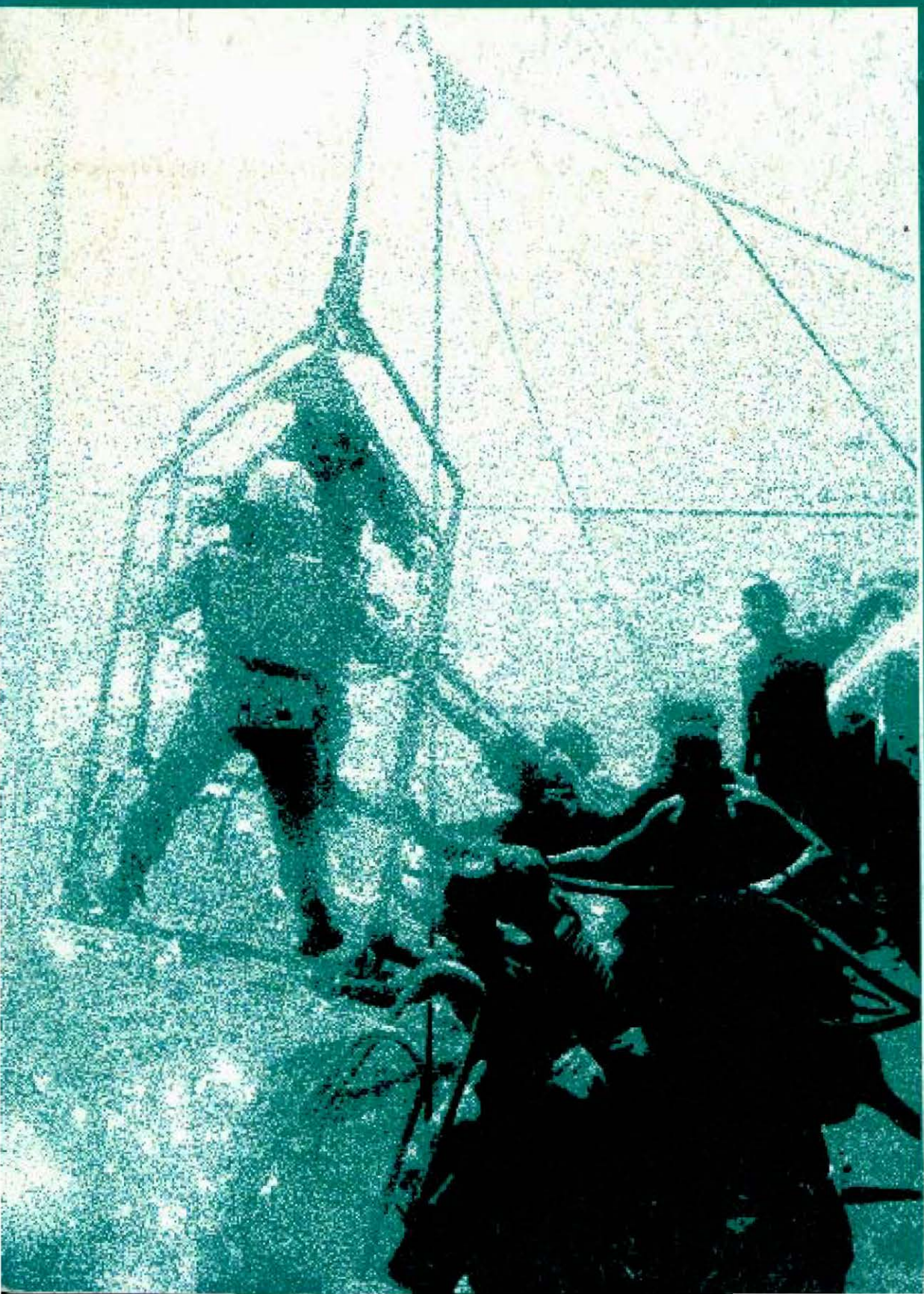
FACEPLATE

The Official Magazine for the Divers and Salvors of the United States Navy



Recovery: SUBIC BAY

Spring 1983
Volume 14, No.1

FACEPLATE

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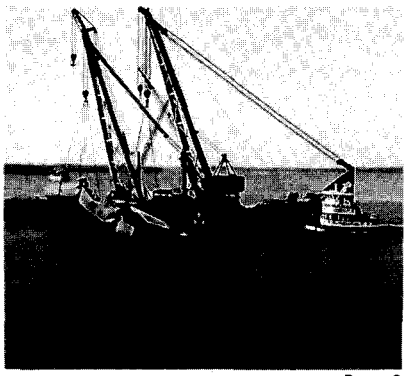

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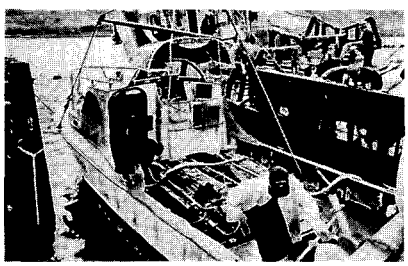

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SOUNDINGS

Seabees Seek Recruits

Since 1969 when the Naval Facilities Engineering Command (NAVFAC) first withdrew Seabee divers from the Construction Battalions for a team effort at Underwater Construction, the Seabee diving community has successfully met the challenge of supporting the Navy with underwater construction and ocean engineering expertise. Over the years, Underwater Construction Teams (UCT) ONE and TWO have earned outstanding reputations with the fleets as "can do" units. The rewards of adventure, professional growth and personal satisfaction enjoyed by these teams are evidenced by the 100 percent retention experienced by UCT ONE for fiscal years 1981 and 1982.

On 1 October 1982, in recognition of the expanding mission of the teams, the manpower allowance for each UCT was increased from 37 to 55 enlisted members. The 18 additional billets include 1 Warrant Officer, 6 First Class (NEC 5342) and 11 Second Class (NEC 5343) divers. Both teams are aggressively recruiting Seabees from within the Naval Construction Force (NCF) to meet the manpower increase.

Prerequisites for orders to Second Class Dive School and entry into the Seabee diver community include two years of experience in the NCF or Public Works, Command recommendation, passing the stringent physical requirements and a positive endorsement by a Diving Officer. Only highly motivated and career-oriented personnel should consider entry into this challenging field. Commands with people interested in joining the Seabee Diving Community are strongly encouraged to support their personnel and the UCT's in this recruiting effort.

For further details, interested personnel should contact LCDR John Cherry, NAVFAC, Autovon 221-0505; LCDR DiGeorge OIC, UCT ONE, Autovon 680-7349 or LCDR Pyles OIC, UCT TWO, Autovon 360-5911.

USS RECLAIMER (ARS-42) Change of Command

LCDR James M. Evans relieved CDR Richard L. Owens as Commanding Officer of the Pearl Harbor-based USS RECLAIMER (ARS-42) in Change of Command ceremonies 16 December 1982.

LCDR Evans enlisted in the Navy in December 1956 and served as an enlisted radioman on the staff of Commander Carrier Division FIVE and on the submarines USS TULE (SS-403), USS JOHN C. CALHOUN (SSBN-630) and USS CHIVO (SS-341). Following his appointment to warrant officer in 1969, he served on USS CHANTICLEER (ASR-7), USS FLORIKAN (ASR-9) and USS COUCAL (ASR-8). He attended Mesa College under the Warrant Officer Associate Degree Program and received a degree in electronics technology. After commissioning as a Lieutenant (junior grade) in 1975, he served on USS PIGEON (ASR-21), Sub-Board of Inspection and Survey Pacific, Advanced Diving Officer Staff Commander, Submarine Development Group ONE and as Commanding Officer, DTV ELK RIVER (IX-501) with additional duty as Officer-in-Charge of the Navy's Saturation Diving School. He reported to RECLAIMER from assignment as Executive Officer, USS PETREL (ASR-14). LCDR Evans is a qualified Saturation Diving Officer and was selected for lateral transfer to the Special Operations (1140) community in February 1982.

CDR Owens departs RECLAIMER for assignment to the U.S. Naval Academy. During his tour as Commanding Officer, RECLAIMER was COMNAVSURFGRU Nominee for the Arleigh Burke and Francis Ney Awards, and won Department Awards for communications, Engineering, Damage Control, Seamanship, Operations and the Battle "E" for overall excellence.

photo credit — Official Photograph, U.S. Navy

LCDR James M. Evans

Navy Diving Expert Dies at 67

CAPT George F. Bond, MC, USN (Ret.), an internationally known authority on the physiological aspects of deep ocean diving and prolonged exposure to pressure, died 3 January at the age of 67.

Nicknamed "Papa Topside" by SEALAB I aquanauts, CAPT Bond was associated with the Navy's Man-in-the-Sea Program since its inception in 1964, and served as its Administrator and Principal Investigator. He was also Senior Medical Officer for SEALABS I, II and III.

CAPT Bond entered the Navy in 1953 as Squadron Medical Officer and Officer in Charge of the Naval Medical Research Laboratory in New London, Connecticut. In 1957 he began the Genesis I project, which studied the effects of prolonged pressure on humans. The program brought CAPT Bond recognition from the Secretary of the Navy, and proved that man could be subjected safely to pressure in experimental gases over prolonged time periods.

Genesis I led to the establishment of the Man-in-the-Sea Program in 1964. Under CAPT Bond's guidance, divers in the program successfully reached a depth of 1025 feet in a wet chamber, the first such dive deeper than 1000 feet.

In the field of submarine rescue, CAPT Bond and his team were the first to demonstrate the feasibility of escape by free ascent from a disabled submarine at depths greater than 300 feet. An expert diver, CAPT Bond completed a buoyant ascent (with no breathing apparatus) from a submarine submerged in 322 feet of water. He was responsible for the early use and adoption of the continuous ascent decompression schedules and the use of no decompression excursion dives from ocean floor habitats.

Prior to joining the Navy, CAPT Bond had a general practice in Bat Cave, North Carolina, where he was the sole physician for 6000 people in a 400-square-mile mountainous area. While there he founded and directed the Valley Clinic and Hospital. He received his B.A. and M.A. from the University of Florida, and his Degree in Medicine and Master of Surgery from the McGill University School of Medicine.

CAPT Bond received many military and civilian honors. In addition to the Secretary of the Navy Commendation Medal with Pendant, CAPT Bond received a Legion of Merit for his work in Genesis I, and Gold Stars in lieu of second and third awards of the Legion of Merit for his efforts in the SEALAB Program. In 1972 he received the Albert R. Behnke, Jr. Award from the Undersea Medical Society.

CAPT Bond's last Navy assignment was as senior Project Advisor for a joint United States, German and Polish undersea project called Helgoland. CAPT Bond retired on 1 December 1975.

At his official retirement ceremony, conducted at the Naval Coastal Systems Center in Panama City, Florida, friends and former colleagues came from as far as Singapore to pay him tribute. After receiving numerous testimonials and citations for his outstanding work, CAPT Bond noted in brief closing remarks that throughout his 21-year naval career he had been rewarded with good duty stations, made "extremely good" by the people with whom he had worked.

CHANGE OF COMMAND

On 22 November 1982, a time honored tradition was observed on USS EDENTON (ATS-1). At 1230, CDR Stephen W. Delaplane relieved CDR William J. Stillmaker as Commanding Officer of the Little Creek-based towing and salvage vessel. The ceremony was conducted at sea, off the coast of Israel, while EDENTON was en route from Golcuk, Turkey to Haifa, Israel.

In keeping with naval tradition, the crew assembled on the fantail to witness the passing of the reign of command from CDR Stillmaker to CDR Delaplane. Before reading his orders to the Naval Training Center, Norfolk, Virginia, where he will assume duties of Executive Officer, CDR Stillmaker took time to reflect on his two and one-half-year tour as Commanding Officer to the Super Tug. He commented that, "It doesn't get any better than this!"

CDR Delaplane, coming to EDENTON following a tour of duty as Commanding Officer of Mobile Diving and Salvage Unit TWO, said he welcomed the opportunity to command EDENTON.

Following EDENTON's arrival at Haifa on 23 November, CDR Stillmaker left the ship and returned to Norfolk, while EDENTON continued its Mediterranean deployment with a new hand at the helm.

Noted Navy Salvor and Maritime Novelist Dies

RADM Edward Ellsberg (Ret.), 91, a salvor whose rescue operations earned him international acclaim during the 1920's and 1930's, died 24 January of cancer in Bryn Mawr, Pennsylvania.

Author of several books on salvage operations, as well as history and fiction, RADM Ellsberg made his first dive at the age of 34, and was subsequently called in to work on several difficult salvage projects.

RADM Ellsberg, then a Lieutenant Commander on duty at the Brooklyn Navy Yard, volunteered for his first salvage operation in 1925, when word came that the submarine S-51 had collided with the steamship, THE CITY OF ROME, off Block Island and sunk in 135 feet of water. Raising the S-51 took ten months, and was the first such salvage ever attempted.

After the mission, he became the first peacetime recipient of the Distinguished Service Medal by Act of Congress. This honor was followed by his promotion to full Commander.

Three years later CDR Ellsberg was summoned when another Navy submarine, the S-4, was sunk in a collision off Cape Cod, Massachusetts. In 1939, while serving as a naval reservist on a two-week cruise aboard an aircraft carrier, CDR Ellsberg was flown in to assist in salvaging the SS SQUALUS off Portsmouth, New Hampshire. Using equipment he had developed following the earlier tragedies, he assisted in rescuing several crew members and raising the SQUALUS.

During World War II, he was in charge of salvage operations in the Middle East, and later in the Mediterranean. He retired from the Navy in 1945.

RADM Ellsberg was born in New Haven, Connecticut on 21 November 1891, the son of Russian immigrants. Appointed to the Naval Academy at Annapolis, he graduated at the head of his class in 1914 and was assigned to graduate engineering studies. During World War I, he supervised the refitting of several captured German passenger ships as troop transports, including the VATERLAND, which was renamed the LEVIATHAN and became a leading trans-Atlantic steamer during the 1920's.

Throughout his naval career, RADM Ellsberg received praise from both military and civilian leaders. Ernest J. King, Chief of Naval Operations in World War II, praised him for his "inexhaustible ingenuity, his perseverance in the face of countless setbacks and his determination which animates all hands" in salvage operations.

New Epoxy Dispenser Improves Underwater Grouting Technique

Naval Civil Engineering Laboratory

Engineers at the Naval Civil Engineering Laboratory (NCEL), Port Hueneme, California, have developed a new underwater epoxy dispenser for installing seafloor fastener systems. According to NCEL inventors Hugh G. Thompson and Ronald L. Brackett, the dispenser represents an improved underwater grouting technique for divers.

Seafloor fasteners are frequently used to stabilize structures underwater. The grout dispenser provides the construction diver with an efficient and reliable method for installing these fasteners. The tool is pneumatically powered at 100 psi and weighs only 7 pounds in water.

photo credit - Official Photograph, U.S. Navy

A Navy diver using the new underwater epoxy dispenser

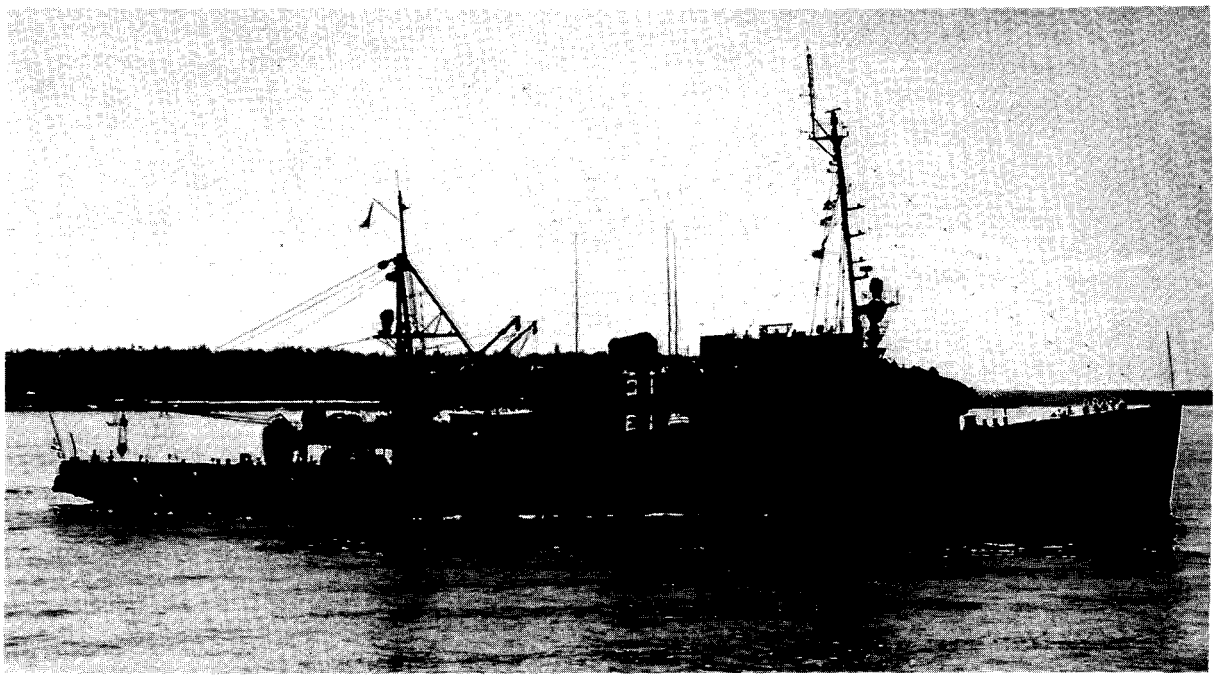
The critical element of the tool is that it simultaneously mixes and dispenses two part epoxies while incorporating a self-cleaning mechanism. This feature helps overcome the problem of quick set-up times for epoxies while ensuring prolonged clog-free operation of the tool.

The dispenser is especially effective in seafloors of soft coral, often penetrated by small holes and tunnels. The tool dispenses enough grout to fill the surrounding voids and at the same time adequately bond the fastener.

The Navy's Underwater Construction Team TWO (UCT-TWO) recently tested the prototype tool at the Pacific Missile Range Facility, Barking Sands, Hawaii. During these tests, divers successfully fastened nearly 3½-miles of oceanographic cables to the coral seafloor in one-third the time required by previous methods.

Thompson foresees several marine applications for the new grout dispenser, including anchoring buoys, small vessels or instrument packages. "The grout dispenser is designed to aid the diver in any underwater grouting task," he said. "Commercial applications in the marine technology field are essentially unlimited."

For additional information, contact the Naval Civil Engineering Laboratory, Autovon 360-5500/3157, commercial (805) 982-5500/3157.



Florikan's SRC-15 Certified

On 11 December 1982 the submarine directorate, NAVSEA Code 921 certified the submarine rescue chamber SRC-15 assigned to USS FLORIKAN (ASR-9). NAVSEA certification allows the SRC-15 to operate to depths not to exceed 850 feet of seawater (fsw) for a period of six years or the next scheduled overhaul of the USS FLORIKAN.

She was constructed by Moore Drydock Company in Oakland, California and is the sole surviving member of the ASR-7 Class Submarine Rescue Ship. She will be completing 40 years of continuous service this April. Since 1969 FLORIKAN has been a unit of Submarine Development Group ONE.

FLORIKAN's present mission is to provide the Pacific Submarine Force with submarine rescue, deep sea diving and salvage capability. FLORIKAN has provided services to every class of submarine in the Navy from World War II through the Trident Ballistic Missile Submarines.

FLORIKAN is commanded by CDR L.M. Silver, USN, the Diving Officer is ENS Peter Pehl II and the Master Diver is ENC (MNDV) Dennis Hima.

photo credit — Official Photograph, U.S. Navy

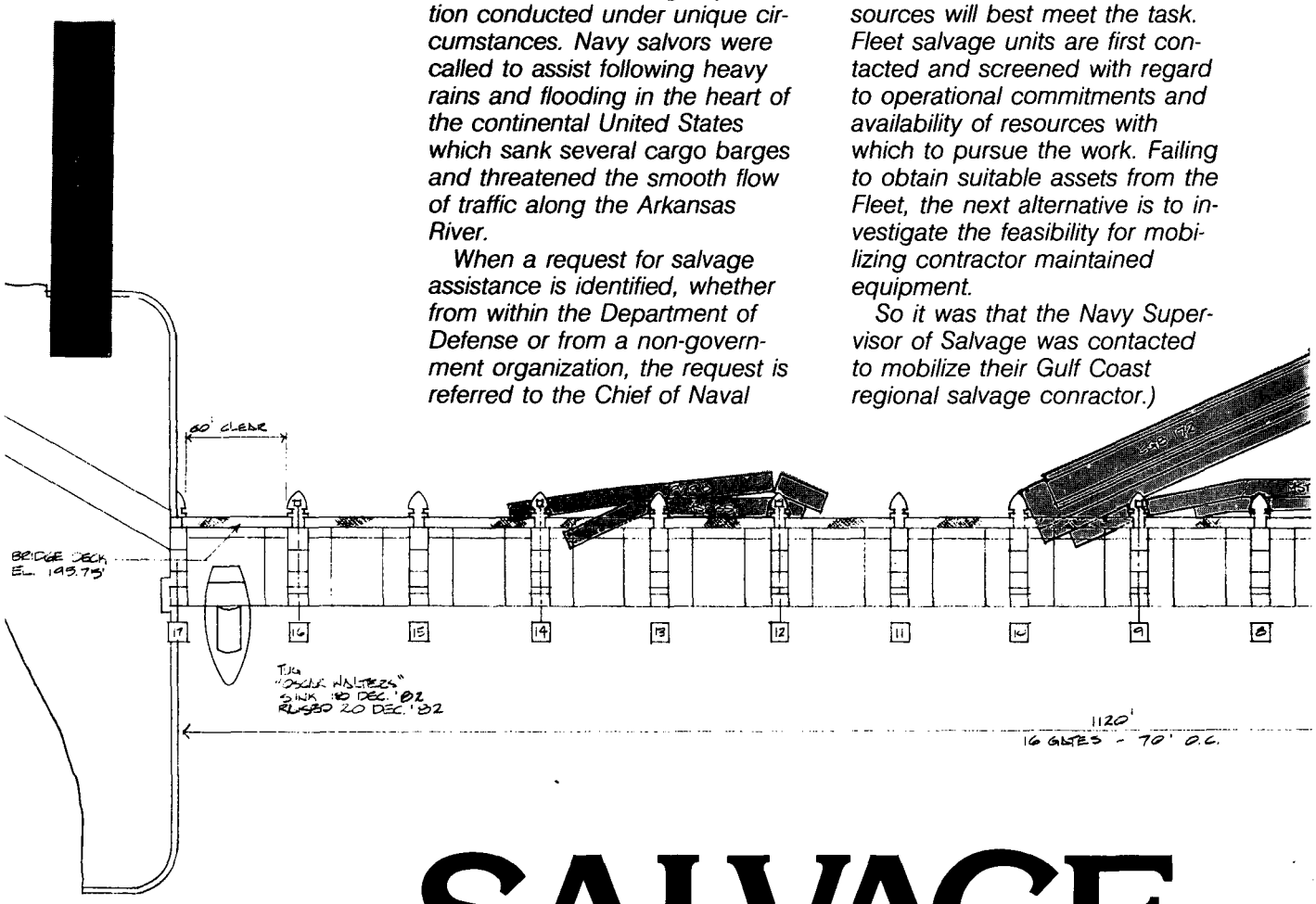
HAUL ME UP

"4-4-4" means "haul me up immediately" to divers and that's exactly what happened recently as "4 for 4" eligible Senior Chief (E-8) divers assigned to Mobile Diving and Salvage Unit ONE were selected for advancement to Master Chief Petty Officer (E-9). Pictured from right to left are: HTCM(DV) Charles Moser, ENCM(DV) Tom Berry, MMCM(MDV) Coy Payne and MMCM(MDV) Donald Bradbury.

(Editor's note: The following is an account of a salvage operation conducted under unique circumstances. Navy salvors were called to assist following heavy rains and flooding in the heart of the continental United States which sank several cargo barges and threatened the smooth flow of traffic along the Arkansas River.

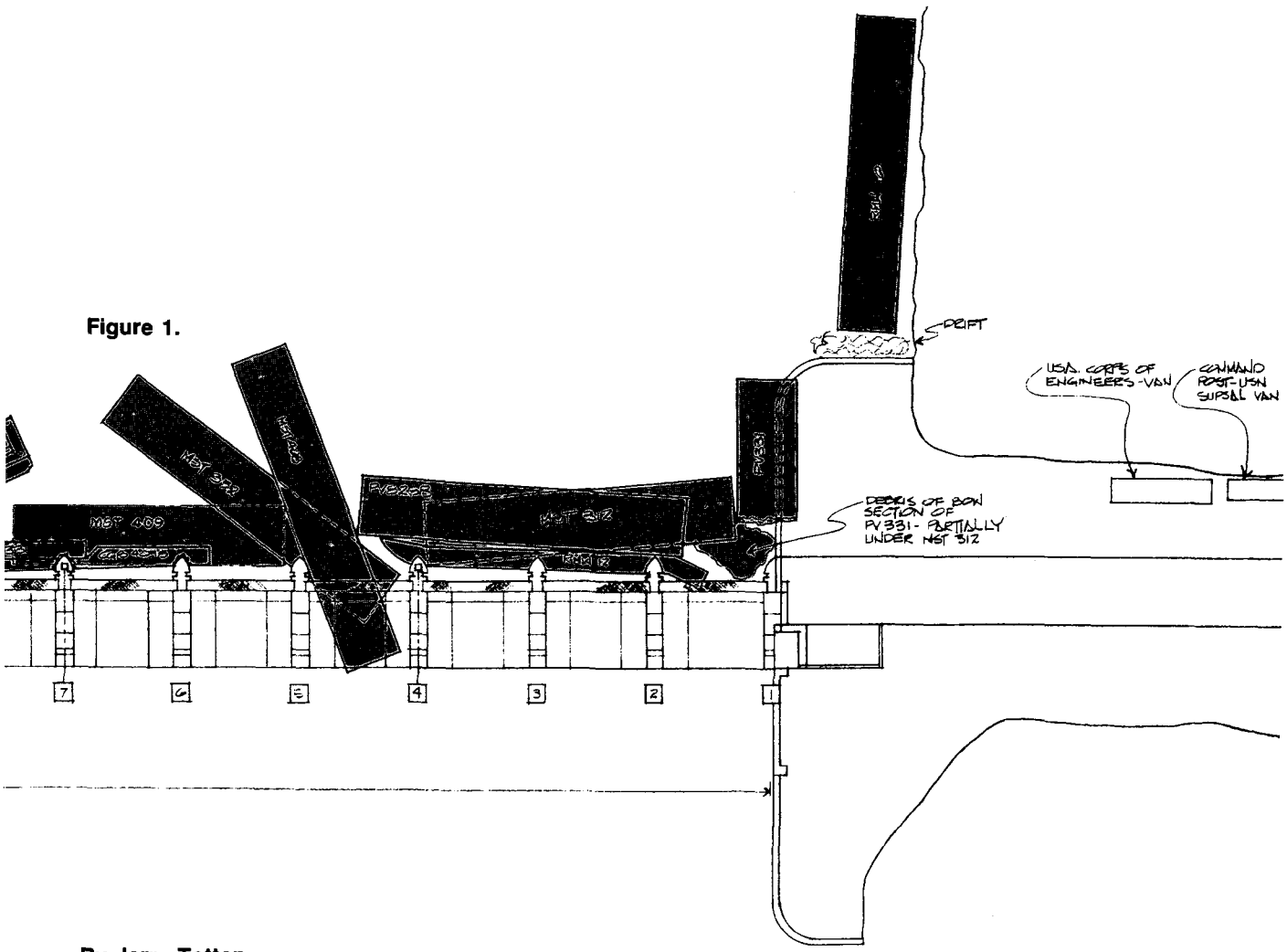
When a request for salvage assistance is identified, whether from within the Department of Defense or from a non-government organization, the request is referred to the Chief of Naval Operations for assignment. The CNO then determines which resources will best meet the task. Fleet salvage units are first contacted and screened with regard to operational commitments and availability of resources with which to pursue the work. Failing to obtain suitable assets from the Fleet, the next alternative is to investigate the feasibility for mobilizing contractor maintained equipment.

So it was that the Navy Supervisor of Salvage was contacted to mobilize their Gulf Coast regional salvage conractor.)



SALVAGE ON THE ARKANSAS RIVER

Figure 1.



By Jerry Totten
Operations Specialist, Office of
The Supervisor of Salvage

On the evening of 4 December 1982, extensive flooding on the Arkansas River caused 38 barges to break loose from a holding area 2 miles up river from dam no. 2. Rain storms during that period had increased the river's normal flow rate of 50,000 cubic feet per second to 180,000, causing enormous problems in the vicinity of the dam.

Dam no. 2 is located 19 miles north of the junction of the Arkansas and the Mississippi Rivers. It is classified as a Gated Spillway and its purpose is to maintain the water level necessary for commercial transit. It has 16 movable floodgates supported by reinforced concrete piers, the forward portion of which are shaped for ice breaking and deflection of floating debris. Thirteen of the barges had collided with these chisel-shaped piers and either sank, blocking the gate entrance, or became lodged within the floodgates (see Figure 1). Obstructing the gates was dangerous; if one gate were left open and the adjacent gate closed, scouring upstream and downstream would start an irreversible undermining action that would eventually destroy the dam. If the dam became inoperable, the Arkansas River cargo traffic would be cut off from the Mississippi.

Salvage Team Organized

The U.S. Army Corps of Engineers (ACOE) recognized the need for a unified salvage and wreck removal effort since the 13 barges at the dam were owned by four different companies. On 8 December the ACOE authorized the U.S. Navy to perform a survey of the dam site in order to develop recommendations for a plan of action. The U.S. Navy Supervisor of Salvage (SUPSALV) gave a tasking order to their prime salvage contractor for the Gulf Coast Zone to provide personnel to assist in the survey, which began on 9 December. During the week that followed, preliminary salvage plans and cost estimates were developed. The first of many salvage conferences was held on 12 December 1982. On 17 December the ACOE authorized SUPSALV to perform the salvage and wreck removal on dam no. 2.

Mobilization began in high gear. The original survey had indicated

that most of the barges had broken backs and were impaled on the ice breaking pier abutments, meaning heavy lifting and pulling equipment would be required. The contractor enlisted assistance from its primary subcontractors to provide the heavy derrick Ajax with a 375-ton lift capacity and Southern 6 with its 450-ton capacity. They also provided the tug TYLER and CAPT LUKE, a diving platform with a recompression chamber and a 60-ton crawler crane.

Using an ACOE barge, two AMCON double drum 180,000 pound line pull winches and a small Clyde winch for pulling were installed. For anchoring, two 6000-pound Stato anchors were provided from the Emergency Ship Salvage Material (ESSM) system.

The ACOE had provided the tug M/V MISSISSIPPI to birth and feed the salvage forces. Without the MISSISSIPPI, transporting the force of approximately 32 men 15 miles to the closest town would have greatly lengthened the operation. The ACOE also provided two rivercraft, the tug SHORTY BAIRD and the barge PINE BLUFF, a spud barge with Manitowoc 4100 (80-ton lift) deck mounted whirly crane, the survey vessel DUMAS and flat deck barges for transporting wreckage as it was removed.

During mobilization, salvage efforts were started on barges which could be retracted with the Corps' floating plants and the limited salvage equipment of a small local firm. Three barges were removed by 20 December. By 23 December mobilization was complete and the salvage team was ready to tackle ten separate salvage jobs.

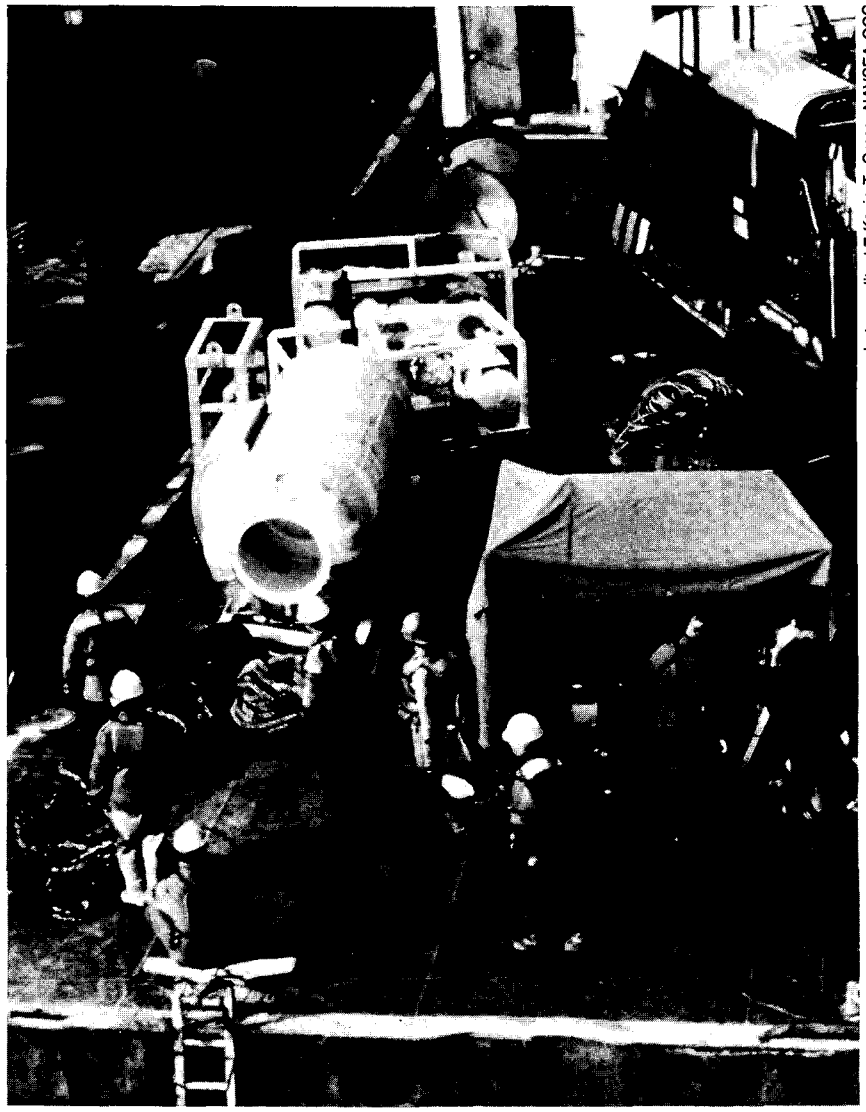


photo credit - LT Kevin T. Gross, NAVSEA OCC

Diving operations from the support barge.

MST 408: Cantilevered Coal Cargo

The first major barge removal attempted was the MST 408. She was fully laden with coal, aground and hung up on barge MST 352 at approximately amidships. This resulted in one-third of her load being cantilevered past the axis of the dam. The added cantilevered weight of this cargo caused excessive strain on the barge.

To relieve the strain, the hopper load of coal on the barge was offloaded onto a lightering barge beginning Thursday, 23 December and removed from the salvage site. While the coal was being offloaded by the Monitiwoc 4100, two 14″ × 14″ I-beams were being welded on to be used as pulling points. After appropriate ballasting and dewatering a pulling barge was positioned to haul the MST 408 off the MST 352. The challenge was to slide the 408 off without the 352 sliding into the dam. On 28 December, once MST 408 was empty, the two AMCON winches attached into its I-beam padeyes and Southern 6 hooked to MST 352 to prevent the 352 from moving, MST 408 was successfully pulled clear.

The MST 352 was next to be removed. It was lying at an angle of approximately 20° to the dam, its bow in gate 4 and its starboard side impaled on pier 5, 60 feet from the bow. Its hull was broken and twisted. The MST 352 was also aground on what would later be identified as the MST 409. A plan was devised to lift MST 352 with Ajax and Southern 6 while using the pull barge to free it from the ice-breaker (pier abutment).

Strong currents created by open gates prevented using divers to run messengers for the lifting slings and it therefore became necessary to develop other methods. The Southern 6 and 4100 barge would use

their whirly cranes and sweep the wires from the ends, while the Southern 6 or Ajax, with their topping lift attached to any strong point on the barges' ends, would lift the barge enough to pass the wires.

On 30 December, with Ajax lifting 300 tons and Southern 6 lifting 350 tons and pulling with the AMCON pull barge, the MST 352 was lifted clear of the icebreaker in one piece.

The ACOE began closing the cleared gates to reduce the water flow rate.

CGB 172: Ajax Derrick Damaged

On Friday, 31 December, the salvage effort shifted to barge CGB 172. CGB 172 lay at approximately a 30° angle to the dam with its forward rake wedged in bay no. 9 and port side impaled on pier 9. The plan called for rigging the Southern 6 for parbuckling with a 3/4-inch thick by 30-inch wide steel strap welded to the barge's hull and having Ajax lift and pull with the pulling barge.

On 1 January the pulling, lifting and parbuckling sequence began, but CGB 172 did not move until 3 January when, after many attempts, loads of over 400 tons were seen. The barge failed near the point of impalement, leaving the bow section still jammed in the bay. When the stern section broke loose it swung into Ajax's A-frame and knocked it loose from the foundation. The derrick twisted and crumpled. Only the fast reaction of Ajax's and Southern 6's barge masters in dumping their loads prevented further damage to both derricks.

The 35-foot forward section of CGB 172, still in the bay under the gate, was cut free using magnesium burning rods furnished by the ACOE. The burning rod can be a useful tool in wreck removal, as it allows an operator to stand well clear of an object under load while cutting. The primary drawback of the magnesium burning rod is the logistics involved in replacement of oxygen cylinders.

While Ajax was being repaired, rigging began on the MST 331. The MST 331 was lying on its beam ends with its bottom impaled on three icebreakers, making it impossible to sweep slings. The barge would also have to be pulled clear of the icebreaker prior to lifting and a large padeye inserted into the wing wall as a lifting point. An I-beam padeye was also welded to the stern for a pulling point.

Because the damage to Ajax had left the salvage team with only one heavy lift crane, the MST 331 would have to be cut in half at the weakened area using the cutting wire, another whip wrecking tool. Once the barge was pulled from the dam and lifted high enough to sweep the cutting wire it was set back down and the cutting wire was attached to the main and jib blocks of Southern 6. As the main block hauled in, the jib block paid out, creating the sawing action which eventually cut through the light barge steel. The stern section was lifted free on 7 January. The bow section was so deteriorated that it broke while lifting, leaving its rake on the bottom. The rake was lifted later in the operation.

Most gates could now be closed, thereby controlling water flow and enabling divers to survey and rig messengers to be used. Operations began to progress more quickly.

Heaviest Lift of the Salvage

The CGB 409B, next to be removed, was severely broken and had to be taken out in sections. Slings could not be swept under 409B, instead, holes for 2-inch chain slings were cut in the exposed wing walls. These chains

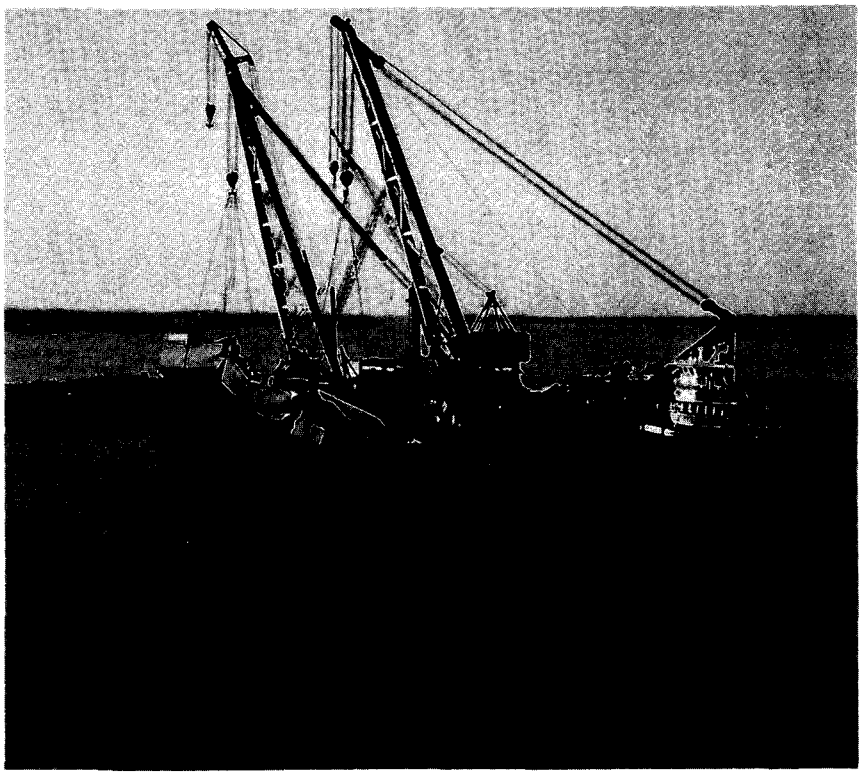


photo credit - J. Totten

Ajax and Southern 6 lifting a hull section of MST 331 from bays 7 and 8.

were used to pull the barge away from the dam and also as lifting points. Once the barge was pulled away from the icebreakers the stern was lifted to sweep the slings. Divers then assisted in cleaning fouled messengers, thereby speeding the evolution. As sections of the 409B were taken out it became evident that it was fouled on a barge below. This later turned out to be the missing MST 409. The last mangled piece of CGB 409B was lifted on 15 January.

Ajax repairs were completed on 16 January, two days ahead of schedule. The derrick was put back to work on MST 312 and RMW 12. The MST 312 had sunk in an upright position but was tangled with RMW 12, whose bottom was impaled on 3 piers. The forward section of RMW 12 would have to be removed before MST 312 could be lifted out in one piece. The bottom and most of the wing walls of RMW 12 had been cut through amidships, leaving only a small section of each wing wall needing to be cut. The above-water section was cut with magnesium rods. Divers used Broco thermal rods to cut the underwater section. Ajax lifted the forward section of RMW 12 on 16 January, allowing work to proceed for rigging the MST 312. It was initially thought that since only the rake was holed, Ajax could lift the rake and it could be pumped and then floated; however, MST 312 was holed throughout and the whole barge would have to be lifted.

MST 312 was lifted clear of the water in one piece on 19 January. This was the single heaviest lift of the operation—more than 600 tons.

The MST 409B was totally submerged, lying at a 45° angle parallel to the dam in a scour hole that went as deep as 70 feet. Divers passed a messenger which was used to pull a sling from the Southern 6 around the mid-body. MST 409 was then partially lifted and retracted from the scour hole. A second sling was run and hooked into Ajax and the MST 409B was raised successfully. Its rake was recovered later.

PV 19B and MST 351: New Chisel Aids Salvors

The removal of the last two barges, PV 19B and MST 351, was lengthy and difficult. Because the barges were entangled they had to be worked simultaneously. Gate no. 12 was operable, but PV 19B and MST 351 spanned the opening, restricting the water flow. In bay no. 13, MST 351 had twisted and jammed under the gate preventing it from being closed, while PV 19B spanned the bay, creating a damming action. It was feared that PV 19B, would break up and become jammed along with MST 351 allowing an uncontrolled flow of water and resulting in scouring of the base of the dam downstream.

The barges had to be cut into more manageable pieces before removal. Throughout the salvage effort the flow rate of the flood water and upstream river depth relied primarily upon control of gates 14, 15 and 16. Concentration of flood waters in these few gates created substantial turbulence in the tail water and consequently an inevitable amount of scour below the gates. Removal of barges PV 19B and MST 351 would allow use of gates 12 and 14 to lessen the flow through gates 15 and 16.

Previous cutting methods could not be used here: the barges were so entangled that cutting wire would be ineffective and the current around pier 13 prevented using divers to burn the wreckage. In addition, PV 19B had developed a crack in her shell plate midway between piers 13 and 14 and it was feared this would fail if too much stress was applied during pulling or lifting. To cut this bulk of twisted steel expeditiously a large chisel was constructed from a 40-foot length of WF 36 x 300 I-beam.

The barge sections spanning bay 12 were removed in two sections without much difficulty using the chisel, making gate 12 operational. Using the chisel and burning bar several attempts were then made to free the section of 351 wedged in bay 13, but to no avail. Before the remaining section of MST 351 could be pulled through the dam, the wing wall of PV 19B gave way and lodged in the bay with MST 351. An 18-foot drop in tailwater since December was working against the salvage team, for if flow had been what it was previously the remaining sections would have been washed through by the force of the water. In an effort to flush out the remaining sections, pieces still wrapped around piers 13 and 14 were removed and the adjacent gates were closed, increasing the flow of water through bay 13 enough to wash the remaining sections away and clearing the last obstructed gate.

The use of magnesium burning bars and cutting wires and field development of such tools as the chisel pointed I-beam saved substantial time and contributed to the overall reduction of the project duration.

The Arkansas River salvage may be remembered as not just one operation, but as a combination of distinctly different operations, each with its own peculiar requirements. The entire operation was completed within 60 days at a cost of approximately $3 million, well below the original estimate of 90 days at $4.8 million. It was a unique opportunity which demonstrated how the Supervisor of Salvage, together with highly competent salvage assistance, can efficiently bring the necessary resources to bear on urgent problems.

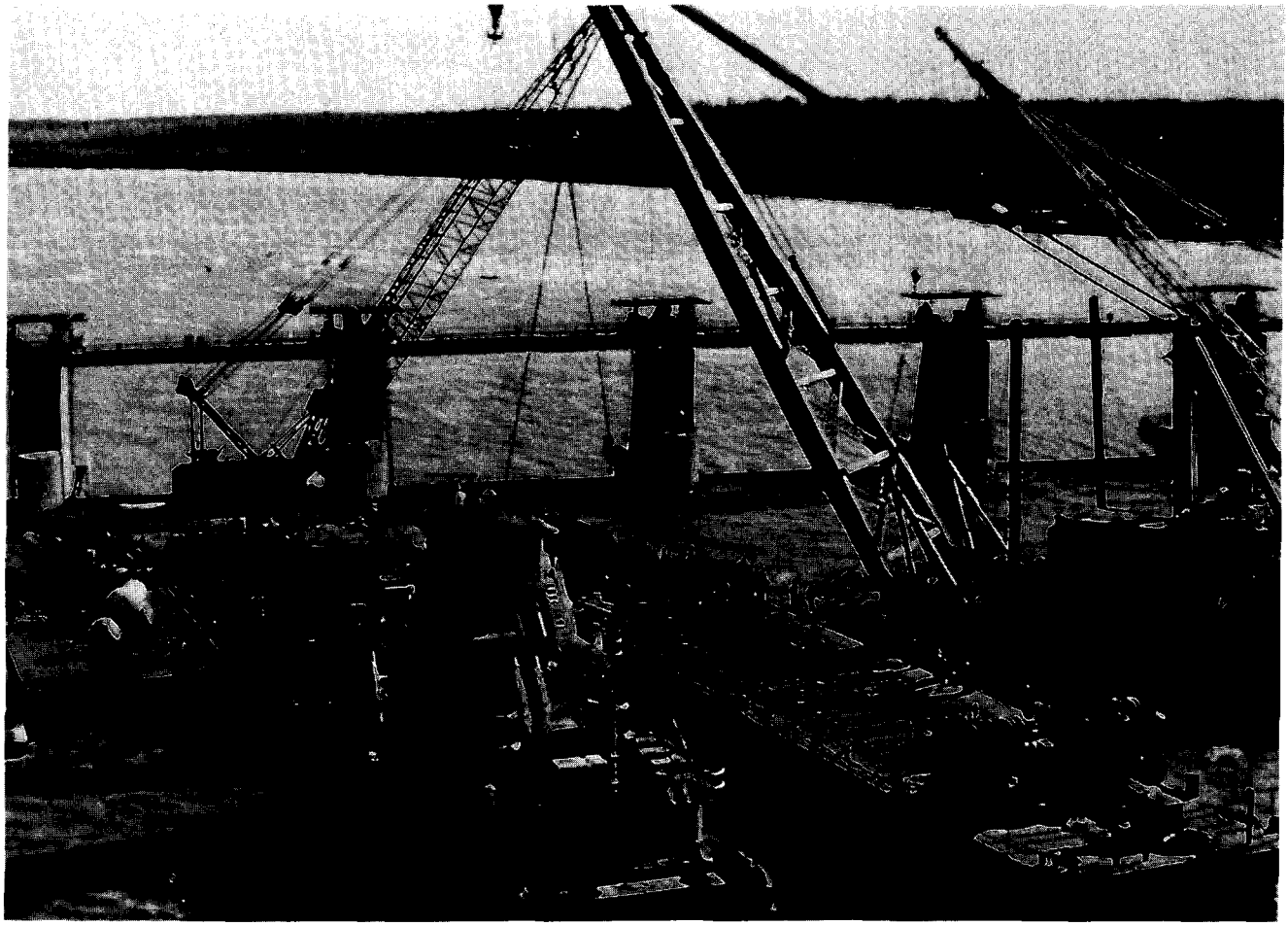


photo credit — LT Kevin T. Gross, NAVSEA OOC

Southern 6 pulling barge and the tug SHORTY BAIRD positioned by dam no. 2.

photo credit - J. Totten

Manitowoc 4100 and the pulling barge use the I-beam chisel in removal of MST 351.

RESERVE DIVERS REPAIR BATTLESHIP

By CDR Richard Wells
NAVINFO Dallas III

Navy reserve divers attached to Mobile Diving and Salvage Unit (MDSU) ONE Det 110 have gained hands-on experience while working to repair a survivor of two World Wars—the Battleship TEXAS (BB-35). The USS TEXAS, moored near Houston at the San Jacinto Battlefield for more than 34 years, had deteriorated severely because the state commission in charge of upkeep has only been able to do basic maintenance on a small part of the vessel. Two years ago reservists assigned to work continuously on the TEXAS called in the reserve divers of MDSU ONE to assist with underwater upkeep work.

During the past two years, the reserve divers not only sharpened their diving skills, but also had a chance to use sophisticated ultrasonic non-destructive testing and to make calculations about the TEXAS' hull integrity.

In addition to gaining technical expertise, reserve divers gained an increased appreciation for how well the Navy built its ships. The condition of the TEXAS proved that a ship's hull will deteriorate if not properly maintained, especially if the ship is not moved, but it also proved that Navy ships were built to last a long time.

The TEXAS, the third naval vessel to be named for that state, was commissioned at Norfolk, 12 March 1914. It was active in both world wars, earning five battlestars and several other awards before being decommissioned on 21 April 1948. It is presently a museum, though only a small portion of it is open to the public.

The task of the MDSU ONE divers was to ascertain the condition of the ship below the waterline outside the hull, study the feasibility of moving the ship to drydock for repairs and survey the closed-off spaces. On weekends for two

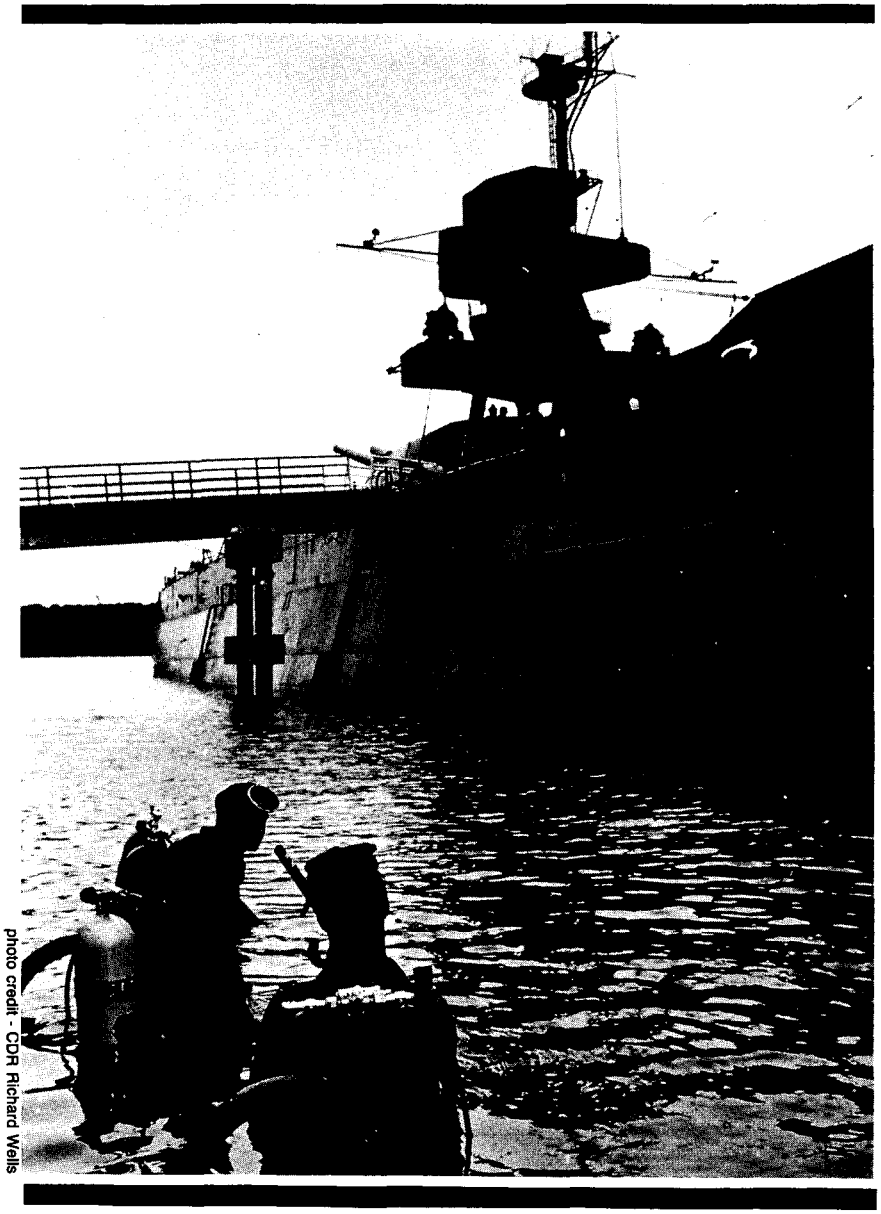


photo credit - CDR Richard Wells

Divers from reserve unit MDSU ONE, Det. 110 prepare to do a hull inspection on the Battleship USS TEXAS.

years, divers from Corpus Christi performed detailed hull inspections, patched, welded and completed detailed interior inspections and structural analyses. The outer hull inspection was done by painstaking visual inspection in the near-zero visibility water and by using non-destructive ultrasonic testing.

"The problems with the ship are many," said LCDR Charles Ulrich, MDSU ONE Det 110 Executive Officer. "On the torpedo blister, or outer hull, for example, there had been some serious deterioration." The torpedo blisters were added to the TEXAS prior to World War II.

"The blister hull is only about 5/8-inch thick," Ulrich said, "and there are voids between the blister and the heavier armor-plate hull. Some of the voids are beginning to fill with water from leaks through the blister."

The divers completed a visual survey of the blister hull on one weekend, checking for holes, pits and other obvious signs of damages, from both the water and inside the voids. A number of small holes were found and subsequently patched with strongbacks following dewatering, using portable pumps.

"Two large holes were found," Ulrich said. "We had to build cofferdam patches, then dewater." The divers then fashioned steel patches and welded them over the holes from inside the voids. Particular care was taken to insure ventilation, while the men worked in the voids, with ventilation blowers used to force in fresh air.

A subsequent weekend was spent on a detailed inspection of the blister hull using ultrasonic testing equipment provided gratis by a commercial supplier located in Houston.

(Ed. Note: The Navy's version of this ultrasonic test equipment, the forerunner of this commercial equipment, is currently undergoing evaluation at SIMA, San Diego. Another system is planned to be delivered to SIMA Mayport in FY 1984.)

Using ultrasonics, the divers found that the thickness of the blister hull was approximately 30 percent deteriorated on the starboard side and approximately 15-20 percent deteriorated on the port side.

"The difference," said LCDR Curt Haverty, commanding officer of the MDSU ONE Det 110 divers, "is that the action of the water current is greater on the starboard side. After all, this ship has not been moved for more than 34 years." Divers using a cathodic field sensing instrument confirmed Haverty's reasoning that the water current was the primary culprit. The instrument, which measures the degree of deterioration caused by the ship's own electrochemical potential showed there were only minor anodic effects on the port side and significantly stronger effects on the starboard side.

As part of the structural survey of the ship, the divers identified and recorded the condition of the more than 1200 spaces on the huge vessel. Most of the 1200 spaces are deep in the ship and have no light. The men checked and identified each of the spaces using pre-World

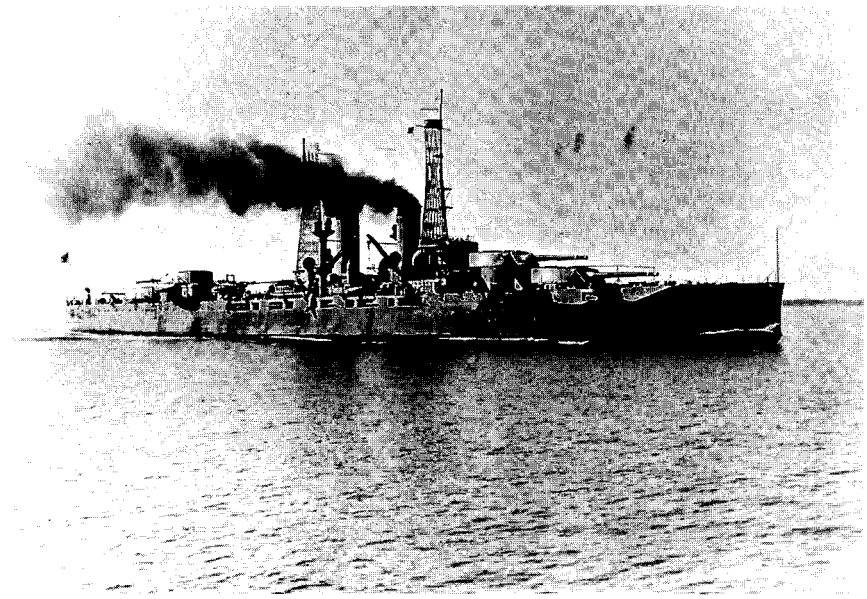


photo credit - Official Photograph, U.S. Navy

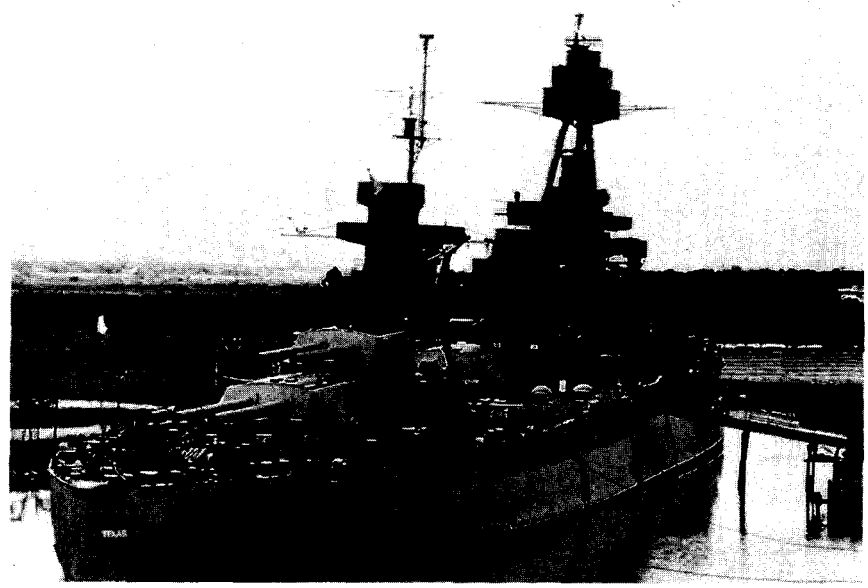


photo credit - CDR Richard Wells

(top) The Battleship USS TEXAS at its standardization trial 23 October 1913.

(bottom) The USS TEXAS Battleship Memorial at the San Jacinto battlegrounds, Texas.

War I ship's blueprints, the only ones available.

Operations Technician "Deck" Geary, a diver in the reserve unit, commented on the feelings the team had about inspecting deep inside the huge ship: "It's kind of an eerie feeling—walking through spaces that have not seen light for over 20 years. I found one man's booklet of 'German Navy Surface Raiders' with his penciled-in comments and extra notes to help him while he was standing lookout watch. It was dated 1943."

This complete structural analysis of the exterior hull and interior of the ship enabled the diving and salvage team to calculate the feasibility of refloating the ship, which now partially rests in the silt and mud bottom, and moving it to dry-dock for extensive repairs. Performing these calculations was one of the important learning experiences for the reserve divers working on the TEXAS. "Calculating the feasibility of this salvage job is exactly like working on refloating any stranded ship," LCDR Haverty noted. "It is important work and good training for everyone in the unit."

The divers' calculations led them to conclude that salvaging and dry-docking the TEXAS would be quite costly, and based on those conclusions, the state commission has given up its plans to dry-dock the vintage ship.

However, the state has decided to pay a professional civilian diving company to patch the TEXAS permanently, not just on the blister hull, but wherever patching is necessary. This work will be carried out based on the reserve divers' survey of the ship.

Though the TEXAS will not be floated, the reserve divers gained valuable experience in their two years of work. "Retired or nor it's still a Navy ship," Haverty said. "We take pride in all Navy ships, and did our best on the TEXAS."

photo credit - CDR Richard Wells

(top) Divers lower a cofferdam patch that will be attached to the outer hull of the battleship.

(center) Tracking the ultrasonic signal from the sensor used by reserve divers to check the thickness of TEXAS' hull.

(bottom) Final touches are put on a cofferdam patch.

photo credit - CDR Richard Wells

photo credit - CDR Richard Wells

UPDATE: Reserve Diving Unit

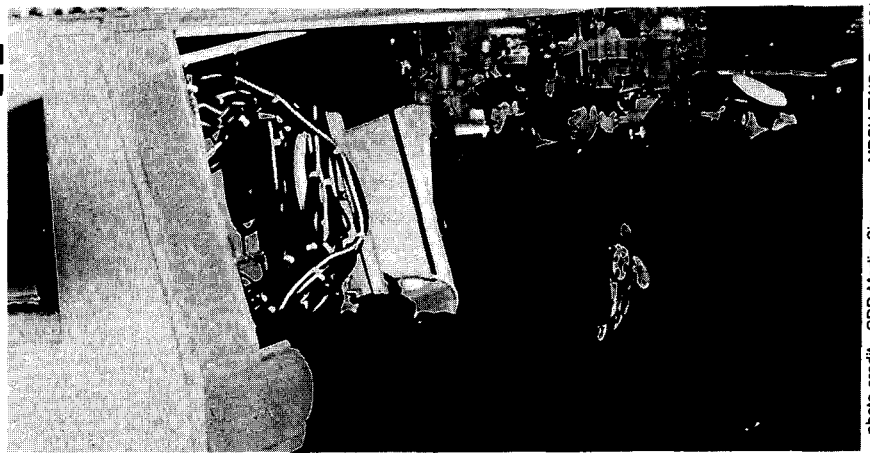


photo credit - CDR Merlin Simonson MDSU TWO, Det. 201

A diagonal view of the ROPER cart, being put to use by MDSU TWO, Det. 201 divers.

By J01 John Redo
Naval Education and Training Center

The reservists of Mobile Diving and Salvage Unit TWO, Det. 201, have been recognized for several outstanding contributions, including their participation in an experimental chamber dive and their work repairing the USS MANLEY (DD-940). They are also the only Navy unit currently operating the new ROPER cart, a surface-supplied air source that they obtained on loan from MDSU TWO in Little Creek, Virginia just last January.

"We're lucky to have the only one in the country. It works great," said the unit's commanding officer, LCDR Francis B. Montague. The ROPER cart has greatly increased the diving capability of his New Bedford, Massachusetts-based unit.

MDSU TWO drills in conjunction with the Shore Intermediate Maintenance Facility (SIMA) in Newport, Rhode Island, performing such functions as hull inspection, plugging, patching and search and recovery. The ROPER cart is ideally suited to the pier-side diving MDSU TWO usually performs. It is certified to 40 feet.

The ROPER cart system is a surface supported diving system consisting of two air flasks on a small trailer cart that provide over 11 hours of diving time at 40 feet. The ROPER cart is used with the Mark 1.

When MDSU TWO Det. 201 was first formed, there were not enough members to man a diving station properly and the unit was restricted to classroom activities. In two years they had worked up to a SCUBA unit, but were still severely limited.

"With the addition of the ROPER cart we've been catapulted into being a much more professional unit," he said.

Use of SCUBA gear requires direct free ascent to the surface and therefore prohibits work on the bottom of ships. "Surface supplied air diving opened up a whole new world of work for the detachment," the commanding officer commented, allowing the divers to work underneath ships and on ships in a raft.

MDSU TWO Det. 201 has not just distinguished itself by its use of the ROPER cart. Fourteen of its members have received Letters of Commendation for participating in the AIRSAT 3D and SUREX Chamber Dives at the Naval Submarine Medical Research Laboratory in New London, Connecticut during the past three years. The dives are part of research into the effects of decompression on submariners whose body tissues may have been saturated with air following prolonged submersion in a downed submarine that had lost its hull pressure integrity.

During this 17-day tour of active duty, participants first undergo a week of physiological testing. In groups of three, the participants are then confined for seven days in pressurized chambers. In the AIRSAT dives the hyperbaric chambers are pressurized to 190 feet of seawater and in the SUREX dives the chambers are pressurized to 60 feet. While confined, the participants' daily routine includes a variety of cardiovascular, pulmonary and psychological tests. They are tested again after the dive is completed to measure any changes that may have occurred while below the surface. Members of MDSU TWO Det. 201 are currently participating in this experiment.

MDSU TWO Det. 201 was also the recent recipient of a Letter of Appreciation from the Naval Underwater Systems Center (NUSC) in Newport for assisting the NUSC Range Support Department's diving team on an underwater propeller change on the USS MANLEY in June 1982.

Work on the MANLEY was just one of many such tasks performed by MDSU TWO Det. 201. The commanding officer is proud of the high level of skill maintained by the reservists, and proud of the fact that many recieved most of their diving training since joining their unit.

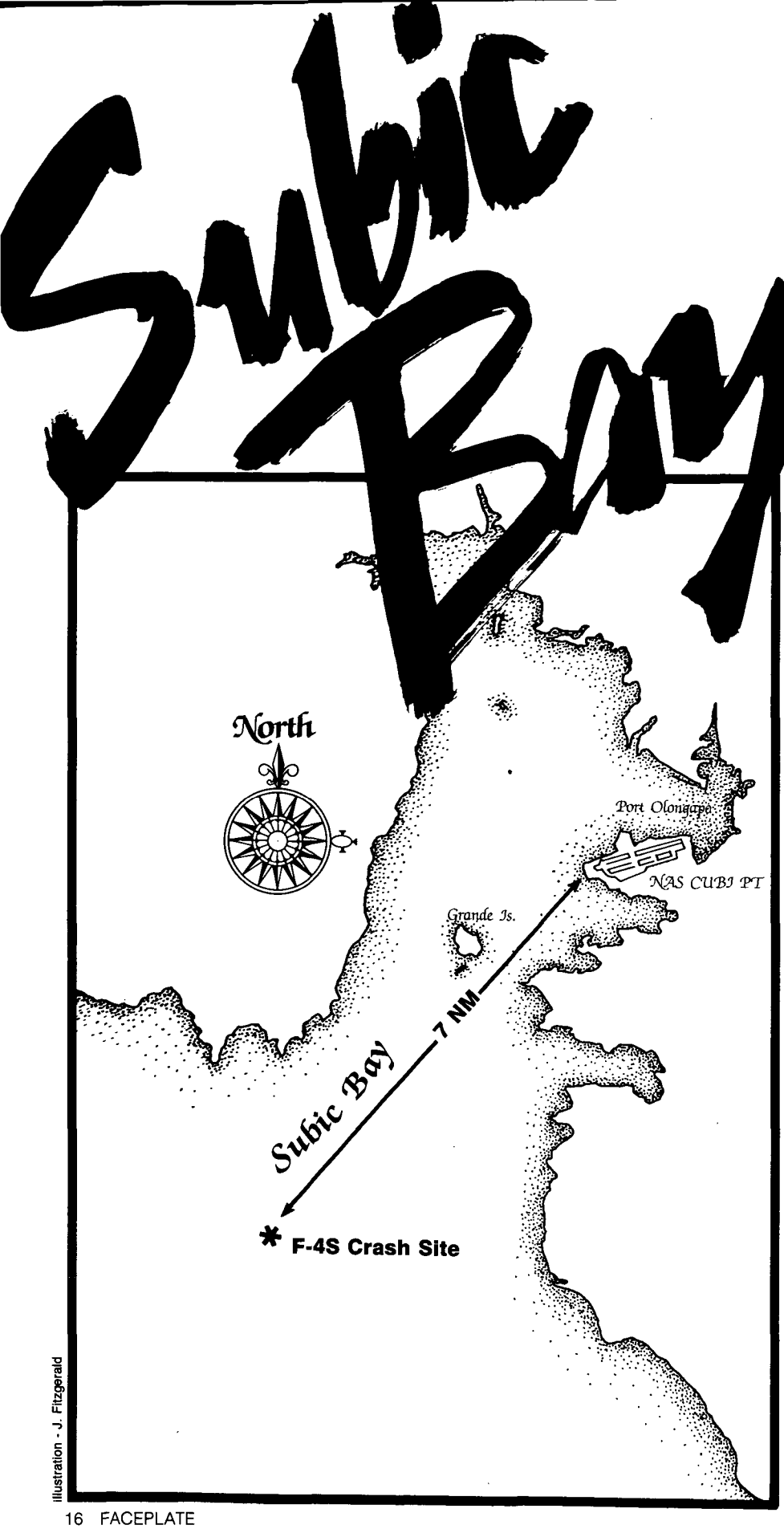


illustration - J. Fitzgerald

Salvors Use New MK12 Mixed Gas Rig

By CDR Gary Cassat
MDSU ONE, Pearl Harbor, Hawaii
LT Neil Hansen
MDSU ONE

The MK12 Mixed Gas Rig was used operationally for the first time last December in the recovery of an aircraft downed in more than 200 feet of water. Divers from Mobile Diving and Salvage Unit ONE, using the Navy's only certified Fly Away Mixed Gas System (FMGS) along with the MK 12 rig, brought up the wreckage from the BUNO 153798, a USMC F-4S Phantom aircraft assigned to VMFA-312. The airplane was lost at sea 7 miles due south of NAS Cubi Point, Subic Bay, Republic of the Philippines on 9 October 1982. The Aircraft Mishap Investigation Board wanted the F-4S recovered and studied because there had been no communications from the aircrew regarding inflight problems before the accident.

Commanding General, Fleet Marine Force Atlantic issued a request for salvage services. CTF 73 was tasked to do the aircraft salvage via the chain of command. Using Oceanographic Unit FOUR side-scan sonar and a sophisticated electronic navigation system CTF 73 commenced search efforts of 18 October under the coordination of

(top) Fly-away Mixed Gas System (FMGS) equipment on BOLSTER's fantail, ready to dive. (bottom) FMGS recompression chamber staged on the YC alongside BOLSTER.

photo credit - Official Photograph, U.S. Navy

Salvage Officer, LT Terry Murray. USNS NARRAGANSETT (TATF-167) was later tasked to assist in the search effort, augmented by side-scan sonar equipment provided by Submarine Development Group ONE. After a thorough search of the probable area, aircraft wreckage was located in approximately 230 feet of water and positively identified on 4 November.

Because the wreckage was so deep, a Mixed Gas (HE02) Diving System had to be used. Mobile Diving and Salvage Unit ONE was tasked to provide the FMGS and dive team and USS BOLSTER (ARS-38) was assigned as support platform/recovery vessel. These assets, coupled with a YC Barge with a 25-ton crane and other logistics support provided by Naval Station Subic/Naval Ship Repair Facility Subic, constituted the recovery hardware.

The FMGS equipment is unique to MOBDIVSALU ONE, which designed, maintains and operates the U.S. Navy's only certified FMGS. It is the mixed gas equivalent of the Fly Away Air Diving Systems (FADS-II) operated by selected diving commands. Its nucleus consists of banks of 24 high pressure bottles in steel racks (QUADS), (five HE02 QUADS, two 02 QUADS), Fly Away Recompression Chamber, Gas Control Console and associated MK 1, MK V or MK 12 diving gear. If deployed from a platform with an installed air diving system, the FMGS can be deployed independently. If no diving air system is available on site, a FADS-I is deployed with the FMGS to complete a totally self-contained diving system.

Work Up Dives Intended to Reduce Occurrence of Decompression Sickness

Intensive preparations for the salvage began immediately. In order that divers on the Fly Away Team could begin frequent exposure to pressure, a program of 150 feet/20 minute work up chamber air dives was initiated with the opinion that individuals who dive regularly to deep depths incur, on the average, a lesser incidence of decompression sickness than those who dive infrequently. Decompression schedules were selected to jump both Partial Pressure Tables and bottom time, to increase the benefit to the divers. The average depth of each dive was 225 feet of sea-water, with maximum bottom time of 40 minutes. This profile resulted in Partial Pressure Table selection of 240 for a bottom time of 60 minutes.

Only five divers developed decompression sickness as a result of the 60 dives completed during the

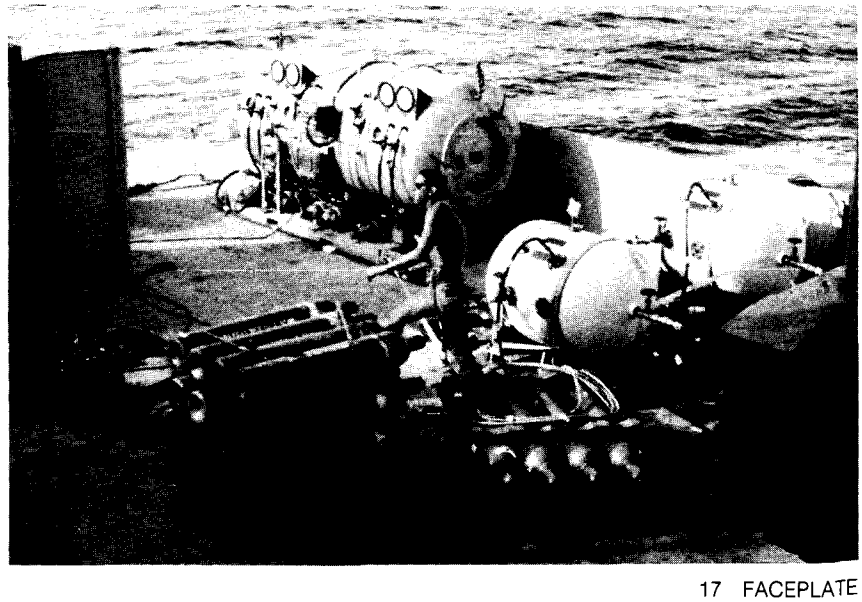


photo credit - Official Photograph, U.S. Navy

BMI(DV) Johnson Keliipio receives surface decompression.

operation, for an 8.26 percent incidence of decompression sickness. In comparison, a C-130 aircraft recovery conducted jointly by MOBDIVSALU ONE and USS BEAUFORT (ATS-2) under similar conditions and depth in March 1981 (coincidently also in Subic Bay) resulted in greater than 25 percent incidence of decompression sickness until the tables were jumped.

The first operational use of the MK 12 Mixed Gas Diving Rig was possible because all FMGS Team Divers were formally qualified in MK 12, having participated in MK 12 (Mixed Gas Mode) evaluations. Because of the depth and nature of diving anticipated, MDSU ONE Commanding Officer CDR Gary Cassat requested and received permission to use the system for this operation.

The FMGS, led by CDR Cassat and supervised by Master Diver, Master Chief Machinist's Mate Coy W. Payne, arrived in Subic Bay on 4 December. USS BOLSTER, commanded by LCDR John P. Speer, arrived in Subic Bay 6 December. The FMGS, along with four spud buoys for USS BOLSTER to use in laying a four-point moor, had been shipped to Subic Bay 20 November on the MSC chartered SS AMERICAN MONARCH.

The Plan

A pre-salvage conference was held with the FMGS team, BOLSTER and CTF 73 representatives. The salvage plan called for the BOLSTER to lay a four-point moor over the crash site. This moor configuration would give divers a more secure platform than two- or three-point mooring, and would also allow for greater mobility. Any one of the mooring lines could be lengthened to move the ship over the wreckage without having to reposition the moor. For deep-water salvage, especially with the threat of heavy weather, this would be particularly advantageous. Oceanographic Unit FOUR would provide precise navigational information to fix the BOLSTER directly over the wreckage. Once the BOLSTER was in the moor with a YC Barge alongside, the diving and recovery operation would begin. On 7 December CDR Cassat assumed duties as On-Scene Commander with Task Designator 73.6.2.

Tropical storms forced a two-day delay, and the BOLSTER laid and set her four-point moor on 10, 11 and 12 December. On 13 December, the BOLSTER was in harness and moored with the FMGS equipment situated on her fantail and the YC alongside to starboard. The Fly Away Recompression Chamber and a 25-ton crane were positioned alongside on the YC.

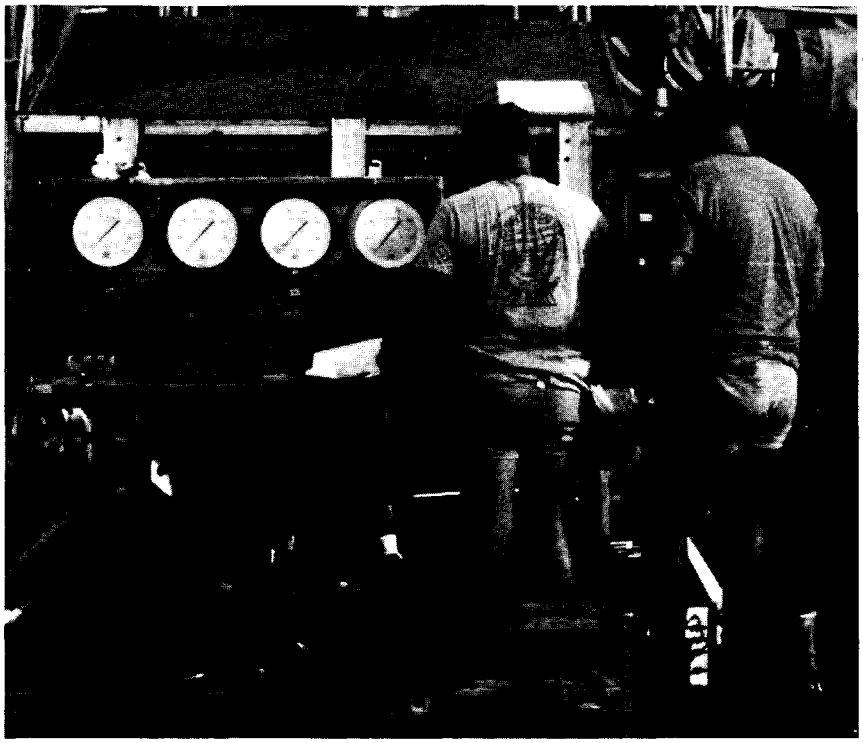


photo credit - Official Photograph, U.S. Navy

BOLSTER crew members manning the console.

An Underwater Damage Assessment System (UDATS) video camera was lowered over the side to within three feet of the bottom as a remote monitor, making the wreckage clearly visible. The wreckage covered a roughly circular area 150 feet in diameter. Divers surmised that the plane had hit the ocean floor at a high speed and exploded on impact, because the wreckage had shattered into such small pieces and been flung so far. The UDATS camera system was used repeatedly before diving to locate individual piles of wreckage within the larger wreckage area in order to conserve precious bottom time.

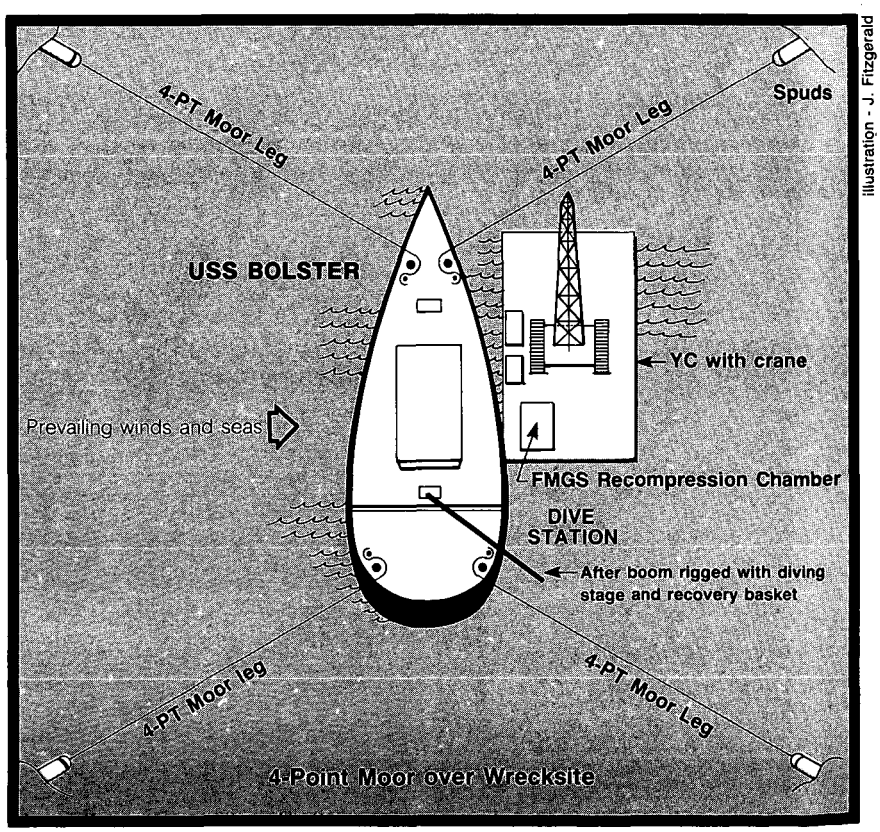


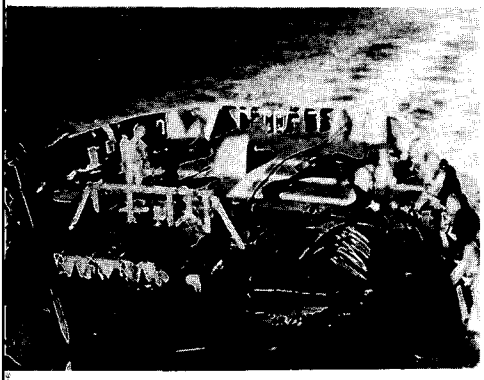
illustration - J. Fitzgerald

Salvage in Deep Mud

During the next 15 days, 75 percent of the aircraft wreckage was recovered. Although the water was initially clear, the six-foot deep mud and silt bottom reduced visibility to zero immediately after a diver touched bottom. Divers descended on a metallic stage which stopped 2 to 3 feet above the bottom. From the stage, divers could see 10 to 15 feet, enough to locate a small pile

of wreckage and get a mental bearing of the direction in which they had to travel. Once the diver left the stage, he relied on his mental picture, for the churned-up mud immediately cut off his visibility.

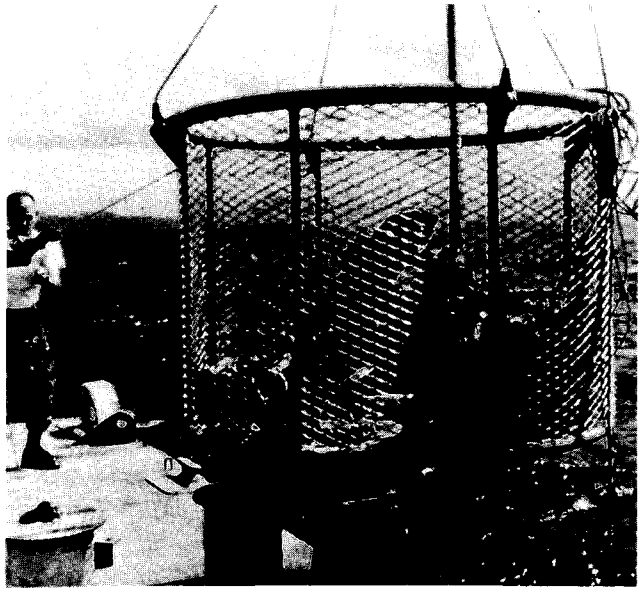
Several techniques were used to overcome the visibility problem. Nylon lines were strung from the recovery basket to the wreckage pile, creating a bannister to guide the divers. A special 500-watt flood light was attached to the recovery basket. The glow of the lamp could be seen 100 feet, and gave the divers some minimal direction.



Most of the actual recovery work was done by touch. Because the plane had hit at such high velocity the pieces of wreckage were small: few were bigger than 1 square foot. Only struts from the landing gear, hydraulic control rods and the fuselage from aft of the pilot's cockpit had fallen in larger chunks.

Many of the smaller pieces were tied together by wiring, making salvage difficult. Divers wearing leather gloves would reach deep into the mud and locate a small piece of wreckage, only to find it tangled up with several others in a mass of wiring. When lifting the heavier pieces of wreckage, divers had to be careful not to sink in the muddy ocean bottom. At times they sank as much as five feet.

The efficiency of the salvage operation was enhanced by the ease of dressing and undressing MK 12 divers, which greatly reduced turn-around time and facilitated normal surface decompression procedures. With two recompression chambers available, a new dive commenced as soon as the previous set of divers were safely in the first chamber and on the bottom.



(top) F-4S wreckage under scrutiny onboard the YC.
(center left) BOLSTER underway dropping her four-point moor.
(bottom) A recovery basket is used to haul up wreckage.

Command Cooperation Pays

Despite the challenges this salvage presented, 75 percent of the aircarft (as estimated by VMFA-312) was recovered by 28 December. Divers had found all but the small shards of metal left by the accident and it was assumed that some of the plane had disintegrated upon impact into pieces too small to locate. Divers also found sufficient evidence for medical examiners to determine that the plane's crew—pilot and radar intercept officer—had gone down with the craft.

The FMGS was staged at Naval Station Subic Bay for return shipment and the FMGS team left for Pearl Harbor 30 December. USS BOLSTER completed the recovery of her four-point moor on 1 January 1983.

This operation, like most SALVOPS, involved extensive teamwork among numerous commands. CTF 73, Oceanographic Unit FOUR, USNS NARRAGANSETT had conducted the initial search support by SUBDEVGRU ONE; MDSU ONE's FMGS team and USS BOLSTER conducted the recovery with technical assistance from VMFA-312; two EOD Mobile Unit ONE personnel were provided to identify and render safe explosive components (ejection seat propellant charges, etc.); a representative of Naval Diving and Salvage Training Center, Panama City, provided technical support for the MK 12 Mixed Gas Recirculator Backpacks; Naval Ship Repair Facility Subic Bay fabricated parts recovery baskets and Naval Station Subic

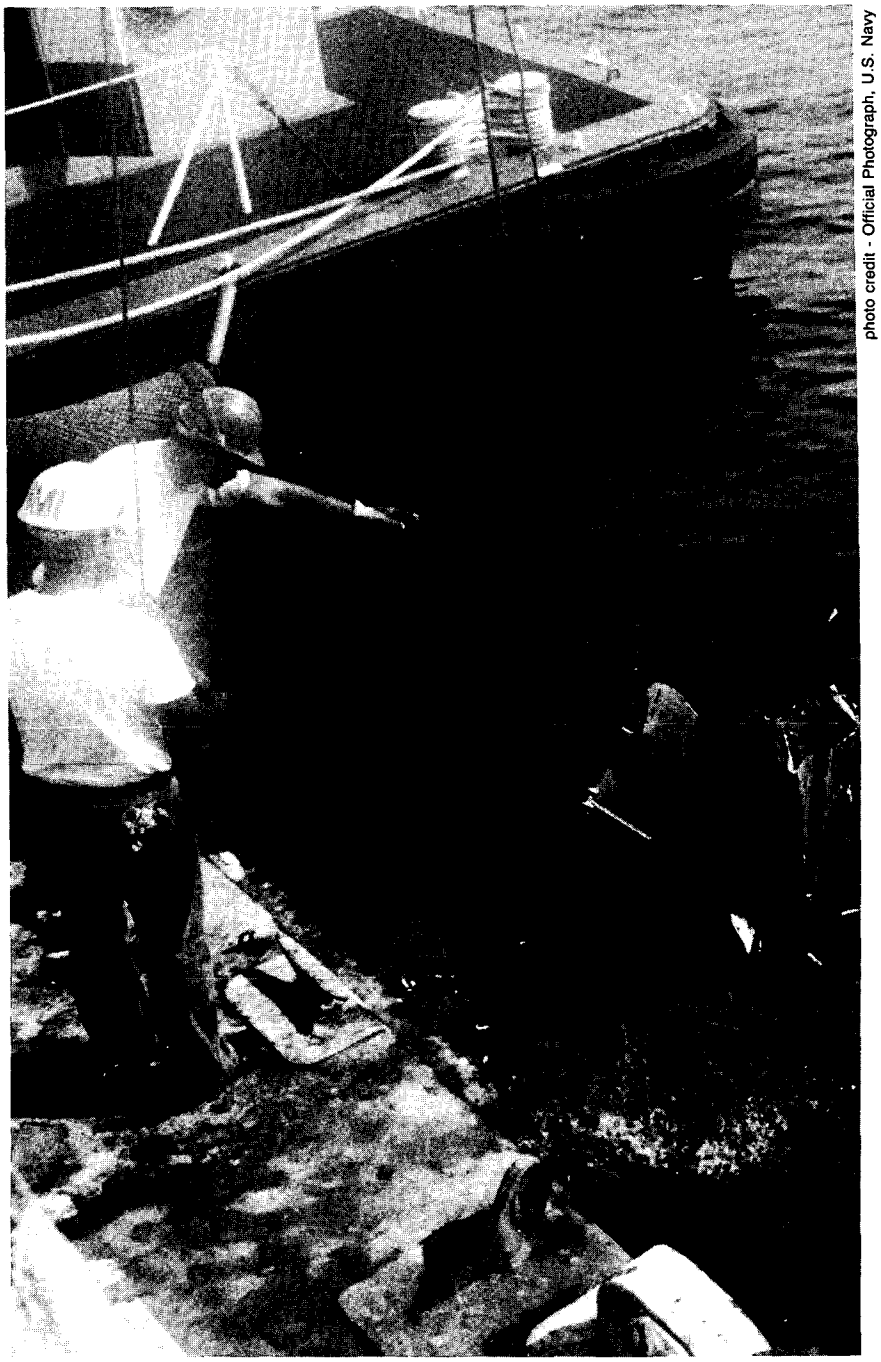


photo credit - Official Photograph, U.S. Navy

More wreckage is hauled aboard.

Bay provided a crane, YC Barge, fresh water barges and AVR-681 for personnel transfer and other logistics support.

The joint effort of these commands and individuals resulted in a highly successful recovery operation unique in several ways: deployment of the Navy's only certified FMGS, a markedly lower incidence of decompression sickness and the historic first operational deployment of MK 12 Mixed Gas Diving Rig.

Overall mission success was attributed to close cooperation by all activities involved, endurance and professionalism on the part of the BOLSTER, MDSU ONE divers and support personnel and expert technical assistance from VMFA-312/MABS-15 personnel. Navy divers can look forward to using the Mark 12 (Mixed Gas) Rig. The operation proved the equipment is reliable, comfortable and easily supported under adverse conditions.

DIVERS AND MAJOR SUPPORT PERSONNEL

MDSU ONE
CDR Gary Cassat, (On-Scene Commander) (CO, MDSU ONE)
LCDR David W. Murray, MC, (Diving Medical Officer)
LT Leon Jackson, Jr.
MMCM(MDV) Coy W. Payne
ENC(DV) Donald J. Roberts
BMC(DV) Lloyd G. Eukers, III
BMC(DV) Orville Olson
MB1(DV) Johnson P. Keliipio
YN1 David W. Bechard
HM1(DV) Dwain L. McDonald
BM1(DV) Jeffrey L. Washburn
BM1(DV) Jeffrey L. Rosenberger
HT2(DV) Daniel J. Marlow
HM2(DV) Guy H. Sturdivant
HT2(DV) Mark Lewis
BM2(DV) Wayne B. Shaw
HT2(DV) James A. Septer

CTF 73
LT Terry Murray (CTF 73 Salvage Officer)

Aircraft Mishap Board
LT COL Kenneth W. Dewey, USMC (MAB S-15)
MAJ Michael J. Soniak, USMC (VMFA-312)

NAVSEASYSCOM
Mr. Harry Rueter
Mr. Bob Kutzleb

NDSTC Panama City
GMGC(DV) Walter B. Joslyn

EOD Mobile Unit ONE
LT Joseph L. Bailey, Jr.
EMC Joe P. McFarlin

USS BOLSTER (ARS-38)
LCDR John P. Speer (Commanding Officer)
LT Todd J. Peltzer
HTCM(MDV) John Ortiz
HTC(DV) Nicholas Ehly
MMC(DV) Harry Ford
HT2(DV) Mark Tochterman
MM2(DV) Ulysses Marrero
EM2(DV) Jeff Holcomb
HM2(DV) Steven Hall

CONSERVER AND INDIANAPOLIS ASSIST ON KAUAI AFTER

HURRICANE IWA

By LT Craig Beauchaine
USS CONSERVER (ARS-39)

Crew members from the Pearl Harbor-based USS CONSERVER (ARS-39), a salvage and rescue ship, along with the crew of the nuclear submarine USS INDIANAPOLIS, spent last Thanksgiving weekend as part of the giant effort to restore power to the hurricane-whipped island of Kauai.

Hurricane Iwa, the biggest storm to hit Hawaii in more than 20 years, ravaged the islands of Kauai and Oahu for 14 hours on 23 November 1982, with winds reaching 110 miles per hour. The storm left thousands homeless, downed trees and buildings and caused millions of dollars worth of property damage.

On Kauai, power plants were knocked out by the storm, leaving the island with virtually no communications capabilities. Kauai Mayor Eduardo Malapit called on the Navy immediately, and by 24 November, naval, Kauai government and Kauai Electric Company representatives met to determine how power could be restored.

For Kauai's power plants to become operational and self-sufficient, a jump-start would be needed from a working power source. At the 24 November meeting, three alternatives for achieving this were devised—hooking the nuclear power plant aboard the INDIANAPOLIS to the downed Lihue power plant near Nawiliwili Harbor; powering the island with Navy mobile power generation units that could be flown in from Port Heuneme, California or a self-start using power from the hydroelectric plant at the McBryde Sugar Company in Wainiha.

On 25 November the crew of the CONSERVER was recalled to begin preparations in the event that Kauai authorities decided to use the INDIANAPOLIS. The CONSERVER was to serve as communications center for Navy operations on Kauai and as transformer platform between the submarine and the power plant.

CONSERVER crew members worked late that night loading gear which included 38 shore power cables, one 12 kva transformer, one 23 kva transformer, two 30 kilowatt generators, two 1600 amp breaker boxes, two 1600 amp junction boxes and several larger tires to be used as submarine fenders.

Meanwhile, five CONSERVER divers, headed by MMCM (DVM) Ron Fulkerson, flew to Nawiliwili to survey the harbor. Diving from Zodiac rubber boats, they ascertained that the harbor was deep enough for the INDIANAPOLIS. They also determined that the harbor was free of obstructions, such as small boats, trees or debris deposited by the storm.

At 2300 on Thanksgiving day, after divers had found the harbor navigationally safe, CINCPACFLT sent orders for the CONSERVER to head to Kauai for its role as communications center and transformer platform. The next morning, only 16 hours after the crew was recalled to the ship, the CONSERVER arrived in Kauai, ready to receive the INDIANAPOLIS.

The INDIANAPOLIS entered Nawiliwili Harbor the morning of 27 November 1982 and was received alongside the CONSERVER. The crew from the two vessels, assisted by personnel from Pearl Harbor Shipyard Shop 99, laid power cables from the INDIANAPOLIS outboard across the CONSERVER to the pier. All the electrical connections were tested, and the crews stood ready and waiting for the word to hook up the cables to the Lihue power plant and begin generating power.

USS INDIANAPOLIS enters Nawiliwili Harbor.

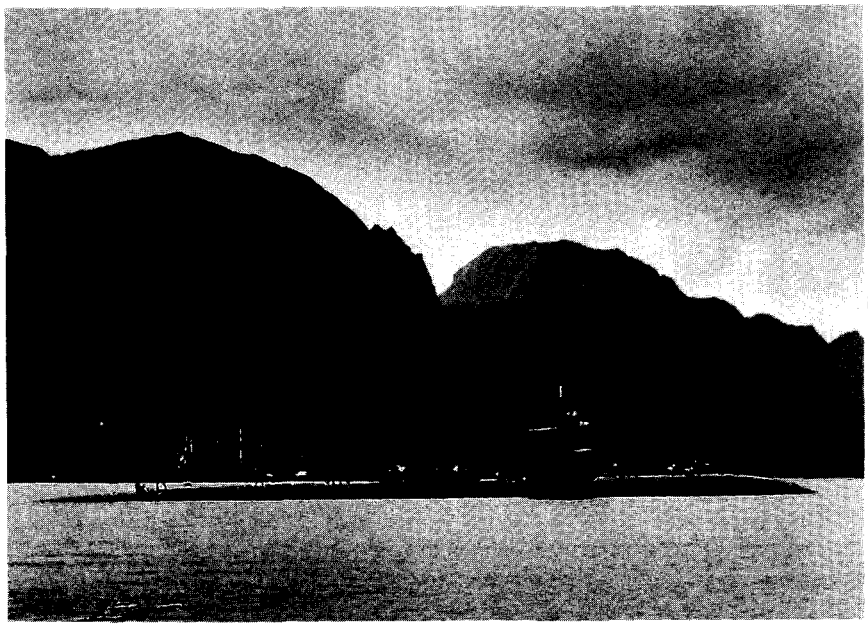


Photo courtesy of the *Honolulu Advertiser.*

CG-40493 DOWN

By LT(JG) Kyle K. Scott
Operations Officer
USCGC MALLOW (WLB-396)

Because telephone lines on Kauai were not operating, communication equipment aboard the CONSERVER was used to coordinate the power-restoration efforts between Kauai and Oahu. Working on the second alternative for restoring power to Kauai, the Navy had also flown a 1500 kilowatt capacity portable generator system from the Navy MUSE project office, Port Hueneme to Honolulu. The system was then shipped to Kauai by a Dillingham Corporation barge.

Having completed all its preparations, the Navy was then put on standby by the Mayor and waited for a signal to begin operations. It was decided to try the self-start option first, and on the evening of 27 November, personnel at the McBryde hydroelectric plant successfully restarted the Port Allen electric plant. Power from both was then used to start the Lihue plant.

On 29 November Mayor Malapit released the INDIANAPOLIS through CINCPACFLT, but requested that the mobile generation units remain as a backup and that the CONSERVER remain to continue as the communications control center. On 30 November, satisfied that the Lihue Power Plant would sustain itself, and with communications on the island restored, the CONSERVER was detailed to return to Pearl Harbor.

Though power on Kauai was ultimately restored without using the INDIANAPOLIS, Kauai residents were aware and deeply appreciative of the submarine's and the CONSERVER's efforts. Crew members missed their Thanksgiving day dinners, but as one CONSERVER sailor said, "seeing the appreciation on the faces of those Kauai residents was well worth the small sacrifice we made."

While crew members from the CONSERVER and the INDIANAPOLIS were working to restore power to Kauai, the Coast Guard was also busy dealing with the aftermath of Hurricane Iwa.

On the day of the storm, the Coast Guard temporarily lost a 40-foot utility boat, the CG-40493, in Nawiliwili Harbor. The high winds of Hurricane Iwa had caused waves that swamped the CG-40493 at her moorings, and the ship had sunk in 25 feet of water.

On 26 November, the CGC SASSAFRAS (WLB 401) along with her dive team and two divers from the CGC MALLOW (WLB 396) were assigned to the salvage operation by Commander, Fourteenth Coast Guard District. For two days, while the SASSAFRAS crew was repairing damaged aids to the navigation system, the divers were preparing CG-40493 for her reappearance on the surface.

An external survey ascertained the extent of structural damage sustained to the hull and superstructure, and other information pertinent to the salvage operation. Divers in scuba gear found CG-40493 resting with her stern on the mud bottom and her bow 8 feet below the surface with a 30 degree list of starboard. Mooring lines were still attached to fore and aft portside cleats. Structural damage was limited to a broken windshield and starboard cabin window.

During a planning meeting that night between SASSAFRAS' Commanding Officer LCDR Rod Schultz and MALLOW's Diving and Salvage Officer, LTJG Kyle Scott, determination was made to rig a bridle to the lifting padeyes on the CG-40493. These would then be

photo credit - LT(JG) Kyle K. Scott

Coast Guard divers don SCUBA gear before the dive.

hooked into the SASSAFRAS' boom. Upon bringing CG-40493 awash, dewatering would be affected in each of the three compartments with P-140 and P-250 pumps.

On 27 November the divers gained access to each internal compartment by removing hatch covers and deck plates. All floating debris and non-permanently attached material which might interfere with and possibly hinder dewatering operations were removed. The 300-pound bridle was fabricated on shore, floated into position with the assistance of salvage lift bags and rigged. Although visibility never exceeded four feet and averaged less than one foot, tasks were completed on time and with minimal difficulties.

On the morning of 28 November, SASSAFRAS maneuvered into position and steadied herself using a three point moor. Within an hour, CG-40493 was awash, dewatered, cradled and secured on SASSAFRAS' deck; and Coast Guard divers had successfully and smoothly completed another salvage operation.

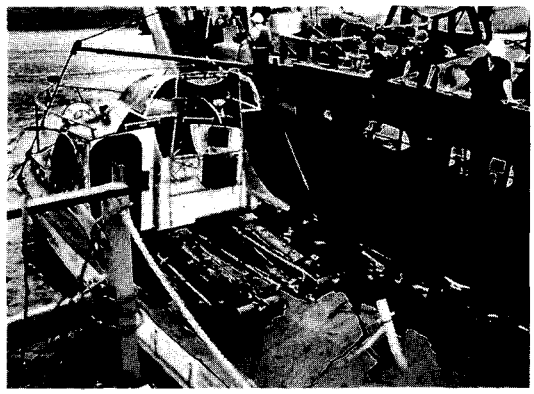
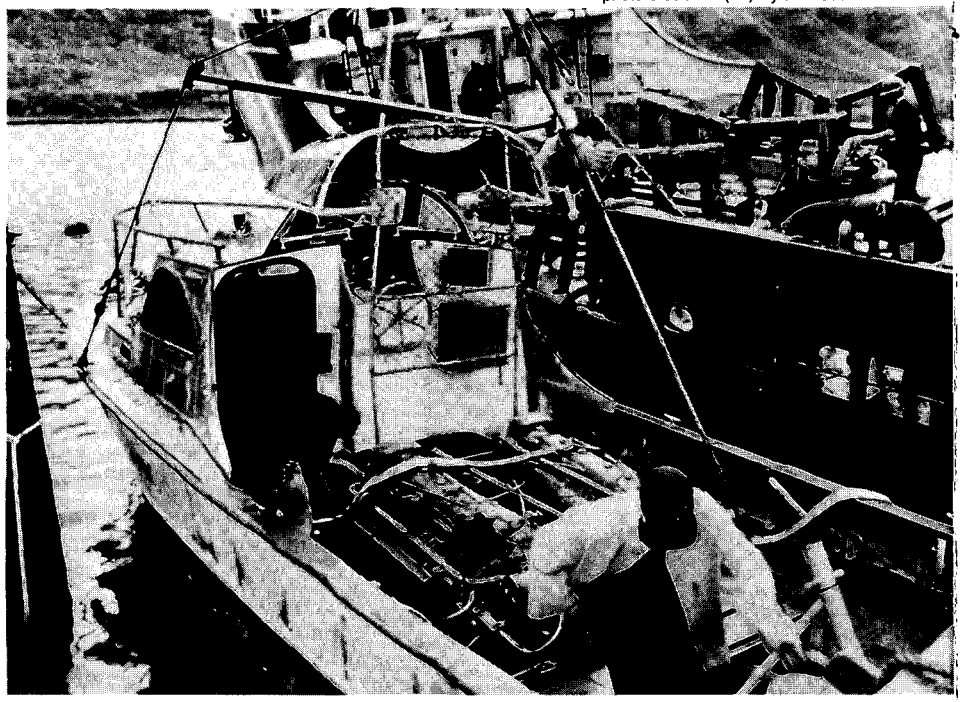


photo credit - LT(JG) Kyle K. Scott

photo credit - LT(JG) Kyle K. Scott



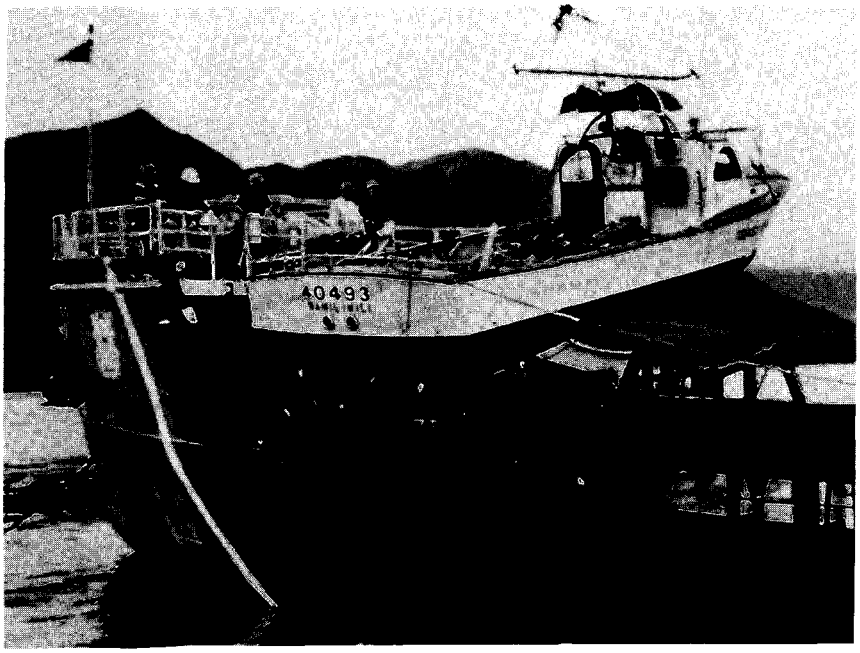


photo credit - LT(JG) Kyle K. Scott

(top) CG-40493 awash and ready for dewatering.

(center) SASSAFRAS crew members dewater CG-40493.

(bottom) USCGC SASSAFRAS (WLB 401) hoists CG40493 on deck.

Recertified

NDSTC Pressure Complex

By CD04 W.C. Woodward
Hyperbaric Systems Officer
NDSTC

Tests, inspections, documentation, procedural compliance—we call it System Certification. Every diving command in the Navy lives and breathes only so long as its ticket is valid. The Naval Diving and Salvage Training Center (NDSTC) Pressure Complex is not unique in regard to compliance. What is unique is that the system to be certified is enormous. It includes three Pressure Vessel Assemblies (PVAs) composed of HP Air Compressors, HE02 transfer pumps, flasks, recompression chambers, thousands of feet of pipe and 3500 valves. Components are made by 38 different manufacturers and consist of 210 different types of valves, loaders and reducers. The hyperbaric complex is the most advanced diver training facility in the world and is crucial to the ongoing development of the Navy diving community.

When the final system certification was received on PVA 3 in October 1981, it marked completion of certifications for the hyperbaric complex (PVA's 1 and 2 were certified earlier in the year). But system certification did not end there. The complex was recertified 30 November 1982 and will be inspected every two years.

The purpose of certification is to safeguard the lives of Navy personnel. Both certification and recertification are essential to insuring safe operation of all equipment and that is a major concern of the Navy.

As with any new facility, ship or shore, there were initially a number of bugs to work out in the Pressure Complex. After this was achieved, NDSTC hyperbaric maintenance personnel spent several months maintaining the system in a certified condition. Because the number of students using the complex has been expanding steadily, all systems have been operated at maximum capacity since coming on line. As expected, malfunctions occurred and maintenance requirements increased, as did the documentation required to stay within the parameters of the system certification.

There are two types of maintenance work—corrective and preventive. Preventive maintenance on the hyperbaric system includes routine procedures such as gauge calibration, sampling the air for purity and testing relief valves. Repairing leaking valves is the most common corrective maintenance procedure performed on the complex.

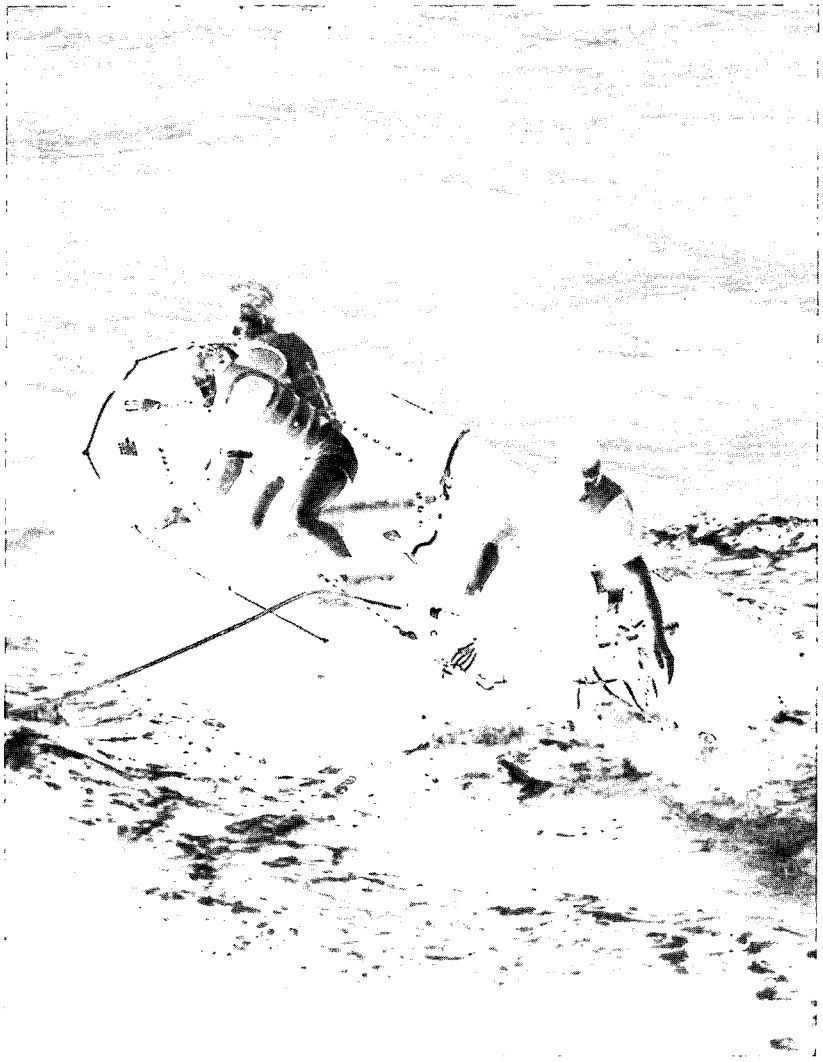
On 30 November, just about the time most of the bugs had been blown out the vents and the growing pains had subsided somewhat, the first year's certification expired, and re-inspection was required. To meet recertification requirements, maintenance personnel had to complete a check-list of tasks listed on the Naval Facilities Questionnaire for Continuation of Certification. These tasks included calibrating pressure gages, analyzing the breathing air and listing the number of pressurizations of the complex. Above all, recertification required that all repairs done on the complex be properly documented to show that everything done to the systems had been in accordance with accepted engineering practice—designed and constructed from proper materials, assembled, cleaned and performance tested.

By mid-November, the Naval Facilities Engineering Command (Systems Certification Authority) was on board and the recertification inspection was in progress. During the day-and-a-half long procedure, a thorough inspection of each system and subsystem was made, including the volumes of supporting documentation of the past year's maintenance actions. Each PVA was pressurized to 600 feet and each subsystem operated at maximum certified depth, i.e., fire extinguishing systems, air and solenoid operated valves, medical locks, etc. Satisfied with this test and finding no conditions prejudicial to manned operations at pressures not to exceed 600 FSW, continuation of certification was granted. New tickets were issued as was a hearty "well done" to the PVA maintenance staff.

One thousand six hundred fifty-two dives have been completed in the NDSTC Pressure Complex to date. None of these could have been accomplished without the tireless effort of the hyperbaric staff:

LT CO MURPHY
CW04 W. WOODWARD
BTSC(MDV) O. WESTBROOK
QMC(SS)(DR) R. SMITH
HTC(DV) L. MATTEONI
MM1 M. McMANUS
EM1(SS) M. SMITH
HT1(SW) A. MANDIGO
MR1(DV) S. PACELLI
MM1(SS) S. GAGNEPAIN
EM2 J. EILAND
HY2(DV) T. BERNDT
MM2(SS) MORRIS
VT3(DV) F. GORY

USS PETREL USES ADVANCES ON MARS



By MCR(DV)(SW) Kerns
USS PETREL (ARS-14)

The Military Amphibious Reconnaissance System (MARS) inflatable boat, a highly maneuverable craft designed by the Naval Coastal Systems Center (NCSC), is now in active use, helping the Navy in operations from rescuing stranded sailboats to recovering torpedoes, as demonstrated by recent activities of the USS PETREL (ARS-14).

The MARS boat was designed to replace the Navy's Inflatable Boat, Small (IBS) which had been in use since the early 1950's. Using new materials and technology, MARS is a great improvement on the maneuverability, speed and durability of the IBS, particularly through its rigid inflatable keel deck and rigid aluminum keelson.

MARS is a 15-foot inflatable, fabric boat with a special modified 35-horsepower outboard motor, designed as a means of insertion of reconnaissance or swimmer teams. It weighs just 200 pounds including motor and fuel. It is made of neoprine-coated nylon or kelvar.

Though MARS replaces the IBS, it can also be used instead of the Navy Z-boat as a swimmer-support craft. The MARS' transom area is similar to the Z-boat's in shape and configuration, and its low freeboard and open-deck area make it easier to get in and out of than the Z-boat, and allow the crew to move freely and work closer to the water without leaning out of the boat. The overall advantages of MARS are, of course, also beneficial to its use in diving support.

The MARS boat's most unique feature is its keelson, a 2 1/2-inch aluminum pipe running from bow to stern that collapses like an antenna. Combined with the inflatable keel, it absorbs pressure from waves associated with high-speed propulsion, and relieves the tortial load on the transom of the boat, providing an extremely stable work surface. The Z-boat, with its wooden keel and floor boards, tends to be unreliable during rough weather.

Improved design of the inflation valves are another advantage of MARS. These valves eliminate the need for bonded joints between male and female parts and don't corrode as quickly as the old IBS valves. MARS also has a new manual inflation pump, a two-stage pump used for different compartments of the boat up to 15 psi.

The MARS boat's solid, but lightweight construction allows a crew of two to three to position and launch the fully assembled boat and motor from almost any location on an ARS's main deck. Launch times for the boat and crew during man overboard drills are continually under one minute.

On the USS PETREL, the MARS boat has been put to use with continually good results. In a recent response to a distress call off Cape Hatteras, North Carolina, more than 150 miles from land, the PETREL used its MARS boat to assist the stranded sailboat INGA LENA.

The sea state was building as the PETREL steamed at full speed to answer the INGA LENA's call. The stricken sailboat was taken under tow for the night, and the next morning, the PETREL's new MARS was put to the test.

The boat was dispatched to the INGA LENA with a repair party. Although repairs were completed on the rudder, the craft was still deemed unseaworthy because of fouled propeller shaft, and because of the high seas. All personnel, including the INGA LENA's two owners, were ferried back to the PETREL, and the sailboat was then towed to a rendezvous point with a USCG cutter off Cape Look Out, North Carolina. Such rescues at sea can be dangerous under any conditions, and warrant exceptionally reliable equipment and expert seamanship; and the MARS inflatable boat proved its worth and seakeeping ability extremely well during this operation.

The PETREL uses the MARS boat in other operations as well. During deep-ocean, four-point mooring operations, the MARS boat is instrumental in the mooring buoy release phase, when speed, maneuverability and endurance are paramount. In one instance, while engaged in the release of one such moor, a hole was accidently torn in the MARS boat forward starboard pontoon, completely deflating that section of the boat. The inflatable deck not only kept the craft afloat, but afforded the crew the necessary speed and maneuverability to release the three remaining legs of the moor safely before being hoisted aboard.

During MK-48 torpedo recovery operations, the MARS boat, with a special nose cage, is used by PETREL as a primary means of recovery. The boat is maneuvered to the torpedo; the nose cage is then installed and the torpedo taken in tow to the recovery ship.

Its capability to transport large payloads at speeds of 20 knots also makes the MARS ideal for use as a safety boat during submarine swimmer operations and sea-surface support craft for personnel transfers in high sea states. PETREL also uses the MARS boat extensively as a line handling boat, which allows the ship to maintain a high degree of self sufficiency in ports and results in savings to the Navy, because commercial tugs are not used in mooring.

Product improvement of the MARS boat is scheduled to begin in fiscal year 1984. One of the boat's major drawbacks is that it uses older materials—neoprene has been in use since the 1950's. Urethane, hypolons and PVC combinations with hypolons will all be examined as easier to build, more substantial alternatives.

The MARS boat initial cost is approximately $6000. It does not yet have a stock number as provisioning by SPCC is still in progress, but can be obtained through NCSC, Panama City, Florida by contacting Bill McCrory, MARS Boat Project Manager at Autovon 436-4673 or commercial 904-234-4673.

Contributors to this article were:

LCDR J.E. Malloch
LT J.D. Cope
LTJG D.J. Day
TMCS (DV) Witunsky
GMG2 (DV) Pfistner
BM3 (DV) Warren
QM3 (DV) Spear

photo credit - Official Photograph, U.S. Navy

DIVING TO THE TOP

By J03 Darryl E. Gies
Naval Amphibious School

photo credit - J03 Darryl E. Gies

A student descends 100 feet during a MK 12 casualty drill dive.

A Master Diver is the epitome of the Navy's diving community, a unique individual who has demonstrated the highest degree of supervisory diving competence under a broad range of adverse conditions.

The rewards for obtaining this prestigious position are many. A Master Diver's specialty pay is nearly double that of a First Class Diver, and promotions to E-8 and E-9 come faster. Once qualified, special attention is given to a Master Diver's duty assignments through personalized detailing, giving him much greater opportunity for matching his desires with the needs of the Navy. Last and perhaps most important, a Master Diver possesses an unparalleled sense of confidence in his ability to supervise any Navy diving operation.

The incentives noted above are not given out with the passage of time—they are earned. After meeting the prerequisites for Master Diver as outlined in the U.S. Navy Diving Manual and Article 1410380, Paragraph 10 of the Naval Personnel Manual, an arduous five-week evaluation is required of all prospective candidates at the Naval Diving and Salvage Training Center, Panama City, Florida. There are seven courses each year with approximately four men per class. (see p. 26 FACEPLATE Fall 1982).

Half of the divers seeking qualification fail the evaluation on their first try. This exceptionally high attrition rate is attributed to the surprise nature of the Master Diving exam. Though the candidates are highly skilled and experienced divers, they have no idea what to expect of the evaluation. They are put in simulated diving and casualty situations for which they have had no advance preparation, situations they would not see in the course of regular training and div-

ing work. The element of surprise, combined with the pressure of being under evaluation, makes Master Diver qualification extremely difficult to achieve.

The Diver Second Class Training Department, Naval Amphibious School, Coronado, California, hopes to improve that attrition rate through a course designed to provide advance training to future Master Diver candidates and diving supervisors. The concept is to offer classroom instruction and a dry run to the candidates, so that they will have had some experience with diving scenarios similar to those they will encounter in Panama City.

Coronado's two-week course is the brainchild of LCDR Pete Herlin, USN, Director of the Amphibious School Diver Training Department.

"We feel that a reluctance on the part of First Class Divers to strive for Master diver is two-fold," Herlin explained. "Initially, there is a fear of the unknown. No one knows what to expect during his evaluation. Additionally, the documented lack of success for first-time candidates in Panama City results in a fear of failure."

The Amphibious School's first course was held 21 June through 2 July 1982. Diving commands participating in the course included the Combat Small Boat Unit, Mobile Diving Team (COMSUBDEVGRU ONE), Fleet Audio Visual Command and the instructors from the School's Diver Training Department. The students spent their first week in the classroom. Master Chief Electrician's Mate (MDV) Joseph Dubois, USN, gave a thorough review of diving physics, air charts and He02 charts. A comprehensive course in diving medicine was presented by LT Dennis Conard, Medical Corps, USN.

photo credit - J03 Darryl E. Gies

A MK 1 diver boards the LCM-8, completing his casualty drill.

During the second week, students were critiqued during diving evolutions off San Clemente Island. These evolutions included simulated top-side and on-bottom casualties, and recompression treatment. Each performance was evaluated with the entire diving team, then with Master Divers, Diving Officer and the Medical Officer. Diving equipment utilized included the Navy MK1 band mask, Navy MK12 deep sea rig and aluminum recompression chamber. Each candidate participated in four drills daily, once as a diving supervisor and three times as a diving tender, for a total of 12 different drills.

"Even an experienced First Class Diver can spend years in the fleet and still not deal with many casualties," Dubois explained. "Simply stated, our course condensed years of casualty experience into two weeks."

LCDR Herlin hopes to obtain the same degree of success in Coronado that a similar course in Pearl Harbor exhibited. Mobile Diving and Salvage Unit ONE, which offers Master Diver candidate training four times a year, achieved a 90 percent success ratio for first time Master Diver candidates in Panama City.

HTCS (DV) David Lidell took the Coronado course and is now optimistic about his chances for Master Diving qualification. "The school was a great confidence builder," he said. "I now feel optimistic about qualifying in Panama City. If I make it on my first try, this course will have played an important role."

As Congress has repeatedly confirmed the present Administration's commitment to a 600-ship Navy, additional underwater ships husbandry will be required, and more Master Divers will be needed to coordinate diving operations. Within the parameters of an uncompromising criteria for acceptance, additions to the master diving community must be made.

The Naval Amphibious School hopes to make its Master Diver training course an annual event. It has tentatively scheduled its next class for 24 June through 8 July 1983. Those interested in attending should contact HTC (MDV) Bruce Earnest at the Second Class Training Department, Naval Amphibious School, Coronado, California 92155, Autovon 958-9978, commercial (619) 437-2978.

The Underwater Army

By CDR P.F. Fawcett
NDSTC

Although the Naval Diving and Salvage Training Center (NDSTC) in Panama City, Florida is run and administered by the Navy, it is the training center for diving students from all the U.S. armed services.

Army divers, managed by the Corps of Engineers, are trained by Army and Navy experts at the NDSTC to perform a variety of reconnaissance, salvage construction and maintenance functions. Like Seabees, Army divers are highly mobile, flying all over the United States with their highly portable gear to perform different underwater assignments.

"Unlike the Navy, Army divers are not shipboard, they're all land based," said NDSTC Army Liaison Officer Tom Baltazar. Most Army divers work in lakes and rivers, as opposed to deep-sea diving. Some work on underwater ships husbandry and other Army diving tasks include dam and lock inspection, debris removal, and pier and port construction.

At the NDSTC Second Class Diver School, Army diving students join those from the Navy, other U.S. armed services and the foreign allied nations to complete a rigorous 12-week training.

The first five weeks are devoted to scuba training. Divers are sent on search projects, work on pipe flange/bolt projects and practice open water dives. After five weeks, they are certified to 130 feet.

The second phase of the training is lightweight gear. Using the Navy Mark 1 mask, the divers learn underwater cutting and welding techniques and the use of underwater hydraulic tools such as grinders, drills and impact wrenches.

During this phase of training, Army divers are taken aside after class to learn use of the Army's Superlite 17B helmet. While Navy divers use the Mark 1 in conjunction with a protective helmet, the Superlite gives Army divers full head and face protection, and is lighter than the Navy gear. Since Army divers do not do much deep-sea diving, the Superlite generally gives them adequate protection against the cold, hazardous materials in the water and head injuries. Only Army divers are authorized to use the Superlite helmet.

Deep-sea diving, using the Navy's Mark 12 gear, is part of the third phase of training at the NDSTC. Army divers learn deep-sea techniques along with the rest of the class. Divers spend a week at sea during this phase, and become certified to 190 feet.

The deep-sea suit provides the most protection, since the Army is sometimes called upon to perform heavy salvage operations in deep water.

Most Army diving, however, is done in lakes and rivers. Since Army divers are based on land, they must transport their gear to each diving site, and make most of their dives from rented barges. Transporting and loading bulky gear such as the Mark 12 is usually too costly for Army purposes.

Upon successful completion of the diving course, each Army student becomes a Second Class Diver and a member of the Army Corps of Engineers. They are then assigned to an Army diving detachment in Fort Belvoir, Virginia; Fort Eustis, Virginia or Pohang, Korea.

Fort Belvoir divers remain attached to the Corps of Engineers and work mainly with Engineer District projects, such as dam and lock inspections and repair and light salvage of inland waterways. At Fort Eustis, divers become part of a Transportation Corps Group Command. Their main responsibilities are port construction and ships husbandry.

Most Army divers are presently attached to the Quartermaster Corps Command in Pohang, Korea. They are responsible for maintaining and repairing two three-mile underwater petroleum pipelines.

In times of conflict, Army divers play a major role in near and far shore reconnaissance, salvage of equipment and removing underwater obstructions by demolition. In addition, the Corps of Engineers is responsible for bridge and pier construction, and river and stream fording.

Army diving units have equipment similar to the Navy "fly-away" systems. Main system components include a recompression chamber, LP and HP air facilities, underwater hydraulic tools and an underwater TV system. All equipment needed to perform underwater missions to 170 feet must be air/sea transportable.

"We're similar to the Seabees. We get a call, pick up our gear and go," Baltazar said. While Seabee divers work around the world, Army divers work primarily in the United States. They have been in almost every state as well as Puerto Rico.

Another difference between Army and Navy divers, he continued, is that in the Army, diving is a primary rating. Because Navy divers are assigned shipboard, they are rated first in another occupation, such as machinist or hull technician, and diving is their secondary function.

After two years, an Army Second Class Diver becomes eligible for the Basic Underwater Construction Technician course and Salvage Diver rating. In three years, he is eligible for First Class Diver training at NDSTC and the Advanced Underwater Construction Technician course at Port Heuneme, California.

Four years after achieving First Class, a diver is eligible for Master Diver rating, the final major step in the Army diving program. Strenuous evaluation, similar to the Navy Master Board, must be passed before becoming a Master Diver.

photo credit — Official Photograph, U.S. Navy

New Report Forms Ready for Divers

By EMCS(MDV) G.L. Butteraugh
Naval Safety Center

The diving pay raise is finally in our pockets. Divers must submit 9940/1s for all of their dives, the Diving Records at the Naval Safety Center can be audited to verify eligibility for diving pay. To avoid problems all divers must submit their Diving Logs and maintain personal diving histories.

The Diving Statistics for 1981 reflected 92,484 total dives, almost 12,000 more dives than were reported in 1980. This leads us to believe that we are closer to attaining 100 percent participation in submitting 9940s. The ability to compile an accurate record of dives and to analyze diving accidents depends on the completeness and accuracy of the reports submitted. All divers should familiarize themselves with the New Combined Diving Log-Accident/Injury Report (OPNAV 9940/1 (Rev. 7-81), enclosed in OPNAVINST 9940.2B), and ensure complete and accurate submissions are made to NAVSAFECEN.

This new form has been accepted. But, as with any new tool, there are some growing pains. The largest problem was inaccesibility through the stock system. The new form is now available through most of the supply facilities. The forms may be ordered using the following information:

Noun Name: Combined Diving Log-Accident/Injury report, OPNAV 9940/1 (Rev. 7-81)
FSN: 11 0107-LF-791-9102
U/1: Pd
Cost: $2.30

If you still have trouble obtaining the form, reproduce some from enclosure (1) of the OPNAVINST. You need only to copy the front of the form, as the backside is for accidents. You can complete blanks that stay basically the same in advance, for example: UIC, Activity Name, SSN, Diver's Name, Age, Height, Weight, Sex, Service, NEC, PTC Used, Schedule Followed and Accident Occurred, etc.

As you start filling out the form, refer to OPNAVINST 9940.2B. Note first that all divers must fill out the entire form; there is no longer a Diver No. 1 or No. 2. Unless the instruction specifies otherwise, all the blanks must be filled in. Once you've filled in your dive form and reviewed it for completeness and accuracy, turn it over to your diving supervisor who will check and sign it. Mailing is to the Naval Safety Center. When your form is received, it is reviewed and submitted to the Safety Center computer data bank.

If you have an accident, fill out the backside of the form as accurately as possible. Include a complete and clear narrative of the accident and findings, as well as the treatment used. Usually the narrative is written on a Standard Form 502 (available through the stock system). The Naval Safety Center should be sent an informational copy on the Personnel Casualty Reports (PERSCASREPs).

1 January 1983 was the last date the old form (OPNAV 9940/1A) was accepted for submission to the Naval Safety Center.

Finally, if you still have questions when filling out the new form, they can be answered by writing Commander, Naval Safety Center, Attn: Code 22, NAS Norfolk, VA 23511 or calling Autovon 690-1292, commercial 804-444-1292.

As the official magazine for the U.S. Navy diving and salvage community, FACEPLATE publishes information concerning the latest equipment, techniques and procedures and other newsworthy events.

For this purpose to be best served—and for you to be best informed—it is imperative that the magazine receive articles from all Fleet and shore-based activities. Without such support, FACEPLATE cannot adequately fulfill its intended mission.

For the Summer 1983 issue we would like to emphasize research and development applicable to diving and salvage. Some suggested areas of interest are diving and salvage equipment development and evaluation, ship's husbandry, underwater work techniques, pollution abatement, medical aspects of diving and underwater tools. Articles submitted for publication must be unclassified

The deadline for submission of manuscripts is 10 June 1983. Although this office assumes the privilege of limited editorial license, significant changes to manuscript text will not be made without prior consent. Material considered unworthy for publication will be returned to the originator.

FACEPLATE's account of people, programs and operations become a part of the historical record of U.S. Navy diving and salvage. You can be part of it.

Point of contact at NAVSEA OOC is LT K.T. Gross (SEA OOC-31J) at Autovon 227-7606/7/8 or commercial (202) 697-7606/7/8.

The OLD MASTER

Too long out of dive school, and often too long away from computing diving charts, many of us have forgotten some of the basic but elusive rules for selecting the appropriate decompression schedule. In this issue of the Old Master, the reader's memory will be tested on several rules of thumb prescribed by the U.S. Navy Diving Manual, Vol. I (air).

With the understanding that most diving is done at shallow depths, 10 to 50 feet, let's see how the "Ole Grey Matter" works if all of a sudden you were required to conduct deeper dives. What will the decompression schedule be for the following dives?

Off to Alaska you go (God forbid) to search for a lost object.

You are diving MK12 air, with the dry suit. The air temperature is 25 degrees, and the water temperature is 36 degrees. The depth of the dive is 118 feet for 26 minutes.

Being flexible and working for the company as we do, we pack up and move to some warm place (you can pick the place). You are still looking for that lost object. The person that spotted it in the Fall wasn't sure of the location the first time.

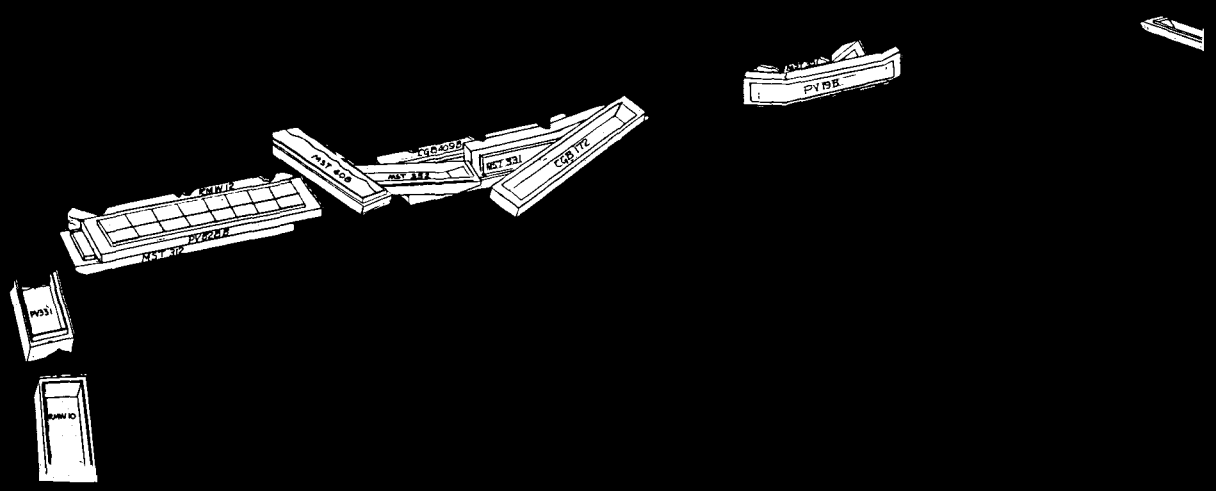
Suppose you are diving MK1 air. The air temperature is 98 degrees. The water temperature is 72 degrees. The depth of the dive is 82 feet for 12 minutes. You had a surface interval of 45 minutes. The depth of the repeat dive is 88 feet for 17 minutes. What decompression schedule would you choose if you were supervisor on the dive station?

Well, how do you think you did?

The first problem, which was easy should be 120/30—WRONG. You should consider decompressing on a 120/40 schedule. See paragraph 7.4.2 in Volume I.

The second problem, the first dive would be a no decompression dive using a 90/12 schedule, which gives you a repetitive group letter of "D." After the surface interval you are still at "D.". The repetitive dive would decompress on a 90/30 no decompression schedule. If you didn't come up with this one you had better read paragraph 7.5.3.

Here's hoping that none of you missed these. That way the Safety Center will never hear of you as a casualty.



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Washington, DC 20362

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$15.00 per year, foreign ($4.40 single copy)