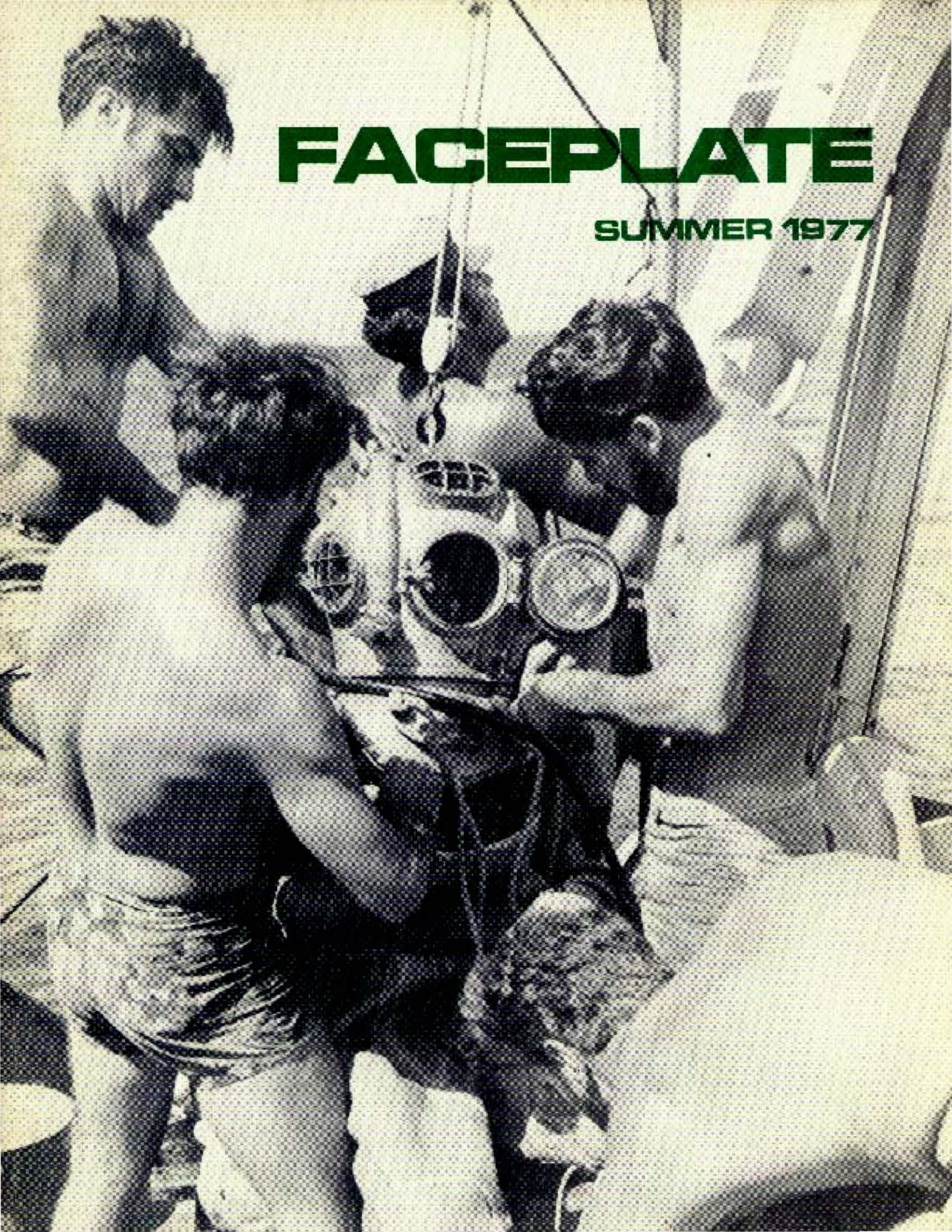
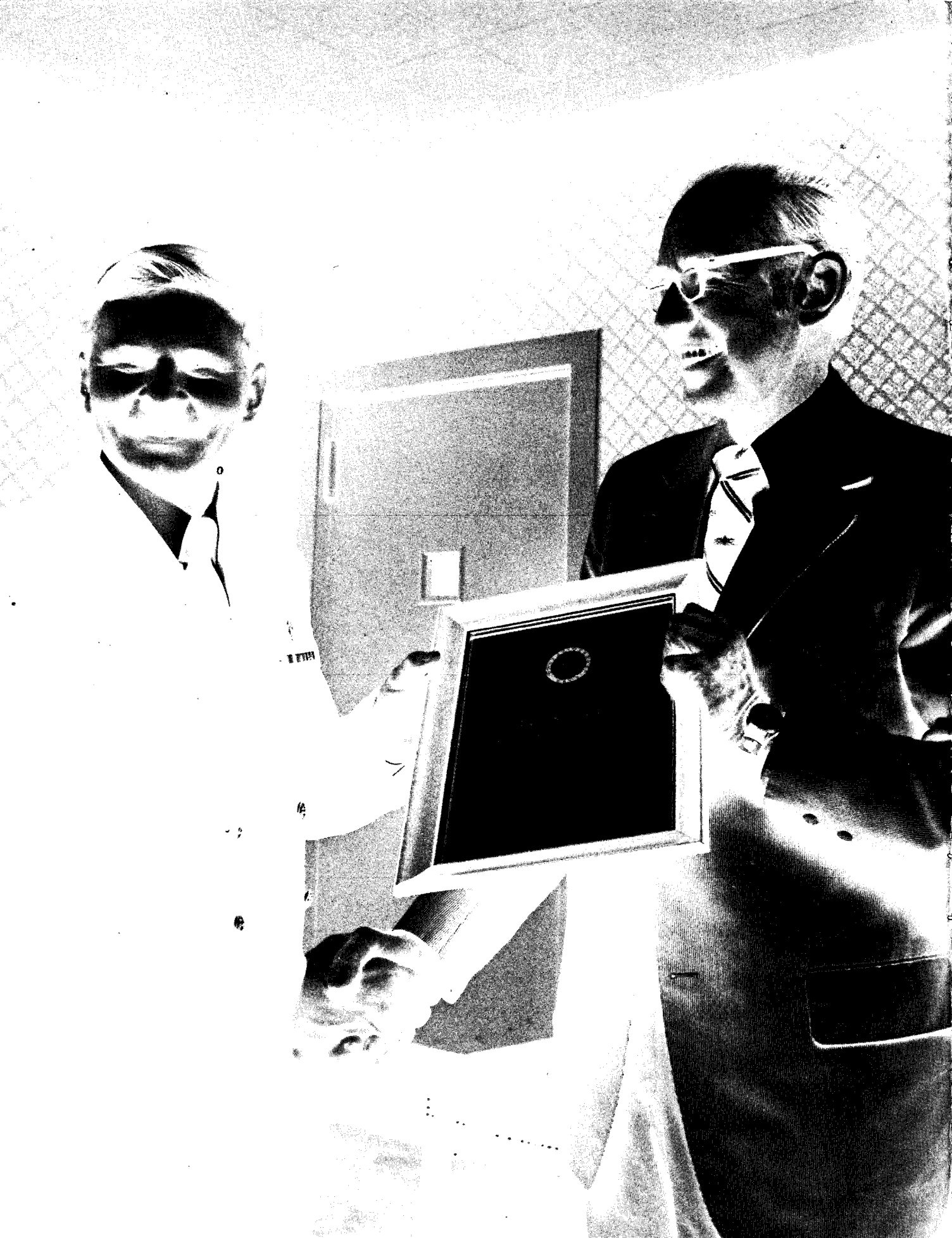
FACEPLATE

SUMMER 1977





FACEPLATE

. . . the official magazine for the divers of the United States Navy.

VOLUME 8, NO. 2

FACEPLATE is published quarterly by the Supervisor of Diving to bring the latest and most informative news available to the Navy diving community. Articles are presented as information only, and should not be construed as regulations, orders, or directives. Discussions or illustrations of commercial products do not imply endorsement by the Supervisor of Diving or the U.S. Navy.

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Front cover shows HCU-1 divers undressing an He-O_2 diver during a surface decompression.
Inside cover photo shows the Honorable W. Graham Claytor, Jr., Secretary of the Navy, congratulating HT1(DV) Dale Lueck, who was selected as Shore Sailor of the Year. See page 7.
Back cover photo shows the cockpit of an F-14 Tomcat as it rested on the bottom of the North Atlantic. See page 17.

MASTER DIVERS' CONFERENCE SCHEDULED

Many Master Divers have expressed concern about the lack of communications between the various sectors of the diving community. As the "core" of the diving Navy, Master Divers in particular need to have a suitable forum to exchange ideas, to discuss policy with those who form it, and to receive an update on new equipment and procedures. In response to this need, the Supervisor of Diving is hosting a 2-day working conference for USN Master Divers on September 19-20, 1977, at the U.S. Naval Station, Treasure Island, California. Topics on the agenda include diver qualification and requalification; Washington—how it works at CNO, NAVMAT, NAVSEA, BUPERS, and BUMED; new equipment; and diving pay—separating fact from fiction. Also part of the 20-plus subject list are diver rate—pro and con; Navy diving—who is doing it and where is it going; career patterns for Diving Officers; and a forecast for the new 1140 community.

FLY-AWAY AIR COMPRESSOR UPDATE

There is good news on the status of the new portable 250 psig compressor/console systems. Procurement has been initiated; and the delivery of 18 systems to the Navy is expected in December 1977. Fleet personnel can expect this equipment the first of 1978. A fleet priority list for receiving these systems has been developed. Those to receive a system in the first delivery are all ARSs and several land-based diving commands. A prototype of this compressor operated for 103 hours last July without any equipment failures.

A NOTE ON DIVING PUBLICATIONS

The diving publications we have today are really only as good as the inputs received here in Washington, D.C. from you, the end fleet user. This point cannot be overstressed, and your support in this area is strongly solicited. When you are reading or using the publications and see what you think is an error, write it down and send it to the Supervisor of Diving. Each comment is reviewed and provides the basis for annual changes to the manuals.

To bring you up to date on current schedules for publications changes, the following information is provided:

U.S. Navy Diving Manual, Vol 1, 0994-LP-001-9010
Change 1: Issued
Change 2: In preparation, estimated fleet issue, late 1977

U.S. Navy Diving Manual, Vol 2, 0994-LP-001-9020
Change 1: Issued
Change 2: FY 78

U.S. Navy Recompression Chamber Handbook, 0994-LP-014-5010
Revision 1: In preparation, estimated fleet issue, early 1978

Underwater Cutting and Welding Manual, 0929-LP-000-8010
Revision 1: In preparation, estimated fleet delivery, early 1978

Recently, there has been some confusion on how to order manuals. Navy personnel should order manuals from:

Commanding Officer
US Navy Publications and Forms Center
5801 Tabor Ave
Philadelphia, PA 19120

The full two-volume *Diving Manual*, with Change 1 already included, will soon be back in stock. Volume 1 is already available; Volume 2 should be available in December 1977.

WORKING DIVER—1978: CALL FOR PAPERS

A call for papers for "The Working Diver—1978" has been issued by Battelle-Columbus Laboratories, co-sponsor of the March 7-8, 1978 symposium. Other sponsors of the meeting, which will be held in the Battelle auditorium, Columbus, Ohio, are the U.S. Navy (Supervisor of Diving), Marine Technology Society (Committee on Salvage and Diving), and the American Society of Mechanical Engineers (Ocean Technology Division). Topics include advances in diving equipment, use of divers and equipment in underwater work or salvage operations, ship husbandry, extreme environment diving (oil platforms), and divers and the energy crisis. Those wishing to submit papers should send an abstract by September 15, 1977 to Mr. Peter Riegel, Battelle-Columbus, 505 King Avenue, Columbus, Ohio 43201.

UDATS REPAIR FACILITIES

The Navy maintains two Underwater Damage Assessment Television System (UDATS) repair facilities. One is located at the Mare Island Naval Shipyard, California; the second is established at the Pearl Harbor Naval Shipyard, Hawaii. These UDATS repair shops are part of the Transducer Repair Facilities at each shipyard. They have the necessary parts and test equipment on hand to service all components of a UDATS unit (including cable, high intensity light, camera, helmet, monitor, and video tape recorder). Components that require servicing should be sent directly to the closest repair facility to the attention

of Code 967 T.R.F. Any further questions regarding UDATS repair should be directed to R. Long, NAVSEA 04312, at Autovon 222-8946.

MK 1 MOD O TRAINING COURSES AVAILABLE

The need to familiarize the fleet diver with the use and the maintenance (with emphasis on the former) of the Mk 1 lightweight diving outfit has resulted in the establishment of 5-day training classes. This course is designed primarily for those fleet divers who have not had any previous training in the Mk 1 Mod O mask. In addition, participants must have the following prerequisites: Current diving physical, current diving qualifications, and previous official U.S. Navy training in surface-supplied diving with a minimum qualification of 2nd Class Diver status.

The following list gives the locations, contacts, and dates for the classes:

Location:	Starting Date:
HCU-2	8/15/77
Little Creek, VA	8/29/77
LT Tinsley	
8-680-7404	
(Additional dates for FY78 will be given in a future AIG 239 msg.)	
NAVSUBTRACENPAC	9/12/77
Pearl Harbor, HI	10/17/77
CWO Bishop	12/5/77
808-471-9421	2/6/78
	3/27/78
	5/1/78
	6/19/78
	7/24/78
	9/11/78
NAVTRACEN	11/4/77
San Diego, CA	3/17/78
LCDR Brereton	4/28/78
Autovon—958-1478	6/9/78
COM—714-235-1478	

Class quotas can be obtained from the contact for each location. TAD orders (including funds for travel and/or per diem if necessary) must be sponsored by the prospective candidate's command. Mess and berthing facilities are either not available or not guaranteed at any location. Per diem should therefore be arranged accordingly.

LT ENOS FROCKED AT 130 FEET

LT Russ Enos, currently the Salvage Officer aboard USS DIXON (AS-37), was "frocked" with his lieutenant's bars in a ceremony that occurred at a depth of 130 feet. LT John Allen, Executive Officer at the Naval School, Diving and Salvage, Washington, D.C., also took part in the ceremony, which took place in the NSDS pressure complex on March 18, 1977 (the day of LT Enos' graduation from He-O_2 Diving Officer School at NSDS).

AIG MESSAGE SUMMARY UPDATE

NAVSEA 191506Z Apr 77: Top Manifold Gasket Replacement for Mk III Lifejacket (AIG 239 FY77-22).

NAVSEA 230039Z Apr 77: Divers' Air Purity Standards (AIG 239 FY77-23).

NAVSEA 251240Z Apr 77: Diving Equipment Authorized for Navy Use (AIG 239 FY77-24).

NAVSEA 261954Z Apr 77: Deep Sea Diving Standard Dress (AIG 239 FY77-25).

NAVSEA 032338Z Jun 77: Diving Manual Changes (AIG 239 FY77-26).

NAVSEA 151951Z JUN 77: Training of Fleet Divers in Use/Maintenance of Mk 1 Lightweight Diving Outfit (AIG 239 FY77-27).

NAVSEA 212020Z Jun 77: Diving Dresses (AIG 239 FY77-28).

F-106A RECOVERED OFF FLORIDA

An F-106A was reported missing after a multiple aircraft training exercise was conducted by the Jacksonville-based Florida Air National Guard squadron on February 7, 1977. These maneuvers took place within the designated offshore airspace area and approximately 30 nautical miles east of St. Augustine, Florida.

An Aircraft Accident Investigation Board was convened; and, shortly thereafter, the Office of the U.S. Navy Supervisor of Salvage was contacted for assistance in the search and recovery of the missing F-106A. As soon as official authorization was received to proceed with the task, Mr. R. E. Kutzleb of Seaward, Inc. (the prime search and recovery contractor), departed for Jacksonville, Florida, accompanied by Mr. Ron Green, the designated Supervisor of Salvage representative.

The at-sea sonar search commenced at approximately midnight on February 18. Early that morning a significant contact was recorded on sonar which, when further investigated on succeeding passes, was thought to be the missing aircraft. Localization runs were continued throughout the day. The search vessel, R/V COVE, returned to Mayport, Florida, late that evening to make arrangements for U.S. Navy divers to physically verify the contact. Diver confirmation was accomplished during the following 2 days and selected debris recovery was conducted for the next 10 days. The recovery effort was considered completed and operations terminated on March 4.

A composite team of U.S. Navy divers headed by LT John Gripp, USN, was made available for the verification and recovery task. This group was made up of 13 divers from USS PRESERVER (ARS-8), USS PAIUTE (ATF-159), and a Mayport-based destroyer-tender, USS YOSEMITE (AD-19). Scuba was used for diving on the wreckage, which was at depths just over 120 feet.

A Few Words from SUPDIVE

In the Fall and Winter '76 issues of *Faceplate*, we gave you a broad rundown on many of the major problems and programs. This article is intended to be an update of those problems and programs just to let you know that the wheel really does turn.

POINTS OF CONTACT: Since the last issue, we have reorganized OOC; and you need to be updated on people and phone numbers.

SUBJECT	CONTACTS	PHONE EXT AUTOVON 227- COM: (202) 697-
Certification	CDR Klorig	-7386
	Mr. Dietrich	-7386
	Mr. Snyder	-7386
Diving Waivers	Mr. Bergman	-7606
Diving Procedures	Mr. Bergman	-7606
Diving Publications	Mr. Bergman	-7606
Diving Engineering	Mr. Bergman	-7606
	Mr. Rueter	-7606
	Mr. Stockard	-7606
	Mr. Lindberg	-7606
Shipcheck/Diving Boats	Mr. Michelson	-7606
UDT/SEAL	LCDR Schropp	-7606
	Mr. Milner	-7606
EOD	LT Bacon	-7606
UCT/Diver Tools	LT MacDougal	-7606
General Diving Matters	Mr. Keane	-7403

SUPDIVE MASTER: We have asked both fleet Commanders if they would be able to provide the compensation necessary to establish this billet in the office. The response has been favorable but contingent upon ship retirements, which, as many of you know, is scheduled to take place next fiscal year in several instances. So, we are forging ahead to get the paperwork squared away. In the meantime, I intend to have a master diver from each fleet spend at least 1 week each quarter in our office to be briefed on what is happening and to give his honest opinion on our problems and solutions.

APPROVED DIVING EQUIPMENT LIST: The NAVSEAINST 9597.1 of March 18, 1976 is currently under revision. As mentioned in the previous article, we use the AIG 239 message to provide interim updates. One of the biggest changes you will notice is the expanded list of LP and HP filters. Be sure to check the current AIG 239 listing elsewhere in this issue to ensure that you are up to date.

SHIPCHECK PROGRAM: The shipcheck program is complete and we are well into Phase II, which has to do with the improvement and correction program. A couple of Shipalts have already been released by NAVSEA 941, the Type Desk for diving ships. For those of you needing help in getting your diving boats in order, we have certifiable plans for both a simple HP flask system and a combination LP/HP system—just call or write. At the same time, we have received fleet requirements for a standard IMA diving boat and we are moving ahead at top speed to firm up the design and portable equipment loads. One additional item that came out of the shipcheck program effort is the discovery that there is lack of knowledge concerning the hydrostatic test requirements of high pressure flasks, particularly on diving boats. If you don't know, then review *NAVSHIP TECH MANUAL* CHAPTER 9490 (Change 2 of 01 Feb 77) sections 9490.171 through 9490.181. One note about certification (which is going "hot and heavy") is that we have developed a list of common recurring discrepancies. This list can be of great assistance in preparing for your certification survey. Give Al Dietrich or Ron Snyder a call when you are ready for one. With schedules being what they are, you should allow for a lead time of approximately 4 to 5 weeks.

SHIPBOARD AIR COMPRESSORS: As noted, we have the flyaway system coming along, with an initial purchase this year and ongoing purchases for the next several years. We are also working on a diesel driven portable HP compressor, the initial purchase is scheduled for FY78.

DIVING HOSE LONGEVITY: The new criteria for extending hose life was published by NAVSEA message DTG 251930Z Jan 77. If you don't have it, let me know.

UNDERWATER SHIP HUSBANDRY: This program is really starting to roll, especially the hull cleaning portion, which is tied to fuel savings and is therefore tied to President Carter's Energy Conservation Program. You can look forward to a more in-depth description of the program in a future *Faceplate* article. Right now, we are using civilian contractors to perform the hull scrubbing; this effort is scheduled to be turned over to fleet divers in 1981, after we get new long-life paints that are more corrosion and fouling resistant. We also have equipment procurement to accomplish before that time. In answer to the question of why we don't get the fleet involved now, I'll just say this: Do a little calculation, considering the cleaning of every surface ship, every 9 months, at 12 man-days per hull. That adds up to a major effort that the fleet is not in a position to fully accept. We are, however, training people to be our on-site SUPSALV representatives; and they should pro-

vide a cadre of personnel familiar with the job, including the before and after pictures and report writing.

GAS SAMPLING: The program is under way and your attention is directed to NAVSEANOTE 9597 of May 27, 1977 for details. This is a giant step toward getting standard air tests and results. You should also notice that the AIG 239 message number FY77-23 changed the air quality standards. This was reasonable, because, in some cases, the ambient air could not meet the standards.

In closing, I will re-emphasize the points CDR Bartholomew made in the Fall 1976 *Faceplate* concerning communications up and down the line. I welcome and encourage phone calls and letters. I hope that our Master Divers' Conference (September 19 and 20, 1977, at Treasure Island, San Francisco, California) will go a long way toward closing the gap. And, finally, remember that budgeting for new projects has a 3- to 5-year lead time. The "difficult" we do immediately but the "impossible" takes a little longer.

HT1 (DV) LUECK IS SHORE SAILOR OF THE YEAR

Annually, the Atlantic Fleet, Pacific Fleet, and shore command each choose a Navy sailor as their respective "Sailor of the Year." This year's shore duty honor goes to a member of the diving community: HT1(DV) Dale K. Lueck, a diving instructor at the Naval School, Diving and Salvage (NSDS), Washington, D.C., was chosen from more than 150,000 sailors in 250 commands across the country. As a result of his selection, HT1 Lueck was meritoriously advanced to Chief Petty Officer by the Secretary of the Navy in a special ceremony at the Pentagon on July 24, 1977. The award also includes a 1-year tour with the Master Chief on duty with the Chief of Naval Education and Training at the Pensacola, Florida Naval Air Station.

After enlisting in the Navy in 1969, HT1 Lueck attended the Recruit Training Command in San Diego, California, where he was commended by the Commanding Officer for having the highest average score on weekly academic examinations in his company. Recruit training was followed by Shipfitters "A" School and duty aboard USS BRADLEY (DE-1041).

Petty Officer Lueck attended Naval Second Class Diver School in San Diego in 1971, where he graduated number one in a class of 14 and was awarded the position of "Honor Man" of his class. From there he went to First Class Diver School at NSDS, from which he graduated number two out of a class of eight and after which he was awarded NEC 5342.

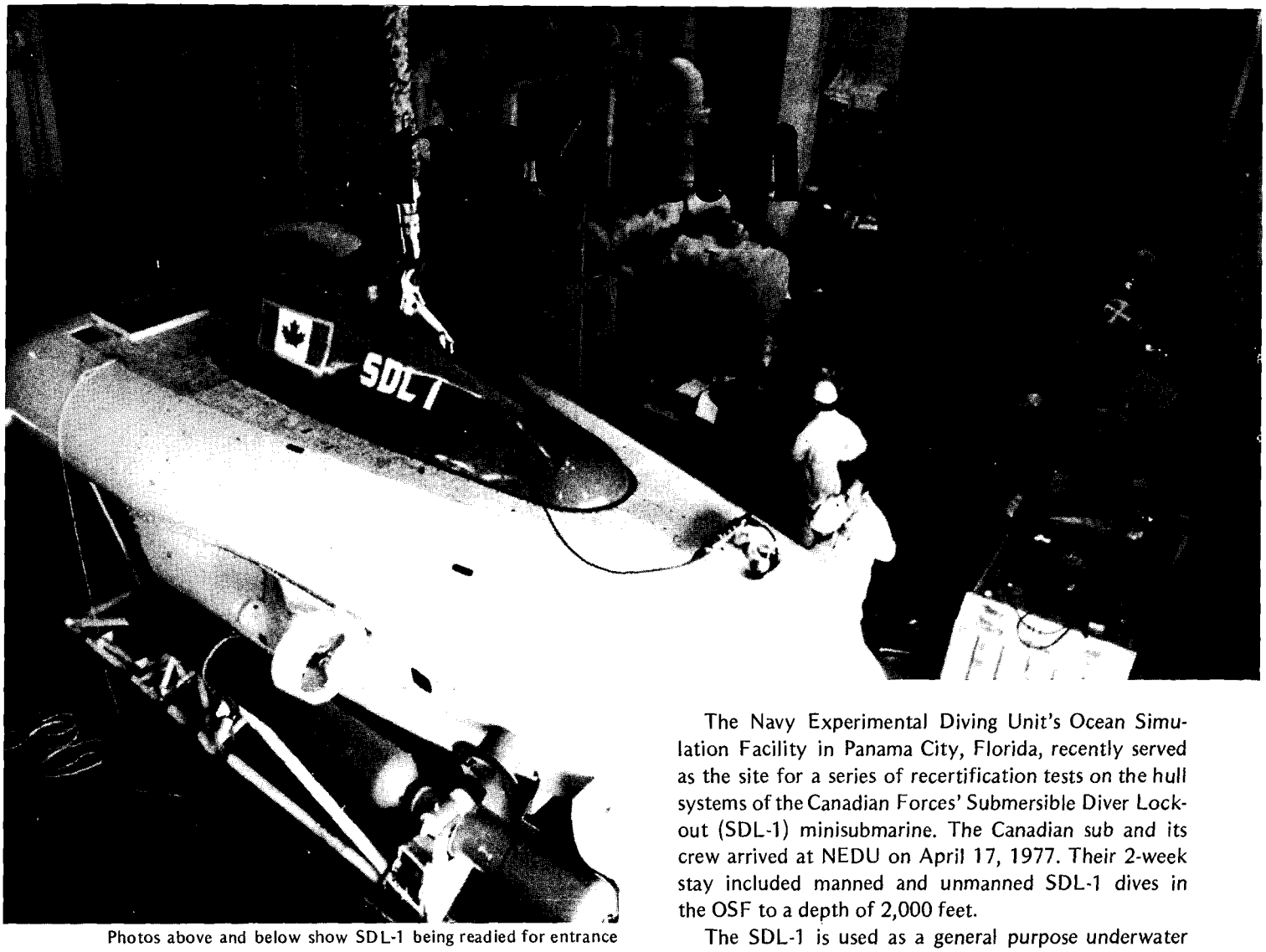
He next reported to USS SPERRY (AS-12), making one deployment to Pearl Harbor, Hawaii, for submarine repair commitments and a yard overhaul in Portland, Oregon. During this period aboard SPERRY, he was division training Petty Officer, supply Petty Officer, and man-hours accounting and PMS Petty Officer. He also qualified as Diving Supervisor, LCM-6 coxswain, and LCM-6 boat engineer. In addition, he was division leading Petty Officer and SPERRY's acting Master Diver. While onboard, he received commendations from SPERRY's Commanding Officer and from the Commanding Officer of USS GUDGEON (SS-567) for extensive upkeep and repair services.

HT1 Lueck attended instructor training school before reporting to NSDS, where he has served as a ship salvage techniques instructor, Petty Officer in charge of the scuba training locker, Petty Officer in charge of salvage demolition training, and has been on TAD to the Air System Certification Team to assist in the construction of the new diving system aboard YDT-15. While working with demolition training, HT1 Lueck developed and implemented new demolition range training procedures and made major revisions to the demolition training curriculum.

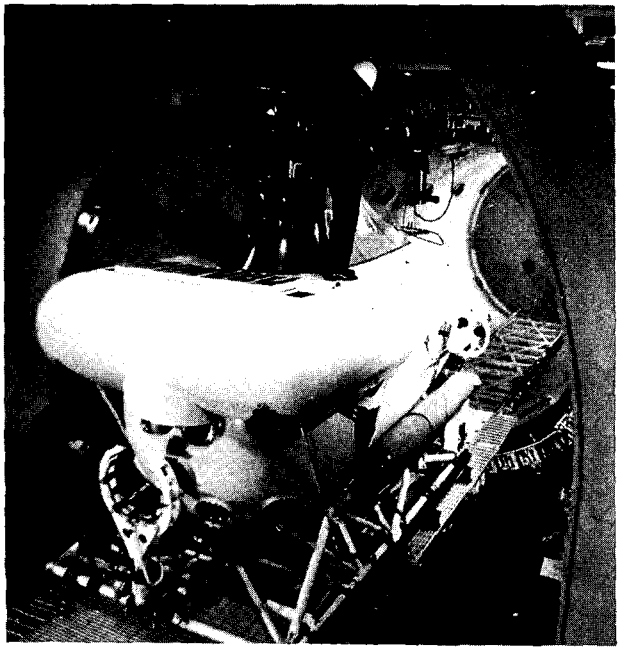
He was selected as Sailor of the Quarter for the period of October through December 1976. During the calendar year of 1976, HT1 Lueck received four letters of appreciation from the following: From the Supervisor of Salvage for his involvement in the technical evaluation of hydraulic beach gear pullers; from the Commanding Officers of the Naval Reserve Diving and Salvage Unit 106 and the Reserve Harbor Clearance Unit 1001 for his assistance in training personnel during reserve ACDUTRA in July; and from Commandant, Naval District Washington, D.C., for his personal efforts in the Combined Federal Campaign, in which Petty Officer Lueck, as the Salvage Division Keyman, enthusiastically helped achieve 189 percent of the command's goal with 100 percent participation. (He has been a Combined Federal Campaign Keyman yearly since his arrival at NSDS.)

In early 1977, he received another letter of appreciation from the Public Works Officer, Naval District Washington, D.C., for his personal cosupervision in a fuel storage barge hull inspection and river bottom survey. In the midst of this operation, an automobile plunged into the Anacostia River within 400 yards of the barge project. Under HT1 Lueck's on-the-spot assessment and supervision, he and his team of divers successfully rescued the entrapped passenger from the vehicle (which was resting in 20 feet of water), thus preventing an inevitable drowning.

According to his juniors, peers, and superiors at NSDS, HT1 Lueck has consistently demonstrated the superior qualities of judgment, integrity, and professionalism that characterize a top level enlisted leader of any organization. (See photo on inside front cover.)



Photos above and below show SDL-1 being readied for entrance into OSF wet pot.

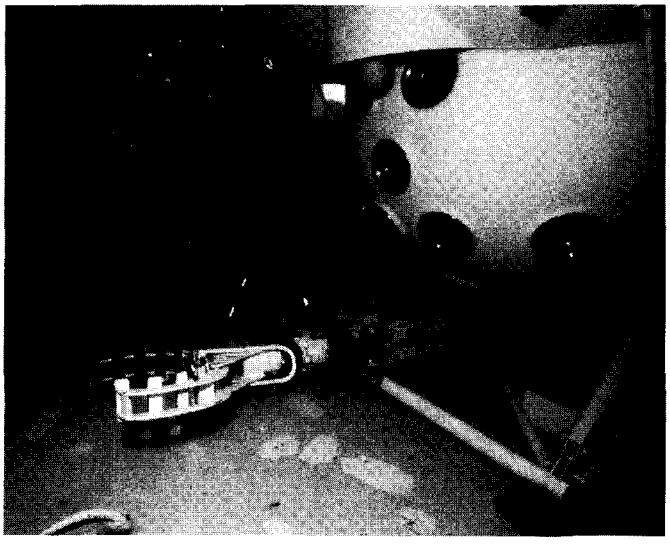


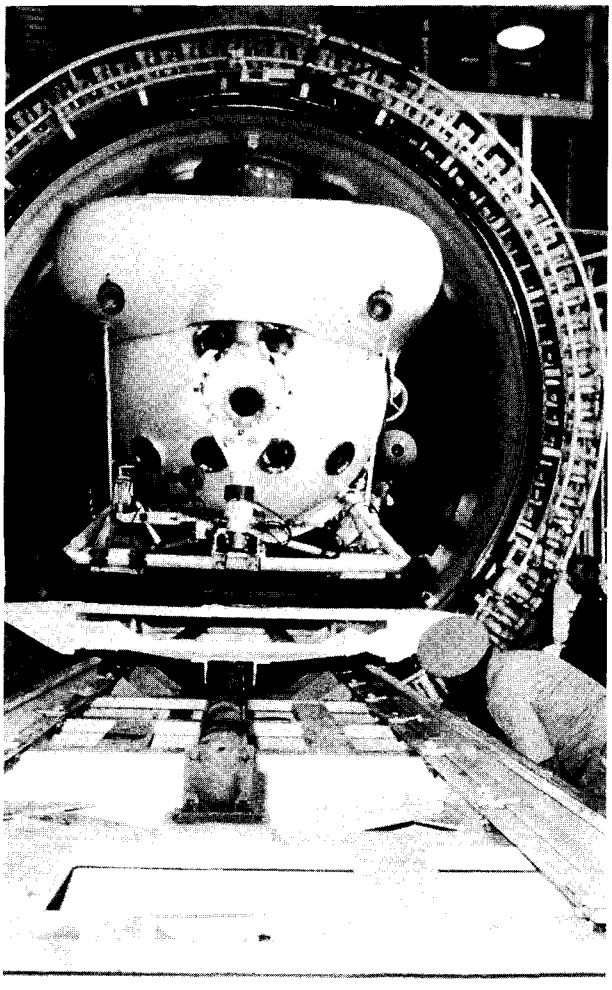
The Navy Experimental Diving Unit's Ocean Simulation Facility in Panama City, Florida, recently served as the site for a series of recertification tests on the hull systems of the Canadian Forces' Submersible Diver Lock-out (SDL-1) minisubmarine. The Canadian sub and its crew arrived at NEDU on April 17, 1977. Their 2-week stay included manned and unmanned SDL-1 dives in the OSF to a depth of 2,000 feet.

The SDL-1 is used as a general purpose underwater vehicle for seabed exploration, surveillance, and recovery. The hull, which is fabricated from HY-100 steel, consists of two spheres interconnected by a cylindrical tube. The forward sphere is 7 feet in diameter and serves as the command station. The after sphere is the lock-out compartment and measures 5 feet 5 inches in diameter. The tunnel joining the two, which is 5 feet 11 inches long and 25 inches in diameter, allows personnel transfer between spheres at depth. This construction allows the command sphere to remain at normal atmospheric pressure while divers compress or decompress in the after sphere.

The SDL-1 is capable of carrying up to six persons to a depth of 2,000 feet without a tether. At depth, one pilot, one co-pilot, and an observer can study the ocean floor through 10 large viewports. They may also perform simple tasks outside the vessel by using the submersible's two mechanical arms. When necessary, three additional diver/crewmembers, accommodated within the rear lock-out compartment, are able to exit the vehicle at depth to perform various tasks. This lock-out diving

Tested at NEDU





capability is available to a maximum depth of 1,000 feet. (No lock-out dives were performed during the NEDU trials.)

Powered throughout by lead acid batteries, the submersible can operate at depth for periods of up to 8 hours with a 24-hour life support capability in reserve. Much of this power is used to operate two independent thrusters mounted on either side of the vehicle, which propel it forward and backward at varying speeds of up to 1½ knots.

The SDL-1 is 20 feet in length (with manipulators stowed), 10 feet in width, 12 feet in height, and weighs 26,000 pounds. These dimensions, though compact in terms of easy transport by road, sea, or air, are such that the OSF is the only testing facility in the world large enough to accommodate in-chamber trials of the submersible.

The SDL-1 has been used in 327 dives since it was delivered to the Maritime Command in 1970. Included in its missions was its recovery of a 7-ton Avenger aircraft, intact, from the bottom of the 240-foot-deep Bedford Basin in Halifax, Nova Scotia, in 1972. Other completed tasks include the salvage of an S2F Tracker aircraft and an investigation of marine life on the continental shelf for the Department of Fisheries.

The recent tests on the SDL-1 at NEDU were made because of various modifications to the craft's hull. The trials were part of a continuing diving exchange program between the U.S. Navy and the Canadian Forces.

Above left: SDL-1 in chamber during test. Above: SDL-1 entering wet pot. Below: SDL-1 arrives in Panama City.

Who Are Your MASTER DIVERS?

The following list contains the names of USN Master Divers and their current addresses. *Faceplate* will be making an effort in future issues to keep readers informed of additions, deletions, and duty transfers.

MMCS(MDV) MIKE ANDERSON
HARBOR CLEARANCE UNIT ONE
FPO SAN FRANCISCO 96601

BMCM(MDV) CARL BRASHEAR
COMMANDING OFFICER
USS L. Y. SPEAR (AS-36)
FPO NEW YORK 09501

BMCS(MDV) BILL AUSTIN
NAVCOASTSYSLAB PANCTY
NAVAL COASTAL SYSTEMS LAB
PANAMA CITY, FL. 32401

HTCS(MDV) FRANK BUSKI
COMMANDING OFFICER
USS KITTIWAKE (ASR-13)
FPO NEW YORK 09501

HTCM(MDV) EARL BENNETT
HTCS(MDV) RICHARD BRADY
HTCS(MDV) GEORGE GILSON
HTCS(MDV) JOHN SCHLEGEL
SCHOOL DIVING AND SALVAGE
COMMANDANT
NAVAL DISTRICT WASHINGTON
CODE 611.1
WASHINGTON, D. C. 20374

BMCS(MDV) ERNEST CALTENBACK
NAVUNWATSYSCEN NEWPORT RI
OIC NAVAL UNDERWATER
SYSTEMS CTR
BLDG 118 NEWPORT, RI 02840

GMGS(MDV) PHIL COLVIN
COMMANDING OFFICER
USS DIXON (AS-37)
FPO SAN FRANCISCO 96601

BMC(MDV) BILL BOKANOSKI
SOLOMONS BR FIELD DIV NOL
OIC NAVAL SURFACE
WEAPONS CENTER
SOLOMONS FACILITY
SOLOMONS, MD. 20688

BMCM(MDV) JOHN DAVIS
EXPLORD DISPSLFAC INDHD
COMMANDING OFFICER
NAV EXPLOSIVE ORD DISP FAC
INDIAN HEAD, MD. 20640

HTCS(MDV) DAVID DECEMBER
COMMANDING OFFICER
USS BRUNSWICK (ATS-3)
FPO SAN FRANCISCO 96601

BMCS(MDV) HERB HARPER
SUPSHIP SAN FRANCISCO CA
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NAVAL SUPPORT ACTIVITY T.I.
CODE 16 BLDG. 367
SAN FRANCISCO 94130

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USS HOWARD W. GILMORE (AS-16)
FPO NEW YORK 09501

HTCS(MDV) JERRY JENNINGS
COMMANDING OFFICER
USS CONSERVER (ARS-39)
FPO SAN FRANCISCO 96601

HTCM(MDV) RALPH JONES
MMC(MDV) CHARLES WETZEL
COMMANDING OFFICER
HARBOR CLEARANCE UNIT TWO
FPO NEW YORK 09501

BMCS(MDV) MIKE EINHELLIG
COMMANDING OFFICER
USS CANOPUS (AS-34)
FPO NEW YORK 09501

HTCS(MDV) BOB JONES
ENCS(MDV) BILL ROMAINE
NUC DIVING DIV LONG BEACH
COMMANDER
NAVAL UNDERSEA WARFARE CEN
NAVAL STATION
LONG BEACH, CA. 90801

TMCM(MDV) BILL GHOLSON
COMMANDING OFFICER
USS FLORIKAN (ASR-9)
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BMCM(MDV) JAMES KERR
BMCS(MDV) DON McKENZIE
NAVAL SUBMARINE TRAINING
CENTER PACIFIC
FPO SAN FRANCISCO 96610

EMCM(MDV) TOM KING
UCT-1 OIC
UCT-1 NAVPHIBASE
LITTLE CREEK
NORFOLK, VA. 23521

HTCS(MDV) BILLY KITCHENS
COMMANDING OFFICER
USS FULTON (AS-11)
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MRCM(MDV) DENNIS MORSE
COMNAVSURFLANT
COMMANDING OFFICER
FAU CLF HQ CINCLANTFLT
NORFOLK, VA. 23511

BMC(MDV) ROY MOWEN
COMMANDING OFFICER
USS EDENTON (ATS-1)
FPO NEW YORK 09501

BMCM(MDV) JOHN LANKFORD
RANGE SUPPORT TORPSTA KYPT
COMMANDING OFFICER
NAVAL TORPEDO STATION
CODE 012
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HTCS(MDV) JON MUNDY
BMCS(MDV) DICK ARLINGTON
COMMANDING OFFICER
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HTCS(MDV) STEVE LECHNER
INSTRS-SUBMARINE SCH NL
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COMMANDER
NAVAL SPECIAL WARFARE GROUP 2
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COMMANDING OFFICER
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MMCM(MDV) FRED SCHUNK
COMMANDING OFFICER
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FPO SAN FRANCISCO 96651

MMCS(MDV) TOM PETERSON
COMMANDING OFFICER
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HTCM(MDV) GARY SPICKERMAN
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COMMANDING OFFICER
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BMCS(MDV) LEE RINEHART
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COMMANDER
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NAVAL STATION
NORFOLK, VA. 23511

HTCS(MDV) RAY STEELE
MAINT & SUP SUBASE PEARL
COMMANDING OFFICER
NAVAL SUBMARINE BASE
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QMC(MDV) JESSE WILLIAMS
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COMMANDING OFFICER
USS HUNLEY (AS-31)
FPO NEW YORK 09501

BMCM(MDV) JAMES WHITE
COMMANDING OFFICER
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MASTER DIVER Candidate Screening at HCU-1

LTjg Timothy B. Stark, USN
Harbor Clearance Unit ONE

Harbor Clearance Unit ONE, Pearl Harbor, Hawaii, has been conducting a Master Diver candidate screening program for the Commander, Naval Surface Forces U.S. Pacific Fleet since September 1975. The program was established primarily for Master Diver candidates from within NAVSURFPAC to ensure that only well prepared candidates are sent to the Master/Diver course in Washington, D.C. This is because of the high cost and attrition rate of participants from the Pacific. The program has been successful in more ways than one; divers from all over the Pacific want to be screened for the experience gained by running an observed and critiqued diving station.

Substantial improvements have been made to the program based on feedback from candidates and Master Divers. Participation in the screening is not limited to candidates alone; all Master Divers, He-O_2 Diving Officers, and divers may participate as observers (limited to Masters and He-O_2 Diving Officers), divers, and tenders. At times, as many as seven Master Divers have been on the diving station observing and critiquing the candidates. The Master Divers believe the screening program is "the best thing to come down the pike since the Mk 1 Mask." With the strong support from PACFLT Master Divers, a candidate has the advantage of being able to "pick the brains" of some of the top Master Divers in the Pacific.

The evaluation period lasts 2 weeks. The screening begins with a 40-question written examination relating to diving procedures, diving casualty procedures, medical aspects of diving, and physical problems related to diving. The written examination has no bearing on passing or failing the screening, but it does inform the candidate of areas that require his attention. After the examination, the candidate spends the afternoon with HCU-1's Diving Medical Officer. This session allows the candidate to clear up any "grey areas" concerning diving medicine.

The next phase is open sea diving. The candidate supervises air and mixed gas dives using Mk 5, Mk 1, and

the two-man open bell. When available, one of the diving ships of Service Squadron FIVE is used as the diving platform. The ship is loaded with the Fly-Away Mixed Gas System from HCU-1, and this, coupled with the ship's own air diving system, provides both air and mixed gas diving operations for the candidate being screened. If a ship is not available, HCU-1's 90-foot LWT (warping tug) is used as the diving platform. The water depths for dives during the open sea diving phase are between 90 and 150 feet.

The candidate gets to supervise one "free dive" (without imposed problems) each on air and mixed gas. The remaining dives include some sort of problem, either in water or on topside or both. The complexity of the imposed problem increases as the week moves along; however, the problems imposed are those that could happen on any diving station. All the candidates receive the same drill to ensure a fair evaluation.

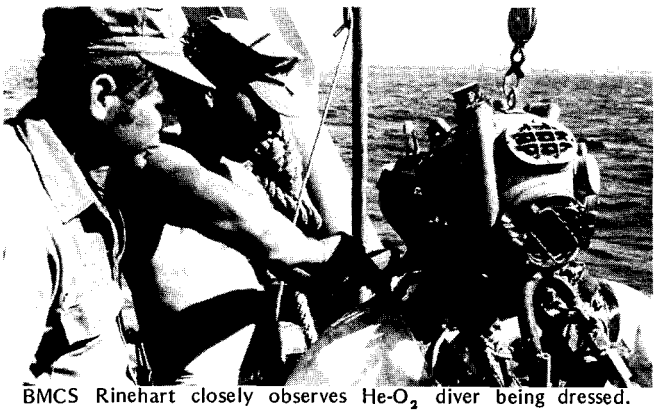
During the "testing," a candidate remains below decks and away from the diving station until it is his "turn in the barrel." Usually, the participant receives four air drills and four mixed gas drills, depending on the number of candidates to be screened. When four candidates are evaluated (which is the maximum number during one period), the days of diving mixed gas are long. Each participant is critiqued individually just after he finishes "running" his dive. This ensures that the mistakes he made are fresh in his mind and that he can profit from them.

After the last day of screening, a board is convened to evaluate each candidate's individual performance. The board consists of the NAVSURFPAC Salvage Officer (Chairman) and HCU-1's He-O_2 Diving Officers and Diving Medical Officer. HCU-1's Master Divers and He-O_2 Diving Officers and Master Divers from the area that have observed the candidate during the screening period are also included. The board decides whether an individual is recommended or not recommended to participate in the Master Diver Course in Washington, D.C. If a participant is not recommended, he is told why and what he can do to improve. A letter is then sent to the candidate and to the candidate's command from the NAVSURFPAC Salvage Officer relaying the board's findings.

The overall success of the screening has been outstanding. Five candidates have been recommended and all five have become Master Divers. Three candidates have been recommended from recent screening periods and are awaiting class convening dates. HCU-1, COMSERVRON FIVE, and COMNAVSURFPAC, realizing the shortage of Master Divers in the Pacific Fleet and in the Navy, are placing strong emphasis on their "Self-help Program" – the Master Diver Candidate Screening.

Master candidates MMC Lugo and BMCS Rinehart discuss procedure with Master Diver QMCS Fenwick during screening.

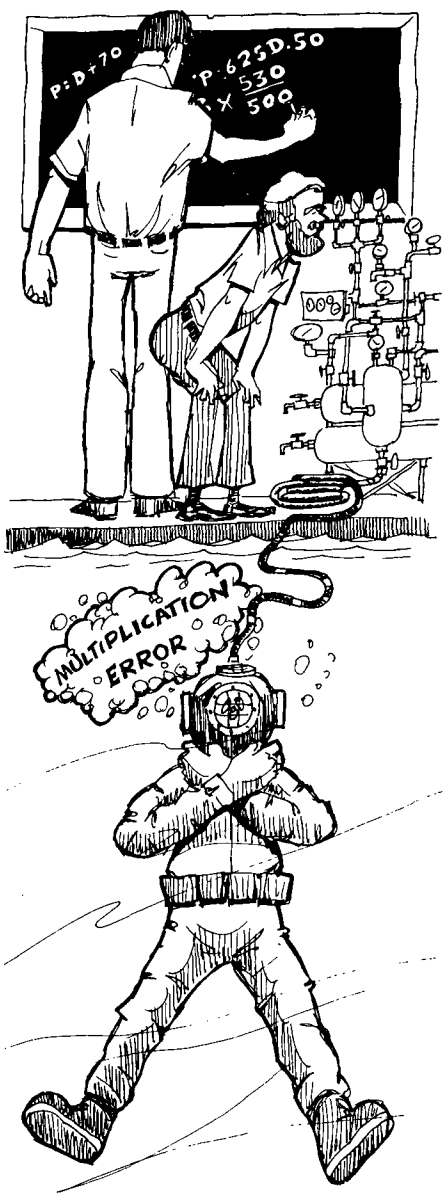
LTjg Stark briefs diving station on simulated casualty during test.



BMCS Rinehart closely observes He-O_2 diver being dressed.

MMCS(MDV) Anderson (center) and BMCM(MDV) Kerr (right) critique candidate BMCS Rinehart's performance.

SHIP-CHECK Program Completed



Mr. Ronald R. Snyder
Office of the Supervisor of Diving

Operation SHIP-CHECK has recently been completed. Fifty worldwide Navy diving activities were surveyed, including Submarine Tenders (AS's), Destroyer Tenders (AD's), Repair Ships (AR's), Salvage Ships (ARS's), Submarine Rescue Ships (ASR's), Harbor Clearance Units, Diving Schools, and Ship Repair Facilities. Mr. R. E. Pfeiffer (NAVSEA OOC-T) was responsible for the concept and formulation of the program. The survey team consisted of Mr. R. L. Price (NAVSEA PMS-395), Mr. A. W. Trigger (Naval Surface Weapons Center, Dahlgren Laboratory) and the author.

What Was SHIP-CHECK All About?

The Chief of Naval Operations endorsed in February 1976 a two-phase program proposed by the Commander, Naval Sea Systems Command that would ultimately lead to system certification of afloat surface supported diving systems and recompression chamber systems. The premise of the program was that surface supported diving operations could be conducted safely, for an interim period, provided the air reaching the diver was of sufficient capacity and quality. This interim period concept was based on the condition that the existing system was being upgraded through vigorous pursuit of system certification. The goal of the program was to first get an overview of existing systems and then, using the overview as a baseline, proceed to develop technical packages that would upgrade the systems to current acceptance standards.

Phase I

Phase I consisted of an on-site survey of each ship/craft to measure the pressure and flow rate that the installed system was able to provide to the diving station(s). In addition, air samples were taken from each source of a diver's air. Based on the flow and pressure measurements and air quality, the maximum safe diving limits were defined for each type of diving equipment (Mk 1, Jack Brown, Mk 5, and scuba). Also, Phase I gathered as much data as possible on each system, i.e., nameplate data, piping schematics, hydro dates, valve arrangement, etc.

Phase II

Phase II used the data collected during Phase I as a baseline in developing "get-well" technical packages that will upgrade existing systems and concurrently increase diving capabilities. The results of Phase II are summarized below.

SHIPALT ARS 389K is intended to allow the use of existing components and piping to the maximum extent feasible to: Permit operation of a diver's air system at increased pressure, improve air filtration, minimize maintenance, and provide for external air supply from portable compressors. The modified system provides a central station to control a diver's air supply pressure and to monitor a diver's depth. Diving at shallow depths can be done with the installed compressors via the console. Two portable 250 psi/100 scfm engine driven compressors are to be stowed in the salvage hold. These will be connected to the console to support diving operations beyond the depth limit of the installed compressor capability.

SHIPALT ARS 377D upgrades the oxygen system supporting the chamber. The chamber oxygen supply cylin-

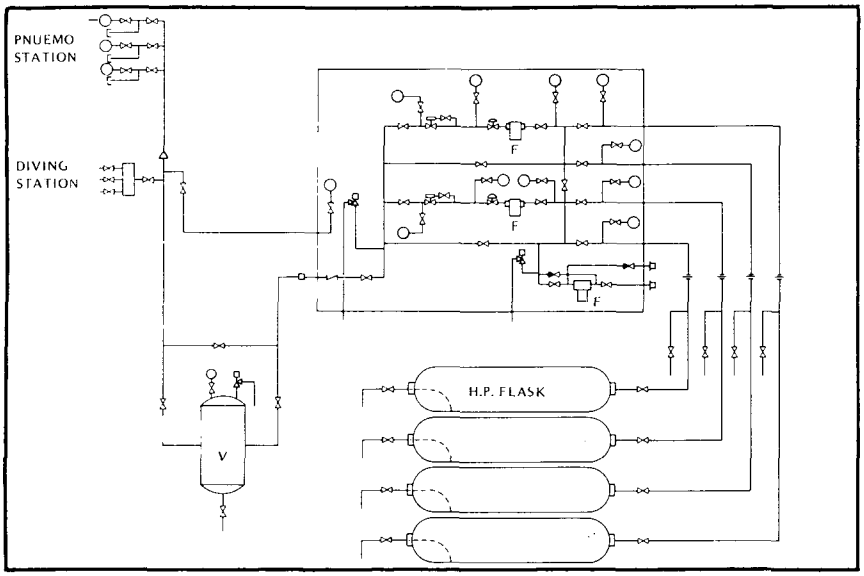


Figure 1

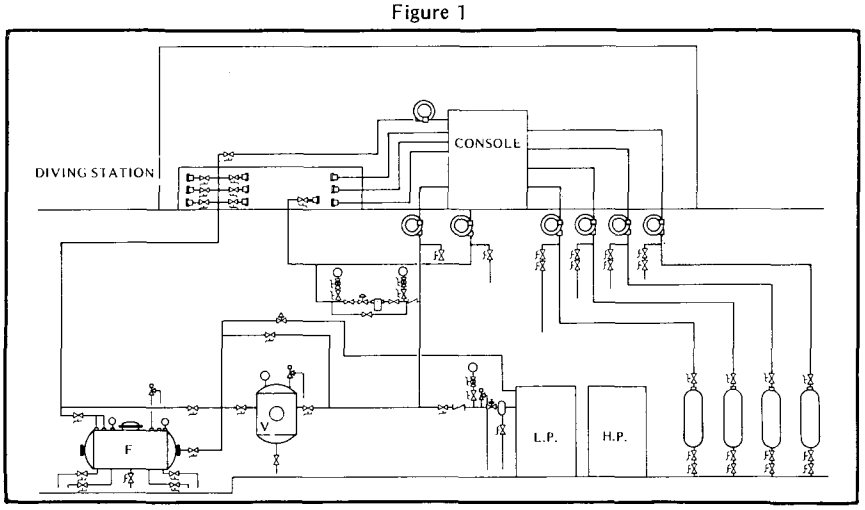


Figure 2

ders are to be relocated to the space below the chamber or at the end opposite the outer locker. The inner and outer lock depth gages will be moved to the space above the chamber. The oxygen piping and gage piping is to be modified to accommodate the relocation of the cylinders and gages and, as necessary, to comply with MIL-STD-777C. Also, the existing piping and fittings intended for reuse will be verified as suitable for use at the maximum operating pressures.

Note: SHIPALT ARS 389K and 377D are not the only SHIPALT's on the street concerning diving systems. They are the two that were developed from the SHIP-CHECK program.

Diving Boat Air System No. 1 (NAVSEA drawing 513-4714352C) depicts the air system for installation on an existing small boat hull. The air source consists of four high pressure air flasks that are charged from a pier-side or shipboard source. Divers' air is regulated through redundant reducing stations. Three filters are provided, including one at the flask/scuba charging station. The basic piping configuration is shown in Figure 1.

Diving Boat Air System No. 2 (NAVSEA drawings 513-4713038 and 513-4713211) also is an air system for installation on an existing small boat hull. This system was developed largely through the effort of Senior Chief Charles Martin of the USS PIEDMONT (AD-17) working through CDI Marine Company and in close coordination with the System Certification Authority. In this system, both high pressure and low pressure air systems are provided. The high pressure system consists of an H.P. compressor, filter, four flasks, and redundant reducing stations in a diving console. The low pressure system consists of an L.P. compressor, volume tank, and filter. The high and low pressure systems are cross-connected, but are segregated by a check-valve. The basic piping configuration is shown in Figure 2.

Both of the aforementioned diving boat air systems drawings and technical data are available for fleet use by contacting the Supervisor of Diving and specifying which set of drawings are desired. Drawings obtained from other than official sources must not be used because they may not be the latest revision or the total package. There is no longer any need or reason for diving lockers to design their own diving boat air systems!

In addition to the information given above, NAVSEA is in the process of designing, from the keel up, a standard Navy diving boat. It is hoped that these will be delivered eventually to the IMA's as a finished product. However, the design and funding of this project is just in the early phases.

A spin-off of the SHIP-CHECK Program was to identify problem areas in the Navy Diving Program. Trouble areas found include general non-compliance with pressure vessel hydrostatic testing requirements, confusion in the fleet on what certification is all about, and unauthorized modification to recompression chambers. Other problems discovered were that air analyses by charging scuba bottles may yield erroneous results, AIG 239 messages are not reaching the working diver, and that there is a startling lack of depth capability of some systems using the Mk 1 mask. These items are in the process of being resolved.

NEDU Tests Decompression Computer

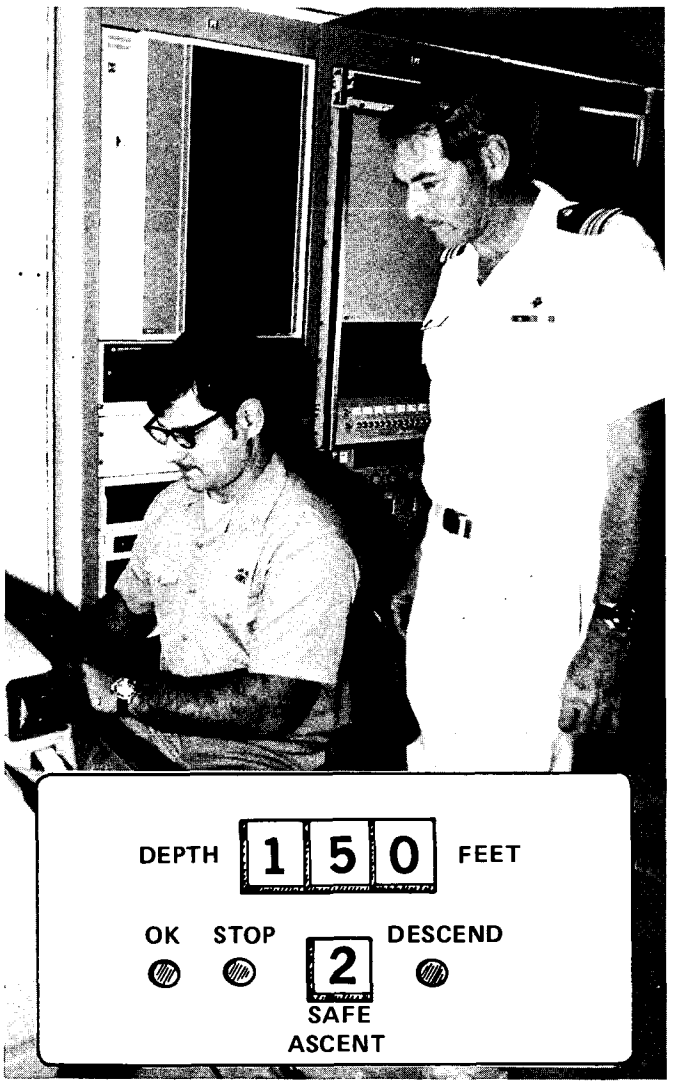
The Navy Experimental Diving Unit, Panama City, Florida, developed mathematical programs in May and June 1977 for use with the Swimmer Life Support System (SLSS) Mk 1 closed-circuit scuba. The dive programs are tailored to the constant oxygen partial pressure gas mix supplied by the SLSS and are generated by a micro-computer that is carried on a swimmer's arm. The computer keeps track of the time spent at each depth and calculates the safe ascent depth throughout the dive. This eliminates the need to count the entire bottom time as being at the deepest depth of the dive, extending the amount of time a swimmer can spend under water safely.

The development of these multi-depth programs involved 215 test dives to a maximum depth of 175 feet. The dives, which were conducted in the 55,000-gallon wet hyperbaric chamber at NEDU, sometimes lasted longer than 6 hours. Approximately 900 man-hours were spent in the water by the test divers. Participants in the test were divers from NEDU, Explosive Ordnance Disposal (EOD) Group 2, EODFAC, Underwater Demolition Team (UDT) 11, UDT 12, UDT 21, Seal Team 1, Seal Team 2, Inshore Warfare Group 1, Inshore Warfare Group 2, and BUD/S.

These computer-generated dive tables will be used as part of the inshore warfare swimmer delivery system. They will enable a swimmer to vary his depth while approaching and departing his objective. In addition to these tables that are computed for the SLSS air-oxygen mix, the development of similar tables for air dives is anticipated.

The micro-computer was developed by the Naval Ocean Systems Center in Kailua, Hawaii. It is battery operated and fits in a 4x3x2-inch case that can be strapped to a diver's forearm. The computer displays necessary information to the diver wearing it, including his present depth in feet and safe ascent depth in 10's of feet. In addition, the computer's display shows a colored light to indicate whether the diver is deeper than his stop (green light) or if he is at his stop (red light). When the diver is too shallow, all the digits flash and a yellow light comes on to alert him to the imminent danger of compromised decompression.

It is planned that this device will undergo further testing and will be available to the Inshore Warfare community commencing FY79.



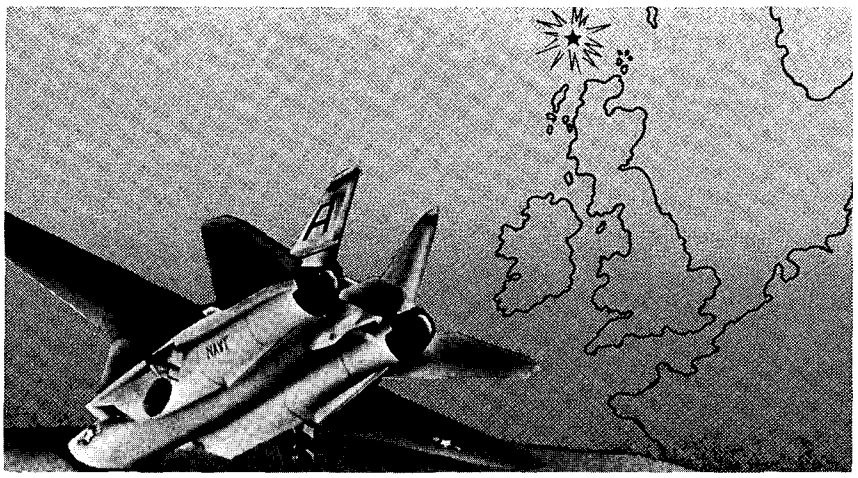
Drs Zumrick (USN) and Buckingham (CF) check NEDU computer for dive table data. Inset: Sketch of new micro-computer. Bottom: Divers wearing SLSS Mk 1 are briefed before test dive.

F-14 Salvaged from North Atlantic

The USS KENNEDY (CV-67) was launching aircraft north of Scotland near the Orkney Islands on September 14, 1976, during which several F-14 aircraft were preparing to take part in a simulated defense of the task force. The launch was going smoothly when one of the F-14's taxiing to the ship's catapults suddenly roared toward full power. The pilot jammed on the brakes, but the aircraft began to skid toward the edge of the angled flight deck. At the last possible second, the pilot and the Naval Flight Officer ejected from the plane. The ejection seat worked as designed; and the two men, still strapped to their seats, were rocketed 300 feet in the air, at which point their parachutes opened and they floated back to the flight deck of the KENNEDY. Fortunately, no serious injuries were incurred. However, the F-14 was not as fortunate and it immediately sank in 1,890 feet of North Atlantic water. During the excitement on the flight deck, the KENNEDY's navigator remained calm and immediately and accurately fixed the ship's position.

This exercise was being covered by the news media from European countries and the United States. In fact, an NBC film crew was in one of the ship's helicopters filming the flight deck when the accident occurred; and soon the accident was being shown on television around the world.

Just as newsmen reported, two Soviet cruisers and several intelligence ships were in the vicinity. There was speculation that the Soviets might try to raise the aircraft for intelligence purposes, especially since a Russian



pilot had flown a MIG-25 to Japan shortly before this accident, giving the U.S. intelligence community an unexpected bonanza.

The F-14 "Tomcat" is an ultra-sophisticated aircraft; the AWG-9 fire control system has the capability of tracking up to 24 targets simultaneously. It can also launch up to six Phoenix missiles and shoot down targets at distances in excess of 100 miles.

The decision was made to attempt to retrieve the airplane, though the task of locating it would be very difficult. Weather was a risk factor with winter approaching; the turbulent North Atlantic would certainly hamper the operation. Even if the aircraft and the Phoenix missile it had aboard were located, the raging seas would make salvage operations difficult, to say the least.

The U.S. Commander Eastern Atlantic was designated as the officer-in-charge of the recovery effort. The U.S. Navy Supervisor of Salvage (SUPSAL V) was tasked to provide the search team, search and navigation equipment, commercial and non fleet recovery assets, and technical direction of the operation.

The USS SHAKORI (ATF-162), then in the vicinity of Rota, Spain, was designated as the search platform and was ordered to proceed to Glasgow, Scotland, for outfitting in preparation for the search. An oil field supply ship, M/V CONSTRUCTOR, was contracted by SUPSALV to act as the recovery vessel. In addition, CURV III, a cable controlled underwater research/recovery vehicle operated by the Naval Undersea Center in San Diego, California, was flown to Scotland and placed aboard CONSTRUCTOR.

SHAKORI arrived in Glasgow on September 20 and loaded aboard the DECCA precision navigation system and the side scan sonar equipment. At midnight the next day, she sailed quietly down the Firth of Clyde and headed out to sea to begin searching for the proverbial "needle in the haystack."

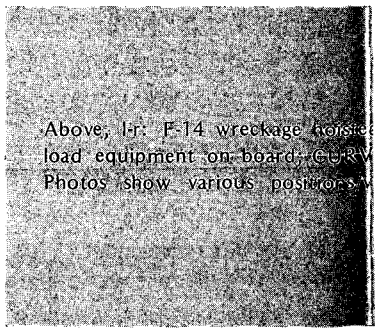
At the site, the weather was cloudy with easterly winds of 25 knots and seas of 8-10 feet (higher winds and seas were yet to come). The first of many problems occurred during the initial sonar scanning, when the sonar struck bottom during a turn, damaging the cable and the transponder and requiring 8 hours to repair. By late night on the 25th over 4 square miles around the KENNEDY's datum had been covered without any significant contacts.

With winds rising occasionally to 40 knots and with waves in excess of 20 feet, SHAKORI took rolls of up to 35°. A loosened antenna connector caused the DECCA navigation gear to spin out of calibration, creating another delay because SHAKORI had to leave the search area and sail closer to the reference system to recalibrate.

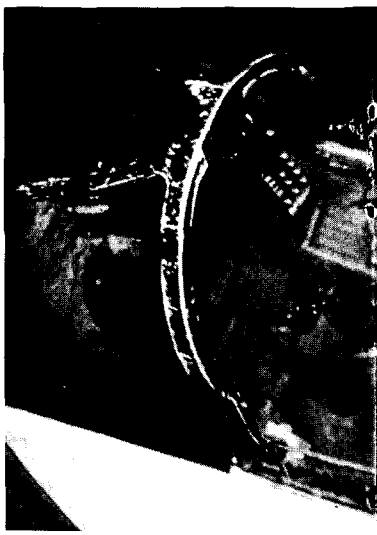
The weather continued to deteriorate and the search continued with no success until October 2, when a firm contact was located on a rerun over datum. After making several passes over the contact, the weather worsened to the point that the sonar had to be recovered. In addition, because fuel and supplies were running low, SHAKORI was forced to head for Aberdeen, Scotland.

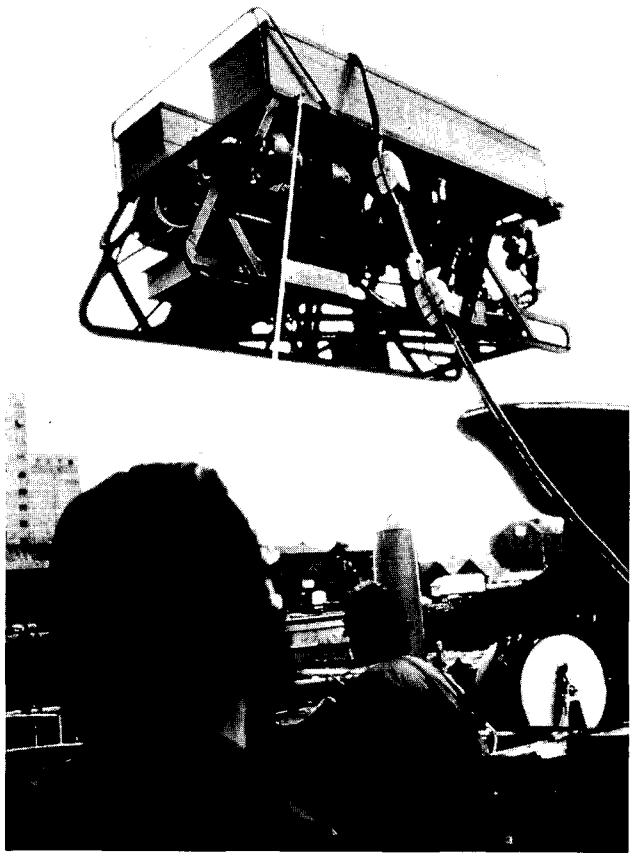
Once SHAKORI arrived in Aberdeen, a meeting was held to discuss the use of the NR-1, a Navy nuclear powered underwater research and ocean engineering vehicle. Another ship M/V OIL HARRIER, was hired at this time to augment the recovery team. OIL HARRIER's capabilities included powerful towing winches and a large, clear afterdeck. The DECCA master unit was also returned during this period to its shore based location in order to provide all ships with a precision navigation system capability. This created a slightly less accurate arrangement than originally, but it was adequate to regain the contact position.

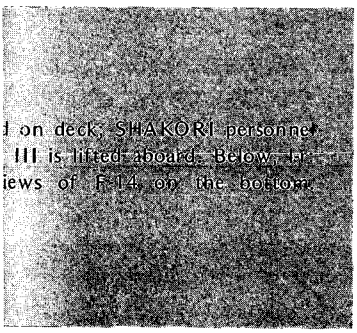
Weather again was a problem, and sailing was delayed until the evening of October 8. Heavy seas slowed the



Above, l-r: F-14 wreckage hoisted load equipment on board; CURV Photos show various positions







on deck. SHAKORI personnel
III is lifted aboard. Below, tw
iews of F-14 on the bottom

transit to the operating area, but the search began once again on the evening of October 10. Early on the 14th, the contact was relocated. However, the sonar trace indicated that the contact had been dragged approximately 300 feet from its previous site.

The weather once again caused the operation to be suspended on the 15th; and all of the recovery forces sailed into Kirkwall, Scotland. Weather remained poor, but the ships departed Kirkwall 2 days later for the salvage site. SHAKORI commenced sonar verification runs while CONSTRUCTOR and OIL HARRIER "bounced around" in the heavy seas.

CURV III was launched on the 19th to inspect the contact. Unfortunately, a cable connector flooded out before the vehicle reached the bottom, and the vehicle had to be recovered. The NUC technicians determined that on-scene repairs were impossible, and, once again, all units sailed into Kirkwall.

Because of CURV III's breakdown, the decision was made to use NR-1 to verify the contact and attempt to attach a line to it. SHAKORI rendezvoused at the salvage site with NR-1 and her "mother ship," USS SUNBIRD (ASR-15). After relocating the contact, SHAKORI made sonar contact and dropped a deep ocean transponder on top of the site. Late that evening, NR-1 made positive verification that the "needle had been found."

NR-1 reported that the F-14 was lying upside down and that a large amount of fish net was tangled around the aircraft. A fishing trawler in the area had apparently caught and dragged the F-14; confirmation of the loss of a snagged net was later provided by a large French trawler. In the meantime, repairs had been completed to CURV III; and CONSTRUCTOR and OIL HARRIER sailed to once again join the salvage effort.

On closer inspection by NR-1, it was discovered that the Phoenix missile was *not* on the aircraft.

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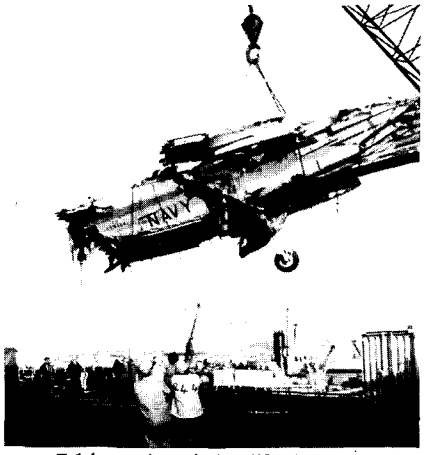


F-14 wreckage being lifted on deck.

SHAKORI passed a choker made of 10-inch-circumference nylon line to SUNBIRD, which in turn dropped the choker to NR-1. The submersible attached it to the port landing gear of the tomcat with her mechanical arm. Unfortunately, the North Atlantic weather started to howl again, prohibiting any attempt to lift the aircraft.

When the weather finally subsided, M/V CONSTRUCTOR lowered an 8½-inch-circumference Nydac line to the bottom. Using its mechanical arm, NR-1 attached the line to the previously placed choker. The surface end of the line was then transferred to OIL HARRIER, which took a strain with its powerful winches and began to lift the F-14 from the bottom. When the aircraft was 100 feet from the surface, the lift was suspended to allow divers to inspect the aircraft and attach a wire strap to the nose gear. However, this plan was cancelled because of heavy swells that caused OIL HARRIER to surge excessively, which made diving operations extremely dangerous. It also caused the outer casing of the Nydac line to chafe through in several places. When the aircraft was lowered to 300 feet and towing commenced, the Nydac lift line parted and the aircraft settled in an upright position to a depth of approximately 1,500 feet.

A second lift attempt was made, this time with a 10-inch-circumference nylon line, after NR-1 again secured a line to the choker. OIL HARRIER's powerful winch began to grind, and the aircraft was hoisted to 100 feet below the surface. Once again the surging of OIL HARRIER made diving impossible. The aircraft was lowered to approximately 400 feet and HARRIER headed for shallow water. Suddenly the choker parted, and, for the third time, the F-14 fell to the bottom.

Supply requirements and weather conditions forced the ships to return to port. CONSTRUCTOR and OIL HARRIER sailed to Kirkwall and were not called upon again in the operation because the U.S. Commander Eastern Atlantic had contracted for three additional vessels. These were the TARUS, a West German salvage ship; the BOSTON HALIFAX, a British trawler; and the TWYFORD, a West German work ship.

Meanwhile, SUNBIRD and NR-1 diligently continued the search for the Phoenix missile, finally locating it on October 30. NR-1 first photographed the weapon, then recovered it and passed it on to SUNBIRD.

TARUS, BOSTON HALIFAX, TWYFORD, and SHAKORI departed Kirkwall on November 4 and proceeded to the site of the F-14. HALIFAX, equipped with a steel trawl net, began dragging in an attempt to snag the aircraft. On the third pass, the F-14 was "netted." However, BOSTON HALIFAX was not successful in lifting it. Neither the net nor BOSTON HALIFAX's winches were strong enough to lift the fighter. The tactics were changed, and TARUS and TWYFORD attempted to snag the aircraft by dragging a 37-millimeter high-strength wire net between the ships. This technique was successful, and TWYFORD passed her end of the wire to TARUS to allow her to tow the F-14 to shallow water.

After 21 hours of towing, the aircraft struck a submerged ledge at a depth of 165 feet, which broke loose its starboard main landing gear. Underwater inspection from an observation bell lowered from TARUS found the aircraft inverted, the wing broken, half of both horizontal stabilizers missing, and the vertical stabilizer embedded in the bottom. However, the fuselage remained intact.

Divers wearing scuba inspected the wreck, but were unable to attach a lift line. Surface-supplied divers were then used to successfully attach a heavy lift wire to the nose landing gear.

Finally, in mid afternoon on the 11th of November, the F-14 tomcat "gave up" and broke clear of the water, ending a search and salvage effort that had required an unprecedented amount of skill and determination by the task force. The success of this recovery operation proved that with sufficient tenacity and dogged persistence, even "Murphy's Law" can be overcome.

USS SHAKORI.

RHCU UPDATE:

Diving Safety and Training Seminar Number Two

Active and reserve duty Navy representatives from the Atlantic and Pacific Fleets gathered on April 23-24, 1977, for the Reserve Harbor Clearance Unit (RHCU) Program's Diving Safety and Training Seminar. Held at the Navy Experimental Diving Unit in Panama City, Florida, this second annual 2-day meeting served as a working weekend to update RHCU Commanding Officers on both active and reserve diving and salvage plans and developments.

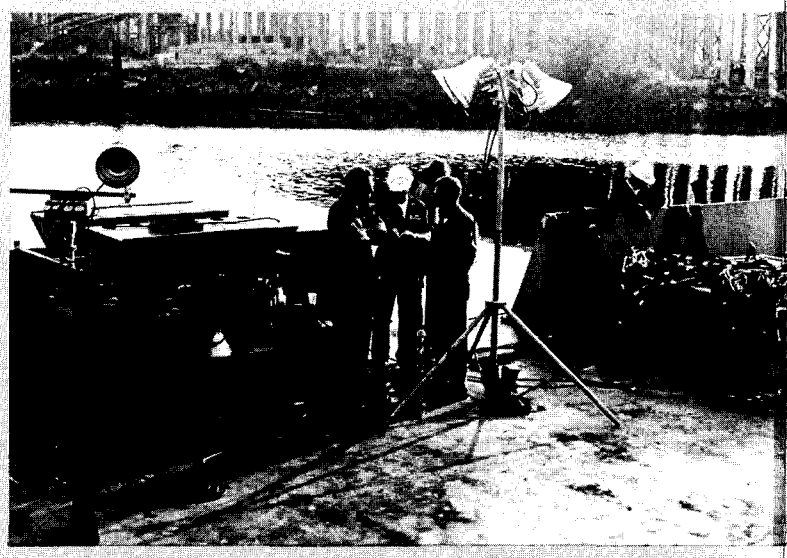
In a discussion of RHCU plans, CDR Robert Larrick, then in the Office of the Chief of Naval Reserve, announced that some of the reserve units have received authorization to become 60-drill units. This resulted from a Letter of April 7 to revise BUPERSINST 5400. 42D. (Those units effected still have the regular scheduled drill requirements apart from the additional drills.) In his discussion of RHCU Program funding and structure, CDR Larrick emphasized that reserve unit personnel must use only Navy approved gear in accordance with NAVSEAINST 9597.1; that all personnel must meet and maintain the physical requirements; and that all operations performed by reserve units must be carried out in accordance with the *Diving Operations Manual.* CAPT Dave Petzinger, Commanding Officer of D & S 1006, presented CDR Larrick with a special farewell plaque (since he is leaving the CHNAVRES Office), in recognition of his efforts in behalf of the program.

Speakers from various active duty commands discussed their respective roles in the diving/salvage community and how their units will be involved in RHCU training. CAPT R.B. Moss, USN Supervisor of Salvage (technical sponsor for the RHCU Program), gave a general overview of what NAVSEA does, its background, and several notable salvage operations completed by SUPSALV personnel. CDR F.D. Duff, USN Supervisor of Diving, pointed out in his update on current diver status that RHCU diving qualifications are the same as the regular Navy. He also gave a brief rundown of new equipment either under development or on its way to the fleet.

CAPT Petzinger (left) gives farewell plaque to CDR Larrick.

The Naval School, Diving and Salvage Summer Diver Training program, which consists of three 2-week sessions, was explained by LT Mike Duigan, Training Officer at NSDS. CDR Frank Richards, Commanding Officer of NSDS, stressed the importance of sending to these training sessions only those personnel who are physically qualified. New plans for moving the school to Panama City were also discussed. (*Faceplate* will have an update in the next issue.) LCDR Jim Roper, Commanding Officer of HCU-2 in Norfolk, Virginia, and LCDR Arthur Erwin, Commanding Officer of HCU-1 in Pearl Harbor, Hawaii, also discussed their respective summer salvage training programs for reserve personnel. PACFLT comments and a salvage operations review was given by CDR William Milwee, PACFLT Salvage Officer, to familiarize the RHCU personnel with the type of tasks they completed last year. Other items on the agenda during the seminar included an NEDU update and tour, a discussion on various methods of handling salvage operations that involve chemical/hazardous materials (given by LCDR Halverson of the U.S. Coast Guard) and a diver tool package tour/briefing.

HCU-1 Raises Ex-Navy ATR



CDR Milwee, Coast Guard Strike Team O-in-C, and LTjg Stark (l-r) discuss disposition of refloated vessel.

LTJG T. B. Stark, USN
Harbor Clearance Unit ONE

An ex-Navy ATR sank in approximately 20 feet of water in the Duwamish Waterway, Seattle, Washington, in mid-September, 1976. The vessel had an undetermined amount of Bunker C fuel oil aboard that was spilling into the waterway with every tidal change, causing a severe pollution problem. The sinking was reported to the U. S. Coast Guard, Captain of the Port of Seattle, and steps were undertaken immediately to contain the oil from further polluting the waterway and Puget Sound.

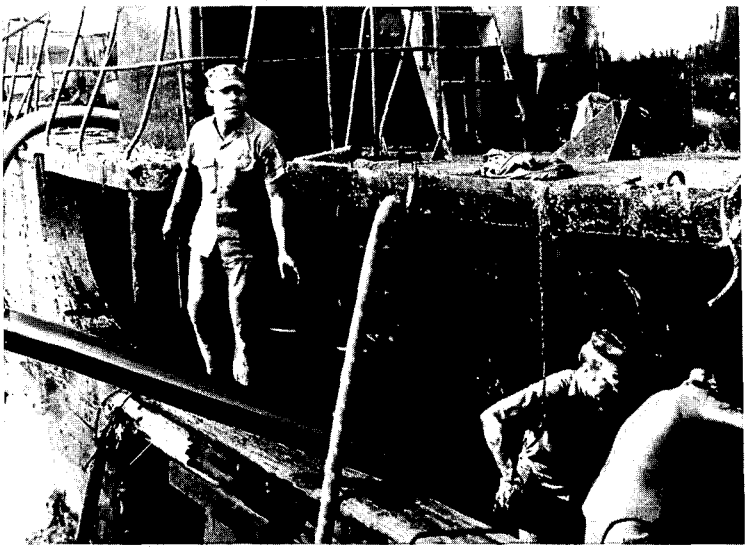
The Coast Guard determined that the most effective method to stop the pollution menace was to salvage the vessel and remove all the oil. Since the Coast Guard had no salvage assets in the area, the Commander, Thirteenth Coast Guard District requested assistance from the Navy to raise or refloat the sunken ATR. CDR W. I. Milwee, USN, Pacific Fleet Salvage Officer, then undertook the task to raise the vessel by whatever means necessary, whether by a commercial contractor or Navy assets.

CDR Milwee contacted LTJG T. B. Stark, Harbor Clearance Unit ONE's Salvage Officer, to discuss the salvage operation and to arrange a preliminary survey of the sunken vessel to determine the extent of salvage effort required.

The vessel, which was 143 feet in length with a 27-foot beam, was similar in design to the ATA-type ship, but had a wooden construction instead of steel. The survey found the ship with a 15° port list and sunk to the 01 level at high tide and to just below the main deck at low tide. The exact cause of the sinking and the condition of the hull were not determinable. All factors considered, the salvage effort could be conducted completely by Navy assets using pumping and support equipment from the ESSM Base at Puget Sound Naval Shipyard (PSNS), Bremerton, Washington, and experienced salvage personnel from HCU-1.

CDR Milwee and LTJG Stark formulated a salvage plan predicated on the fact that the vessel's hull was sound and that no major patching or cofferdaming would be required. The plan dictated that a team of seven divers, headed by Master Diver QMCS J. J. Fenwick, USN, would be dispatched from HCU-1; all portable salvage equipment and a salvage work platform would come from PSNS and the ESSM Base; an external diver survey of the hull would be conducted; a walk-through survey would be conducted inside the vessel; all pumps and support equipment would be rigged; and, at low tide, the vessel would be dewatered.

In preparation for the task, a YC salvage work platform was outfitted at PSNS with two 10-inch salvage pumps with 6-inch adapters, two 6-inch salvage pumps, numerous lengths of Genline light-weight 6-inch hose for suction and discharge, two 125 CFM Diver's LP Air Compressors, one lighting generator assembly, three Mk1 Mod O Diving outfits, and one scuba charging compressor. All pumps were tested by pumping water to



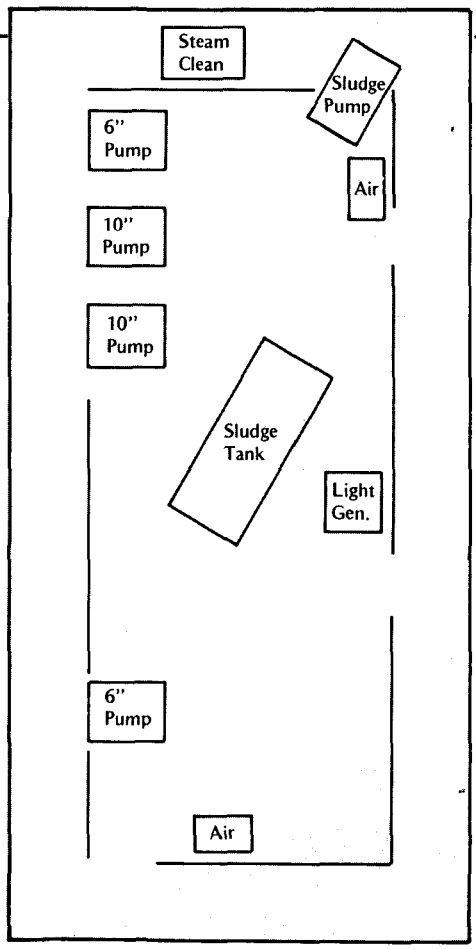
HCU-1 divers remove suction hoses from engineering compartment (above) and from after section (above right) of ex-ATR.

ensure their proper performance before leaving for the salvage site.

The YC salvage work platform was moved to the salvage site by Navy Tug and then moored alongside the sunken ATR. An external diver survey of the underwater hull revealed no major damage. All through-hull openings were plugged and the dewatering hoses were rigged in various locations to ensure effective pumping capability and control of the vessel during the refloating operation. When all pre-pumping work was completed, the salvage team departed the vessel to await low tide when they would begin raising the vessel.

During pumping operations, the effective pumping rate was between 6,000 and 7,000 gallons per minute. Within a few hours, the Ex-Navy ATR was afloat. Pumping operations continued for several more hours, after which the salvage personnel turned the salvaged vessel over to the Coast Guard Pollution Strike Team and the oil pollution clean-up contractor. The HCU-1 salvage team returned to Pearl Harbor after completing the clean-up of equipment and the logistic arrangements for returning the diving equipment to HCU-1.

The total cost of the salvage operation including transportation of personnel and equipment to and from Hawaii, use of ESSM equipment and YC, per diem for 8 days, materials lost, damaged, or expended, was $13,000. The rapid response and low cost of the salvage operation illustrates the effectiveness of Navy salvage assets.



Drawing shows how YC was outfitted for salvage job.

What's Happening at HCU-2?

LT Cincotta, LTjg McCord
Harbor Clearance Unit TWO

HCU-2 vs F-4J

A Navy F-4J from Fighter Squadron Eleven (NAS Oceana) caught fire in flight and crashed approximately 1 mile off the coast of Vieques Island near Puerto Rico, on February 9, 1977. The aircraft was estimated to have hit the water nose down at a speed of 600 knots. The depth of the water at the crash site was 28 feet, with a bottom consisting of sand, shells, and coral. Both the pilot and the RIO had ejected safely.

Divers from the Roosevelt Roads, Puerto Rico, Diving Locker found the downed aircraft on February 11 and commenced recovering pieces of wreckage. The heavy parts of the aircraft, including the engines, were buried in sand to a depth of approximately 12 feet, causing a crater 12 feet in diameter and 4 feet deep.

In order to determine the cause of the accident, the Navy Safety Center representative wanted to recover both engines and all wreckage that showed any fire damage. Harbor Clearance Unit TWO, Norfolk, Virginia, was requested to assist in recovering the wreckage and sent LTjg McCord and CWO3 Wilcox to Roosevelt Roads to give advice and supply technical expertise. At this time, members of the Army Special Forces from Fort Bragg, North Carolina were also in Puerto Rico for scuba requalification dives. The Army offered their assistance, and with the help of their 23 soldiers, the major portion of the wreckage lying on the sea floor was quickly recovered. This freed the Navy assets to concentrate solely on recovering the engines.

Because the Base diving locker was needed for other jobs, HCU-2 assumed full responsibility for recovering the engines, and the remainder of the HCU-2 salvage team arrived to assist on February 24. A 6-inch airlift was used to excavate the sand from the crater in order to recover the engines.

The starboard engine was recovered on March 4; the port engine was retrieved the following day. By completion of the operation, the crater was 12 feet deep, 50 feet in diameter at the top, and 20 feet in diameter at the bottom.

The divers participating in the recovery from HCU-2 were: LTjg McCord, CWO3 Wilcox, MRC(DV) Atkinson, MMCS(DV) Nichols, BMC(DV) Cedola (now CWO2), EM1(DV) Schribner, and HM1(DV) Wendeborn. The divers assisting from Roosevelt Roads were: BMCS Eastwood, HT2 Watts, HT2 Stubblefield, HT2 Cooper, BM3 Hughes, and SN Kelly. LT Digeorge, from MCB-1, was also on hand and used the opportunity provided by the salvage task to combine work with requalification dives. A total of 37 divers made 176 dives totaling 223 hours and 15 minutes bottom time, using both the USN Mk 1 Band Mask and scuba diving equipment.

HCU-2 vs F-14/F-105

A USN F-14 from Strike Aircraft Test Directorate, Patuxent, Maryland, crashed in the Chesapeake Bay approximately 14 miles southeast of Patuxent Naval Air Station on February 22, 1977. The next day, a USAF F-105 from the 113th Fighter Air Wing also crashed in the Chesapeake Bay, this time approximately 6 miles east of the Patuxent River Naval Air Station. Harbor Clearance Unit TWO, with assistance from the Naval Surface Weapons Center Facility, Solomons, Maryland, was tasked to locate and salvage the two planes..

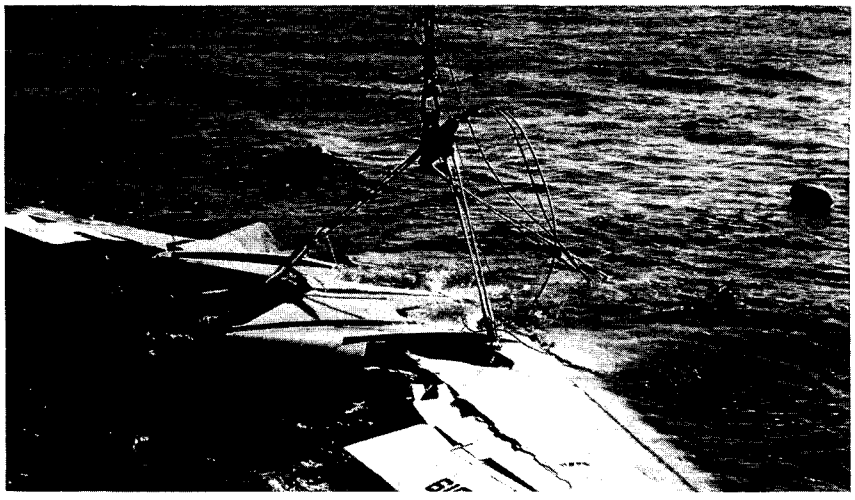
The Supervisor of Salvage was requested to assist in locating the aircraft. Seaward, Incorporated (SUPSALV's primary search contractor) was assigned the job of locating the planes. The equipment used to find the aircraft was the EG and G dual side-scanning sonar, which was towed just above the bottom. The CUBIC Autotap DM40 line-of-sight system with two responder units at known reference points ashore was used for navigation. The F-105 crash site was discovered on March 1; the F-14 was found 2 days later.

The F-14, which had entered the water at a slow rate of speed, was resting in 29 feet of water and was basically intact except that the starboard vertical stabilizer was broken and lying over the starboard horizontal stabilizer. The aircraft was lying belly down, leaning to port, and stuck in the mud.

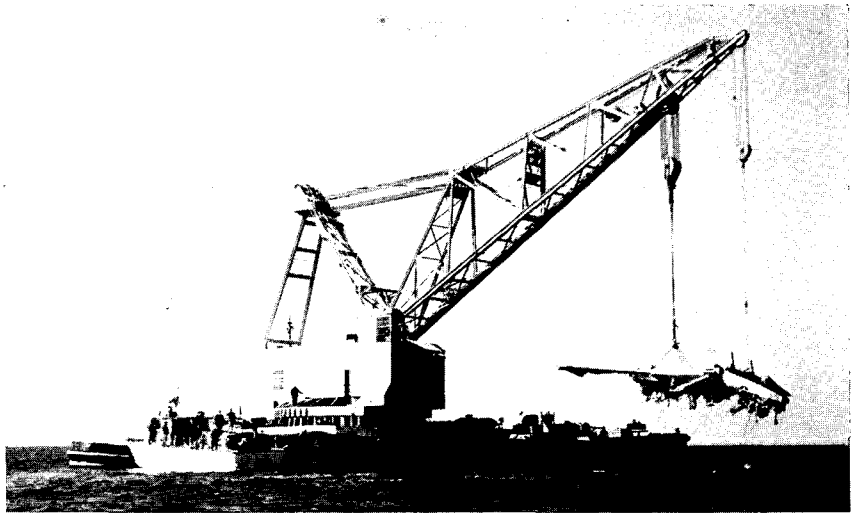
The F-105 wreckage was in 20 feet of water. The aircraft, which had entered the water at 600 knots per hour, had disintegrated on impact and had created a crater 10 feet deep and 20 feet in diameter. Small pieces of wreckage were strewn about the bottom near the crash site.

On March 4, all diving and salvage assets were concentrated on recovering the F-14. The weather, which is notoriously bad in the Chesapeake Bay area at that time of the year, lived up to its reputation. After a 1-day delay, the salvage team was able to fit the F-14 with the lifting slings. The plane had already begun to break-up in the choppy seas by the time YD-220 from Naval Station Norfolk was used to lift it. By March 8, however, it had been placed on deck in three large sections. Salvage efforts were then directed toward the F-105.

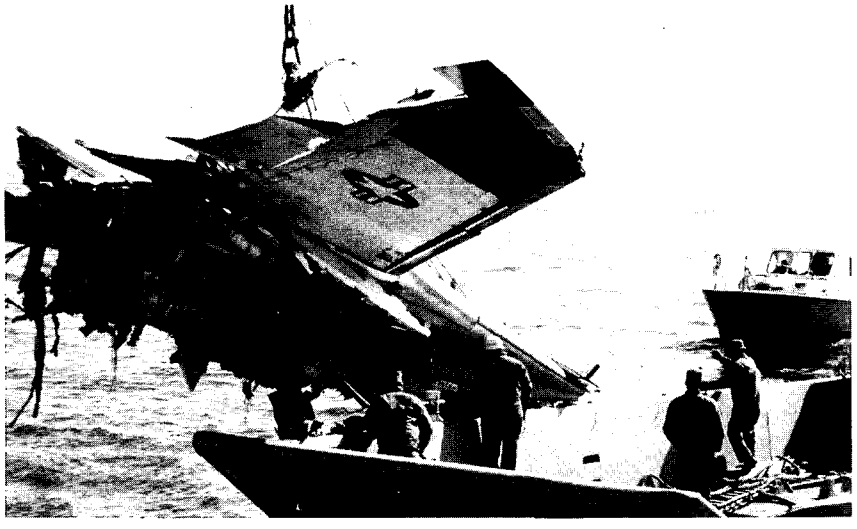
Divers began collecting the debris around the F-105 crash site using a YSD from Solomons for a platform. It soon became evident, though, that the use of an airlift was also needed to



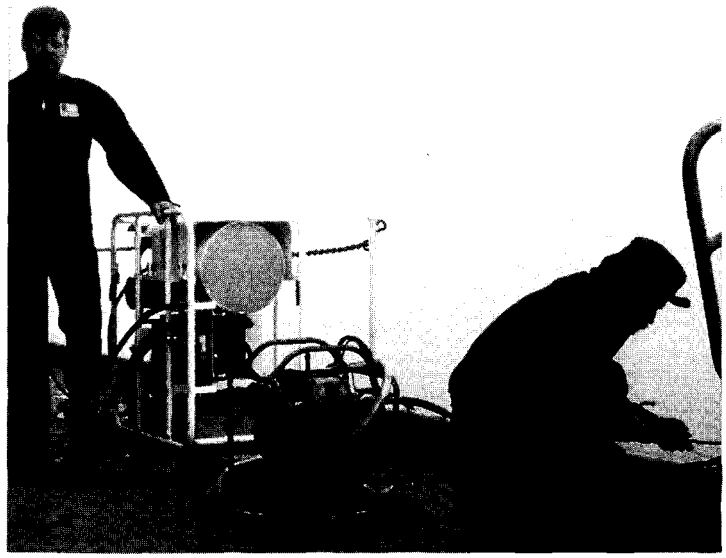
F-14 wreckage is lifted out of the water.



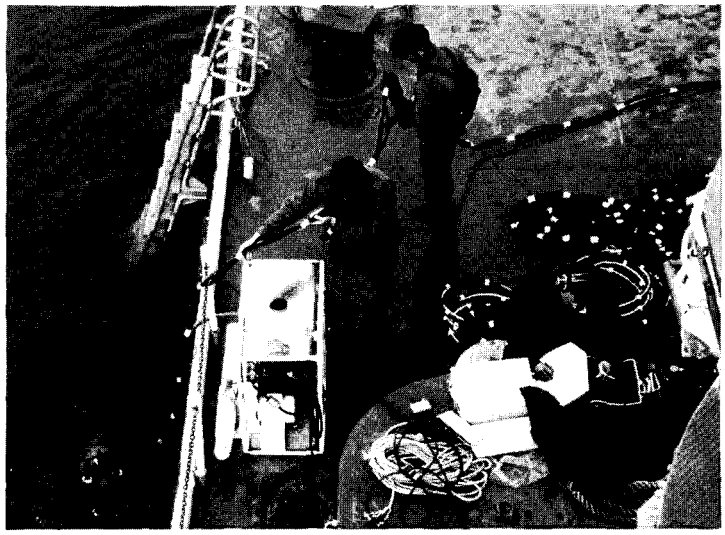
Another view of YD lifting F-14 wreckage.



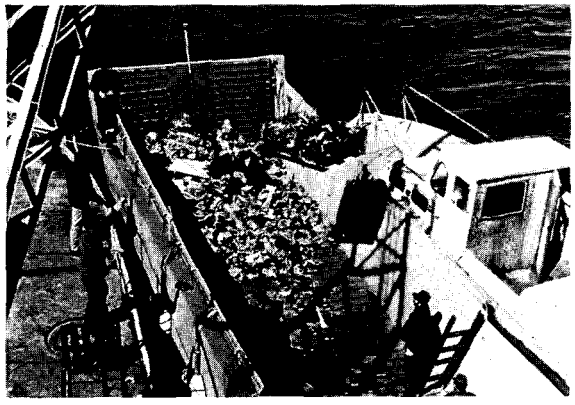
F-14 wreckage hoisted on deck.



Two photos above and below are of F-105 dive station, showing hot water suit and Econo Heater used during recovery.



Below left photo shows divers in hot water suits; below right photo shows shattered wreckage, both from F-105 operations.



recover the engine. The weather again hampered operations and only a few days of diving were possible before operations were forced to secure. On April 6, the decision was made to postpone the operation until May, when weather conditions would improve.

During the initial phase of the operation, HCU-2 had received permission from CNO(OP23) to use a Diving Unlimited International Econo Heater. Using this new unit with hot water suits contributed greatly to the successful completion of this salvage job. The water temperature ranged between 34°F-45°F. With the hot water suits, the divers' bottom times and productivity greatly increased. Throughout the operation, the Econo Heater operated smoothly with no major malfunction. The greatest problem was clogging of the filter, which was caused by the airlift.

The F-105 salvage operation was resumed on May 12 using HCU-2's YSD-53. This time, a 10-inch airlift was used instead of the 6-inch airlift used in the March/April phase. By May 22, the USAF representative was satisfied that the material recovered was sufficient to determine the cause of the crash; and the operation was terminated.

The divers participating from HCU-2 were: LT Page (RN), LTjg McCord, CWO3 Wilcox, EMCS(DV) Nelson, GMGC(DV) Vanderford, HTC(DV) Quinn, BM1(DV) Tucker, HM1(DV) Matthews, BM1(DV) Morrison, and QM1(DV) Bartosh. The divers assisting from NSWC Solomons were: CWO3 Stott, BMC(DV) Bokanoski, GMGC(DV) Smallwood, EN1(DV) Kupko, BM1(DV) Karlie, HM2(DV) Shults, MM2(DV) Jackson, and BM2(DV) Sohenauer. From EOD Detachment NSWC Dahlgren, Virginia; HTC(DV) Auman and AO1(DV) Houston took part in the operation.

A total of 12 hours bottom time was spent on the F-14. Considerably more diving time, 71 hours and 33 minutes, was spent on the F-105.

HCU-2 vs ICE OPS

The heavy ice that accumulated in rivers, creeks, and bays of the northeastern United States caused severe damage to navigation aids and created numerous hazards to navigation during the winter of 1977. Because Coast Guard forces were overloaded with ice-breaking operations, the Commandant of the Coast Guard asked the Chief of Naval Operations to provide assistance in opening the many shipping channels in these waters. CNO directed COMNAVSURFLANT to assist the Coast Guard and then tasked Commander Naval Beach Group TWO as OTC. Harbor Clearance Unit TWO assisted in the ice clearance operation by providing diving services aboard the LCU's sent to Albermarle Sound, North Carolina, and Hampton Roads, Virginia, areas, and also by manning a third branch of the operation aboard HCU-2's YSD-53. Completing the ice clearance operation kept the YSD-53 and her crew busy from February until June 12, 1977.

The first phase of the YSD's operation was in the James River, Virginia, where the crew removed hazards to navigation and damaged navigation aids from February 2-11. The cold water (approximately 32°F) and the large ice floes (up to 1 mile wide) constantly hampered divers in their clearance efforts. After much hard work, perseverance, and the expenditure of several pounds of plastic explosives, the James River was reopened to vital commercial traffic.

During this same period, a force of four LCU's with cranes embarked was used in Albermarle Sound, North Carolina, to render this busy waterway safe. Assault Craft Unit TWO (ACU-2) personnel piloted the LCUs and personnel from Amphibious Construction Battalion TWO (ACB-2) ran the cranes while HCU-2 divers performed the diving and rigging. This phase of the operation lasted from February 4-12.

Also during this time frame, two other LCUs were used in the Hampton Roads area to recover vital navigational aids damaged by the flowing ice. As in the Albermarle Sound effort, ACU-2 personnel drove the craft, the ACB-2 crew ran the cranes, and HCU-2 provided the diving and rigging services. This clearance force was on station from February 7-13. After this concentrated effort, the tempo of operations slowed somewhat; and for the remainder of the ice removal operations, only the YSD-53 was deployed. The clearance work from mid February to June was directed towards the waterways of the Eastern Shore of the Chesapeake Bay.

The crew of the YSD-53 "worked" the waters from Cape Charles, Virginia, to Crisfield, Maryland, from February 14 until March 30. During this time, many damaged navigational aids that had become hazards to navigation were removed to open up the waterways for commercial traffic and for the all-important fishing trade. From April 11-22, the YSD-53 and a new crew cleared the waterways of Chesapeake Bay on the Eastern shore from Crisfield Maryland, up to Nanticoke River.

YSD-53 finally underwent a few weeks of needed upkeep and then sailed for Hooper Island Light in the Chesapeake Bay to continue salvaging a downed USAF F-105 airplane. On May 31, the YSD-53 again resumed clearance operations in the Nanticoke River and Knapps Narrows area of Maryland. When YSD-53 returned to its home port in Little Creek,Virginia, on June 12, HCU-2's assistance to the Coast Guard was concluded. HCU-2 divers and support personnel logged over 25,000 man-hours away from the command. At times, as much as 50 percent of the command's personnel were in the field involved in clearance operations. The skill, stamina, and spirit displayed by all participants in these efforts were the key factors in their successful completions.

(continued next page . . .)

NORTHERN CLEARANCE GROUP:
JAMES RIVER/ROCKLAND SHOAL CHANNEL
February 4-11, 1977

Officer in Charge: CWO4 W. L. Wilcox, USN (February 4-8/10-11)
LTjg R. S. McCord, USN (February 9)

YSD-53:
Craft Master: BMC H. E. Hill, USN
Craft Engineer: EN2 M. J. Vogt, USN
Crew: EM3 D. L. Montgomery, USN (4-8 Feb)
EN3 C. J. Anderson, USN
FN J. J. Litzinger, USNR
EM3 L. T. Thompson, USN (9-11 Feb)
ENFN J. F. Meyers, USN
SA R. J. Bentley, USNR
Divers:
MMCS(DV) W. S. Nichols, USN
GMGC(DV) D. K. Vanderford, USN
BM1(DV) F. D. Palmer, USN
BMC(DV) R. E. Cedola, USN
MS1(DV) L. L. Wariner, USN
HM1(DV) C. W. Wendeburne, USN

SOUTHERN CLEARANCE GROUP:
COIN JOCK VA/ALBERMARLE SOUND/
ALLIGATOR RIVER
February 4-12, February 4-10

O-in-C Diving Det.: HTCM(DV) R. L. Jones, USN
(4-12 Feb) ENC(DV) R. L. Hardy, USN
HMC(DV) C. K. Blair, USN
HTC(DV) C. J. Smith, USN
ENC(DV) R. E. Tardy, USN (4-6 Feb)
CPO C. Ballinger, RN (4-6 Feb)
GMG1(DV) W. E. Brooks, USN
BM1(DV) M. R. Hobbs, USN
EN2(DV) R. M. Gregg, USN (6-10 Feb)

O-in-C Diving Det.: LTjg R. S. McCord, USN
(10-12 Feb) HTC(DV) J. P. Quinn, USN
EM1(DV) R. N. Scribner, USN
BM1(DV) F. S. Morrison, USN
*FN(DV) J. C. Jackson, USN

*TAD from USS RECOVERY (ARS-43)

HAMPTON CLEARANCE GROUP:
LITTLE CREEK CHANNEL/WILLOGHBY BAY CHANNEL
HAMPTON RIVER, ELIZABETH RIVER, BACK RIVER
FEBRUARY 7-13

O-in-C Diving Det.: LT P. E. Cincotta, USN
EMCS(DV) J. B. Nelson, USN
MMC(MDV) C. D. Wetzel, USN (7-10 Feb)
HTC(DV) D. J. Smith, USN
QM1(DV) D. J. Bartosh, USN (7-9 Feb)
HM1(DV) R. W. Mathews, USN (7-9 Feb)
BM1(DV) J. E. Tucker, USN

CHESAPEAKE CLEARANCE GROUP
ALFA/CAPE CHARLES CLEARANCE GROUP:
EASTERN SHORE
FEBRUARY 14 - MARCH 30

Officer-in-Charge: CWO4 L. E. Ryder, USN
YSD-53:
Craft Master: BM1(DV) F. D. Palmer, USN (14 Feb - 18 Mar)
Craft Engineer: EN1 C. G. Swenson, USN
Crew: EM3 D. L. Montgomery USN
FN J. J. Litzinger, USN
FN J. F. Meyer, USN
MS3 M. J. Martin, USN (14-25 Feb)
MS3 E. S. Maximo, USN (26 Feb - 4 Mar)
FN A. F. Garrow, USN (14 Feb - 18 Mar)
FN P. J. Reilly, USN (3-30 Mar)
SN R. J. Bentley, USN
MS2 C. S. Sapanghila, USN (20-30 Mar)
Divers:
HTC(DV) A. NMN Connor, USN (2 Feb - 4 Mar)
HMC(DV) M. L. Darios, USN
MS1(DV) L. L. Wariner, USN
BMC(DV) B. P. Randell, USN
EM1(DV) D. E. Gallagher, USN
BM2(DV) A. W. Moon, USN (28 Feb - 30 Mar)

APRIL 11-22

Officer-in-Charge: CWO3 W. L. Wilcox, USN
YSD-53:
Craft Master: BM1 S. A. Cannon, USN
Craft Engineer: EN1 C. G. Swenson, USN
Crew: EN3 C. J. Anderson, USN
FN P. J. Reilly, USN
SA P. M. Halstead, Jr., USN
EM3 D. L. Montgomery, USN
FN J. J. Litzinger, USNR
Divers:
EMCS(DV) J. B. Nelson, USN
EN1(DV) S. T. Vernardo, USN
HM1(DV) C. W. Wendeborne, USN
BM1(DV) M. R. Hobbs, USN
MS1(DV) L. L. Wariner, USN
HT2(DV) C. D. Taylor, USN

NANITCOKE, NAPPS NARROWS
MAY 31 to JUNE 12

Officer-in-Charge: CWO3 W. L. Wilcox, USN
YSD-53:
Craft Master: BM1 S. A. Cannon, USN
Craft Engineer: EM1 C. G. Swenson, USN
Crew: EM2 M. E. Coers, USN
ENFN J. F. Meyer, USN
FN D. C. Debauche, USN
FA J. J. Litzinger, USNR
HT3 G. L. McKenney, USN
SN R. J. Bentley, USNR
SA E. C. Nicanor, USN
SR P. M. Halstead, Jr., USN
Divers:
EMCS(DV) J. B. Nelson, USN
ENC(DV) R. E. Tardy, USN
MS1(DV) L. L. Wariner, USN
HTC(DV) D. J. Smith, USN
HMC(DV) M. L. Darius, USN
HT2(DV) C. D. Taylor, USN

HCU-2 vs AMMI PLATFORM

One of the major ice-related jobs that Harbor Clearance Unit TWO undertook in 1977 was the location, raising, carrying, and placing on dry ground of an AMMI platform, which was damaged by ice in the Potomac River. The AMMI platform is a 46-foot by 104-foot barge that was used as an ordnance test platform by the Naval Surface Weapons Center, Dahlgren, Virginia. Ice had built up under and around the steel pilings supporting the AMMI platform, creating enormous weight and pressure. As the Potomac River ebbed, the ice sheared all but three pilings and carried the platform 10 miles down stream. It then settled to the bottom and stayed in a riverbed grave for over 3 months until an HCU-2 salvage team recovered her. Under the supervision of CWO4 Ryder, the salvage team consisted of HTCM(DV) Jones, MMC(MDV) Wetzel, ENC(DV) Watkins, ENC(DV) Hardy, BMC(DV) Randell, HMC(DV) Blair, EN1(DV) Alexander, BM1(DV) Chancellor, BM1(DV) Virgil, GMG1(DV) Brooks, BM3 Cox, ENFN Meyer, FN Krzykowski, SN Gallina, SA Nicanor, SA Jellison, and FA Cole.

The primary salvage platform used was the YFNX-33, a converted YFN built entirely by HCU-2 Diving and Salvage Department personnel. YFNX-33 is rigged with a 25-ton capacity "A" frame, two 100-ton main bow rollers, and two 1-5/8-inch auxiliary bow rollers for mooring and rigging. A 10-ton capacity crawler crane is secured forward to assist rigging, lifting objects, etc. Centerline aft is a 25-ton capacity Skagit winch that provides power for the A frame and 2,500-pound LWT stern anchor. Also located aft on each side under a weather shelter are two 8-ton Clyde Winches that handle one standard set of beach gear purchase each in addition to bow anchor wires. All compartments have been reinforced below deck to support the bow rollers, A frame, deck crane, etc. They have also been converted for stowage of beach gear, diving gear, and associated salvage equipment. In addition, the below deck compartments are used for chain and wire storage, a diving locker, HT Shop, and salvage hold. The forward compartment is empty and has been piped to facilitate a ballast lift.

HCU-2's two LCM-8s, which towed the YFNX-33 to Dahlgren, are mainly used as tug work boats to move barges from one area to another, to move wrecks from shallow waters, and for other general work boat duties. However, they have also been converted for towing and are equipped with an enclosed pilot house, radios, gyro compass, and tool shed/workshop.

YFNX-33 was towed from Little Creek, Virginia, to NSWC Dahlgren on April 4, 1977, a trip that proved to be more eventful than anticipated. The weather turned poor, and the entire transit took place in rain, heavy fog, and rough seas. The LCM-8s each alternated towing while the other was towed behind YFNX-33 to save fuel and rest the crew. After 21 hours and minimal habitability, it was a weary salvage team that finally moored at NSWC Dahlgren.

The lifting of the AMMI platform was typical of shallow water salvage, requiring several days of rigging messengers, working wires, chase chains, and lift chains under the wreck. A second barge (a YC, belonging to NSWC) was rigged temporarily with a 50-ton truck crane, securing pendants, 5-ton cherry picker, and 6-inch salvage pump for flooding and dewatering spaces.

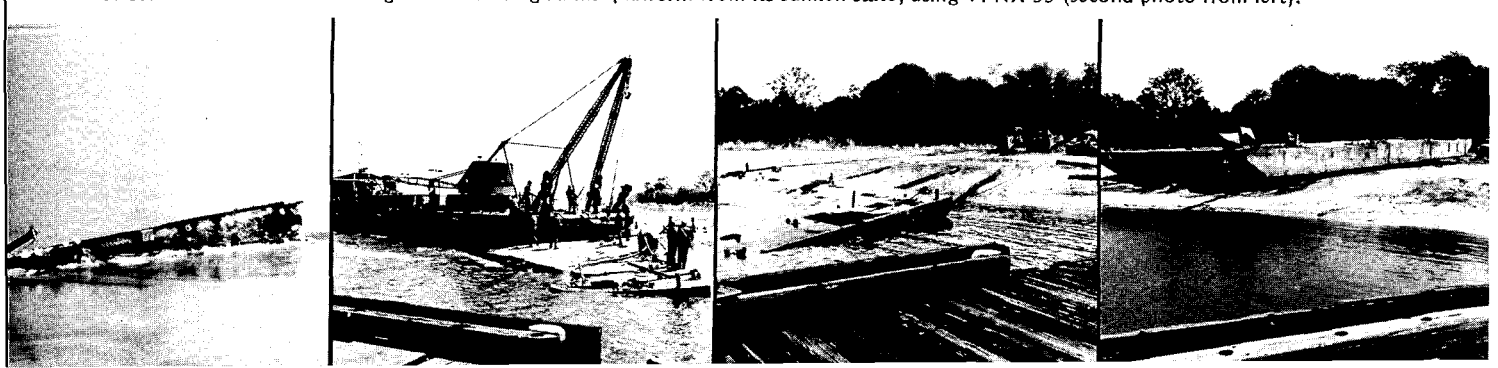
After mooring over the platform, which was 10 miles south of Dahlgren, rigging for the lift began. The process was slow, as expected, because of the heavy buildup of mud, oyster shells, and other debris on top of the barge. The messengers were "run" and lift chains rigged under the bow section of the barge and the YC was towed into position by the LCM-8s.

By using beach gear purchases and by flooding/dewatering the forward rake tanks of the YC, the lift chains could be shifted aft and positioned properly. The process was slow but effective and enabled the platform to be cradled between YFNX-33 and the YC. The platform was then raised and carried 10 miles upstream until it was grounded 1,000 yards south of Dahlgren's main channel for the night.

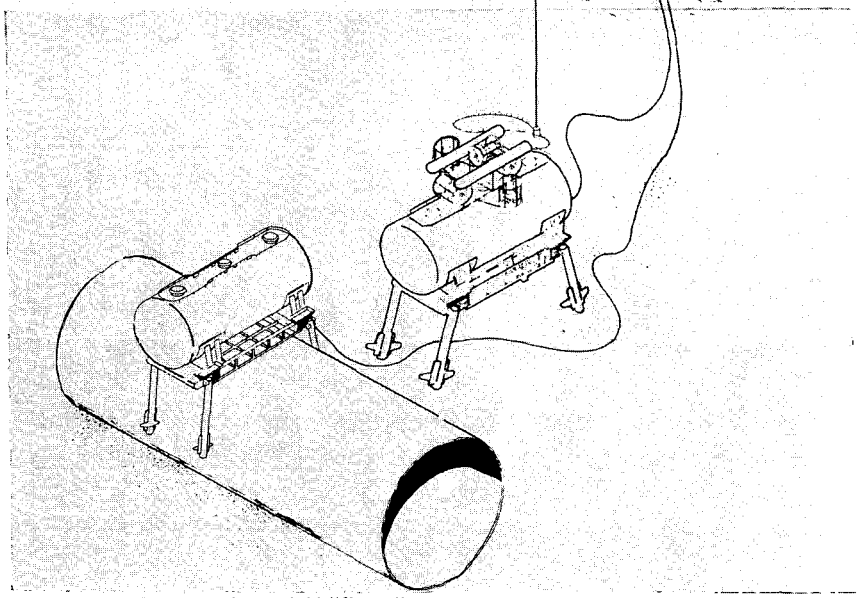
The following day, lift chains were shifted again to balance the barge. After lifting, both work barges carried the AMMI platform between them to Pumpkin Neck. It was then pulled on the beach using beach gear with bulldozers, personnel carriers, and a Sherman Tank.

The salvage task was the first real test for YFNX-33. This shallow water salvage craft, which was designed and fabricated solely through the ingenuity of HCU-2 personnel, was equipped by prowling through excess equipment catalogs and yards. Although the craft is essentially completed, construction of further additions are continuing. A larger version of YFNX-33, YFNX-34, is also in the planning stages, and is awaiting the time and personnel for manning and conversion.

Photos below show various stages of recovering AMMI platform from its sunken state, using YFNX-33 (second photo from left).



Loss Successful in Open Sea Tests



Drawing shows PIV "flying" a pontoon down to salvage object.

The Large Object Salvage System (LOSS), developed under the sponsorship of the Naval Sea Systems Command at the Naval Coastal Systems Laboratory, has successfully completed open sea testing. The recovery capabilities of LOSS components used with various assets were demonstrated in two series of trials conducted in the Gulf of Mexico off Panama City, Florida. The first series was concluded in the fall of 1976; the second was completed in the spring of 1977.

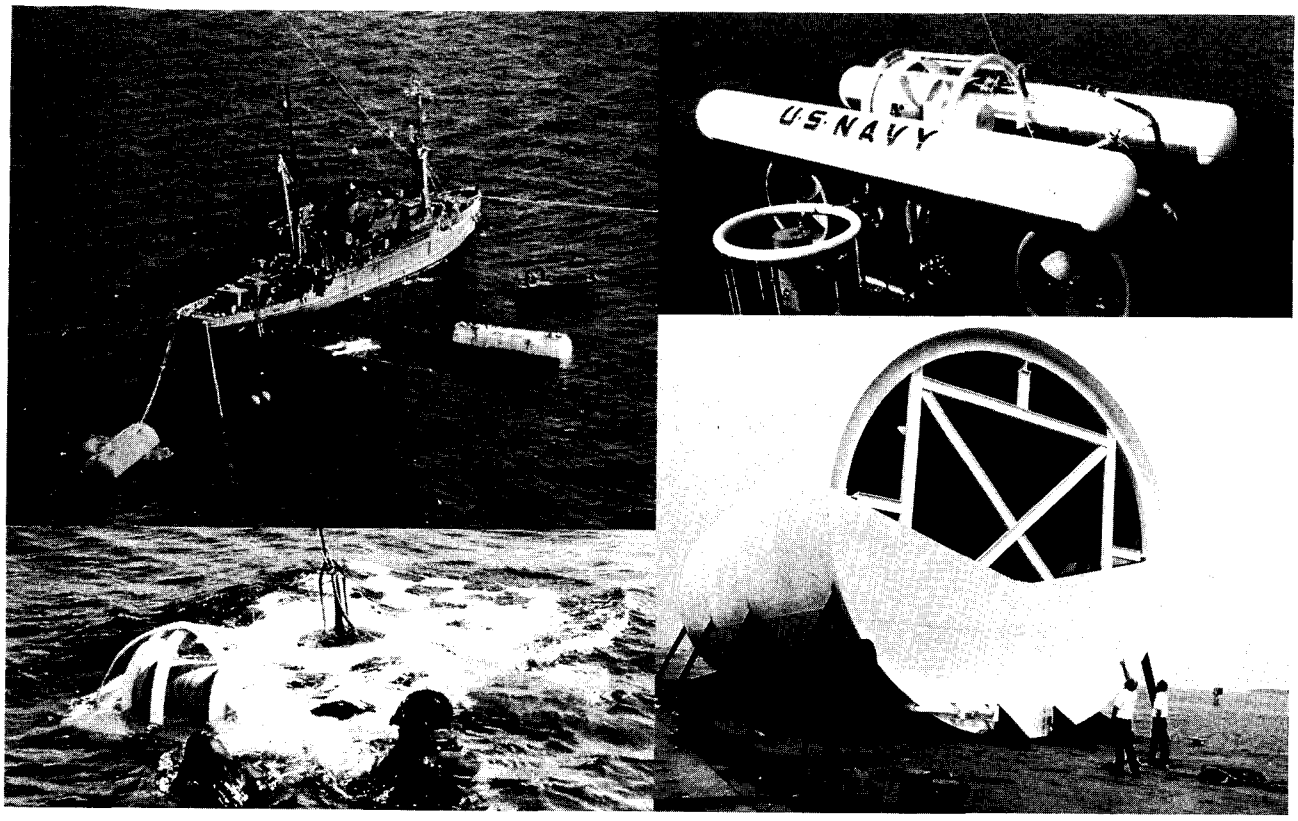
LOSS was designed to provide a capability of recovering large objects (up to 2,000 long tons) from continental shelf depths down to 850 feet. It includes two major subsystems: The large object salvage system pontoon (LOSSP), a 100-ton pontoon that relies on pressure compensation to withstand the pressures found at depth; and the pontoon implacement vehicle (PIV), a surface powered and controlled propulsion unit designed to transport the 100-ton pontoon from the surface to the ocean floor and then place it upon the object to be salvaged.

LOSSP is the principal component of the salvage system. Each pontoon, which individually is capable of lifting 100 long tons, is a steel cylinder 13 feet in diameter and 50 feet long. Pressure compensation in the pontoons is provided either by compressed air supplied through a hose from the surface or by liquid nitrogen (LN_2) carried internally in two 1,800-gallon dewars. All functions of the pontoon are controlled remotely by a topside operator through a 68-conductor electrical "power/control" cable that connects the pontoon to its onboard control console. Beneath the pontoon proper are four articulated arms by which the pontoon is attached to a salvage object.

The PIV is 22 feet long, 22½ feet wide, 11 feet high, and weighs 7½ tons. It is equipped with five 30-hp motors driving 48-inch four-blade propellers. Subsystems of the PIV consist of navigation, television, 2,000-pound variable buoyancy, and attachment. One PIV can be used to place any number of pontoons in a recovery operation.

The PIV alone is capable of lifts up to 3,000 pounds, and each pontoon provides an additional 104-ton lift capability. However, the LOSSP and the PIV do not constitute a salvage system complete in themselves, but are components in a larger operating system established as circumstances require to perform specific salvage tasks. This larger system would be composed of salvage vessels, lift gear, diving systems, submersible vehicles, etc., as needed, in addition to LOSS.

Two pontoons and control consoles were built especially for the fall and spring tests, which involved the raising of a 180-ton cylindrical steel object from 130 feet of seawater. The pontoons were similar to those used in 1972 testing (see *FP*, Fall 1972), having two dry compartments on each end containing dewars of liquid nitrogen and a larger floodable section at the center.



Top left: RECOVERY in four-point moor, with PIV and pontoons in the water. Top right: PIV is lowered overboard. Bottom left: Divers at surface with RUWS. Bottom right: Cutaway view of salvage pontoon.

The fall test commenced on November 7, 1976, when USS RECOVERY (ARS-43) got under way from NCSL and positioned herself in a pre-layed four-point moor over the to-be-lifted submerged object located 20 nautical miles out in the Gulf. Environmental conditions were not good, with winds in excess of 35 knots and seas up to 6 feet throughout a major portion of the test period. All the LOSS hardware except the two pontoons and the PIV (which were towed atop the 1972 prototype pontoon) were on board RECOVERY. It was planned to lower the first pontoon using remotely installed guidelines and position the second pontoon with the PIV, then raise the object and tow it to a shallow water dump site.

Guidelines were successfully attached—one by the Remote Unmanned Work System (RUWS) and the second by the Work System Package (WSP) mounted on the RUWS vehicle. Both devices were operated from the R/V PIERCE, an offshore supply boat leased from Tracor. In spite of "herculean" efforts by the RECOVERY divers (spearheaded by Bos'n Quiery and MM3 "Bat" Wilcox), problems with one of the nitrogen dewars prevented the first pontoon from being properly attached to the object. The PIV was then mated to the second pontoon and it was "flown" down via the PIV to the object and was properly positioned (two-blocked). This first test ended on a high note by clearly demonstrating the following: 1. The ability of LOSS to be effectively operated from a fleet asset, 2. the attachment of guidelines by remotely controlled vehicles (an important objective for objects sunken beyond diver depths), 3. the ability of the PIV/pontoon assembly to maneuver into the necessary positions on a submerged object, and 4. the ability to operate the system in state 4 seas.

During subsequent debriefings, it was decided to redo portions of the tests in the spring when weather conditions could be expected to be better. Thus, in early June 1977, the same LOSS group, minus RECOVERY, prepared to go to sea. R/V PIERCE carried all the LOSS hardware except the pontoons, which were transported by a commercial tug contracted for the

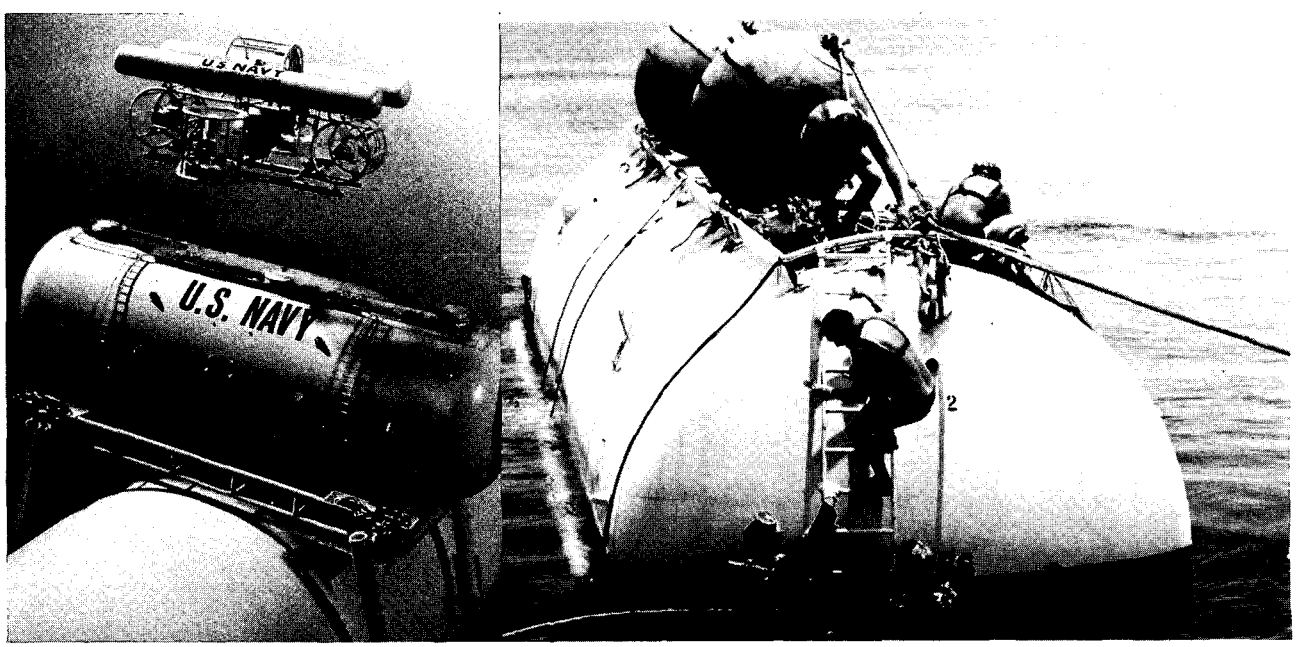
job. An NCSL LCM-8 was configured with the Fly-away Air Diving System to serve as the diving platform to support both scuba and Mk 1 mask operations. Eight divers from Harbor Clearance Unit TWO, Norfolk, Virginia, arrived on June 6 and immediately commenced rigging lift chains to the salvage object and air lifting the 30 tons of sand that had accumulated in the object during the winter. The HCU-2 group consisted of EN1 Marion L. Alexander, MMC(MDV) Charles D. Wetzel, HTC Arthur Connor, BM1 David J. Bartosh, BM1 Gary M. Chancellor, LT Paul E. Cincotta, GMG1 William E. Brooks, and BM1 Charles W. Virgil.

For the first few days of the operation, unusually strong currents (up to 2 knots on the surface) swept the site. However, in spite of the conditions, by the 17th, both pontoons had been accurately positioned by the PIV; divers had connected all eight object lifting chains to the pontoon clasper hooks; the eight ballast chains had been released; and all systems were "go" for the lift. The pontoon deballasting was controlled from a single van, which provided the Test Director with finite control of the liquid nitrogen admitted into each pontoon as well as video input from five TV cameras (two each on the under-carriage of each pontoon and one on the sea floor). After approximately 1½ hours of nitrogen gas generation, the "breakout" of the object occurred. As is usually the case, breakout was not a dramatic change in position because of the control provided by the ballast chains. In fact, a vertical shift of only approximately 1 foot occurred. As the object eased off the bottom, its apparent weight increased as it lifted more chain off the sea floor until the entire structure stabilized several yards above the bottom. At that point, the ascent winches were carefully released and the pontoons slowly rose to the surface as cable was payed out.

Perhaps the most significant feature of the LOSS lifting technique is its independence from the sea/air interface: No lift lines are required over the submerged object, only loosely faired umbilicals. These last two tests also demonstrated the ability to operate the system from either Navy salvage ships or from commercial ships. Thus, the large object salvage system reflects a major improvement in the use of rigid pontoons in salvage when compared with the former 80-ton "SQUALUS Era" pontoons still in the ESSM System.

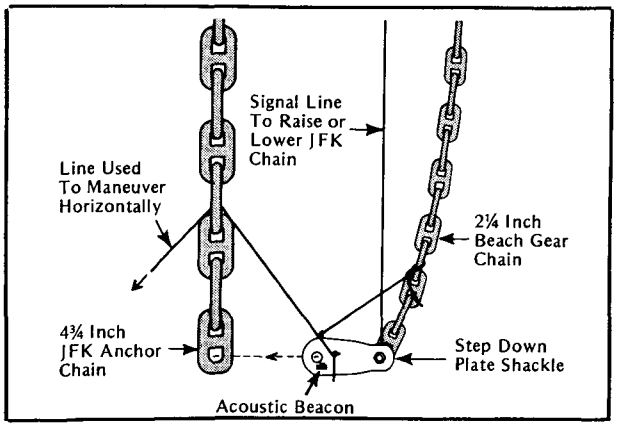
Current plans are to refurbish LOSS and to store it at the ESSM complex at Cheatham, Virginia, where it will be available to support any underwater salvage requirement. Should an emergency arise, the necessary number of LOSS pontoons can be procured on very short notice.

Below left: Model shows PIV ascending after placing pontoon on top of object to be recovered. Below right: Divers rigging LOSS pontoon during spring testing.



ESCAPE RECOVERS KENNEDY ANCHOR

Above, l-r: LCDR Okeson (CO), ENS Magill, LTjg Stanton, MMC(DV1) Smith, BM1(DV1) Miles, LTjg Duba, LT Parker (XO).



Arrangement Divers Used to Shackle in Bitter End of JFK Chain

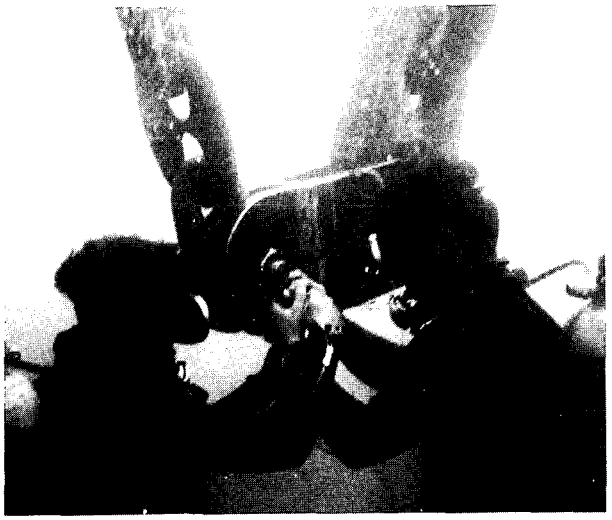
Following operations with the Sixth Fleet off Naples, Italy, USS ESCAPE (ARS-6) received a message on March 25, 1977 that the aircraft carrier JOHN F. KENNEDY (CVA-67) had lost its massive starboard anchor and chain in Augusta Bay, Sicily, because of a failure of the anchor windlass brake. The next day, ESCAPE's Commanding Officer, LCDR Lars Okeson, met with personnel aboard KENNEDY for a briefing on the search and recovery operation.

The size and weight of the salvage objects were massive. The chain, one of the largest in use by a Navy ship, weighed approximately 125 tons and measured 180 fathoms in length. Each of the 4-3/4-inch-chain's links weighed 360 pounds. Each of the 12 shots weighed over 10 tons. The anchor alone weighed 30 tons. Thus, the salvage problem was to locate a 155-ton mass of iron in 240 feet of water and connect into the bitter end of the chain so that it could be picked up by KENNEDY at a later date.

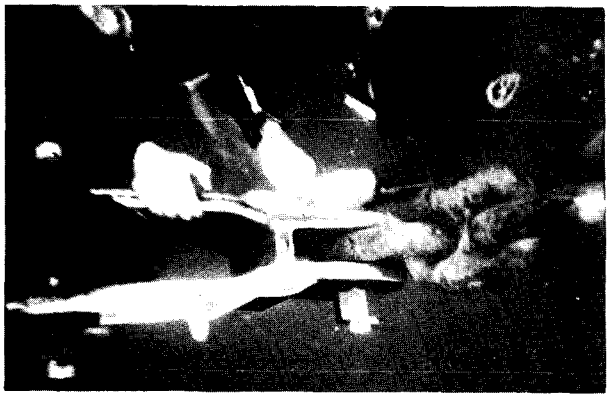
The ensuing operation was a triumph for ESCAPE (the oldest of the Navy's ARS ships) and her crew, who accomplished the job within the timeframe necessary using only standard beach gear and scuba equipment. Personnel of USS SHENANDOAH (AD-26), USS SURIBACHI (AE-21), and USS HOIST (ARS-40) also gave valuable assistance at various stages of the operation.

ESCAPE arrived at the salvage scene on March 28 and began anchorhawking in a grid pattern over the area considered to be the location of the chain's bitter end. On the seventh pass over the area, the chain was successfully snagged. Over the next week, two 1-5/8-inch beach gear legs were used to hoist the chain to approximately 70 feet below the surface. Divers then rigged a sling that permitted successive grabbing along the chain toward the

Above: Divers sliding lifting pennants down the anchor chain.



Above: Divers attach acoustic device to side of step-down shackle. Below: Overhead view of step-down plate shackle, showing its construction.



bitter end. The sheer weight of the chain, its unwieldiness, and unfavorable weather, however, caused the beach gear legs to part on two occasions. At the second parting on April 5, the anchor hawk kicked free and the anchor fell to the bottom.

After coming so close to success, this setback only deepened the resolve of ESCAPE's officers and crew. Despite the fact that ESCAPE is the oldest of her peers (and is scheduled for decommissioning soon) and that there is no underwater TV or sophisticated side-scan sonar aboard to simplify the task, she and her crew were determined to recover the massive anchor and chain.

When operations resumed the next day, the diving team was increased to 14 with the arrival of two divers from SHENANDOAH. At 2:30 am, the anchor hawk finally snagged the chain. At first light, divers rigged the starboard leg around the chain in a figure-eight pattern with two 1-1/2-inch wire straps and a 2-inch safety shackle. The port leg was rigged in the same manner.

Successive moves were made toward the bitter end of the chain by sliding the straps down the chain and alternately straining and slacking the two legs of beach gear. Although this method was successful, the slings became easily damaged, since the chain would render through the slings being slackened while the pick-up sling would slide up the chain before taking hold. Pick-up and attachment was, therefore, modified to a cross-stepping method, connecting and disconnecting the slack leg to the chain each time in the direction of the chain's bitter end. In addition, placing a 3-foot 2-1/2-inch section of pipe above and below the sling to correct the rending and sliding problem enabled the salvors to move the beach gear 20 to 30 feet along the chain toward the bitter end on each pull.

Movement along the chain totaled 130 feet by the end of the day, plus 120 additional feet the next day. The chain's color-coded links allowed accurate monitoring of the steady progress toward the bitter end. (Members of the crew who remained topside were also aware of the progress, each alternating strain on the port and starboard legs caused a corresponding port or starboard list of nearly 10°.)

The bitter end was finally reached on April 11, ending this grueling phase. The salvors next prepared the chain for later recovery by the crew of KENNEDY. At this stage, three additional divers arrived from SURIBACHI to assist in the operation. The plan was to attach a specially designed stepdown plate shackle to connect a 2-1/4-inch chain to KENNEDY's 4-3/4-inch chain. A 1-5/8-inch recovery wire would be connected to the other end of the 2-1/4-inch chain and lead to four crown buoys on the surface.

ESCAPE brought the KENNEDY chain's bitter end to within 70 feet of the surface. The starboard bow roller lowered the 2-1/4-inch chain and stepdown plate

shackle to the same depth. The divers completed the hook-up within 25 minutes. An acoustic pinger was then attached to the shackle, completing the operation. ESCAPE departed the area, leaving the four crown buoys tending the recovery wire. (KENNEDY, with several crew members of HOIST aboard, recovered the anchor and chain on May 9.)

Divers participating in the recovery were: LTjg P.E. Stanton, USNR; LTjg S.C. Duba; ENS M.D. Magill; ENC(DV1) S.G. Hayslip; MMC(DV1) S.L. Smith; BMC(DV1) D. Brown; BM1(DV1) T.W. Miles; HT1(DV1) K.O. Doty; HTFN(DV2) R.K. Palmer; EN3(DV2) S.C. Miers; ENFN(DV2) R.H. Powers; SK3(DV2) R. B. Hernandez; and HM1(DV) S.E. Tripp from ESCAPE. Divers from SHENANDOAH were HT3(DV1) J.P. Josenhans and HTFN(DV) R. Webb. LTjg P. Adkins; MM2(DV) D. Green; and ICC(DV) J. Nunes came from SURIBACHI, EOD Group II.

"Kudos" to ESCAPE and to the supporting units were numerous.

From Commander, Task Force 60:

> Congratulations on your fine efforts in locating and marking JFK's anchor chain. Notwithstanding the weather and seas and several setbacks, you continued to press forward with renewed enthusiasm. Upon reaching the "sweet" bitter end, both in recovery ops and deployment, please convey a well done to all hands.
>
> RADM SCHOULTZ

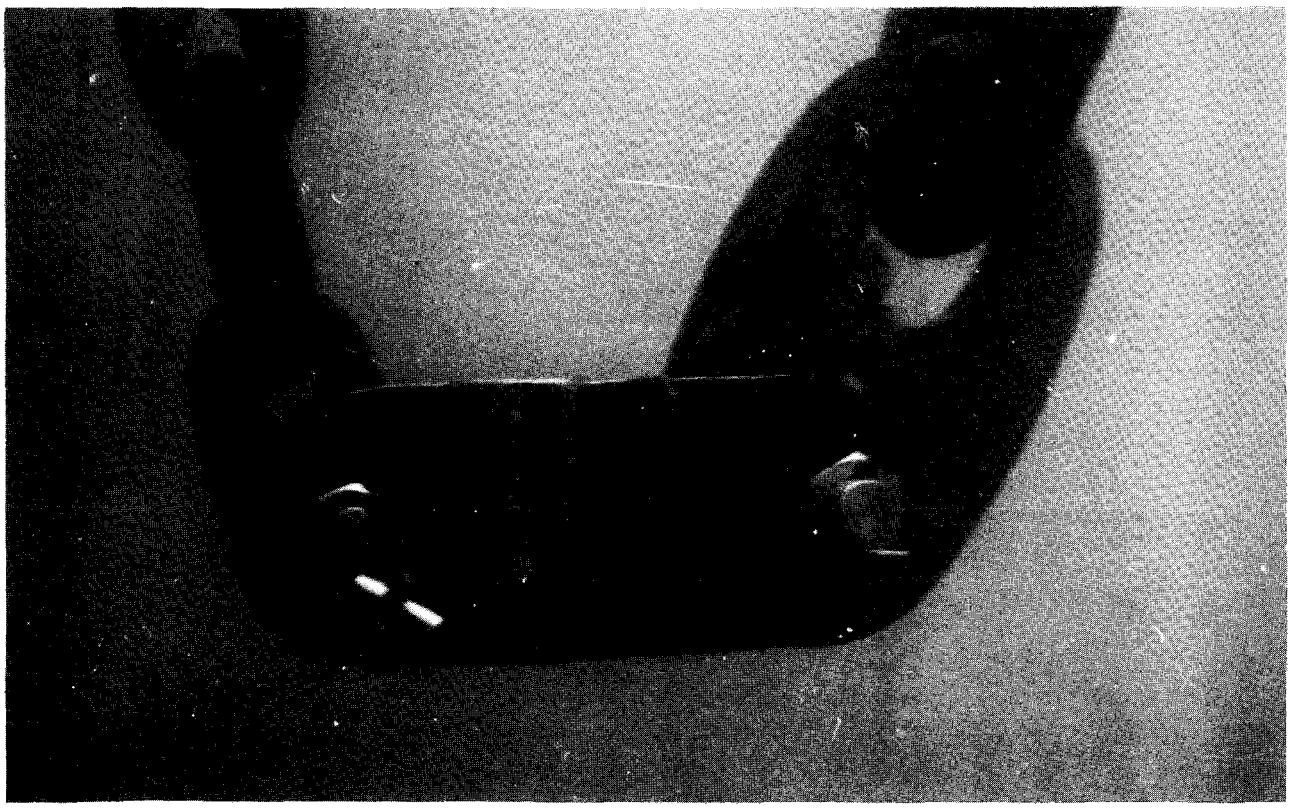
From Commander, Sixth Fleet:

> I would like to add my admiration and thanks to USS ESCAPE for an outstanding, safe, and professional job in locating and buoying JFK anchor. Well Done.
>
> VADM HARRY D. TRAIN, II

ESCAPE's crew had little time to enjoy their success, however. Four days later, ESCAPE commenced another major task, towing the 445-foot patrol craft tender USS GRAHAM COUNTY (AGP-1176) across the Atlantic Ocean to Norfolk, Virginia.

The KENNEDY operation was significant not only for its success in locating and buoying the costly anchor and chain, but also for its perfect diving safety record. The 18 divers logged 64 dives for a total bottom time of 30 hours with no accidents or mishaps. The average working depth was 108 feet, though some dives went to 130 feet. Visibility was extremely good, ranging from 40 to 50 feet. LCDR Okeson credits the safe diving record to the professionalism of the divers and to two specific precautions taken throughout the operation. Divers were encouraged to take a 2-minute stop at 10 feet whenever a dive required particularly strenuous work; and all divers began their ascents 2 minutes before their no-decompression limit.

Photo below shows hook-up job completed. The underwater acoustic device can be seen at left.



The Old Master ...

I thought I would take a few minutes to refresh your memory on Approved Diving Equipment and spell out the criteria involved before a piece of equipment is Service Approved or Authorized for Navy use.

First, the basic instruction regarding Approved Diving Equipment is NAVSEAINST 9597.1. NAVSEA receives input from a variety of Naval facilities such as the Navy Experimental Diving Unit, Naval Coastal Systems Laboratory, Naval Weapons Station Dahlgren, and others to assist with additions and deletions to the current list. Changes to the instruction are promulgated at frequent intervals by AIG 239 messages, so be sure your Locker has access to these and to all diving related messages (your Diving Officer should assist you with obtaining timely routing). By the way, input from the fleet to the Supervisor of Diving is always encouraged. So, if you think you have a "better mousetrap" that would be safer or would perform a better task, don't hesitate to recommend that it be evaluated. A word of caution, however, many items of diving equipment (particularly in the scuba category) are frequently being tested; and many of these fail to meet the testing criteria. If a piece of gear that you have recommended has been tested, you will receive a return letter or phone call to bring you up to speed on its results (good or bad).

The distinction between whether or not a piece of equipment is Service Approved or Authorized for Navy use is spelled out in NAVSEAINST 9597.1. Definitions are stated below.

A. "Service Approved:"

Equipment that has been tested and documented in accordance with OPNAVINST 4720.9D and NAVMATINST 4720.1. Service Approval procedures are detailed and complex. Basically, the basis for the origination of new diving equipment is written in an Operational Requirement (OR), which is funded by appropriate NAVSEASYSCOM managers and sent to a Naval laboratory for research and development.

As equipment progresses through development, a good deal of unmanned testing and evaluation occurs. After satisfactory unmanned testing, the equipment is sent to NEDU for stringent manned testing and then is scheduled for Technical Evaluation by fleet personnel. This Technical Evaluation is basically a last chance to ensure that all the "bugs" are worked out before Operational Evaluation by the Operational Test and Evaluation Force.

Once a satisfactory operational evaluation is performed, the piece of equipment must be certified by NAVSEA. Once certified, the equipment is ready for Service Approval by the Chief of Naval Operations.

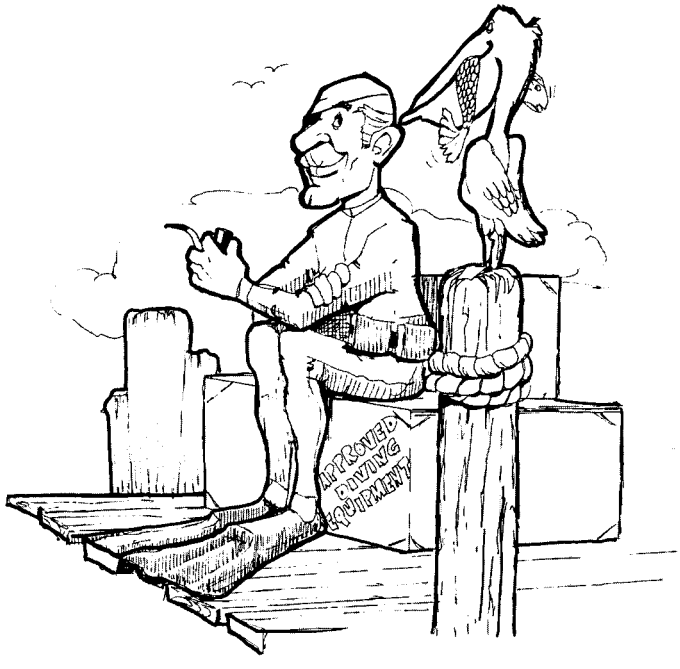
B. "Authorized for Navy Use":

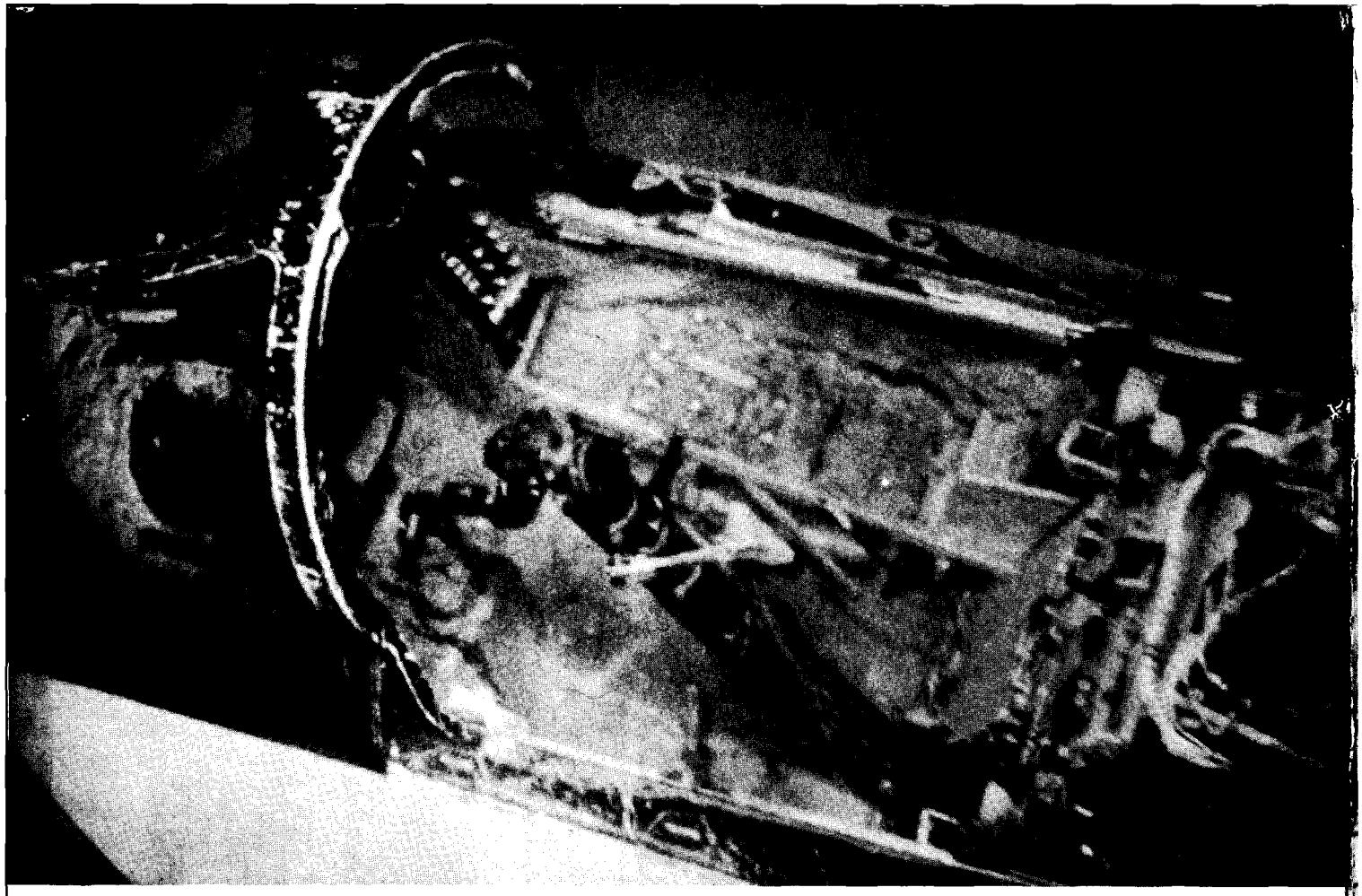
Diving equipment that has been operationally tested in all modes of intended use for safety and adequacy under the auspices of the Navy Experimental Diving Unit or an appropriate testing laboratory, and that, upon review of documentation by the Supervisor of Diving (NAVSEA OOC), is determined to be acceptable for use by Navy Divers; or

Diving equipment that was proved safe and operationally adequate by many years of satisfactory Navy use before the issue of this instruction and that has undergone a safety review by the Supervisor of Diving. A complete revision to NAVSEAINST 9597.1 (Approved Diving Equipment List) is now in preparation and should hit the street sometime in September.

How can *you* help the diving Navy? Share your ideas thoughts, and methods with the rest of us. We might find it very useful. If you have anything to pass on, or if I can be of any assistance to you, write or call me at the address given below.

"The Old Master"
BMCM(MDV) James L. Tolley, USN
Navy Experimental Diving Unit
Panama City, Florida 32407
(904) 234-4351 or Autovon 436-4351





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