Operation Determined Response
USS COLE see page 5

FACEPLATE

The Official Newsletter for the Divers and Salvors of the United States Navy
Volume 5, No. 3 / March 2001

CDR Bobbie Scholley and CWO3 Frank Perna discuss Dive Ops on the deck of USS COLE. See Page 11

ADS pilot Russ DeMille preparing for a dive as the ADS crew moves the suit to the water. See Page 3.

In This Issue

From the Supervisor of Diving

CAPT Chris Murray

This issue of FacePlate contains articles discussing the salvage response to two very serious occurrences, the grounding of the USS La MOURE COUNTY off the coast of Chile, and the terrorist attack on the USS COLE in Aden, Yemen. The salvage response to both incidents was outstanding. In both cases the response was rapid and professional and a real testimonial to the readiness of and the need for our salvage Navy. There is a lot going on with Navy diving as we progress with new equipment and procedures. SDV Team One is currently conducting field evaluation tests on a dive computer, NEDU is looking at cold water regulators to offer an alternative to Poseidon, 1.3 ppO2 trials are ongoing for the MK 16, a replacement chamber for the aluminum FADS II chambers is under construction, and warm water research continues at NEDU. These are but a few of the issues being worked for Navy diving.

Dive Manual Revision 4, Change A

We expect to have Change A to Revision 4 of the Dive Manual out on CD in April 2001and the hard copy out in May. An AIG will be released that will highlight the changes and give the effective date (upon receipt) and mandatory use date (approximately 90 days after receipt). The changes include a rewrite of Chapter 14, Surface Supplied Mixed Gas Diving Operations, warm water diving guidance, chamber air volume requirements, SCUBA air requirements, and numerous other changes that will be outlined in the change.

USS MONITOR Expedition 2001

The USS MONITOR *expedition gives the Navy an excellent opportunity to perform operational*

(continued on page 2)

From the Supervisor of Diving

(continued from page 1)

Surface Supplied Mixed Gas Diving under some pretty arduous conditions. This year we also are looking at the use of Saturation Diving as a proof of concept using a civilian SAT system. Mobile Diving and Salvage Unit Two will again be heading up this year's mission with MDSU One providing a detachment for the operation. LOGRON Two will be providing one and possibly two ARSs to this Summer's expedition. The current plan has the USS Grapple supporting diving in the April- May timeframe, a derrick barge for June and July possibly followed by another ARS in August.

MDV/CWO Conference 2-4 May 2001
This year's MDV/CWO conference will be on Panama City, Florida from 2-4 May. The conference will be held at NDSTC. For further information refer to AIG 01-02 or our 00C website at www.supsalv.org.

Drager Dive Sorb
We are in the process of approving Drager Dive Sorb as a substitute for SodaSorb and Sofnolime. This will be authorized for all diving and for chamber use as well.

Cochran NAVY Decompression Computer
SDV Team One is currently conducting a fleet evaluation for a dive computer for SEAL use. The evaluation period completes 1 August. After successful fleet evaluation of the Cochran NAVY Decompression Computer, it will be authorized for SEAL use. Further evaluation will precede use by fleet scuba divers and ship husbandry divers.

FACEPLATE is published by the Supervisor of Salvage and Diving to bring 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.

Articles, letters, queries and comments should be directed to the Commander, Naval Sea Systems Command, NAVSEA 00C, 2531 Jefferson Davis Highway, Arlington, VA 22242-5160. (Attn: FACEPLATE). Visit our website at **http://www.navsea.navy.mil/sea00c.**

Captain Bert Marsh, USN
Director of Ocean Engineering
Supervisor of Salvage and Diving
NAVSEA 00C
marshb@navsea.navy.mil

Jim Bladh
Managing Editor
Head, Operations Branch, 00C22
bladhjc@navsea.navy.mil

HTCM (MDV) Chuck Young, USN
ENCM (MDV) Dave Davidson, USN
Fleet Liaison Editors
youngch@navsea.navy.mil
davidsondl@navsea.navy.mil

F. Scott Lassiter
Graphic Designer
slassiter@roh-inc.com

In Memory of Eric Glaubitz

On 17 February 2001, we lost a key member of the SUPSALV team. Eric Glaubitz, the ESSM salvage equipment life cycle manager died after suffering a stroke. Eric was a true "friend" of the fleet salvor. His influence can be found in salvage holds and the ESSM system. He was instrumental in designing and upgrading all of the fleet's yellow gear, and was an expert on the Almon Johnson automatic towing machine. When you rig beach gear, you can thank Eric for introducing the hydraulic pullers into the inventory, replacing the cumbersome and dangerous purchase system. He was always ready to help solve problems and work with salvors in maintaining and repairing their equipment. Within the SUPSALV organization, Eric was one of our most versatile engineers. Regardless of the task, he always willingly attacked problems with enthusiasm and completed them in the most professional manner.

Eric Glaubitz

Although his job was not an "operational billet", Eric was often called upon to assist in salvage and pollution operations. He was the first SUPSALV representative to arrive in Valdez, for the big oil spill. He assisted in the CHALLENGER, TWA 800 and many other salvage operations.
We will truly miss Eric.

Pacific Reach

By: LCDR Peter LeHardy

During the first two weeks of October 2000, the U.S. Navy's Deep Submergence Unit (DSU) took part in a multi-national submarine rescue exercise near Singapore. This exercise, named PACIFIC REACH 2000, was hosted by the Singapore Navy and involved the United States, Singapore, Japan, and South Korea. During the exercise, three separate submarine rescue capabilities were used on four different submarines. The submarines CONQUEROR (Singapore), AKISHIO (Japan), CHOI MOO SUN (South Korea), and USS HELENA (United States) were each "rescued" by three different submarine rescue platforms. The platforms were from Japan, South Korea and a United States/Singapore collaboration. For the United States, DSU deployed the Submarine Rescue Chamber (SRC) and an Atmospheric Diving System (ADS) on the Motor Vessel Kendrick, a Republic of Singapore Navy leased vessel of opportunity.

The SRC is a one atmosphere chamber that "pulls" itself to a downed submarine using a down-haul cable that is attached to the sub's escape hatch. Since its first dive in the 1930's, the system has used either surface supplied air or mixed gas divers to connect the down-haul cable. This method limits the SRC operating depth to the max depth of the divers (currently 300 feet). To extend the operating depth of the SRC and reduce the need for dangerous air and mixed gas dives, the U.S. Navy recently purchased an ADS. Using this system, Navy ADS pilots can descend to depths of 2000 feet while working in an environment that is pressured to one atmosphere. The pilot can connect the SRC down-haul cable at a greater depth than surface supplied divers without the need for time consuming and dangerous decompression dives.

The Deep Submergence Unit, Stolt Offshore and NAVSEA 00C team.

At the time of the exercise, the U.S. Navy's ADS had not been certified for use as an element of DSU's submarine rescue program. To overcome this and still complete the exercise, DSU requested assistance from a contractor operated ADS. On this request, the NAVSEA 00C office tasked its diving services contractor to subcontract Stolt Offshore's Hard Suit systems to provide ADS support for Pacific Reach 2000. Prior to this exercise, ADS technology had not been used to support the SRC in submarine rescue operations.

In preparation for Pacific Reach 2000, the ADS units were transported from Louisiana to Singapore and loaded aboard the M/V Kendrick. Also aboard this vessel was the SRC, operated by members of DSU. With the SRC and the ADS onboard, the M/V Kendrick was transformed into a stand alone submarine rescue platform.

Each submarine in Pacific Reach 2000 required a unique fitting to allow the ADS to attach the SRC cable. The Japanese submarine required a "split spelter socket," the South Korean sub needed a "Maryland socket" and the Singapore submarine called for a standard SRC hook. Each of these fittings had to be slightly modified so that the ADS manipulators could operate the fittings.

During the underway period, the ADS was used extensively throughout three separate series of submarine rescue drills with each submarine. Operating 200 nautical miles north east of Singapore, in about 270 feet of water, the Kendrick began the first series of SRC operations on the Japanese AKISHIO. After two days of successful drills, the Singapore submarine CONQUEROR moved in and conducted drills with the Kendrick. The final series of rescue drills were conducted between the Kendrick's SRC/ADS team and the South Korean CHOI MOO SUN. During each series, the ADS located the downed submarine and attached the SRC down-haul cable to the sub's escape hatch. The SRC then traveled down this cable and mated

(Continued on page 22)

A Day in the Life of an Experimental Diver

By: LT Tim Liberatore

With a mission statement that reads "test and evaluate diving and hyperbaric life support systems and procedures, and conduct biomedical research and development," one could certainly wonder just what goes on at the Navy Experimental Diving Unit (NEDU), Panama City, FL. It certainly sounded high-speed/low-drag and the place to be for the latest developments in diving technology when I received my orders. I quickly found out that the truly unique part of the job was that you would be subjected to human testing and would probably be poked and prodded more than you would like to discuss. After all, the mission also required "assignment as an experimental human test subject with a high risk of decompression sickness or oxygen toxicity."

BM1 Larck in drysuit with OXY/LUNG

There are probably multitudes of rumors and perceptions that surface when you tell someone you are an experimental diver. To shed some light on what really goes on, I conducted an interview with one of the first class/saturation divers at NEDU. BM1 (DV) Troy A. Larck was the "guinea pig" for this study. He is the Leading Petty Officer of the Life Support Division in the Engineering Department. On board for just six months, he has already plunged headfirst into some of our most demanding protocols like the Warm Water Diving study and the MK16 1.3 ATA PO_2 table validations. In addition he has completed qualification as Chamber Support Operator (CSO), a critical Ocean Simulation Facility (OSF) watch station primarily responsible to the Dive Watch Supervisor for compression, decompression, and depth control of the OSF chamber.

The Life Support Division's primary responsibility is maintaining the operational readiness of the OSF. The OSF is the world's largest, most complex, man-rated, hyperbaric diving system which is capable of simulating depths to 2,250 FSW and able to sustain extended duration saturation diving for 10 divers. It is truly the centerpiece of the command and is three stories tall with a command/control room and data acquisition room rivaled only by NASA's mission control in Houston.

Now on with the interview:

LT: *What were your expectations of NEDU coming from SubDevRon-5 Det Diving?*

BM1: I expected NEDU to be like any other shore-based command, good diving and flexible working hours. I received my welcome aboard package and was surprised to see how large their mission statement was. I knew that I would be asked to participate in human testing, but the mission statement also included a lot of equipment testing. The rest didn't really concern me. I certainly wasn't expecting the protocols at NEDU to be comprised of **mostly** human experimentation.

LT: *What's a typical diving day like at NEDU?*

BM1: That depends upon the diving protocol being conducted. We dive in our test pool or in the OSF. Some experiments are even done in our recompression treatment chamber. The most demanding diving days so far have been the "Hot" Water Study being conducted for SpecWar and Fleet Diving. Each test subject dives at most twice a week in the test pool. The night prior to the dive you eat an MRE before going to bed and make sure you hydrate until you're pretty well bloated. You also have to take a urine specimen bottle home with you. This is for you to fill in the morning. Upon waking you are not supposed to eat or drink anything until you get to work where they (the vampires) take 4 vials of blood. The diving side will be briefed and then it's time for you to get suited up. You eat another MRE and drink until you're bloated.

Next is the morning weigh-in prior to instrumentation. Upon completing that ritual you move on to installing a core temp monitor in your rectum and an external catheter, nicely equipped with a handy urine bag and tube. ECG (electrocardiogram) monitors are the next thing put on you, consisting of four leads on your chest and a 2-pound transmitter bag around your shoulder. Weigh-in again fully instrumented.

The water temperature is varied from 90 to 99 degrees F. Depending on the day you could then put on a dive skin, dry suit or just shorts. The diving rig is the Aqua-Lung OXY/LUNG UBA, which is a closed circuit 100% oxygen rebreather. Your time in the water is set at a max of 4 hours and of course you are exercising the entire time riding a prone position cycle ergometer. And yes, they do monitor your RPMs and work rate. Music is played un-

(continued on page 8)

OPERATION DETERMINED RESPONCE

USS COLE

MDSU 2 Det Alpha Lends a Hand to A Wounded Warrior

By: CWO3 Frank Perna

On 12 October 2000, USS COLE (DDG 67) was refueling in the port of Aden, Yemen when the ship was attacked by terrorists. A small boat packed with explosives was detonated along the portside of the ship killing 17 sailors, wounding 39, and ripping a hole approximately 40' by 40' in the hull.

Mobile Diving and Salvage Unit TWO (MDSU-2) Detachment Alpha was in Bari, Italy on a six-month deployment aboard the USNS Mohawk (T-ATF 170) as the ready diving and salvage team. News of the bombing spread fast and the diving detachment was placed in standby. On 13 October 2000, Detachment Alpha received orders from COMSIXTHFLT to deploy immediately to Aden, Yemen. Our tasks were to locate the missing sailors, assist with stabilizing the ship, recover evidence, and perform structural inspections. Close to 100 investigators, diving and salvage experts, engineers, and support teams made up the Crisis Response Team.

On 14 October, twelve members of Detachment Alpha touched down at the airport in Aden, 22 hrs after receiving orders to deploy. Armed soldiers and military police surrounded the plane and two vehicle-mounted fifty-caliber machineguns were pointed in our direction. CDR Keenan and LCDR Long greeted us. CDR Keenan, Officer in Charge of Ship Repair Unit, Bahrain, headed all of the salvage operations surrounding the Cole. The two officers had already performed a quick damage assessment on the COLE's hull. CDR Bobbie Scholley, Prospective Commanding Officer of MDSU 2, arrived later with senior engineers from SIMA, Norfolk and Norfolk Naval Shipyard workers. After our passports were checked and dive systems x-rayed and inspected, our equipment was loaded onto transport trucks. Soldiers mixed among us on the small and cramped buses that took us on our way. Before arriving at the ship, we passed through three Yemeni checkpoints and a U.S. checkpoint protecting access to the stricken COLE.

USS Cole sits ready to begin her long journey home aboard the Blue Marlin.

ENCS (MDV) Lyle Becker, BMC (DV) David Hunter and I boarded the Cole. Our first glimpse of the ship that night will be forever fixed in our minds.

The ship was blackened by the explosion, listing slightly to port, and without electrical power. Our first objective was to determine which locations to search, identify a centralized location to setup dive station and determine how to safely enter those spaces.

The crew of the USS COLE had performed super human feats under arduous conditions since the attack, but on 15 October, they were unable to stop the flooding into Main Engineroom-2 (ME-2), the only remaining operational engine room. As several divers investigated the cause for ME-2 flooding, the rest of the dive team setup the Light Weight Dive System (LWDS) on the 01 level, portside between the forward and aft stacks. The report on the flooding: AMR-2 was completely flooded, and flooding was progressing into ME-2 through a ruptured bulkhead shaft seal on the starboard side. Measurements taken of the port bulkhead shaft-seal provided us with the dimensions needed to construct a rope seal from 3-inch Sampson braid line. All normal accesses to the engine and machinery rooms were impassable. The dive team routed the MK 21 helmets and umbilicals through AMR-2 escape trunk hatch on the 03-level.

(continued on page 6)

(USS COLE continued from page 5)

EN2 (DV) Mike Shields routing umbilicals through the engine room vent duct.

The divers were equipped with Divers Underwater Camera Television System (DUCTS) and Divers Helmet Mounted Lighting System (DHMLS). Emergency Gas Supply (EGS) with a 150-foot whip was used instead of man-carried bottles to reduce the diver's profile in the water. This allowed them to reach all areas of the engineering spaces. For added protection against chafing and cuts, the umbilicals were wrapped inside 2 ½-inch fire hoses. We monitored the divers' fatigue and hydration levels very closely. Air temperatures of 100-110 degrees kept water temperatures around 90 degrees and wet suits were worn to protect the divers.

HT2 (DV) Bret Husbeck and EN2 (DV) Mike Shields located the ruptured shaft seal very quickly and installed the temporary rope seal. A layer of electrical putty filled in small crevices and effectively stopped all flooding into ME-2. Inspection of AMR-2 revealed no visible breeches in the hull or bulkheads. All accesses into the space were intact and provided a satisfactory flooding boundary. At this time, it was felt that a tear in the hull had opened into AMR-2, but the divers were unable to locate it due to the layout of the compartment.

On 16 October, The COLE's diesel generator stopped running, and due to a rupture in the starting air piping system the ship's engineers could not recharge the high-pressure air flasks. The Engineering Officer requested that divers locate and secure the Diesel Air Starting Valve (AHP-V-67) in Supply Store Room No.1, in order to isolate the damaged section and reroute air to the flasks. ETC (DV) Terry Breaux and IS3 (DV) Greg Sutherland found entering the space easy, but had a very difficult time navigating through the wrecked and flooded supply spaces. The portside and forward bulkheads were blown inward, all non-water tight doors had broken from their hinges, filing cabinets lay scattered across the deck, and visibility was reduced to less than 3 inches.

While the divers were searching for the air valve, plumb and drain valve (WD-V-342) was also located and closed. With these valves secured and the damaged piping systems isolated, the inspection of the supply spaces continued. A tear in the hull near the port forward corner of the supply storeroom was located accounting for the flooding of the space.

With the ship's immediate stability concerns met, the next underwater task was to inspect the blast area, gain access into ME-1 and search the surrounding workshops. These were the last known locations of the missing COLE sailors. The diver's staging area was moved to a small boat positioned just aft of the blast hole, and divers were required to climb down a pilot's ladder from the 01-level and "hat up" in the boat before entering the water.

The blast area was nothing less than devastating; noticeable to the world was the immense opening in the hull. The most disturbing sight was the extensive damage inside the ship. The blast from the explosion had torn 30-35 feet into the center of the ship. The width of the exterior breech was approximately 70 feet and involved 3 decks. Half-inch steel bulkheads had shredded and vertical and horizontal structural supports had snapped from the force of the blast. Work spaces closest to the explosion no longer existed. Those spaces that escaped total demolition were unrecognizable. In their place was a tangled mess of broken equipment, piping, and wires.

(continued on page 7)

STG2 (SW/DV) Donald Schappert is tended by EN2 (DV) Mike Shields in the main engine room.

(USS COLE continued from page 6)

HMC (DV) Don Adams and GM3 (DV) Sean Baker entered the blast area from outside the skin of the ship. They placed a large rubber mat over the entrance of the blast-hole to protect themselves and the diving equipment from the knife-like metal plating. As they made their way around the blast area, their umbilicals fouled every few feet despite all efforts by additional tenders and divers. Very slowly and carefully, the divers inspected every inch of the blast area looking for signs of the missing sailors and any evidence of the explosive device. The FBI was keenly interested in anything that might help their investigation to identify the terrorists or the composition of the bomb.

IS3 (DV) Greg Sutherland prepares to dive in the main engine room.

All attempts to enter ME-1 and the Reverse Osmosis (RO) Shop were thwarted by a tangled mass of impenetrable debris. At our request, Norfolk Naval Shipyard (NNSY) workers cut away a section of decking, allowing us to continue our search and recover one of the missing sailors.

It had become apparent that the divers could not gain access to ME-1 from outside the ship or any of the normal accesses. We decided the best way to enter ME-1 was from the engine room vent duct within the intake/uptake compartment. This was not an easy task, as the flooded walkway of the upper level of ME-1 was two decks down, and the vent duct did not offer us a safe way down. Heavy fuel vapors coming from the engine room overwhelmed the team; fuel tanks had ruptured spilling a large amount of fuel into the water. Free communication from the engine room to the sea allowed a "washout" of the space and lessened the heavy concentration of fuel in the water. Several measures had to take place before divers could attempt an entrance into ME-1. Norfolk Naval Shipyard (NNSY) provided gas free services, certifying the space free of an explosive atmosphere, and provided interior lighting to illuminate the upper spaces. Space ventilation was set up using RAMFAN, a water driven blower to pull the fumes out of the engine room. Without any significant reduction in fuel vapors, the diving tenders wore Self-Contained Breathing Apparatus (SCBA) to safely tend the divers from within the engineering space. As a preventative measure and for ease of mind, several AFFF containers were emptied into the flooded space. Wooden ladders were constructed for each deck within the ventilation duct to ME-1 upper level walk way.

On 17 October, I entered ME-1 along with BM2 (DV) Mike Allison. The small size of the ventilation duct forced us to climb down without our MK 21 helmets on and to "hat up" on the walkway within ME-1. Even though we were very familiar with the engine room layout, engineers from the USS COLE and USS DONALD COOK guided us as they observed our progress on the DUCTS television. As we moved through the water column, we could feel the change in densities between fuel and water. Metal shavings sparkled as our underwater lights scanned the engine room. Diving in this enclosed space was extremely dangerous. Sheared bulkheads, buckled decks, broken pipes and wires created an immense "spider web" of destruction. Everything fouled our umbilicals. Pieces of broken equipment fell from the overhead as we disturbed their delicate balance.

We located and recovered three more of the missing sailors. Additional dives in ME-1 on 18 October by HT2 (DV) Bret Husbeck and GM2 (DV) Roger Ziliak brought up large amounts of personal items. All attempts to shut a 10-inch fuel oil transfer valve (FO-V-53) went unsuccessful due to a large expansion tank blocking operation of the valve.

On 19 October, the dive team was able to assist the FBI more directly by searching the ship's compartments that their agents had deemed too dangerous to enter. At this point, the team safely located and recovered two more sailors.
All of the missing Cole sailors were recovered and were given full military honors as they were escorted off the ship to begin their long journey home.

With the recovery phase completed, the dive team began preparing for the many inspection dives. Naval engineers needed to determine how much of the COLE's structural strength was lost and if the ship would be able to handle the docking evolution without the need for additional strengthening. From 20 October to 24 October, detailed structural and damage information in ME-1, AMR-2, Supply Storerooms and hull plating was provided and documented. Of particular importance were the vertical stanchions and I-beam supports, each inspected for deformation and signs of weld cracking. Measurements taken of the blast hole were drawn on a graph to show the shape and size of the blast hole (location, direction and number of cracks that radiated out). The divers then drilled holes at the end of each crack to prevent them from increasing in size and further weakening the hull.

To ensure the keel had remained

(continued on page 8)

(USS COLE continued from page 7)

straight and undamaged, keel deflection measurements were taken at twenty-foot intervals. A Kevlar line (360 feet long) connected between forward and aft Tugits was stretched the length of the keel. Two wire rope bridals fastened at the sonar dome and the inboard propeller rigging tunnel held the Tugits in place. Approximately 3 tons of tension applied to the Kevlar line made it taut. Divers then measured the distance between the line and the keel. With slight sag calculated into the measurements, the keel had remained undamaged.

The Blue Marlin, a 700-foot-long Norwegian heavy lift transport ship, received the contract to lift and transport Cole back to the United States. To accommodate the COLE, Blue Marlin was fitted with docking blocks with two large guideposts to maintain COLE in the proper position over the blocks. For stability, the keel blocks were shortened and two large holes were cut into the deck allowing the propellers to drop below the main deck of the transport ship. The Cole was positioned 19 degrees off center on the deck so the sonar dome could hang over the side of Blue Marlin's deck.

USNS Catawba (T ATF 168) towed Cole out of the harbor on October 29 to deeper waters, approximately 23 miles off the coast of Yemen. Loading Cole onto Blue Marlin required a depth of at least 75 feet and calm seas. The transport ship partially submerged as COLE was maneuvered by tugs into position over Blue Marlin's deck. Three SCUBA dive teams guided the damaged destroyer as the Blue Marlin raised up in the water to meet the ship. The forward dive team reported on the sonar dome's position and forward keel block, while two aft dive teams reported on the propellers as they entered the cut outs, the aft keel block and port and starboard side blocks. The entire docking evolution took almost 24 hours to complete. Blue Marlin with the COLE securely held on its deck made the transit back to the United States. The COLE will undergo extensive repairs at Ingalls Shipbuilding and Drydock Co. in Pascagoula, Mississippi.

Salvage and recovery operations are always a team effort. No one person can accomplish them alone. I was grateful to have such fine and experienced diving and salvage officers as CDR Keenan, CDR Scholley and LCDR Long on the side. They provided invaluable guidance and common sense. I am indebted to and extremely proud of the divers in Detachment Alpha who made it all possible. The recovery of fallen shipmates was difficult and mentally exhausting, as were the treacherous dives performed within COLE's flooded and damaged compartments. Thirty-seven dives were conducted with over 76 hours of bottom time. Besides the diving, these divers with their "can-do-attitudes" assisted the salvage efforts in many other ways. They helped to get the diesel generator back online, rerouted the ship's starting air system, setup and operated emergency dewatering equipment, and provided air recharging service to the FBI and EOD divers.

The following U.S. Navy Deep Sea Divers performed these heroic efforts: ENCS (MDV/SG) Becker, BMC (SW/DV) Hunter, ETC (SG/DV) Breaux, HMC (DV) Adams, HT2 (DV) Husbeck, GM2 (SS/DV) Ziliak , STG2 (SW/DV) Schappert, IS3 (DV) Sutherland, EN2 (DV) Shields, BM2 (DV) Allison, GM3 (DV) Baker.

CWO3 Frank Perna is the Officer In Charge of Detachment Alpha, Mobile Diving and Salvage Unit TWO, homeported in Little Creek, Virginia. Prior to beginning his tour at MDSU-TWO, CWO3 Perna completed a tour as Master Diver at SIMA Dive Locker, Naval Station, Norfolk, Virginia.

(A Day in the life of an Experimental Diver continued from page 4)

derwater and hopefully you are with three other guys that like the same music. I hate classic rock - heard all the songs a million times. Every hour you are given a manual dexterity test and a comprehension test (called SINDBAD for System of Investigation of Navy Diver's Behavior at Depth) while still trying to pedal. You can come out any time you want to but they would prefer if you maxed your body out. The data collected is what is important. The dive will be aborted if your core temp reaches 104.9 °F or if you are above 104 °F for 5 minutes. It happened to me and it wasn't pleasant.

The dive day is not over yet though. After getting out of the water, you give four more vials of blood and try to hydrate again. Then the SOF (Special Operations Forces) Mission Related Performance Measures testing begins. This test consists of a timed M-4 carbine (a shorty M-16) disassembly and assembly, hand grip strength tests till muscle failure, running steps with a 44-lb weighted ruck-sack for 1 minute, max pull-ups, M-4 target shooting with 50 pop-up targets, and finally a comprehension battery on a laptop computer. This had better

BM1 Larck installing new EBA system at OSF Manual Operating Panel

(continued on page 16)

Turbo Patriot

By: LT Mike Teates

Members of Underwater Construction Team ONE and TWO recently completed Exercise TURBO PATRIOT '00 in Camp Pendleton, California. TURBO PATRIOT was a Joint Logistics Over the Shore (JLOTS) exercise conducted in September 2000 by the United States Transportation Command.

"Logistics over the shore is the process of discharging cargo from vessels anchored off-shore or in the stream, transporting it to the shore and/or pier, and marshalling it for movement inland. LOTS operations are conducted over unimproved shorelines, through fixed ports not accessible to deep draft shipping, and through fixed ports that are inadequate without using LOTS capabilities."

The Underwater Construction Teams (UCT) are a key component in the Offshore Petroleum Discharge System (OPDS) portion of the United States JLOTS capabilities and assist in other components of the JLOTS mission by providing hydrographic and sub-sea soil analysis for the Elevated Causeway Pier, underwater ship husbandry services and underwater salvage services.

The OPDS is capable of providing 1.2 million gallons of fuel a day to forces ashore from a Military Sealift Command tanker moored up to 4 miles offshore and is installed jointly by the UCTs and the Amphibious Construction Battalion (ACB). The OPDS consists of several components: a 839-ton barge measuring 57' x 150' that when ballasted to the bottom becomes a Single Anchor Leg Moor (SALM), a beach termination unit to receive and distribute fuel upon its arrival on the beach, a specially configured tanker that stores and offloads the SALM, OPDS flexible conduit, and several small craft to install the system and fuel. The OPDS can be installed and provide fuel to the beach in 7 days using 24 hour operations.

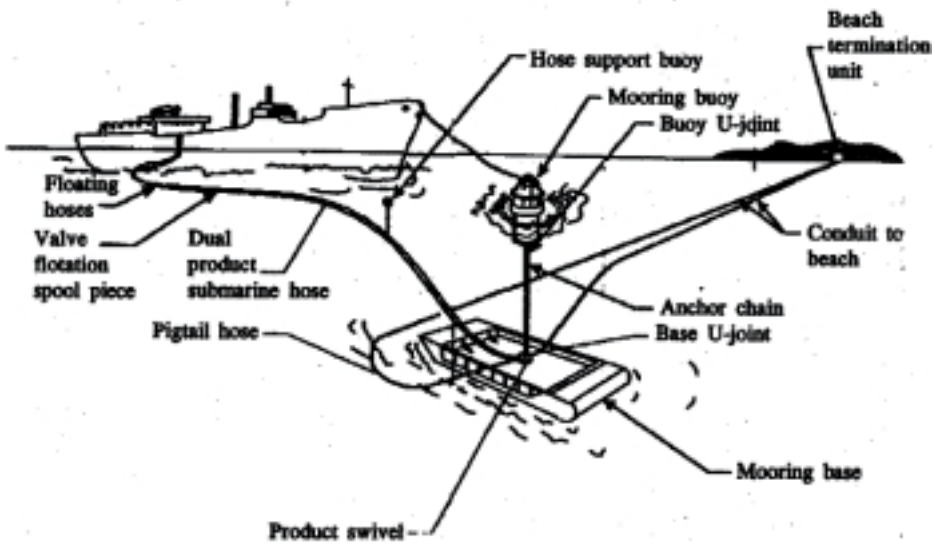

Diagram of Salvage Operations

Prior to the tanker arrival, the UCTs assist in determining the installation site by performing a beach, hydrographic, and geotechnical survey to determine a suitable location for the SALM and conduit path. When the tanker arrives it lists 12 degrees to discharge the SALM, which is towed into its final position by several OPDS Utility Boats (OUB). The UCTs connect the submarine hose and conduit pigtail hoses to the SALM which is then sunk by controlled ballast tank flooding. As the SALM sinks to the bottom the 55-ton main mooring buoy attached to the SALM becomes positively buoyant and detaches from the SALM. With the SALM on the bottom, the floating hose from the tanker is connected to the submarine hose and the pigtails are connected to the main conduit. The main conduit is then pulled to the beach and connected to the beach termination unit by the ACB. The tanker can then use the SALM's main mooring buoy as a single point moor. The conduits are sunk to the bottom and must be stabilized and inspected prior to pumping fuel ashore. Once the OPDS operation is completed, the process is reversed and the UCTs raise the SALM by flooding the ballast tanks with air.

Two UCT detachments led by a joint command and control element mobilized one air detachment Table of Allowance (TOA) to Camp Pendleton and established a command center in the JLOTS camp. A small crew sailed with the MSC Chesapeake from San Francisco to Camp Pendleton to prepare the tanker, SALM and install a MK-3 LWDS and a TRCS on a specially configured OUB. Upon the tankers arrival, the SALM was sunk 2 miles offshore at a depth of 100 feet. Due to the depth and the work requirements on the bottom, both "No decompression" dives and "Surface Decompression using Oxygen" dives were used during the OPDS installation.

(Continued on page 20)

USS LAMOURE COUNTY

By: CWO2 Riendeau

A puff of smoke rolls off the tires of an Air Force C-5 Galaxy as it completes a 12 hour flight from Norfolk, Virginia to Antofagasta, Chile. The oversized cargo transport carries nearly 100 tons of diving, salvage and oil pollution control equipment as well as 19 divers from Mobile Diving and Salvage Unit TWO. Led by CWO4 Tom Ross and Master Diver Scott Heineman, this team of Navy divers joined forces with NAVSEA diving and oil pollution control contractors to complete one of the largest peacetime ship salvage operations in US Naval history.

Eight days earlier, the USS LA MOURE COUNTY (LST 1194), as part of a UNITAS deployment, was conducting a routine amphibious exercise that would launch eight Amphibious Assault Vehicles (AAV) and send 240 marines ashore on a remote Chilean beach. The LST, home ported in Norfolk, was making a pre-dawn approach to the beach when the 522-foot ship ground to a halt.

Master Diver Scott Heineman, HTC Mike Lutz, and GM2 Chad Dillon lowering concrete on a trolley line to diver in the water.

Battle stations were quickly manned as the crew set to work to save their ship. Three repair lockers worked frantically to stabilize buckled decks and frames, as well as control the flooding of fuel into the forward and after troop berthing compartments. Meanwhile the ship started to broach increasing the damage to her port side. The Chilean tug, Galvarino, on station to support the exercise came along side and the crews of both ships worked to get the towing hawser passed. Soon, encouraging pops and cracks came from the straining synthetic towline and the ship began unleashing her grip on the rocky bottom. In about 90 minutes the LA MOURE COUNTY was afloat and under tow to anchorage in nearby Cinfuncho Bay.

The ship was not yet out of danger. Although stability of the ship was not a great concern, the risk of structural failure and additional flooding due to the massive damage to the keel and ship's bottom was serious. The remote location made mobilization of salvage forces difficult. The crew spent the next eight days perfecting their damage control skills while Chilean Navy divers worked tirelessly installing wedges, patches, and underwater epoxy in the myriad of holes along the ship's hull. Over the course of the coming weeks, the Chilean divers, using just scuba, were able to apply rudimentary exterior patches on every hole in the hull except the largest hole at the keel.

The CINCLANTFLT Salvage Officer, LCDR Jess Riggle, arrived a few days ahead of the MDSU team and began assessing damage, formulating a rough salvage plan and working with the Chilean divers. The strength of the ship was a big problem that was only being made worse by the severe hogging caused by the flooding of all the forward tanks. This flooding left the bow trimmed six feet deeper than normal. Ultimately the salvage plan focused on three main areas:, oil pollution control/prevention, structural repairs, and buoyancy restoration. Each area was important and interrelated. All actions had to be carefully coordinated to support the operational commander's desire to offload the Marine AAVs from the tank deck to support follow-on UNITAS exercises. Fuel spills and transfer of fuel and oily waste were managed by the NAVSEA ESSM contractor, Global Phillips Cartner. Welding and fabrication of massive structural stiffeners were the job of the NAVSEA diving contractor, Phoenix International. The task of buoyancy restoration fell to the divers of MDSU-2, whose first assignment would be an intensive un-

(Continued on page 18)

Command in the Spotlight

Mobile and Salvage Unit Two

By: CDR Barbara Scholley

When Jim Bladh asked me to do an article for Command in the Spotlight, he was expecting me to do one on Mobile Diving and Salvage Unit TWO. As proud as I am of this command, I thought I would take this opportunity to highlight a different organization. I want to pay tribute to the many Military Divers involved in Operation Determined Response after the October 2000 bombing of the USS COLE in Aden, Yemen. This diverse group contributed significantly to the stabilization and protection of the COLE and assisted in her safe departure from the Port of Aden. This operation is a superb example of the teamwork that Military Divers are known for.

Operation Determined Response was executed by a Joint Task Force (JTF) made up of the USS TARAWA Amphibious Ready Group (ARG), several ships from the USS GEORGE WASHINGTON Battle Group, and other organizations. The JTF was composed of organizations from CINCPACFLT and CINCLANTFLT. There were many different diving organizations involved and assigned missions in almost every major area of the Operation. In addition to the Mobile Diving and Salvage Unit TWO Detachment Alpha (see article page 5), there were Divers from EODMU TWO, THREE, SIX, and ELEVEN, EODMU EIGHT DET Bahrain, SEALs, Marines from 1st Battalion Reconnaissance, and the Salvage EDOs from CTF 53. Each team of Divers brought unique skills and equipment to the table and provided support to the other teams when needed.

On the day of the bombing of COLE, a small group of EODMU Eleven Divers were on the scene. This team, including CDR Holly from COMFIFTHFLEET and ENS Ron Zitzman from EODMU 3, was in Yemen conducting humanitarian de-mining support. Immediately following the bombing, EODMU 8 DET Bahrain and EODMU 6 DET 8 Divers were dispatched to Aden to assist. The arrival of the TARAWA ARG brought EODMU 3 DET 9 with much appreciated relief. During the course of the operation, several of the EOD Officers were reassigned to the headquarters staff to assist with force protection, while the rest of the detachments set up SCUBA operations to search for evidence for the FBI's Evidence Recovery Team. These teams provided an array of skills that included more than diving support and that were critical in finding valuable evidence in the waters surrounding the COLE.

The Salvage Engineering Duty Officers from CTF 53 arrived on the scene almost immediately after the bombing. With only hours to prepare, CDR Pat Keenan and LCDR Matt Long provided the leadership and expertise essential to the success of the operation. The importance of the work performed by these two officers can not be stressed too strongly. After making SCUBA dives on the damaged area, CDR Keenan and LCDR Long quickly put together an appropriate salvage and stabilization plan. Working closely with NAVSEA 00C, they identified the how, who, and what needed to be done to keep the ship afloat. They provided excellent guidance on how to best search for and recover the missing crew members. They were the Docking Officers responsible for the precision "at sea" docking of the COLE on BLUE MARLIN. As far as we know, this was the first "at sea" docking of a vessel this size and the event went without a hitch.

CDR Barbara Scholley, Commanding Officer of MDSU 2

Mobile Diving and Salvage Unit TWO Detachment Alpha played a key role in the stabilization and victim recovery efforts aboard USS COLE. As the Sixth Fleet Salvage asset, they were the quickest and safest means of getting surface supplied divers into the interior spaces of COLE. CWO4 Frank Perna, ENCS (MDV) Lyle Becker and the rest of the detachment (BMC Hunter, HMC Adams, ETC Breaux, HT2 Husbeck, GM2 Ziliak, STG2 Schappert, BM2 Allison, EN2 Shields, GM3 Baker and IS3 Sutherland) brought a critical mix of talent that made the operation a success. Not only was the team experienced in underwater ship husbandry, but several of them had recently been stationed at SIMA Norfolk and had dived on COLE or one of her sister ships

(Continued on page 12)

(Command in the Spotlight continued from page 11)

Part of the Operation Determined Response Dive Team. This part of the team includes the MDSU II Det Alpha divers and the First Battalion Recon Marines and and members of the USMC Security Team

before. This helped immensely when searching through flooded space that had been damaged by the blast. This team made heroic efforts to accomplish dives that are above and beyond what is normally expected and persisted until every victim was recovered. The team's experience in diving on dry dock blocks was also essential during the docking of COLE on the BLUE MARLIN,

You might not think of the Recon Marines of 1st Battalion as part of a salvage dive team, but they too provided valuable support during the operation. Capt Bruce Soltire and his team of divers provided both equipment and personnel support during the docking evolution on BLUE MARLIN. To accommodate the early morning start to dive the blocks, the Recon Divers transferred to USNS Catawba where MDSU TWO DET Alpha was already embarked. CATAWBA has limited berthing space, but Marines are incredibly flexible and of course had their own cots to set up on deck. Capt Soltire, SGT Dixon, SGT Rardon, SGT Sanchez, SGT Spannuth, SGT Wasik, CPL Moser, CPL Rudig, CPL Thomas, and LCPL Peters were real team players and even taught us a few tricks.

There were also several members of the SEAL Team community in the operation, but their main focus was force protection. There were two other groups of non-divers that provided invaluable support for the diving operations occurring aboard COLE. MDSU TWO DET Alpha was embarked aboard CATAWBA for most of the operation and for a week of transit to debark in a safer port. CAPT John Pope and the crew of CATAWBA were exceptionally cooperative, providing small boat support, flexible meal hours, and excellent hospitality the entire time. CAPT Pope was also responsible for the safe and successful tow of COLE from the port to the BLUE MARLIN. Towing a battle damaged ship is always risky and a nerve racking experience but towing it in a potentially hostile environment adds even more complications. CAPT Pope and his crew proved to be real professionals and accomplished the risky tow superbly.

During the course of the operation, the CATAWBA and the MDSU dive team were assigned a small USMC component as a security force. Led by SGT May, the eight man force was responsible for all the shipboard security as well as for accompanying the dive team on the daily 60 minute small boat transit to and from the COLE. SGT May, CPL Mayo, CPL Morgan, CPL Lawson, LCPL Anderson, LCPL Chavez, LCPL Dykes and PFC Williams quickly became valued members of the MDSU team. We were happy to have this protection and even happier that it was provided by such a dedicated and professional group of young Marines.

As you can see, there were many Divers that deserved recognition during Operation Determined Response. Unfortunately, I did not have the names of each and every one of them, but they were all essential to assisting our COLE shipmates during this tragic event. Whether they were Navy or Marine Corps, EOD or Salvage, Officer or Enlisted, each Diver contributed significantly to the success. During a dangerous and emotional operation in a hostile environment, each Diver displayed the highest degree of Honor, Courage and Commitment. HOOYAH Military Divers!

CDR Scholley is currently the Commanding Officer of MDSU TWO. She was the PCO for MDSU TWO when she accompanied MDSU TWO Det Alpha during Operation Determined Response. Prior to this tour, CDR Scholley was Supervisor of Diving and CO, USS BOLSTER (ARS 38).

NAVAL DIVING AND SALVAGE TRAINING CENTER

By: LCDR Jim Bredemeier

The Naval Diving and Salvage Training Center (NDSTC) located at the Navy's Coastal Systems Station in Panama City Beach, Florida, is the latest facility supporting a long history of U.S. Navy diving training. In 1882, the U.S. Navy established a diving school under retired Chief Gunner's Mate Jacob Anderson at Newport, Rhode Island. The school trained divers to descend to 60 feet to recover exercise torpedoes. The school was closed at the outbreak of World War I, as all available divers were needed in the fleet. In 1927, the diving school was re-established at the Washington Navy Yard in Washington, D.C. The curriculum included training with hand and power tools including underwater burning with oxygen-hydrogen and oxygen-arc torches. The Navy Yard school was closed in 1980. The current facility, under the cognizance of the Chief of Naval Education and Training (CNET) opened in 1980 and was designed from the ground up to be the cornerstone of U.S. Navy diving training. At the Panama City location enlisted personnel, officers, and civilians from the Navy, Marine, Air Force, Army, Coast Guard, and allied foreign countries are trained in all phases of diving and ship salvage. With the exception of Special Warfare forces, all military personnel receive initial and advanced training at NDSTC.

The 33 yard, 12 foot deep, 8 lane dive pool.

The center is situated on St. Andrew Bay's Alligator Bayou and covers approximately 155,000 square feet. NDSTC's engineering, craft, curriculum, medical, supply, and materiel logistics departments provide the comprehensive framework and support for all high-risk training (approx 10,000 dives annually) performed at NDSTC. As the hub of U.S. Navy diving and training, all aspects of diving and life support requirements are addressed, from deep salvage to routine hull maintenance. Twenty-four different courses encompassing all phases of diving, ship salvage, combat diver (USMC) and submarine lockout are taught to approximately 1,400 students annually. Typically, courses range from 5-26 weeks in duration. Qualifications are made to a depth of 300 feet. NDSTC's Commanding Officer, CDR Mark T. Helmkamp, was among the first to complete training at the Panama City location. He initially qualified in the spun-copper MK V helmet, synonymous with deep sea diving and prominent in the recent hit movie "Men of Honor" starring Robert De Niro and Cuba Gooding Jr.

Technology and curriculum used at NDSTC include diving medicine and physiology, diving procedures and operations, decompression techniques and applications, diver navigation and tracking, diver tools, gas dynamics and chemistry, hyperbaric systems, manned and unmanned hyperbaric testing, nondestructive testing (NDT), thermal protection, and contaminated atmosphere breathing equipment.

SCUBA (including MK16 and MK25 re-breathers) and deep-sea surface supplied diving are taught at the center's outdoor training pool and three indoor open tanks. After mastering the various diving rigs in controlled environments, the students perform working dives from open diving bays on Alligator Bayou. The final phase of instruction includes open-sea diving in the Gulf of Mexico from one of the two Yard Diving Tenders (YDTs) capable of supporting both air and mixed gas diving. Additional specialized facilities in-

YDT 18, one of two Yard Diving Tenders here at Panama City, FL.

(continued on page 22)

CONSOLIDATED DIVERS UNIT
SAN DIEGO, CALIFORNIA

BY: CWO3 RICK ARMSTRONG

Consolidated Divers Unit (CDU) located at Pier 10 on Naval Station, San Diego California is one of the largest diving lockers in the Pacific Fleet. CDU is dedicated to providing quality underwater ships husbandry (UWSH) repairs, light salvage and hyperbaric recompression chamber support to Commander, Navy Region Southwest. CDU divers are the on-site technical experts for waterborne repairs conducted on the carriers, surface combatants, submarines, and support ships and craft of PACFLT.

In 1979 COMNAVSURFPAC created the San Diego based diver consolidation plan as a pilot program to determine if consolidation of Navy divers would better effect utilization of diving assets and provide cost savings to the Fleet. The first year of the program was a success, and in August 1980 the diving unit was officially commissioned as Harbor Clearance Unit One Detachment (HCU 1 DET). The unit's name was later changed to Mobile Diving and Salvage Unit One Detachment (MOBDIVSALU ONE DET).

This consolidation plan was validated when the number of dives and bottom times doubled without increasing personnel or cost. In addition the West Coast hull-cleaning program was created, saving the Navy over $80 million dollars in fuel costs annually.

Hollywood premier of "Men of Honor" from left to right bottom row, CDR Kelly Eley, CO, CDU, IT1 (SW/DSW) Dave Gove, HM1(DV) Aaron Levy, top row; EM1(SW/DV) Mike Welsh, CWO3 Rick Armstrong XO, CDU, Master Diver Carl Brashear, Film Director George Tillman, EN1(SW/DV) Steve Willis.

A mixed crew of Puget sound divers and CDU divers divng on a double screw change on USS STENNIS (CVN 74), from left to right, HT2(DV) Bucky Baker, yardbird rigger, HT2(DV) Travis Richardson and unidentified Puget Sound Navy divers.

The technical expertise combined from a variety of Navy dive lockers (USS CAPE COD, USS ACADIA, and USS JASON) resulted in the development of new underwater work techniques for underwater repairs on various classes of Navy and Coast Guard ships. These included waterborne propeller and CPP blade change outs, masker belt replacements, Auxiliary Propulsion Unit (APU) swaps, shaft re-laminations, and underwater wet welding, Also, a central database was established for underwater work and hull cleaning performed on West Coast based ships and submarines.

On October 1, 1986 MOBDIVSALVU ONE DET was disestablished and Consolidated Divers Unit (CDU) was established. The command's primary focus became underwater ship husbandry with the transfer of salvage responsibility to Mobile Diving and Salvage Unit One (MDSU-1) located in Pearl Harbor, Hawaii.

With the decommissioning of the last submarine tender in the Southwest region (USS MCKEE), CDU was tasked with providing waterborne maintenance to SUBPAC assets. A 12-person dive detachment was established in October of 1999 and continues the quality underwater repair work that has been the legacy of submarine tender divers Navy wide.

With some of the finest divers in the Navy, CDU handles a variety of tasks from changing out 40-ton propellers on nuclear carriers, Auxiliary Propulsion Units on

(Continued on page 15)

(Consolidated Divers continued from page 14)

Two divers on the fin stabilizer, BM3 (DV) Mike Aviogne, HT2 (DV) Jeff Pitts.

surface combatants, Secondary Propulsion Motors on nuclear attack submarines, to installing cofferdams on a carrier in support of a major yard availability. CDU divers excel in all facets of these waterborne repairs. Each repair performed in-water saves the Navy thousands of dollars in dry-dock costs.

CDU is commanded by CDR Kelly Eley and led by Chief Warrant Officers and Master Divers including CWO2 Roland Bissonnette, CWO2 Steve Rienagel, BMCS (SW/DSW) Kyle Gaillard, HTCS (DSW) Boy Kayona and HTCM (SW/DSW) Brick Bradford.

Recently five divers from CDU took leave to assist with filming of the movie "MEN of HONOR". These divers provided technical support, acted as extras, and made a majority of the dives seen in the final take of this movie depicting the life and times of BMCM/Master Diver Carl Brashear. CDU was invited to the Hollywood screening of the film at the "Dorothy Chandelier Pavilion" and the reception at the Conga Room.

CDU is also the West Coast bends watch coordinator, overseeing 14 Diving Medical Officers, 16 Diving Medical Technicians, 11 Master Divers and all regional First and Second Class Divers. This diverse group responds to any diving related casualty and/or clinical hyperbaric oxygen treatments that are initiated within the Southwest region.

CDU trains divers for the Navy's only NAVSEA certified wet welding program. Developed in 1991 and headed by HTC (SW/DV) Bob Barker, this team is ready to deploy worldwide for any underwater repair requiring this unique technique. CDU has been involved in many complex wet-welding jobs (utilizing fillet and groove welds) and NDT projects on both Pacific and Atlantic fleet units. Application of these skills cover removal and installation of ropeguards during propeller replacements, zinc replacements, installation of welded cofferdams for maintenance or deactivating of Navy vessels, and stress crack repairs.

CDU sponsors a Royal Navy Chief Diver for a two-year tour of duty utilizing the Navy Personal Exchange Program (PEP). This successful program allows U.S. Navy divers to work with their Royal Navy counterparts and British divers to learn U.S. Navy fleet repair techniques that can be employed on NATO vessels upon their return to duty in the United Kingdom. CDU's PEP member is CPO (D) Strange who has relieved CPO (D) A.J. Wheeler as of November 15, 2000.

As America moves into a new century, Navy divers remain a viable, cost efficient tool that Fleet commanders can call upon to repair any vessel afloat at a tremendous cost savings in their limited repair funds. Commands such as Consolidated Divers Unit are on the cutting edge of underwater repair technology. The 65 superb officer and enlisted divers that make up this outstanding Command are the future leaders within the Navy diving community, Specifically: HTC (SW/DV) Carter, IT1 (SW/DSW) Gove, DC1 (DV) Hellwig, DC1 (DV) Annon, BM2 (DV) Wiltshire, HT1 (SW/DV) Alexander, EM1 (SW/DV) Welsh, EN1 (SW/DV) Smith, HT2 (SW/DV) Valentine and HT2 (DV) Richardson. Consolidated Divers Unit's motto "Excellence under Pressure" continues to set the standard for others to emulate.

CWO3 Armstrong served as a Master Diver at Consolidated Divers Unit (CDU) from 1991 until commissioned a CWO in 1994. He served as the R-6 division officer, ships diving officer, and decommissioning officer on USS DIXON (AS 37) and USS MCKEE (AS 41). In December of 1999, he reported to CDU as the Repair Officer. He is currently serving as the Executive Officer of CDU.

(A Day in the life of an Experimental Diver continued from page 8)

be worth their data points!

LT: *What's a typical workday like in your division?*

BM1: Monday, Wednesday, and Friday we muster outside at 0700 for PT. It is usually about 30 minutes and then we all break off to either go to the gym or go for a run. Tuesday and Thursday PT is left up to the individual. I like to hit the gym as much as possible and run only once a week. After that, I work in Life Support division. Our division is responsible for repair, maintenance, and modifications to the OSF. Currently we are working on installing an emergency breathing apparatus (EBA) system in case of a building fire. This will make our limited number of Scott Air Packs obsolete and save money on recertifying them. We don't actually fight the fire but the watch section would need to be able to have time to surface a dive. This piping system is currently taking up much of my time. PMS and diving and getting qualified on the various watch stations are always present. For a shore command we are pretty busy all the time. The good thing is we still get good liberty. Duty is usually only once a month. If you have a diving emergency and call our phone number after hours, you might be speaking to me.

LT: *What are your collateral duties?*

BM1: Currently I'm the division 3M Coordinator, Command Urinalysis Coordinator, and a member of the Executive Steering Committee.

LT: *What is expected of you with regard to qualifications?*

BM1: All opportunities are open to you no matter your rank. Dive Watch Supervisor for a saturation dive is the highest (and expected of E-7 and above within 12 months of checking onboard). Others include Chamber Support Operator, Life Support Operator, Atmosphere Analysis Operator, Control Technician (Electrical/Communication Systems Operator), Gas King, Chamber Supervisor, SCUBA Supervisor, Test Pool Supervisor. These are the main ones and you are expected to accomplish them all. They are very lengthy and challenging. By the time you are through with all the quals you know every inch of every system.

LT: *What are your thoughts on Quality of Life and your work environment?*

BM1: I can't really complain about the quality of life or my work environment. My job here keeps me busy and is very rewarding. Even though the different protocols sometimes make me a little nervous, I can see that they have real world applications for the diving navy. If NEDU didn't exist, who would be doing this research? It's better for all that the dive community is directly involved. Catch phrase – "Cutting-Edge Technology."

LT: *Did you anticipate being a human test subject?*

BM1: Yes I did. I didn't have any idea of the scope to which this would be done though. I anticipated more research being conducted on diving systems and rigs. This doesn't seem to be the case. I've been here only six months but have seen no research other than biomedical/physiological. The downsizing of the Navy in conjunction with the decommissioning of diving ships seems to have caused NAVSEA to send their budget money away from hardware. These are only my opinions, but they do have something to do with my attitude about being a human test subject.

LT: *What do you think of the operational tempo of the unit?*

BM1: The tempo is quite high for a shore-based unit. We have overlapping experimental diving protocols and still have to find time to do maintenance. All personnel at the unit put in a lot of time coordinating between their collateral duties and diving. There are approximately 80 military at the command. This number might seem to be a lot, but the command is structured similarly to a naval shipyard. Compartmentalization seems to be the key to our success. We have the capability to draw upon just about any resource needed to complete a job.

LT: *Does the command support your professional development?*

BM1: Yes, the command supports off duty education and MWR in a lot of ways. Tuition Assistance is paid 100% as long as you pass the course. Our Career Counselor is top-notch and works hard to make sure you are taken care of. I don't believe the unit can do anything more to help people make rank. Awards are given for special achievements and qualifications are there for the motivated.

If you are looking for an opportunity of a lifetime and a truly unique experience, I highly recommend accepting orders to NEDU. Obviously, it is not a job for the faint-at-heart and there are some risks associated with the experiments. To mitigate these risks, all of the protocols are intensely scrutinized by a Committee for the Protection of Human Subjects and reviewed by more doctors and divers than you can shake a stick at. NEDU has certainly been the most challenging and rewarding duty that I have been assigned and has surpassed my expectations as a state-of-art research facility. The unit professionalism, camaraderie, and esprit de corps are unmatched. The unit is well represented from a wide spectrum of diving communities including: Fleet Divers, Saturation Divers, SEAL, EOD, SEABEE, EDO, CEC, and of course a large contingent of DMOs/UMOs and DMTs to keep us from bending one another. For more information regarding NEDU please refer to the following website: http://www.nedu.org/.

LT Liberatore is a qualified Seabee Combat Warfare Officer and Basic Diving Officer. He has been assigned as the Engineering Officer at NEDU since August 1999.

MK 25

By: LCDR Loring Crepeau

U. S. Navy Special Warfare personnel often use the MK 25 closed-circuit underwater breathing apparatus (UBA) during shallow, clandestine diving operations. Because the MK 25 is a pure oxygen (O_2) UBA, the divers must breathe significantly elevated partial pressures of oxygen (PO_2) for hours at a time. This can lead to mission-limiting lung damage caused by pulmonary O_2 toxicity (PO_2T). Investigators at the Navy Experimental Diving Unit (NEDU) are working to develop a way to prevent PO_2T.

Oxygen's toxic effect on the pulmonary system relies on free O_2 radicals. Briefly, the theory points the finger at superoxide (O_2^-), a corrosive agent that is normally produced in small quantities through normal metabolism. Before it can accumulate in sufficient quantities to cause damage, superoxide is metabolized into hydrogen peroxide (H_2O_2) and after reacting with another enzyme becomes water.

Breathing oxygen-rich gas produces much more O_2^-, ultimately overwhelming the body's capacity to metabolize it. When this happens, oxygen and hydrogen peroxide can react with biochemicals on cell surfaces, inducing changes that cause these surfaces to change shape. These events can ultimately cause the cell to rupture and die.

Other components in cells (genes, transport mechanisms and power plants) can also be damaged by free radicals, leading to cell death. Proteins can also become free radicals, losing their unique structure and special activity.

Oxygen toxicity can induce white blood cells to accumulate in the lungs adhering to the inner lining of the blood vessels. When this happens, blood vessels leak, cellular debris accumulates in lung tissue, and fluid collects.

The potential for inducing lung damage increases as PO_2 and exposure increase. Symptoms of PO_2T include a burning as you inhale, cough, shortness of breath, and chest tightness or pain. Even in the absence of symptoms, PO_2T can diminish lung function, so pulmonary function tests (PFTs) are conducted to determine whether divers exposed to high PO_2 suffer silent lung damage.

In our quest to find a way to reduce PO_2T's risk, we searched the literature and found a candidate agent that divers could take before conducting MK 25 missions. Melatonin is a naturally-occurring hormone synthesized and released by the pineal gland in the brain. It is normally released during the evening and night hours, and plays a role in sleep among all vertebrates. Melatonin is also used as an over-the-counter sleeping aid, taken near bedtime, usually in 5 milligram (mg) or smaller doses.

More interesting to us, melatonin has been shown to serve as a powerful antioxidant, which means it scavenges oxygen free radicals so they're prevented from doing damage. Administering large doses of melatonin to rats markedly reduced or completely eliminated all indicators of O_2^--derived cellular, lung, and brain damage. We hypothesized that we could use melatonin to protect MK 25 divers from suffering lung damage.

While melatonin's protective role in rats was encouraging news, the dose that they received was roughly 150 times what people normally take to induce sleep. The literature on melatonin's effect on humans is confusing. While numerous studies have reported that taking large doses did not cause any side effects, other studies found relatively small doses during the daytime can induce sleepiness, and create brain wave activity akin to what's exhibited during sleep. We were also concerned that large doses of melatonin would reduce our subjects' alertness levels and mental function as they did in some of the low-dose articles, ultimately proving more mission-limiting than oxygen-induced lung damage.

Before trying to evaluate melatonin's capacity to prevent oxidative lung injury in divers, we first sought to determine whether the doses we hope to use would materially diminish motor function and neuropsychological status, or cause something surprising, such as nausea or dizziness. If a high dose of melatonin compromises warfighters's combat capabilities, its ability to protect them from oxidative lung damage is irrelevant.

CWO 3 Danny Miller exhales forcefully during pulmonary function testing one day after eight continuous hours of hyperbaric oxygen exposure.

We had 10 subjects take 150 mg of melatonin that had been dissolved in about a tenth of an ounce (one to two ml) of ethyl alcohol and mixed in a glass of orange juice. One hour after each administration, we measured their motor performance (including grip strength, finger tapping, and high stair stepping) and neuropsychological status using the Automated Neuropsychological Assessment Measurement (ANAM) test battery. This battery measures the subject's rating of sleepiness, simple reaction time, mood state, and ability to match cubic patterns, solve math problems, maintain short-term memory, and identify letters from a memorized list.

None of our subjects experienced any adverse reactions that kept them from taking the second dose of melatonin four hours later, or completing a regular day at work. Melatonin did exert subtle and temporary effects on all subjects, with a wide range of individual differences among them. Two subjects exhibited a marked reduction in performance on at least one of the ANAM tests at one hour post-admin-

(Continued on page 20)

(USS LAMOURE COUNTY continued from page 10)

HTC Mike Lutz, GM1 Chad Dillon, SM2 Jorge Guillen, and HT2 Andrew Cowan hand mixing concrete aboard the Chilian Tug, Galvarino.

derwater survey.

Petty officer John Golden held the end of the measuring tape. Petty Officer Everett Hairston swam the reel aft beneath the hole that previously held the keel beam and flat hull plating. Now, all that remained was jagged metal and the blackness of the ship's internal fuel tanks. "Thirty-five plus feet" came through the diver's communication box. The hole was wide enough to drive two large cars through. Two days of diving revealed severe damage to nearly all fuel tanks and bottom compartments forward of the main engineroom, a keel that was not only severed but crushed to the overhead of the tank, and a hole measuring 37 feet long by 40 feet wide. With this information the salvage engineers put the NAVSEA diving contractor to work constructing three box beams that would be placed under the crippled ship to effectively replace the broken keel and give her enough support to survive an open ocean tow. Each beam ended up as a box made of one-inch steel three feet by three feet by seventy feet long, sealed at each end to allow its 16 tons to be floated into place.

The most urgent priority was to reduce the stress on the hull by restoring buoyancy forward. Removal of the AAVs from the middle of the ship would make the hogging worse so their offload had to wait until the bow was raised. Storage space for fuel and fuel-contaminated water recovered from the forward tanks was limited and located aft where the added weight also increased hogging stresses. These factors led to a strategy that called for the MDSU divers to enter tanks through underwater access holes cut in the tank bottoms after fuel had been stripped off the tanks, to use concrete to back up the exterior patches applied by the Chileans, and to isolate internal piping and seal the tank vents to allow compressed air to be used if necessary. It was ironic that saving the ship required adding more holes in the bottom! Entering the tanks from the bottom saved the divers from much fuel contamination and greatly reduced the fuel-contaminated water that would later have to be pumped. To strip the tanks, a spool piece with a gate valve was mounted on each tank top using friction stud welding which spins each threaded stud so fast that it welds itself in place. A "hot tap" machine mounted on the spool cuts through the tank top and then water pressure under the tank "floats" the fuel through the valve to a hydraulic pump.

With no time to spare, the divers focused their attention on the four largest forward tanks referred to simply by the frame number of their forward bulkhead: 32, 41, 73 and the Forepeak. Divers went to work mapping each tank and void. Visibility was less than six inches due to fuel and floating contamination. Each pipe was identified by size, and location and traced hand over hand from entrance to exit from the tank. Suction and discharge piping was blank flanged and all bilge pockets inspected for even minor damage. Each tank had unique problems. The Forepeak was ripped wide open at the stem with an additional six-foot tear directly under the keel. Tanks 32 and 41 not only had a buckled bulkhead allowing free access between them, but the wedges, metal patches, and epoxy installed by Chilean divers to close the massive tear across the bottom would never survive an open ocean tow. A buckled bulkhead in 73 was the most challenging because sea pressure acting on an adjacent inaccessible tank made sealing the crack hard if not impossible. Taking into consideration that the ship would undergo an open ocean tow to a safe port, every repaired area no matter how small needed to be reinforced.

"Concrete—metal reinforced concrete!" was the word that came from Salvage Central. It was identified as the only feasible solution to each problem. The dive team realized that the mortar would have to be carried through the water column into the spaces and placed in key locations to bring the leaks to a manageable condition. Teams could then enter the tanks from inside the ship to make final repairs. The concrete mixing team measured out each batch with precision. Trash bags of mortar were placed on a trolley line and lowered to the green diver, Petty Officer Shane Keebler, at the tank entrance. Diving supervisor, Petty Officer Jeff Annon, went through voice commands in great detail to ensure that this was a timely evolution. "Haul it up" came back from Green and the trolley line was retrieved and filled with another load of concrete. Waiting for

(Continued on page 21)

PMS Corner

"Service to the Fleet"

Buoyancy Compensators: The following BC's initially were added to MIP 5921/023. They will be covered under 5921/011 with Force Revision 2-01. Seaquest Model Black Diamond, US Divers Seamaster

CPV/Tech Products Valves: Due to recent incidents involving failures to older CPV valves, maintenance is now in place to perform a visual/operational inspection and periodic lubrication. This maintenance is covered under MIP 5921/034 and applies to CPV and Tech Product valves. If there are any indications of abnormalities in valve operation, i.e. excessive binding, stiffness, or bronze residue on stem, the valve should be disassembled and inspected.

Flex Hoses and Diving Umbilicals: Tag requirements for Flex hoses and Diving Umbilicals have been clarified and are available under MIPS 5921/033, and 5921/039.

Sanitizing Agents: Recent changes in state and federal EPA laws have prompted changes to the types of disinfecting agents used to sanitize diving equipment. Currently the use of WESCODYNE is authorized until exhausted. Changes to the following MIPS have deleted WESCODYNE and the replacement agents are listed. Affected MIPS: 5921/019, 5921/159, 5921/162, 5921/172, 5921/177, and H-012/006.

Hot Water Heaters: Maintenance for Diver Hot water Heater (various models) is under development. In the interim, utilize mfg. tech manuals to perform maintenance.

Technical questions, Logistics problems, Supply requests, Personnel issue? Call or contact ANCHOR DESK 1-877-4-1-TOUCH or www.AnchorDesk.navy.mil

Welcome aboard to BMCS/DV(RET) Duffy as the NAVSEA Diving Equipment In-Service Engineering Agent. He is now full time as a civilian at NEDU and is available to answer any planned maintenance questions. Mr. Kerry Duffy/ISEA 059 Comm: 850-230-3100, DSN 436-4351 or duffykp@nedu.navsea.navy.mil.

SEALAB Reunion: *Old Timers Re-unite*

The weekend of 9-11 March saw the 2001 Sealab Reunion at Panama City. Divers and friends from all walks of life showed up for their annual get together with attendees from as far away as Spain to the east, California to the west, the Florida Keys to the south and Washington state from the North. Some of the notables who attended were Scott Carpenter, Sir John Rawlins, Jack Ringelberg, Bruce Banks, Dick Long, and a long-time attendees, Jim Bladh and Herman Kunz. Bill Meeks came in from his home in Marbella, Spain. It had been many a year since Bill had made it back to the States, and we were all glad to see him. Master Divers from the past were in attendance, were acknowledged and applauded. All in all, we had about 105 attending this get together; I know of no better feeling than being a witness to men and women who get to see each other and talk about old times. That's what reunions are all about. On Friday of the weekend reunion, NDSTC (Navy diving school) put on an old fashioned cookout for the reunion attendees. All who attended saw the famed school hospitality in action. CDR Mark Helmkamp, CO of the dive school was also guest speaker at the reunion banquet on Saturday night.

This reunion is now history and the California reunion group has started thinking what they plan on doing next year. We have one reunion in Panama City and the next in San Diego. For all attendees who made their way to Panama City for this past reunion I thank you all for making it a good one. Bob Barth and committee.

(Turbo Patriot continued from page 9)

The installation of the OPDS during TURBO PATRIOT was a challenge due to one pigtail becoming trapped under the SALM on the bottom. With the pigtail trapped it was impossible to connect the pigtail to the main conduit and complete the installation. As the OPDS system has two identical pumping systems, it was decided to connect the second pigtail to the SALM on the seafloor. The UCTs were faced with the difficult task of connecting a 320-foot, eight inch diameter conduit through a closed chock to a 8-bolt flange, underwater at 100 feet, at night. Although this evolution had never been performed during previous OPDS installations, the UCTs utilized Seabee CAN DO and diver HOOYAH spirit to connect the conduit and proceed with the remainder of the OPDS installation.

UCT ONE and TWO will send detachments to participate in operation TURBO CADS 01 in Korea in May 2001 where they will again participate in JLOTS operations.

CUCM Marty Hierholzer (SCW/MDV), EA2 Blair Mercado (DV) and CM1 Daryn Holty (SCW/DV) stand on the deck of the SALM prior to sinking it to the bottom.

Story by LT Mike Teates, UCT ONE

LT Mike Teates is the Executive Officer and Diving Officer of Underwater Construction Team ONE. He is Seabee Combat Warfare Qualified and is a Registered Professional Engineer.

(MK 25 continued from page 17)

istration, but most subjects's performance returned to baseline levels an hour later. Generally, subjects described melatonin's effect as similar to taking over-the-counter antihistamine cold medicine and becoming a little foggy or groggy. Most described the second dose's effects as much less pronounced, suggesting they rapidly developed tolerance.

Having established the safety of our dose regimen, we started a study to determine melatonin's effectiveness in reducing PO_2- induced oxidative lung damage. We are exposing subjects to eight hours of essentially continuous 2.0 ATA oxygen on two separate occasions in our hyperbaric treatment chamber. On one of those exposures, subjects take a 150 mg dose of melatonin just before being pressed to depth, then take another dose four hours later. On the other occasion, they consume a placebo drink following the same administration and oxygen exposure schedules. The melatonin and placebo are administered double-blind, which means that neither the investigator nor the subjects know what's in that glass of juice until after the experiment is completed.

To track cognitive performance, we administer the ANAM test battery every hour at depth using the same tasks used during the first study.

To assess oxidative stress and melatonin metabolism rates, we will measure some biochemical markers in blood and urine samples collected just before the dive, one hour after taking the first dose, halfway through the dive, an hour after taking the second dose, then right after surfacing. We will assay the blood samples ourselves for superoxide dismutase and have an outside laboratory assay the urine samples for cyclic 3 hydroxymelatonin, 8-hydroxy-2-deoxyguanosine, 6-hydroxymelatonin sulfate, and melatonin.

To assess melatonin's protective influence on lung function, we determine our subjects' baseline, immediate post, and subsequent post-dive pulmonary function, using three measures: Forced vital capacity, that shows how well the subject can forcefully blow out all the air in his lungs (see Figure 2); slow vital capacity, that defines the subject's maximum useable lung volume; and diffusion capacity, that illustrates how well your lungs deliver oxygen to the body.

If melatonin effectively reduces oxidative stress without causing mission-limiting side effects, we may recommend using this agent in the fleet where divers endure extended O_2 breathing periods, such as Special Warfare MK 25 UBA operations, or during emergency decompression using O_2 in a disabled submarine scenario.

LCDR Loring J. Crepeau, MSC, USN, earned his Basic Diving Officer pin at the Naval Diving and Salvage Training Center in 1991. He recently transferred to NRD Miami, where he serves as a Medical Programs Officer Recruiter.

(USS LAMOURE COUNTY continued from page 18)

the surge to assist him, the green diver passed the 25-pound bag to his buddy, Petty Officer Jorge Guillen who had taken up five hours of residency in the tank hand-packing concrete and rebar around protruding wedges. This procedure went on for several days in each tank. Although the divers were only a few feet from the surface, it seemed like another world far removed from the activities going on topside.

The first real test came just ten days after MDSU divers arrived. The USS TORTUGA arrived to take the Marine AAVs and the pressure mounted to get the bow up. After applying air pressure to carefully push as much water as possible out of the tank bottom and then sealing the access hole, the 32 and 41 tanks seemed to be ready. The massive air pocket would lessen the water/fuel mixture that would require removal once the tank was opened. Expectations were high as the dive team stood by with salvage pumps ready and airline respirators charged. A sound like a jet engine echoed within the ship as Petty Officer Neil Wolfe opened the hot tap valve to vent the tank. As the roar of the escaping air dwindled, the manhole covers were quickly removed and the pumps inserted and fired up. It was soon clear that the pumps could keep up, but the leaks were bad enough that before long we would run out of storage space for the oily waste. As soon as the fuel and water were down to waist deep, "tank divers" crawled into the space and began chasing leaks. A concrete mixer donated by the Chilean Navy came alive with one pull of its starter. As in earlier rehearsals in the water, a trolley line was rigged into the space and buckets of mixed concrete were lowered to the divers. Locating holes that squirted like drinking fountains became commonplace, patching them however, was more difficult. Over the course of a very long and frustrating night the fuel soaked divers finally developed a reasonable technique of channeling leaks into vent tubes, pouring concrete around the vent tube and plugging the end of the tube after the concrete had set. (Just like in the Salvor's Handbook but it's a lot harder than it looks).

The efforts of that night were enough to allow offloading the AAVs the next day. This gave us confidence that we would succeed, but it would be many more days and many tons of concrete before we could claim that the 32 and 41 tank were secure, and over a month before the remaining tanks were finished. "Mas Cemento!" the Spanish translation of "more concrete" became the rallying cry of the divers who kept having to go back into dirty fuel tanks and were putting more hours on the airline hose mask than the MK-21.

A few days later, a coastal tanker arrived, easing our storage problem and allowing us to empty the massive dracones (floating fuel bladders) that we had been using since USS TORTUGA delivered them from the ESSM base. The first of the massive box beams arrived as well and the contract divers worked around the clock for the next several weeks assembling the beam sections, rigging the beams into position, fitting them up and building up the thousands of linear feet of underwater weld bead necessary to fix them in place. As buoyancy restoration work wound down in the weeks that followed, the MDSU divers turned their energies to rigging the LAMOURE COUNTY for tow. When all the repairs were complete the MDSU team led by MDV Jim Mariano connected the towline of the Chilean Icebreaker OSCAR VIEL for the long-awaited tow to safety in Talcahuano, 700 miles to the south.

Navy divers had been on the scene for six weeks and had installed 22 steel reinforced patches, plugged more than 50 holes, poured 27 tons of steel reinforced concrete, and restored 700 tons of buoyancy to the crippled ship. By a tremendous cooperative effort the Navy divers, NAVSEA ESSM, and diving contractors had kept LA MOURE COUNTY afloat and delivered her safely to port.

Members involved in the Operation:

CLF: **LCDR Jess Riggle**
CNSL: **LCDR Rich Blank**
MDSU2:

CAPT (sel) Philip Beierl	**HT1 Anthony Mabry**
CWO4 Tom Ross	**EN2 John Golden**
HTCM Scott Heineman	**GM2 Chad Dillon**
BMC James Mariano	**SM2 Jorge Guillen**
MMC Roger Riendeau	**GM2 Shane Keebler**
HTC Mike Lutz	**GM2 James Urban**
BMC Rueben Finger	**HT2 Andrew Cowan**
BM1 Jeff Annon	**HT2 Larry Langdon**
EN1 Neil Wolfe	**DC2 Bryan Clark**
HM1 Everett Hairston,	***NAVSEA:***
QM1 Geoffrey Ives	**Mike Dean**
HT1 Anthony Mabry	**LCDR Scott Mattingly**
EN2 John Golden	**LCDR Greg Baumann**
GM2 Chad Dillon	**LT Rob McCLellan**
HT1 Anthony Mabry	**Denise Brown**
EN2 John Golden	**Jim Ruth**

CWO2 Riendeau served as LCPO of MDSU-2 Detachment BRAVO prior to his commissioning as Chief Warrant Officer. As a CWO he is currently assigned as one of three Detachment OIC's at MDSU-2. Special thanks to the Commander in Chief Atlantic Salvage and Special Operations Officer CAPT. (sel) Phillip Beierl for his invaluable assistance in this endeavor.

(Pacific Reach continued from page 3)

with the submarine. After the SRC returned to the surface, the ADS disconnected the down-haul cable. The average time required by the ADS to descend to the sub and connect the SRC cable was approximately 30 minutes. Additionally, the ADS assisted SRC operations by observing and relaying information on the mating process to the SRC topside personnel. After a week of successful drills, the ADS has proven itself to be a reliable tool for SRC submarine rescue operations.

Pacific Reach 2000 successfully demonstrated many different ADS capabilities. First, the "fly away" capability of the system was exhibited. Packed into two, relatively small, containers, the ADS system arrived in Singapore two days after departing the United States. Also evident in this exercise was the system's ability to operate from vessels of opportunity. With a footprint of roughly 700 square feet, the system needed very little space to operate. The ADS demonstrated its ability to work with the SRC, successfully connecting and disconnecting three unique fittings to three different submarines. Many other benefits of the ADS system were displayed, but perhaps the most important capability of this contractor-operated system was its ability to be seamlessly integrated into a military operation. Through six days of intensive submarine rescue exercises, the Hard Suit team and the Navy's DSU personnel worked side by side, developing a strong sense of teamwork. ADS involvement in submarine rescue exercise Pacific Reach 2000 was a complete success.

LCDR Peter K. LeHardy (USNR) is a member of NAVSEA Detachment 1006. Prior to joining the reserves, he served over ten years on Active Duty, first as a Surface Warfare Officer and then as a Special Operations Officer. After completing Dive School in 1994 and Explosive Ordnance Disposal (EOD) School in 1995, he was assigned to EOD Mobile Unit THREE, in San Diego, California. While there, he served as the EOD Detachment Officer in Charge (OIC) aboard USS KITTY HAWK and as the OIC for the Marine Mammal Systems Detachment. His final tour on Active Duty was as the OIC of the EOD Detachment at Naval Weapons Station Earle, in Colts Neck, New Jersey.

(NDSTC continued from page 13)

clude three hyperbaric complexes that allow simulated dives to 600 feet, a 347,000-cubic foot gas farm to support hyperbaric diving operations and a medical facility with limited laboratory and emergency capabilities.

The school recently received delivery of YDT-17 *Neptune* and YDT-18 *Poseidon*—the newest class of diving support vessels in the U.S. Navy. Each $7M craft is 131 feet in length with a 27 foot beam. The aluminum-hulled shallow draft vessels are equipped with dual diesel-driven water-jet drives and through-hull bow thrusters. They are capable of 18 knots and cruise at 15 knots. The YDTs replaced WWII vintage craft and have an expected service life of 40 years.

The center also works closely with the Navy Experimental Diving Unit, located across the bayou, and Navy fleet diving units to keep its courses up-to-date and relevant to the diving community. "We need to remember the heritage and investment we have here," notes CDR Helmkamp. "The relationships we share with Coastal Systems Station and the Navy Experimental Diving Unit represent an unbeatable group when it comes to the advancement of naval, salvage and commercial diving."For more information, visit NDSTC's website at: **www.cnet.navy.mil/ndstc.**

Lieutenant Commander Bredemeier was commissioned through Officer Candidate School, Newport Rhode Island in Feb 1987. He now serves as the Executive Officer for NDSTC.

MDV/CWO Conference

2-4 May 2001, Naval Diving and Salvage Training Center, Panama City, Florida.

The 2001 MDV/CWO Conference will be held at NDSTC on 2-4 May 2001. Details of the conference have been promulgated in Diving Advisory 01-02 or you can visit the web site at http://www.supsalv.org/conferences.html. Also, a summary of the 1999 conference action items is viewable from the 'What's New' to the right. There will be five working groups covering Salvage, UWSH, Personnel and Training, EOD/SPECWAR/USMC, and CWO. All MDVs and Diving CWOs are encouraged to submit point papers of interest. An electronic point paper submission form is available at the web page, and is the preferred method for submission of point papers. Deadline for submission of point papers is 13 April 2001. An agenda for the conference as well as the review of submitted point papers will be added to the web page prior to the conference.

MDV Reunion

The MDV Reunion will be held at the CSS marina, Panama City Beach, FL on 5 May 2001 starting at 1000. If you have questions call Joe Gray @850-230-9217 or e-mail him at jgrayretmdv@knology.net.

The Old Master

By: ENCM(DSW/SW/MDV) Robert D. Carmichael

I'm writing this as I prepare to transfer to the fleet reserve after 22 years in our great Navy. Since entrance into the diving community in 1982, I have learned what INVESTING can do for you. Investing for Divers? Let me explain. As divers we really don't work in our rate. Occasionally we fix a diesel engine or braid a line, but that's not what appears on the advancement exams. Now is the time for INVESTING your time and resources to make rate. Investing study time, getting orders to duty that enhance your experience, taking time to ask the right questions all lead to achievement. First of all the thing you want to achieve is rate. You do so by setting goals. More study time, schools, TAD to ships, etc. Finally after time the INVESTMENT pays off. You make that next rate.

Diving is the same way. You INVEST the energy and fortitude to make it through Second Class Dive School and become a Diver for the Fleet. With that achievement comes extra money and responsibility. Not satisfied as a Second Class Diver, you want to increase your value to First Class Diver. This means you again have to increase the INVESTMENT of time, study, and effort to attain that goal which equates to more money and responsibility.

After making First Class Diver and INVESTING your time and energy into making Chief, you are ready to go the final step toward Master Diver. The road hasn't been easy, but it really hasn't been that hard either. The years of experience, time, and effort have prepared you to make that next step. The INVESTMENT pays off when you get the "FAT PIN". It takes time, energy, persistence, and discipline to achieve your goals. The great news is that they do pay off and the hard work and motivation are worth every painful night studying, every pull-up, every run and every late night on the side.

I wish someone had told me that the INVESTMENT part of becoming a Master Diver also applies to investing money. If I had put even a fraction of my Second Class Dive Pay away in a savings account, mutual fund or IRA, I wouldn't be looking for a job as I retire from this great Navy. Just think of what we could do after 20 years if we INVESTED a little each time as we made rate or the next grade of Diver. Shipmates, I want to emphasize some of the things that you can do to lead a fulfilling Navy Diving career as well as a prosperous one.

Master Diver Robert Carmichael

Starting this year the National Defense Authorization Act for Fiscal Year 2000 authorizes a Thrift Savings Plan (TSP). This is a way for you to save a portion of your base pay in a special account. The money placed in this account and its earnings is not taxed until it is withdrawn.

This plan is offered to assist you in achieving your financial goals. There are numerous ways in which to put away some of that Dive pay for future use, such as IRAs (individual retirement accounts), CDs, Mutual Funds, and other safe ways to start an INVESTMENT plan.

Just as you climb the Navy ladder as a Diver and Sailor, start climbing the financial ladder as well. I just wish that when I was an EN2 (DV) that someone would have made me realize how much money I wasted that I could have saved. By INVESTING in your career as a Navy Diver and in your and your family's financial security, you will be much better off after 20 years.

Finally, I would like to use the last remaining space to say "Thanks to the Diving Community". I have had a rewarding and exciting career, and it all comes from the family known as Divers. I want you all to know that it has been an Honor to serve with you and an even greater Honor to serve for you.

Master Diver Carmichael has spent tours on USS Safeguard (ARS-25), USS Bolster (ARS-38), USS Conserver (ARS-39), Subase Pearl Harbor, USS Canopus (AS-34), MDSU-1 Pearl Harbor, Ship Repair Facility Yokosuka, and will retire from SPAWAR (formerly NOSC) San Diego.

DEPARTMENT OF THE NAVY
SEA 00C
NAVAL SEA SYSTEMS COMMAND
2531 JEFFERSON DAVIS HIGHWAY
ARLINGTON VA 22242-5160

Official Business