

Diving Safety Lines

Fall/Winter Edition

2011

Diving Safety Lines is a semi-annual release by the Afloat Safety Directorate of the Naval Safety Center. The information contained herein is a summary of research from selected reports of diving hazards to assist you in your mishap prevention program. *Diving Safety Lines* is intended to give advance coverage of safety-related information while reducing individual reading time. This bulletin does not, in itself, constitute authority but will cite authoritative references when available. It is recommended that this bulletin be made available to all hands.



From the Diving Safety Division Head

LT Eli Ford

Email: safe-divesalvage@navy.mil

Welcome everyone to the Fall 2011 Dive Safety Lines. First, I'd like to introduce myself, my name is LT Eli Ford, and I've recently arrived from EODMU SIX. I'd like to thank LT Cooper for his exemplary management of the Diving Division here at the Naval Safety Center and I wish him the best of luck while aboard MDSU 1. I'd also like to welcome NDCS Josh Cole and MDV David Schoephoerster, "Shep," to the dive team. We're all looking forward to getting out and interacting with the dive lockers during our surveys.

This edition of Diving Safety Lines is reflective of some of the issues the team has witnessed during our surveys, and as always some frequently asked questions for DJRS. As I'm sure you're all aware, defense funding in becoming increasingly tight, so pay special attention to the NDCS Cole's scheduling article as our travel for surveys may become limited. Please feel free to contact our office with any questions or concerns at safe-divesalvage@navy.mil or 757-444-3520 ext. 7837

V/R
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Diving Safety Lines

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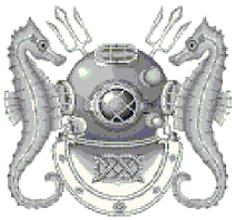
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Master Diver's Corner

NDCM (MDV/DSW/EXW/SW) David "Shep" Schoephoerster

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For those that don't know me, I am NDCM David "Shep" Schoephoerster. I checked onboard in June 2011 from Expeditionary Support Unit Two. I have relieved NDCM Kent Robarts who retired after 28 years of service. I would like to wish Rock and his family the best as he moves onto his next life. Thank you for the past six years that you mentored me and the many others you mentored during your career.

As I have already been out to a couple of diving commands, there are two things I would like to bring up. The first being over-bottom pressures on first-stage regulators. Although this has gone to an annual check with no "R" attached to it, it is still one of the things that we check during our surveys. The majority of them are low by 10 psi or more for SCUBA. We have found EGSs that are left topside that should be set at 150 psi that read 115-120psi. Although these will provide some amount of air, it is not the requirement that is set forth in PMS, manufacturers' tech manuals and U.S. Navy Dive manual. I urge all diving supervisors to add a spot on your pre-dives and check your over-bottoms prior to each diving day.

Next, we'll talk about final stage relief valves on compressors and charging stations. If you are charging multiple size SCUBA bottles with different pressures, the safest and most effective means would be to have a relief valve that could be switched with each set at 10% above that bottle pressure. I know this does not happen all the time and some have told me they rely on the blow-out disc in the event they had a 5000 psi compressor with a 5,500 psi relief. I just can't believe that we operate this way. In the past, I have seen compressors running, charging bottles, and no one around. This is happening with both young and experienced divers alike. Please hold training with all divers on proper jamming procedures.

I look forward getting out to all diving commands across the services and seeing old friends, as well as making some new ones. After being here only a couple of months, I am impressed with the way our Dive Navy is going. With that said, even I'm still learning.

HOOYAH!! Dive Safe!!

NDCM(MDV/DSW/EXW/SW) David "Shep" Schoephoerster

Naval Safety Center Master Diver

Comm: (757) 444-3520 ext. 7082 (DSN 564)



Welcome Aboard



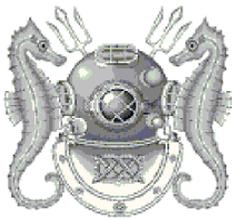
NDCS(DSW/SW) Joshua Cole
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I reported to the Naval Safety Center in July 2011. Previously, I was stationed at SEAL DELIVERY VEHICLE TEAM ONE Pearl Harbor, Hawaii. There, I served as the LCPO in a Dry Deck Shelter Platoon as well as the operations chief for SDVT-1. Prior to SDVT-1, I completed an instructor tour at CEODD DETPAC.

In the short time I have been at the command, I have been on several diving safety surveys. The results have been anywhere from outstanding to unsatisfactory. There are areas throughout our community that we need to improve. I ask that we all take something away from these surveys, good or bad. As we complete our rounds, I don't want the stigma to be that the Naval Safety Center is the enemy. We are not the inspector general, and it is not within our authority to shut down dive programs. Rather, our purpose is to provide an outside set of eyes that make recommendations from a safety standpoint. As military divers, it is in our nature to be the best and sometimes being the best requires some constructive criticism. I look forward to the experience, providing assistance, and learning along the way. We should all take pride in being the best deep sea diving force in the world. Plan your dive, dive your plan!!

HOO-YAH DEEP SEA!!!

NDCS(DSW/SW) Josh Cole



New Diving Safety Survey Checklists Available!

After countless hours of researching references and validating questions, new Diving Safety Survey/DORA checklists are now available on the Naval Safety Center website. The new, cleaned up checklists are streamlined with a more professional look. All of the out-of-date questions have been updated or completely omitted. You will also note that there is a repeat, significant, and PMS block on each question for ease of tracking.



Dive Jump Reporting System (DJRS) FAQ

NDC (DSW/EXW/SW) Rebecca Jones

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1. I have DJRS profile, so why can't I log into DJRS?

To log on to DJRS a user must use a CAC and have a WESS account. A WESS account can be obtained by requesting one at the Naval Safety Center website. A valid .mil email address is required in order to request a WESS account. Click on the WESS icon and then click on "request/maintain account."

2. Why can't I log on to DJRS even though I have a WESS account and a DJRS profile?

Once a user has a WESS account and a DJRS profile, the two must be associated to each other in order to access the DJRS system. If you are not associated, you will receive an error message from the system saying you have not been associated. Your command's profile manager or unit manager can do this. If your command does not have someone assigned as a profile manager or unit manager, the Naval Safety Center dive department can associate your profile and WESS account.

3. How is my DJRS profile and WESS account associated?

On the user's profile screen there is a button for "associate WESS account." Click on that button and enter the email address that was used to request the WESS account. If the email address is valid, the user's information will pop up. If it is correct, click the "set WESS ID for current profile" and the user will now be associated.

4. I can log into DJRS but I cannot do anything, why?

In order to perform any function in the DJRS program, you must have permission to do so. There are several different permissions that can be granted to a user depending on the level of access they will need in the DJRS system. The lowest permission is "dive recorder" and all they can do is enter dives. Other roles in the DJRS program include: dive analyst, dive DJRS profile manager, dive unit manager, and role sharer. The dive unit manager has the most access in the DJRS program and should be the MDV/DO or senior diving supervisor. The role sharer can share permissions with others at their command.

5. I just transferred to a new duty station and I cannot do the same things in DJRS that I was able to do at my last duty station?

This is because when you are transferred from duty station to duty station all of the permissions that you were granted at your last duty station are removed and must be granted back to you by your new duty station. All permissions are removed when a user is placed into a PCS status. In order to get permissions in DJRS, a "role sharer" assigned to your new duty station must grant you whatever permissions you need in the DJRS program.

6. Why cannot I print my personal dive logs?

The most common reason that personal dive logs cannot be printed is because the individual is in a PCS status. If you are in a PCS status you will not be able to print your personal dive logs. In order to print personal dive logs, you must be attached to a command.

7. How do I get a diver a profile in the DJRS program?

Only NDSTC, BUDS, Army dive school, and the Naval Safety Center have the authority to add a new dive profile into the DJRS program. All students should have a profile created while they are going through their initial dive training. If a diver needs to be added after the fact, only the Naval Safety Center can do it. Go to the Naval Safety Center website and navigate to the diving section. There you will be able to download a profile request form. Email that form to safe-divesalvage@navy.mil and we will create the dive profile in DJRS.



Gauge Calibration 101

NDC(DSW/EXW/SW) Rebecca Jones
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CRITICAL VS. NON-CRITICAL GAUGES

-**Critical gauges** Require calibration. Examples are: depth gauges, diver's manifold pressure gauges, final outlet pressure gauges, SCUBA charging, submersible pressure gauges, and test equipment gauges.

-**Non-critical critical gauges** Do not require calibration. Examples are: gas storage gauges, compressor stage gauges, oil pressure and temperature gauges, SCUBA pressure test gauges, and volume tank gauges. Note: a non-critical gauge can be calibrated if the command deems it to be critical or when the gauge reliability is in question.

DEFINITIONS

TMDE includes all devices used to measure, calibrate, gauge, test, inspect, diagnose, or otherwise examine materials, supplies, and equipment to determine compliance with specifications, engineering drawings, technical orders, technical manuals, and maintenance instructions.

METCAL is a combination of two independent yet connected ideas. Metrology is the science of measurement for determination of conformance to technical requirements, including the development of standards and systems for absolute and relative measurements. Calibration is the comparison of a measurement system or device of unverified accuracy with a measurement system of known and greater accuracy to detect any deviation from required performance specifications of the unverified measurement system or device.

IMPORTANT REFERENCES

OPNAVINST 3960.16A - Navy Test, Measurement, and Diagnostic Equipment (TMDE), Automatic Test Systems (ATS), and Metrology and Calibration (METCAL)

NAVSEAINST 4734.1B - NAVSEA Test, Measurement and Diagnostic Equipment (TMDE) and Calibration Programs
NAVSEA OD 45845, Metrology Requirements List (METRL)

NEED TO KNOW FACTS

1. Critical gauges are only authorized for use if in accordance with NAVSEAINST 4734.1B. Page CH 1-3, Para 1. *"Any TMDE requiring calibration is not authorized for use unless it has a current calibration label."*
2. In accordance with NAVSEAINST 4734.1B, critical gauges must have current calibration labels for use; thus, PMS cannot be pushed to the right.



Diving Safety Survey Scheduling

NDCS(DSW/SW) Joshua Cole

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I have assumed the responsibility of scheduling all diving safety surveys (DSS). As you all should know, we sent a message listing what commands are due in FY-12. For clarification, COMNAVSAFECEN 1316227 Oct 11 is not our schedule. The message is solely to inform commands of their DSS due dates.

Another issue with scheduling surveys is with the change to the periodicity as per Diving Advisory 11-05. It states: "fleet units that are periodically inspected by DORA will have a DSS scheduled between 14 to 20 months from the date of their last DORA." Be aware the Naval Safety Center does not track command DORAs. If you are on the list as being due FY-12 and have recently had a DORA, please contact me to realign your DSS due date.

As we are all aware, funding this year is extremely tight. Due to this, we may have problems with planning trips and getting these trips approved. With that said, we will do our best to get out and accomplish all the surveys due this year. This may mean that you might be asked to have a survey completed prior to or after your due date. Additionally, we will not travel to an area just to accomplish one DSS when multiple commands are located in the same geographical location.

Submarine commands need to contact their squadron representatives to schedule their surveys as well. This needs to be done at the squadron level as it informs the chain of command as to what is required. We cannot schedule one submarine for a survey if there are more in the geographical area that need to be completed. Again your squadron representative needs to make these arrangements. We are not managing funding if we allow this to happen.

Our schedule is getting full this fiscal year as a lot of commands have already been in contact with us and have confirmed dates. We do understand that operational commitments may impose problems; however, we will be flexible and take all requests into consideration. Thanks in advance and let's, "Get 'er Done!"

Plan your dive, Dive your plan! HOO YAH DEEP SEA!!!

NDCS (DSW/SW) Josh Cole



Oxygen Cylinders

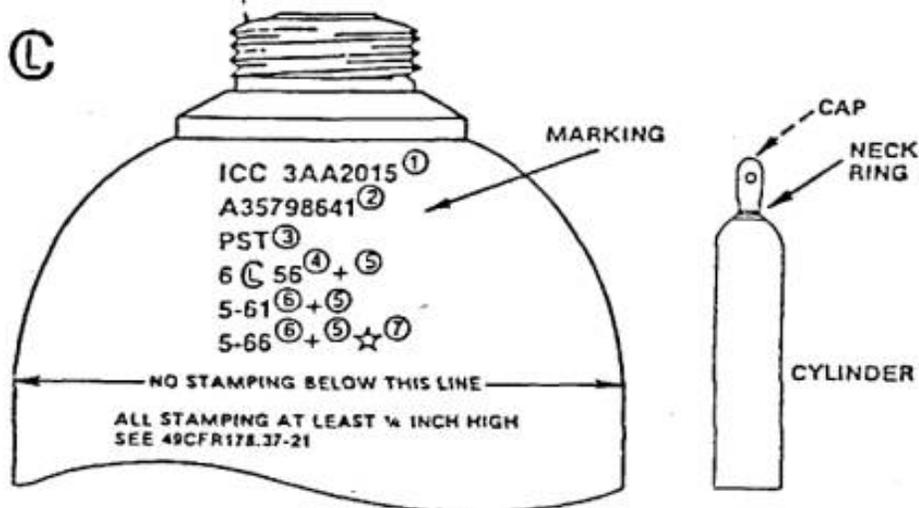
DCC Christopher Keplenger

Email: christopher.keplenge@navy.mil

We have been getting a lot of questions about hydrostatic testing of oxygen cylinders. The Compressed Gas Association (CGA) and the Department of Transportation (DOT) provide guidance on the safe transportation, storage, and use of high-pressure oxygen cylinders. Most oxygen cylinders are required to be hydrostatically tested every 5 years. This test ensures the cylinder can safely hold the maximum fill pressure. Just like all cylinders the test date is stamped into the shoulder of the cylinder there are also two other markings which are sometimes found on these cylinders. If a plus (+) sign is located after the test date the cylinder can be filled to 10% above the pressure stamped on the cylinder. A five-pointed star after the test date means the hydrostatic test date has been extended an additional 5 years. A cylinder with a five-pointed star would need to be tested every 10 years. If a cylinder is in use (filled or partially filled with oxygen) and it reaches its retest date, there is no requirement to pull the cylinder from use for retesting. The cylinder can stay in use until it is empty. After the cylinder is emptied, it must be tested before it can be refilled and transported.

MARKING REQUIREMENTS

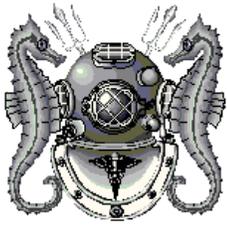
178.36 to 178.68 Subpart C Specifications for Cylinders.



1. DOT or ICC marking may appear-new manufacture must read "DOT". 49CFR171.14
"3AA" indicates spec in 49CFR170.37.
"2015" is the marked service pressure.
2. Serial number- no duplicates permitted with any particular symbol- serial number combination.
3. Symbol of manufacturer, user, or purchaser.
4. "5 56" date of manufacture. Month and year.
"C" disinterested inspector's official mark.
5. Plus mark (+) indicates cylinder may be 10% overcharged per 49CFR173.302(C).
6. Retest dates
7. 5 pointed star indicates ten year retest interval See 49 CFR173.34(e)(15).

CAUTION: This is a training aid and does not include all provisions of the regulations.

Figure 1 Marking Requirements



From The Medical Department

HMC (DSW) Dean Del Favero
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Hypothermia

As the winter season rapidly approaches, the water temperatures are beginning to decrease. One of the biggest hazards associated with diving in cold water is hypothermia. Hypothermia, by definition, is an abnormally low body temperature. Most people will show signs of hypothermia when their core temp. drops below 95 degrees Fahrenheit. Water conducts heat away from your body 25 times faster than air does, so you cool more rapidly in water versus air. A low body temperature can affect your brain function and create a major hazard while diving.

Recognizing hypothermia is critical because it can be life threatening and needs to be treated immediately. The major signs and symptoms of hypothermia include excessive shivering, fatigue, confusion, loss of coordination, slurred speech, memory loss, and drowsiness.

Treatment always consists of re-warming, but be careful of how quickly you re-warm the victim. In severe cases of hypothermia, re-warming too quickly can cause “after drop.” After drop occurs when cold blood returns from the extremities back to the core, causing the hypothermia to become worse. For this reason, always re-warm the core, not the extremities. You also want to minimize rough-handling the victim or allowing them to walk around on their own to prevent after drop and or a cardiac arrhythmia (abnormal heart beat). The first step in treatment is to remove the victim from the source of the cold and put them in a warm environment. Remove any wet clothing and wrap in warm sheets or clothes. If the signs/symptoms are severe, transport to a medical facility immediately for advanced care and observation.

The best way to treat hypothermia is by preventing it from occurring in the first place. Proper dress (wetsuit, dry suit, semi-dry suit, hot water suit), based on water temperature, should be carefully considered during the operational planning phase of your dive. Dehydration and poor nutrition are predisposing factors, so stay well hydrated and eat a well-balanced meal prior to diving in cold water. Due to its vasodilating effect on our bodies, alcohol can be a contributor to hypothermia so stay away from alcohol when exposed to a cold environment.

Remember, hypothermia is a real threat when diving in cold water. The ability to recognize when you or one of your divers is stricken with hypothermia is critical. Prevention of hypothermia is of the utmost importance when planning your dives in a cold environment. Remember, dive safe!

Medical Equipment Maintenance

A common discrepancy found while conducting our diving surveys is the lack of PMS coverage for medical equipment. MIPS for medical equipment can be found under the 6521 series. Here are some examples of this often overlooked equipment:

6521/582 Medical O2 Cylinders

6521/R48 Hand Operated Resuscitators (AMBU Bags)

6521/R43 Stretchers

6521/348 Zoll Plus AEDs

6521/606 Zoll Pro AEDs

Also, remember to keep all your paperwork on equipment that is sent out for maintenance.



Diver in the Spotlight

HM2 (DV) Matthew Schneider



Coming from Bristow, Virginia, HM2 Schneider attended Northern Virginia Community College earning his Associate's Degree in General Science. On November 29, 2006, Petty Officer Schneider enlisted in the U.S. Navy and attended HM "A" school in Great Lakes, Illinois. After graduating, he received orders to Branch Health Clinic New England in Newport, Rhode Island. During his tour in Newport, Petty Officer Schneider volunteered for a 12-month Individual Augmentee assignment to Afghanistan in support of Operation Enduring Freedom where he served as the primary medic for an Army unit responsible for mentoring Afghan National Police forces. After completing his IA assignment, HM2 Schneider received orders to Navy Diving & Salvage Training Center (NDSTC) in Panama City, Florida. Upon graduation from dive school, he successfully earned the title of Deep Sea Medical Diving Technician. From dive school, he was assigned to Ship Repair Facility-Japan Regional Maintenance Center Sasebo, Japan in November 2010.

In January 2011, SRF was tasked with conducting controllable pitch propeller (CPP) repairs on the USS Harpers Ferry (LSD 49), taking 18 days to complete repairs to all 10 CPP blades. Only 11 days later, SRF was tasked to repair the CPP system on the USS Tortuga (LSD 46) and in 19 days completed repairs to all 10 blades and the first in-water hub cone torque procedure. Petty Officer Schneider's motivation and technical competence made him an integral part of the SRF dive team and resulted in this remarkable amount of bottom time. HM2 was also SRF-JRMC Yokosuka/Sasebo Junior Sailor of the Quarter for the 1st Quarter 2011.

The Naval Safety Center would like to congratulate HM2 Schneider for conducting 49 approved dives from 01 January 2011 to 30 June 2011 and accumulating a total bottom time of:

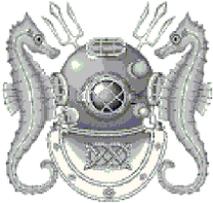
5 Days, 1 Hour & 25 Minutes!!

Each issue, we would like to acknowledge the active duty Navy diver with the most bottom time reported in the Dive Jump Reporting System (DJRS) for the last six months.



Top 20 Commands by Total Bottom Time (TBT)

| Rpt No:DV-301 | | DoD Dives | |
|-------------------|----------------|-----------|--------------------------------------|
| | | FY 11 | Run Date: 1 Oct 2011 |
| TBT in Minutes | Total Dives | UIC | Command Name |
| 833,129 | 12,907 | N0610A | NAVDIVESALVTRACEN PANAMA CITY, FL |
| 702,717 | 9,421 | N49746 | NSW BASIC TRNG COMMAND |
| 317,271 | 2,950 | N4523A | PUGET SOUND NAVAL SHIPYARD |
| 312,732 | 4,037 | W1E0C0 | SPECIAL FORCES UNDERWATER OPS SCHOOL |
| 260,994 | 3,437 | FFGS70 | AF COMBAT DIVE SCHOOL (NDSTC) |
| 255,994 | 2,999 | N41150 | NORFOLK NAVAL SHIPYARD AND IMF |
| 242,761 | 2,234 | N32253 | PEARL HARBOR NAVSHIPYD AND IMF |
| 213,300 | 2,009 | N55236 | SOUTHWEST RMC SAN DIEGO, CA |
| 145,824 | 1,118 | N08973 | SDV TEAM 1 |
| 106,171 | 1,127 | N0463A | NAVAL EXPERIMENTAL DIVING UNIT |
| 91,458 | 2,396 | N42270 | MDSU 1 (SEA) |
| 82,548 | 2,113 | N00750 | NAVSUBSCHOLGROTON |
| 82,404 | 626 | N68316 | NAVSUBSUPPFAC NEW LONDON, CT |
| 77,847 | 2,656 | N47898 | NSW DEVELOPMENT GROUP |
| 76,533 | 646 | N45598 | NAVSHIPREPFAC DET SASEBO, JA |
| 74,471 | 2,187 | N42838 | MDSU 2 |
| 69,362 | 446 | N45255 | USS FRANK CABLE |
| 50,416 | 162 | N39944 | SEAL TEAM 18 |
| 49,443 | 870 | N44466 | TRIREFFAC KINGS BAY, GA |
| 40,394 | 284 | N39589 | NSWG 1 TRAINING DET |



Top 5 Diving Safety Survey **Discrepancies FY 11**



Submarines:

1. Training:
A1X0- Training plan does not include emergency response drills.
2. Administration:
A1D1- All divers are not conducting the minimum dives every six months to maintain their qualifications.
3. Administration:
A2J0- There is not an effective means to ensure all divers are kept up to date on all the current AIG-239 effective diving advisory messages.
4. SCUBA:
A1N0- Up to date manufacturer's tech manuals were not available for all SCUBA equipment.
5. Administration:
A4B3- Commands are not submitting dives into the Dive Jump Reporting System (DJRS).

All Other DOD Dive Lockers:

1. HAZMAT:
HAZ06- When hazardous material is dispensed into a non original container, the secondary containers are not properly labeled with material name, manufacturer address, and nature of hazard. (DD form 2522)
2. Underwater Tools:
A2A0- Hoses are not in good condition and within service date. (Note: rubber hoses - 12 yrs)
3. Recompression Chamber:
A1M4- Chamber log available is not on station, lacks required minimum data, or has not been reviewed and signed after watches by diving officer and or master diver.
4. Administration:
A1L0- Preventive Maintenance System (PMS) has not been implemented for all diving and diving support equipment. If not, an FBR must be submitted for equipment lacking coverage. Equipment maintenance manuals are followed in the interim.
5. Recompression Chamber:
A101- The recompression chamber pre-dive and post-dive checklists from the U.S. Navy Diving Manual are not being used.



Summary of Recently Reported Diving Mishaps

CWO4 Robert Cassels

Email: Robert.m.cassels@navy.mil

The following are excerpts from the narrative portion of submitted WESS mishap reports:

1) Diving Arterial Gas Embolism (AGE) Mishap:

While launching a combat rubber raiding craft (CRRC) from the deck of a submerged submarine at approximately 30 fsw, an ND2 experience an "AGE." While inflating a CRRC with a SCUBA bottle, the CRRC got lively and the diver followed it to the surface. Once on the surface, the diver couldn't pull himself into the CRRC. A second diver followed to see what was taking so long and the first diver reported his left arm was weak and starting to go numb. He inflated his buoyancy compensator and was recovered by surface support. They placed him on oxygen and conducted a neurological exam revealing weakness in his left arm. After transit to chamber (about 2 minutes), the diver was pressed to 60 fsw and at 6:52 into the first oxygen period, he had complete relief. They completed a TT6 and the post treatment neurological exam revealed no deficits.

2) Arterial Gas Embolism (Age):

While participating in a night, closed-circuit channel-crossing contour dive during combat-swimmer training, an SO3 experienced chest pains. He believes that he performed a val salva while coming up for a peek and then experienced chest pains. The on-scene corpsman's initial neurological exam showed weakness in the right arm and multiple numb spots (both triceps, left jaw area, and both legs). Following a complete neurological examination, the MDV diagnosed a possible arterial gas embolism and the SO3 was moved to the dive chamber and completed TT6 followed by transfer to a local hospital.

3) Decompression Sickness (DCS) Type I:

An EOD3 participated in a working SCUBA dive for a harbor mapping project as a single diver on a witness float. He surfaced multiple times throughout the dive to coordinate with the dive boat and accumulated a total bottom time of 90 minutes at a maximum depth of 35 fsw. Approx 1 hour after the dive, the diving supervisor noticed the EOD3 was limping. After a brief interview, the diving supervisor determined that EOD3 might have Type I DCS and required further evaluation. The diving supervisor took EOD3 for evaluation by the MDV and DMO. The MDV and DMO concluded that the injury could not be positively determined to be a mechanical injury and that the patient required hyperbaric treatment. The EOD3 experienced full relief from symptoms on the second oxygen period and was treated on a TT6. The final determination for this injury was Type I DCS.

Lessons learned: Diving supervisors should carefully examine all symptoms following a dive.

4) Hypoxia:

An EOD MCM team was conducting a training dive with a single tended Mk-16 Mod 1 diver on N2O2. The diver had a malfunction and didn't initiate the appropriate emergency procedures and abort the dive. The rig failed to transition to an ATA of 1.3 PPO2 and gave the diver a flashing red on his primary display. The diver failed to recognize the warning signs and reached a max depth of 45 fsw. The diver completed his task and on ascent had difficulty breathing. The diver became unconscious before reaching the surface and was recovered by the dive team. The diver regained consciousness and was assessed by the command master diver. The diver was symptom free; however, the Mk 16 Mod 1 had malfunctioned. It had an O2 addition valve fail in the closed position and gave all the proper indications of a malfunction on the primary and secondary displays. Had the diver paid attention to the indications from the rig, he would have identified the malfunction and initiated the proper emergency procedures.

Summary of Recently Reported Diving Mishaps (cont.)

5) ARTERIAL GAS EMBOLISM (AGE):

A single-tended SCUBA diver was conducting a 30 minute dive in 60 fsw when he surfaced unconscious without his SCUBA equipment. The diver was recovered immediately by the support craft and they activated the emergency assistance plan. While transiting, the diver regained consciousness. The diver reported an uneventful dive to 55 fsw and terminated the dive when he reached 500 psi on his submersible pressure gauge.

On ascent; the diver reported increased breathing resistance and becoming fouled in lines. Somewhere between 20-40 fsw, he doffed his equipment and tending line and began a free ascent to the surface. During ascent, he lost consciousness. Medical personnel treated him for a near drowning and then a precautionary recompression chamber treatment for a possible AGE. Upon completion of a TT6, he went to a naval medical center for observation.

This mishap can serve to remind us of several of our basic skills. Proper emergency procedures should be part of the pre-dive brief, ensuring all divers understand the procedures. When faced with an emergency, it is important to remain calm and follow the proper procedures for the situation. In doffing his equipment, the diver removed his only source of air and his buoyancy compensator (BC). If possible, the diver should have freed himself from the fouling and dumped his weight. As he ascended, he may have been able to obtain a small amount of air as the surrounding pressure decreased. By keeping his BC, he could have added air, ensuring positive buoyancy to bring him to the surface. In addition, it is always important to be aware of your tending line. As a diver, you should have enough line to be able to complete your task, but not have an excessive amount of slack. Remember, your tending line follows you where ever you go; sometimes you need to trace your route back to keep your line clear. As a tender you always need to be able feel your diver on the other end.

6) Pulmonary Over-Inflation Syndrome (POIS):

A diver conducted a Mk 20 surface supplied dive to perform ballast tank work on a submarine. The dive profile was 30 fsw for 307 minutes. Three hours after surfacing, the diver noticed dive-related symptoms and performed a self-assessment of subcutaneous emphysema. The lesson to be learned here is to immediately notify the dive supervisor and medical personnel at the first sign of symptoms.

7) Hyperbaric Treatment:

During a routine EOD training dive, a PO1 was performing a search and destroy operation on an underwater training mine utilizing the Mk16 Mod 0 at a depth of 40 fsw. After a bottom time of approximately 17 minutes, he unexpectedly surfaced. The diving supervisor diagnosed a possible pulmonary over inflation syndrome (POIS) and enacted the emergency action plan. They transported the diver to the nearest recompression chamber and medical facility, approximately 500 yards from the diving site. Upon evaluation by a diving medical officer (DMO), the medical team diagnosed mediastinal emphysema and treated him with 100% O₂.

8) Near Drowning:

During dry-deck shelter (DDS) operations, the divers conducted an emergency procedure (EP) drill that required all divers to surface. They gathered on the surface and went back down when ordered. While entering the DDS, an ND1's regulator hose became fouled on a hookah manifold and pulled his regulator from his mouth and he inhaled sea water. He couldn't recover his own regulator and tried to use a hookah regulator. While clearing the hookah regulator, he inhaled more sea water and decided to surface. On the way, he tried to use his regulator, but continued to cough and choke on sea water. At the surface, he signaled for help. The dive supervisor heard him coughing and recovered him in the RHIB. The ND1 was weak, vomiting, disoriented, and short of breath. He was transported on 100% oxygen to the surface support vessel. The chamber supervisor recompressed him to 60 feet and completed a TT6 with two extensions. The initial diagnosis was a presumed arterial gas embolism due to rapid ascent and altered neurologic examination. Following treatment, the DMO's examination and review of the history changed the diagnosis to a near drowning.

Reported Diving Mishaps FY11

| Apparatus | Diagnosis | Cause | Summery |
|---------------------|-------------------|-----------------------------|---|
| SCUBA | AGE | undetermined | AGE following a No "D" dive |
| MK 16 MOD 1 N2O2 | Hypoxia | Rig O2 add valve failure | Diver surfaced unconscious following MK16 MOD 1 dive |
| SCUBA | AGE | Inexperienced personnel | Student treated for AGE after SCUBA training dive |
| MK-20 | IEB | undetermined | IEB w/ perilymph fistula |
| MK 16 MOD 1 HEO2 | Hyperbaric trauma | undetermined | MK 16 MCM diver reports chest pain 2 hours after surfacing |
| MK 25 | AGE | Inexperienced personnel | Student sustained dive injury during training |
| MK 25 | AGE | Lack of attention to detail | While diving member experienced headache and dizziness |
| MK 25 | AGE | Lack of attention to detail | Member experienced chest pain during diving evolution |
| SCUBA | AGE | Lack of attention to detail | Diving related AGE |
| SCUBA | EAR Perf | Lack of attention to detail | Student perforated tympanic membrane during training SCUBA dive |
| MK 25 | AGE | Inexperienced personnel | While diving member experienced a possible AGE |
| SCUBA | Near Drowning | Fouled | Near-drowning dive injury during SCUBA dive |
| SCUBA | AGE | Inexperienced Personnel | Diver developed AGE after diving session |
| MK 21 | DCS I | Undetermined | Member developed cutis marmorata following working dive |
| SCUBA | DCS I | Undetermined | Type I DCS following working SCUBA dive |
| MK 16 MOD 1 N2O2 | DCS II | Inexperienced personnel | EOD diver type II DCS |
| MK 16 MOD 1 HEO2 | AGE | Lack of attention to detail | MK 16 diver develops AGE |
| MK 25 | Hypercapnia | Inexperienced personnel | Student was completing a dive when he became unconscious |