THE FACEPLATE

DEEP SEA DIVING SCHOOL
EXPERIMENTAL DIVING UNIT

WASHINGTON D. C. 20390

SUBMARINE MEDICAL OFFICER HONORED

CAPT. ROBERT D. WORKMAN

CITATION:

For exceptionally meritorious service from January 1962 to May 1966 as Submarine Medicine Research Officer at the U. S. Navy Experimental Diving Unit, Washington Navy Yard. During this period, in which a rapid expansion of diving capabilities took place throughout the world, Captain Workman organized, supervised and executed a program of diving research and development which effectively maintains the primacy of the U. S. Navy in this field. He was the principal investigator in the development of a complete diving system using helium-oxygen breathing mixtures in a semi-closed circuit SCUBA diving apparatus which overcomes previous limitations of nitrogen narcosis, breathing resistance, carbon dioxide retention and oxygen toxicity and extends the safe operating limit for SCUBA from shallow to very deep waters. Elevating the mathematical theory of decompression to a level where realistic decompression schedules can be produced by digital and by analog computers, Captain Workman personally calculated and tested the decompression schedules for U. S. Navy studies in saturation exposure diving in the SEALAB experiments. He supervised the evaluation of an extremely promising innovation in the treatment of decompression sickness, the minimal recompression oxygen therapy, which not only reduces treatment-time and cost, but improves the results even of those severe injuries which responded least to treatments formerly available. Captain Workman's outstanding professional skill, resourcefulness and dedication were in keeping with the highest traditions of the United States Naval Service.

For the President,

Paul H. Nitze
Secretary of the Navy

On Thursday 8 March in ceremonies at the Washington Navy Yard, Vice Admiral Robert B. Brown, Surgeon-General of the Navy, decorated Captain Robert D. Workman, Medical Corps, with the Legion of Merit for exceptionally meritorious service as Submarine Medicine Research Officer at the U. S. Navy Experimental Diving Unit. Present also were Rear Admiral C.E. Loughlin, Commandant, Naval District Washington, Rear Admiral R.O. Canada, Jr., Deputy Surgeon-General, Rear Admiral E. P. Irons, Inspector-General Medical, and Rear Admiral G.M. Davis, Jr., Commanding Officer, National Naval Medical Center. Captain Workman was cited for his work on the mathematical theory of diver's decompression, decompression from saturation exposures such as the SEALAB experiments, development of a helium-oxygen SCUBA diving system, and evaluation of a new method of treatment for decompression sickness, which all effectively maintains the primacy of the U. S. Navy in the field of diving. Stationed at the Experimental Diving Unit from January 1962 to May 1966, Captain Workman is now Chief, Laboratory of Submarine and Diving Medicine of the Naval Medical Research Institute and has additional duty as consultant in diving matters to the Bureau of Medicine and Surgery, the Deep Submergence Systems Project, and the Experimental Diving Unit. Introduced by Commander William R. Leibold, Officer-in-Charge of the Experimental Diving Unit and the Deep Sea Diving School, Admiral Brown also presented diplomas to three foreign and ten U.S.Navy officers graduating from the Medical Diving Officer course at the Deep Sea Diving School.

Surgeon General of the Navy VICE ADM R.B. Brown, decorating CAPT R.D. Workman, MC, USN with the Legion of Merit.

FACEPLATE

Published quarterly as an unofficial publication. This periodical is compiled and edited at the U.S. Naval School, Deep Sea Divers, with the assistance of the Experimental Diving Unit, Washington Navy Yard, Washington, D.C. The opinions expressed in this publication are those of the writers and do not necessarily reflect the official policy of the U. S. Navy. The purpose of the FACEPLATE will be an exchange of information between all men who work under the sea.

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EDITORS COMMENT

If you failed to receive your copy of the FACEPLATE the reason is probably we do not have your correct address and zip code number. Effective 1 January 1967 all official mail must bear zip codes. So if you missed out, forward your correct address to the editor and you will be placed on the up to date mailing list.

Since the holiday leave period things have been humming here at DSDS. The student roster shows 121 students on board undergoing diving training. This includes students from Japan, Uruguay, Indonesia, Greece, Argentina and Vietnam. We are anticipating a continued high level of student loading.

Only two articles were received from the Fleet for this edition of the "Faceplate". I repeat in order for the "Faceplate" to exist and be a successful diving news media I need your articles.

DSDS PERSONNEL

		From	To
Transfers -	PN3 SILAS, H.B.	DSDS, WASHDC	USS TOLOVANA (AO-64) FPO, S.F.

PROMOTIONS

	From	To
PUTMAN, J.L.	LT	LCDR
LUCREE, W.M.	MLC	MLCS
LIDDLE, H.S.	DCC	DCCS

RETIREMENTS

BMC Raymond J. GLESPEN transferred to Fleet Naval Reserve 16 January 1967

IN MEMORIAM

On 27 January 1967, Ensign John W. OKARSKI, USNR passed away at the Bethesda Naval Hospital, Bethesda, Md. Ensign OKARSKI's death was a result of a diving accident at the U. S. Naval School, Deep Sea Divers, on 26 January 1967. At the time of the accident Ensign OKARSKI was a student attending the Ship Salvage Diving Officer Course.

Burial services were held at Mount Oliver Cemetery, Detroit, Michigan.

Our deepest and heartfelt sympathy go out to Ensign OKARSKI'S family.

DSDS GETS NEW MEDICAL OFFICER

Commander George L. MILLER, MC, USN first enlisted in the U.S. Navy in January 1937 as an apprentice seaman. Upon completion of boot training at Norfolk, Va., he served aboard destroyers and submarines based at Coco Solo and Balboa, Canal Zone. Attended Deep Sea Diving School and graduated a Diver First Class in 1939. Spent the rest of his career until 1945 in the Pacific where he participated in the entire Pacific Campaign, serving aboard various destroyers and submarines. CDR MILLER was serving aboard the destroyer BARTON in the capacity of a Chief Firecontrolman on November 1942 when she was sunk in the Phillippines. After the war CDR MILLER departed the Navy and attended medical school at Georgetown University and NYU Bellevue Medical School. CDR MILLER served his internship and graduate study at Bellevue Lenox Hill Hospital and Hackensack Hospital. Later CDR MILLER entered private practice in New York and New Jersey. In 1961 CDR MILLER returned to the Navy as a Medical Officer. In 1964 he returned to the submarine force and became a qualified submarine Medical officer. In December 1966 CDR MILLER reported to the U.S. Naval School, Deep Sea Divers as Senior Medical Officer.

OLD MASTERS QUIZ

HeO_2 DIVING

1. What are the determining factors in selecting a partial pressure table?

2. How is the rate of ascent determined between stops, after leaving the first stop?

3. What is the rate of ascent from the 40 foot stop in the chamber, when using surface decompression?

4. When using surface decompression if our stop at 40 feet is 88 minutes, how long do we remain at 40 feet in the recompression chamber?

5. What size of drill is required to check the aspirator jet?

6. When should the secondary exhaust valve be inspected?

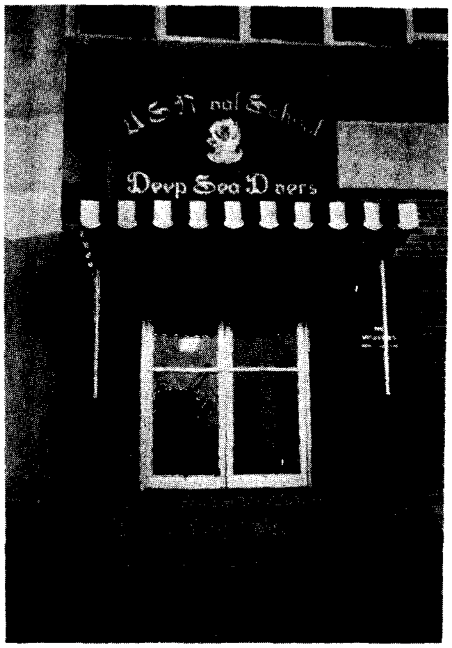
7. How long will Baralyme absorb carbon dioxide effectively?

8. What is the main advantage of Baralyme over shell natron?

9. What is the maximum rate of descent, diving with HeO_2?

10. How many cubic feet of oxygen is the diver ventilated with upon reaching 50 feet?

U.S. NAVAL SCHOOL DEEP SEA DIVERS



The U.S. Naval School, Deep Sea Divers is the largest and most advanced school of its type in the world.

The school was originally established prior to World War I at Newport, Rhode Island. This school was disestablished with WWI and its personnel were formed into an overseas salvage division which was sent to France and rendered valuable service in salvage operations there. In 1928 the school was re-established at the Washington Navy Yard, This location was chosen with the view that its proximity to the Experimental Diving Unit (which had been established in 1927) would permit expeditious application of approved experimental findings to the standard diving curriculum.

The mission of the school as set forth in SECNAV Notice 5450 is "To train selected officers and enlisted personnel in the techniques of deep sea diving, salvage diving and underwater mechanics with particular emphasis on submarine rescue, salvage operations, ships strandings and salvage demolition operations at various depths."

In support of the above mission the school is tasked with training, qualifing and recommending designations of the following:

1. Deep Sea HeO_2 Diving Officers.
2. Ship Salvage Diving Officers.
3. Master Divers.
4. Diver First Class.
5. Diver Second Class.
6. Medical Deep Sea Diving Technicans.

In addition the school provides special short courses of instruction such as:

1. Training of Engineering Duty Officers and officers ordered as Commanding/Executive officers of diving type ships ~~by presenting~~ an overview of the regular courses in Ship Salvage and Deep Sea Diving.

2. Instruction for medical officers in deep sea diving techniques with particular emphasis on the physiological aspects.

3. Requalification and refresher training for all classes of divers as prescribed ~~in Article C-7408, BUPERS Manual.~~

4. Training for navy civilian industrial divers to the level of diver second class, with particular emphasis upon the supervision of diving operations and major underwater mechanics.

5. Training for Army divers.

6. Training for foreign officers and enlisted personnel under the military assistance program as approved by CNO.

The eligibility requirements to attend any of the above courses of instruction are clearly outlined in Articles C-7313 and C-7408, Bureau of Naval Personnel Manual and the U.S.Naval Formal Schools Catalog (NAVPERS 10500).

To assist in accomplishing the foregoing mission and task, the diving school facilities include:

1. Two pressure complexes, capable of withstanding 350 psi where depths to 750 feet can be simulated. Each complex is directly connected to a double lock recompression chamber.
2. Two 12 feet open tanks.
3. YFNX-9, a converted 500 ton covered lighter, (non self-propelled) containing two classrooms, and four diving stations, equipped to dive eight divers at one time.
4. YDT-5, a converted minesweeper fully equipped for sustained diving operations, including HeO_2 diving.
5. YSD-39, fully equipped for sustained diving and salvage operations.
6. YF-336, fully equipped for sustained diving and salvage operations.
7. LCM-6, fully equipped for sustained diving operation.
8. LCP(R), equipped for SCUBA diving operations.

It is the consensus of opinions that if you graduate from the U.S. Naval School, Deep Sea Divers having dived day after day in the mud infested waters of the Anacostia and Potomac Rivers, you will be qualified to dive anywhere in the world.

MK VI DEFECTS

It has been brought to the attention of Naval Ship Engineering Center (NAVSEC) Code 6636 (Swimming and Diving Branch) that some of the MK VI cylinders appear to have defects which might limit continued use. These defects are as follows:

A flaking of metal on the outside usually near the bottom of the cylinder.

COMMENT: This has been investigated. It is attributed to the manufacturing process. It will not affect the integrity of the cylinder or its continued use.

The second condition is on the inside of the cylinder at the bottom near the spreader-bar socket.

COMMENT: This condition has the appearance of cracks. It is actually a folding of the metal during the forming process. This will be found mainly on cylinders supplied under contract NObs 86819. In these, the spreader bar stud is inserted in the socket with an "O" ring seal. The stud should be in the socket and snugged tight when testing the cylinders. They likewise are satisfactory for use.

For information, NAVSEC 6636 has been changed to NAVSEC 6138 as of 1 December 1966. Telephone numbers are not changed and physical location is still at the U.S. Navy Experimental Diving Unit.

DIVING LOGS

The Experimental Diving Unit has just received authorization to print and distribute a new fleet diving log. The present NAVSHIPS 1000 is a very durable and handy log for the diving station, however, one of the primary purposes of having a diving log is to provide data for analysis. With the present log format and the ever increasing volume of fleet diving, the job of data extraction and analysis has become an almost impossible task.

The new diving log has been designed as part of a data processing system from which the Navy can obtain needed statistics on fleet dives. It is envisioned that these diving statistics will be used for evaluation of decompression tables and diving equipment. They will also be used to compile a description of diving being done in the U.S.Navy which will be very helpful in the future of Navy diving. The new log system will also allow the Experimental Diving Unit to record the amount and type of diving done by each individual diver. In this way, the Navy will have access to a summary of each diver's experience in the event that such data should be needed.

The completed data processing system will involve the following steps:

1. Recording the dive by the top side recorder.
2. Checking of the dive record by the diving supervisor and diving officer.
3. Submission quarterly of the completed diving log forms.
4. Coding of reporting activity and the geographical location of the dive by NAVXDIVINGU personnel.
5. Transcribing of data to punch cards by an optical scanner.
6. Tabulation and storage on electromagnetic storage disks by a computer.

Step one above (recording of idve) is the most important aspect of the entire data processing system. Regardless of how sophisticated the data reduction and analysis system gets, it still relies upon the human input. If the diver doing the recording misinterprets or misrepresents the actual facts, the entire system fails before it even starts. All this leads up to the point that if the Navy is to profit from this system the divers must conscientiously record the dives made by their activity.

The new diving log has been designed to operate in conjunction with an optical scanner. The scanner works on a reflected light principle in which light is projected upon the log form. Any area which the topside recorder has blackened with a 2-H pencil does not reflect the light and is registered within the machine. When the optical scanner is operated in conjunction with a card punch, data are converted intc punch cards directly from source documents at the rate of 64,000 characters per hour, or 800 fully punched cards per hour.

Once the data is on punch cards it is fed into a computer for tabulation and analysis. Summary statistics obtained in this way will be stored on electromagnetic storage disks for easy access. In two or three years the Experimental Diving Unit should be able to provide upon request a summary of every navy diver's experience.

There will be a complete set of instructions and an example issued with each diving log. The new Diving Manual, to be issued later this year, will also contain full instructions. If after reading the above publications you have any unanswered questions regarding the diving log or the method of data extraction we encourage you to send your questions to the Officer in Charge, Experimental Diving Unit, Washington Navy Yard, Washington, D.C. 20390.

The center insert of this publication is a sample of diving log sheet for the following dive:

Date: 16 April 1966
Diver: JONES, John E.
Serial No.: 455 24 73
Class Diver: Diver 1st Class
Age: 32 years
Height: 5'10" or 70"
Weight: 165 lbs
Depth of Water in Area of Dive: 2,520 feet
Wave Height: 3 feet
Current: 1/2 knot
Water temperature: 76° F
Type bottom: Unknown (Diver didn't go to the bottom)
Visibility: 120 feet (diver's estimate)
Purpose of dive: Work (clean sea suction)
Breathing apparatus: Light Weight
Breathing Media: Air
Percent Helium: 0%
Percent Oxygen: 21%
Percent Nitrogen: 79%
Depth of Dive: 30 feet
Bottom Time: 78 minutes
Type of Work: Moderate
Tools Used: Hand tools (wrench and screwdriver)
Number of dives made in previous 24 hours: None
Decompression schedule: No decompression dive
Schedule depth: 30 feet
Schedule time: 80 minutes (78' rounded off)
Location of decompression: Water (depth to surface at 60 feet per min.)
Was decompression accurately followed: Yes
Total decompression time: 1/2 min. (rounded to one min.)
Outcome of dive (medical): Diver OK
Outcome of dive (equipment): Apparatus performed satisfactorily.

HELP DIVING AND HELP YOURSELF, RECORD ACCURATELY.

36. DECOMPRESSION STOPS

DEPTH	TIME	GAS
30'—0'	.5 min.	air

38. JOB DESCRIPTION Cleaned sea suction valve.

37. ADDITIONAL REMARKS None.

38. SIGNATURES Frank Paylor BMC(DV) — DIVING SUPERVISOR; Tom Mattson LTJG — DIVING OFFICER

IDENTIFICATION

REPORTING ACTIVITY ARS-24 Grasp

CODED BY THE EXPERIMENTAL DIVING UNIT

2. DATE: MONTH 04 DAY 16 YEAR 66

3. NAME Jones, John E. (LAST, FIRST, MIDDLE)

4. SERVICE NUMBER 4552473

5. CLASS DIVER: MASTER, FIRST CLASS, SECOND CLASS, MED TECH, SCUBA, SUB MED OFFICER, DIVING OFFICER, SALVAGE OFFICER, OTHER

6. DIVER'S AGE (YRS.) 32

7. DIVER'S HEIGHT (INCHES) 70

8. DIVER'S WEIGHT (LBS.) 165

AREA CONDITIONS

9. GRAPHICAL LOCATION Luzon - Philippines

CODED BY THE EXPERIMENTAL DIVING UNIT

10. WATER DEPTH (FT) 2520

11. WAVE HEIGHT (FT) 03

12. CURRENT (KNOTS) 0 1/2

13. WATER TEMPERATURE (F°) 76

14. TYPE BOTTOM: UNKNOWN, MUD SILT, SAND, CORAL, ROCK, SAND & CORAL, SAND & ROCK, MUD & SAND, MUD & ROCK, OTHER

15. VISIBILITY (FT) 120

NAVSHIPS 1000 (Rev. 12-66)

DIVE CONDITIONS

16. PURPOSE OF DIVE: SELECT, TRAIN, REQUAL, TENDER, EXPERIMENTAL, WORK, SPORT, OTHER

17. BREATHING APPARATUS: NONE, DP SEA AIR, DP SEA HeO2, LIGHT WEIGHT, SCUBA OPEN, SEMI CLOSED, CLOSED, OTHER

18. BREATHING MEDIUM: UNKNOWN, AIR, OXYGEN, HeO2 MIX, N2O2 MIX, He N2 O2 MIX, OTHER

19. PERCENT HELIUM 00

20. PERCENT OXYGEN 21

21. PERCENT NITROGEN 79

22. DEPTH OF DIVE (FEET) 0030

23. BOTTOM TIME (MINUTES) 00078

24. TYPE OF WORK: UNKNOWN, NONE, MILD, MODERATE, HEAVY, OTHER

25. TOOLS USED: NONE, HAND TOOLS, WELDING OR CUTTING, PNEUMATIC TOOLS, EXPLOSIVE TOOLS, OTHER

DECOMPRESSION & OUTCOME

26. NUMBER OF DIVES MADE IN PREVIOUS 24 HOURS 0

27. DECOMPRESSION SCHEDULE USED: NO DECOMPRESSION DIVE, AIR TABLES, EXCEPTIONAL EXPOSURE, HeO2 TABLES, REPETITIVE DIVE TABLES, OTHER

28. SCHEDULE - DEPTH/PARTIAL PRESSURE 030

29. SCHEDULE - TIME 080

30. LOCATION OF DECOMPRESSION: WATER, SURFACE CHAMBER, SUBMERSIBLE CHAMBER, WATER AND SURFACE CHAMBER, WATER AND SUBMERSIBLE CHAMBER, OTHER

31. WAS THE DECOMPRESSION SCHEDULE ACCURATELY FOLLOWED? YES NO

32. TOTAL DECOMPRESSION TIME (MIN) 00001

33. OUTCOME OF DIVE (MEDICAL): DIVER OK, DIVING ACCIDENT MINOR, DIVING ACCIDENT MAJOR

34. EQUIPMENT: PERFORMANCE OF EQUIPMENT: SATISFACTORILY, UNSATISFACTORILY

EXPERIMENTAL DIVING UNIT

Since publication of the last Faceplate the "Unit" has been primarily involved in saturation dives in support of the Man-in-the-Sea program. Equipment evaluation has been slow due to apparatus undergoing manufacture and as yet to be delivered for test and evaluation. Saturation dives have been successfully conducted to 450 feet with excursions from that depth being made to 600 feet in the wet pot using the MK VIII semi-closed circuit breathing apparatus. This apparatus is being designed and constructed at NAVX-DIVINGU for the Sea Lab III project. It's description was given in previous Faceplate articles. TM1 COFFMAN (DV1) and AO1 BLACKBURN (DV1) are on loan from DSSP technical office to carry out the work on this equipment. Their participation in design, prototype construction, test and evaluation is expected to insure a foundation for training in this apparatus by the Sea Lab aquanauts following delivery to DSSP.

The helium reclaim system was started up before Christmas and after various shake down problems has finally become an operational part of the diving facility.

On order for follow up on the ADS IV system scheduled for deliver to HCU-1 and the ATS diving system are two new developments, the MK IX semi-closed circuit apparatus, and the diver ciruculating hot water heating system. The MK IX is a compact semi-closed rig utilizing hose supplied gas similar to the back-packs used at NAVXDIVINGU. The breathing bags will be made of dipped neoprene rubber and will be placed inside nylon pouches for protection. The backpack is a faired plastic housing containing a low resistance flat carbon dioxide absorbent canister and a small "come-home" bottle. The come-home bottle is intended to supply bottom-mix to the diver through a single hose regulator as an emergency supply in event of failure of the primary breathing circuit. Provision is made for the addition of an oxygen partial pressure monitor with surface readout as an additional safety device. The overall appearance of the apparatus will be clean and will present a low hydrodynamic resistance for swimming. Gas admission will be accomplished through the use of the "GARRAHAN" block.

The diver heating system will consist of water cicculating underwear and a heater-pump unit. The underwear is made with plastic tubing sewn in to provide a path for warm water circulation over all portions of the body. Heat is provided through the use of an electric immersion heater, thermostat and circulating pump. Electrical energy is supplied from the surface or from a personnel transfer capsule. This heating system will allow the diver to work in cold water for long durations. His bottom time will be limited only by the effective life of the CO_2 canister (3 hours).

A recent commercial development may prove to be the most significant contribution to Helium-Oxygen diving in many years. This equipment is the Air Reduction Company MIXMAKER. The system consists of a series of regulators, needle valves, solenoid valves, piping and gages, constructed to permit pre-programming of four mixes of helium, nitrogen and oxygen and selection of either mix through the positioning of a switch.

The unit is designed to eliminate the requirement for pre-mixing gas and will allow a ship to commence a cruise with pure gases rather than various mixes.

The amount of labor saving and the increased capability to remain on an extended diving operation without pre-mixing gas is significant. The prototype unit will be on loan from the Air Reduction Company for a short test at NAVXDIVINGU and if tests are successful it is expected that a unit will be purchased for evaluation on an operational ASR. Future work planned at NAVX-DIVINGU includes commencement of evaluation of the MK IX, completion of construction and testing of the MK VIII, evaluation of an improved closed-circuit pure oxygen apparatus, evaluation of fully closed-circuit mixed gas apparatus and various supporting equipments such as helmets and regulators. This work-load will share time with a continuing saturation dive program to support Man-in-the-Sea and the evaluation of decompression tables for short duration dives designed for use with the ATS diving system. Work is in progress to split the gas rack and manifold to allow use of both diving chambers at the same time.

The activity at the Unit promises to continue at full pace throughout the foreseeable future.

MASTER DIVERS

NAME	RATE	DUTY STATION
ADAMS, A.	DCCS	SHP REP FAC SUBIC
ADAMS, S.	DCCS	HCUI
BAILEY, J.	DCCS	DSDS
BECKHAM, H.	BMC	HCUI
BEHYMER, W.	BMC	MINE DEFLAB,PCTY
BENT, W.	QMC	DSSP, S.DIEGO
BIGGER, F.	BMC	ASR-12 PENGUIN
BIGNARDI, U.	SFC	ASR-8 COUCAL
BLACKBURN,R.	BMC	ARS-42 RECLAIMER
BOSWORTH, R.	SFC	ASR-20 SKYLARK
BRAUNER, F.	DCCS	EDU
BROWN, J.	BMCS	DSDS
BROWN, L.	BMCS	ARS-8 PRESERVER
BUHL, C.	DCCS	ASR-10 GREENLET
CANTRELL, C.	DCCS	SHP REP FAC GUAM
CARROLL, H.	EMC	CU2
COLLINS, F.	SFC	ASR-14 PETREL
CRISLER, L.	DCCM	ASR-15 SUNBIRD
DAVIDSON, P.	ENC	NOTS PAS
DOUGLAS, L.	BMC	ASR-13 KITTIWAKE
DRISCOLL, R.	SFC	AS-34 CANOPUS
FLANAGAN, J.	DCCS	NOTS PAS
GARLICK, J.	GMGC	U/W SWIM SCH
GUILLEMETT, E.	GMGC	UWEPRCHENSTA, NPT
HURLEY, L.	DCCS	AS-12 SPERRY
JORDAN, J.	ENC	EODF INDHD
JOSENHANS,F.	DCCS	AS-15 BUSHNELL
KENEALY, J.	ENC	DSDS
KENNEDY, J.	DCCM	NAS, NOISL, S.DIEGO
LAMAR, L.	BMCM	ARS-38 BOLSTER
LARSON, R.	SFC	HCU I
LIDDLE, H.	DCCS	DSDS
MARTIN, W.	BMC	MINEDEFLAB PCTY
MAY, A.	ENC	EDU
McKENZIE, R.	SFC	SHP REP FAC SUBIC
MULLIKIN, H.	DCCS	SUBSCH, NLONDON
PAYNE, J.	BMC	ASR-20 SKYLARK
PAYNE, W.	DCCS	AS-19 PROTEUS
POTTER, D.	BMCS	ASR-9 FLORIKAN
PRICE, D.	MMCS	DSSP S.DIEGO
RANGER, C.	DCCS	FLT TRA FAC PEARL
SCHNEPF, R.	GMGC	ASR-7 CHANTICLEER
SPIVEY, L.	BMC	ASR-16 TRINGA
STOUT, J.	DCCM	TORP STA KEYPORT
THOMPSON, R.	SFC	DSDS
TIMMONS, J.	BMCS	DSDS
TODD, B.	BMC	SUBBASE, NLONDON
TOLLEY, J.	BMC	DSDS
WATERS, N.	DCCS	SERSCHCOM, SDIEGO
WEBB, D.	BMCM	ORDLABTEST, SOLOM
WORTHY E.	BMCS	AS-33 SIMON LAKE

TOTAL MASTER DIVERS ON ACTIVE DUTY AS OF 1 MARCH 1967 51.

SYNTHETIC LINES

Excerpt from the Nov 1966 issue of Proceedings of the Merchant Marine Council of the U.S. Coast Guard.

The use of synthetic lines in the U.S.Navy has increased greatly and experience with them has broadened correspondingly. Many new varieties have been introduced, each intended to eliminate objectionable features of previous lines.

In spite of certain drawbacks, synthetics are popular in the Navy because they are lighter and easier to handle than manila and are stronger. They can be stowed below when wet, without rotting; in fact, they should not be stowed for extended periods in sunlight. Another reason for their popularity is they last longer, are stronger, and reduce costs. It is important that only experienced seamen handle synthetic lines at winches and mooring bitts. Ship's officers must make sure their men know the types and characteristics of all lines used. Every manufacturer furnishes full instructions with his product and there is no valid reason for ignorance of its potential limitations.

For example, nylon lines are noted for extreme elasticity and stretchability. For these reasons, they are especially well suited for deep-sea towing, but, although the strongest lines in proportion to size, they are not satisfactory mooring lines, particularly for large ships. Nor is nylon recommended for stoppers because when it parts it is very apt to snap back and fracture a man's ankle.

Polypropylene or "polyprop" lines have great strength, ong life, are light to handle, do not absorb water and gh the same wet or dry. They have built-in resistance oil and chemicals and are good for topping lifts, boat ls, and other special purposes. They are not suitable for most guys and gantlines because of chafing. Polyprop lines have high gripping power and tend to freeze on bitts and winch heads unless watched carefully and eased off. In a case not long ago, a polyprop line under heavy strain suddenly surged after grabbing on the bitts and threw the Bos'n into the bitts. He lost his arm as a result.

Do not coil polyprop lines habitually in the same direction as it will unbalance the lay. If a polyprop line is used continually on the same side of the winch or windlass, in a counterclockwise direction, it will extend the lay and shorten the twist of each strand. Kinks and hocks will develop. If in a clockwise direction, the lay is shortened, the rope becomes stiff and will kink. Alternate directions regularly, starting with clockwise turns on new lines.

Dacron lines better resist abrasion by rough surfaces than the others because they resist heat and friction. They are well suited for small craft such as tugs, barges, and yachts. Polyethylene lines have about the same elasticity as Dacron and wear well. Many combinations of these materials are coming on the market and claim the virtues of each, while at the same time they eliminate their less desirable features.

When synthetic lines are on the winch heads, take great care not to surge them with winch heads rotating. Surging can cause fibers of the lines to heat and melt, freeze to the metal, and cause permanent damage to the lines. Keep bitts and winch heads in good condition when synthetic lines are used. Do not allow them to develop grooves or rough surfaces because such defects damage the lines and also cause them to grab.

Do not let synthetic lines rub against rough surfaces. eep chocks smooth and free of rust and burrs. Keep llers free to turn. Use chafing gear or parceling as essary. Do not drag rope over rough surfaces or sharp es or allow it to chafe against other rope. Never use ila or wire on the same chocks or bitts in conjunction with synthetics.

Watch your mooring lines at all times, being on the alert to spot buckling of strands - a sign of unbalance. Watch for broken strands and frayed yarns. If you twist open the strands and find powdered fiber, it is a sign of internal wear. NEVER STAND IN THE PATH OF A LINE UNDER STRAIN - ESPECIALLY WITH SYNTHETICS.

Nylon stoppers are not recommended under any circumstances because if the stopper parts, the man holding it has his ankles exposed when the parted end snaps back. Dacron stoppers are far less apt to snap if they do part and yet are stronger than manila.

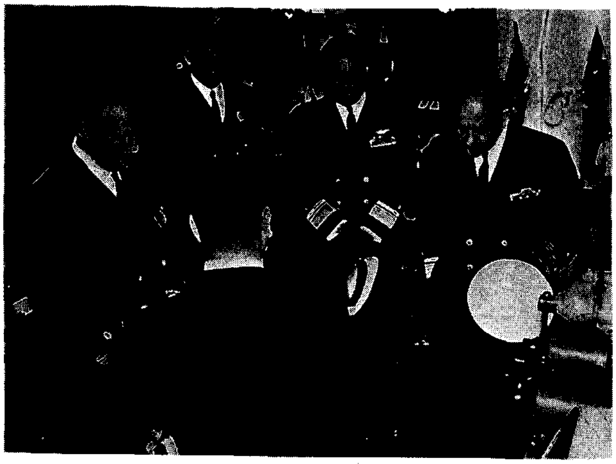
.....In analyzing, a number of mooring line accidents in which synthetic lines were involved, it has been found that replacing manila on a "strength for strength" basis with synthetics results in a line of too small diameter to take a stopper properly and one which presents too small a surface to the face of a gypsy head or bitt for even heaving or surging when under strain. The result is that they melt and stick and then let go all at once. It is therefore recommended that manila mooring lines should be replaced by synthetics on a "diameter for diameter" basis rather than a "strength for strength" one. The longer wear and the safer handling characteristics will justify the greater initial cost.

Ships are bigger, towboats more powerful. New mooring techniques and materials must be used, and along with these must go an intensive educational program.

MASTER ON DUTY

JEROME M. TIMMONS DCCS(MDV) USN

Chief Timmons enlisted in the Navy in 1942 and received boot training at Newport, R.I. He served in the Pacific during WWII on board cruisers and oilers. In 1948 he attended Salvage School at Bayonne, N.J. and assigned to the Salvage Base at Waipio Pt., Pearl Harbor and later to the USS JASON ARH-1. In 1953 the Chief attended DSDS for Diver First Class training followed by assignment to the USS CHANTICLEER ASR-7. In 1957 Chief Timmons was assigned to DSDS as a diving instructor. In 1959 Chief Timmons was designated a Master Diver and in 1962 assigned to the USS PENGUIN ASR-12 where he served as the Master Diver on board for four (4) years. Chief Timmons is presently attached to the Staff at DSDS.



Surgeon General of the Navy VADM R.B. BROWN being briefed by CAPT Workman on the various equipment at EDU. Looking on are RADM E.D. Irons, Inspector General Medical, RADM R.O. Canada, Deputy Surgeon General, and CDR W. R. Leibold, OinC, DSDS/EDU.

BLASTERS HANDBOOK

The well known and authoritative Blasters Handbook, 15th edition, written by The E.I. duPont de Nemours & Co. is now available from the company. This new edition is the first since the 1958 edition and much information is included. It is considered to be the "Bible" for those using blasting agents and explosives of all kinds. Naval activities interested may obtain a copy by writing to:

Mr. Herbert L. Schaaf
Pompton Lakes Development Laboratory
E.I. duPont de Nemours & Co.
Pompton Lakes, New Jersey

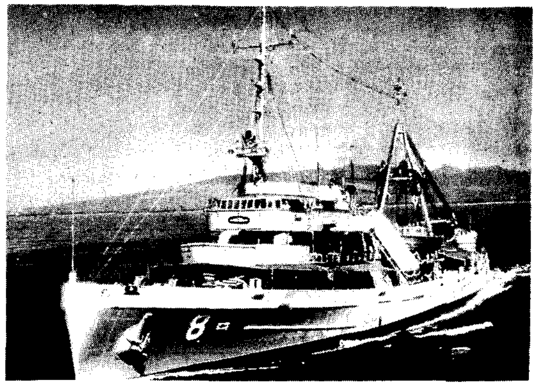
EFFECTIVE INSTRUCTIONS

BUWEPSINSTR 8510.20 provides instructions concerning the utilization of torpedo air flasks as air accumulators in compressed air systems.
BUSHIPSINSTR 9490.9 specifies procedures for cleaning, inspecting, and coating high pressure air flakes and moisture separators.
BUSHIPSINSTR 9490.4 provides instructions concerning cleaning high pressure air systems.
MILSPEC MIL-F-24152 entitled "FILTER, AIR, DIVERS" covers filters for all types of diving systems.
BUSHIPS Drawing 19738-S4904-297223 may be used as a guidance plan for the installation of high pressure air flasks in boats. This drawing should be ordered from the Norfolk Naval Shipyard.

SUPERVISOR OF SALVAGE

NAVSHIPS INST 5450.109B delineates information as to the organization, functions, and responsibilities of the Supervisor of Salvage, USN. This instruction supersedes and cancels BUSHIPS INST 5450.109A. In order that governmental activities, including unified commands interested in salvage matters may be appraised of the organization and functions of the Supervisor of Salvage, it is requested that the commands holding this instruction disseminate the information contained therein to those parties. It is also requested that the Supervisor of Salvage and The Assistant Supervisor of Salvage be kept fully informed of all salvage operations being conducted, world wide.

U.S.S. COUCAL ASR-8



Diving to a depth of 173 feet on a recent HeO_2 diving operation on board COUCAL one of the topside tenders noticed that the rubber covering on the life line and telephone cable, for length of about 30 feet (on deck) at close intervals, was expanding about 6 inches in diameter.

As soon as possible, the diver was started up to his first decompression stop which was 70 feet. At this depth the life line and telephone cable was back to normal size and presented no further problem for the remainder of the dive.

Following the dive an inspection of the equipment revealed that the gooseneck was not full of bees wa therefore the pressure on the breathing media was forcing its way through the gooseneck and also through the wax that was in the telephone plug, up through the cable.

U.S. Navy Diving Manual Section 2.3.2(28) outlines the procedure to follow if this should happen. In the case of COUCAL, the cable was renewed vice repaired.

COUCAL is commanded by LCDR A.P. FESTAG, USN.

Divers on board are:

LCDR A.P. FESTAG	CO
LT A.C. AKERSON	XO
LTJG E.C. LINK	Div/Sal Officer
WI H.M. FORT	Div. Officer
SFC U.D. BIGNARDI	Master Diver
BMC G.J. BROWN	Diver 1st Class
MM1 W.A. STEPHENS	" " "
DC1 R.H. STEELE	" " "
SF1 N. SIMEONE	" " "
BM2 R.L. ROSENBERGER	" " "
EM2 N.C. HICKS	" " "
MM2 D.A. MOORE	" " "
BM2 L.W. MUSICK	Diver 2nd Class
EM3 G.K. ROBINSON	" " "
EM3 R.W. MILLER	" " "
HM1 R.S. FLOURNOY	Medical DV Tech.

ANSWERS

1. Depth of dive and percent of oxygen.
2. Rate of ascent table.
3. 8 feet per minute.
4. 83 minutes.
5. #72.
6. Prior to each dive.
7. 7 hours. (Should be changed after 3 hours us
8. Less caustic.
9. 65 feet per minute.
10. 25 cubic feet.