

THE FACEPLATE



JUNE 1964

DEEP SEA DIVING SCHOOL
and EXPERIMENTAL DIVING UNIT

WASHINGTON, D.C. 20390

C. H. HEDGEPEETH, CDR, USN, OinC, DSDS - I am extremely well pleased with your response to our plea for articles, questions and comment on the FACEPLATE. We recognize that one or two issues do not solve all the problems in swimming and diving, therefore please continue to question, study and report everything considered worthy of passing on.

Some of the items foremost in my mind during this past quarter pertain to or have a direct bearing on safety: taken, not necessarily in order of importance but merely as I think of them the paramount items submitted for information are:

LIFEJACKETS: The yoke type, Scuba, U.S. Navy Mark 3 Life Preserver has been approved for service use. This jacket is designed for use by all deep diving swimmers using scuba equipment. This jacket, when inflated will give 19 pounds lift at 200 feet. All paper work is now complete for procurement and placing in the stock system except that the actual placing of the contract can not take place until after 1 July. Small matter of money. You can expect and plan to use your OPTAR to purchase these from SPCC. We will stay on top of this and inform you as soon as these jackets are delivered. In the meantime tests have been repeated on the lift capabilities of life preservers available. The standard UDT Jacket with two 30 gram cartridges will lift 19 pounds from 113 feet. The air force under arm type will lift 19 pounds from 94 feet using the standard CO² cartridges issued with them. If the air force type is to be used make sure that positive arrangements are made to keep the bags under the swimmer's arms otherwise the user will end up about 3 feet below the bags and the surface.

DEPTH GAGES: The Mark I depth gage has developed several deficiencies. Several gages have been returned to EDU and the manufacture has been called in to attempt to determine the cause or causes of failure. To over simplify a gage reading shallow probably has developed a leak in the aneroid chamber. This error will be constant on surface and at depth. A sluggish gage can be caused either by excessive friction in internal gear linkage or have the back plate orifice plugged with dirt and salt.

The instructions provided are very general on both testing for accuracy and removing and cleaning of back plate, I would encourage an accuracy check upon receipt and before placing in service and at least once each quarter thereafter. The back plate should be removed and cleaned routinely every two weeks if used during the period or more often if gage appears to be sluggish. Don't forget the semi-annual wipe tests and stowage requirements for both the depth gage and compass.

PLACING NEW SCUBA IN SERVICE; ALL TYPES - OPEN CIRCUIT, CLOSED CIRCUIT AND SEMI-CLOSED CIRCUIT.

All equipment when received must receive a complete and thorough bench check prior to placing in use to insure that all parts are set and functioning as required. Also routine maintenance as set forth in the Diving Manual and specific manufactures instruction books cannot be neglected or by-passed

I know, that in some instances those instructions are not specific and should be revised. A program is underway to review and revise those instructions but this requires some period of time. Recommendations from you on this would be appreciated.

While on the subject of maintenance it might be well to review BUMED INST 6420.1 of 15 September 1960. This pertains to hygiene maintenance of SCUBA and is most important.

BREATH HOLDING OR CONTROLLED BREATHING WHILE SWIMMING WITH SCUBA CONTINUES TO SHOW UP:

This practice offers no real advantage and is extremely dangerous because it forces retention of CO_2 in the blood. High blood level CO_2 will render you unconscious in minutes or seconds without warning. In open-circuit scuba the practice of determining who used the most or least air during a swim can lead result in promoting a form of breath holding and should be discontinued as a contest or marking criteria.

Once learned, controlled breathing, is also practiced unconsciously regardless of what type scuba is in use. As you well know semi-closed or closed circuit equipment uses constant mass flow and there is no possible way to conserve gas during a swim. Additionally, high CO_2 can cause either CO_2 poisoning or trigger the O_2 convulsion since high concentrations of oxygen is available.

Our deep diving program continues to progress and support in the way of funding is expected during the latter half of fiscal 65. Our first mile stone will be 600 feet. The organization, management, funding and scheduling are now being firmed up, therefore more detailed information should be available for the next issue of FACEPLATE.

Remember there is no substitute for knowledge. A good diver continues to learn each day. A good review of physics, physiology and equipment of basics is always in order.

W. R. BERGMAN, LT, USN, AOinC, DSDS -

This will be my last bit for FACEPLATE as a Staff member. I depart in August to assume command of the USS FLORIKAN in San Diego. LT Al FESTAG, present Executive Officer of KITTIWAKE will be my relief. I trust he will find the same rewarding tour that I have experienced. - We have included a list of scuba parts and stock numbers in this issue to help resolve some of the many supply questions that have come our way. Work is presently underway to develop and publish one supply catalogue to encompass all diving equipment. We hope this project will come to maturity as it has been sorely needed. - Age and Diving° There is no substitute for youth but the diver over thirty with his vast experience will give him a run for his money. Competition among a diving gang is traditional and healthy. However, in viewing recent 816's it becomes evident that experience alone will not carry the over 30 diver, he must maintain a good state of physical condition. This means keep the weight down participate in some profitable exercise program, and get the rest you need. A diver out of condition is a liability no gang can afford. - Deep Diving! There seems to be much confusion on depth limitations to diving. NAVSHIPS 250-538 is the guide. With deviations decided upon by the circumstances of the dive needed and the discretion of the Commanding Officer. Diving capability in excess of 380' is maintained and has been since 1950 at EDU. The divers at EDU are not miracle divers but by virtue of their experimental diving are best qualified for deeper work. When deep tables are fully proven they will

be quickly promulgated to the fleet, but until then EDU divers will get the call on deep dives and continue in the "Experimental Human Subject" category. FACEPLATE! One final request for articles from your commands. This publication has been improving due to efforts by both you and the staff here. It could be so much better if you would put more effort into it. The diving world is expanding rapidly, FACEPLATE can keep us abreast of projects, equipment, procedures and news of fellow men of the deep lets use it. If nothing else try to stump the OLE MASTER DIVER"

USS TRINGA (ASR16) - L. M. TEW, LT, USN, OPS Officer -

The USS TRINGA (ASR16), under the command of LCDR C. WALKER, USN, is at present deployed in the Mediterranean. The following divers are onboard:

Nine First Class Divers: BOSWORTH, SF1; DYKES, SF1; ASHLEY, DC2; CAHILL, DC1; CARVIN, EN1; HARRISON, SFM2; KOWAL, SFM2; MEADERS, BM1; and RICHARDSON, SF1.

Four Second Class Divers: O'BRIEN, BM2; TRUMBULL, BM3; SALERNO, BMSN; and KOCIK, FN.

One SCUBA Diver: BEALE, TM1.

CHBOSN Lowell HAMMOND is the diving officer. CRISLER, SFCS is the leading Master, ably assisted by J.C. BROWN, BMC, Master Diver. N.F. HARDEE, HMC is our Hospital Corpsman.

The officer divers are the Captain, C. WALKER: Executive Officer, Herb SCRANTON, and Operations, Lou TEW. LTJG F. RICHARDSON is ordered in to relieve CHBOSN HAMMOND in July. HAMMOND is going to SUBASE, New London. LT Herb SCRANTON relieved LT L.A. PAPI as Executive Officer the 27th of May in Toulon, France. LT PAPI is reporting to the USS PRAIRIE as repair officer.

During the OPS period of 18-21 May 1964 a S-4S was conducted off Toulon, France. Four Diving Officers, including the Officer in Charge of the French Diving School and 8 diver instructors of the school embarked in TRINGA for the OPS. The French divers showed lots of interest in the operations. The moor was in 330 feet of water. A helium diver, CAHILL, DC1, made the dive to check the downhaul. Four bell runs were made with two French divers as passengers each run.

Upon completion of the moor the ship was anchored in 25 fathoms of water while HeO2 diving was conducted. This was of great interest to the French divers. The last day was spent SCUBA diving, the French displaying French gear and the U.S. displaying U.S. gear.

On 25 May the TRINGA divers were given a tour of the French Diving School. The diving school consisted of 2 class rooms, an open tank, several barges and a diving boat. There are 10 instructors assigned. The school is mostly devoted to 2nd class and EOD diver training. Most of the work is done in the sea. The open tank is used mostly for EOD problems. Ninety percent of the French diving is with SCUBA, closed and semi-closed circuit. It was a very interesting day. The school provided lunch and wine, and a good time was had by all. There is an excellent area off Toulon for S-4-S for helium diving.

MASTER DIVER COLUMN - CONTROLLED BREATHING - I am amazed at the rash of recent accident and near-accident reports involving the use of so-called "Controlled Breathing". To those of you who might never have heard of this, I will define it so that you can avoid it. It involves deliberate breathholding and under-breathing while using SCUBA to "extend" your air supply. NO BUPERS DIVING SCHOOL IN THE NAVY TEACHES THIS. It is a practice to be condemned. If some salty character somewhere tries to give you the "word" as an old diving pro", tell him to get lost. You'll probably end up with a wow of a headache even if you manage to stay off the NAVMED 816. (These characters don't have "15 years of diving experience" as they boast, they only have the same damfool year repeated 15 times and if they have managed not to get hurt it was by simple blind luck.)

Some will argue that this practice might have a place in open-circuit SCUBA diving where air supply is limited. Not in the Navy. If the diver is in good shape and is relaxed and confident with his equipment he won't be over-breathing but will breathe normally while SCUBA diving. (If he is not he should be disqualified!) Plan the dive and know that you will have enough air for the work necessary and for some reserve. Take full advantage of the equipment. Fill the bottles correctly, and then, if gauging before use shows them not quite full, top them off again. Maintain your regulator so that you're not losing air in leaks.

THERE IS NO NEED TO "EXTEND AN INADEQUATE AIR SUPPLY" IF PROPER PLANNING HAS PROVIDED ALL THE EQUIPMENT NEEDED.

The idiotic (and dangerous) part is that old habits die hard. I have heard of EOD and UDT swimmers who practice "Controlled Breathing" with the semi-closed Mark VI and the closed circuit oxygen rig. In Neptune's name for what purpose? If the equipment is maintained and the canister filled correctly, all the exhaled CO2 is absorbed in the canister. The use of oxygen is not reduced by controlled breathing. It is not wasted in a larger breath, it just circulates and recirculates until it is used up. But the buildup of CO2 in the lungs and in the blood which results from underbreathing lays the swimmer wide open to oxygen poisoning and that could be fatal.

Ventilate normally in all SCUBA diving, but it is of paramount importance that you do this with semi-closed and closed-circuit apparatus. The equipment is designed for you to do this, you lose nothing by doing it, and you can kill yourself by not doing it.

SCUBA CASUALTIES - A pair of SCUBA divers were making a bottom search at a varying from 150 to 176 feet. Search was unsuccessful and after 13 minutes bottom time they began their ascent. (180/15 table calls for 3 minutes at 20 feet and 6 minutes at 10 feet.) The divers decided they could not decompress hanging off under the boat. They surfaced and were towed to a buoy about 50 yards away. Approximately four minutes after surfacing they reached the buoy and went down to 20 feet on the anchor chain to decompress. One of the pair developed a pain in his back and abdomen after 1 minute at 20 feet, but stayed at that depth for 3 additional minutes. Both divers then surfaced again and were rushed to the nearest decompression chamber. The Buddy Diver took additional decompression in the Outer Lock of the Chamber and apparently escaped unscathed. The first diver had two recurrences under treatment and two days later emerged from the Treatment Chamber still with some residual important deficiencies in the nerve supply to his pelvis.

This accident is the result of gross carelessness in providing for foreseeable circumstances. The Diving Manual is explicit (1.4.1(12)) in stating that 130 feet is the maximum working limit for SCUBA and that SCUBA dives shall be "no decompression" dives. If the requirements for the diving operation are such that these limits must be exceeded, it is clearly the responsibility of the Diving Officer to see that the operation is planned carefully and carried out in safety. The diver in this case was a First Class Diver, as required. For dives in excess of 170 feet a medical officer and a recompression chamber are required at the scene (1.4.1). Missed decompression on a dive of this type is a constant problem, and the possibility must be provided for. An adequately weighted line with decompression markers at 10, 20, and 30 feet is basic (3.2.5) and could have prevented this accident. An auxiliary air supply, either another SCUBA set or a surface-supplied facemask, should be available at the first decompression stop. It obvious that an adequately equipped diving craft is necessary for deep SCUBA diving.

The divers in this party were obviously not familiar with article 1.5.6 of the Diving Manual, "Omitted Decompression in Emergencies", and all readers who are not should review it. It is quite possible in this case that had the divers gone immediately to 40 feet on the buoy chain as the Manual prescribes the injury could have been reduced or averted, in spite of the accumulation of prior errors.

ESCAPE TRAINING TANK, PEARL - LT HERMAN KUNZ

The divers attached to the training tank are utilized primarily as tank instructors for free ascent or submarine escape training. In additon, we have a continuous Second Class Diver and SCUBA School and also do all the underwater submarine repair work in this area. We are not overworked at present as we are in a relatively slack period of submarine escape training. However, we will undoubtedly be training full bore when the new submarine escape appliance gets here this summer.

We want to extend an invitation for free ascent training to any diver rotating through the area and suggest you drop us a card ahead of time so you can be scheduled. This training generally takes two days (about two hours the first day and one hour the second day). The first day, the men are started at about 12 feet and work on down until they are satisfied that they have the feel of it from 50 feet. Then, the next morning they complete their training by making one ascent from the 100 foot lock.

Divers presently attached to Escape Training Tank:

KUNZ, HS., LT (DIVING OFFICER), STOUT, J. F., SFCM, (MASTER DIVER), WEBB, L.L., BMCA, 5342, LARAMEE, R.H., DGCS, 5342, CARLE, H.K., GMCA, 5342, SMITH, R.L., ENCA, 5343, JORDAN, J. ., ENCA, 5342, CASART, R.G., BML, 5342, MacPHERSON, C., BML, 5342, FLANNELLY, J.F., BML, 5342, MORRIS, M.J., BML, 5342, DIBROGROZCIO, A.G., BML, 5342, OSBORN, B.G., BML, 5342, MANDIBLE, A.G., GML, 5342, FERNANDEZ, J.A., SOL, 5343, CLEAR, G.W., SOL, 5342, PATTERSON, G.C., ENL, 5343, KITCHENS, B.J., SFL, 5342, ORTIZ, J.A., SFL, 5342, ALEXANDER, E.L., SFL, 5342, JOYCE, J.L., HML, 8493, ATKINSON, W.E., HML, 8493, O'KEEFE, P.M., BM2, 5342, McCULLOCK, N.L., BM2, 5342, CLITES, J.E., GM2, 5342, McDONALD, B.J., EN2, 5343, ILSON, J.M., HM2, 8493.

RECENTLY TRANSFERRED: RYAN, J.R., MMCS to USS COUCAL (ASR-8),
SANFORD, T.E., BM2, to RES FLT BREMINGTON, WASH., SMITH, R.R., MR2 to
RES FLT MARE ISLAND, CALIF.

ORDERED TO REPORT: BARTLETT, J.R., BM1 from SHIP REPAIR, GUAM,
MENDIOLA, G., BM2 from COCOPA (ATF-101), FORT, K.B., MM2 from USS DIXIE (AD-14)

Billet wise we rate a master, three corpsman, sixteen first class and
fourteen second class. At present we are one first class over allowance
and short eight second class.

I have orders in hand for Hunter's Point and should move in July or
August. "Stinky" STOUT doesn't have orders as yet, but has been assured
that he will go to Keyport, Washington in December.

RECENT HAPPENINGS HERE AT THE SCHOOL: A hearty welcome aboard to
IT DONNEY and GREENHALGH, HMC. Our recent loss column reads as follows,
LEONARD, GMC(DVM) to USS COUCAL, CHRISTENSON, HMC(DV) to USS GILMORE,
GUSH, SFI(DV) to EOD School, Indian Head, Md. Losing these men sure hurts
all the way down to 15 section liberty.

Had several old timers back recently for the Masters Course - MARTINEZ, BMC,
HIDALGO, BMC, RANGER, SFC, MAY, ENC, CHILDERS BMC, THOMAS, DCC. Congrats
to all on their being selected as Master Divers.

ALOHA: This constitutes an ALOHA message from John KROHTA, DCCM (EX-DV)
and Bob SHUSTER SFC(DV) preparatory to entering the Fleet Reserves on July
1st and June 11th respectively. At this time we wish to take the opportunity
to bid Adieu to all of our ex-diving partners, friends, acquaintances,
associates. Over the years we have had the good fortune to serve in many
diving billets with the majority of our fellow divers on many diversified
and interesting assignments. In retrospect we feel that our careers were
certainly channeled into the proper field of endeavor and had we it all
to do over again we would do exactly as we have for we both feel that the
Esprit De Corps existin amongst navy divers has no parallel in any other
branch of the Navy. John intends to seattle in the Midwest and operateing a
chamber for hyperbaric surgery and I am settling in San Diego where I will
run a scuba school and operate a chamber for hyperbaric surgery also.

We both feel that we will miss the service and the camaraderie of our ship-
mates however, due to our advanced ages we feel the time has come to begin
our second field of endeavor in civilian life under direct supervision of
our spouses.

We leave the service knowing full well that the younger divers trained by
us will competently fill the billets vacated by us and will continue to
instill in future divers the spirit of "Can Do"

We both feel very fortunate that we were able to terminate our Naval Careers
aboard the Prairie (AD-15) for the shipmates we made aboard her were some
of the finest we have had the pleasure to serve with in the Navy.

Divers aboard the Prairie are: DENIS LONG, MR2(DV), DON LANE, SF1(DV), EOD, FRANK BUSKI, SFP2(D2), "Will" WILCOX, BM3(D2), TONY THOMPSON, SFPFN(D2)

To each and everyone we have known throughout the service, diver and general service sailor alike we say,

Good Bye - Good Luck and Good Diving

WHY JUMP HEO² PPT - F. R. COLLINS, SFC(DVM)

I have noticed from some of the incoming instructors individual diving logs that on most of their HEO² dives they were jumped to a higher partial pressure table. Why were they jumped and what is the advantage?

The 7-50 report project #NS 186-201 states that all dives are considered work dives, and the time is double, so a decompression table for a 20 minute time interval - and that all table using more than 16% O² is computed for 14% O².

So you already have a pretty good safety factor built into your tables, and by jumping tables you only get a few more minutes decompression time and its really not needed.

Assistant Officer in Charge, U.S. Navy Experimental Diving Unit - LCDR R. PESCOTT, USN

Our Manpower Authorization Allowance has been increased by six divers and one yeoman. The diving ratings are BM, MR, SF (2), DC, and MM. So far only one man has appeared on the horizon, but we hope to get the billets filled by 1 October. What I said in last FACEPLATE still goes. If you want duty in connection with the deep diving program put in for NAVXDIVINGU on your rotation card. The duty is for 3 years (minimun), with the possibility of one year extension.

The series of dives to 500 feet have been completed. These were working, 20 minute bottom time dives. We intend to continue in 50 foot increments until we get over the 700 foot mark.

The 500 foot dives were made in the HeO² suit, the MK VI, and a modified MK VI. We turned the recompression chamber, igloo, and deep tank into a modified submersible decompression chamber on the last three dives of the series to enable the divers to take the decompression stops in comfort and be dry and warm.

Progress may seem slow, but many dives have to be made to prove out a given decompression table at these depths. We are getting there slowly but surely.

REPAIR PARTS FOR AQUA-LUNG MODEL DA "AQA-MASTER" DEMAND TYPE DIVING APPARATUS (NAVSHIPS 394-0065) IN THE SUPPLY SYSTEM:

AQUA-MASTER REGULATOR, U.S. DIVERS 1010 FSN H4220-589-1221

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>FSN</u>
1000-25	PIN H.P.	H4220-714-3514
1000-27	PIN SUPT	H4220-714-3515
8210-03	GASKET	H4220-752-8990
1000-29	DIAPHRAM H.P.	H4220-714-3516
1000-43	CLIP BOX BRS	KZ5340-721-7291
8210-01	GASKET	H4220-800-2622
1010-18	VALVE EXHALING	H4220-726-7935
1000-37	DIAPHRAM L.P.	H4220-714-3524
1000-34	GASKET	H4220-800-2346
1000-38	FILTER SINTERED	H4220-714-3525
1123-09	CLAMP 1 $\frac{1}{4}$	H5340-951-3033
1123-10	CLAMP 1 $\frac{3}{4}$	H5340-951-3034
8201-12	PACKING C-RING	KZ5330-530-1991
0501-05	WASHER	KZ5310-725-9232
0501-09	DISC ASSY	H4220-714-3517
0502-06	PLUG SFTY	H4220-714-3527
0502-12	DISC SFTY	H4220-714-3526
8202-14	PACKING PREFORMED	H5330-951-1890
1010-01	PLATE CLIP RET.	KZ5340-714-3520
1010-02	PLATE CLIP RET.	KZ5340-714-3521
8340-03	SCREW	KZ5305-274-1379
1010-04	PACKING NUT	9C4730-720-4486
1010-05	CLIP SPR. TNSN	KZ5340-721-7292
1010-06	SPRING HLCL CMPRS	H4220-951-1882
1010-07	STEM VL	H4220-714-3522
1004-09	NUT HEX	H5310-951-1874
8450-08	WASHER FLAT	H5310-951-1897
1108-02	DISC VL	H4220-977-9043
1010-13	CAP, REG	H4220-977-9042
1000-22	RING RET	H5340-951-1894
1000-24	SPRING HLCL CMPRES	H4220-977-9038
1010-65	SEAT VL	H4220-977-9044
0502-29	DISC & RETAINER	H4220-977-9040
0502-20	SPRING	H4220-951-1883
0518-05	INSERT	H4220-977-9039
0518-06	WASHER NMTLC	H5330-951-3036
0502-08	WASHER NMTLC	H5330-951-3035
0502-14	STEM VL.	H4220-977-9041
1000-15	CLIP	H4220-721-7291
1108-02	VALVE DISC	H4220-977-9043

Part numbers are U.S. DIVERS

DEMAND TYPE SCUBA OUTFIT AND ACCESSORIES

BELT PISTOL	D8465-577-4925
*BREATHING APRS DMND TY, ALUM	S4220-541-7397
CASE-SMALL ARMS AMMO	D8465-261-4983
COMPRESSOR-AIR 3000PSI	H4220-892-2234
DEPTH GAGE-WRIST TYPE	H4220-639-8999
DIVERS DRESS-SWIM SUIT TYPE	H4220-DVR-DRESS
DIVERS DRESS-SWIM SUIT TY EX LARGE	H4220-516-3385
DIVERS DRESS-SWIM SUIT TY LARGE	H4220-516-3386
DIVERS DRESS-SWIM SUIT TY MED	H4220-516-3387
DIVERS DRESS-SWIM SUIT TY MED LONG	G4220-516-3388
FILLER AND GAGE-SCUBA	S4220-541-7398
KIT-DEPTH GAGE REPAIR	H4220-651-5731
KNIFE X SHEATH	A1095-391-1056
LIFE PRESERVER-YOKE CO2 UDT TYPE	H4220-276-8929
MASK-UNDERWATER	H4220-289-8195
SWIM FINS SIZE 8-9	D8465-577-4136
SWIM FINS SIZE 10-11	D8465-577-4137
SWIM FINS SIZE 12	D8465-577-4138
CARTRIDGE-CO2 INFLATION 18 GRAM	H4220-287-
COMPASS	H6605-290-4111
FLASHLIGHT	9Y6230-243-6069
DIVERS DRESS-SWIM SUIT TY MED SHORT	H4220-516-3389
BUDDY LINE FABRICATED FROM THE FOLLOWING:	
SNAP HOOK	KZ5340-275-4584
CORD, COTTON	KZ4020-240-2161
TWINE COTTON	KZ4020-234-6763

* INCLUDES CYLINDER, MANIFOLD, HARNESS, REGULATOR AND CYL STRAPS

Underwater wrist watches should be procured in accordance with BUSHIPSINST 10510.3C Ser 665-2001 of 14 August 1961

USS PENGUIN (ASR-12) - The USS PENGUIN (ASR12), with LT A.H. CARRY commanding, is still carrying out her assigned duties in the Key West Area. The diving gang at present is made up of:

Diving Officers: LT A.H. CARRY, Commanding Officer, LT J.L. PUTMAN, Executive Officer, LT C.A. CHAPMAN, Operations Officer, LTJG, G.F. YOUNG, Diving Officer. Masters: TIMMONS, J.M. SFCs, HOLGERSON, A.C. SFC. MED. TECH.: MINNER, W.A. HM2., 1st. Class: BROWN, K.L., EML, FICKEN, D.I., EML, FONTANA, JP., BMC, JOSEPHANS, F.E. SFC, KIRK, R.E., SFL, STEBER, A.E., EML, TRIPP, J.E., DC1, KIRBY, K.M., EN2, LAIDLER, J.W., EM2, VANYO, R.C., AB2, SMELKO, F., SFL, 2ND Class: THAGGARD, A.R., SFL, DUNHAM, G.A., DC3, and GIRARD, P.N., EN3

PENGUIN's Divers contributed greatly to earning an overall grade of "GOOD" during the ship's sojourn in GTMO for underway training in February this year. Since returning from the Med. in June 1963, PENGUIN's Diving has been confined to Requal and Diver Training with the exception of the salvage of a Marine Corps Phantom 11 jet in 170 feet of water. The Marine technicians aboard, to give us a hand in the salvage, must have been sorry for us due to the condition

of JOSEPHANS' khakis. They somehow came up with enough Orange Flight Suits for the entire diving gang. This must have given quire a start to the crews of the many planes passing over, as they saw what would appear to be a bunch of pilots pulling divers out of the water for a change.

During the course of the Phantom Salvage Ops, a total of 91 dives were made under the following conditions:

Depth: 165 to 175

Water temperature: 63°/71°

Air Temperature: 70°/84°

Current: 0/4.5 knots

Visibility: 0/45 feet

Work: Moderate to extremely heavy Fast bottom searches with and without circling line. Taking out 350/500 feet of hose, passing wire straps on wreckage, hauling out 7 inch nylon, making hook ups for picks.

On this operation, we had 6 cases of "PAIN ONLY" bends plus 3 divers experiencing slight traveling pain in muscles and or joints immediately after surfacing which subsided within 20/30 minutes and did not require treatment.

Of the 6 cases, three occurred after the diver's second dive with a minimum surface interval of 21.2 hours, and three after the diver's third dive with a minimum surface interval of 29.7 hours.

The divers were all well rested, in very good spirits and had consumed no alcohol for at least 48 hours prior to being hit. The pneumofathometers had been calibrated 4 months prior to the operation and were checked "on the money" by steel tape at 10, 20 30, 40, and 50 feet. Five (5) feet was added to the pneumo readings, on the bottom, and the divers decompressed accordingly, 180/40 or 180/50, as TBT indicated.

In reviewing the accident data, a few interesting facts concerning the divers came to light which we would like to put down here for possible comment:

	<u>AGE</u>	<u>HT</u>	<u>WT</u>	<u>Diving Experience</u>
Diver "A"	43	70"	190 lbs.	19 years
Diver "B"	38	69"	160 lbs.	3 years
Diver "C"	38	66"	165 lbs.	17 years
Diver "D"	37	73"	170 lbs.	17 years
Diver "E"	36	72"	190 lbs.	14 years
Diver "F"	35	67"	145 lbs.	15 years

This was the first case of bends for 5 of these divers. The remaining diver had been hit before, but ONLY under controlled conditions at EDU.

MAPP GAS - H. S. LIDDLE, DCC(DV), DSDS

For my first article for the Faceplate after much thought I decided to write about a new product on the market that should be of interest to all of us in the diving and salvage Navy. I first came in contact with this about 18 months ago at the American Welding Society Convention in Phila. This is a new fuel gas that has been in civilian industry for some time. Its name is MAPP, its a stabilized methylacetylene-propadiene. This gas could take the place of both acetylene and hydrogen aboard the salvage ship. Its a more economical gas than either of the two and the stowage problem is greatly reduced, for example, a 300 cubic foot bottle of acetylene weighs approximately 240 pounds and contains about 20 pounds of fuel, in contrast a cylinder containing 60 pounds of MAPP gas weighs only 100 pounds, a 60 pound cylinder of MAPP will replace 4 to 5 acetylene cylinders. MAPP can be used in the shop for all topside work such as cutting, silver braze and welding. For cutting it does require a different design tip in that the orifices are larger in the MAPP tip. For welding brazing and silver braze just use one size larger tip than is normally used. For underwater cutting we have found it works very well, here again, a special tip for your existing torch is required. The tips can be purchased for about \$5.00 each.

MAPP being stable up to around 350 psi you have no trouble such as with acetylene, and this should permit us to burn in almost any depth required. As for safety standards, MAPP is in a liquid form in the cylinder and is insensetive to shock and heat and creates no storage problem at all.

MAPP is superior to hydrogen for underwater burning in every respect. It will cut rusty plate laminated plate and through paint. The technique is basically the same as for burning topside with an acetylene torch.

As you can see from my article I am sold on MAPP as a replacement for acetylene and hydrogen aboard a diving and salvage type ship. We have done some experimental work with MAPP and will do more if I have aroused anyones interest enough to look into it more. Drop me a line here at the school and I will be glad to send you more detailed information on MAPP.

(Ole Master Diver Note: I'm sure you are saying if this is so good why don't we have it now. BUSHIPS must put final approval on this before it is OK for the fleet. At this time testing is still in its initial stage.)

DIVING LOG BOOKS (NAVSHIPS 1000(Rev. 11-57)) - LTJG R. E. DALL, MSC, USN

A recent research project at EDU requiring the gleaning of information from several hundred diving log books, NAVSHIPS 1000 (Rev. 11-57, demonstrated a certain laxity on the part of some individuals recording the dives. Lack of complete information, especially the recording of the diver's service number, was the most conspicuous example. A second less frequent, but no less important, shortcoming was the conflict between the recorded "Bottom Time" and the time interval between the recorded "Left Surface" and "Left Bottom" times. Needless to say, (or so we thought) these two times should always jive.

The information contained in these logs can serve a very useful research function. As the field of diving progresses new procedures will be introduced. For the most part such new procedures will have their origin and development in a laboratory setting. A one to one transfer of results from the laboratory to the fleet cannot be assumed. A system of informational feedback from the fleet to the laboratory is required. The diving log book can serve as a basis for such a system. However, the output is only as good as the input, in other words, such a system will work only to the extent that recorded information required by the diving log is complete and accurate.

ON BOARD REPAIR PARTS FOR SCUBA - R. A. MURDOCH, EDU, Engineering Department

The relatively recent introduction of the USN closed circuit oxygen rig, NObs 88016, the USN Mark VI semi-closed circuit rig, NObs 86819 and recent deliveries of non-magnetic open circuit demand apparatus have created onboard repair parts crises. I am happy to report that most of these are being resolved. The spare parts for the O₂ rigs were delivered to SPCC Mechanicsburg the latter part of April. The contract for the MK VI spares was let early in May and they should be available shortly. A contract for spares peculiar to the demand apparatus regulators supplied under NObs 88376 can be expected shortly.

While not making parts available any sooner, perhaps a few words about the mechanics of these procurements will help clear the air on why it takes so long to get parts.

- a. The contract is initiated by BUSHIPS.
- b. On first generation equipment the contractor submits a recommended onboard repair parts list to SPCC, Mechanicsburg. If changes are involved, this may not be finalized for some time.
- c. It is screened to insure that duplicate items are not already in stock.
- d. SPCC then exercises an option, contained in the basic Bureau contract, and awards an order for the required spares.
- e. The spares are delivered as soon as the contractor produces them.

The approved onboard repair parts list as SPCC Mechanicsburg is cross indexed, i.e., contains both the manufacturers part number and a SPCC or Federal stock number. Lacking the latter, parts can be obtained by citing the manufacturers part number from the instruction book, manufacturer's name and contract number.

U.S. NAVAL SCHOOL, UNDERWATER SWIMMERS - LT J. E. HARVEY, Jr., USNR

The mission of the Underwater Swimmers School is to train men in the use of SCUBA and some of its applications. In fiscal 1963 slightly over 500 students enrolled and 76% graduated. Projected enrollment for this fiscal year is over 650 students.

Among the five different courses taught, basic SCUBA instruction is the backbone of the school. This is a one month course of instruction qualifying students to 130' with open circuit SCUBA. The course is popular among all military services. In fiscal 1963 the Army sent 65 Special Forces troops, the Air Force sent 85 Pararescue personnel and the Marine Corps sent 35 Reconnaissance members. Having these outstanding men attend this school makes us quite aware of the role of leadership in diving that the Navy is expected to play.

The Explosive Ordnance Disposal program brought us 336 students in fiscal 1963. In addition to one month of basic SCUBA, these men receive another month of training in Jack Brown, semi-closed circuit SCUBA and electronic search procedures. 83 UDT swimmers received SCUBA training in a six week course. In addition to basic SCUBA, they are qualified in closed and semi-closed SCUBA and Submarine lockout procedures.

Two new courses are being taught. Naval aviators became concerned about their helicopter aircrewmembers jumping into the open sea to untangle an ejected pilot from his parachute. They came up with a LUBA - Limited Underwater Breathing Apparatus. This rig is a miniature open circuit, single hose regulator SCUBA with a 20-30 minute surface supply of air. One can appreciate the utility of this equipment only after swimming in the rotor wash of a hovering helicopter. It is definitely unpleasant without a facemask and breathing apparatus. We teach a two week course in the use of the LUBA, emphasizing the fundamental aspects of compressed air diving and diving the students to 30' even though they are supposed to use the gear only for surface swimming.

As a result of numerous discrepancies in salvage inspections in the fleet, CNO has directed BUPERS to conduct a maintenance course in shallow water gear. We have received the task of designing a two week curriculum involving the Jack Brown rig. We are taking the point of view that fleet sailors leaving this school will be expected by uninformed superiors to not only maintain the gear, but to use it when it is inconvenient or embarrassing to call for qualified divers. Consequently, the curriculum will include enough diving medicine to teach a respect for the gear. Apparently the plan is for every ship in the fleet to have a set of shallow water gear and two men trained to keep it cleaned up.

Experimental Diving Unit, Washington, D.C. - The Experimental Diving Unit by virtue of its mission makes a continuing effort to collect and record data concerning diving accidents. The majority of this information is collected from the NAVMED 816 (Report of Decompression Sickness). When the NAVMED 816's are received they are carefully reviewed by the staff of the Experimental Diving Unit and Deep Sea Diving School. Frequently it is necessary to initiate further correspondence to clarify reports that were not properly prepared.

Some of the most common errors are:

1. The time and depths are either omitted or in error. (This would seem to indicate that the diving logs are not being used properly.)
2. Some reports are being submitted on thermofax copies. Thermofax and similar methods of reproduction are not suitable for permanent retention.
3. Delay in reporting or failure to report. The NAVMED 816 should be prepared and submitted at once, in unusual circumstances the report may be delayed for 30 days, and a follow-up report submitted if necessary.
4. The language and phrasing used in reporting is sometimes so vague that the report becomes useless. The circumstances surrounding an accident should be reported in a manner that will give a clear picture to the reader. The person preparing the report should keep in mind that the purpose of the report is to promote greater safety in diving.

PERSONNEL charged with the responsibility for preparing the NAVMED 816 should consult the U.S. NAVY DIVING MANUAL, NAVSHIPS 250-538. Section 1.9.8. gives complete and concise instructions for preparation of this form. As noted in the February issue of the FACEPLATE this report should be submitted via the chain of command for reasons that should be obvious to all.

Prevue of a change: Granular Baralyme for shell Natron in Deep Sea Diving - LCDR M. W. GOODMAN, (MC), USN, Assistant Submarine Medical Research Officer, EDU and K. W. WALLACE, BMCS(DV), USN, Master Diver, EDU

Almost ready to blossom forth from pre-publication handling is a EDU Evaluation Report devoted to the recently completed investigation of Granular Baralyme suitability for the Deep Sea Helium-Oxygen canister. It is the firm and unanimous conclusion of the authors that the evidence highly favors discontinuance of Shell Natron use and Shell Natron burns. However, the trail which starts here (with the reports of some experiments) can lead to an appropriate BUSHIPS instructions and Diving Manual change only after cognizant BUMED and BUSHIPS codes have granted favorable endorsements. Therefore, what you are reading now, and what follows, does not have authorized application. However, since the work is out to both SUBLANT and SUBPAC ASR units, via the rumor route, here is a summary of the situation.

EDU and DSDS collaborated on this project so that a large number of dives could be made with the Granular Baralyme. Final count was 190, including 21 dives to 300-320 feet, 7 to 400 feet and 2 to 500 feet. Among the total minutes used, without changing the absorbent, were 10 dives lasting an average of 297 minutes, and 1 each at 351 and 500 minutes. The latter was done in relays, with each man working his posterior off to really stress the canister. Since no CO² was detected, and liberty call had exceeded itself by two hours, it was agreed that a 500 minute test would speak for itself.

The reaction to this prospect, as expressed by the divers themselves has been highly favorable. Unless open-sea experiences turn up something

unexpected, there will be some concurrent simplification of the diving technique, and an entirely new canister packing-handling procedure. These will be detailed in a 1-2-3 format in the final communication through channels. It is clear that the logistic impact will be a simplified one.

Hopefully, the canister chemical burn risk is on its way out, as the sodium hydroxide Shells are superseded and assigned for chemical warfare duty in Chicago-Style Street fights. Until then, no more information can be gained by writing EDU or BUSHIPS. When all the tape is finally wound the report will be sent to all diving activities. So please, no letters asking, "When do we start using Earalyme?"

THE OLE MASTER DIVER

Q. - When three second class diver billets exist and one is vacant, can the one vacant billet be filled by a First Class Diver?

A. - YES. (1) This has been answered in the Oct 61 Faceplate. 50% has to be dropped or carried over to a whole as we don't train any half diver, we assume there is none in the fleet. So lets look out for the good of the Navy: 1st the Navy; 2nd the ship/station and 3rd the man will gain by utilizing the mans training. (2) Change 9 to BUPERS Manual, article A-4202, incorporates SECNAV Notice 7220 of 18 Aug 1961. Also see article 044055, NavCompt Manual for diving pay authority.

Q. - The question has been raised to how fast can you charge SCUBA Bottles?

A. - The answer to this question is not set down in black and white. The instruction manual for the Scott Pak stated the maximum rate in charging would not exceed 500 pounds PSI per minute. The Ole Master says keep them cool while charging.

Q. - The same old question of how deep are you allowed to dive on open circuit SCUBA is still with us.

A. - The answer to this question is adequately covered in Section 1.4(12) page 84a and section 3.1.2 of the Diving Manual. In no way would the Ole Master Diver infringe on the guide lines, and limitations set forth by this authority. Bear in mind the prerogative of Commanding Officer to extend limits in emergencies or particular circumstances.

Q. - How long should a diver be grounded after getting bent?

A. - A rule of thumb that has been taught to all divers and is used here and at the Experimental Diving Unit is one week for each table used, or one week for a table one, two weeks for a table two and etc. This rule should only be used if the patient left the chamber completely cured, otherwise the advice of a medical diving doctor shall be sought.

Q. - In surface decompression on air or O2, if the surface interval exceeds the five (5) minute maximum, what would the recommended procedure be.

A. - If the surface interval is exceeded the divers decompression would have to be considered compromised, and the procedure outlined in 1.5.6 of the Diving Manual followed. Omitted decompression.

Q. - What should the flow rate capacity be for the oxygen regulator used on the HE02 rack in cubic feet per minute in pounds per square inch? Can you recommend the proper name and type regulator?

A. - The regulator must deliver $\frac{1}{2}$ cubic feet of gas per minute for each atmosphere of depth. The NAVXDIVUNIT report 7-49 covers this very carefully at 50 pounds over bottom pressure the H.P. Nozzle will deliver 6 liters per minute or approximately $\frac{1}{4}$ CFM which will give a total recirculation of 61.6 liters or approximately 2 CFM. The Ole Master recommends a two stage regulator from the federal stock catalogue with a rate of flow of not less than $\frac{1}{5}$ cubic feet per minute at 75 pounds PSI.