March 1998 Reunion of Sealab/NEDU (see page 7)

FACEPLATE

The Official Newsletter for the Divers and Salvors of the United States Navy
Volume 3, No. 2 / Winter 1998

Chilean tugs in harness attempt extraction of the LST Valdivia.

Stranded Vessel Freed From Coast of Chile

By Will Healy, NAVSEA 00C 22B

The Chilean Naval Ship (CNS) *Valdivia* ran aground in Pisagua, Chile on May 17, 1997. A propulsion failure during an exit from a beaching exercise caused the vessel to turn broadside to the surf and become broached. On May 26, 1997, the Chilean Navy contacted the Office of the Supervisor of Salvage (SUPSALV) and requested technical assistance. An engineer was sent to provide assistance with the US Navy's salvage response program POSSE. In the end, over 300,000 pounds of equipment and 20 US

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In This Issue

SUPSALV Sends

The third Working Divers Conference is now history and from all accounts it was very successful. The intent of the WDC is to identify issues facing Navy divers and help resolve them. The conference was held in San Diego and I want to thank CDU for doing a great job of hosting this important conference. BZ to LCDR Troy Pappas and all of CDU for making it a success.

Over 160 personnel attended the WDC and discussed issues that were grouped into three broad categories: Equipment & Physiology; Personnel & Training; and Underwater Ship Husbandry. There was a great deal accomplished and 52 new issues at this WDC were assigned action to 13 different commands. The proceedings from the WDC has been sent out to Navy diving commands with more details on the individual issues.

I look forward to the next conference which is tentatively scheduled to be held in 1999 on the east coast.

This issue of FACEPLATE discusses topics on recent operations and new equipment

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SUPSALV SENDS *(from page 1)*

going to the fleet and the Dive School. Past copies of FACEPLATE can be found on SUPSALV's homepage. You can access SUPSALV's homepage through the Internet at: http://www.navsea.navy.mil//sea00c.

Winter is here. In the last issue I encouraged all of you to take a round turn and ensure that your locker was ready for winter diving operations. Make sure that you have done the necessary maintenance and training to safely dive and work in the harsh winter environment.

Also, familiarize yourselves with the rules for cold water and beneath ice diving.

I encourage you to submit articles for publishing in FACEPLATE. In order for all of us to grow and learn it is important that we share successes and lessons learned.

We at SUPSALV wish you all a Safe and Prosperous New Year.

CAPT R. S. McCord
Director of Ocean Engineering
Supervisor of Salvage and Diving

INTERNET: MCCORD_RAYMOND_S@hq.navsea.navy.mil

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 R. S. McCord, USN
Director of Ocean Engineering
Supervisor of Salvage and Diving
NAVSEA 00C

Jim Bladh
Head, Operations Branch, 00C22
Managing Editor

HTCM(MDV) Michael Washington, USN
Fleet Liaison Editor

Judy Kvedar
Production Editor

Deborah Condran
Graphic Designer

National Group Seeks All Fleet Tug Sailors Past and Present

The National Association of Fleet Tug Sailors, Inc. is seeking former and present crew members of the "Work Horses" of the U.S. Navy, Coast Guard, and Army: ATF, ATR, ATO, ATA, ATS, ARS, ASR, WMEC, WSA, LT and all YTB, YTL, YTM or WYT class salvage ships and tugs. Please contact George Kingston, 1611 Woodbridge Circle East, Foley, AL 36535-2267 or call (334) 943-7823.

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Navy personnel would be mobilized to the scene. The ensuing extraction was one of the more extensive heavy salvage operations that the US Navy has participated in in recent years. More than 15 vessels were involved in an effort that lasted more than two months. The stricken vessel was successfully refloated on 10 July 1997.

Ex-USS San Bernadino *aground on the shores of northern Chile.*

SUPSALV engineer, Will Healy, traveled to the northern desert of Chile to provide technical assistance in the salvage of the Landing Ship Tank *Valdivia* (ex-USS *San Bernadino*). After two weeks of pulling attempts, the vessel was successfully turned perpendicular to the beach, but it was clear that insufficient pulling power existed to free the strand. A team of divers and salvage experts from MDSU-2, Little Creek, along with 4 legs of beach gear from ESSM, was organized to be mobilized to Chile. The MDSU team, led by CWO4 Robert Kirk and HTCM (SW/MDV) Lino Matteoni, worked with ESSM personnel to make sure all necessary equipment was loaded for transport. A fully laden 747 cargo plane and the divers arrived in Chile on June 16.

The primary task for the MDSU team was to deploy the four legs of beach gear. Typical of most salvages, the unique situation made for some problems and required some unique solutions. Due to the bottom composition and the large number of vessels involved in the pull (at one time as many as 13), it was desirable to place the pullers on the deck of the strand and the anchors 3000 feet to seaward. A local tug was used to handle the anchors, chain and two 600 foot lengths of wire while the pullers and three lengths of wire were rigged on the strand. The team was split into two sections, with MDV Matteoni leading the at-sea team of BMC(DV) Randy Contreras, HMC(DV) Mike Cockrill, HT1 (DV) Chris Erbe, EM2(DV) Dane Doolittle, PR2 (DV) Warren Dempsey, AD2 (DV) Jess Swinko and EM3(DV) Steven Duncan. This team worked with the local tug operators to lay the anchors and stretch out each leg. The section on the strand consisted of CWO4 Kirk, EMC(SW/DV) Landon St Peter, BMC(SW/DV) Rueben Finger and two ESSM mechanics. This team was also assigned a detachment of about a dozen Chilean sailors to assist in figure-eighting wire and passing end-fittings through the hydraulic pullers. Providing demonstrations and restricted verbal instructions, Finger and St Peter were able to teach the Chilean sailors how to rig and tend beach gear with only limited supervision.

The living conditions on scene were not ideal. Fresh water was extremely limited. Aside from the 150 person fishing village, the nearest town (and the nearest tree) was a three hour drive through the desert. As usual, the divers adapted to the harsh surroundings.

Both teams worked long hours side by side with Chilean Naval personnel. None of the Americans spoke Spanish but even this communication hurdle was surmountable. The hard work paid off when the vessel floated free on July 10, after almost two months of Chilean and US Navy efforts.

All MDSU sailors, the ESSM mechanics, Will Healy, and LCDR Jess Riggle (who relieved Healy on 2 July) received a commendation from the Chilean Navy for their outstanding efforts. Working with the capable Chilean sailors, all personnel involved had a interesting and rewarding experience.

Will Healy is a Naval Architect who provides towing and salvage technical assistance for the Office of the Supervisor of Salvage, 00C.

EMC(SW/DV) St Peter and BMC(SW/DV) Finger work with Chilean sailors to pass an end fitting through a hydraulic puller.

FINAL TESTING COMPLETED FOR FADS III MIXED GAS SYSTEM

By BMCS(SS/MDV) Paul D. McMurtrie

In October 1997 NAVSEA completed the final stage of testing on the Flyaway Dive System (FADS) III Mixed Gas System (FMGS). The system was then shipped to Key West, Florida where it was embarked onboard the USNS *Mohawk* to conduct a series of dives that would progressively lead to a final 300-foot certification dive.

(MDSU2) Det Bravo Dive Team recovering the divers from the 300' certification dive.

A view of the entire FMGS System with the control console assembly in the foreground.

The FMGS was developed to meet a fleet requirement for diving to a depth of 300 fsw in search and recovery missions. With the decommissioning of the ATS class ships, the Navy was down to one aging mixed-gas system to meet fleet requirements worldwide. The FADS III Mixed Gas System provides the Mobile Diving and Salvage Units a portable capability to respond to these missions whenever called upon.

NAVSEA was assisted through all phases of assembly, testing, and certification by the divers from Mobile Diving and Salvage Unit Two (MDSU-2) Det Bravo. As with the FADS III air system, the program benefited greatly from the early involvement of the MDSU-2 divers, who were instrumental in the development of the standard operating and emergency procedures, as well as developing the protocol for gas charging and gas mixing.

The FMGS, like the FADS III air system, was developed as a joint effort by Coastal Systems Station (CSS), Panama City, FL and NAVSEA Diving Programs Office, SEA 00C3. It was derived from the basic concept of the FADS III air system, with an upgraded, expanded control console assembly to meet the specific requirements of mixed-gas diving. The system was designed to sustain a lightweight and portable flyaway configuration while providing an employable gas storage capability.

Two (MDSU2) Det Bravo divers going up and over on the stage.

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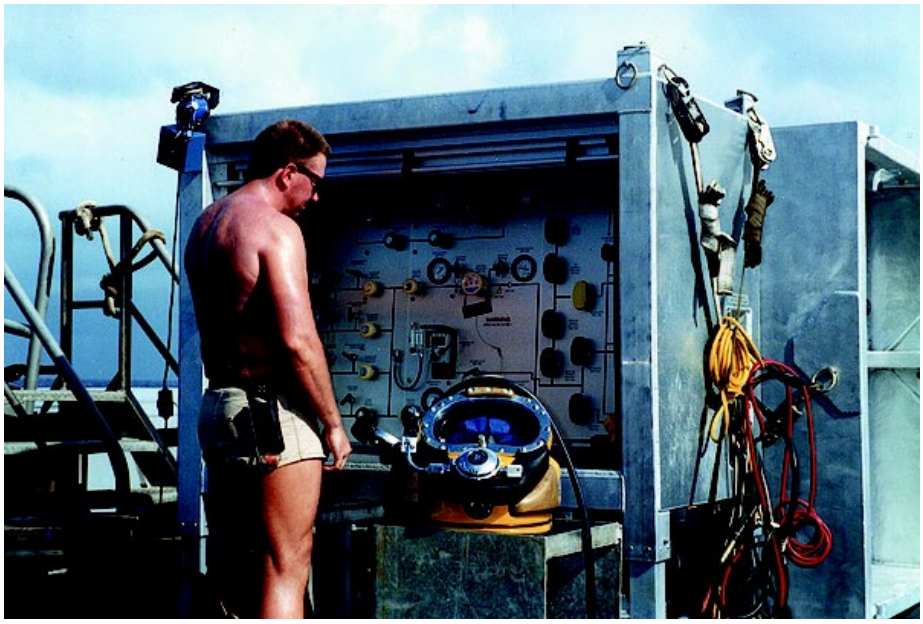

BMC(SW/DV) Mark Leet conducts predive procedures on the FMGS Control Console Assembly prior to the 300' certification dive.

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The lightweight configuration was maintained by utilizing composite 5000 psi flask rack asssemblies essentially identical to those used on the FADS III air system. The only differences from the FADS III air racks are specific to the type of gas contained in the rack assemblies and the pressure to be supplied for the application. Combining the flask rack assemblies with the recently developed Mixed Gas Control Console Assembly provides a flyaway mixed gas diving system capable of sustaining five 300'/:30 dives without having to recharge the gas banks.

Staging the FMGS onboard the USNS Mohawk proved to be an easily surmountable challenge for the salvors of MDSU-2. Once positioned on the fantail, the FMGS only occupied a small portion of the deck space required for salvage operations. Many valuable lessons were learned in the staging and positioning of equipment on the USNS class ships that will cross over to the ARS 50 class ships.

The certification dives were conducted flawlessly due primarily to the professionalism, preparation, and enthusiasm of the MDSU-2 dive team as well as the faultless diving conditions of Key West, FL. Initially a series of shallow $He0_2$ dives were performed progressing down to the final 300-foot certification dive. During the shallower mixed-gas dives, all system capabilities and emergency procedures were exercised to prove their safe operation.

Along with the standard configuration for the FMGS, two alternate configurations were developed: a configuration to incorporate the TRCS into the FMGS to provide a lightweight chamber system and a configuration to use the ARS 50 class ships HP air system support the air requirements of the FMGS.

BMCS(SS/MDV) Paul D. McMurtrie is currently assigned to NAVSEA 00C as the Fleet Master Diver. He attended Second Class Dive School in 1979 and was selected as Master Diver in 1992.

NAVSEA personnel responsible for the development, ing, and certification of the FMGS were: Bob Kilpatrick 00C33), BMCS(SS/MDV) Paul McMurtrie (SEA 00C36), Scott Lopez (SEA 00C42). Marty Sheehan, CSS code A headed up the design effort at Coastal Systems Station.

The following personnel from MDSU-2 participated i certification of the FMGS in October 97: LT Kirby J. Sco CWO3 Charles E. Hulsizer, BMCS(SW/MDV) Donald Der ENC(SW/DV) Michael P. Mueller, BMC(SW/DV) Ruben P. BMC(SW/DV) Mark M. Leet, BMC(DV) Timothy J. Bradbu BMC(SS/DV) Allen D. Warf, MM1(SW/DV) Roger C. Rien EM1(SW/DV) Richard L. Howsmon, HT1(DV) Michael P. L EM2(DV) Gerald H. Rusin, GMG2(DV) David G. Edwards BM2(DV) Bernard E. Ogg, SM2(SW/DV) Joseph M. Pendi QM3(DV) John P. Dyer, GMG3(DV) Eric G. Honsberger, QM3(DV) Matthew J. Hemlinger.

UNDERWATER CONSTRUCTION TEAM REPAIRS MAGNETIC SILENCING FACILITY

By MM2(SS) Jay Pinsky

The nuclear-powered submarine, by design, is one of the most stealthful machines man has ever created. Her tireless nuclear reactor could keep this protector of peace deployed for more than 10 years if not for her human complement. State-of-the-art engineering practices, along with 21st century sonar and weapons platforms, leave the submarine atop the maritime food chain. She is the perfect weapon, except for one problem — all submarines are made of metal and the Earth, despite its submarine-favoring oceans, possesses a magnetic field that submarines cannot outrun, out-dive or sneak past.

It did not take long for military forces throughout the word to discover the magnetic-field disrupting signatures which leave a bread-crumb-like trail that submarines were leaving behind, and build machines to track them.

The most obvious reaction to this new discovery would be to invent a method to minimize, if not eliminate, the distortion that the submarines create. The U.S. Navy did just that with the development of the Magnetic Silencing Facility, or MSF.

"The Magnetic Silencing Facility's function is to keep submarines undetectable and safe from magnetic mines by performing three main functions: magnetic ranging, magnetic treatment, and magnetic research," says Donna Carson of TRF's Magnetic Silencing Facility. Kings Bay is home to one of America's finest MSFs, but two years ago NAVSEA decided that the equipment used by the facility was not meeting its needs. Upgrading the MSF was paramount in the protection of one of America's most potent weapons platforms, but a tightening budgetary noose looked to choke the reality of such upgrades in the foreseeable future. The upgrade would require the removal, replacement, and magnetic alignment of 55 magnetometers and cables, encasing each magnetometer cable in a separate conduit (over three miles of conduit would be required), installation of eight protective cable risers, and the replacement of two faulty 1500 MCM X-loop cables, each weighing over 1,700 pounds.

Divers from Underwater Construction Team One, Air Detachment Charlie, Little Creek, VA., perform repairs to TRIDENT Refit Facility's Magnetic Silencing Facility. Their efforts have enabled the Navy to minimize repair costs to the government and ultimately to the taxpayers by performing professional quality workmanship to this unique facility, for a fraction of the cost in the outside world.

Due to budgetary concerns and time constraints, civilian contracting of this project was not practical. The Naval Facilities Engineering Service Center, tasked with the design and coordination of the in-water equipment upgrade of the Kings Bay MSF, decided early in the planning stage that the assets needed for performing the upgrade were as close as the nearest Underwater Construction Team. The U.S. Navy has two highly trained, highly efficient units of Seabees in its arsenal that specialize in unique repairs to underwater facilities.

These units, known as the Underwater Construction Teams One and Two, are home ported in Little Creek, VA, and Port Hueneme, CA, respectively. This very select group (there are only 160 UCT members in their community) of skilled divers are capable of performing underwater construction, repair, and maintenance of waterfront and ocean facilities worldwide with specialties in underwater welding, cutting, demolition, and other related activities.

They are professionals with unquestionable talents. They are the Navy's own, which means they are capable of working within the funding constraints required of this project.

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An umbrella provides only temporary relief for divers who worked ten hour days, six days a week.
(Photos by MM2(SS) Jay Pinsky)

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"Outsourcing to civilian contractors has its place. But with the expertise that resides within the United States Navy community it is more cost-effective and time-efficient on this project to utilize the Underwater Construction Teams," says Lonnie Winkleman, project engineer from the Naval Facilities Engineering Service Center. Hiring a civilian marine contractor would have cost the government approximately $8,000 to $10,000 per day to do this job. Use of Navy assets, specifically UCT 1, brought that cost down to under $2,000 per day.

Each Underwater Construction Team is made up of three Air Detachments. Air Detachment Charlie, under the supervision and leadership of Officer-in-Charge CMC/DV Jeff Snyder and Assistant Officer-in-Charge SW1 Tim Norris, had to endure not only a rigorous work schedule requiring 10 hour days, six days a week, but also an adverse work environment. Diving conditions are often treacherous, a constant 3-4 knot current counters the divers every effort; the black, murky silt native to Kings Bay makes visibility impossible underwater.

"The Underwater Construction Teams have been involved with five magnetic silencing projects for our command in the past seven months. Without exception their performance has been magnificent," says Winkleman. The superb work of Air Det Charlie has proven once again what skilled Navy professionals can do when given a difficult task. Their efforts have enabled the Navy to minimize the costs to the government and ultimately to the taxpayers by performing professional quality workmanship to this unique facility, for a fraction of the cost in the outside world.

MM2(SS) Jay Pinsky is assigned to the TRF Kings Bay Engineering Department. He has served aboard USS Rhode Island (SSBN 740) and USS Daniel Boone (SSBN 629).

1998 Sealab, NEDU, DSSP Reunion Notice

During the reunion in Panama City, it was decided to have the next (1998) reunion once again in San Diego, California. Before going any further, the committee of Tomsky, Bornholdt, and Mazzone want to thank Bob Barth for all of his contributions toward holding the group together, as well as expanding attendance by including all who served at the Naval Experimental Diving Unit as part of all future reunions. The 1997 reunion was very successful, thanks to Bob Barth and the facilities of the Unit.

The 1998 reunion will be held in San Diego, California, from 12 March through 15 March. We have booked the reunion at the Holiday Inn, San Diego Bayside, 4875 N. Harbor Drive, San Diego, CA 92106. Facilities supporting a reunion are excellent, and a large room with a view will be provided for our full-time use. Rates of this and other hotels in the area will be sent out with the next mailing.

Although we seem to have ample time, the committee needs to nail down the approximate number of people planning to attend.

As always, contributions to the committee Reunion fund to cover cost of mailings and other incidentals will be greatly appreciated. Send contributions to:

Sealab Committee
c/o Bob Bornholdt
1310 Rosecrans St. Suite K
San Diego, CA 92106
(619) 224-2944 (office)
(619) 267-7503 (home)
(619) 224-0167 (fax)

Other members of the committee are Jack Tomsky, 1850 Summit Hill Drive, Escondido, CA 92027, (610) 740-9689 and Walt Mazzone, 5156 Pacifica Drive, San Diego, CA 92109, (619) 274-9376.

This is the first planning reminder. More to follow.

00C COMPLETES LARGEST WET-WELDING OPERATION TO DATE

By LCDR John Rosner

Lowering the Port Vertical Stabilizer into position for final welding.

In October 1996, the Underwater Ship Husbandry Division (NAVSEA 00C5) was tasked with developing and executing a procedure to perform waterborne towing modifications to Moored Training Ship 635, ex-USS *Sam Rayburn*. The work was required to support the tow of MTS 635 from its homeport at the Nuclear Power Training Unit (NPTU), NWS *Charleston* to Norfolk Naval Shipyard for an overhaul beginning in April 1998. The moored training ships at NPTU are former SSBNs that have been converted to waterborne nuclear power training platforms.

Model tests performed at Carderock Division, Naval Surface Warfare Center determined that the following modifications would be required to make MTS 635 seaworthy for an open-ocean tow with a crew aboard:

1. Fixing the rudder to a 0 degree lower and 2 degree upper splay angle;
2. Fixing the stern planes in the full rise position;
3. Installation of waster plates over the bow dome for towing bridle chafing protection;
4. Installation of scoop extensions to prevent air suction into seawater systems during the tow; and
5. Installation of two 16-foot by 8-foot vertical stabilizers with support struts on the outboard sides of the horizontal stabilizers and stern planes.

Since work on the moored training ships can only be performed during scheduled periods, due to a rigorous training schedule, the modifications had to be executed well in advance of the anticipated tow. NAVSEA 00C5 executed the work to fix the rudder and stern planes in March 1997. Norfolk Naval Shipyard and Puget Sound Naval Shipyard divers teamed up to weld the bow waster plates and install cofferdams to support the dry welding installation of the scoop extensions in July and August 1997.

The task to install the vertical stabilizers presented another new challenge to NAVSEA 00C. Welding oversized vertical plates to a small landing area at the ends of the horizontal stabilizers posed a difficult enough challenge alone. However, the plates also had to be aligned within 1 degree of the vertical plane of the centerline of the ship. This, of course, had to be accomplished in the Cooper River with currents of up to 2 knots.

Upon official tasking and receipt of the vertical stabilizer design drawings from Electric Boat Corporation (EB), the installation procedure was developed in painstaking detail. Faced with critical alignment tolerances and the Cooper River currents, it was imperative to develop a detailed procedure. The success or failure of an operation of this magnitude is directly related to effort expended in procedure planning.

With the procedure in hand, the NAVSEA 00C5 representative, LCDR John Rosner, the diving services contractor, and the EB design engineer, Mr. Charlie DeLauro mobilized to Charleston in July 1997 to start work. Since the installation was to be conducted from a spud crane barge, work started by loading out the barge with the mobilized equipment and the EB supplied pre-fabricated material. The dive station was set up during the load out. Because expediency was a key element in the operation, the dive station layout had to be fashioned in an efficient manner. This means that topside fabrication work had to be conducted in an area that would not interfere with diving operations, and the topside tenders had to be able to access, repair, and supply gear to support the divers without delay.

Upon arrival at NPTU, the barge was spudded down aft of MTS 635, and work to remove existing interferences on the

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Starboard Vertical Stabilizer alignment tower extends above the waterline during fit-up.

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horizontal stabilizers started immediately. Filler plates were welded in place to even the landing areas on the outboard edges of the horizontal stabilizers stern planes.

Optical tooling technician atop the Port alignment tower checking the alignment during welding.

Targeting plates were welded outboard of the filler plates to reduce stress concentration on the welds and to assist in the alignment of the vertical stabilizers during the installation. Doubler plates were welded to the upper and lower surfaces of the horizontal stabilizers to distribute the sea slap induced loading on the vertical stabilizers and to reinforce the plating for the landing of the reinforcing struts.

Now with all this material in place, it was time to fit-up, align, and weld the vertical stabilizers. Because the alignment tolerances were so critical, an optical tooling team from Electric Boat was brought in to measure the alignment during the fit-up and welding phases. All welding was sequenced as a counter-effect to the distortion caused by the heat of welding. After the vertical stabilizers were installed, a total of eight struts were welded in place to reinforce the entire structure.

The final net difference in the alignment of the vertical stabilizers was 15 minutes of 1 degree from the centerline of the ship. A total of 575 hours of bottom time was used and the operation was completed in 26 days using four diver/welders, one diver, and four topside tenders. Over 280 pounds of wet-welding electrodes were consumed to complete over 250 linear feet of wet-welded joints ranging from 1/4 to 5/8 of an inch in thickness. Most importantly, however, the operation was completed without impacting the moored training ship's training schedule.

LCDR John Rosner (00C56) is a Civil Engineer Corps Diving Officer assigned to the Underwater Ship Husbandry Division, Supervisor of Salvage and Diving. A member of NAVFAC's Ocean Facilities Program, he came to 00C from the Ocean Construction Division of the Naval Facilities Engineering Service Center (NFESC).

Topside fabrication welding on a reinforcing strut after fit-up and before final installation/ welding.

SUPSALV Dedicates Exhibit to Navy Divers

On Thursday, 25 September, Captain "Chip" McCord, Supervisor of Salvage and Diving, officially dedicated the Navy Diving Display at the U.S. Navy Memorial in Washington, D.C.

The display included numerous operational photographs and a Mark V diving suit and helmet, known as "Jake" to generations of Navy divers.

CAPT Raymond "Chip" McCord speaks about the contributions Navy Divers have made to their country during the dedication ceremony at the U.S. Naval Memorial, Washington, D.C.

The Mark V served as the Navy's primary diving apparatus for nearly 70 years. U.S. Navy Gunner G.D. Stillson introduced Mark V. His designs were based on British Royal Navy tests of 1906-1907 aimed at making diving in great depths practical and safe. "Jake" was born in 1915 as a compilation of several designs: the U.S. Morse and Schrader helmets, the British Seibe Gorman, and the German Draeger Werk helmets. Originally designed for use in submarine rescue, the Mark V served the U.S. Navy until 1983, when it was replaced by the Mark 21.

The Navy Diving Display pays tribute to the contributions Navy divers have made to their country. Today's Navy divers lead the world in the fields of ship and marine salvage, underwater ship repair, underwater construction, explosive ordnance disposal, combat diving, and biomedical research.

TESTING AND EVALUATION OF HYDRAULIC TOOL NOISE ON DIVER'S HEARING

Test fixture being lowered into the water from barge. MK3 LP Air Compressor in background.

By BMCS (SW/DV) Duffy

In March 1997, NAVSEA tasked the Navy Experimental Diving Unit (NEDU) to determine the diver-permissible exposure limit for three underwater hydraulic tools, two of which are currently on the Navy's Authorized for Navy Use (ANU) list. The objective was to determine the maximum allowable time a diver may safely use the Impact Wrench (IW20), Grinder (GR24) and Needle Descaler (Fairmont HU4805) while wearing MK 21 MOD 1 and MK 20 MOD 0.

Coastal Systems Station (CSS) Non-Magnetic Test Pool & Diving Station.

Selecting a Test Site

The first challenge was locating a suitable test site. Background noise, both surface and sub-surface, precluded many available sites, while funding restraints limited most others. Finally, the Non-Magnetic Test pool, located on the Coastal System Station (CSS), was chosen. This pool is in a fairly remote area, contains approximately 13 million gallons of fresh water, and has an anechoic bottom liner, which significantly reduces reverberant noise. Maximum depth of the pool is 40 ffw with an average temperature of 78 degrees. Manned and unmanned testing was conducted in 15 ffw, measured at the diver's chest.

The next step was to assemble a core team, comprised of Principle Investigator, Task Leader, Diving Supervisor and two teams of six divers. In addition to the core team, support personnel consisted of seven military and eight civilians providing services as required.

Preparing the Site

A test platform was shipped from Carderock Division of the Naval Surface Warfare Center. Upon arrival, minor modifications to the test platform were made in order to suspend it from a flotation barge. An existing "A" frame assembly was located in the NEDU lay-down yard, refurbished, and certified to a safe working load of 500 pounds.

Before diving could begin, water samples were taken to determine bacterial/chemical content of the pool. The results were satisfactory. The rigging shop, in conjunction with CSS transportation, provided rigging services and a large canopy structure was erected to prevent problems associated with environmental conditions.

Next came the actual dive station layout. A large conex box, complete with full power supply and environmental controls, was provided by CSS. Primary air was supplied by a low-pressure air compressor and secondary air was supplied by high-pressure flasks using MK 3 LWDS set up in configuration 1. Hydraulic power for the tools was supplied by the MOD 2 hydraulic power unit. Electrical power was supplied by a 30kw diesel generator.

A portable audiogram booth was assembled inside the conex box for divers' pre-dive, post-dive, and follow-up audiograms. Two dual-channel real time frequency analyzers, along with a digital audio tape recorder, were utilized to gather and analyze data. Over 200 data files of

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sound analysis were accumulated, along with digital tapes.

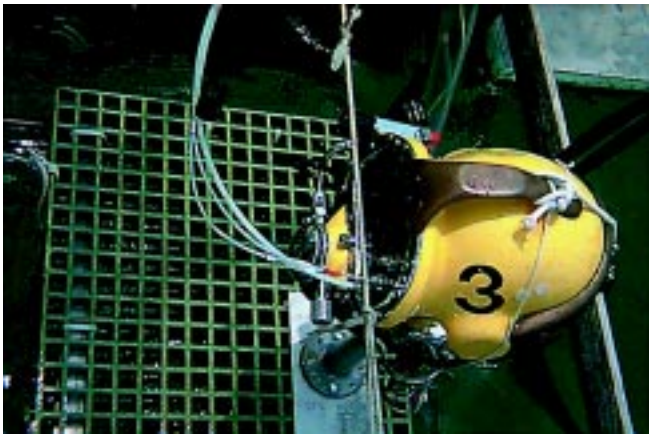
Unmanned and Manned Testing

For the unmanned tool noise simulations, a head and torso simulator was placed inside a standard MK 21 helmet. In measuring noise simulating a MK 20 diver, two omni-directional hydrophones were positioned within the test platform to collect noise in the approximation of the diver's head.

Actual diving commenced on 5 August. The test platform was instrumented and lowered to depth. A surface-supplied diver then verified correct attitude of all equipment. Video cameras enabled both the supervisor and support personnel to view the tool in operation. Hydraulic flow was controlled from topside. The sound data gathered in the unmanned phase provided a baseline to establish initial time limits for manned diving.

Manned diving commenced using the Needle Descaler. Testing of this tool was discontinued, however, due to repeated failure of the Descaler. Manned diving in both the MK 20 and MK 21 continued with testing of the Impact Wrench and Grinder, using various time limits. These limits were based on the noise level measured and a comparison of pre- and post-dive audiograms to determine if the diver experienced any temporary hearing loss or threshhold shift. A threshhold shift was defined as a 15 decibel change or greater. Upon surfacing, the diver was required to be undressed and in the audio booth within 2 minutes. Due to the proximity and layout of the dive site, this was easily accomplished. The Number 1 tender would visually observe the diver inside the booth for the 10-minute clean time.

Testing was completed on 27 August. As a service to the Coastal Systems Station, an underwater survey and video of the test pool was conducted in scuba. Both the video and drawings along with a bottom sample was provided to CSS. A total of 54 manned dives with a total bottom exceeding 42 hours were performed. In addition, 82 audiograms were taken and filed for future reference. Training was conducted on a daily basis to qualify personnel in various watchstations.



MK21 Diving Helmet with instrumentation. (Note the location of the underwater hydrophone.)

Findings and Conclusion

Findings and conclusions have been submitted to SUPSALV for approval.

Prior to assuming the duties as Assistant Fleet Diving Projects Officer, Senior Chief Duffy was assigned as the Life Support Division Officer at the Ocean Simulation Facility located at the Navy Experimental Diving Unit. Previous commands include USS Grasp (ARS-51), SIMA Mayport, USS Petrel (ASR-14), and USS Yosemite (AD-19).

Working Underwater

by LCDR David M. Boone, USN

The Navy's Underwater Construction Teams (UCTs) are an elite diving corps of Seabees and other Navy personnel that provide underwater construction and inspection services for the U.S. Navy and Marine Corps. They have done the same kinds of jobs since World War II when their Navy Seabee "forefathers" performed underwater construction, demolition, and salvage work in the Pacific theater.

Background. In February 1974, the Chief of Naval Operations formally commissioned UCT One, stationed today at Little Creek, VA, and UCT Two, stationed at Port Hueneme, CA. The UCTs are made up of three independently-deployed air detachments of 15 Seabees each. The entire command consists of three officers and approximately 60 enlisted personnel. The divers of the UCTs are tasked with constructing, repairing, and maintaining the Navy's waterfront and ocean facilities throughout the world.

Prospective team members must attend Second Class Navy Dive School in Panama City, Florida, for 5½ months, and then Underwater Construction School in Port Hueneme for two months. The program's rigorous challenges account for its high attrition rate: only 20 percent of those who begin the course complete it.

Missions. Throughout their history, the UCTs have been highly mobile units. Staffed by exceptionally professional construction divers, they execute complex ocean construction projects under adverse conditions. Their missions include pier, piling and cable inspections and repairs; maintenance and construction of underwater utility systems; support of amphibious operations; and participating in naval amphibious exercises.

Projects. During World War II, most of the projects were performed by specially trained diver-qualified Seabees assigned to the Naval mobile construc-

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COMMAND IN THE SPOTLIGHT

USS *Safeguard* (ARS 50)

by LTJG Eric Christopher Correll

Thai divers doing indoctrination dives. HT2(SW/DV) Shultis and BM2(DV) Hellwig tending divers in foreground and HT2(DV) Foy sitting standby on yellow bench. LTJG Wisner on comms and ENCM(SW/MDV) Wiggins supervising.

1997 was a year of high "OPTEMPO" for USS *Safeguard* (ARS 50), which completed emergent salvage operations and a WESTPAC deployment and spending over seven months away from her homeport of Pearl Harbor, Hawaii. Her first voyage was a six-week excursion to Eureka, CA to salvage a U.S. Air Force Reserve (USAFR) HC-130 from 5100 feet of water. Her second deployment was a five-and-a-half month WESTPAC which included a SpecWar SUBEX, Cooperation Afloat Readiness and Training (CARAT) 97, and diving and salvage training with over 100 divers from five countries .

At the request of the U.S. Air Force, Navy salvage assets were tasked with the salvage of a USAFR HC-130 from coastal waters off Northern California in November 1996. The primary task of *Safeguard* was to assist in the recovery of the aircraft's voice and data recorders. After departing Pearl Harbor with five days' notice on 14 January 1997 and arriving in Eureka, CA, *Safeguard* was outfitted with a Fly Away Deep Ocean Salvage System (FADOSS) . Eventually, NAVSEA brought in a second ROV, Deep Drone, which was certified to deeper depths and could be mounted and launched directly from *Safeguard*'s forecastle. A week-long window of amiable weather allowed *Safeguard* to recover both flight recorders, one engine, and video the entire debris field. The most difficult part of raising the wreckage was not the initial hookup on the bottom but the transfer of the load at the surface from the FADOSS to *Safeguard*'s fantail. Once pieces were lifted to the surface , a boat crew shifted the load from the FADOSS to the aft boom auxiliary hook, a task that was difficult at best, as six to eight foot swells continuously moved through the OPAREA. As Boatswain's Mate 3rd class Michael Stalnecker commented, "The last thing I wanted to do was watch the FADOSS lose the load just as I was shifting it." After successful recovery of the black boxes, *Safeguard* returned to her homeport and received special recognition from both the Secretary of the Navy and Air Force.

For the second time in three months, *Safeguard* departed across the Pacific, this time in a westerly direction. Her first task involved providing support for the Navy SEALS in support of SpecWar SUBEX 97-3. While S*afeguard* was not providing support for the SEALs off the coast of Tinian, her divers were conducting dives with the dive lockers from USS FRANK CABLE and Ship Repair Facility, Guam.

Upon her arrival in Pattaya, Thailand, *Safeguard* joined with other U.S. Navy and U.S. Coast Guard vessels to start CARAT 97. In addition to training Royal Thai Navy divers in the use of the Mk-21 surface supplied diving helmet, ARS 50 divers participated in an extensive environmental project aimed at the preservation and restoration of Thailand's coral reefs. The project involved deployment of over thirty 3000 and 5000 pound buoys around the reefs of Ko Sak and Ko Lan islands. The mooring buoys, designed to be used by fishermen and tourist boats, would protect the coral reefs from the damaging effects of boat anchors which had already scarred the underwater habitat for decades. As Engineman 2nd class Mark Smith explained, "The first few times ev-

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Singaporean SALVEX. One U.S. Navy diver and one Singaporean entering the water to do a hull inspection on a sunken wreck. BM1(SW/DV) Watcher in white shirt in right corner as comms, HT2(SW/DV) Shultis as logs, Singaporean divers tending and stage handling.

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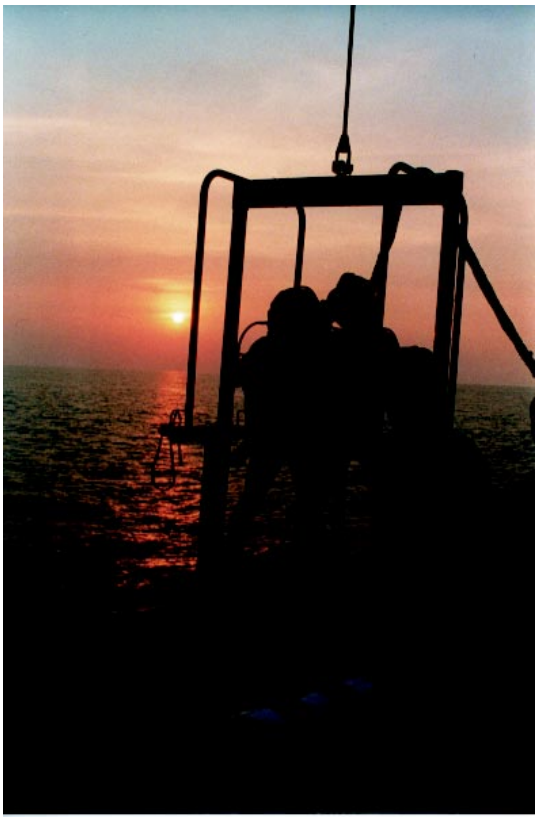
eryone was a little nervous with the ship so close to shoal water, but after we got into a rhythm, it was easy." Within five days ARS 50 divers laid marker buoys around both islands, rigged and deployed all mooring buoys, and recovered all marker buoys, successfully completing a highly visible joint project in support of CARAT 97.

After departing Thailand, *Safeguard* participated in CARAT-MALAYSIA 97, CARAT-SINGAPORE 97, and INDUSA PASSEX 97. All three foreign navies received classroom training from U.S. Navy diving personnel. Before beginning diving operations, U.S divers gave walkthroughs on the onboard Divers' Life Support System. Under supervision, several foreign divers were able to train with *Safeguard*'s consoles, winches, and chamber. By the end of INDUSA PASSEX 97, U.S. Navy divers had conducted Mk-21 indoctrination dives with over 50 Malaysian, Singaporean, and Indonesian divers, none of whom had previously seen a dive helmet.



Mixed gas diving in Korea, ENCS(SW/DV) Edgley tending stage. Photos by EN1(SW/DV) Bradrick.

Although *Safeguard*'s role in CARAT 97 was primarily training Southeast Asian divers, her dive locker offered other valuable services to the CARAT 97 surface force. *Safeguard*'s divers performed emergent diving operations on USCGC *Chase*, removing debris fouled in her screw. They also conducted hull inspections on several ships. Additionally *Safeguard*'s divers performed an emergency pitsword replacement for the USS *Mcclusky*, providing services of a unique and valuable nature that normally a tender or salvage ship would provide to a surface force.

ARS 50 ended her deployment with ROKN SAKVEX 97-2K. She participated in this exercise with two Korean salvage ships homeported out of Chinhae, Republic of Korea. The salvage ships, formerly known as USS *Beaufort* (ATS 2) and USS *Brunswick* (ATS 3), were purchased by ROKN and christened *Pyong Taek* (ATS 27) and *Kwang Yang* (ATS 28). the first week involved extensive salvage operations among all three vessels, including laying and retrieving a four-point moor and live offship firefighting. The training was not one-sided; Master Diver Steve Wiggins explained, "Because the Koreans didn't have their hydraulic pullers yet, they rigged up beach gear with fourfold purchases, something I haven't seen in a long time. The salvage phase provided good hands-on training for both sides." The final week focused on mixed gas diving. Divers from both *Safeguard* and Mobile Diving and Salvage Unit One (MDSU-1) provided technical support to ensure the ROKN salvage vessel's Mixed Gas Divers' Life Support Systems were fully safe and operational. Finally *Safeguard* divers conducted dives to depths of 270 feet utilizing MDSU-1's Mixed Gas Fly Away Dive System (FADS). As Hull Technician 2nd class Thomas Shutlis commented, "It was a good end to a long WESTPAC. Everyone had a blast going deeper than 190 feet. With the disappearance of the ASR's, and ATS's, many of our divers needed the HeO_2 training as much as the Koreans."

After five-and-a-half months in the Western Pacific, *Safeguard* returned home 20 September 1997 to conduct local operations.

LTJG Correll is the DCA and Diving Officer aboard USS Safeguard. *He is a graduate of Duke University where he received his commission through the ROTC Program.*

Group photo of SAFEGUARD divers and Malaysian divers after doing underwater cutting.

Training Center Develops New Craft for the 21st Century

By CWO4 Edmond Delanoy

Nearly every First Class Diver, Master Diver, and Diving Officer now on active duty trained onboard the venerable old Yard Diving Tenders (YDT-14s and -15s). These workhorses have had their day and will be replaced in 1999. The Naval Diving and Salvage Training Center is well into the procurement process for two new YDTs to replace the 55-year-old YDT-14 and -15.

The new craft, YDT-17 and -18 respectively, will be 131 feet long and 27 feet wide. Being built by Swiftships, Inc., out of Morgan City, Louisiana, they are aluminum-hulled shallow draft ships, equipped with duel diesel-driven water jet drives. They will be capable of at least 18 knots and will cruise at 15 knots. Maneuverability will be enhanced by a through-hull bow thruster. With a three-point mooring system, the craft will support open ocean diving to a depth of 190 fsw. With the enhanced speed capability, the craft can get to the deeper water in the Gulf of Mexico to support improved surface-supplied diver training. The FADS-III dive system will be installed on each craft.

The craft are being built under a new Acquisition Reform Program with the cognizance of Naval Sea Systems Command. This program eliminates construction to military standards and uses industry standards best practice. All equipment used is commercial off the shelf (COTS). Under acquisition reform, teamwork between contractor, Supervisor of Shipbuilding, program manager, and end user is emphasized.

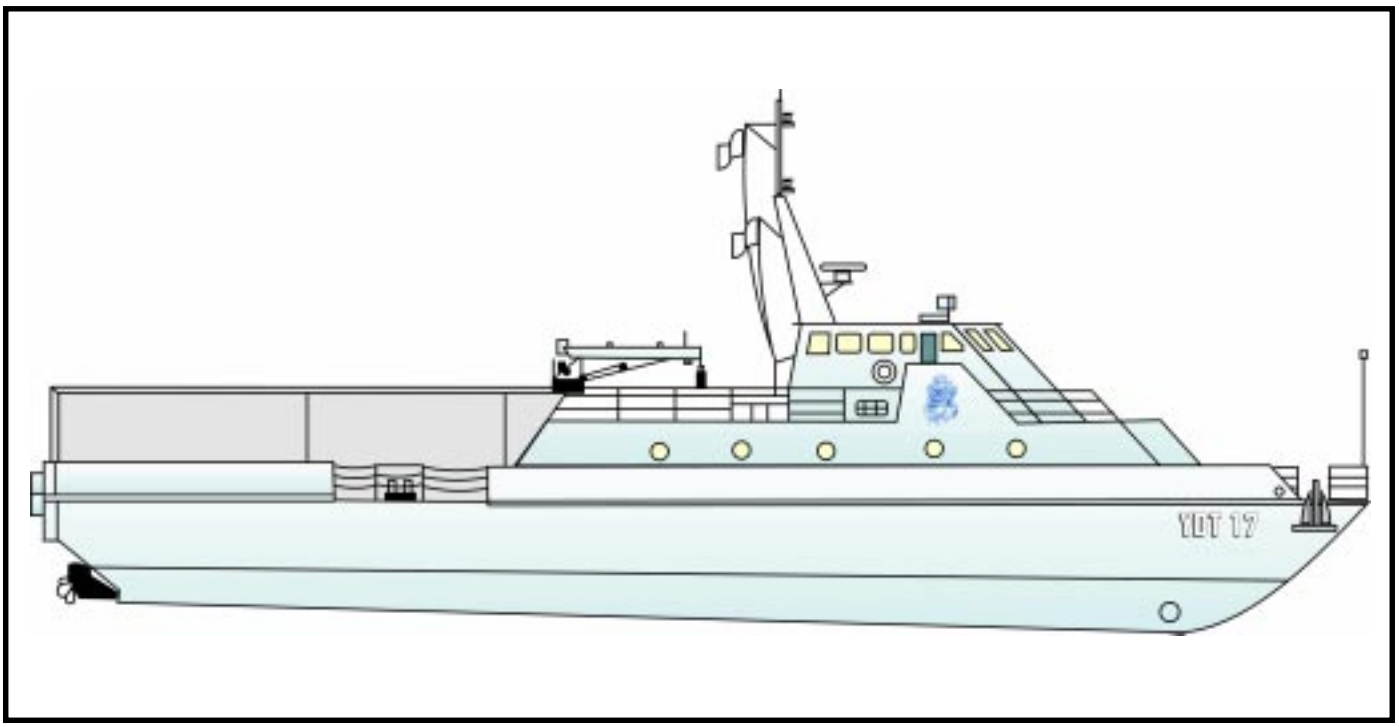
NAVDIVESALVTRACEN has had a very proactive role in development of the contract specifications and the design phase.

The craft hull design is from already-proven oil field support craft in use worldwide with the pilot house forward and a long open deck fantail where the dive station will be placed. The milestone schedule is:

- December 1997: keel laying of YDT-17; February 1998: keel laying of YDT-18.
- November 1998: launch YDT-17 for builder trials.
- February 1999: deliver YDT-17 to NAVDIVESALVTRACEN.
- April 1999: delivery of YDT-18.

The new craft will have an expected service life of 40 years and will be a welcomed addition in support of the Naval Diving and Salvage Training Center's mission well into the 21st century.

CWO4 Edmond Delanoy is the Craft Officer at NDTSC, where he served as an instructor from 1985 to 1988. He has served on USS Florikan (ASR-9), COMSUBRON ONE, and SEAL Delivery Vehicle Team ONE.



The OLD MASTER

By HTCM(MDV) Michael Washington

Having attended the 1997 Working Diver Conference, I reflect back on the importance of communication. The successful conference provided a vehicle for exchanging information. Conference proceedings with action item due dates were mailed to all Navy diving commands and registered conference attendees to continue the flow of information. Completing the action items will ensure that the final purpose of the conference, identifying and resolving problems, is a success.

Let me take this opportunity to communicate my position here at NAVSEA. I work for you. I simplify my job description by saying it is to understand and tend to the Fleet needs. Your chain of command can provide a strong link for building on your ideas, but only if you communicate them.

At this point let me give you an update on the Diving Operation Specialist (DOS) enlisted warfare designation proposal. The proposal was given the Master Chief Petty Officer of the Navy's endorsement. After this, the chain for endorsement is OPNAV submarine division, which handles diving issues. This is the current status of the proposal. Upon receiving OPNAV endorsement, it will be forwarded to the Fleet commanders. With their endorsement, it goes to BUPERS and finally to the CNO's office for final approval. During this process, briefings are held to clarify issues and concerns.

If you have Internet access, you will be able to download a Powerpoint presentation regarding the proposal. Go to http://www.roh-inc.com, our contractor's web site. Click on the "ROH Download Site" option, then click on the file named mdv_dos.zip. After downloading the file, use Pkunzip to unzip it. Next, go to Windows Explorer and double-click on ppview32.exe to launch the Powerpoint 97 slide viewer. Double-click on the file named mdv_dos.ppt to start the presentation.

I recently received an official tasking based on a request from the United States Naval Institute to identify the first African American U.S. Navy Master Diver. As a Master Diver with over 22 years of Navy diving experience, I've grown to realize that to give a complete answer, research must be done. This research will also clarify some information given in an earlier issue of Faceplate *(see Faceplate, Volume 2, Number 1, Spring 1996)*.

MDV Michael Washington, October 1975, 2nd Class Dive School, SRF Bubic Bay, Philippines.

My main source of information was an artist with the Navy Art Gallery. Through DM1 Murray's background search, BMCM(MDV) Carl Brashear was identified as the first U.S. Navy active duty African American Master Diver, June of 1970. It was further determined that CGM John Henry "Dick" Turpin was awarded the title of Master Diver for the Bremerton Naval Shipyard upon his retirement from active duty, December of 1925.

Future issue:
The untold story of Dick Turpin.

HTCM(MDV) Mike Washington is currently serving as NAVSEA Senior MasterDiver. He can be contacted at (703) 607-2766, DSN 327-2766, or FAX (703) 607-2757. His e-mail address is:
Washington_Michael_J@HQ.NAVSEA.NAVY.MIL

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tion battalions (NMCBs). These projects included underwater demolition of reef obstructions, and in-shore construction to develop channels, harbors, and mooring facilities for the Fleet.

In 1969 a team of Seabee divers provided underwater construction support for the Tektite I undersea habitat near St. John, U.S. Virgin Islands. Instead of using a floating crane, they configured an "underwater elevator" lifting system from pontoon sections to install the 160 ton habitat 52 feet underwater.

Construction operations on the test array installation of the Azores Fixed Acoustic Range (AFAR) began in 1970 at Andros, Bahamas. The AFAR project required underwater explosive demolition to blast a trench through the precipitous basalt submarine island shelf. UCT divers installed split pipe to each of four large, double-armored power and signal cables. Their innovative procedure for application of the split pipe enabled them to exceed the industry standard for applying split pipe on the ocean floor.

Beginning in 1971, UCT divers assisted with the building of the Naval installation at Diego Garcia. They performed a variety of harbor maintenance and construction services. In addition, they performed all subsurface maintenance on the desalination barge, which included blasting a new trench for barge mooring.

Other projects during the 1970s, 1980s, and early 1990s have included pier reconstruction at McMurdo Station, Antarctica, and cable installation and stabilization in Iceland.

Beginning in early spring 1996, UCT divers demolished and removed a large section of a concrete pier at Naval Base Norfolk. By drilling holes in the concrete and placing explosives, the divers blasted the pier into smaller sections that could be lifted out by crane. Because the pier was on the waterfront of a busy Navy base with various warships nearby, the blasts had to be carefully controlled. New, non-electric detonators were used with the explosives to eliminate the risk of electric detonators accidentally being set off by ship radar or electronic systems.

Another 1996 project for UCT divers was providing underwater inspection services of the desalination plant at Naval Station, Guantanamo Bay, Cuba. They installed PVC pipe to serve as an outfall for the base's sewage treatment plant. The entire outfall was constructed by joining individual 20-foot long pipe sections together on the surface while divers were securing the pipe to concrete saddles on the ocean floor.

Future Outlook. Today and in the years to come, the UCTs will continue to exercise their self-sustaining diving operations in the Arctic, Antarctic, and in all points in between. The personal satisfaction of meeting challenges head on and overcoming them makes the UCT an extremely rewarding Navy specialty—just ask any team member!

LCDR David M. Boone is the Commanding Officer of UCT One. This article has been reprinted courtesy of the Deckplate, Fall 1997.

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

Official Business