

Factual Lines About Submarine Hazards

FLASH

Submarines



January - March 2009

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Route for Safety's Sake

CO ___ XO ___ NAV ___ ENG ___ CSO ___ SUPPO ___ MDR ___ DCA ___

COB ___ EDMC ___ 3MC ___ CPO Quarters ___ 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 and for further information or assistance in improving your safety and / or processes go to:

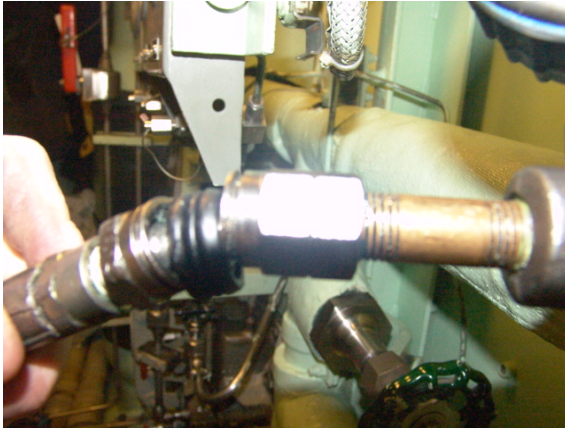
<http://safetycenter.navy.mil/afloat/submarine/index.asp>

Warnings, Cautions and Notes

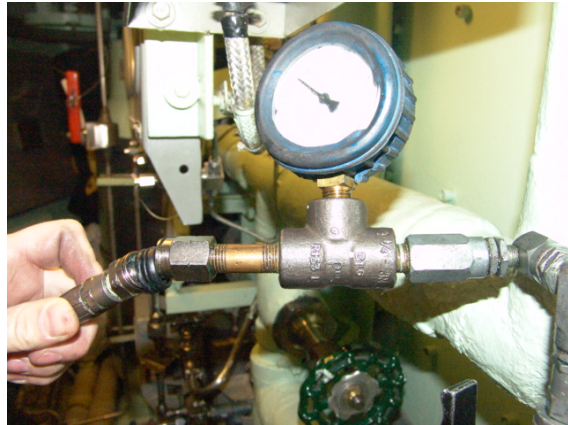
The Flash is a newsletter that provides safety-related information to the fleet. This information is a summary of research from selected mishaps and surveys done throughout the force. This data is provided to assist you in YOUR mishap prevention program and gives advance notice of other safety-related information. *This newsletter is NOT authoritative but will cite references when available.*

Periodic Maintenance System Lessons Learned

CDR Webb



Unauthorized brass piping in a High Pressure System
Unauthorized fitting adapter to high pressure hose



The gauge is broken and not calibrated

It is exceedingly apparent that the accomplishment of Periodic Maintenance is not always conducted IAW the intent of the Planned Maintenance System (PMS). In this instance, I will discuss pneumatic greasing. However, NSC has noted similar PMS related issues in every survey area.

Could improper greasing be considered a safety concern? What if this greasing caused catastrophic damage to the equipment reduced the ship's ability to fight or prevents the hatch from opening. This is not a new issue for the fleet; I have witnessed several instances where submarines failed to get underway or had to return to port due to failed equipment or rattles that were attributed to poor greasing. Over the past eighteen months, 78 crews were surveyed and only 1 had 100% correctly configured pneumatic greasing equipment, IAW the Submarine Greasing Manual T6350-AA-HBK-010 and PMS card. In most cases: Maintenance workers had not identified these equipment deficiencies and the command leadership was unaware of the problems. No technical feedback report (TFBR) submitted, No parts on order and No ESL entries made. In almost every case: No monitoring of pneumatic greasing was conducted by an officer in the past year.

Several Sailors commented that they had been sent to conduct PMS the first time on their own and neither the divisional LPO nor LCPO had ever witnessed or been involved in the training or personally verified that the young Sailor performing the maintenance was achieving quality results. Let's get back to the basics! "Deck plate CPO training and leadership" What would be better: sitting through another death by power point on greasing or taking the division on a field trip and actually conducting step-by-step training on all aspects of maintenance?

I challenge Safety Officers, Department Heads, Division Officers and 3M coordinators to reinvigorate your PMS monitoring program. Require 100% verbatim PMS accomplishment and inspect what you expect by conducting deck plate monitoring. Don't pick that weekly PM that takes 10 minutes. Monitor that tough out of the way maintenance, you may just learn something about your ship and your people. I guarantee that it's worth your time, and if the crew sees that it is important to you, it will be important to them.

Damage Control MMC (SS) Fannin

The Force Revision that comes every quarter has been creating some questions around the fleet. The first question that came up was about the 36M-1 for hydrostatically testing the fire hoses.

Question 1: Does the hydrostatic testing requirement of NSTM 505, section 505-11.1.3 and JFMM Volume IV, Chapter 9, Appendix B through D apply while testing the fire hoses? NSTM 505 does not apply to fire hose. NSTM 505.11 sections are applicable to the piping systems listed and as referenced in 505.11.1.1. Requirements of 505.11.1.3 are applicable to the piping systems cited in the preceding paragraphs of 505.11. Fire hoses also are not governed by the requirements of NAVSEA Technical Directive S6430-AE-TED-010, Volume 1 cited in 505.10.6. The Appendices in the JFFM are also for piping systems and supplement information contained in NSTM 505. Fire hose testing mirrors the requirements for commercial testing of fire hoses in National Fire Protection Association (NFPA) Standard 1962.

Question 2: What test gage accuracy is required? Test gage(s) range and accuracy. Typically hydrostatic testing is conducted with two gages with the proper range and accuracy. The two gage requirement is part of NSTM 505.11.3. and applies to piping system hydrostatic testing and is not applicable to fire hoses. The gage on the test rig cited in the MRC is required to be calibrated under general guidance for test devices.

Question 3: Are two relief valves (automatic and manual, may be two manual relief valves) required? Can the nozzle serve as one of the reliefs? The two manual relief requirements are not applicable to fire hoses and also a condition of NSTM 505.11.3.4. The pump test rig cited in the MRC for hose testing is equipped with means to relieve pressure. The nozzle installed on the hose could be used as a relief, but is intended to allow for removal of trapped air in the hose(s) being tested. Relief valves are needed in piping systems to prevent pressurizing to pressures that could result in catastrophic failure of the piping and personnel injury. The Navy fire hose is rated to 300 psig test pressure and 600 psig burst pressure, failure modes could include hose wall burst, hose to fitting separation or end fitting (fitting with nozzle or cap) separation. The hose is constrained as required by the MRC, so that failure generally results in leakage of the test water. Pressure is lost immediately upon a sudden failure, and testing is ended and pressure relieved in a leakage failure. NFPA 1962 recently added guidelines for hose inspection during test that restricts personnel from straddling or walking in front of the free end of the hose when pressurized. Personnel are also warned to inspect pressurized hoses during testing with a standoff distance of fifteen feet. I am working to have the warnings added into PMS requirements for implementing these safety precautions.

If you have any questions about these items or ideas for items to be submitted in the next flash, feel free to call or email me using the contact information at the end.

Medical

OXYGEN ANALYZER AND EXPLOSIMETER HMCS (SS/AW/SW) Bonneville

Over the past year the Naval Safety Center has received multiple questions on Oxygen Analyzers and Explosimeters.

Here is the interim status and a quick update from NAVSEA: NSWC Phila. C/926 serves as the ISEA for Servomex Oxygen Analyzer (NIIN 01-101-3079), Explosimeter Model 3 (NIIN 01-446-5625), and the Explosimeter Model 5 (NIIN 01-029-9375). Both the Servomex and the Explosimeter are no longer being supported by their respective manufacturers. The PhD Ultra (NIIN 01-467-8854) and the PhD6 that will be replacing them shortly are fully supported on four gas (O₂, LEL, CO and H₂S) analyzers used aboard surface ships. Although NSWC Phila. C/926 has test data that shows the PhD ultra CO and H₂S sensors will not work properly in the submarine atmosphere due to the hydrogen background, the data also shows that the oxygen and Lower Explosive Limit (LEL) sensors will work properly aboard a submarine. NSWC Phila C/926 has worked with the manufacturer of the PhD Ultra to create a new part number that corresponds to a unit loaded only with O₂ and LEL sensors. A new APL will be created for this part number and identified for submarine use. This unit will serve as the replacement for both the Explosimeter (LEL sensor) and the Servomex (O₂ sensor). Further information, such as the new APL number, will be provided as it becomes available. NSWC Phila C/926 has been informed that in place of the Explosimeter, the OEM is shipping the Solaris, MSA part number 10048214, equipped with oxygen and LEL sensors. until the PhD Ultra becomes available to the submarine fleet, the Solaris is an acceptable replacement for the discontinued Explosimeter.

Safety Officer

LCDR Beals

Hello Fellow Submariners!

I am LCDR Beals, newly transferred to the Naval Safety Center. I am happy to be a part of the safety team and I am looking forward to making a difference in the area of submarine safety and mishap prevention. I am a Submarine Engineering and Repair LDO and was an A-Ganger in my past life. I am the Submarine Safety Officer Course program manager. Additionally, as a member of the Safety Center Survey team, I am responsible for assessing the areas of General Departmental, Safety Officer and HAZMAT.

This article addresses HAZMAT (HM), more specifically HM Management and the Material Control Program (Atmosphere Contaminants). As a HAZMAT Coordinator assigned to a Fast Attack during a major availability, I learned a few things the hard way.

I made the following mistakes:

1. I waited until the last month of the availability to restart the Atmosphere Control Log.
2. My HM inventory was not complete and our storage was terrible. Our HM lockers were not properly labeled. Incorrect containers were used and the containers were not properly labeled. In some cases we had not segregated.
3. Divisional inventories revealed everyone had Prohibited, Restricted and Limited use materials that I hadn't issued Atmosphere Contaminant labels for and taken action to remove them from the boat.
4. Divisions were stock piling materials that could be consolidated or the amount carried reduced to the minimum required for a deployment.
5. Our folks were not maintaining MSDS sheets for all the material maintained in the space, rendering our spill response and medical treatment plans ineffective.

6. Secondary containers were not labeled properly and sometimes used for the wrong thing.

Being "can do" submariners, we pushed through this nearly impossible task while conducting training, testing systems, completing dock trials and fast cruise in order to get to sea trials.

Lessons Learned:

1. Restart the Atmosphere Control Log about 8 weeks prior to the end of the availability. (Sub Atmosphere Control Manual, Chapter 7)
2. Maintain a HM inventory through out the availability using the Submarine Hazardous Material Inventory and Management System (SHIMS). At a minimum get monthly locker inventories from the divisions. CHOP manages SHIMS.
3. Conduct a 100% inventory of HM every year. The Sub Atmosphere Control Manual requires a semi-annual inventory of all Atmosphere Contaminants. Combine these two events before you go to sea. (see OPNAVINST 5100.19E, Volume 3, Chapter D15) - Locker label NSN 9905-01-342-4851 (10"X7") or 9905-01-342-4859 (3"X5")
4. Audit the HM program using OPNAVINST 5100.19E Appendix B3-D prior to sea trials to ensure your program is functional and the boat is safe.
5. Conduct training on HM and used HM handling IAW OPNAVINST 5100.19E paragraph B0303. Include the requirements for storage in this training.
6. Post the NAVOSHENVTRACEN Compatibility Chart Rev 09-03 outside each HM Locker. The chart is located in the Hazardous Material Users Guide, OPNAVINST 5100.28

Did you know there are additional labeling requirements for small secondary containers? What if the container is too small to write all the required information or affix a label? Take a look at the note following OPNAVINST 5100.19E, paragraph D1502.e. (1). Where is your additional information kept? Do your troops know where it is and how to use it?

References:

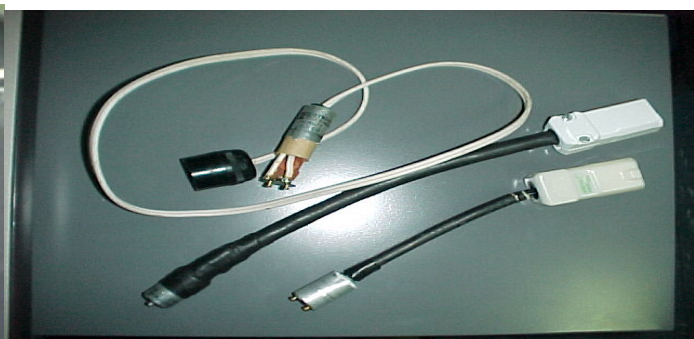
1. OPNAVINST 5100.19E, Chapter B3 and D15
2. Nuclear Powered Sub Atmosphere Control Manual S9510-AB-ATM-010, Vol 1, Rev 4, Chap 7
3. SMCL Web Site Link: <https://smcl.dt.navy.mil/login.cfm> (Requires CAC and account) The Supply Officer and SKC should have access.
4. OPNAVINST 5100.28, Hazardous Material Users Guide

Electrical - Electronic ETCS (SS) May

THE GOOD (METAL) THE BAD (PLASTIC) AND THE UGLY (UNAUTHORIZED JURY RIGS)



Plastic Metal



Jury Rig

Why do we continue to come aboard and find plastic starters installed in fluorescent lights after all of us have previously reported they were removed? There are two possibilities:

1. Personnel did not complete the inspection and replacement properly. Personnel may have misunderstood the requirements, were not properly supervised or tracking was not used to ensure all

lights were inspected and plastic starters replaced. None the less, all the plastic starters were not identified and replaced in our initial attempt.

Or

2. Personnel have plastic starters in their bench spares and are installing them after the fact. We know that the supply world has purged all plastic starters from the Supply system. The threat of electrical shock is real! Sailors have experienced crumbling plastic starter casings when normal pressure was applied in an attempt to remove them. The potential for electrical shock is likely to occur in these cases due to exposed electrical components. COMSUBFOR and COMSUBPAC issued message dtg 101224Z SEP 2007 discontinuing the use of plastic starters for fluorescent lights. To eliminate this electrical safety hazard as quickly as possible, all SUBLANT and SUBPAC afloat units were directed to inspect all light fixtures onboard and replace plastic starters with the metal starters and report completion to their ISIC NLT **30 November 2007**.

If Sailors must remove a plastic starter, they shall notify the Command's electrical division, ensure all tag-out procedures are in accordance with current shipboard instructions, de-energize the lighting fixture circuit and tag "out of service", and consider all electrical leads energized until positively proved they are de-energized.

Our safety surveys are finding a good majority of submarines have not completely removed the unauthorized plastic fluorescent light starters so shock hazards still exist. The Naval message that was sent out can be found on our web site www.safetycenter.navy.mil. Recommend taking another look at your ship's lighting, top to bottom fwd to aft, and ensure all plastic starters are removed.

Combat Systems / Deck FTC (SS) Cahill

During the past couple of surveys, I have noticed personnel are not aware of the newly issued NAVSEA Planned Maintenance System (PMS) card for Otto Fuel Spill Kit Inventory MIP: 7500/ADC (R-5). Previous Force Revisions (FR) for the Otto Fuel Spill Kit Inventory did not have a Maintenance Requirement Card (MRC) MIP: 7500/ADC (R-5**).

The FR 1-09 MRC does not provide all the references required to complete the inventory. The best guide is located in OD 44979 Appendix B and C. The Naval Safety Center has noted the discrepancies and submitted a Technical Feedback Report (TFBR) for resolving this problem.

OD 44979 for Weapons Emergencies has inventory requirements contained in the publication. Additionally, while reviewing the tools and support equipment section I found National Stock Number (NSN) errors and some required parts are missing from the listing. The Naval Safety Center has submitted Manual Change Requests for corrections to 688, 726, and 21 Class submarines. The 774 Class was not covered due to developmental concerns from NAVSEA.

As a reminder, each individual command is responsible for ensuring PMS is conducted properly and problems are referred to higher authority for resolution.

During review of technical documentation and Allowance Equipage Lists (AEL), I have noticed personnel are not aware of processes or websites for updates. I will include some sources for these updates.

The current version of S6340-AA-MMA-010 Otto Fuel II; Safety, Storage and Handling Instructions is Revision 6 dated 28Feb07. This publication is stored and maintained at the Technical Data Management Information Storage (TDMIS) URL: <https://nsdsa2.phdnswc.navy.mil/> website. The website requires Common Access Card (CAC) and log-in / password for access. Use CAC for website display and follow directions for account requests.

Allowance Equipage Lists (AEL) can be requested from URL: <https://nicppla11.fmso.navy.mil/WarningDOD/index.aspx?location=/APLAEL/aplael.aspx> (Require CAC and .mil address which accepts attachments). The page will ask for Requestors name (Example

use FT3 (SS) Joe. E. Sailor), Requestors E-mail (Must be .mil and accept attachments - the AEL will be a PDF file), Requestors telephone (Must use official telephone number), and Requestor Activity select other (Place your ship name in this box). The screen will have the following fields for entry APL/AEL number (Example enter 0-006350027), Computation Method leave blank, MCC code leave blank, Maintenance Level enter 3 for submarines, Electronic Table leave blank, and NSAF UIC leave blank. The request will be e-mailed back to your e-mail address in the form of a PDF document containing single or multiple numbers depending on amount requested or personnel pulling data. The AEL will be for multiple submarine classes and personnel will have to use columns for correct class. The AEL will be dated under identification number block with the date of your request. The identification number date is not the Revision date. The Revision date will normally be found under characteristics as REV DATE - APR 08. The revision date may appear as just 04 -08 or not be listed.

Defense/Federal specifications and standards (MILSPEC) is located at [URL: http://assist.daps.dla.mil/quicksearch/](http://assist.daps.dla.mil/quicksearch/) (Example for Document ID: mil-i-17244e). This website is useful for ensuring submarine obtains correct bi-metallic thermometers from supply.

Naval Air Technical Data and Engineering Service Command (NATEC) NAVAIR Manuals can be requested from URL: <https://my Natec.navair.navy.mil/> (Requires CAC and Certificate registration to view website). This website is useful for ensuring your HELO Transfer Kit is complete with required documentation.

Naval Ordnance Safety and Security Activity (NOSSA) is located at URL: <https://nossa.nmci.navy.mil/nrws2/> (Requires CAC and log-in / password for documentation access). This is useful in updating NAVSEA OP 4 changes.

Submarine Maintenance Engineering, Planning and Procurement Activity (SUBMEPP) is located at URL: <http://www.submepp.navy.mil/>. This website is useful in updating COMFLTFORCOMINST 4790.3 Joint Fleet Maintenance Manual and Tag-Out Users Manual (TUM).

Common Problem Reporting System (CPRS) is located at URL: <https://cpr.npt.nuwc.navy.mil/>. This is useful in viewing, submit, and update official problem data for LCS PRs, SSN PRs, TRIDENT PRs, SEAWOLF PRs, Ranges STR, TFBRs, OD 44979 MCRs, TMDERs, AN/SQQ-89 PRs, CSA-RAN PRs, RCS-RAN PRs and Heavyweight Torpedo RPRs. The site also contains current TOCSIN newsletters.

Effective COMNAVSAFECEN Submarine Safety Advisories

2007

31 7-07 081545Z AUG 07 Guidance on NAVSEA Approved Safety Harnesses and Climber
Safety Sleeve Recall Interim Aloft Procedures

2008

34 3-08 211439Z OCT 08 SCBA Repair Facilities

To download advisories, you must be on a .mil domain terminal and have a PKI certificate. Go to our Naval Safety Center Website <http://www.safetycenter.navy.mil/index.asp>, on the left hand side of screen click DKO Secure Site. Once are on the secure site page, click <https://www.us.army.mil/suite/page/418385> and this takes you to the log-in screen for DKO/AKO. If, you do not have an account then register for an account (This is a self registration process). If, you have an account select our direct link <https://www.us.army.mil/suite/page/418385>. On the left bottom of webpage screen click on the file named Secure, Afloat, Messages, and Afloat Safety Advisories.

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