The Submarine Division of the Naval Safety Center Presents:

FLASH

Factual Lines About Submarine Hazards

May 2003 – June 2003

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Farewell

Once again we, at the Naval Safety Center, must bid a fond "adieu" to one of our own. ETC(SS) Craig Houck has been serving as submarine safety analyst, operational risk management facilitator, and FLASH editor (Jan 01-Apr 02). For those of you who work 3M on the waterfront, be warned, Mr. Houck will be a TYCOM 3M assessor. We extend our best wishes to Mr. Houck and his family. "Trailer park Tuesday" just won't be the same. "*Each man has his own vocation; his talent is his call. There is one direction in which all space is open to him.*"

Hazardous Material Shelf-life Management

HMCS(SS/SW) Flannery

The proliferation of hazardous waste has become a serious problem for the Navy. It is harmful to the environment, unsafe for personnel, difficult to handle, and disposal is extremely expensive. You can be instrumental in helping the Navy solve the problem by recognizing its seriousness and taking immediate action within your command to minimize the generation of used hazardous material.

An effective waste minimization program must include active life-cycle management of hazardous material before it turns into hazardous waste. One of the best and highest payback methods of doing that is, the establishment of a good shelf-life extension management program for hazardous materials.

Approximately 70 percent of the hazardous material turned in for disposal, is unused and in its original packaging. It has simply reached the end of its designated shelf life before being used. Your command can do a lot to help the Navy change that situation.

All shelf-life material is either Type I or Type II. Approximately 10 percent is Type I and cannot be extended. Ninety percent, on the other hand, is Type II with an extendable life. Instead of automatic disposal when the shelf life on Type II material expires, every effort must be made to extend the life of the material until it gets used.

Shelf-life extension programs are the single most neglected aspect of shelf-life management. Organizations (users as well as suppliers) generally do not conduct in-house inspections or tests to extend the shelf life of their material. They either don't extend shelf life at all or rely on the monthly DOD Quality Status Listing (QSL) to tell them what shelf-life material can be extended and for how long. When the QSL is used, extension efforts often consist solely of re-marking material with the new expiration dates. There is nothing wrong with that and it needs to be done. However, the QSL primarily lists only the DLA-managed items that require laboratory testing. Items that require only visual checks are not listed and neither are GSA-managed items. There is a DOD initiative underway to extend the QSL into a DOD listing that will include material managed by DLA and all military services. But it will be some time before it becomes fully integrated and it will never list items that require only visual checks to do extensions.

In-house inspections and tests are good enough for most of your material. It is, however, often difficult for personnel to find descriptions of the specific inspections or tests required to extend the shelf life of particular items. There is no single source of test information to go to. Individual product specifications are a primary source of inspection and test information. Also, material safety data sheets (MSDS) and Federal Standard 793 guidelines are other sources that have guidance on what tests need to be conducted to extend the life of a particular product. Shelf-life extension inspections and tests on hazardous material

must rely on locally developed instructions and procedures. In the absence of specific guidelines, use good, old-fashioned common sense. For most Type II material, shelf-life extension tests are not complicated, DO NOT require laboratory testing, and can be done on the spot by your hazmat technician (NEC 9595, usually your SK). They usually are nothing more than visual checks for damage and or deterioration.

Do you still need further assistance? Assistance with shelf-life questions and problems is available from Navy and regional shelf-life coordinators. They have been placed at the major CONUS homeports and ports to assist all Navy commands in their area. They can assist with shelf-life extensions, offload, and disposal problems, or any other aspect of shelf-life management. Their goal is to reduce hazardous waste disposals by increasing consumption of hazardous materials. Shelf-life assistance is a big part of that goal.

With all that said, shelf-life management has the benefit of reducing the costs for disposal (which usually costs more than the cost of the product) and minimizes purchasing additional hazardous material to replace expired material.

Counter Measures?

MMC(SS) Shull

What is the proper extinguishing agent for Class D (Lithium Hydride) fire in the countermeasures locker? The answer has always been Purple-K Powder (PKP) fire extinguisher. Are we correct in this assessment? Let's look at some of the facts.

- In 1985, SHIPALT SSN-3153 replaced the PKP fire extinguisher in the trash disposal unit (TDU) room with an aqueous film forming foam extinguisher (AFFF), leaving a PKP in the galley.
- In 1994, SHIPALT 688-3095 replaced the galley PKP with an AFFF extinguisher. TRIDENT TZ-778 did the same.
- In Jul – Sep 2000 issue of FLASH, the use of PKP on a Class D fire was identified by NAVSEA as a significant safety issue. In that, the use of PKP on a lithium hydride (LiH) fire will result in a violent reaction, fire intensifying, the evolution of hydrogen gas (H2), and the potential for an explosion.
- There are currently no Class D firefighting agents approved for use on Navy ships or submarines.
- The MSDS sheet on LiH calls for a graphite-based extinguisher **(LITH-X)**.
- The proper application of the correct Class D firefighting agent to a burning device would likely create a greater hazard to the crewmembers.

So what kind of technical guidance do we have? COMSUBLANT/COMSUBPACINST 8500.4B, Conventional Weapons Manual (CWM) and SW050-AB-MMA-010, Pyrotechnic, Screening, Marking and Countermeasure Devices, both conflict with the guidance provided in S9086-S3-STM-020/CH-555V2R7 Naval Ships' Technical

Manual (NSTM) Chapter 555 Vol. 2 Submarine Firefighting which correctly states,

WARNING

"Do not use water, carbon dioxide, PKP dry chemical, or aqueous film forming foam to fight lithium hydride (LiH) fires. These agents will react violently with LiH and may produce toxic gases."

NAVSEA has made the following recommendations to COMSUBLANT for the CWM:

1. Replace existing paragraph 3302.1.e with *"Do not use water, carbon dioxide, PKP type dry chemical, or AFFF to fight lithium hydride (LiH) fires. These agents will react violently with LiH and may produce toxic gases."*
2. Replace existing paragraph 3302.1.f with *"Guidance for fires involving burning countermeasures is provided in reference 139."*
3. Replace existing paragraph 3302.1.g(2) with *"The appropriate guidance for fires involving lithium hydride."*
4. Replace existing paragraph 3302.1.g.(3) with *"The hazards of using water, carbon dioxide, PKP type dry chemical, or AFFF fire suppression agents on burning lithium hydride."*
5. Add new reference 139: *NAVSEA S9086-STM-020/CH555V2, Naval Ships Technical Manual, Chapter 555 Volume2, Submarine Firefighting.*

We are also awaiting a message ACN to be released to clarify stowage/protection requirements for countermeasures and a message to inform afloat units not to use PKP for LiH fires.

We continue working to resolve this issue. More information will follow.

PPE for Daily Specific Gravities and Routine Sampling of Battery Electrolyte

EMC(SS/SW) Seplak

If you have ever done any work in the battery well you will be able to attest to the fact that it is hard to work, especially taking specific gravities or a sample, without getting exposed to some amount of battery electrolyte. If a sufficient quantity were to get into your eye then according to the material safety data sheet (MSDS) from GNB "Electrolyte (sulfuric acid) vapors or mist can cause severe irritation, burns, cornea damage and **possible blindness**." So, taking this into consideration, isn't it prudent to take a second and put on chemical goggles prior to entering the battery well? THE ANSWER IS **YES!!!**

Recently, there has been some confusion on what personal protective equipment is required when taking a routine sample or daily gravity on submarine storage battery. There is are several documents that give the requirements for working with battery electrolyte: the SSORM, OSHA regulations, MSDS, NSTM 223, NSTM 670, PMS maintenance requirements, and OPNAVINST 5100.19D. The confusion comes in when personnel refer to the Joint Fleet Maintenance Manual (JFFM) and read section IV-III-4A.1.J(1) that says, "The use of goggles is not required for routing sampling or specific gravity measurements." **This confusion is now eliminated**… COMFLTFORCOM issued an advance change notice to the JFMM (DTG R 161711Z MAY 03). The ACN instructs commands to revise

the section discussed above and insert new wording "**For Routine Specific Gravity Measurements Or Sampling Electrolyte, Wear Appropriate Eye Protection**"

So if you work in the battery well take a minute and review the proper safety procedures as set forth in the documentation listed above, and make sure the proper PPE is available in the vicinity of the well and it is in good condition. If you're a supervisor, take a minute at morning quarters or during divisional training and ensure that your personnel are familiar with PPE requirements and eyewash stations operation.

If you have any question about these requirements contact EMCS(SS) Page (SUBFOR electrician) at (757) 836-1260 (DSN 564); or EMCM(SS) Baker (SUBPAC electrician) at (808) 473-5577 Ext. 130 (DSN 315).

Submarine Life Preservers

FTCM(SS/SW) Clements

We now have an updated AEL for all authorized submarine life preservers. AEL 2-330013101 was recently updated to reflect the addition of the new Sterns MK 1 float coat and the new Sterns inherently buoyant life preserver. Note (1) of the AEL states, "Subs with the Mk 5 are to continue utilizing them until no longer serviceable, at which time the new Sterns model Mk 1 life preserver is to be requisitioned as a replacement".

The new Mk 1 can be ordered as a complete unit or in pieces. The Kapok life jacket has also been replaced with the new Sterns inherently buoyant life jacket. Note (9) states, "Existing mil spec life preserver (Kapok) is no longer stocked in the supply system; users of this life preserver may continue to use and repair until no longer repairable and then replace with the new Sterns inherently buoyant life preserver".

The repair parts for the Kapok are also on this AEL.

N-1 Electrical Shock Hazard Continues

EMC(SS/SW) Seplak

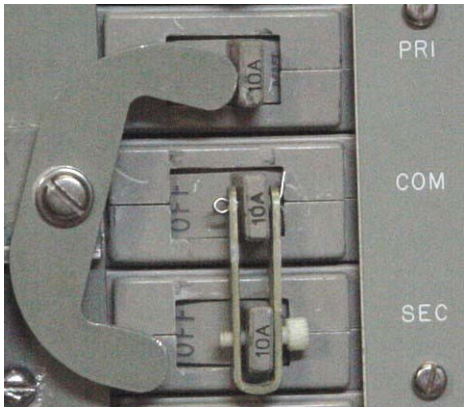
During the past six years, one of the top discrepancies we have found on our safety surveys has been the failure of the navigation lighting panel N-1 to meet the specification put forth in NAVSEA documentation.

Here's a little bit of history on this issue: In August 1996, a shipmate aboard a submarine received an electrical shock when he touched one of the circuit breakers in N-1. The Sailor was showing the lighting panel to a tour group. The problem was that the panel did not comply with the vendor's drawing. INSURV inspection reports identified this potential electrical shock hazard in panels constructed by the Whitmore Company in June 1994. NAVSEA released a message in April 1996,

COMNAVSEASYSCOM 091215Z APR 96 (NOTAL), directing squadrons to have ships inspect their navigation lighting panels for compliance with the vendor's drawing pending issue of an alteration document to fix this problem.

The potential electrical shock hazard is the result of the panel's unique construction. Metal stiffeners are used in the handles of some of the circuit breakers in N-1. The metal stiffeners can provide a current path to the circuit breaker interlocking yoke, causing a potential shock hazard. Non-conducting bushings and screws are used to insulate the circuit breaker handle metal stiffeners and the circuit breaker interlocking yoke. Technicians and supervisors must be aware of this design feature to ensure the electrical shock hazard is eliminated and is not re-introduced by any maintenance performed on the panel.

Alteration and Improvement Item (A&I) N-3171 (applicable to SSN 690 through 773) was issued in October 1996. Ship Alteration Item (SHIPALT) TZ-0856 (applicable to all 726-class subs) was issued in March 1997.



The alteration documents contain the procedure used to verify non-conducting bushings (NSN 9G-5970-01-094-1582) and screws (NSN 9G-5970-01-094-3317) installed. In addition, they outline the specifications for the warning sign required on the panel cautioning that removal of the non-conducting bushings and screws creates a potential shock hazard.

Who Took the Balls Out? Woof! Woof! Woof!

FTCM(SS/SW) Clements

One of the most frequent discrepancies encountered during submarine deck division surveys are missing auto-inflating life balls. Everyone is familiar with the auto-inflating life ring but very few know about the auto-inflating life ball. The life ball, when activated, inflates an orange plastic ball with a radar reflector inside. This adds visibility to a man overboard and gives the added ability to track the man with the ships radar. This safety device was issued to both Atlantic and Pacific fleets via A&I N1970 and is applicable to all submarines except SSBN 726 Class. The life ball is attached to the life jacket when personnel are topside working or standing watch while underway. The A&I provided 10 balls for life jackets and two for each life raft. The NSN for the life raft model, UN-60/0 is 01-374-5154 and the NSN for the life jacket model, UN-30/AW is 01-334-7777. Repair parts can be found on the AEL 2-120014061.

The Chicken-head Award

MMC(SS) Shull

The Chicken-head Award is dedicated to those unexplained and sometimes even bizarre items we have seen during our travels. If you would like to submit photos for Chicken-head Award consideration, contact me at (757) 444-3520 Ext. 7091 (DSN 564), or e-mail at jeffery.shull@navy.mil. We will not publish who or where the photo was taken (the intent isn't to embarrass anyone). The whole idea of this is to help keep submarines aware of potential hazards and to clean up our own mess before someone else does.

We found these severely corroded countermeasures during a trip conducting safety surveys. We found it difficult to pick a winner between the two.

Welcome Aboard

Welcome aboard to LT Victor H. Romano. LT Romano reports to the Naval Safety Center as the Assistant Submarine Division Head in Code 38. LT Romano received his commission as a limited duty officer in 1999. Previous duty stations include: USS George Washington (CVN 73); USS James K. Polk (SSN 645); TRF Planning Dept Nuclear QA Kings Bay, GA; USS Trepang (SSN 674); USS Henry M. Jackson (SSBN 730 B). You can reach LT Vic Romano at (757) 444-3520 Ext. 7201 (DSN prefix 564), and e-mail at victor.romano@navy.mil.

Effective COMNAVSAFECEN Submarine Safety Advisories

17-00	201959Z DEC 00	Contract Liberty Boat (Water Taxi) Safety
1-03	071425Z JAN 03	Effective COMNAVSAFECEN Afloat Safety Advisories for Surface Ships and Submarines

To download you must be on a .mil domain terminal. Go to our secure web site by selecting the DoD menu link. Once you are on the secure site select the Afloat Messages link and then select the Submarine effective advisories link.

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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 are 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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