FACEPLATE

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Operation Iraqi Freedom

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SUPSALV SENDS

Hoo-Yah Deep Sea! Our U.S. Navy diving and salvage forces recently responded to calls from around the globe to exercise nearly every skill set in our inventory…simultaneously.

It started in late 2002 with the marshalling of forces into areas surrounding the Iraqi theater of operations as the prelude to Operation Iraqi Freedom. Then in January 2003, a well-planned deployment to the remote atoll Ulithi by USS SALVOR (ARS 52), MDSU ONE, and SUPSALV commenced to reclaim nearly two million gallons of fuel oil from the sunken WWII Fleet Oiler USS MISSISSINEWA (AO 59). This complex operation in 135 feet of water executed even better than planned, and saved the Ulithi population from the possible catastrophic release of MISSISSINEWA's bunkers, which could have devastated the fragile environmental balance of the entire atoll.

Nearly concurrently, a national disaster occurred. On 1 February 2003, Space Shuttle COLUMBIA disintegrated upon re-entry, killing all seven astronauts and leaving a 240 nautical mile long by 10 nautical mile wide debris field across Texas. One week later NASA asked SUPSALV to provide operational command and control of the underwater search and recovery phase, and asked for U.S. Navy diving teams as well. MDSU TWO provided one active duty detachment and reservists from four of their reserve detachments to augment the multi-agency dive teams which were already on-scene. The search environment was a nearly-impossible-to-penetrate reservoir filled with both standing and fallen trees from the Sabine National Forest. Nine dive teams (including four Navy teams) conducted over 3100 dives in the reservoir after a NAVSEA 00C search team coordinated an underwater electronic survey of over 20 square nautical miles of flooded forest, securing operations on 18 April 2003.

And then war began. With MISSISSINEWA hot tap operations underway in the Pacific, and a major underwater search and recovery operation for COLUMBIA underway in East Texas, a combined Task Group of MDSU, EOD, Underwater Construction Teams, USCG Strike Team and SUPSALV representatives and contractors were in and around Iraq conducting operations in direct support of Operation Iraqi Freedom. Elements of Task Group 56 (commanded by COMEODGRU ONE) participated in a wide range of clearance, diving and salvage including aircraft search and recovery, and harbor-clearance operations in Umm Qasr using both conventional and expeditionary tactics.

The flexibility and agility of the USN diving, salvage, EOD, SEAL, and UCT forces during these vastly different operations conducted simultaneously while thousands of miles apart, is testimony to the strength and dedication of our diving Navy…and the foundation of our diving Navy is our Navy Divers. Keep up the great performance, and never stop looking for opportunities to conduct realistic training and improve even further on our operational capabilities.

Captain Jim Wilkins
Director of Ocean Engineering
Supervisor of Salvage and Diving

In This Issue

MISSLES IN BOUND! OK Red?

Air raid sirens screamed as nearby Patriot batteries launched at incoming Iraqi Al Samut missiles. Unsure of the missiles' intended target, Navy Divers from MOBILE DIVING AND SALVAGE UNIT TWO DET DELTA donned gas masks and took cover under gear laden trucks. Local port stevedores wrapped scarves around their faces and frantically searched for cover. After the missiles were intercepted or had fallen harmlessly into the Kuwait desert, the reassuring "All Clear" signal was broadcast and both Divers and stevedores went back to loading diving and salvage gear aboard the leased GAC 65, a 275 ft. by 75 ft. flat barge. Tasked with recovering two British Sea King helicopters crashed in the Northern Arabian Gulf in approximately 80 fsw, MDSU TWO Divers somberly loaded diving and salvage systems, realizing that along with the aircraft wreckage the aircrew must be recovered and returned to their nation for honors and burial.

Loading out for a salvage job is always a challenging adventure, but the stakes grow in time of war. Force protection issues must be considered, cooperation with coalition forces and language barriers all come together to present issues that must be resolved. Fortunately, planners from FIFTH FLEET, COMEODGRU ONE, COMEODGRU TWO, MDSU ONE and TWO, and SUPSALV had positioned a considerable salvage force. Many issues were resolved automatically by procedures put in place before the war started. Prepositioned salvage forces, including MDSU detachments, USS GRAPPLE (ARS 53), and British civilian Divers formed the core salvage and expeditionary salvage forces during hostilities. NAVSEA contacted local contractors to supply cranes, tractor-trailers, barges, and tugs. A diving and salvage Task Group, commanded by CDR William (Bill) Robertson USN, directed the deployment of salvage forces throughout the theatre. An early morning call from him put into motion a four-truck convoy from Camp Patriot, Kuwait Naval Base enroute to Port Shaiwba on the Northeast coast of Kuwait. Aboard the heavily armed tactical convoy were just eight U.S. Navy Divers and a civilian contractor.

HTC (DV) Brad Fleming dons a MK 12 outergarmet for protection from jagged metal wreckage as GMI (DV) David Jones tends and Master Diver Jim Mariano briefs the side.

The GAC 65 salvage barge lies moored between the USNS CATAWBA (foreground), LUTHER, and NINA (not shown).

Traveling the roadways in Northern Kuwait required defensive postures not normally encountered by U.S. Navy Divers. The convoy must proceed tactically. Communication, checkpoints, encounters with the enemy all must be included in planning a tactical convoy. Fortunately the coalition forces were doing a great job sweeping up any enemy so the convoy proceeded without incident. Only upon arrival at the port did Divers come under the threat of enemy action as the elusive Iraqi mobile missile launchers crudely aimed their projectiles toward coalition forces positioned in Kuwait.

While Divers loaded gear aboard the GAC 65 barge, Master Diver Jim Mariano, already on scene aboard the USNS CATAWBA (TATF 168), fought heavy seas and strong currents in search of the aircraft and crew. Joining him in his efforts were eight Divers from MDSU TWO Detachment DELTA, the British minesweeper HMS GRIMSBY and civilian Divers from British Royal Auxiliary Forces. Two days later, the remaining DET DELTA Divers aboard the GAC 65 barge arrived at the salvage site. The barge equipped with a 20-ton crane and MDSU TWO's Light Weight Dive System focused on recovering both the crew and the twisted wreckage from the murky waters of the Persian Gulf.

Lightweight expeditionary salvage requires salvors to sacrifice some of the standard dive station luxuries. The onsite chamber could not be physically positioned to support surface decompression. Lack of a stage required Divers to complete lengthy decompression stops, hanging from their umbilicals while wrapped around the descent line. The surprisingly cool waters added to the discomfort and frustration because the portable hot water heater had been removed from the load list prior to deployment to save weight and space on the fully loaded C5 aircraft. Lacking a mooring system, the GAC 65 barge was positioned between three tugs. The tugs attached towlines to three positions fanned around the barge and dropped their anchors 120 degrees apart. Warping the barge through the debris field required paying in or out on towlines and sometimes taking up chain on the tugs' anchors. The detachment's OIC and On Scene Commander (OSC) monitored tides, winds

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MDSU ONE DET 3 in IRAQ

By: CWO2 Eric MacDonald

On 24 February 2003, MDSU ONE DET 3 deployed to Kuwait in support of Operation ENDURING FREEDOM. Fifteen personnel and equipment flew in a USAF C-17 from Hickam AFB, Hawaii to Kuwait International Airport. Equipment was selected to support DET 3 in its anticipated operational environment, enable the success of operations, and enable rapid intra-theater movement. In accordance with Standard Operating Procedures (SOP), the MK III system and all support equipment were loaded in ISU-60 and ISU-90 shipping containers. Additionally, DET 3 deployed with three LSSV/CUCV-III tactical vehicles, an Air System Rack Assembly, TRCS, two dive boats, individual infantry equipment, and detachment field gear.

Upon arrival in Kuwait, DET 3 offloaded their equipment and conducted a tactical convoy to Camp Patriot, 'tent city.' Each day the team attended briefings, operationally tested equipment, conducted unit level training, and participated in SCUD missile attack drills. The simulated attacks occurred at all hours of the night with the announcement, "ALL KNB - LIGHTNING, LIGHTNING, LIGHTNING" over the camp PA system. In response to this alarm, all hands donned their gas masks, double-timed to their assigned bomb shelters (20-foot long CONNEX shipping containers buried 6 feet in the sand) and donned full Mission Oriented Protective Posture (MOPP) gear.

Within two days of MDSU ONE DET 3's arrival in Kuwait, they were tasked with their first mission of Operation ENDURING FREEDOM. A coalition ship was damaged when it struck a shoal in the Arabian Gulf. After EODMU TWO Divers conducted an initial inspection in SCUBA and provided digital imagery, COMFIFTHFLT ordered a more detailed investigation to support a decision regarding the ship's final disposition. DET 3 and LCDR Matthew Long, COMFIFTHFLT Engineering Duty Officer, conducted the detailed inspection and provided the data and recommendations to higher authority.

Next, MDSU ONE DET 3 was joined by a seven-man element from MDSU TWO. Together, the two teams completed a three-day ship husbandry mission on the HSV-X1 JOINT VENTURE, an experimental high-speed vessel operating in support of Naval Special Warfare. Divers removed two 5,000 lbs T-foil fin stabilizers from the ship's twin aluminum hulls and replaced them with 500 lbs clamshell hull fairings that housed the stabilizers, decreasing the ships draft and enabling HSV-X1 to operate in the shallow and poorly charted waters of Khawr Abd Allah to more readily support Naval Special Warfare missions.

After weeks of drills, briefings, wearing MOPP gear and waiting, Operation IRAQI FREEDOM began. On 22 March 2003, coalition ground forces crossed into Iraq. SCUD drills at Camp Patriot were replaced by Iraqi missile attacks. The alarm "ALL KNB - LIGHTINING, LIGHTNING, LIGHTNING" became more urgent, bomb shelters filled up more quickly, no one complained about the heat. The detachment donned their MOPP gear in half the time it took during the drills. Fortunately for Camp Patriot, all missiles were shot down by Patriot Missile Batteries or landed harmlessly in the desert or sea. Spending hours with shipmates huddled in bomb shelters while real missiles were inbound significantly increased DET 3's respect for CBR defense, MOPP gear, first-aid, and buddy-aid training.

QM1 Coy Everage posting watch during RECON of Az Zubayr river.

When Marines from the 15th Marine Expeditionary Unit quickly secured Umm Qasr, Iraq's southern-most port, the Commander-in-Chief announced that humanitarian aid would be delivered within days. Although no major ships were scuttled at Umm Qasr, six Iraqi Mine Layers, PB 40s, were fouling the quay in the southern-most portion of the port and had to be cleared. Naval Special Operations Task Force (CTF 56) ordered MDSU ONE DET 3 to report to Umm Qasr, Iraq.

MDSU ONE DET 3, with Underwater Construction Team ONE (UCT ONE) and Naval Coastal Warfare (NCW), planned and conducted a tactical convoy from KNB to Umm Qasr through the Iraqi/Kuwait De-Militarized Zone (DMZ). The convoy crossed the DMZ and entered Iraq just after sunset 26 March. The destruction left in the wake of the USMC advance was surreal. In the moonlight, innocent trees cast ominous shadows, routine sounds became threatening, the landscape was littered with demolished enemy fighting positions - perfect hiding places for enemy snipers. The focus of every member of DET 3 was at a new peak. They maintained scrutiny over their assigned fields of fire, mentally reviewed their rules of en-

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gagement, and continually checked the status of their weapons and ammunition. The expeditionary warfare training conducted at Pearl Harbor earned heartfelt appreciation.

Upon arrival, DET 3 was tasked with clearing the port of all six mine layers (PB 40s), two of which were sunken. The team convoyed from the CTF 56 Command Post to the quay at the Old Port daily. Hearing sporadic small arms fire and operating in the immediate vicinity of the Iraqi Coast Guard Station, the team was acutely aware of the high threat from Fedayeen Sadaam and other paramilitary forces. To bolster security during convoy and harbor clearance operations and to enable the progression of work, 33 personnel from MDSU ONE DET 3, UCT ONE and CTF 56 EOD were incorporated into the harbor clearance team. Daily the team cleared buildings that could be used by snipers. With security in place, primary and secondary tactical communications established, and all Task Force operations deconflicted, the team commenced clearance work. First they conducted battle damage repair and grounded the four PB 40s that were still floating. The team then removed and demilitarized the mine deployment racks utilizing OXY-ARC cutting techniques. Next, Divers scrounged materials at the port, created and rigged a towing bridle to the first sunken PB 40 and pulled the boat 80 feet across the bottom with a MTVR (6-wheel tactical vehicle) to a grounding site at high tide.

The second sunken PB recovery was not as simple. It was sunk in the channel with four LUGM-145 sea mines onboard. MMC (MDV) Tom Perkins and MM1 (SS/DV) William Sinrich conducted the initial reconnaissance of the PB 40 and confirmed the mines were still on board, not secure, and probably damaged. The mines significantly complicated the recovery effort; blowing them in place would have damaged the pier facility being cleared. Riverine and tidal currents combined could reach six knots, visibility was near zero, and a steel pipe frame on the PB prevented the safe removal of the mines in the water. After several attempts to beach the

CBR Gear.

PB and subsequently remove the mines, CTF 56 ordered the removal of the obstacles to enable access to EOD Divers. After HMC (DSW/FMF) John Richardson, ENC (DSW/SW) John Sullivan, QM1 (DSW) Coy Everage, and GM2 (DV) Matthew Sabin removed the frame from the PB 40, Royal Australian Navy EOD Divers from Clearance Diving Team THREE raised, towed, and beached the mines. With the mines removed, the harbor clearance team used chain to make fast a 30 ft. workboat and two 2,000 lbs Yokohama fenders above the craft, and using the MTVR, pulled the PB ashore during high tide.

During the PB recovery operation a MK-5 Special Operations Craft (MK-5 SOC), operating in the Khawr Az Zubayr, struck a submerged wreck that ripped a 15-inch tear in the aluminum hull and partially separated the transom from the keel. The damage was so severe that the Craft Master was forced to beach the MK-5 SOC on the A1 Faaw peninsula to save it from sinking. MMC Perkins and a three man repair team immediately deployed up the river to render assistance. Two days and three nights were spent repairing the damage while constantly pumping the craft to prevent it from sinking at high tide. The damage was so extensive that patches, plugs and epoxy could only stop 80% of the flooding. Repairs were made with makeshift patches and finished off with concrete poured in the bilge enabling the MK-5 to transit back to Kuwait for repairs. During repairs the Divers augmented the MK-5's crew in maintaining security by standing watch and manning the MK-5's crew-served weapon system.

Throughout Operation IRAQI FREEDOM, DET 3 Divers assisted EOD team leaders during their missions. The Divers destroyed fighting positions and weapons caches and helped dispose of tons of ordnance, they jumped at the chance to operate in the field with EOD. Conversely, the EOD technicians enthusiastically supported harbor clearance teams by providing security, demolitions expertise, and by helping sling chain and wire rope. The interoperability between the Fleet Divers and EOD technicians throughout Operation IRAQI FREEDOM was essential to mission success.

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MM1 William Sinrich transfering a line during Patrol Boat recovery.

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and positions and directed the movement of the barge as Divers methodically swept the debris field. As Master Diver Mariano reported the recovery of wreckage and crewmembers, the OSC marked off the recoveries on a sonar scan provided by the minesweeper HMS GRIMSBY.

On the bottom, Divers fought currents over one knot and zero visibility for over an hour per dive in a debris field 300 by 300 yards wide. By using a commercially available handheld GPS, the sonar scan of HMS GRIMSBY, and provided with coordinates of the targets, supervisors were able to direct their compass-equipped Divers directly to wreckage despite the low visibility. Long wire rope slings were manufactured on site and used to wrap around larger pieces of wreckage for recovery. A salvage basket was used to recover smaller items. Accident investigators from the Royal Navy scoured every inch of the wreckage as it came aboard to determine the cause of the collision that doomed the aircraft. British warships sent crews over to collect the fallen aviators. Later the MDSU TWO Divers watched the CNN coverage of the somber ceremony at Heathrow as the fallen airmen were returned to their loved ones.

Many of the challenges facing Divers during the recovery of this aircraft and crew were not covered in First and Second Class Dive School or exercised during Master Diver Evaluations. Salvors manned crew-served weapons, communicated on secure circuits, and worked/slept in CBR gear. MDSU ONE Divers, conducting harbor clearance operations in Iraq, faced even tougher expeditionary operations. Eating, drinking, sleeping, and providing self-security consumed resources usually not required for peacetime diving operations. Wartime is not the time for OJT. Our Diving Navy must be able to respond to a myriad of missions. Almost all involve the safe conduct of operations below the waterline, but some include the security and survival of our Sailors above sea level. Let's ensure we train for these missions as well!

MDV Eric Frank, HT1 (DV) John Coffelt, and crew of the USS GRAPPLE gage the clearance between ship and barge prior to offloading the US Harrier jet they recovered during Operation IRAQI FREEDOM.

CWO2 Rick Cavey is currently Officer in Charge, MDSU TWO DET DELTA.

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EN1 Gregory Lee takes a break from towing ships while AMCM helicopter searches for mines.

With the Port of Umm Qasr cleared and humanitarian aid successfully delivered by RFA SIR GALAHAD, COMFIFTHFLT ordered CTF 56 to clear the Port of Az Zubayr and the six-mile waterway between Umm Qasr and Az Zubayr, the Khawr Az Zubayr. Over 50 ships, barges and craft were stranded or anchored along the Khawr Az Zubayr, and another 60 derelict vessels were abandoned pierside in the port of Az Zubayr. ENC Sullivan and MDV Perkins surveyed the damaged ships while QM1 Everage plotted the position of each ship using a hand-held GPS PLGR. The team determined that 16 derelict vessels and one submerged wreck blocked the channel. Additionally, 30 vessels needed to be removed from the Az Zubayr piers.

During the reconnaissance, the team discovered a new construction, a 90-foot Iraqi Patrol Boat (PB 90) taking on water and sinking pierside at Az Zubayr. To prevent the PB 90 from sinking and becoming a difficult harbor clearance project, EN1 (DSW) Gregory Lee led a four-man repair team that remained overnight in Az Zubayr to de-water and repair the craft.

Upon completion of the reconnaissance and surveillance mission, the enormity of the required clearance effort was clear. To complete the mission, two salvage tugs, a large quantity of wire rope, two towing hawsers and at least three weeks of solid operating time was needed. Fortunately, during the return trip to Umm Qasr, the team discovered a 60-foot pusher boat adrift in the river. Necessary repairs were made and we christened her "ARS 60", positioned coalition identification panels and got underway for Az Zubayr to start clearing smaller vessels and barges from the pier to make room for the larger ships from the channel.

After weeks of backbreaking work under the threat of enemy engagement, the mission was completed successfully utilizing multiple salvage and towing assets including the US Army and a commandeered Iraqi tug. Twenty-five hundred feet of pier space and the Khawr Az Zubayr were free of obstruction and open for coalition shipping.

MDSU ONE DET 3 unceremoniously restowed its gear and convoyed back to Camp Patriot, Kuwait. The mood of the team on the convoy departing Iraq was considerably different from the mood during the infiltration. Fear and anxiety were replaced with a well-deserved confidence in the capability of the detachment. Shortly after reconstituting in Kuwait, DET 3 redeployed to Hawaii. The Detachment, their shipmates, their Commanding Officer, and their families breathed a collective sigh of relief with their journey safely completed.

Eric MacDonald is the Officer in Charge, MDSU ONE DET THREE.

Space Shuttle Columbia *Water Recovery Operations*

By: CWO2 Roger Riendeau

The last transmission from the Space Shuttle COLUMBIA occurred on 01 February 2003 at approximately 8:59 AM EST as she was passing over Texas at an altitude of over 39 miles. Moments later America would lose seven of its finest Astronauts. The debris trail was over 220 miles long, starting in the Dallas-Fort Worth area and ending in western Louisiana. Immediately, NASA began tracking and recording radar images, while local authorities started receiving reports of falling debris. Officials began collecting, logging and plotting the debris positions. It was possible that several high interest items from the left side of the shuttle, data recorders, cameras, and control systems may have fallen into any of the numerous ponds and lakes which are scattered across East Texas. The 185,000 acre Toledo Bend Reservoir was prime search area due to the numerous reports from local fisherman. However, the morning was extremely foggy and all reports with any credibility were from fishermen involved in a bass fishing tournament and were from hearing debris hit the water rather than seeing it.

Trees breaking the surface of Toledo Bend Reservoir.

In the summer of 1968 the community of Sabine County, TX stared in awe as rain poured into the local forest and countryside. A dam across the Sabine River had recently been completed and plans to clear cut trees and remove all the man-made objects from the Toledo Bend Reservoir as it filled was set to begin. However, two back-to-back 100-year storms rolled through and filled the 60 mile long reservoir in less than six months; leaving houses, cars, trees and even graves, under as much as 105 feet of water. No one at that time could ever imagine the tremendous obstacles that those items would turn out to be almost 35 years later.

Navy 1 Dive Team.

Dive teams from the FBI, EPA, and the Texas Department of Public Safety (DPS), began diving sites based upon "ear" and eye witness accounts. These Divers quickly discovered the difficulties of searching in an underwater forest. The EPA brought the first side scan sonar asset which also had difficulty operating in the heavily forested lake. One of the side scan sonars was dedicated to the ear and eyewitness reports while the second was used to start a gross survey under the center of the flight path. As reports came back from the dive and side scan teams, NASA soon realized they would need expert help to organize, prosecute, and manage the extensive underwater search effort just getting started.

On February 8th, CAPT Jim Wilkins (SUPSALV) informed NASA the Navy was ready to provide a formal assessment of the search environment. The Navy assessment team arrived at Toledo Bend Reservoir the next day to meet with Mr. Scott Harris (EPA) and Astronaut Steve Bowen (NASA). The team conducted an aerial overview of the bodies of water where debris was suspected. After CAPT Wilkins briefed NASA and FEMA officials on SUPSALV capabilities, it was obvious they could use our expertise. FEMA officially requested SUPSALV assistance.

NAVSEA 00C and MDSU TWO were tasked by the CNO on February 14 to support the Debris Recovery Operation with the intent of assuming command of the underwater search effort. It would prove to be an extremely difficult environment for searching and diving. As SUPSALV took over command and control, it became apparent that many hurdles needed to be overcome before an effective search could begin. First, was to unify the Global Positioning Systems (GPS) used by the dive and scan teams. The second and most difficult hurdle was to identify and acquire as many different search assets as possible to provide the best images of the lake's bottom. Phoenix International brought in the following search assets with operators: five Marine Sonic side scan sonars with 5 degree down angle transducers, one custom Marine Sonic side scan sonar with the transducers turned down at 10 degrees, one Klein 3000 side scan sonar system, one Reason SeaBat 8125 multibeam system, and one Reason SeaBat 8101 multibeam system. Additionally, two unmanned Remote Environmental Monitoring Units (REMUS), which have side scan sonar capability, were brought from MDSU

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TWO. The REMUS is an untethered unit, unlike conventional side scans, and could run the lake bottom without fear of entanglement. With all these assets, data analysts identified targets as they reviewed side scan imagery. Another method of target location was from ear witness accounts. On the morning of the incident the reservoir was covered with a thick layer of fog and had no less than 500 fishing boats participating in a bass tournament. Fishermen and land owners came to authorities for weeks reporting they heard pieces hitting the water or flying overhead but saw very little due to the fog. The eyewitness reports, nicknamed "X-files", were scrutinized and although the reports were credible, in many cases they did not provide specific or accurate enough information to dive on.

Although the average depth was relatively shallow, the dense tree coverage posed a difficult problem for the search boats. Surface towed side scan sonars produce their best quality results when operated at depth of 10% of the selected range scale off the bottom. Conditions dictated that the sonars had to be directly attached to the boat or towed as little as two feet below the surface. This provided relatively poor quality images and only large pieces of debris could be identified. Towing was not the only problem. The boats themselves could not run the required straight navigation lines due to the dense tree coverage. The REMUS also had its drawbacks. Designed for open ocean where depth changes occur gradually, it would often run into trees, stumps, and even the river bed wall, providing poor data and occasionally requiring Divers to "Free REMUS."

LWDS (Light Weight Dive System) deployed.

The MDSU TWO dive teams included Reserve Detachments from Cleveland (409), Newport (101), and Jacksonville (608). The Navy dive teams began arriving on 13 February with SCUBA equipment, Lightweight Diving Systems (LWDS), a Transportable Recompression Chamber System (TRCS) and lightweight salvage equipment. The Divers received an initial in-brief from NASA which covered the numerous hazardous materials and pyrotechnics on-board the shuttle at the time of the incident. The search area centered on an area one nautical mile on either side of the Columbia flight path. A secondary search area extended the original search area out an additional one nautical mile on either side of the flight path. This produced a water search area of 14.69 square nautical miles. Later in the operation two dive teams were also deployed to search a 3.14 square nautical mile area of Lake Nacogdoches 40 miles Northwest of Toledo Bend.

Daily dive briefs, given by SUPDIVE, directed all dive and security boat teams. Each morning the dive teams received a dive package containing a dive area, target locations (GPS coordinates), a target picture (side scan image), and a target description (size). Packages were generated by the data analysts who worked the night shift analyzing the data from the previous day's side scan searches. Four Navy teams joined the civilian dive teams and together they cleared approximately 60 targets per day. SCUBA was the equipment of choice, with the LWDS used for some of the deeper areas of the reservoir. Divers frequently dove the whole day, virtually blind, and located nothing but tree stumps and logs. In the hostile environment of the lake bottom the learning curve for the data analysts was slow. Water-soaked wood often reflected the sonar signal well enough to fool even the best analysts.

The question of the hour was, "If the side scan could locate an object, how can we confidently place a Diver at the same location and clear the target as well as a 90-foot box around it?" The first key objective was to place the dive team at the location identified by the side scan

CAPT Chris Murray accepts possible shuttle debris.

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PO Le and PO Gilkey loading the sector scanning sonar.

sonars. This was accomplished by using a Garmin GPS that was Wide Area Augmentation System (WAAS) capable. These units often placed the dive team within feet of the target location. The second key objective was to place a Diver with 100% confidence on the exact target.

Houston Police Divers had been field-testing a stationary sector scanning sonar from Kongsberg for several - months. The units could be deployed by a dive team and are set in the middle of a tripod. Before Divers were deployed, the diving supervisor, via laptop computer, mapped out the bottom to a maximum range of 120 meters. A 30-meter swath or less produced the best image. The advantage of this new tool was the ability to provide the same images that the side scan produced whereby a positive target identification could be made. The units could also scan the bottom simultaneously navigating the diver around obstacles from topside. In addition to this procedure, Navy teams carried a hand-held AN/PQS 2A and the civilian teams used metal detectors to complete a 100+ percentage of area coverage.

As several weeks passed, the dive teams and data analysts could more readily identify logs and tree stumps and eliminated them from the target packages to about a 50 percent certainty. Several questions arose, such as "If we are using our side scan units in such an unconventional way, what assurance do we have that they will be able to pick up a shuttle piece if one is present and are the data analysts able to identify it?"

A test range was set up containing four pieces of actual shuttle debris ranging in size and shape, various pieces of trash, and several boxes made to replicate the OEX recorder. The recorder was the most important missing piece and it was hoped that it retained information from the final seconds of flight. The test range was set up in a 30-foot deep, uncluttered area of water. A second test range, replicating the first, was set up in a 75-foot deep cluttered area representative of the normal conditions in the reservoir. Each scanning asset took turns running the cluttered and uncluttered test ranges. Three days of testing showed that even on a good day in optimal water conditions, the processors could accurately identify only the largest of the debris pieces measuring 4 ft. by 5 ft. All other pieces showed some reflectivity but would have been dismissed in real time video as other than shuttle debris. The result was, to say the least, discouraging. Experts were then brought in to evaluate the current search techniques, equipment presently in use, data, and the reservoir's conditions. After a day of discussion it was determined that we had the best equipment, the most experienced operators, and there was nothing more they could recommend to further enhance what was already in place.

The COLUMBIA recovery team continued to plumb the depth of Toledo Bend Reservoir for 54 days. Once a week dive leaders from both Navy and civilian teams met to discuss what current procedures worked and what did not. As weeks passed, dive teams began to see images of the reservoir's past inhabitants. Houses, barns, bridges, and roads were all frequent stops made by Divers. Outside the command post was a pile of recovered debris. Car tires, batteries, boat engines, anchors, fishing boxes, perch traps, refrigerators, and the all too plentiful beer can became constant reminders to each dive search team that even though shuttle parts remained elusive, if they were out there, they would find it. After two months of intensive search and recovery efforts, dive operations were completed on 12 April with a handful of recovered pieces turned over to NASA officials as possible shuttle debris. All pieces deemed high priority by NASA, that were thought to reside in the reservoir were eventually found by Texas Forest Service ground walkers. In all, the search and recovery assets consisted of two Navy and six contracted side scan or multibeam sonars. Nine dive teams (four Navy and five civilian) involved over 140 Divers and searched 17.8 square nautical miles. Fifty-one eyewitness reports involving private ponds and cisterns were cataloged, tracked, and cleared. The operation closed out with 3,100 targets cleared, 3,019 dives, 825 hours of bottom time, and a farewell send-off from the local tavern "The Bloody Bucket".

As a final note, when NASA called and enlisted the assistance of the Navy, they wanted the best and were convinced that nobody could pull an effort together better. When the final search and recovery teams departed on 14 April, NASA could rest assured that, although substantial debris had not been found, nobody else could have done a better job than Navy Divers. Hooyah.

CWO Roger Riendeau is the Officer In Charge of MSDU TWO DET BRAVO based out of Little Creek, VA.

USS Mississinewa Oil Removal Operations

By: Bill Walker

INTRODUCTION

In February 2003 a joint U.S. Navy team consisting of Fleet units, SUPSALV and contractor personnel removed nearly 2 million gallons of oil from the leaking World War II oiler USS MISSISSINEWA in the remote Ulithi Atoll, Yap state, Federated States of Micronesia (FSM). Following two previous Navy operations to patch MISSISSINEWA's leaks in late 2001 and early 2002, and in response to a request from the Governor of Yap, via the State Department, the Chief of Naval Operations (CNO) initiate oil removal operations. CNO directed the office of the Supervisor of Salvage (SUPSALV) of the Naval Sea Systems Command, to undertake planning and implementation of the oil removal, pending the results of an Environmental Assessment (EA) of the proposed oil removal. When the EA resulted in a Finding of No Significant Impact (FONSI), in August 2002, CNO directed SUPSALV to proceed with oil removal and directed Commander Pacific Fleet (COMPACFLT) to provide Navy Divers and a diving vessel to support the operation. USS SALVOR (ARS 52) was assigned to provide diver support and her Commanding Officer LCDR John Carter was designated the Navy's On-Scene Commander under a Commander Seventh Fleet chain of command. Mobile Diving and Salvage Unit ONE (MDSU ONE) and Explosive Ordnance Disposal Mobile Unit FIVE (EODMU FIVE) in Guam were directed to provide additional Divers and diving equipment to support the mission. Ultimately, resources were mobilized from Pearl Harbor, Guam, Singapore, Williamsburg, VA, Port Hueneme, CA, Anchorage, AK, New Orleans, LA, and Washington, DC to undertake the oil removal operation.

USS MISSISSINEWA sinks, November 1944.

BACKGROUND

USS MISSISSINEWA was sunk by a Japanese manned suicide torpedo, or "kaiten," on the morning of 20 November 1944, while anchored in the lagoon at Ulithi Atoll, approximately 360 miles southwest of Guam. Sixty-three members of her crew were lost in the attack. At the time of sinking, the MISSISSINEWA was carrying a full load of Navy Special Fuel Oil (NSFO), aviation gasoline, and diesel fuel. The actual location of the wreck was uncertain until 6 April 2001, when Divers from the San Francisco Bay area located and were the first to dive on the wreck of the 553-foot MISSISSINEWA in Ulithi Lagoon.

USS SALVOR crew rendering honors to MISSISSINEWA crew.

On 6 August 2001, the Yap government received a report of an oil spill in Ulithi Lagoon. Surveys by government officials dispatched to the site on 7 August confirmed that the oil was leaking from MISSISSINEWA. A storm had recently passed over the area and may have been a factor in the start of the leak. A State of Emergency was declared for the spill site. The U.S. Coast Guard (USCG) and National Oceanic and Atmospheric Administration (NOAA) sent a team to assess the impacts of the spill and the need for shoreline cleanup. At the direction of CNO, SUPSALV rapidly mobilized a contractor scuba dive team to verify the source of the oil release. While on site, the SUPSALV team quantified the release rate, plugged the leak source and removed trapped oil likely to be released with the next storm. In late December 2001, the vessel started leaking again, and CNO dispatched a more robust team, adding MDSU ONE surface-supplied air Divers to the SUPSALV/contractor mix. SUPSALV's Emergency Ship Salvage Material (ESSM) and Pollution Response contractor "GPC – a Joint Venture" (GPC) mobilized the sub-contracted support vessel SMIT PIONEER from Singapore to serve as the support platform. This

(USS MISSISSINEWA continued on page 11)

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second team arrived at the site in early February 2002, to conduct further assessments. Again, they were able to plug the leak (at a different point this time) while on scene. Through tank sampling and extrapolation the Navy surveys revealed that up to 2.8 million gallons of oil remained in MISSISSINEWA's tanks.

THE OIL REMOVAL OPERATION

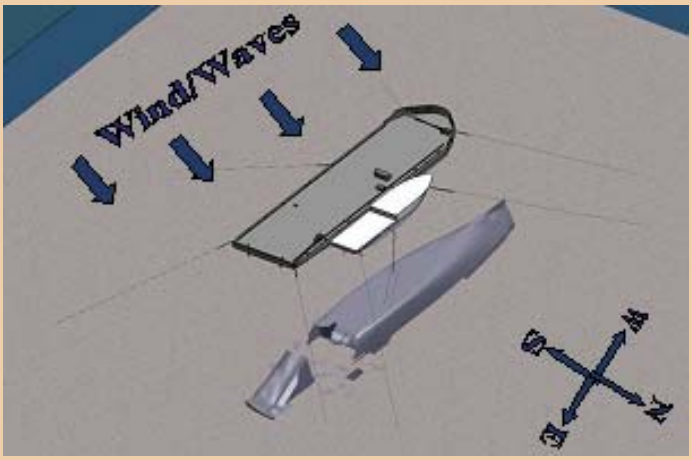
For purposes of discussion, the MISSISSINEWA oil removal operation is divided into four phases – Planning, Mobilization, On-Scene Operations, and Demobilization.

The Oil Planning

Planning for USS MISSISSINEWA oil removal operations commenced informally following the two Navy survey/patching operations when it was determined that sporadic small oil releases were likely to continue and that a catastrophically large release was possible. Formal planning began with development of the "Proposed Action" portion of the Environmental Assessment. An EA requires a presentation of the Proposed Action, in this case the oil removal, in sufficient detail to determine the action's potential impact on the environment. Following the Finding of No Significant Impact (FONSI) and direction from CNO to proceed, a detailed Operations Plan was developed, based on the EA's Proposed Action, and further specifying personnel, equipment, and procedural requirements.

As noted above, CNO formally tasked SUPSALV with planning and executing the offloading operation and tasked Commander Pacific Fleet (CPF) with providing a diving support platform and Navy Divers to support the effort. The involvement of Navy Fleet units triggered Navy Fleet planning in the form of several Concepts of Operation (CONOPs), addressing diving operations, medical evacuations, and related Navy operational requirements. These CONOPs are beyond the scope of this article.

SUPSALV tasked GPC with developing the detailed oil removal operations plan, assembling the offloading systems using Navy-owned, SUPSALV Emergency Ship Salvage Material (ESSM) equipment, providing appropriate commercial support vessels, and providing an operations team to support the on-scene SUPSALV representative with technical advise, topside diver support (of ESSM equipment), and a pumping crew.



USS MISSISSINEWA concept of operations schematic.

The concept of operations for offloading MISSISSINEWA relied upon an experienced salvage team with surface-supplied air Divers using hot tap tools (described below) to access the ship's cargo and fuel tanks through the inverted hull that rested in 130 feet of water. Divers would then rig submersible pumps and discharge hoses to transfer oil from MISSISSINEWA's tanks to a tank vessel moored over the wreck. The diving support platform, USS SALVOR, would be moored alongside the tank vessel. Three twin-drum mooring winches on the tank vessel would allow controlled movement of the vessels in the six-point moor and thus precise positioning of diving stations on SALVOR directly over target locations on MISSISSINEWA'S hull. Upon completion of offloading, the recovered oil was to be transported in the tank vessel to a receiving port to be sold for power plant fuel or refinery feedstock.

The EA and subsequent briefings for the Governor of Yap and his environmental staff had made it clear that even if all tanks could be tapped and pumped as planned, approximately one half of one percent of the pre-offload volume of MISSISSINEWA oil would likely remain on board at termination of oil removal operations. Remaining oil would include oil clinging inside the emptied tanks or in inaccessible piping or other inaccessible areas of the wreck. The offloading operation would not preclude further minor releases, but should prevent future significant releases.

A hot tapping is a process in which a pipe flange and valve are bolted or welded to the shell plating of the hull over the high point of a tank. With the valve opened, the hot tap device (like a hole saw) is secured to the valve, and the cutter head advanced through the valve and against the hull and then rotated to cut a hole (in our case a 3.5 inch diameter hole) through the hull. The cutter is then retracted back through the valve, the valve closed, and the hot tap device removed and replaced by a hose to the suction end of a submersible pump. With a hose then attached to the discharge end of the pump, the valve is opened and pumping can commence. In some cases (e.g. tank vents no longer open), a second hole must be cut low in the tank to allow ingress of water to replace the oil removed.

Mobilization for Offloading

Mobilization for MISSISSINEWA offloading included the movement of five support vessels from Hawaii and Singapore, Navy diving equipment from Hawaii and Guam, and other Navy and commercial support equipment from Virginia, Louisiana, Hawaii, and Singapore. Navy, Navy contractor, and sub-contractor personnel were mobilized from Hawaii, Guam, Washington, DC, Williamsburg, VA, Port Hueneme, CA, Anchorage, AK, and Singapore.

(USS MISSISSINEWA continued on page 12)

(USS MISSISSINEWA continued from page 11)

USS SALVOR proceeded from her home port of Pearl Harbor in mid-January 2003, with SUPSALV Pearl Harbor ESSM support equipment, and MDSU ONE diving equipment, as well as her own allowance of diving equipment, including her installed recompression chamber. USS SALVOR stopped in Guam to pick up MDSU ONE and EODMU FIVE Divers, and additional diving equipment, including an EODMU FIVE Fly-Away Recompression Chamber (FARC). She then proceeded to Ulithi Atoll, arriving toward the end of January 2003.

After an exhaustive search for support vessels, GPC hired two tank vessels (barges) out of Singapore, rather than one, to receive MISSISSINEWA oil and to provide primary salvage support. A pair of anchor-handling tugs were hired to tow the two barges, provide additional hotel services for SUPSALV and contractor personnel, and to install the six-point moor. One barge, FELS 20, went to a shipyard in Singapore to be outfitted with all salvage support equipment – mooring winches, 60-ton crane, berthing modules (for the additional Divers), and related support systems, including a sanitary wastewater treatment plant for USS SALVOR, and for her own on-board berthing modules that included showers and toilets.

ESSM salvage and spill response equipment from Williamsburg, and Singapore and support equipment, including leased marine sanitation devices (for wastewater treatment) from Louisiana were transported by ship to Singapore for installation on FELS 20. The second barge, FELS 21, was to be the primary reception vessel for MISSISSINEWA oil and required no significant preparation prior to deployment. In mid-January 2003, the larger tug, SEACOR ROVER with FELS 20, and the smaller JAYA MARLIN with FELS 21 departed Singapore for the approximately 2-week transit to Ulithi Atoll.

SUPSALV and GPC personnel based in Washington, DC, Williamsburg, VA, Port Hueneme, CA, Anchorage, AK, and Pearl Harbor, HI, flew from their respective bases to Yap, Federated States of Micronesia (FSM) and then on to the island of Falalop at Ulithi Atoll in a small Pacific Missionary Airways aircraft. From Falalop, it was an exciting, small, open boat transit of eight miles to the MISSISSINEWA site to meet SEACOR ROVER.

On-Scene Oil Removal Operations

Response vessels and personnel rendezvoused at Ulithi Atoll around 1 February 2003. SEACOR ROVER arrived first with the primary support platform, Barge FELS 20, met with an advance SUPSALV/ GPC team and commenced positioning FELS 20 in the six-point moor. USS SALVOR then moored alongside FELS 20 and commenced setting up dive stations on her fantail. The 60-ton crane and a small forklift truck on FELS 20 were used to transfer shipping containers and equipment between SALVOR and FELS 20, and to set up pumping stations and support equipment on the support barge. The second barge, FELS 21 was moored alongside FELS 20, opposite SALVOR to receive oil pumped from MISSISSINEWA.

All vessels were positioned over MISSISSINEWA and rigged for pumping operations on 4 February 2003, and Navy Divers on SALVOR commenced diving operations. After an initial scuba survey, Mark 21 Divers positioned a "navigation grid" on MISSISSINEWA using a network of wires and magnets to assist Divers in positioning hot taps at precise, pre-determined locations (the highest point in each tank to be pumped). Divers then secured a pumping manifold to one of MISSISSINEWA's bilge keels, with a 4-inch discharge hose to the surface. A lightweight, 4-inch submersible pump with suction and discharge hoses were rigged between hot tap accesses and the manifold as offloading progressed.

The manifold isolated the relatively weak hot tap flanges from the stresses of topside vessel motion transmitted through the discharge hoses.

With the navigation grid in place and initial pump rigging in place, the Divers proceeded with implementation of the offloading plan, sequentially hot tapping each tank and space known to contain oil from the previous surveys. The Divers hot tapping procedure at each location was as follows: clean marine growth from the designated hot tap location on the hull, position a flange against the cleaned hull with magnet-clamps, drill and install self-tapping bolts to secure the flange to the hull, mount a shut-off valve on the flange, secure the hot tap (hole saw) device to the valve's oil/water-tight cam loc fitting, open the valve, advance the cutter head through the valve to the hull, rotate the cutter head using a hydraulic tool as the

(USS MISSISSINEWA continued on page 13)

Moore Barge FELS 20 with nested support vessels.

(USS MISSISSINEWA continued from page 12)

Divers on stage during MISSISSINEWA oil recovery operations.

cutter head is advanced through the hull, secure cutting when through the hull and retract the cutter head from the hull back through the valve, close the valve, replace the hot tap device on the valve cam loc coupling with a short suction hose to the submersible pump. Oil floating at the top of the tapped tank can now be pumped to the moored vessels, to be replaced by ingress of seawater through open tank vents or other tank openings.

Each tank confirmed to contain oil was hot tapped and pumped off in this manner. Pump discharge was sampled continuously as it was discharged into FELS 21. As the bulk of the oil was removed from each tank during initial pumping, when a significant percentage of water was detected, pumping was secured on that tank to allow remaining oil to migrate through internal tank structures to the top, and water to settle out from the oil. A series of pumping and settling cycles were required, more on some tanks than on others, before salvors were confident that as much oil as possible had been removed from each tank. All oil and water pumped (about 7 % of the total volume pumped was free water) was retained on the receiving barge for transport and sale/disposal in Singapore. When all removable oil had been pumped from each tank, all fittings were removed from each hot tap flange and the holes were capped in a manner preventing future access by unauthorized personnel.

Demobilization

Upon completion of oil removal operations, Divers performed a final survey of the hull to ensure that all hot tap caps were securely in place and there was no indication of further oil release. SALVOR then secured from diving operations, re-stowed all gear, transferred equipment to and from FELS 20, and got underway for return to Pearl Harbor, via Guam to disembark EODMU FIVE personnel and equipment.

Three additional days were required to recover the 6-point moor and re-pack, re-stow, and secure all gear on FELS 20 for the return transit to Singapore. SUPSALV and GPC personnel assisted prior to small boat transit to Falalop for return flights home. For the return to Singapore, the larger, more capable SEACOR ROVER towed the FELS 21 with her full load of MISSISSINEWA oil and JAYA MARLIN towed the FELS 20 with her deck load of salvage equipment. ROVER and MARLIN departed Ulithi Atoll with their tows at midnight on 1 March 2003, two weeks ahead of schedule, after just about a month of MISSISSINEWA offloading operations. It was about three months before all equipment was returned to the SUPSALV ESSM bases and other suppliers around the world. ESSM equipment refurbishment continued for about another month after that.

A Diver taking an oil sample.

CONCLUSION

The MISSISSINEWA offloading operation was highly successful in all respects. The threat of a significant future release of oil into the pristine Ulithi Atoll was eliminated. While small, inaccessible volumes of oil remain on board, it is unlikely that even minor future releases will be detected. Nearly 2 million gallons of potentially damaging cargo and fuel oil were removed through the joint, on-scene efforts of a team consisting of Navy Fleet Sailors and Divers from three Navy commands, NAVSEA SUPSALV, SUPSALV's contractor - GPC, a major subcontractor, four commercial vessels and a Navy salvage vessel. A little-known relationship between the United States government and the Federated States of Micronesia (FSM), under a formal "Compact of Free Association" was cemented. Ulithi Atoll islanders of the four inhabited islands around the lagoon, as well as officials of Yap state of the FSM, were delighted with the successful oil removal. The Ulithi islanders rely on the bountiful waters of the Ulithi lagoon for subsistence fishing as well as to support a fledgling tourism industry. Relatively new ESSM hot tap equipment was procured, systems assembled, support items identified and all components successfully exercised with the support of Navy Fleet Divers and Salvors. Finally, in addition to the operational successes, we should note that the Navy successfully implemented requirements under the National Environmental Policy Act (NEPA) for preparation of an Environmental Assessment (EA) leading to a Finding of No Significant Impact (FONSI). Through the EA and FONSI, NAVSEA and Fleet salvage forces not only met regulatory requirements, but also perhaps more importantly, engaged in environmental planning that facilitated a successful salvage operation with minimal impact on the environment.

Bill Walker (NAVSEA 00C25B) is a Salvage Specialist and Environmental Engineer at NAVSEA 00C.

USS MISSISSINEWA Diving Operations

By: HTC (MDV) Michael E. Moser

On 3 February 2002, a Mobile Diving and Salvage Detachment from Mobile Diving and Salvage Unit ONE (MDSU ONE) was deployed to Commander Seventh Fleet area of responsibility. The MDSU ONE Detachment and an element from Explosive Ordnance Disposal Mobile Unit FIVE (EODMU FIVE), with technical and contracted support from NAVSEA, located and patched a damaged service pipe, securing the source of the leak. The task organization completed a thorough survey and gathered data to support the decision to remove MISSISSINEWA's remaining cargo. Engineers determined that the oil had to be pumped out of MISSISSINEWA and collected prior to a catastrophic release. In conjunction with MDSU ONE, USS SALVOR, NAVSEA, and COMPACFLT developed a Concept of Operations to mobilize forces to Ulithi, remove and collect MISSISSINEWA's cargo.

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Samples of contaminated water.

On 13 January 2003, USS SALVOR, as designated on-scene commander, deployed from Pearl Harbor with an element of MDSU ONE DET FIVE. On 28 January, SALVOR arrived in Guam where she embarked additional equipment, including a chamber and Divers from EODMU FIVE, arriving at the objective on February 2nd.

The first task was to establish a marked grid system to support the location of various points along the hull. The grid system consisted of a main wire running fore to aft along the center of the hull. Several branch wires were run athwartship. With any point on the hull defined by the grid system, Divers were able to accurately locate targeted tanks under the two inches of sea growth covering the hull.

MDSU ONE DET FIVE was particularly well suited for participation in this operation. During previous recovery operations, several members of the detachment gathered invaluable experience operating "Hot Tap" equipment. Hot tapping equipment enables Divers to penetrate the hull or any bulkhead of a ship to access and collect liquid cargo. The system is designed to prevent release of the cargo to the environment while breaching the integrity of the hull. In order to access the cargo in MISSISSINEWA, Divers first cleared over 50 years of marine growth from designated 2-foot diameter sections of the hull at each of the targeted

Divers hot tapping a cargo tank on MISSISSINEWA.

oil tanks. They then attached a flange to the cleared area, and screwed a 4-inch ball valve onto the male threads of the flange. Divers then opened the ball valve, clamped the "Hot Tap" tool to the valve assembly, and advanced a hydraulically-powered hole saw blade through the center of the ball valve assembly and into the hull of MISSISSINEWA. Once the bit was through the hull, Divers slowly retracted the tool and closed the ball valve preventing escape of the liquid cargo. With seawater, oil and air inside several of the tanks, Divers were often required to cycle the ball valve and permit the air (lightest medium) to escape prior to connecting collection hoses. Finally, 4-inch collection hoses were connected, and the oil was recovered as pumps on the barge lifted the oil into collection tanks. Later, pumps in the water column were added to help push the oil to the surface.

Fuel oil, still in MISSISSINEWA's service and storage systems, had to be removed as well. HT1 Rick Pelton, an expert at underwater cutting and welding, made the first cut into the ship's hull to access the interior fuel tanks. Using

(USS MISSISSINEWA continued on page 15)

OBITUARY

With sadness, we note the passing of a U.S. Navy Diving Legend - CDR (ret) Billie L. Delanoy, who passed away recently at his home in California. His name was synonymous for many years with all the best of which was and has become Navy Diving and Salvage.

Born in 1928, he enlisted in the U.S. Navy in 1946 and was designated a Diver in 1947. Prior to his commissioning in 1958, he served on almost every possible salvage ship and repair tender in the Pacific. Following his commission, he served in many diving related billets including: Training Officer at the Naval School of Diving and Salvage, NSDS (Washington, DC), XO of the USS SAFEGUARD (ARS 25), CO of the USS UTE (ATF 76), and XO of Harbor Clearance Unit ONE during which he helped author the first official salvage manual. He then served as XO of the Dive School in Washington, DC before assuming duties as Commanding Officer in 1969. After command of the USS GREENLET (ASR 10) his final tour was as Commanding Officer of the Man-in-the-Sea Program in San Diego.

Upon his retirement from active duty in 1971, he continued to work in the diving community as Vice President of Taylor Diving and Salvage involved with work in the oil field and commercial diving. In addition to serving as a Salvage and Ocean Towing consultant for many maritime firms, the US Navy hired him as a consultant to develop and conduct the initial crew training for the new ARS 50 SAFEGUARD class salvage ship.

A recognized expert in diving and salvage, he served as the Lloyd's of London's insurance firm's expert witness in over 20 court cases involving maritime disasters. He was larger than life to many and the epitome of honesty and the embodiment of a gentleman. His contributions will be long remembered.

Shipfitter First Class Bill Delanoy, USS GREENLET (ASR 10) in 1956.

(USS MISSISSINEWA continued from page 14)

exothermic techniques, he cut a six by six-foot door into the side of the hull. Next, investigative holes were drilled in cargo holds. No oil was found, and upon completion of the internal work, LT (jg) Christopher Reece, SALVOR's Diving Officer, welded a steel cover over the opening to prevent recreational Divers from entering MISSISSINEWA.

With the oil removed from the tanks, an arduous task remained; the oil service piping inside the hull needed to be drained. MM3 Paul Odermann and HT2 Luke Johnson entered MISSISSINEWA through a damaged section of the hull where the Japanese "kaiten" hit. Working around jagged and twisted steel, the divers advanced 50 feet into the wreckage where they found the patch MDSU ONE Divers placed in December 2001. They replaced the deteriorated flange and attached a pumping hose to remove the remaining oil. With the oil transfer completed, a new flange was installed to seal the pipe.

Each unit involved contributed significantly to the successful completion of this operation, from leadership and technical expertise to the well-maintained life support equipment. Additionally, this operation took three weeks to complete; the mission was accomplished successfully two weeks ahead of projected schedule. No personnel were injured, and no liquid cargo was released to the environment.

As a result of the salvage team's efforts, 1.96 million gallons of crude oil was removed as a potential hazard from the pristine Ulithi Lagoon.

HTC (MDV) Michael E. Moser, MDSU ONE DET FIVE, Pearl Harbor, HI.

MDV/CWO Conference 2003

This year's MDV/CWO conference was held 14-16 May in Panama City, FL and covered a variety of topics. A sampling of some first day presentations are: MDV Heineman's review of the DSWS program and the newly approved OPNAV1414.3A (Diving Salvage Warfare Specialist Qualification), BMCM Prat covered SEA WARRIOR 21, MDV Briggs reviewed the manning situation, and MDV Curtis covered the 5V model including the pros and cons of the Diver rate. On the second day we broke up into four working groups of Salvage, UWSH, Personnel & Training, and SPECWAR/EOD/USMC. From these groups, point papers were presented, discussed, and action items and deadlines were assigned. These point papers and the resulting action items (with responsibility and due dates) are available for review at http://www.supsalv.org. Please take the time to review. If you have input or suggestions please call or e-mail any of us here at NAVSEA.

MISERY LOVES COMPANY

By: LT (jg) Sara H. Olson

Misery loves company – just ask any of the eleven Master Diver (MDV) candidates that attended Mobile Diving and Salvage Unit TWO (MDSU TWO) MDV pre-screening in the freezing rain from October 27-31, 2003. They endured the biting rain, heavy current, and reduced visibility of the Patuxent river to learn where they "…stand with achieving the goal of becoming a MDV," said candidate HTC Fleming.

Warrant Officer Riendeau, Project Diving Officer, and BMCS (MDV) Mariano, Project Master Diver, spent weeks developing drills that would challenge the candidates to think beyond what is explicitly stated in the Dive Manual. MDSU TWO Master Divers Mariano, Mallet, and Daniels enlisted the expertise of MDVs Orns, Roberson, and Heater to ensure this year's pre-screening accurately reflected what the candidates' will experience during MDV evaluations. The result was an learning experience for all. "We try to present real-life scenarios, that are slightly more challenging than those presented during evals," explained MDV Mariano. One candidate, who attended pre-screening three previous times, testified that this was the most educational and well organized one he has attended. Another candidate described the two weeks of diving and drills as "by far the most educational experience in my diving career." That sentiment was echoed by all the candidates and Divers present.

MDV Mariano briefing MDV candidate, HTC Fleming.

Four of the eleven candidates were designated as primaries and selected to supervise drills throughout the free and graded weeks. Divers from MDSU TWO repeated the exact same scenarios for each candidate whose responses were graded by the MDVs. The enthusiasm and motivation demonstrated by the MDSU TWO Divers in faithfully repeating each scenario contributed directly to the successful completion of the entire two weeks. The seven secondary candidates observed each scenario and freely discussed and debated the "correct" course of action. In addition to the MDV evaluation, FMGS and dive station training were conducted for the entire dive team throughout the two weeks and contributed directly to two First Class Divers qualifying as Unlimited Mixed Gas Diving Supervisor during the pre-screening.

Deploying MK 20 Diver (SUPDIVE) during Underwater Ships Husbandry Drill.

MDSU TWO conducts two MDV pre-screenings per year to prepare candidates for MDV evaluations at the Naval Diving and Salvage Training Center in Panama City, FL. This year, over half the candidates traveled cross-country for the chance to perform and learn in "real, on-the-side situations." It was a great learning experience for all involved and as stated by MMC Brustad, "you could not buy this kind of training. *FANTASTIC!*"

Bits and Pieces

"Service to the Fleet"

*This page is designed to give the readers **"Bits and Pieces"** of various topics in regard to diving and its systems.*

TRCS

- Flask racks for the TRCS system require tipping to remove excess moisture from the flasks after being charged. The one exception is, if you have an ANU approved purification cartridge system installed on your compressor, tipping is not required. ESSM has reported that TRCS flasks that they have received recently have an excess amount of water in them, which equates to PMS not being performed. Those commands with TRCS systems permanently installed in ISO containers or buildings will be required to have an ANU approved purification cartridge system installed prior to next certification.

- For commands interested in expanding their TRCS system, Cowan offers the Modified Transfer Lock (MTL) that accommodates 5 people and was initially designed as a component of the US Navy SRDRS Submarine Rescue System.

- Commands are authorized to use any ANU approved O_2 or CO_2 monitoring system. Revisions to drawing and tech manual will reflect this.

- NAVSEA is in the process of reviewing and revising technical manuals, drawings, OPs, and EPs.

Buoyancy Compensators

Due to the rapid advances and ever-changing world of BCs, Commercial Off the Shelf (COTS) BCs not listed on the ANU list, that meet the following four requirements, will be authorized for Navy use:

1. Has an oral inflation tube
2. Has a power inflation device
3. Has quick release of weight w/o chance of fouling
4. Has 10 lbs positive lift at maximum depth.

Commands are responsible to ensure that these requirements are met prior to use.

HP/MP/LP Hose Assemblies

NEDU has certified clean and ready to install HP/MP/LP hose assemblies. Examples include but are not limited to FADS, MK3 MOD 0, TRCS, and SCUBA. All hoses are pressure-tested and cleaned to required cleanliness standard for system requirements. Commands will receive all required testing, cleaning, and objective quality evidence for inclusion in their hose log. Hose assemblies can be supplied with or without strength member married in place with caps or plugs permanently attached to each end of the hose for foreign material exclusion devices.

Viewports

Process Instruction 00C3-PI-006 (Viewports) will be in effect soon and will cancel AIG 03-05. It changes the following MIPS: H-012/006, 5921/020, and 5921/177.

Transportable Recompression Chamber System (TRCS).

O-ring

Questions have been raised about O-ring hardness, specifically in the Transportable Recompression Chamber System (TRCS). The TRCS O&M Manual and drawings call for M83248/1, where /1 designates 75 durometer and /2 designates 90 durometer. The Joint Fleet Maintenance Manual (JFMM) calls for 75 durometer on LP systems and 90 durometer on HP systems. In specific diving applications, the hardness of the O-ring depends on a number of factors and an across-the-board hardness is not always the best fit. In cases of conflict, follow the system's specific technical manual and drawings as closely as possible. Use of a different durometer O-ring requires a Minor Departure from Specifications to be signed out in accordance with the Divers Re-Entry Control System.

Step-by-Step

To download Luxfer's SCUBA Cylinder Visual Inspection Guide that is required to perform the A-6R on 5921/019, please follow the instructions below:

1. Type in URL: www.luxfer.com
2. Click on "Luxfer Gas Cylinders"
3. Under "Gas Cylinder Divisions", click icon to enter site
4. Click on the "Downloads" link
5. Click "Register" (Highlighted in red)
6. Enter the required data
7. Download the Luxfer's SCUBA Cylinder Visual Inspection Guide.

Relief Valves

MIP 5921/034-73, MRC 36M-6R allows for in-place testing of relief valves. This MRC must be accomplished with a controlled work package with appropriate safety precautions. This MRC is not authorized for use on recompression chamber or compressors.

Command in the Spotlight

NAVIMFAC PACNORWEST DET Everett

By: DC1 DV Jon Sommers

Nestled between two piers, on a floating Vietnam-era barge which used to serve as a makeshift morgue, lies the Dive Locker of NAVIMFAC PACNORWEST DET Everett. Located about 45 miles north of Seattle, WA, Naval Station Everett was opened in 1994 for the sole purpose of berthing the aircraft carrier USS ABRAHAM LINCOLN. NAVSTA Everett is now home to three FFGs and one new Arleigh Burke DDG as well as supporting an ongoing rotation of various support craft and PCs for homeland security purposes. IMF Det Everett is the surface force detachment of IMF Bangor. The R6 Division Dive Locker is part of that detachment. For those of you who have been around and understand limited resources, that makes us the step-children of the step-children. Monetary assets aside, the Dive Locker at IMF Det Everett gets the job done.

Billeted for 15, the locker's current tally is 10. Three 1st Class Divers, six 2nd Class Divers, and MDV Winter. Our assets include one MK-3 LWDS, one ROPER cart, and a 22-ft Boston Whaler used extensively for SCUBA and Force Protection tasking. Our primary job is UWSH plus the multitude of security swims involved with force protection.

The jobs completed by this locker have included: waterborne propeller replacements on an aircraft carrier, CPP blade replacements, CPP hub seal repairs, APU repair and propeller replacement, sonar dome rubber window repair, shaft stern tube seals, numerous cofferdam jobs, and the bread and butter hull inspections and cleanings.

CDR Rosner, DC1/DV Sommers, QM1/DV Stewart pose as heroes of the last dive.

The first half of this year has been busy. One of our FFG's tangled with some KEVLAR fishing netting, ripping off half of her upper ropeguard, sending it bouncing off the churning blades of her screw. One of the blades required replacement, the rest required extensive grooming to their leading edges and a new ropeguard needed to be manufactured. The blade replacement and CPP hub seal repair went as smoothly as they should, taking around two days. The ropeguard took four tries to get a match, taking the better part of a week. In the middle of this, the locker wrote and completed 27 RECs for the certification of a newly acquired TRCS.

June would see two more shaft seal jobs (five in four months), at NISMO Bremerton, WA. The first day of the job, a request was received from a local family for a body recovery in a nearby lake. The day before, the local law enforcement dive team had searched for 4.5 hours to no avail. The Navy dive team recovered the body in just under an hour. Another testament to the organizational skills, team work, and professionalism of Navy Divers.

If you are looking to relax and retire in the Northwest, this is not your place. Every boot is shined and the decks look like glass. The old school ways still live on. Overtime is authorized. It's the right way to do business. Navy Divers are the cream of the crop, the king of the mountain. It is up to us to ensure we do not rest on our laurels, to constantly challenge ourselves and our community to aspire to even higher standards. The diving community is currently in a state of great change. Our future is in OUR hands. The future will be what WE make it. Are YOU ready? Hoo Yah Navy Deep-Sea Divers!

Divers complete debrief during clean time. From left to right: EM1/DV Rowles, EN2/DV Ayers, HT3/DV Douglas, BM2/DV Keezer (seated), BM2/DV Roberts (seated), DC1/DV Sides, MDV, DC1/DV Sommers, CDR Reimers XO SUPSHIP listens intently, he's the next diver in the water.

The Old Master

By: MDV Lino F. Matteoni

The day of my retirement is getting closer than I would like to believe. These last thirty-one years have passed in a blink of an eye. So, here is my chance to do a little article for FACEPLATE. As most of you know, I have not pursued a career in writing, but here it goes.

The U.S. Navy Diving program is the best in the world. We have proved this by always being ready for any situation that may arise, whether it takes place here or in some other country. The way that we have done this is with professional personnel excelling with the equipment at their disposal. Also, our young Divers just coming to us from Dive School are no longer just knuckle dragging brutes, they are Divers - well-trained and educated. We have become well known as the technical experts in all aspects of diving. We are no longer just tied to salvage or ships husbandry, now we are with Spec War Units, EOD Units, and Marine Corps Units.

The diving community has gone through many changes in the last 15 years, with many more changes on the way. Salvage ships and repair ships are almost a thing of the past and the opportunity to serve on-board scarce. This has made it impossible in some cases for personnel to work in their ratings. Which is why I believe that a diver rating might not be such a bad idea. With our own rating we will be advanced with the knowledge you have obtained as a Diver. With this new rating Divers should be detailed to each type of diving command through their naval career. This will ensure that they meet all qualification requirements for the new rating.

This is why it is imperative that those in the leadership positions be responsible for maintaining the highest standard of training so our personnel are always at peak readiness. This will ensure that we are always ready for what may happen. Training is one of the best ways to prevent accidents, which need not occur. Not only do we have to train our Divers, but also the junior and senior personnel that work along side of us, so that they will have a better understanding of what we do. This will make communications go smoother.

It has been an honor to serve in the diving community. I wish you all the best in the future of our diving community.

JAKE'S CORNER

By: Otto Adams

FROM THE SUPERVISOR OF DIVING . . .

This issue of FACEPLATE contains articles covering the work and efforts of Mobile Diving and Salvage Units ONE and TWO and the Underwater Construction Teams. Their deployments during IRAQI FREEDOM and the missions and tasks that these commands completed were a tremendous help to the war effort and demonstrated the value of the Navy Fleet Diver. Hoo Yah Navy Deep-Sea Divers!

Retiring MDVs

We are losing well over three-hundred years of diving experience with the retirement of the following Master Divers: MDV Ray Augustine, MDV Scott Heineman, MDV Dick Schlinkerman, MDV Ken Hinkebein, MDV Barry Burgess, MDV Jim Phalin, MDV Mike Washington, MDV Don Curtis, MDV Lino Matteoni, MDV Rusty Hunt, MDV John Schnoering, and MDV Paul Gridina.

Many thanks for the thousands of dives you supervised, the hundreds of hours you spent on the bottom, the numerous Divers that you have taught and influenced to become better Sailors and Divers and to the daily contribution you have made to making this great Navy and Nation what they are today. Hoo Yah!

New MDVs

Congratulations to our newest Master Divers. The standard has been set by the Master Divers that came before you. It is now your turn to lead our young Divers and to grow tomorrow's Master Divers. Most recent Master Divers to be pinned: BMC (DSW/SW/MDV) Don Grubbs - MDSU TWO, ITC (DSW/SW/MDV) Dave Gove - MDSU ONE, BMC (DSW/SW/MDV) Kevin Jones - SDV Team ONE, BUC (SCW/MDV) Eric Eaton - UCT 2, Port Hueneme, EMC (DSW/MDV) Vern Malone - DSU, San Diego, and ENC (DSW/MDV) William Rubow - SIMA, VA.

I would also like to congratulate our first Diving Chief Warrant Officer 5, CWO5 Terry Harris.

Dive Manual

We are currently working on an update to the Dive Manual. We have numerous changes, corrections, and proposed changes that we are working on now. We hope to de-conflict some of the information in the various chapters as well as bring the manual up-to-date. If you have any input, please pass it on by e-mail to MDV Fred Orns (OrnsFK@navsea.navy.mil) or MDV Steve Smith (SmithSS@navsea.navy.mil) at 00C.

Preliminary Contaminated Water Diving Manual

Expect to see the Contaminated Water Diving Manual available on the 00C website as we release this FACEPLATE. 00C3 will also be sending out a few copies to dive lockers for comment and review. This is a hot topic and way past due for getting the attention it needs. This manual will be the first step in getting guidance to the Fleet on diving in contaminated water. It is our intention to issue this manual as preliminary guidance and request fleet user feedback. After about six months, we will then review and reissue an updated manual as our first contaminated water diving manual. Additional appendices will follow as more research and studies are completed in this area. The guidance in the Contaminated Water Diving Manual was put together by NEDU, after exhaustive research into the civilian diving industry, government agencies, and foreign military Divers as to what are the best practices and diving equipment available. We will continue to work in this area with NEDU, industry, and our allies to be better prepared to handle contaminated water situations.

Divers Survey from the Center of EOD and Diving

The EOD and Diver surveys are out on SKILLSNET. We need 100% participation from every EOD Tech and Diver in the fleet. You have/will receive word that it is time to take this survey from many sources (NKO, messages traffic, e-mails, etc) and how to take the survey. This survey has a large and immediate impact on the future of our communities. For that reason, take whatever steps are required to get your people to complete this survey NOW. Do not wait. Please pass to all Divers in our communities. The Center of EOD and Diving is working to chart the future for EOD and Fleet Divers of the future. Give this effort 100% support.

Working Divers Conference 2004 is scheduled for 29 March - 2 April at the Expeditionary Warfare Training Group in Little Creek, VA. We are soliciting point papers for the up-coming conference and you are encouraged to submit papers to the SUPSALV website (http://www.supsalv.org) via your Chain of Command.

On another note, there will soon be a recruitment page for Fleet Divers on the official USN web page at http://www.navy.mil. Please e-mail any suggestions for improvement of this page. Finally, if you liked the diver picture presentation screened at the beginning of the conference and would like a copy, simply e-mail MDV Steve Smith with your mailing address at SmithSS@navsea.navy.mil.