The Official Newsletter for the Divers and Salvors of the United States Navy Volume 9, No. 1 / January 2006

> In This Issue... Sorbet Royal 2005 CARAT 2005 Hurricane Response

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SUPSALV SENDS

Never in U.S. history has there been a salvage effort the size and scope of that required in the aftermath of Hurricanes KATRINA and RITA. Approximately 500 miles of coastline in four different states (Alabama, Mississippi, Louisiana, and Texas) incurred the wrath of these two storms which left over 3,000 commercial vessels sunken, stranded or fully aground as the storms' floodwaters receded. Thankfully, only a few of these casualties were deep-draft vessels, and their owners removed them with little damage almost immediately. But the remaining thousands included commercial barges and fishing or shrimping vessels with displacements over 100 tons.

What was the U.S. Navy salvage role? Like so much of the KATRINA response effort, it is a story of "First Responders" and "Long Term Recovery."

First responders: Part of the Navy team in Joint Task Force (JTF) KATRINA was a salvage and diving element (CTE 20.7.1.3) under command of CO MDSU2 (CDR Glenn Allen) and including USS GRAPPLE (ARS 53) (LCDR Brandt), which arrived in the early stages of KATRINA response. An advance detachment of MDSU2 led by CWO3 Rick Cavey immediately began local interagency coordination to apply their resources in a "first-aid" manner...hitting the obvious, high-priority requirements both for side-scan survey and diving and salvage. MDSU2's exceptional record of success reduced the remaining immediate priority work by removal of several wrecks blocking waterways near Biloxi, MS. USS GRAPPLE conducted channel and port clearance ops in Pascagoula, MS and Mobile, AL, assisting local authorities in restoring these ports for commerce. CTE 20.7.1.3 also included a hydrographic sur-

vey team from Naval Special Clearance Team 1 and an international contingent of French and Canadian divers. This peacetime operation proved our USN Salvage Forces' wartime harbor and channel clearance capability and criticality.

Long-term recovery: In addition to the tactical salvage element of JTF KATRINA, the Chief of Naval Operations and the Deputy Secretary of Defense directed SUPSALV to undertake the following national-level mission:

"Under the direction of FEMA, provide coordinated strategic direction of national assets for KATRINA-related hydrographic survey and marine salvage response in selected off-shore areas, channels, waterways, ports, and harbors, with an ultimate goal of critical maritime reconstitution consistent with FEMA priorities."

Working to support an integrated team of FEMA, USCG, and U.S. Army Corps representatives, SUPSALV responded to tasking throughout the waterfront, principally in southern Louisiana. To help us coordinate hydrographic surveys, the Oceanographer of the Navy provided LCDR Sean Memmen. For wreck-removal work, most involved rigging and lifting stranded commercial fishing and shrimping vessels along the levees and banks of the Mississippi River and associated waterways. Approximately 80% of the vessels were high and dry and required no diving, with only about 20% partially or completely sunken. To accomplish this work, we engaged DonJon Marine (and several sub-contracted commercial salvors) for wreck removal, and Phoenix International to develop an interactive wreck removal database. Although our work is not complete, as of this writing, over 300 of an anticipated 340 vessels assigned to us by either ("SUPSALV SENDS" continued on p. 5)

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Cover Photo: Petty Officer 2nd Class Hermanson, a USS GRAPPLE Deep-Sea Diver prepares to dive. From Mark Lonsdale's new book "Navy Divers: Performance Under Pressure." Photo authorized by Best Publishing Company, www.bestpub.com.

By: CWO4 Jeffrey Zagurski

Sorbet Royal 2005

ivers from Mobile Diving and Salvage Unit TWO (MDSU2) Deep Diving Detachment TWENTY, USS GRASP (ARS 51) and Deep Submergence Unit (DSU) participated in one of the largest and most challenging live submarine escape and rescue exercises ever conducted -NATO Exercise "SORBET ROYAL" 2005.

It was held in June and July 2005 in the Mediterranean off the coast of Taranto, Italy. The Fly Away Mixed Gas System (FMGS), Submarine Rescue Chamber (SRC), and Atmospheric Diving Suit (ADS), were employed in a coordinated effort to demonstrate interoperability of equipment and personnel necessary to support U.S. Navy and NATO Submarine Rescue Operations.

The Atmospheric Diving Suit deployed from USS GRASP can assist submarine rescues down to 2,000 feet while the diver inside remains at surface pressure.

After a brief planning and training period, key supporting cast from MDSU2 Administration, Supply, and Operations Departments, along with a ten-man element from Detachment TWENTY,



The ITS PRIMO LONGOBARDO alongside at the naval base in Taranto with various ships participating in Sorbet Royal 2005 in the background.

mobilized over 30,000 standard cubic feet of compressed breathing gas and 39 tons of specialized mixed gas diving equipment and personnel. Everything was loaded aboard a DC10 Aircraft at Norfolk Naval Air Station for transport to Naval Air Station, Sigonella, Sicily and further transported to USS GRASP (ARS 51) in

Augusta Bay for the exercise.

Participation in the exercise afforded MDSU2 a wonderful opportunity to demonstrate its ability to mobilize specialized equipment and personnel into the COMSIXTHFLT Area Of Responsibility (AOR).

Throughout the exercise, vided unique opportunities to dive

MK-21 using surface-supplied mixed gas, cross-train with Russian and Turkish divers, operate U.S.-specific rescue systems, and support the United Kingdom

Royal Navy transfer under pressure (TUP) protocol with the U.K. (LR5, a free swim-

ming submarine rescue vehicle deployed from the Icebreaker Fennika) throughout the exercise.

"This is the first time I've had the opportunity to work with my counterparts from other nations," said HTC(sel)(DSW) John Valentine. "I worked with Russian, Turkish, and Canadian divers and although the basic steps are the same, everyone did things a little differently."

Valentine, a diver for Mobile Diving and Salvage Unit TWO, said he was surprised at how well everyone meshed from the onset. "I walked away from this experience with a lot of respect for the different services and

for the capabilities they bring to the table. At one point, we had three different evolutions set up and operating on the fantail of the (USS) GRASP."

With over 40 different nations now operating submarines worldwide, an exercise such as Sorbet Royal offers a rich training environment to work together and

divers were pro- ITS SAN GIUSTO was the command and control ship for Sorbet Royal 2005. She is an amphibious landing platform designed to carry vehicles and marines.

> solve complex disaster rescue problems under a variety of difficult circumstances.

GMC(sel)(DSW/SW) James Dertilis, a MDSU2 diver, said that the sheer number



of assets participating in Sorbet Royal was impressive. "What surprised me the most was how many units they were able to assemble from so many countries."

While it may not be immediately apparent during the search phase for a missing and presumably lost submarine, divers play an important part in many aspects of submarine escape and rescue.

Using towed and autonomous sonar systems, divers

deployed on small surface craft would be used to search pre-determined grids in effort to locate the disabled submarine (DISSUB). Once the DISSUB is located, SCUBA, surface-supplied air, mixed-gas, and saturation divers would be used in conjunction with other rescue systems.

Divers work to inspect the hull, clear access to hatches, attach supply lines to deliver fresh air to the crew or provide high pressure air through fittings in attempt to re-establish buoyancy. The ultimate goal is always to save lives. In



The USS GRASP deploys a submarine rescue chamber to the Italian submarine Longobardo awaiting rescue on the bottom.

During the exercise GMC(sel) Dertilis dived 130 feet down to a bottomed Turkish sub while working off the Finnish icebreaker MS/V Fennika. "I've dived on subs before, but it has always been pierside. This was my first time diving on a sub sitting on the bottom. It was really impressive swimming down towards the sail of the sub and then seeing the SRC (Submarine Rescue Chamber) hooked up to the hatch."

For a disabled submarine (DISSUB) below the depths at which divers can



The LR5 being brought to her resting place onboard FENNICA.

addition, divers can deliver watertight pods containing food, medical supplies or atmosphere control chemicals to keep the crew alive while awaiting rescue.

work, an Atmosphere Diving Suit (ADS) or **Remotely** Operated Vehicle (ROV) can allow similar tasks to be carried

out. Diver's ability to operate recompression chambers provides another dimension to the submarine rescue process because of the potential for decompression sickness (DCS) from exposure to increased internal pressure created from a breech in

the submarines pressure hull. Rescued submariners exhibiting signs of DCS would be admitted to a recompression chamber and treated with accelerated recompression therapy and breathing 100 percent oxygen.

For most of the divers involved in Sorbet Royal 2005, the concept of performing a search and rescue operation on a disabled sub has always been a theoretical exercise. GMC(sel) Dertilis said that walking away from this experience, he realizes that we have the skills and equipment to do it in the real world. "I know we're totally capable of rescuing people from the bottom," said Dertilis, "more importantly, this type of exercise allows us to build confidence in other countries' capabilities. Should services be required, we know who we can contact, what type of equipment they have, and

how to work together in order to reach distressed submariners as fast as possible."



Rigged above on the SPS NEPTUNO is the cradle used to lower divers down to the distressed submarine.

Future Sorbet Royal exercises are already in the planning stages. Mobile Diving and Salvage Unit TWO is homeported in Little Creek, Virginia and is commanded by CDR Glenn Allen.

CWO4 Jeffrey Zagurski is Officer in Charge, Deep Diving Detachment TWENTY, Mobile Diving and Salvage Unit TWO.

MDSU ONE Aids in Repatriation of WWII Air Crew

A seventeen-member dive team from the Hawaii-based Mobile Diving and Salvage Unit (MDSU) ONE, joined forces with Joint POW/MIA Accounting Command (JPAC) to conduct recovery operations for a missing WWII aircraft off the coast of Palau.



B-24J Liberator.

MDSU ONE provided the JPAC team with diving support needed to accomplish a forensic recovery of remains from a WWII B-24J Liberator aircraft shot down by Japanese anti-aircraft fire in September 1944. JPAC's mission is to locate and recover the human remains and material evidence, including personal effects and aircraft parts that will aid with the identification process of the Americans that went down with the plane.

"Being involved in a mission of this type is very rewarding," said Chief Warrant Officer 3 Raymond Spann, MDSU ONE Det 7 Officer in Charge. "We are part of a mission that is able to bring closure to families of the brave men lost sixty-one years ago," he said.

This is not the first JPAC mission for MDSU personnel who are recognized as the military's foremost experts in underwater salvage and recovery operations. "It simply made sense for JPAC to utilize this expertise for the mission," said Maj. Rumi Nielson-Green, JPAC Public Affairs Officer.

Various diving techniques and equipment were incorporated into the mission. The Navy divers joined five JPAC personnel to complete the task. The divers used MK-21 MOD 1 surface supplied diving equipment as well as MK-20 (SCUBA mode). Each diver was equipped with a state-of-the-art helmet mounted video system so the on-scene anthropologists could view everything the divers were seeing and doing.

The mission took just over fifty days during the rainy season in Palau. The team also faced ecological challenges during the mission. The aircraft went down near coral heads and the craft itself is considered a Palauan National Treasure. The Navy divers worked to leave a minimal footprint by minimizing their entry points into the aircraft and by depositing dredge material away from any live coral using a drainage shoot system. No ecological restoration was required and all wreckage recovered during the dredging was replaced. The plane was not raised.

"Every part of the government of Palau from the local to the national level was extremely cooperative and helpful," said Nielson-Green. "The President, Mr. Tommy Remengesau, took great interest in the mission and has been very gracious toward this effort," she said.

"This dive job has been one of the best jobs I have ever done," said Petty Officer 2nd Class Steve Hordinski. "Not only is the job great, but the locals treated us very well. Palau is a beautiful place. I am very glad I was part of this mission." The waters off Palau are considered one of the best dive areas in the world. "We only took the Palauan Sabbath off and worked ten hours a day," said Spann. "The various sea life and incredible visibility of this natural wonder is second to none," he added. The team had a combined dive time of 165 hours.

"Despite the long hours, my guys were excited about being involved in a mission of such importance and magnitude. They all realized that this is a once in a lifetime opportunity to be involved in such a noble event," Spann said. "In eighteen years of being a diver, this is the most important job I have ever had the pleasure of being involved in." At the end of the mission, the team recovered human remains and dog tags. The team is scheduled for a follow-up mission later this year.

COMMARFPCOM Public Affairs Release.

SUPSALV SENDS

(... continued from page 2.)

USCG or Army Corps have been recovered using SUPSALV's commercial heavy-lift assets under superb site coordination of our 00C Salvage Engineers Ric Sasse, Rick Thiel, Bill Walker, and LCDRs Josh Price and Carl Parks. Our 00C1 fiscal team led by Karen Hopson supported. Engineering Duty (ED) salvage engineers (from the Fleet and shipyards) and NAVSEA SUPSALV Det reservists capably augmented the SUPSALV team throughout the operation.

Fleet Participation: In addition to the "first responder" operations above, MDSUs 1 & 2 were offered opportunity by SUPSALV for Fleet Master Divers and Diving Warrants to engage with commercial waterfront operations using SUPSALV funding, and CWO2 Williams from MDSU 1 spent several weeks working with our team. SUPSALV is also using KATRINA's strandings of the ex-USS SHADWELL (LSD 15) and the ex-USCGC STATE OF MAINE in Mobile Bay as an opportunity to use Fleet salvors to refloat both vessels. Under direction of SUPSALV Director of Salvage Operations, CAPT Mike Herb, USN (Ret), we are developing a combination dredging/ salvage plan to substantially reduce ex-SHADWELL's ground reaction from her current 4,000+ long tons to a level that will permit a MDSU 1 detachment to employ beach gear to refloat her. A similar approach will be taken to recover ex-STATE OF MAINE. We expect these operations to be undertaken in March of this year.

The U.S. Navy's combined salvage response by MDSU 1 & 2, USS GRAPPLE, SUPSALV (augmented by ED Salvors and 00C Reservists) and SUPSALV's commercial salvors is helping turn the tide along the U.S. Gulf Coast as the Mississippi and economically critical waterways return to full capability. An unprecedented challenge is being met by an unprecedented response...Hoo-Yah, Deep Sea!

Captain Jim Wilkins

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Mark V Monument at WNY

By: Bob Barth

The first of "The Man in the Sea Monument Series", the bronze "Jake" project has been making progress since our update in the last issue of FACEPLATE. Graduates of DSDS and NEDU crewmembers at the

Washington Navy Yard and divers around the country have joined together to fund what will eventually give us the money to build our "Jake."

As a lot of you already know, we embarked on this effort last year with the initial work going towards identifying how to build this huge, fullydressed Mark V diver. We contacted various monument makers and artists associated with a task of this magnitude, then after we found out that there were good people out there to do the statue, we wanted to know how much this bronze diver would cost. Eventually, we had a good idea about what was needed and we hit the streets with the effort to raise the

money. There

is a lot more to putting up a monument on

federal property than you would think but the folks at the Washington Navy Yard put their blessing on the project and now it is in our hands to raise the money to get it done. We have collected a good amount of money so far, but much more is needed until we get the monument built.

In order to help us get this project completed, a website that tells our story can be found at: <u>http://www.hspig.org/</u> <u>hspig-maninthesea.htm</u>. We have been asked over and over for the address to send the tax-exempt donations to, so here it is again: Checks should be made out to Mark V Monument and sent to 17314 Panama City Beach

> Parkway, Panama City Beach, FL 32413. We have been working our network of active and retired divers while former military divers at Homeland Security Policy Institute Group have been soliciting donations from corporate America.

> > The end result of this project is to have a bronze "Jake" near the area of what was once the Navy Diving School and NEDU. If we were to build a nest egg that would allow for more of these statues, then our thoughts were to have a second statue made for the current Navy diving school here in Panama City, NDSTC, a monument to memorialize Army Divers at Ft. Eustis, and a combat swimmer monument for our SEAL brothers in Little Creek, VA. Right now we are focused on the first monument for the

WNY. You can assist in

this effort by telling all the folks you know about it and helping us generate the money needed to get it done. We promise to build the best darn monument than we can get built and make you proud that you were part of it. There are a lot of old sailors and school graduates back in the shadows working on this effort, please join us.

We thank you for your donations and enthusiasm.

Mark V Monument at the WNY A Brief History

An Experimental Diving Organization was established at the New York Naval Shipyard in 1913 and formally designated as the Navy Experimental Diving Unit (NEDU) in 1927 when it was relocated to the Washington Navy Yard to centralize all navy diving research.

The Navy Diving School was established

in 1926 in Building 146 at the WNY and was renamed Deep Sea Diving School (DSDS) in 1928. The Navy Salvage School was moved to the WNY from Bayonne, NJ in 1957.

NEDU relocated to Panama City, FL in 1975 and the Diving School followed in 1980. There is currently nothing at the Washington Navy Yard that tells this history. The Mark V Monument we plan to erect there will change this.

Donation Request

This monument is dedicated to Divers from around the world who gave their life's work to underwater construction and the salvage of ships lost at sea. Their method of training and development of equipment set standards adopted by the international diving community. Their traditions will last forever.

Please accept this opportunity to support this project in remembrance of the unsung heroes who labored in the murky depths to save lives and improve knowledge of the world underwater.

Please send your tax-deductible contribution to:

Mark V Monument 17314 Panama City Beach Pkwy Panama City Beach, FL 32413

A certificate of appreciation will be mailed to each donor. Please make check payable to "Mark V Monument."

Please contact Bob Barth at <u>bob.barth@mchsi.com</u> or Doug Hough at (850)235-4101 or <u>momits@bellsouth.net</u> if you have any questions.



Tembers of the rescue Mand salvage ship USS SAFEGUARD (ARS 50) might not have realized it when they left port in Sasebo, Japan on April 21 that their journey through Cooperation Afloat Readiness and Training (CARAT) 2005 would be a multi-faceted language learning experience.

USS SAFEGUARD completed the final phase of CARAT in the

successfully solidifying a long road in cooperation at sea and ashore. During the multinational exercise, USS SAFEGUARD conducted training with six different countries: Singapore, Thailand, Malaysia, Indonesia, Brunei, and the Philippines.

"The number and types of things that USS SAFEGUARD sailors have accomplished this summer is pretty remarkable," said LCDR Doyle Hodges, USS SAFEGUARD Commanding Officer. "We've conducted diving and salvage exercises with six different nations, helped to clean up schools and orphanages, enjoyed liberty all over Southeast Asia, towed another ship, done lots of valuable training, and qualified Sailors in every watch station from lookout to Engineering Officer of the Watch to Officer of the Deck."



USS SAFEGUARD crewmembers salvage wreckage from an Indian Seahawk jet that has been 165 feet underwater for more than 30 years and was only recently discovered by the Indian Navy.



Philippines on August 23, 2005 USS SAFEGUARD divers group together with members of the Indonesian Navy.

Hodges noted that other nations' divers were always "eager and professional." He emphasized that every exercise involved mutual growth and a strengthened confidence in each other's abilities.

Throughout CARAT, Hodges noted that there was a perfect semblance of hands-on with classroom training. USS SAFEGUARD dive staff used the MK-21 surface supplied diving rig, a device that supplies air to divers in the water. At each stop, USS SAFEGUARD brought out its "Mud Monster," a large yellow box, whose sides measured 5 ft. by 5 ft., made to simulate salvage operations. The crew even partnered with the Royal Malaysian Navy (RMN) to pull a purposely-sunken Sport Utility Vehicle (SUV) from the ocean floor in Tioman Island, Malaysia.

Each CARAT phase presented a new challenge and a new language. One thing that helped USS SAFEGUARD crewmembers through the language barrier is the international diving sign language used during underwater exercises. For instance, a closed fist means stop. The thumb and forefingers touching with three fingers extended means, "I'm okay." Other signs mean, "you lead," "out of air", and "going up."

The crewmembers say that it was not too difficult to communicate. In fact, most of the USS SAFEGUARD divers feel that the learning process was actually fun.

"I enjoyed breaking the language barrier between the two Navies," said Hull Maintenance Technician 3rd Class (DV) Zachary D. Dimare of the Indonesia phase of CARAT. "It was challenging, yet rewarding, to work with a culture so different from ours."

Many of USS SAFEGUARD divers tried to teach their international counterparts new words and phrases. Divers from the

Southeast Asian countries enjoyed saying the English phrases like "Hoo-yah."



A USS SAFEGUARD diver holds up an American flag alongside a Royal Malaysian Navy diver holding up a Malaysian flag.

"I have enjoyed interacting with all the different cultures thus far in CARAT," said Boatswain's Mate 3rd Class (DV) Danielle R. Smith. "It has been the experience of a lifetime!"

USS SAFEGUARD is a forwarddeployed rescue and salvage ship operating out of Sasebo, Japan, and is part of Task Force 76, the Navy's only forward-deployed amphibious force.

IT3 (SW/DV) Jason M. Tucker is Public Affairs Officer, USS SAFEGUARD (ARS 50). JOSN Adam R. Cole is Public Affairs Officer, Task Force 76.

Breath-Hold Diving

By: Dr. Peter Lindholm

INTRODUCTION

he unstated goal of breath-hold (BH) L diving is to avoid drowning by surfacing in time to start breathing before losing consciousness due to hypoxia. Normally with BH diving there is a strong urge to breathe, forcing most humans to abort a breath-hold within safe limits. This urge to breathe is mainly driven by the rising level of carbon dioxide that is produced from our metabolic processes. Carbon dioxide is produced when the muscles consume oxygen to burn carbohydrates and fat to produce energy for swimming. A recently published study shows that a BH diver burning fat, after carbohydrate stores have been depleted, consumes oxygen faster resulting in an increased risk of hypoxia-induced loss of consciousness. The dangers of hyperventilation and hypoxia of ascent will also be discussed.

BACKGROUND

Unfortunately, BH divers drown every year and the typical accident scenario involves a young male competing with his friends in the local swimming pool trying to swim the longest distance under water. These youngsters usually don't know much about diving physiology and the risks of breath-hold diving. Yet it is possible to safely perform extraordinary feats if you are a trained athlete competing in breath-hold diving. While



Practicing breath-holding technique.

some humans may drown trying to swim 25 m others can swim 175 m breath-holding (current world record without fins in a standard pool). It may be noted that no accidents have occurred during organized competitions in the sport called "Apnea" (no breathing).

Not all divers who "pass out" underwater will drown. Immediate rescue of the unconscious diver can be accompanied by spontaneous resumption of breathing and the diver usually regains consciousness within 10-20 seconds. Some of these underwater swimmers can recall their BH diving procedure that culminated in the loss of consciousness, even though they usually have no recollection of the actual event (since loss of consciousness affects the memory of the immediate time period, approximately 10-30 seconds, preceding the incident). Such survivors have helped physiologists to elucidate the mechanisms of BH diving and loss of consciousness. Craig explained the dangers of hyperventilation in 1961 (1) and Lanphier and Rahn demonstrated hypoxia of ascent in 1963 (2). These mechanisms explain most cases of loss of consciousness associated with breath-hold diving. However, recently Lindholm and Gennser (3) have described some near fatalities in educated and experienced divers who had not subjected themselves to hyperventilation or hypoxia of ascent. These cases made us think that there might be a third mechanism behind BH diving associated with loss of consciousness. These divers had all engaged in prolonged exercise before the accident dive and had not replaced energy by eating or drinking anything.

PROLONGED EXERCISE/CARBO-HYDRATE STORES DEPLETION

Prolonged periods of physical work deplete the carbohydrate stores (glycogen) in the body, which forces the body to compensate by increasing in the rate of lipid (fat) metabolism. When the human body burns fat to produce energy it uses 8% more oxygen than if it metabolizes carbohydrates. Also, 30% less carbon dioxide is produced by fat metabolism than carbohydrate metabolism. Thus, a breath-hold diver who has depleted his glycogen stores will become hypoxic faster, but the carbon dioxide driven stimulus to breath will be delayed. A dive that could safely be performed in a rested and well-fed state may be dangerous after a long day of ex-



BH diver ascending.

ertion from diving. The problem for the carbohydrate-depleted BH diver is that the signals (urge to breathe, diaphragmatic contractions) of near breath-hold breakpoint that are recognized by the experienced divers as "it is time to surface" will be blunted, giving the diver a dangerous sense of comfort. Prolonged exercise is common during military training and this training sometimes entails maneuvers that require BH diving. Additionally, many recreational BH divers (spear-fishermen) spend hours pursuing their sport and fail to bring proper nutritional replacements.

HYPERVENTILATION

Hyperventilation reduces the blood carbon dioxide content without increasing the oxygen content to the same extent because the oxygen stores in the body are maintained constantly almost full with normal breathing. Initiating the BH dive with the reduced carbon dioxide level makes it easier to maintain breathhold, enabling some divers with strong motivation (or a high tolerance to discomfort) to hold their breath until unconsciousness. Craig (1) showed that the prolonged breath-hold times after hyperventilation were associated with lower oxygen levels in the blood going to the brain; levels that were low enough to cause hypoxic loss of consciousness. This was a particular problem if the diver exercised (swam) during the breath-hold.

ASCENT BLACKOUT

The partial pressure of oxygen in the

lungs (and not the fractional percent, (%)) affects oxygen loading of the blood and therefore the oxygen delivery to the brain. A critical oxygen pressure (PAO₂) of approximately 30 mmHg is needed to sustain consciousness when breathing is resumed after a breath-hold (dive). At the surface this equates to about 4% oxygen in the lungs and 45% oxygen saturation of the arterial blood. While a diver at the surface would be unconscious with an pulmonary oxygen content of 2% (PAO₂: 15 mmHg), a diver swimming around at 30 m (100 fsw) with 2% oxygen in the lungs would feel comfortable since the oxygen pressure would be 60

mmHg due to the surrounding pressure of 4 atmospheres absolute pressure and its effect on the gas pressure in the lungs (recall Dalton's Law of Partial Pressure: the partial pressure of a gas equals the absolute pressure times the fraction of the gas: 4 ATA (3040 mmHg) x 2% oxygen = 60 mmHg PAO₂). This diver, who is still able to swim at 30 m, would become unconscious during his ascent to the surface because the partial pressure of oxygen in the lungs would be reduced along with the absolute pressure. If we disregard the oxygen consumption of swimming, this diver

will reach the critical oxygen level at a depth of 10 m (33 fsw) where the absolute pressure is 2 ATA and oxygen pressure will be 30 mmHg (2 ATA (1520 mmHg) x 2% = 30 mmHg). Thus, a BH diver is most likely to loss consciousness near the surface during the ascent.

BH divers can lose consciousness during other phases of the BH dive because the diver could have dived so deep or so long that the oxygen isn't enough for him to make it back to the surface. Physiology and physics can trick the BH diver's ability to estimate their endurance and they may not start ascent in a timely fashion.

Apnea during light exercise 50W



Typical recording of arterial oxygen saturations in a subject who made maximal voluntary breath holds under two different conditions: (a) preceded by rest (Control) and (b) preceded by 18 hours of carbohydrate free diet followed by 2 hours of moderate exercise (decreased carbohydrate and increased fat metabolism). This figure illustrates that oxygen was depleted more rapidly and to a greater extent (56% vs. 67% SaO₂) during apnea following prolonged exercise.

COMPETITIVE BH DIVING

Rapidly gaining popularity is the competitive sport called "Apnea" (no breathing) in which divers attempt to reach maximal duration, depth, or distance swimming during breath-hold. The current world record in swimming (without fins) in a standard swimming pool is 175 m on one breath! For duration the best performance is 8.58 minutes during resting breath-hold floating motionless in a pool. There are athletes that can swim to more than 100 m deep and return to the surface using only a wetsuit, facemask, and fins. 586, 1961.

2. Lanphier E.H. and Rahn H. Alveolar gas exchange in breath-hold diving. *J Appl Physiol* 18: 471-477, 1963.

3. Lindholm P. and Gennser M. Aggravated hypoxia during breath-holds after prolonged exercise. *Eur J Appl Physiol* 93: 701-707, 2005.

Peter Lindholm, MD, PhD is from Sweden where he served in the military as a mine clearance diver. He is currently in the U.S. on a fellowship from the Office of Naval Research, performing research in diving physiology at the Centre for Research and Education in Special Environments, Buffalo, NY.

SHALLOW WATER BLACKOUT

The term "shallow water blackout", originally coined for CO_2 intoxication in diving with closed-circuit breathing gear, is sometimes inappropriately used to describe hypoxia of ascent. As described in this article, loss of consciousness during breath-hold diving is due to hypoxia of the brain caused by prior hyperventilation, a shift to fat metabolism, hypoxia of ascent, or a combination of these three factors.

CONCLUSION

The purpose of this article is to inform breath-hold divers of the potential

> increase in the risk of losing consciousness if breath-hold diving is performed after a prolonged period of exercise or fasting. For swimmers it seems advisable to perform breath-hold underwater swimming before other demanding physical exercise. Divers involved in underwater sports should take care to replenish their carbohydrate stores, for instance, during long competitions or a day of recreational spearfishing, both to increase performance and to reduce the above mentioned risk.

REFERENCES

1. Craig A.B., Jr. Causes of loss of consciousness during underwater swimming. *JAppl Physiol* 16: 583-



tiger team of Seabee divers from Underwater Construction Teams (UCT) 1 and 2 recently joined efforts and deployed to Key Largo, Florida, to assist the National Oceanic Atmospheric Administration (NOAA) to restore and stabilize Aquarius, the world's only undersea laboratory. The undersea habitat, often referred to as America's "inner" space station, sits at a depth of approximately 60 feet. Owned by NOAA and operated by the University of North Carolina at Wilmington (UNCW), Aquarius is a national asset that supports scientists, researchers, and even astronauts in their efforts to better understand the oceans, coastal resources, and the ability to conduct work operations in an austere and remote environment.



Bow stud link chain rigging.

According to Craig Cooper, Operations Director for Aquarius, "as Hurricane Rita passed south of the Keys as a Category I Storm before roaring into the Gulf of Mexico, its wave heights reached nearly 30 feet off Key Largo. Since Aquarius is sitting in 60 feet of water, a thirty-foot wave overhead created significant bottom surge; the type of surge that has been known to tear shipwrecks in two and scatter them hundreds of feet across the bottom of the ocean." The surge and constant wind-driven currents from the east-southeast shifted Aquarius approximately ten feet, broke a pin to one of legs, and threatened to tip the habitat over. Additionally, the hold-down anchors were pried from the seafloor, and exterior deck frames, battery pods, and other structures were damaged or torn loose.

According to LCDR Tim Liberatore, UCT 2 commanding officer, "the UCTs are perfectly suited for this type of work. Stabilizing the Aquarius habitat was a great opportunity to do real-world seafloor engineering on an underwater structure while helping out an agency that was affected by Hurricane Diver inspecting the habitat.

Rita. The UCTs have not been involved with this type of work since the 1960s and

1970s when they were first called upon to help establish the Navy's Man-in-the-Sea and Sealab saturation diving programs."

With the entire habitat bow down at fifteen degrees and severely twisted, NOAA was forced to cancel a planned October National Aeronautics and Space Administration (NASA) Extreme

Environment **Mission Operations** (NEEMO) project and request assistance from the U.S. Navy diving community in the hopes of stabilizing the lab in time for a follow-on mission. During the NEEMO mission, NASA "aquanauts" and scientists had planned to evaluate new medical diagnostic and remote telemetry technologies to enhance the delivery of



NASA will drive the ROVs from inside Aquarius and from the Exploration Operations Center at the Mission Control Center (MCC) located at NASA's Johnson Space Center, in Houston, Texas. The aquanauts will also participate in a number of SCUBA and hard hat diving exercises and tasks to evaluate operations concepts for lunar exploration including building underwater structures, working with MCC hindered by communication



The Aquarius habitat.

medical care in remote and harsh environments, as well as develop procedures and techniques for lunar exploration using remotely operated vehicles (ROVs), tracking systems and navigation devices.

delay scenarios, and demonstrating concepts for man-machine interaction with the use of robotic devices.

Chief Builder (SCW/DV) Mike Johnson, UCT 1 detachment Officer in

("Aquarius" continued on p. 20)



DonJon was one of the first marine salvage companies called to respond to the damage from Hurricane Katrina, and later, Rita, early Saturday morning, September 3, by Captain Jim Wilkins (SUPSALV), and asked to travel to Alexandria, Louisiana, where the Katrina **Emergency Response Command Post was** being based. The purpose was initially to provide technical support as it related to possible salvage issues that were impacting the opening of commercial marine traffic in the affected areas.

The early response effort was focused on rescuing people still remaining in the city and around the Gulf region, repairing the damaged levees, pumping water out, and performing hydrographic surveys of the Mississippi River and other primary channels in an effort to reopen those waterways. Upon arrival on-site, we found representatives from a number of ASA salvors, most notably T&T Marine, Bisso Marine, and Titan Maritime in the Alexandria Command Post, and Resolve Marine in the Mobile, Alabama region. The ASA was poised to respond.

Over the first few days, there was a fair amount of time spent waiting for conditions to allow for the commencement of recovery operations, attending meetings, and trying to support the response efforts

of the United States Coast Guard, United States Army Corps of Engineers, FEMA, and SUPSALV in whatever way possible.

The Coast Guard folks who were running the early response were the same ones whose families were displaced by the evacuation, and in to survey barges that were restricting the opening of the Industrial Canal. It was essential that this waterway be cleared so that repair materials such as stone and ce-

ment could be brought to Lake Pontchartrain, whose waters were spilling into the city.

A survey team was brought to the site by an armored USCG helicopter with a four-man secu-

rity team. During the survey, an eightperson, gun-toting group of local vagrants approached the bridge from a distance. The survey team was quickly placed in a protected position while the security forced the vagrants to leave.

Once the initial salvage survey to remove the stranded barges was completed in New Orleans, the helicopter ride back to Alexandria was quiet. Seeing the vast range of destruction was sobering. It gives one a better feeling for what a war zone looks like.

During subsequent flyovers of the Mississippi River, the destruction

Aerial view of Venice.

many instances, they were not even sure where their families were. Most, if not all, lost their homes, possessions, and much of their life as they knew it.

Early on in the response effort, we moved from Alexandria to New Orleans



sippi and Alabama, the homes and buildings were obliterated, blown right off their foundations. In some spots, it was like nothing ever existed there.

The local casinos and casino barges in the area were crumbled. Pleasure boats



Hurricane damage in the town of Empire.

In short, the Gulf Coast has suffered immense damage, but hope remained.

Just as the Katrina response was moving into high gear, Hurricane Rita swept into the Gulf Region. While Rita was not as strong as Katrina and luckily not a direct hit on New Orleans, the weakened infrastructure of the area sustained additional damage. Levees were again breached and areas of New Orleans which were pumped dry were reflooded. Salvage efforts were curtailed and all marine equipment headed north for protection. Sections of western Louisiana, which were not severely impacted by Katrina, sustained marine and non-marine damage. Power was knocked out throughout the region. Water, gasoline, and in some instances food were not readily available for days. As a result of the response teams already in place, recovery was quick, but the scope of the response was now larger.

Working together with the various ASA members and a few potential members has been a great experience. Together, we have seen things we didn't expect to see in our lifetime, and we have used our collective experience to get this enormous recovery effort underway. Our best wishes go out to the Gulf Coast region and those who have lost so much.

John Witte, Jr. is the Executive Vice President of DonJon Marine Co., Inc.

was not quite as wide-spread but certainly evident. Our first flight to Gulfport and Biloxi, Mississippi, was an eye opener. In New Orleans, buildings were generally intact and flooding caused most of the damage. In Missiswere in piles. The rebuilding of the region would have to start from scratch.

Back in Louisiana, fishing towns like Empire, (mile Marker 19 on the Missis-

> sippi) and Venice (at the mouth of the Mississippi) looked like a flooded toy box complete with oil and debris. In Empire, two 170-foot-long fishing trawlers of approximately 450 tons each were picked up and moved over 1,000 feet and placed squarely onto the main highway.

Hurricane Clean-Up





Barge EMC 423 Explosion and Salvage Case Study

ate in the afternoon on 19 January 2005, a tank barge designated EMC 423 carrying a cargo of approximately 400,000 gallons of clarified slurry oil exploded and caught fire in the Chicago Sanitary and Ship Canal just east of the Cicero Avenue Bridge. The towboat pushing the barge at the time of the explosion broke away from the barge and commenced an effort to push the burning barge to the northern bank of the canal. The explosion ripped the deck off the tank barge in the way of Cargo Tank #2, Cargo Tank #3, and Cargo Tank #4, however the barge remained afloat. Subsequent firefighting efforts introduced enough water through the open cargo tank tops that the barge sank adjacent to the north bank of the canal. After sinking, the bow of the barge remained above water and the wreck took on a starboard list of approximately 2.5 degrees.

The United States Coast Guard Marine Safety Office (USCG MSO) Chicago organized a unified command center and began the process of managing the efforts to contain and prevent pollution from the oil remaining in the barge's cargo tanks. The pour point of the clarified slurry oil was approximately 180 degrees Fahrenheit with a density greater than water. The oil quickly solidified and was

by the solidification of the oil cargo in the tanks, the wreck became an immediate hazard to navigation and ongoing pollution threat. The decision was

made to remove the wreckage of the barge as expeditiously as possible.

The barge owner, as the responsible party, designated himself as the salvage contractor, and diving surveys commenced. The dive surveys revealed that the deck structure of the barge was completely compromised from the forward end of Cargo Tank #2 to the aft end of Cargo Tank #4 and the side shell of the barge had Firefighting efforts. buckled slightly at the

transverse bulkhead between Cargo Tank #3 and Cargo Tank #4. Diving surveys also revealed that almost all of the cargo oil (in a solid form similar to asphalt) was still contained within the hull structure of the barge and that flooding had occurred in the port and starboard wing tanks as well as the aft void.

Based on construction plans obtained from the barge owner, salvage engineers

> from the USCG Marine Safety Center Salvage Engineering Response Team (SERT) and the USN Supervisor of Salvage and Diving (SUPSALV) developed a HECSALV (POSSE) model of the barge. The load case for use in HECSALV was developed using the ullage readings taken during the on-load of the cargo, and the damaged condition of the barge was developed using the model, load

case, and diving surveys.

USCG SERT and SUPSALV Salvage Engineers were asked by MSO Chicago

to use the HECSALV/POSSE model to evaluate the salvage plans that were presented by the salvage contractor. The salvage contractor initially intended to re-

By: LCDR Josh Price



move the water that had slowly leaked into Cargo Tank #1 subsequent to the barge sinking. He believed that this would raise the forward end of the barge enough to be able to install a sand bag cofferdam around the perimeter of the open deck on top of Cargo Tank #2. After installing the cofferdam, the salvor intended to remove the water from Cargo Tank #2. He would then repeat the process of installing a cofferdam and pumping the water from Cargo Tank #3 and Cargo Tank #4 as buoyancy was regained from the forward end of the barge to the aft end of the barge. After removing the water from the cargo tanks, the oil would be removed from Cargo Tank #1 and the water would be removed from the aft void.

An analysis of this plan was conducted by SERT and SUPSALV engineers, and the analysis confirmed that this approach would remove enough weight from the barge to refloat the vessel. Additional analysis revealed that this approach would greatly increase the deck tension in the area between Cargo Tank #3 and Cargo Tank #4. Because the deck had been stripped away during the initial explosion, and buckling had already occurred in the area of highest predicted deck tension, the



Barge Explosion and Fire.

mostly contained within the remaining structure of the cargo oil tanks. While the immediate risk of pollution was limited

salvage engineers concluded that the catastrophic failure of the barge side shell was possible in executing this salvage approach. USCG MSO Chicago rejected the salvage plan, due to the risk of releasing

the trapped cargo oil into the canal if the barge collapsed.

The secondary salvage approach proposed by the salvage contractor called for removing 75% of the solidified cargo oil from Cargo Tank #3, Cargo Tank #4, Cargo Tank #2, and Cargo Tank #1. Water would be allowed to backfill the barge during the cargo re-



Sunken Barge on the north bank of the Chicago Sanitary and Ship Canal.

moval process. After the removal of the cargo oil, the water would be removed using cofferdams and pumps as proposed in the initial salvage plan. A HECSALV/POSSE analysis of this plan revealed that the sequence of cargo oil and water removal would reduce the deck stress induced on the barge during the lightering sequence, and the removal of 75% of the cargo oil would mitigate pollution in the event that the barge structure did catastrophically fail.

The salvage of EMC 423 was successfully executed by placing .25 inch steel plate vertically around the perimeter of the barge and pulling the steel plate into contact with the side shell of the barge using wire rope hogging straps. Divers used soft patches, wedges, and plugs to make this "whole barge" cofferdam as water-tight as possible, and adequate pumping capacity on all four cargo oil tanks was applied simultaneously to overcome leakage. The water was removed from the cargo oil

changer lowered from the surface and

pump the cargo oil with an asphalt pump.

Because the water temperature was 50 de-

grees Fahrenheit, efforts to locally heat

cargo oil were unsuccessful.



HECSALV/POSSE representation of the damaged barge.

In order to remove the solidified cargo oil, the salvage contractor attempted to locally heat the cargo oil to the pour point of 180 degrees Fahrenheit with a heat extanks, and the barge was refloated and towed away for disposal.

USCG SERT and NAVSEA 00C salvage engineers provided technical analysis to support salvage plan review and decision making by USCG MSO Chicago. This analysis allowed USCG MSO Chicago to avoid approving a salvage plan that had the potential for creating further pollution if the barge had broken up and released the solidified cargo oil. All interested parties with access to POSSE are encouraged to download the barge model and initial salvage plan from <u>www.supsalv.org/00c2 posse.asp</u> and use these files to refresh their skills and re-familiarize themselves with the tools available to salvage engineers in evaluating various salvage plans and approaches.

LCDR Joshua Price is currently the Assistant for Salvage at NAVSEA 00C.

U.S. Navy Diving and the Historical Diving Society USA

The Historical Diving Society USA is a non-profit educational corporation formed in 1992. It has members in 37 countries and publishes the award-winning quarterly magazine HISTORICAL DIVERS, which covers many aspects of diving history, including the U.S. Navy.

Among Society Advisory Board members are distinguished Divers such as Dr. Christian Lambertsen, Bob Barth, Scott Carpenter, Surgeon Vice Admiral Sir John Rawlins, Bev Morgan, Phil Nuytten and Andreas Rechnitzer.

As a part of the HDS Educational Outreach Program, the Society is offering a complete set of back issues of HISTORICAL DIVER, along with a continuing subscription, free upon request to any U.S. Navy diving unit. For more information on this offer, please contact the Society at hds@hds.org.

The Pipe (Part 2) By: Bey Morgan

In our last issue, divers Ramsey Parks and Frank Donahue were completing a commercial pipe inspection. Halfway through the job, Frank became light as he drew down his air supply and decided to change to his emergency regulator. We now pick up where we left you skip-breathing in the July issue of Faceplate...

Ramsey dropped to the bottom of the pipe and felt for the emergency regulator. It was on the strap around his neck and handy for the switch-over. He was still breathing very hard from the swim and did not seem to be able to get enough air out of his doubles to satisfy the need. "Well," he thought, as he started to switch regulators, "I counted 10 more joints of pipe so we could not be any farther than a couple of hundred feet from the end of the pipe. I've got plenty of air left in my piggy-back bottle to make it out."

He made the switch-over and pushed the button on his emergency regulator to expel the water. When he let up on the purge button, the regulator stayed on steady-flow blasting large volumes of air out and around his head and escaping forever along the top of the pipe. Silent curses raged across his brain as he jerked the emergency regulator out of his mouth and banged it into his hand in an effort to stop the free-flow. He shoved the regulator back into his mouth and carefully ejected the water with the air he had left in his lungs. The next breath came easily and shut off properly at the end of the breath. The regulator was working correctly. This was a bad dive, he thought to himself, as he set out after Frank. "I don't know if I'll take another one of these pipeline jobs again. They are bad enough when everything goes right but this was ridiculous," he thought. Ramsey settled down for the short swim out of the pipe and started counting joints again.

Six joints, seven joints, eight joints, ten joints, that's 200 more feet and he would soon be out. He relaxed, settled down, and his breathing rate went down. This is more like it, he thought, relax. So I'm down to my emergency bottle, it's okay, just a few more feet and I should see the light at the end of the pipe. Sixteen



Frank Donahue and Ramsey Parks.

joints, seventeen joints, eighteen joints, where's the light? There should be only two more joints. Nineteen joints, twenty joints, twenty-one joints. Wait, something's not right here... the engineers told me this was a two thousand foot pipe and the pipe joints were twenty feet apart, and I took samples every five joints or one hundred feet. Twenty-two joints, twentyseven, thirty. Good God, this pipe is much longer than the engineers told me. What the hell! Thirty joints, thirty-five joints.

This is bad, Ramsey thought to himself. This is really bad. I have to save every ounce of air in my bottle, I've got to stretch it, I've got to make it last. Then he thought about Frank. Frank had far less air and the realization hit him. Somewhere, floating at the top of the pipe was Frank. He had probably already gone by him. He had to be out of air by now. What a tragedy, he thought. What a shame, all because some engineer gave me the wrong dope. On he went, on into the black. Even his light was growing noticeably dimmer. It would soon go out.

The absolute finality of this endless pipe descended upon him. That pipe had no beginning and it had no ending. That pipe was his forever. A strange relaxation melted through his body. His breathing became even slower and longer. The confu-

> sion in his mind stopped swirling and settled as the grains of sand fall into place on the ocean floor. I am a fool, he thought. Now I know what happened. When I switched to my emergency regulator, I got turned around and now I'm swimming back the wrong way in the pipeline. It's all very simple. I swam as far as I could on a set of doubles, then I switched to a single and swam back down the pipeline and there's no way on God's Earth I can cover the same distance on a single. I don't even have a gauge to tell me when the end is going to come.

> Ramsey Parks was probably never more relaxed than during this

moment of facing death. It was like falling from the tallest building except that he had a lot more time to think about it, and think he did. The first thing he thought about was Conrad Limbaugh who had faced exactly the same situation in a cave in France and had undoubtedly gone into the same trance-like tranquility during his last few minutes when he realized there was no way out. I should have learned from that, Ramsey thought, but no, I wanted the money. The money was good at the start but now he laughed to himself ... the money was nothing. And then he thought of his wife. He had only been married a week. My poor wife, he thought, I've made a widow out of her. She will never understand why this happened.

He had stopped counting pipe joints by now. There was no reason to. He must swim on down that endless pipe until ... and then he thought about how it would be when it came. The regulator would start to breathe hard. He would start drawing on it, and drawing on it, and soon there would be nothing to draw on. And he would relax and die. It's taking so long, he thought, I'm so relaxed, swimming is so smooth and easy.

And then it came. He first noticed an almost imperceptible change in his regu-

lator. A very, very slight increase in breathing resistance as he slowly drew the air out of the tank, through the hose, and into his mouth. He had taken the regulators apart many times and he could follow the air as it came up from the tank and through the first stage regulator, lifting the seat and into the hose, and into the second stage regulator, and as he drew in on the diaphragm it tripped the lever that allowed the precious air to flow into his mouth. This was the start of there not being enough air to open those little valves, not being enough air to supply his lungs. But he was relaxed and it was easy and it was going to happen very

smoothly. After several increasingly more difficult breaths he was even deeper into his trance. He was as completely relaxed as a human can become. His light was nearly out, just showing a feeble glow in the darkness, barely reflecting on the sand.

And then he saw something. Something faint and small a long way off. Was it possible? He eased out his tranquility slightly. He squinted his eyes within his mask and strained to look, and the beat of his legs kicking his fins picked up slightly.

And then the tranquility was completely broken. His eyes opened wide. His heart accelerated. Adrenalin coursed through his body. Light! There's a light, right there, right there is the end of the pipe. I can make it! The regulator drew hard. He strained to draw the life-giving air from the regulator. This was no time to relax and stretch his air. This was it. This was everything. He had to make it out of the end of the pipe. He had to get out of the tower. He thrust his legs as never before. He pulled with his arms. He strained with everything available, rounded the end of the pipe and entered the tower.

God, look at it ... the open ocean ... it's right up there. He dropped one of his weight belts as he came up the tower. The extra buoyancy made him accelerate toward the roof of the tower. He reached out his arms and trimmed his body. He hit the opening on an angle and deflected through the opening on an angle with his hands pushing hard on the roof of the tower.



Ramsey Parks.

There was no air left now but he left the regulator in his mouth hoping to get perhaps a slight breath from the gain in pressure differential as he raced towards the surface. He jettisoned his other weight belt and his speed toward the surface increased. Blow out, he thought, blow out, don't embolize, don't make it all this way only to embolize. He managed to get a little air going out of his lungs. The light became stronger and stronger until it blinded him, or maybe it was the lack of oxygen that caused his already tunnel vision to close in and collapse. And suddenly, there was no water on his face, he opened his mouth, and the regulator dropped from it. Air rushed in and down to his lungs. He squinted his eyes and laid back on the buoyancy of his doubles and the piggyback. His vision returned. That first breath he needed to give him life, but this breath, the second breath, he savored. He tasted it, he enjoyed it. It was as if he were filling his lung sacks one at a time. There's so much of it up here. There's so much of this good stuff up here. He drank in the blue sky and let the sun wash across his face. With the next breath he noticed he was trembling and he made an effort to relax.

He looked about him on the water and nearby his boat was approaching rapidly.

On the boat, we had given up hope, of course. We held off for several minutes after we had calculated he couldn't possible have any air left. Frank Donahue had come up on the inshore end and we had all

> assumed that Ramsey would be close behind. After quite some time lapse, we assumed that something had gone wrong and waited until we knew his air supply would be exhausted. We started to prepare a recovery team to get his body. While we were making preparations, the boat operator kept near to the end of the pipe and then, long after giving up all hope, he appeared.

> Although there was a noticeable loss of color from his face, Ramsey kept a calm exterior as he climbed aboard, sat down, and had a smoke. We radioed the beach that the other diver was aboard and that the job was secured. As we headed into port,

Ramsey explained what had happened.

Although he had no comments to indicate how he felt about swimming pipelines, that was the last pipeline that I can remember him entering. Occasionally after an evening of good food and drink, the conversation slows and he confides in me that he still awakes in the middle of the night to find that he has been swimming that same pipeline.

The years will wear on with you and me, we will have good days and bad days. But somewhere late at night when the city is asleep, and the only sound is the murmur of the ocean against the beach, Ramsey will be once again swimming down that endless, dark pipeline.

Bev Morgan worked as a commercial diver for many years. Shortly after becoming a diver, he started designing and making



equipment and formed Kirby Morgan in the early 1960's. Through continued research and innovation, KMDSI has developed the world's leading line of diving helmets and full face masks.

Patent Foramen Ovale (PFO) and the Diver

Over the past three years, I have conducted diving medical research for the U.S. Navy addressing the question of any possible increased risk to Navy Divers that may arise from a common heart anatomical variation known as patent foramen ovale or PFO. In light of recent changes to the Manual of the Medical Department (Change 126 Manual of the Medical Department, U.S. Navy, NAVMED-117; 12 Aug 2005; MANMED), I felt that an article in FACEPLATE addressing concerns of the Navy and how those concerns may affect the working diver was warranted.

Recent Additions to MANMED

Article 15-102 section 7 subsection m paragraph 2 of Change 126 of the MANMED states: "Designated divers diagnosed with any decompression sickness (including symptoms of joint pain or skin changes) shall: ...

(b) Be evaluated by a cardiologist for the presence of a patent foramen ovale (PFO) with the results documented in the medical record."

Prior to the recently approved Change 126 to the MANMED, testing for PFO was not required by the military for any reason. The addition of this requirement is a significant change in official policy regarding a diver's health and deserves a thorough understanding by every diver. To get a good grasp of the topic, one must first understand how the heart functions during diving.

The Heart and Diving

The heart is essentially a dual pump system designed to keep two fluids, oxygenated blood and deoxygenated blood, flowing in their separate circulation loops. Freshly oxygenated blood flows from the lungs to the left side of the heart (#4 in Figure 1) and is then pumped through the systemic circulation to the muscles, organs, and brain (#6). Oxygen-poor, or deoxygenated, blood from the muscles, organs, and brain flows through the lowpressure piping system, the veins, to the right side of the heart (#1) and is then pumped to the lungs (#3) where oxygen is returned to the blood and carbon dioxide is released.

Occasionally, when a diver surfaces from either a no decompression or a decompression dive, small bubbles appear in the blood due to nitrogen gas diffusing out of body tissues and into the blood. These bubbles are typically found in the low pressure or venous side of the circulation and are returned to the right side of the heart (#1 in Figure 1) where they are pumped from the right ventricle (#2) through the pulmonary artery (#3) to the lungs. The lungs are composed of tiny air sacs and small capillary blood vessels where gases are exchanged and bubbles are removed from the circulating blood. Oxygenated and bubble-free blood is returned to the left side of the heart through the pulmonary veins (#4) and pumped by the left ventricle (#5) to the muscles, organs, and head through the aorta (#6). Usually the bubbles produced by decompression do not cause a problem, thanks largely to the filtering capacity of the lungs.

When a very large quantity of bubbles are generated over a relatively short period of time, as may occur with



Figure 1. The heart after completing a dive during which bubbles are generated in the blood and enter the low-pressure circulation.

certain high-risk dive profiles or with omitted decompression, the filtering capacity of the lungs is overwhelmed and the diver may exhibit the pulmonary symptoms usually associated with pulmonary decompression sickness (DCS). Pulmonary DCS, descriptively known as "the chokes", occurs when a large intravascular bubbleload causes congestion of the pulmonary capillary bed, the release of inflammatory factors, an increase in the pulmonary arterial pressure, the collection of fluid in the lungs, and subsequent death. The direct injection of air bubbles into the arterial system, an arterial gas embolism (AGE) generally occurs due to barotrauma and is not part of the subject of this article.

Patent Foramen Ovale: The Heart of the Matter

A PFO is a hole (or potential hole) in your heart's dividing wall that allows direct connections between the left side and right side pumps. Everybody has this hole prior to being born and about one in four Americans will continue to have a PFO into adulthood. In most of these individuals, there is a small flap of tissue that covers the PFO from the left side pump (the higher pressure pump) and acts as a oneway flapper valve. Since the pressure in the left side circuit is almost always higher than that on the right side, the PFO flapper valve is usually closed and the two plumbing circuits remain separate. The PFO flapper valve may be temporarily opened by maneuvers that increase right side pressure in relation to left side pressure. These maneuvers include lifting, straining, or coughing.

A strong abdominal Valsalva maneuver, similar to the strain that one produces when attempting to have a bowel movement while being constipated, temporarily increases the pressure in the chest cavity surrounding your heart. The Valsalva maneuver required during screening tests for the presence of a PFO uses a much more forceful procedure than the one divers commonly use to clear their ears while descending in the water column. When the forceful Valsalva is relaxed there a precipitous drop in the chest cavity pressure which permits a sudden and large increase in the amount of blood flowing into the right heart and lungs and a relative decrease in the amount of blood returning to the left side of the heart. This momentary shift in blood volume causes a right side heart pressure that is greater than the left side heart pressure for a few heart beats and allows for the PFO flapper valve to open and the movement, or "shunting", of blood directly between the right side and left side heart.

The concern regarding diving with a PFO is that bubbles that are normally filtered from the blood going to the brain can bypass the filter bed of the lungs by directly entering the left atrium from the right atrium through the opening of the PFO (# 1 & #4 in Figure 2). The bubbles would then be pumped directly into the systemic circulation (#6) and theoretically could create symptoms of neurologic or spinal DCS (DCS II). There have been more than ten studies in which divers with a history of DCS II injury were examined for the presence of a PFO. Divers with a history of serious DCS II were found to have twice the expected number of PFO's. While being the improper study design to determine actual risk of developing DCS II, these various retrospective studies indicate a potential 2 to 5-fold increased risk of having a DCS II symptom if the diver has a PFO. The study conducted at Navy Experimental Diving Unit (NEDU), although also not conclusive, agrees with a doubled relative risk. Most people who get unnerved by this apparent increased risk of diving with a PFO forget two things: (1) the U.S. Navy bends fewer than twenty individuals per year while conducting more than 50,000 working dives, and (2) a majority of the bends cases occur during experimental dives in which immediate diagnosis and treatment (i.e., recompression) is available. The Navy's total DCS rate is less than 0.04%, and the rate for serious DCS II injuries is much lower. Those individuals who do get bent and receive prompt treatment are unlikely to experience long-term residual symptoms.



Figure 2. A heart with a PFO and post-dive bubbles. The direct connection between right and left side circulations creates the potential for bubbles from the right side to avoid filtration by the lungs and to pass directly into the system circulation.

Screening Tests for PFO

There are several different ways of determining whether a PFO exists in a diver's (or anyone else's) heart. This is causing some problems, as we will discuss later in the paragraph.

The "gold-standard" for PFO detection, and the method utilized by most cardiologists, is transesophageal echocardiography (TEE) with bubble contrast. In brief, an ultrasound image of the heart is obtained by placing the ultrasound probe adjacent to the heart by means of the esophagus (i.e., the patient swallows the "big, black snake") and injecting a small amount of bubble containing solution (the bubble contrast) into a vein in the patient's arm. This procedure is invasive, meaning that it requires the test subject to have the ultrasound probe, typically a hose about one-half inch in diameter, introduced into their esophagus through their mouth. Most people have a strong gag reflex and therefore require sedation before this procedure can be tolerated. The use of sedative makes the conduct of a strong Valsalva procedure unlikely and therefore causes many small PFO's to not be reported during the TEE procedure. The complication rate associated with TEE is very small but occurs more often than DCS injury in the U.S. Navy.

NEDU chose to use two other, noninvasive methodologies for detecting PFO during the conduct of their study. During transthoracic echocardiography (TTE) with bubble contrast, the ultrasound probe is pressed against the test-subject's abdomen just below the rib cage and the heart is observed through the chest-wall while bubble contrast is introduced into the arm vein. The TTE procedure only detects 65% of the PFO's that may be detected by TEE, but does not require the use of a sedative and therefore permits the conduct of a forceful Valsava procedure. The sensitivity of NEDU's procedure to detecting small PFO's and significant right-to-left shunts that are not in the heart is increased by the inclusion of a third detection method, the transcranial Doppler (TCD). TCD is performed at the same time as the TTE and is also noninvasive. A Doppler ultrasound probe is attached to either side of the test-subject's head and directly counts small bubbles in the bubble contrast solution that are transported by the systemic circulation to the head if a PFO or significant Right-to-Left Shunt (RLS) is present. A RLS is the direct movement of right side blood into the left side circulation and may occur either through a PFO or a right-left vascular connection that occurs outside of the heart, e.g., inside of the lungs. The combination of TTE and TCD with bubble contrast injection has proven to be a sensitive, rapid, and patient acceptable means of detecting PFO and RLS at NEDU. The typical exam (Figure 3) requires about twenty minutes and is well tolerated by the diver. No complications from testing have occurred.

However, the current MANMED does not provide guidance as to what procedure is to be used by the consulting cardiologist for the assessment for the presence of a PFO in those divers who do have a DCS injury. Three out of four divers identified as having either a PFO or a RLS during testing at NEDU were reported by the consulting cardiologist as not having a PFO. (*"PFO" continued on p. 20*)

("PFO" continued from p. 19)

Why Is the Navy Doing This?

There is sufficient data to support the continued acquisition of PFO status of Navy divers as a scientific curiosity. Current Navy diving practices are extremely safe as indicated by the observed bends rate of less than 0.04%. Most Navy dive tables have a calculated probability of DCS outcome of 2% to 6%, a theoretical bends rate that is 100-fold more than the actual experienced rate. However, plans are in place that will significantly change the way that the U.S. Navy dives. Future dive tables that extend the no-decompression limits and topside decompression computers that calculate decompression profiles based upon real-time data of actual dive profiles rather than the current "square" dive profiles may lead to significantly increased actual DCS rates while decreasing theoretical bends rates. As decompression profiles are designed to more accurately reflect the dive profile, and consequently, as the potential for producing post-dive venous bubbles increases, the linkage of a PFO to DCS II may strengthen. It also may not. We really will not know the answer until the appropriate data is acquired and analyzed.



Figure 3. HM2 Kenneth Hopper conducts a PFO screening examination at NEDU. The experimental diver is lying on his back with HM2 Hopper conducting the TTE. The bubble contrast solution has been injected into an intravenous line in the subject's left arm after proper TCD probe placement on the subject's head has been achieved.

Summary

The current MANMED requires cardiology consultation for individuals who have a history of DCS; this requirement is prospective and only involves new cases of DCS. CAPT Wilkins, Supervisor of Salvage (NAVSEA 00C), has determined that any Navy Diver who desires to know whether or not he or she has a PFO may request a cardiology consult from their command Diving Medical Officer.

It remains to be seen how new PFO information will be used in the future, but it remains imperative to the continued safety of Navy diving that all post-dive symptoms that may be diagnosed as DCS shall be reported by the diver to either the Dive Supervisor, Diving Medical Officer, or Master Diver. Further study of the potential linkage between the presence of a significant RLS or PFO and decompression injury will continue at NEDU and results of this study, as they become available, will be reported to working divers in future articles such as this one.

LCDR Patrick Hennessy is currently serving as Diving Medical Officer, researcher, and diver at the Navy Experimental Diving Unit in Panama City, Florida.

As of press time, BUMED M34 has decided to no longer require PFO testing after DCS occurrence because standard testing for PFO is not generally available. A change to MANMED will be forthcoming. -*Ed*.

("Aquarius" continued from p. 10)

Charge, stated that "It was great to work jointly with UCT 1 and UCT 2 to assist NOAA with this important project. The project also gave us an opportunity to train together and dive with NITROX, an enhanced oxygen-to-nitrogen gas mixture, which allows the divers to stay longer on the bottom doing work."

According to Construction Electrician 1st Class (SCW/DSW) Alex Semmler, UCT 2 Aquarius project leader, "the good news is that after two weeks *Diver making repairs after Aquarius sustained hurricane damage.* of working alongside

NOAA and UNCW divers, the team was able to successfully stabilize and anchor



about Aquarius, please visit the official the habitat sufficiently to allow NOAA to

and proceed with other missions planned for Aquarius this winter, including a U.S. Navy sponsored saturation diving mission that will further prepare the Navy for a fly-away sat dive capability that comes online this fiscal year.

Additionally, Chief Warrant Officer Edward Bichard, UCT 2 operations officer, said "this project has helped establish a great partnership between NOAA and the UCTs that will hopefully continue into the future with NOAA making plans for a permanent anchoring project and a replacement offshore life-support structure".

For additional information

website at www.uncw.edu/aquarius.

commence with its November mission"

Hard Hat History

444... Blackie Keane...444

B lackie Keane, a retired U.S. Navy Chief Boatswain's Mate who died in November 2004 at age 79, was given a "full-body" burial at sea by the crew of the USS GRAPPLE. The combat rescue, salvage and recovery ship was the same type on which Mr. Keane worked over 40 years ago as a Master Diver and as one of the pioneering corps of Navy Divers.



PO2 James Kerbedett of he USS GRAPPLE stands guard over the casket of Chief Master Diver Donald "Blackie" Keane.

"We feel as if we are taking care of one of our own," said Master Chief Gary Furr, 48, a fellow Master Diver and Command Master Chief of the GRAPPLE. "When you spend the better part of your life serving your country as a diver, the sea becomes a part of you. We feel like we're taking him home."

Originally printed in "The Disposaleer" in August of 2005. Written by Sean Smith.

Managing Editor's Note: Blackie and I were friends and diving partners for years. Blackie, you beat me to the bottom again.

29 Years Ago in Faceplate The Working Diver

The seventh bi-annual 2-day "Working Diver" symposium will be held on March 7 and 8, 1978 at Batelle Memorial Institute, Columbus, Ohio. More than 600 divers, salvors, scientists, and engineers from the United States and abroad are expected to attend. The symposium is being sponsored by the U.S. Navy Supervisor of Diving and Office of Naval

Research, the Salvage and Diving Committee of the Marine Technology Society (MTS), the Ocean Technology Division of the American Society of Mechanical Engineers (ASME), and Battelle-Columbus.

Specialists from Canada, England, France, Japan, and the United States will present 21 papers discussing topics of current interest to working divers and salvors. Subjects include ship husbandry, thermal problems in diving, large-object salvage systems, underwater television, and arctic diving operations. The speakers represent the U.S. Navy, U.S. Coast Guard, U.S. Department of Commerce, Canadian government, diving equipment manufacturers, diving contractors, salvage



companies, research organizations, and universities.

Mr. W. W. "Woody" Hayes, head football coach at The Ohio State University, will be banquet speaker on March 7. RADM G.C. Heffner, SC, USN (Ret.), assistant to the president of Battelle Memorial Institute for Community Affairs, will be banquet toastmaster.

Chairing the sympo-

sium will be CAPT Robert B. Moss, USN, Director of Ocean Engineering and Supervisor of Salvage. Members of the program committee are CDR F. Duane Duff, USN Supervisor of Diving, Mr. Walter R. Bergman, Assistant to the Supervisor of Diving; CAPT William F. Searle, Jr., USN (Ret.), Chairman of the Committee on Salvage and Diving, MTS; Dr. Jack R. Malson, Chairman of the Ocean Technology Division, ASME; Ms. Betty Alkire, senior administrative assistant; and Mr. Peter S. Riegel, research engineer, Equipment Development Section, Battelle Columbus.

Originally printed in the Winter 1977 issue of Faceplate.

From the Managing Editor Jim Bladh

My close association with the Office of the Supervisor of Salvage began with Captain Bill Searle, who sponsored me to be the first Exchange Officer with the British Navy. After over 30 years associated with the office I have noted that the Supervisors of Salvage has been involved in many operations that have made the headlines. Namely:

- **Bill Searle** Palomares Nuclear weapons recovery,
- Eugene Mitchell Oriental Warrior, Sydney Smith, Regulus,

- Huntley Boyd Suez Canal Clearance,
 - Colin Jones Air Florida,
- Chuck Maclin USCG Blackthorn, Korean Airlines 007,
- Chuck Bartholomew Space Shuttle Challenger, Exxon Valdez,
- Dick Fiske Desert Shield/ Desert Storm,
- Chip McCord TWA Flight 800,
- Bert Marsh Ehime Maru,
- Jim Wilkins Gulf Coast hurricane clearance.

It appears that Jim Wilkins drew the big one. Of course, there were many more operations dating back to Commander Sullivan in 1942. Ref:: (Mud Muscle & Miracles). John Witte's article (see p. 11) gives a brief overview of what is involved on the Gulf Coast.

Captain Mark Helmkamp has published a list of participants in his Topside Red Diver section (see p. 29) that have made contributions to our proposed "JAKE" Divers memorial in hopes that it will encourage additional support.



It's day 6, 1200 AM, we are already a day and a half behind schedule as the dive team heads down the pier towards your now, biggest pain on the waterfront. The crane team has just started leveling

38 and have another one made. "Topside, we just broke the new tool you sent us." What the !@#\$? Are you sure you have cleared all the stake marks? "Yes, topside, we have removed all eight stake marks."

What a re-

the "J-fixture" for reinstalling the propeller and all hell is breaking loose. The wind is increasing to 50 mph, lighting bolts are striking everywhere, and now the rain is coming down in sheets. It's



TRF Kings Bay Diver Locker.

just par for the course on this job. This scenario is replayed on a daily basis. If it's not the weather, it's dealing with some unforeseen material or procedural problem.

As anyone who has ever worked on the aging 688 Class submarines knows, nothing goes according to plan. When we were tasked with the "emergent" PAB replacement, we responded in the usual diver fashion, "can do." When the PMA asked for our proposed schedule stating that no overtime is authorized, we gave the usual padded "9 days sir."

Day one - the guys are fired up and ready to go, they hit the water running. "Topside, we are going to need a drill to get these fairwater screws out." And so the story goes. Ok, no problem, just a minor setback. After a full eight-hour shift, we now have removed the fairwater covers and rope guards. Not making much money yet, surely things will pick up. Second shift takes the side, ok guys, first shift ran into some problems but we should be able to make up the time. First thing we need to do is get this dunce cap off so we can remove the screw. "Topside, we just broke the cool guy tool for removing the lifting eye plugs." BM1, run over to plug out. The forward-lifting eye plug wins the battle and we go ahead and choke off the dunce cap with a Kevlar strap and one lifting eye. Victory at last, the dunce cap is on the surface. It ends up taking shop 38 several hours using opposing pneumatic hammers to remove the plug. Now let's get the dunce cap studs out so that first thing in the morning we can get this screw off. ting any love. After using a 4' pipe wrench, three divers and a small boy, we finally get the studs out. Despite our best efforts, not a good day's work, but spirits are still high.

All right, a new day with no rain or lightning, a good start, things are surely looking up. Let's get some cheater bars on that nut and see if we can break it loose. No such luck. Get the intensifier kit and let's press the screw up so we can get the nut off. "Topside, we got some leaks on the nut." Here we go again. After looking at the nut we find that during the last install the wrong plugs were used in the nut thus letting the fluid leak out and damaging all the internal seals. Ok, now let's do it the old school way (with NAVSEA approval of course). Let's wrap the nut with a strap and take it to power (although Petty Officer Bennett is the Sup, we do not have MDV Gaillard in the water). After applying many band-aids and with some much-needed luck, the nut cooperates and we get the screw moved down the taper. After the third press, the nut finally gives up and dies. Some joy, the nut is on the pier and off to 38 for a rebuild and the screw is ready for removal. Have we exorcised all our demons?

Hey, EDO, we just want to make sure the shaft is in the dry-dock position. Yes,



Divers preparing to enter the water.

"Topside, we need another stud extractor, we broke this one." What is going on? Just double nut them and let's get out of here. We tried that and we are not getDive Sup, it is. Ok, let's get this fixture on and make some money. "Topside, are you sure the riggers leveled the fixture right?" It looks a little off too starboard. EDO, are you sure your shaft is in the dry-dock position? Yes, Dive Sup, "I know my boat." Divers, use the outboard chain fall to adjust the fixture. Note to self, when something just doesn't look right, it usually isn't. Ok, topside, the fixture is on lets start walking this screw off.

You guessed it, the screw won't move. It's binding on the keyways. After some careful investigation inside the boat by the Master Diver (using that Master Diver

Domestic Terrorism.

General education

courses are required

in six categories

(a minimum of 30

quarter credits) and

include college math-

ematics, college En-

glish, biological sci-



brain) we find, and imagine this, the marks the boat uses to align the shaft in the drydock position are not correct. Way back in shaft alley under some obscure deck plate the MDV finds the actual stamped shaft marks. Low and behold, the shaft is off to starboard (see note above). After wasting a full shift, the fixture is removed and the shaft jacked to the newly discovered marks. Wow, what a difference that makes.

Despite the best efforts of Murphy, we managed to get the screw off, the ARC bearings replaced with staves, and the screw on with nothing more then the usual summer Georgia thunderstorms and the occasional tropical storm to slow us down, oh, and don't forget the flying teeth. It was only through complete dedication, "can do" attitude of the dive team, not to mention some very long nights (so much for the no overtime authorized), and the around the clock support of many shops, we delivered this boat a half day ahead of schedule. To bring us back full circle, remember the fairwater covers in the beginning, "Topside, we need some all-thread, a big hammer, and a cargo strap, we can't get this last fairwater cover on." Ok, who brought the bananas? Here we go again.

Editor's Note: The underlying issue in this story is Procedural Discipline and QA oversight. Procedures are written to provide the correct method for accomplishing a task - safely - and result in the component functioning as intended. Because our environment is dynamic, QA is there to identify any anomalies that do not meet specifications. When procedural discipline and QA both fail safety is compromised, equipment does not perform to specification, and scarce maintenance funds are expended to correct the deficiency. If the procedure is not working, seek guidance from competent authority, do not take shortcuts... you may be the diver who has to correct the problem and be placed in harms way. Dive safe and follow the procedures.

CWO2 Ray Schubert and BMCS(MDV) Sandy Bell, TRF Kings Bay.

Degree Opportunity for Navy

The training a Navy hard hat diver receives is intensive and thorough. Training provides basic instruction and experience in surface-supplied air and

their support systems, underwater repair, diving physics, underwater tools and work techniques, underwater cutting and welding procedures, and chamber operations. It is this intense and structured training that may open doors for Navy divers to receive aca- Master Diver Bob Cave at the College's demic credit towards an San Diego campus.

Associate of Science degree from National Polytechnic College of Engineering and Oceaneering.

Formerly the College of Oceaneering, National Polytechnic is pleased to announce the offering of a new online concentration for its Associate of Science degree in Marine Technology designed specifically for military and public safety hard hat divers. This four-course online specialty in Homeland Security Management is designed to support recipients of military hard hat training by offering college credit for military training and experience.

For example, a Second Class diver with two years Fleet experience, or someone who attended both first and second class dive school, could receive up to 36 quarter credits (a full academic year) of course work towards the Associate of Science degree. By completing the Homeland Security Management specialty, 30 quarter units of general education, and some welding experience (which may also be waived if the diver is a hull technician, builder, or other rating including welding), the diver can earn his or her Associate of Science degree in Marine Technology.

The Associate of Science degree in Marine Technology with a concentration in Homeland Security Management is comprised of 36 quarter credits in the fundamentals of hard hat diving, two credits in topside welding experience, 24 quarter credits in homeland security management,

and 30 credits in general education. The homeland security management courses consist of Crime Scene Investigation, Seaport Security, Principles of Investigation, and International and



ences, social sciences, and humanities. General courses may be taken online through National Polytechnic or transferred from another accredited institution.

National Polytechnic is a non-profit college accredited by the Accrediting Commission for Community and Junior Colleges of the Western Association of Schools and Colleges. It is also approved by the Department of Education for financial aid, Veterans Affairs, and is a SOCNAV member. National Polytechnic accepts transfer credit for Defense Activities for Non-Traditional Education Support (DANTES), College Level Examination Program (CLEP), and other credits as recommended by the American Council on Education (ACE). The College also provides a 20% discount on its online courses to active duty military personnel.

Master Diver Bob Cave, U.S. Navy (Ret.), is a member of the National Polytechnic College of Engineering and Oceaneering faculty and teaches at the San Diego campus. For more information on the profession or to enroll with the College, please call (800) 432-3483, (619) 563-7430, or visit us at <u>www.natpoly.edu</u>.

National Polytechnic College is a non-profit corporation, an equal opportunity educator, and an affiliate of the National University System.

Submitted by Nancy Herbst, Vice President of Administration at National Polytechnic College of Engineering and Oceaneering



Ex-Oriskany Set To Meet Final Destination

By: Dave Salazar

In her glory days, the USS ORISKANY wreaked havoc on our Nation's enemies during the Korean and Vietnam Wars. In her new role, the ORISKANY will serve Mother Nature by providing a haven to increase and benefit delicate sea life off the shore of Pensacola, Florida, as well as a once-in-a-lifetime opportunity for divers, when she is sunk as the world's largest artificial reef in May 2006.

But the transition from war-wielding aircraft carrier to artificial reef is not an easy one. Environmental remediation of the 888-foot long vessel would be a daunting task for most companies, but the experts at Resolve Marine Group, Inc. of Fort Lauderdale, Florida and ESCO Marine of Brownsville. Texas have had the situation well in hand since being awarded the remediation contract from the Navy in September 2003.

This tedious chore in-

cluded removing all substances and coatings that could potentially be harmful to marine life that will eventually inhabit the vessel. After months of cutting, scrubbing, scraping, and pressure-washing, the remediation crew accomplished the mission and returned the vessel to the Beaumont, Texas reserve fleet in June 2005, where it awaits issuance for the solid PCB containing materials in the ship's structure such as electrical cable insulation.

Once she's sunk 22.5 miles from the Pensacola shore, the ORISKANY, which boasts a flight deck capable of parking up to 86 fighter jets, will provide a habitat for some of Gulf of Mexico's native species, such as goliath grouper, amberjack, ocean sunfish, and eagle rays. Due to the sheer mass of the vessel, fishermen and divers alike speculate that elusive fish such as marlin and reef shark will also be drawn to the shelter of the sunken ship. According to pre-approved specifications, the carrier will be sunk in 212 feet of water. Due to her considerable height, the ship's flight deck will remain just over 100 feet from the surface, allowing divers to explore the 888-foot by 129-foot flight deck, hangar deck, and her 30-foot-tall island structure.

Part of the remediation process included the removal of hatches, porthole Aside from the plentiful marine life divers will likely find populating the ORISKANY, they'll also get the chance to see – up close – one of the Navy's most fabled aircraft carriers.

Built in 1944, the ORISKANY was the last carrier built to Essex Class specifications, ultimately becoming the last Essex carrier ever used in the Navy by the time she was decommissioned in 1976.

> She was also the only Essex ever to be refitted with an angled flight deck and "hurricane" bow.

> Besides her unique design, the ORISKANY also holds several historical distinctions – she launched 12,000 combat sorties in Vietnam – more than any other carrier in U.S. Navy history. She's also the first carrier to round Cape Horn and was the first Navy carrier to act as a Hollywood stage when "Bridges of Toko Ri" was filmed aboard



Ex-USS ORISKANY on her initial transit from Beaumont to Corpus Christi.

covers, wiring, pipes, and any other fittings that may pose any potential danger to divers. Removal of these fixtures will also serve to make the sunken vessel very easily navigable for divers looking to catch a glimpse of some of the ships interior and the marine life that will eventually make its home there.

According to experts, the wait for that marine life to inhabit the vessel won't be long.

In an independent study, the Reef Environmental Education Foundation researched the amount of fish that descended upon the ex-USS SPIEGEL GROVE, which was sunk as an artificial reef off the Florida Keys in 2001. In less than one month, 46 different species of fish were documented inhabiting the vessel and up to 179 species were found in outlying artificial reefs that were sunk years earlier. her in 1953.

Upon the EPA's approval, the team at Resolve Marine Group, Inc., stands ready to return to the colossal carrier's flight deck to continue last-minute preparations for her sinking.

Once complete, the Navy will outfit her with controlled charges and scuttle her at a permitted artificial reef designated by the State of Florida approximately 23 miles off Pensacola. Her role will have changed forever. No longer will she hear the roar of jets launching from her flight deck, but with marine life inhabiting her and several thousand divers and fishermen frequenting her, the ORISKANY will continue to make a significant impact in her new role.

Dave Salazar is the Marketing & Public Relations Coordinator, Resolve Marine Group, Inc., <u>www.resolvemarine.com</u>



n in the

USS GRASP

By: BMCS(SW/MDV) Heater

to the Edge." GRASP laid a two-point

moor off the coast of North Carolina and

provided underwater footage to depict

Navy rescue efforts for trapped Johnson

omeported at Naval Amphibious Base Little Creek, Virginia, USS GRASP and her crew of 110 have continued the 75-year Naval tradition of pro-

viding diving, salvage, and towing services to the Fleet. Since her last Mediterranean deployment in the summer of 2003, GRASP has continued to maintain an extremely demanding schedule. As an auxiliary ship, GRASP is continually called upon for a broad range of assistance and recovery operations, proving the ship's motto "Any Ocean, Anywhere, Anytime."

In June 2004, GRASP was the support ship for diving operations conducted on the Civil War ironclad USS MONITOR. MDSU2 Detachment Alpha accompanied USS GRASP (ARS 51). GRASP during this

operation along with two NOAA representatives to ensure that this National Sanctuary would go undisturbed. Prior to leaving Little Creek, GRASP crewmembers spent a rigorous week of long hours rigging the ship to lay a fourpoint moor. Once in position off the coast of South Carolina, close coordination between the bridge and deck personnel



was required to deploy four anchors and tons of wire rope for the moor, then the bridge team meticulously maneuvered the ship into harness so that diving operations could begin. With MDSU2's Fly-Away

Mixed Gas System, fifty dives to 230 feet were conducted over a period of two weeks. The success of the "Clean Sweep" preserved the beauty of this historic American ship and National Sanctuary.

One month later GRASP was underway in support of National Geographic's documentary of the USS JOHNSON Sea Link recovery, "Expeditions Sea Link submersible. This documentary, "Expeditions to the Edge: Sunken Sub" was shown on the National Geographic channel. Advanced diving supervisor training was conducted in conjunction with the operation to further enhance GRASP divers' abilities to conduct one of her primary missions.

After assisting National Geographic, GRASP headed south for the ex-USS NICHOLSON

sinkex. During the transit GRASP was asked to assist a 20-ton U.S. Coast Guard craft beached at Cape Hatteras. GRASP's small boats marked the 3 fathom curve with buoys, then the ship made her approach, dropping the starboard fos'cle anchor as a positioning anchor. After letting go the anchor GRASP backed down to within 600 yards of the beach, and trolleyed an 8-inch hawser to the stranded vessel from GRASP's traction winch. A visual internal and external survey was conducted on the vessel's hull and no apparent damage was found; GRASP could continue with the de-beaching process. With the help of the tides and the tension on the traction winch the vessel was freed from the beach. Ever wonder why ARSs are called Rocket Ships?

Following this successful assist and recovery evolution, GRASP continued to





Another successful anchor recovery.

Charleston, South Carolina for ex-USS NICHOLSON sinkex. She towed ex-USS NICHOLSON out to sea and set her adrift for explosive testing. After the first blast she was recovered, taken back in tow, inspected for battle damage and prepared for the second round of demolition testing before she was finally sunk, serving her last duty to the Fleet. Upon returning to homeport, GRASP was called upon to assist an SSN that was stranded in 50 feet of water off the coast of Virginia. The submarine's anchor wildcat had failed during anchoring evolutions, leaving the boat trailing the anchor and several shots of chain. Divers in SCUBA utilized a lift bag to raise the anchor chain to the surface and used KERI cable to cut the detachable link from the anchor. Once the chain and anchor was detached, they were recovered on deck with the capstan and aft boom and brought home for re-installation - another successful mission accomplished by GRASP.

In September while preparing for salvage training GRASP was once again

called upon as the ready salvage ship to recover an anchor from the hospital ship USNS COMFORT (T-AH 20). Her 3-inch anchor chain had parted while at anchor. The hawking anchor was rigged and the quartermasters plotted a search grid for hawking. The 16ton anchor was located and recovered utilizing both towing machines and Engineering Department's ability to ballast and deballast the ship for the twelve hours required to break the mammoth anchor free from her grip in 30 feet of mud within the harbor. Six shots of three-inch chain weighing over 15 tons were recovered over a two-day evolution. The following week the damage control teams exer-

cised their capabilities during fire at sea exercises set up by MDSU2, further proving the wide varieties of expertise by all personnel on board GRASP. One week later GRASP was underway

again enroute to Naval Station Pascagoula, Mississippi to tow ex-USS TICONDEROGA, the first of the Ticonderoga Class cruisers to be decommissioned. The ship performed flawlessly during the two-week transit from Mississippi to Philadelphia, where once again the crew enjoyed a well-deserved weekend off in

ch missioned. GRASP took ex-USS STUMP ed under tow in October and delivered her to Philadelphia for disposition. This was as GRASP's third visit up the Delaware river in three months. She would get one week ch in port before being tasked to tow a floating crane from Naval Submarine Base ed Groton, Connecticut back to Norfolk. In a five-month period the Officers and Crew of USS GRASP had taken the ship through every mission area in their to arsenal, providing service to the Fleet. Without a stop, USS GRASP headed into a drydock for an arduous two month over-

delphia. Living up to the reputation of a

rocket ship (always taking off) she once

again prepared for the tow of ex-USS STUMP, the most recent ship to be decom-

One week out of dock during her shake down cruise, she was called upon to recover an anchor and chain lost by USNS SPICA. The 11,500 pound anchor and 7 shots of 3 inch chain were recovered utilizing the 40-ton boom and aft capstan. GRASP is currently deployed in the Mediterranean with more salvage operations planned for her history file.

This story was provided in the Fall 2005. Rocket ship GRASP was transferred to MSC 19 Jan 06. - *Ed.*



haul.

downtown Phila- GRASP divers meet at the dive station.



Master Chief Boatswain's Mate, Master Diver Eric Frank, U.S. Navy

A ll of us are quite accustomed to gathering around the dive side and listening to the brief prior to any dive. In the husbandry world this brief can have a long sequence of events that all must tie together in a specific order or things go sideways real quick. Earlier this year SERMC was tasked to load out a dive team, travel to Pascagoula Mississippi to replace both fin stabilizers on board USS JOHN L. HALL (FFG 32). We have completed this task a handful of times in the past and even though it is a challenging rigging assignment for the divers, I felt that we had this job in the bag.

All the required equipment from NAVSEA was in place prior to arrival. The new fins were on the pier and all that was left for us to do is get the crane in position and brief dive number one. The first brief is normally very long on this job. It requires a detailed walk through and understanding of the 29 pieces of rigging required to control the movement of the fin. The rigging components were first assembled on the pier so the divers and the dive team can get a clear visual reference and to answer any questions prior to getting wet.

The rig was then disassembled into sections that the two divers could handle leaving surface at 1000. On this job you will normally be able to tell if the brief was effective within the first hour because the divers will start getting off track. That wasn't the case on this day. Every piece went together smoothly and the divers and the dive team were operating like a welloiled machine. By noon the rig had been verified twice against the procedure and I was smiling from ear to ear while giving the divers a smack on the back for a job well done.

The next phase of the job is all on the Rolls Royce tech rep inside, disassembling the internal tiller assembly and bridge unit. While that's going on, we gather again on the pier for the second brief about the handling of the fin from the ship. This is the most critical phase of the job because one wrong move will result in the fin being wedged into the outboard bearing. Our confidence level was up and we weren't expecting anything to get in our way. At 1800 we were in position ready to begin the removal phase. Again things went exactly as briefed. The fin came out without a hitch and was hanging in the water well clear of the ship on the primary rigging pendant.

We knew when we got started this morning that it was going to be a long day if everything went perfect and a real long day if Murphy showed up. So even though dusk was beginning to settle on the dive side, we were excited about how things were going.

The only thing remaining was to shackle the crane to the fin, transfer the load to the crane, set the fin on the pier, and we were going to call it a day.

The two divers that removed the fin had plenty of bottom time remaining and I felt confident that the Diving Supervisor could brief the divers while still in the water. The upper portion of the primary rig has a 11/4" link connected to a six-ton come-along connected to another 11/4" link where the rest of the rig and fin was hanging. The divers were directed to the upper link and briefed about shackling in the crane pendant. Green diver was then sent to keep an eye on the fin shaft during the lift and red surfaced to get the crane pendant. As smooth as things were going today, there was no reason to think that this simple procedure was going to cause so much grief.

The pendant was hooked up in a matter of minutes with red diver moving to the other side of the fin to attach the tending line. OK's were given from both divers. The crane was directed to come up easy.

As the pendant started to break the surface, the tenders noticed that there was chain wrapped around it. The crane was stopped and divers were sent to investigate. Red diver reports that the six-ton come-along is slack and twisted around the



MDV Eric Frank.

rest of the rig. When asked if lowering the fin would straighten things out he reported, "no way, it's one big knot of chain and I'm not sure if it is still connected." So, the decision was made to bring the twisted mess to the surface for inspection and verification that it was going to be safe to lift the fin to the pier. Inspection revealed that red diver had swam past the upper link of the rig and shackled into the lower link causing the come-along to slack off and get fouled. At that point the anxiety level dropped off knowing that the fin was still safely shackled in and we could get this mess to the pier. The divers were pulled and the fin was lifted.

During the debrief, red diver admitted that the brief he got in the water did not clearly state which link to shackle into so he thought it didn't matter. If we had taken the time to pull the divers and show them with the drawings and the procedure like we had done for the other evolutions we would have eliminated this error from accuring.

Lesson learned: No matter how simple the task is or how experienced the diver is, a proper brief is always required to ensure the job goes safely and smoothly.

Topside; Red Diver... From the Supervisor of Diving Captain Mark Helmkamp, USN



Welcome Mike Herb

In our last issue, we brought Tom Salmon up and over and bid him a fond farewell. Tom cast off his mooring lines here at NAVSEA and now steams independently and in company with other retirees in southern California and Baja California. In this issue, we welcome my long-time friend, retired Captain Mike Herb, who has relieved Tom as our new "00C2" in the Salvage Directorate. Mike started and ended his active-duty diving career here at "The Yard" and I was honored to be Mike's Master of Ceremony at his retirement on a scalding hot day last summer.

Mike is a native of Pottstown, Pennsylvania and is a 1976 Naval Academy graduate. Mike left Annapolis and served as a Surface Warfare Officer in USS FAIRFAX COUNTY (LST 1193). While on FAIRFAX COUNTY, he was accepted into the Special Operations Community and later attended the Navy School of Diving and Salvage in Washington, DC, where he qualified as a HeO₂ Diving Officer. While a student at NSDS, Mike met his wife-to-be, fellow Deep Sea class-mate Martha Elizabeth Gray of Atlanta, Georgia.

Mike was distressed to learn that Martha was to be his SCUBA partner and was concerned that she might not be able to keep up with the class. His fear, however, was unfounded; Martha quietly accepted an NSDS instructor's brazen challenge to anyone in the new class to a match race in the pool. The instructor graciously offered Martha a "head-start" but Martha declined his kind offer and returned the same opportunity to the overzealous instructor (you know the type, we've ALL endured them) - and then she proceeded to leave him in her wake and whip him. Only later was it revealed that Martha was an All-American swimmer while in college. Mike was hooked on Martha for life, and the poor instructor learned a hard life lesson: never openly challenge a new class without first snooping the background of potential adversaries.



Mike and Martha back in the day.

Mike left NSDS to serve as Operations Officer, Navigator and Diving Officer in USS FLORIKAN (ASR 9) and then as Executive Officer in USS HOIST (ARS 40).

After departing HOIST, he was assigned as XO of MDSU2. Following MDSU2, Mike commanded USS BOL-STER (ARS 38). Returning to Little Creek, Mike served as Chief Staff Officer of Combat Support Squadron EIGHT before he returned to sea in command of USS GRASP (ARS 51). Mike's next assignment was as Chairman, Department of Professional Programs at the Naval Academy. He then took Command of the Naval Diving and Salvage Training Center in Panama City and followed that great tour as Executive Officer of the Concord Naval Weapons Station.

Mike spent some time at Ft. Leavenworth, Kansas, (*outside the big wall as a student, mind you – I swear – Ed.*) as a Fellow at the U.S. Army's Command and General Staff College where he completed the Advanced Operational Art Studies Fellowship and was awarded a Masters



Mike and Martha now.

Degree in Military Art and

Science. He then reported to Deputy Chief of Naval Operation for Fleet Readiness and Logistics as Head of Ordnance Programs and Policy Branch after which he served in his final assignment at Military Sealift Command as Deputy Program Manager, Naval Fleet Auxiliary Force.

Mike joined our office and was almost immediately dispatched to Louisiana in support of Hurricane Katrina salvage operations. One day, I expect Mike will actually be back from Louisiana and you can call on him here and wish him a hearty "Welcome Aboard."

Contaminated Water Diving

This is a real sore point with me. Think about MDV Charlie Cope's letter in Letters to the Editor (see p. 30) the next time diving in Contaminated Water is contemplated, whether dressed out to dive, or as one of the tenders.

While we have been working to develop a plan to detect both type and quantity of contaminates in water that is of questionable cleanliness, a "hand-held" solution is a long way off. Still, dry-suit technology and equipment and procedures for both divers and tenders are available now that would provide increased protection when water is contaminated. Unfortunately, many harmful contaminates are not always obvious or easily detected except through time-consuming lab analysis. Even then, contamination varies at the dive site as type and quantity can change with depth, tide, or after the bottom is kicked-up – it's a moving, changing target. Worse, the Dive Sup really needs to know in advance what contaminates to look for before proper analysis for those contaminates can be ordered. Certainly Hurricane Katrina associated dive operations raised diver awareness for **Contaminated Water Diving Operations** and underscored (again) our need to advance protective equipment and training availability for U.S. Navy dive teams.

We have stepped up the priority for improving Fleet Contaminated Water Diving (CWD) guidance. I tasked MDV Fred Orns and our German exchange engineer and diver, Fraulein Anke Wilhelm, to



What's wrong with this picture? Does the use of a pressure washer make sense? How should the tenders be protected? Is having an open drinking water bottle on station appropriate?

review the Contaminated Water Diving portion of Divers Institute of Technology (DIT) Commercial Diver Training Program for possible inclusion in the NAVSEA Technical Document (Guidance For Diving in Contaminated Water, SS521-AJ-PRO-010). Anke's focus has been on portable, real-time contaminate testing equipment and procedures.

After completing the DIT curriculum and spending time with DIT instructors and students in the classroom and on dive station conducting hands-on training with dry-suits and SSDS equipment, MDV Orns determined the best way to provide the Navy Divers proper training was through assist visits. He is currently working with Mr. Jerry Zebor of DIT and is preparing a modified version of the DIT HAZMAT and CWD curriculum that will provide the necessary knowledge and skills to perform as a dive team member in a contaminated water environment. MDV Orns will conduct a 5-day course at each MDSU this spring and a CWD workshop during WDC 2006 in San Diego in May. Additionally, MDV Brian Pratschner is working to provide the best CWD equipment to the Fleet. Besides his continued work to add the ORCA as a SSDS configuration, he is intensifying efforts to bring the KM-37 (still in test and evaluation) with its quad-exhaust and improved neck ring, and bring the Divator DP-2 (an XLDS variant) online. XLDS-RDC (eXtreme Lightweight Diving System - Rapid Deployment Console, has entered manned testing at NEDU). MDV Frederick "The Great" Orns' CWD course will cover the following: Nomenclature and definitions, Regulations, Safety, health and hazard recognition, Job Safety Analysis, Detection and evaluation, Personal Protective Equipment, Engineering controls and equipment, Medical surveillance, Emergency Response, Decontamination, Confined space entry, and Diving in

contaminated environments.

WNY MKV Monument Update

I reported in the April 2004 FACE-PLATE that we wanted to build a bronze "Jake" to commemorate the location of the old diving school, the Naval School of Diving and Salvage (NSDS), and the old Experimental Diving Unit here in the WNY. Bob Barth and Doug Hough (curator of The Museum of the Man in the Sea, Panama City, Florida) were made responsible for soliciting money have been collecting contributions. Their effort is focused on the active and retired Navy Diver and relies upon our "network" to spread the word and garner support.

Meanwhile, former Navy Diver Tom Barnes and former Army Diver Jeff West have been aggressively seeking corporate contributions. Additionally, Tom saw the need to recognize ALL military divers and suggested expanding our effort to include monuments for Army and UDT-SEAL Divers at Ft. Eustis and Little Creek, Virginia respectively. Tom is located in Whittier, California and his effort can be reviewed at a website relentlessly worked by Jeff West: www.maninthesea@hspig.org.

I must applaud Jeff West who has put in a great deal of time and effort towards our mutual goal of memorializing the Navy Diver at the WNY and now, all military divers. Tom reports that MAR-VEL President Tom Maddox, DESCO and Anheiser-Busch have already committed resources to our project. Meanwhile, Jim Bladh and I surveyed an area near where the old school and EDU once stood (a convention center and a parking lot now occupy those hallowed NSDS/EDU grounds) and have found a nice spot in front of the Taylor Building and alongside the old marine railway (where Presidential Yacht Sequoia once moored and opposite the side of the old NSDS/EDU location) that we will propose to the CO, Washington Navy Yard.

Listed below are individuals who have contributed as of this writing. (See page 6 for more information):

John Ackerman, Fred Aichele, William Ary, David Baisse, David Balk, David Ball, Bob Barth, Jim Bladh, Alfred Briggs, Jay & Beverly Cook, Al Dietrich, Bill Dover, Don Draper, Evan Evans, James Evans, Dr. Ed Flynn, Jr., Charles Fulkerson, Jim Gardner, Ray Goodson, Jim Halwachs, John Hatcher, Mark & Kathie Helmkamp (that's ME knuckleheads), Mike & Martha Herb, Gad Hitchcock, Byron Howell, Ron Klepper, Bill Liebold, Bill Loudermilk, Dianne "Karen" Lynn, Kevin McEvoy, Bill Milwee, Nyle Monday, F.B. Montague, Frank Monger, Bev Morgan of Kirby-Morgan, Tom & Doris Neuman, Dan Orr, Peter Pehl, Peter Pehl II, David Peterson, Jack Ringelberg, Don Risk, Pete Ruden, Bill Searle, Kemp Skudin, Tim Stark, Larry Stokes, Bill Tageson, Tony Thomas, Jack Tomsky, Jim Vorosmarti, Paul Walker, Kenneth Wallace, Dorothy & Arthur Webb, Sylvester Wilson, Bill Winters, Lee Wolford, and Woody Woodward.

And relative to this discussion, retired Diving Corpsman and classic Beemer restorer Larry Stokes sends me this:

This is a picture of a clay model of a diver in a MKV that I commissioned. It is

Topside; Red Diver... (continued)

to scale and stands about 14" high. It should be finished after the 1st of the year. Anyone who collects bronzes knows they are "spendy." If there is any interest in them, I can arrange getting more with ALL profit going to the MK V fund. Later on I can arrange for the same in cold cast (that is resin and painted to look like bronze) and the cost for them will be about one-

third the cost of a bronze version. I own the molding rights and have no plans of putting the bronzes on the market otherwise. I will not sell any unless the profit goes to the MK V fund. If there is no interest, the mold will be destroyed so no more can be made.

If interested, please contact me and I will direct your inquiry to Doc Stokes –Ed.

Welcome LCDR Dru Daubon Assistant Supervisor of Diving

We wished fair winds and crystal clear, warm, diving seas to LCDR Paul Fleischman who just retired as Assistant Supervisor of Diving this December. Join me in welcoming LCDR Dru Daubon as Paul's relief. Dru comes to us from Commander U.S. Naval Forces SOUTHERN (CUSNS) Command in Mayport, FL where he served Assistant Theater Security Cooperation officer and Exercise Director. Originally from Culebra, PR, he is a 1989 graduate of the U.S. Naval Academy and has served afloat in USS FORTIFY (MSO 446) and USS OPPORTUNE (ARS 41) prior to attending EOD School and assignment to EODMU Six. He reported as Officer in Charge of Mobile EOD detachment FOURTEEN at Explosive Ordnance Disposal Mobile Unit SIX, Charleston, SC. In 1995 he assumed duties as OIC of a Mine Countermeasures Detachment TEN and selected to provide specialized EOD services during the 1996 Centennial Games for the Atlanta Committee for the Olympic Games (ACOG). After a short tour ashore at Naval Weapons Station Fallbrook CA he was assigned as the Senior Operations/EOD Officer for Commander Mine Countermeasures Squadron TWO in Ingleside, TX and completed a deployment to Commander Sixth Fleet in support of multinational MCM exercises and Kosovo humanitarian relief operations (Operation SHINING HOPE). Prior to receiving orders overseas to CUSNS he served as the

Commanding Officer at EODMU TWELVE in Charleston, SC. Completing NATO exercise Blue Game in Denmark, and successfully deploying three ordnance clearance detachments to the C5F/C6F AORs in support of Operation's Iraqi Freedom and Enduring Freedom.

LCDR Daubon qualified as a Master EOD Technician, OUPV Captain and has been designated a Foreign Area Officer for the Western Hemisphere. He is married and has two children, Dru (9) and Monica (8).

Welcome aboard Dru! Now go re-write the Dive Manual...

More Deep Sea Drivers (p. 31)

I'll admit that I was amazed by the response I received from out there in diver-land regarding the "Diver's and Their Rides" spread found in the previous issue of Faceplate (Vol. 9, No. 2). As usual, a few shipmates failed to get the word or were not able to provide a photograph of their pride and joy before our press time; your liberty is hereby cancelled until after your motivation and attitude improve. And for the next issue, don't stand on MY umbilical because YOU didn't get me your photograph. And by the way; stow those Salt 'n Peppers, we haven't worn them in years, sheeze! So here you are gear-heads, feast your eyes on still more rides. Don't be surprised if one day you see them at the Barrett-Jackson auto auction in Scottsdale goin' for zillions...

Letters to the Editor From Jean-Michel Cousteau, Ocean Futures Society

Sixty years ago, when my father, Jacques-Yves Cousteau, and his buddies, Frederic Dumas and Philippe Taillez, were tinkering with his new invention, the SCUBA apparatus for breathing under water, they had probably a limited view of the enormity of the frontier they were crossing. But they did know that they were risking their lives and that it would require courage and a passionate curiosity to experience the unknown.

That has not changed and so I am pleased to lend my full support to the Man in the Sea memorial as a fitting tribute to those brave divers who were also pioneers and who put themselves at risk in order to serve their countries, and in many ways, all of us, by pushing into the deep and exploring the true nature of our planet in its watery depths.

So much of the work done in the sea goes unnoticed and unsung, and this monument will stand as testimony to divers for their work and their membership in a community to which we can now at last express our gratitude.

Jean-Michel Cousteau Ocean Futures Society 325 Chapala Street Santa Barbara, CA 93101 http://www.oceanfutures.org

From Jack Lynch, President of the UDT-SEAL Association

This mission of creating the Man in the Sea Memorial Monument is one of great importance to provide our future generations a path back to examine the past, present and the future of breathing, working and living underwater. This focal point will be one to bring for the history of those men who made that transition into the depths of the unknown. The stories to be told have both amazing feats of bravery and ingenious abilities of improvising. Some stories have sad endings which prove there is a price that these men paid for pioneering into the depths divers have gone. Many stories have happy or funny endings with successes allowing diving to move onward in theory and diving equipment. But I will guarantee one thing for sure! This Memorial will generate stories to be told that will be the most entertaining stories ever told any where by anyone.

I personally have been to about every diving school the U.S. Navy has and enjoyed every one of them. I have been fortunate to meet and work with some of the legends of Navy Diving such as Dr. George Bond, SEALAB; CAPT Frank Cain, WW II Frogman; LT Joe DeMartino, WW II Frogman and Vietnam era SEAL; Dr. Chris Lambertson, OSI; Bob Barth; Jack Schmidt; John T. Brady; Billy Arlington; Ragman Radicki, and of course Bos'n Ryder. There is no end to the long distinguished list of who is who in diving. There should be no end to the story and displaying "Jake" for all to see and wonder who these men are is a start. "Jake" represents all divers, everywhere!

As President of the UDT-SEAL Association, Board of Director for the Naval Special Warfare Foundation, Board of Director for the U.S. Navy UDT-SEAL Museum, and past President of the Navy Divers Association, I fully support and provide my endorsement for the mission of creating this Man in the Sea Memorial Monument effort. "Jake" is not just a name.

Jack Lynch

President, UDT-SEAL Association

Thanks Jack! On the "Man in the Sea Memorial" list is a UDT-SEAL LAR-5 diver for Little Creek, Virginia. -Ed.



Deep Sea Drivers_e



Ray Haas' 1966 IHC crew cab stump-puller (former U.S. Navy truck).



Vern Geyman's big block 1934 Fordstreet rod.



Ret. MDV Mike Nichol's 2005 Screaming Eagle Fat Boy.



Ret. MDV Mike Nichol's derby cover.



RN Sat Diver WO Buck Taylor's 1957 Porsche 356.



Sandy Bacia's "Guilty As Charged" 1967 Chevy II door slammer.



MDV Charlie Cope's 1990 Kenworth truck.



Former SUPSALV Bert Marsh's 2003 50th Anniversary C-5 Corvette.



CWO4 Mark Pierson on his 2005 Honda CBR 1000.



Full-figured Retired Diver Ed Delanoy's 2002 Kawasaki "Meanstreak."



Vern Geyman's hand-built custom bike.



Kellard Jansen's new bike.



LCDR David Ince, RN, in front of Mini V8 EOD Landrover built for his son in 1994.

Topside; Red Diver... (continued)

Document, Document, Document

Dive Sups, Read & Heed: You've heard it before, but I know it is well worth reminding all of you Deep-Sea knuckle-heads that you are best positioned and singularly most interested - whether you now realize it or not - in ensuring your official military medical record accurately reflects every aliment or injury you've suffered while serving Uncle Sam as a Hoo-Yah U.S. Navy Deep Sea Diver. Whether you bang your big ugly noggin on the bottom or are treated in the round house for DCS, once back on the sunny-side; document every detail. Ask the DMOs and Diving Corpsmen do it; that's their job. If you have a problem, call me or Captain (Dr.) John Murray and we'll help you sort it all out.

However, I know this will require continued emphasis and many will, unfortunately, be forced to learn this lesson years after the injury when members of your dive team are dispersed and their memories have faded. In testimony, I offer "Exhibit A."

My Experience with the VA From MDV Charlie Cope, (Ret.)

As many of you may know, I have a disability claim pending with the VA. This stems from an aborted sat training dive in 1975. Treatment was not commenced until about 20 hours after surfacing and it turned out that it was a CNS and spinal hit that has resulted in parathesia in my left arm and several other medical problems. These problems didn't show up for 25 years. Treatment was a fully-extended Table 6 through 30 ft then back to 60 ft and another Table 6 all the way out. I did experience some toxicity during the second 6 and had to interrupt the oxygen periods several times. After the treatment, I retired in 1986 with normal diver problems.

I was recently in DC and CAPT Helmkamp asked me to write a summary of what I have ran into in dealing with the VA. I have been on S.S. disability since April 2004 and have not worked since October 2003 because of blood clots in my lungs. Before I filed the claim, I had contacted Dr. Neuman (he was the treating DMO). I had to run some nerve conductive studies to rule out other causes for the problem. The tests were normal which showed that the condition was more than likely a long-term problem from the hit. I have letters from two other DMOs that say the same thing. The VA said, "That while you suffered a minor mishap on one dive, there no indication that vou were ever bent or treated for the bends while in the service." They had my medical record and the letters at the time. They found other medical problems but not that I had any ear infections or ear squeezes. Or that I had went to Long Beach Hospital and been found to have significant weakness in my left leg. This is all in my record. I got 20% for my back.

Dr. Long has given me a physical and has written a letter to support my claim. I had an appeal hearing on 9 August and I hope I can get this finally settled. They do now believe that I was

bent. When I filed my original claim, I thought it would go right through. I had to go back and file for the ringing in the ears, hearing loss, and COPD (Chronic Obstructive Pulmonary Disease). Now they won't have to pay back pay for them. There are many divers who are in worse shape than I am in. You cannot fight this by yourself. Join a Veterans Organization with a good service officer. They are invaluable in helping with the paperwork.

Those of us who are retired will have to live with the documentation that we have. Those who are still on active duty and may be just getting into this business, get a personal dive log and keep it up-to-date. Record anything that happens to you on a dive station, from squeezes, to cuts, sprains, diving accidents and have the dive sup, diving officer, and corpsman sign the log. I

The following conferences will be held May 5 – 12, 2006 in San Diego, CA: May 5 – 7 - SEALAB Reunion, May 7 – 11 - Diver/Support Reunion, May 8 – 12 - Working Diver Conference 2006.

Reminder for all hands to utilize the Navy Diver Feedback Form at the SUPSALV website in the 00C3 dropdown menu. We strongly encourage the use of this for submission of comments or recommendations on issues of concern. If you have any questions on how or what to submit, please contact MDV Brian Pratschner at (202) 781-1451 or via e-mail at brian.pratschner@navy.mil.

Merry Christmas

Twas' the night before Christmas on the sea deep and blue

Davy Jones was asleep with the rest of his crew With I in my hard hat and dive knife in hand one last dive for dinner for the deep sea diver clan Then from the comm box I heard such a roar Santa's sub, she was sinking to the deep ocean floor

SOS, SOS, came the signal from below Call the SEALs to come save me, please hurry, don't be slow But it's dark and it's cold, much too deep for me If we're going to save Christmas, we must call Deep Sea

So we broke out the hard hats, the hose and the gas Then descended below to save Santa fast

We salvaged the presents and that dear 'ol fat man He then went on his way from wence he began

With St. Nick out of danger, as he yelled you could hear Merry Christmas DEEP SEA . . . you saved Christmas this year!

A non-attributed poem sent by Captain Jim Evans... Retired Deep-Sea Diver extraordinaire (and accomplished Ball Room dancer, Mercedes-Benz aficionado, Trapeze Specialist, Wolverine Tamer, Deadly Snake Charmer, a Master-Mind in the Ways of Espionage, and finally, Literary Agent for MDVs Starkey and Jimmy John)...

> don't mean to slam the Safety Center, but they do not have all the info on file that people think they do. By their records, I never went to 1st Class School and they have no record of the dive or the hit. They can only record what is reported to them. This may be the age of the computer but documentation is still the way the government works. The VA health care or disability people know nothing about diving or long-term effects of diving-related incidents.

> CAPT Larry Garsha, Head of Undersea Med at BuMed, is concerned about this as is CAPT Mark Helmkamp and his Med Officer, CAPT John Murray. These gentlemen have gone above and beyond in helping me.

> Spit out that pogey-bait and remind yourself of MDV Charlie's letter next time you have your grubby mitts on your Health Record. Savvy? – Ed.

But wait; there's more from Deep Sea Divers HTC Glen Rubin of NEDU and Craig Cooper of the NOAA habitat "Aquarius."

