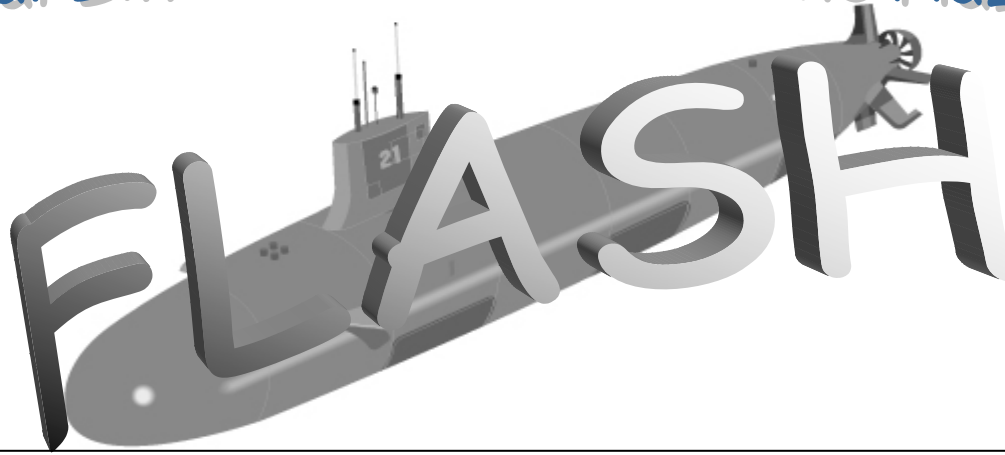


Submarine Division of the Naval Safety Center Factual Lines About Submarine Hazards



October-December 2006

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Route for Safety's Sake

CO _____ XO _____ NAV _____ ENG _____ CSO _____ SUPPO _____ MDR _____

DCA _____ COB _____ EDMC _____ 3MC _____ CPOs _____ Ship's DCPO _____

When reading through these articles, remember this is not an all inclusive list and there are many other issues that should be addressed with regard to each section's attribute checklist. Each section owner is cautioned to review the Hazard Reviews for each section. For further

information or assistance in improving your safety and/or processes go to:

<http://safetycenter.navy.mil/afloat/downloads/default.htm> - submarine.

Damage Control

MMCS (SS) Morrow

In November 2006, the annual Damage Control and Firefighting Conference was held in Norfolk, VA. Many items that affect submarine damage control is see discussed. Listed below is a brief summary of the items that apply to your damage control program.

Damage Control AEL -The Damage Control AEL for 688-class submarines is 2-880043009. This AEL was in need of update since the SCBA and steam protective ensemble have been installed on submarines. NAVSEA will update this AEL to reflect current installations. Additionally, AELs are in development for Virginia and Ohio class submarines. Regardless of the class submarine you are on, this AEL is a great source of NSN information, even if the allowances do not apply to your platform.

Explosimeter Calibration - If you have a model 2A, 3 or 5 explosimeter, then you probably already know that calibration on board is an issue. Apparently, the calibration kit for these explosimeters has been deleted without replacement. The only option at this time is to replace the explosimeter with another that is AEL supported and may not require on board calibration per PMS.

Pyro Locker Fires - Surely by now you have all seen the sign near your pyro locker that says, "Do not use water, CO2, PKP, or AFFF." I submitted an action item to the group to research a suitable extinguishing agent. Research conducted at NSWCCD Philadelphia has shown that no suitable extinguishing agent exists. So the only thing to do is follow the current guidance for your class of ship. Therefore, do not expect the signage to go away any time in the future.

Items still in progress - There are several items that are still being worked by various NAVSEA departments. NSTM 555 vol 2 revisions are under review including changes to fire hose allowance on 688 class submarines and the use of 1-3/4" fire hoses. Also, a procedure for FMAs to recertify red devil blowers that have lost their explosion proof certification should be signed soon.

If you have any questions about these items or ideas of items to submit at the next conference, feel free to call or e-mail me using the contact information listed in FLASH.

Mishap Reporting and Record keeping

HMCS (SS/FMF) Tim Juneau

With the recent issues of WESS-DS (Web enabled safety system- disconnect system) and the subsequent connectivity issues with submarines, I have been reviewing and entering mishap reports into WESS. A lot of submarines are unaware of the most current directive for reporting mishaps. In January of 2005, OPNAVINST 5102.1D, Navy and Marine Corps Mishap and Safety Investigation Reporting and Record Keeping Manual, was released. The majority of mishap reports I have seen are still using OPNAVINST 5100.19D ("Navy Occupational Safety and Health Program Manual for Forces Afloat".) Chapter A6 was deleted in its entirety by ALSAFE 043/05 (091200Z Jun 05). The major change with regards to the OPNAVINST 5102.1D is the requirement to report all mishaps and incidents that were previously only to be recorded locally. This includes data for time away from work, light, limited duty, and occupational illnesses. Chapter 3 of OPNAVINST 5102.1D covers record keeping and reporting.

Mishap records and logs, safety records, including mishap records, which include work-related injury and illness logs, safety investigation reports (SIREP), hazard reports (HAZREP), investigation records, mishap logs and other files maintained in any format for tracking safety reports and corrective actions shall be made available when review is desired by chain of command and shall be retained electronically or hard copy for five years.

Work-related injury and illness log is required for all shore, ground, and afloat activities to track personnel mishaps. This can be accomplished using WESS, other electronic

means, or hard-copy. Ensure all fields per Figure 3-1 of OPNAVINST 5102.1D are covered so you have all the data for the command's annual summary of work-related injuries and illnesses, which must be printed NLT 45 days after the end of the calendar year, signed by the commanding officer, and posted in a conspicuous location for 3 months.

Reportable mishaps are covered in paragraph 3004 of OPNAVINST 5102.1D. Here are a few that may be misreported or overlooked. 1. Mishaps associated with the secondary side of naval nuclear propulsion plant or non-nuclear components. 2. Work-related significant threshold shifts (STS) in hearing averaging 10db or more at 2000-4000Hz in one or both ears confirmed by an audiologists or occupational medicine physician as permanent and is considered to be of occupational origin. 3. Any other work-related illness or injury that involves medical treatment beyond first aid, loss of consciousness, and/or days away from work, as well as light duty or limited duty for on/off-duty military personnel. The glossary in OPNAVINST 5102.1D defines first aid treatment as a one time treatment, with the follow up treatment if required, to clean, bandage, or observe a scratch, cut, burn, splinter, sprained ankle, etc. , not necessarily provided by competent medical authority. First aid, for purposes of the instruction is not required to be recorded or reported, based on the following definition of first aid:

- a. Using a non-prescription medication at nonprescription strength is considered medical

- treatment for record keeping purposes.
- b. Administering tetanus immunizations (other immunizations such as hepatitis B vaccine or rabies vaccine are considered medical treatment).
- c. Cleaning, flushing or soaking wounds on the surface of the skin.
- d. Using wound coverings such as bandages, band-aids, gauze pads, etc or using butterfly bandages or steri-strips (other wound closing devices such as sutures, staples are considered medical treatment).
- e. Using hot or cold therapy.
- f. Using any non-rigid means of support, such as ace wraps. (devices with rigid stays or systems designed to immobilize parts of the body are considered medical treatment).
- g. Using temporary immobilization devices while transporting a victim (e.g. splints, slings, neck collars, back boards).
- h. Drilling of a fingernail or toenail to relieve pressure, or draining fluid from blister.
- i. Using eye patches
- j. Removing foreign bodies from the eye using only irrigation or a cotton swab.
- k. Removing splinters or foreign material from the areas other than the eye by irrigation, tweezers, cotton swabs or other simple means.
- l. Using finger guards
- m. Using massages (physical therapy or chiropractic treatment are considered medical treatment for record keeping purposes, or drinking fluids for relief of heat stress).

To help the command and the safety officer, the medical department representative must be familiar with the requirements of several instructions. Here are a few instructions that the safety officer should have on board. I recommend you review these instructions: OPNAVINST 5100.25B, Recreational, Athletic and Home Safety Program; OPNAVINST 5100.8G, Naval Safety and Occupational Health Program; OPNAVINST 5100.12G, Traffic Safety Program; and DoDINST 6055.7 of 3 OCT 2000, Accident Investigation, Reporting, and Record Keeping.

Electrical

EMCS (SS) Brunberg

On recent surveys I have noted an alarming increase in the number of deficient portable submersible pumps. These deficiencies could easily lead to equipment failure or electrical shock if not corrected. Even worse, the majority of these problems could have been readily identified and corrected by properly completing MIP 3000 S-1R

A correctly inspected submersible pump will be sporting a current electrical safety check tag. I frequently find missing tags, damaged tags, or tags indicating an annual periodicity vice semi-annual. The steps of the MRC are very detailed and when followed step-by-step they will identify and correct these common problems which I frequently find:

- Missing pin retaining screw on 450V plug. This screw tends to loosen and fall out over time; check for this on all 450V plugs. Without the screw the pins can push back and cause insufficient contact. This can cause a shock, fire or pump operation failure.
- Dirty or corroded pins. Poor contact may cause overheating and failure of the connection while in use.
- Loose cables at stuffing tubes on plug, switch box or pump. This causes excessive stress on the electrical connections which may come loose and become a shock hazard or prevent pump operation. Also, when the cable is pulling loose, it provides an entry point for water to ground out the unit. This is not a condition you want in a flooding casualty.
- Cuts in the cable. Never use electrical tape to fix/hide damaged cables, especially not on a

piece of gear designed to be operated underwater. Damaged cables must be replaced or repaired by an IMA.

Careful adherence to the MRC and attention to detail is the solution to most of these problems. The "R" requirement for this MRC is to perform this inspection after each use. Fortunately, the portable submersible pumps are most often used for drills. Unfortunately, this is when they get broken, unknowingly leaving them in a dangerous condition for the next use. I recommend all commands enforce S-1R inspections of portable submersible pumps prior to stowage following drills even if they were not actually operated. This is an excellent MRC on which to perform PMS spot checks.

Machine Shop Maintenance

EMCS (SS) Brunberg

The submarine machine tools are a valuable resource that can save the day in a crisis at sea. This equipment gives the capability to manufacture parts to make repairs at sea. Unfortunately this equipment can become neglected and fall into a state of disrepair if seldomly used. I encourage each of you to take a close look at this equipment and ensure it is ready to operate properly and safely when it is needed.

During recent surveys, we have seen defective machine shop equipment which if used puts the operator and anyone in the vicinity at risk of serious injury. Chapter D8 of OPNAVINST 5100.19D is the reference for proper machine guarding and inspection. This reference is readily available at <http://doni.daps.dla.mil/default.aspx>.

The mechanical systems checklist outlines the following machine guarding requirements and is available on the Safety

Center web site. The deck around the equipment is required to be marked with yellow and black striped or checkered tape to highlight a potentially hazardous area. The NSN for the yellow and black striped tape is 9905-01-342-5933 and checkered is 9905-01-342-5934. Non-skid strips are required to be covering the deck in front of each piece of equipment to provide safe footing for the operator. The NSN for the non-skid strips is 7220-00-205-0389. Each piece of equipment is required to have operating and safety precaution signs posted. The NSNs for each are 0177-LF-224-3801 (lathe), 0177-LF-225-3601 (grinder), and 0118-LF-114-3000 (drill press). Additionally, noise and eye hazard signs are required. Hazardous Noise Warning Label Form NAVMED 6260/2 (8"x10") NSN 0105-LF-004-7200 U/I PG (25s), or NAVMED 6260/2A (2"x2") NSN 0105-LF-004-7800 U/I PG (1400s), and Eye Hazard Caution Sign NSN 9905-01-100-8203 are required. The proper eye

and hearing protection is required to be readily available in the vicinity of each piece of equipment.

OPNAVINST 5100.19D (Para 0804a (15)) requires point of operation guards on metal working equipment. These are often missing on the drill press and lathe and sometimes the grinder. The government source for point of operation guards for submarine equipment is ROCKFORD SYSTEMS, IN. (800) 922-7533 OR SALES@ROCKFORDSYSTEMS.COM. Take action to ensure your equipment is properly guarded.

The bench grinders are frequently found with several deficiencies, common problems include:

- Lack of non-shatter eye shields.
- Eye shields that cannot be adjusted or reduced visibility due to excessive scratches.
- The tool rest is not properly adjusted to within 1/8th inch from the grinding wheel.
- The grinding wheel has been used for non-ferrous metal, which can cause imbalance and possible disintegration of the grinding wheel.

- The bench grinder is not electrically safe. Many grinders are missing the light bulbs under the eye shields and have open electrical sockets exposing dangerous voltages to the operator. The open light sockets are known to collect metal shavings and have been inadvertently touched when adjusting the eye shield creating a shock hazard. Additionally, many power cords are damaged or have exposed wires showing by the plug or light socket that creates a shock hazard.

Inspectors should find these items during a thorough zone inspection. We encourage you to use our checklists to supplement and improve your zone inspection program. A work candidate should be submitted for those items that can't be corrected on the spot and be included in the NAVOSH Deficiency Abatement Plan. Consideration should be given to placing the machine shop equipment OOC until repairs are made depending on the nature of the deficiencies

Mooring Lines

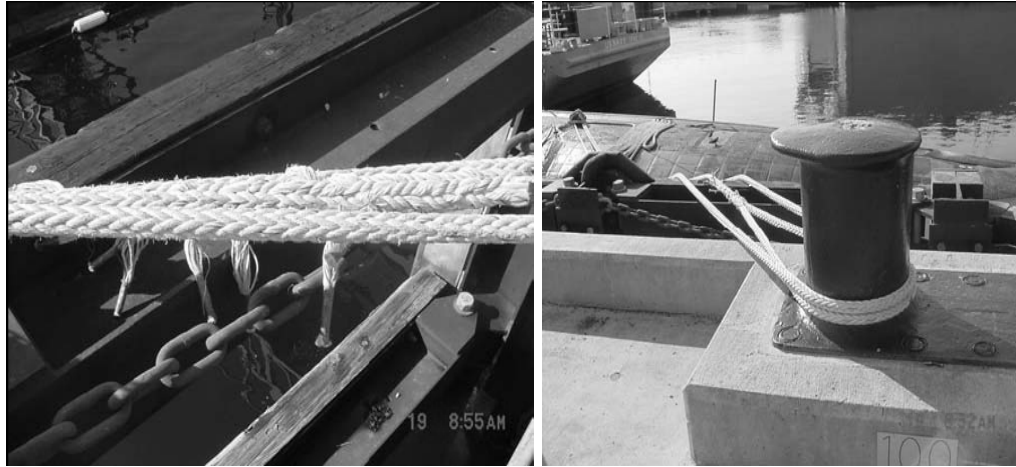
FTCS (SS) Lauber

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Currently, the submarines use two types of mooring lines, the standard synthetic mooring lines and the Aramid® mooring lines. Aramid® mooring lines, as pictured on the next page, are light blue in color and have different characteristics than standard synthetic mooring lines. Aramid® mooring lines are four strand and standard synthetic lines are three strand double-braided nylon lines. One strand on the Aramid® line is designed to break before the others as a safety feature. This helps to release stored energy gradually, associated with this are a loud bang and a cloud of smoke that aids in warning the handler of danger. Aramid® lines

have low stretch properties (6%) unlike standard synthetic mooring lines (30% to 65%).

MRC 5821/021 R-11D was added to the MRC deck in SFR 2-03, which requires ships force to inspect the tattle-tales daily on the mooring lines in use. Standard synthetic mooring lines require that tattle-tales be installed. Due to the low stretch properties of the Aramid® lines they do not require tattle-tales, although NSTM Chapter 613, Wire and Fiber Rope and Rigging, recommends installing the tattle-tale as an indicator to the user that the line has reached its stretching capacity. This R-11D check should be on the PMS schedule every day while in port.



Deck, Safety Harness & Lanyards

FTCS (SS) Lauber

To clear up any confusion and snuff out all the rumors, safety harnesses and lanyards have not changed. Yes, there are new products on the market. But, the old orange parachute, 'H' style harness (MIL-H-24460) is still the only one authorized as for the safety lanyards, the rope style with a break away is still the only one authorized. The new lanyards with nylon straps or the bungee style have not been approved for shipboard use. Good news is on the way!

New harnesses and lanyards have been tested on board the ex-USS Dolphin and USS Newport News, along with two surface ships, with great reviews. The surface community should be getting authorization for use sometime this year. However, submarines will have to wait a little longer. The fall protection work group feels more testing is needed onboard T-hulls, USS Seawolf and USS Virginia class subs.



Authorized

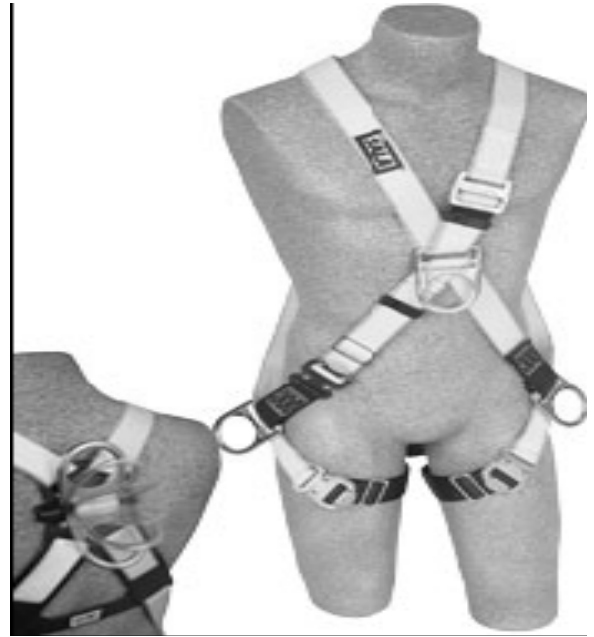


Unauthorized



Authorized

Another point of discussion is the bridge. The question was raised about wearing harnesses and lanyards in the bridge. According to the SSORM, OPNAVINST 5500.19D, and NSTM 077, the bridge and flying bridge are separate entities of the sail when working in them. Anyone out side the bridge or flying bridge requires full



Unauthorized

fall-protection equipment. Inside the bridge, it is the CO's discretion during normal underway periods. Full fall protection is required during foul weather while underway. Commands need to review these requirements in the SSORM, OPNAVINST 5500.19D, and NSTM 077.

Effective COMNAVSAFECEN Submarine Safety Advisories

- | | |
|----------------------|---|
| 17-00 201959Z DEC 00 | Contract Liberty Boat (Water Taxi) Safety |
| 1-07 291542Z JAN 07 | Effective COMNAVSAFECEN Afloat Safety Advisories for Surface Ships and Submarines |
| 2-07 021652Z FEB 07 | Topside Safety |

To download, you must be on a .mil domain terminal and have a PKI certificate. Go to our secure web site by selecting the [Secure site](#) link. Once you are on the secure site, select the [Afloat Messages](#) link, and then select the [advisories](#) you need.

Warnings, Cautions and Notes

The Flash is a newsletter that provides safety-related information to the fleet. This information is a summary of research from selected mishaps and surveys done throughout the force. This data is provided to assist you in YOUR mishap prevention program and gives advance notice of other safety-related information.

This newsletter is NOT authoritative but will cite references when available.

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