The Submarine Division of the Naval Safety Center Presents:

FLASH

Factual Lines About Submarine Hazards

June 2002 – July 2002

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Editor's Thought

MMC(SS) Shull

This issue is my first as editor and it will be a challenge to fill my predecessors shoes. I hope to continue to bring to you the most current information available. I encourage all of you to provide me with your comments, suggestions or concerns. Remember that we as submariners are taught always to maintain a questioning attitude. This is one of the principles that keep us safe. Another is don't be the most senior person with the knowledge of a problem (Cover your own six). When it comes to safety, **common sense is authorized and desired!**"

WHERE O' WHERE DID MY PERISCOPE GO!

MMCS(SS) Downham

Recently three submarines experienced catastrophic damage to periscopes when poor maintenance practices and supervisory follow-up caused the periscopes to fall the entire distance into the scope well and impact the periscope bumper assembly. Could this have been prevented? A resounding **YES** should be heard.

The first occurred when a periscope fell to the bottom of the scope well when the lifting rod nut backed off and caused the hydraulic fluid to vent off allowing the scope to fall. The set-screw used to hold the hoisting rod nut in place was not properly reinstalled during maintenance.

The next was caused when a lack of system knowledge prevented the proper clamping of the scope barrel in preparation for periscope hydraulic system maintenance. Instead ships force relied on the clamp that was presently installed on the fairing to prevent the scope from falling when the hydraulic system was depressurized. Once the system was tagged out and depressurized gravity took over and the scope plummeted to the bottom of the scope well.

The latest incident occurred when the wrong mast clamp was incorrectly authorized for removal by ships force and the Shore Maintenance Facility. Since the clamp was authorized to be removed, it was. This in turn resulted in the laws of gravity taking hold, the scope dropping, and impacting the bottom of the scope well.

Now, what could have been done to prevent the millions of dollars of equipment damage and damaged careers. **Proper maintenance procedures and Operational Risk Management (ORM) would have prevented these mishaps.**

OPERATIONAL RISK MANAGEMENT

MMC(SS) Shull

Background

All naval missions, as well as daily routines, involve risk. Everything we do, both on and off-duty, requires some degree of decision making that includes risk assessment and risk management. The naval vision is to develop an environment where every leader, Sailor, Marine and civilian is trained and motivated to manage risk in everything they do, both in peacetime and during conflict, thus successfully completing all operations with minimum risk.

What is ORM?

ORM is a decision-making tool used by people at all levels to increase operational effectiveness by anticipating hazards and reducing the potential for loss, thereby increasing the probability of a successful mission.

Benefits of ORM

- Reduction in Injuries and Fatalities
- Reduction in Material and Property Damage
- Effective Mission Accomplishment

How ORM Works

ORM is a closed-loop process of identifying and controlling hazards. It is applied on one of three levels depending on the situation.

- Time Critical
- Deliberate
- In Depth

It is guided by four principles.

- Accept risk when the benefits outweigh the cost.

- Accept no unnecessary risk.
- Anticipate and manage risk by planning.
- Make risk decisions at the right level.

It is accomplished in a 5-step sequence.

- Identify Hazards
- Assess Hazards
- Make Risk Decisions
- Implement Controls
- Supervise

ORM training requires one day to complete and is in no way related to a safety survey. We can tailor ORM training to each command. If your command hasn't had ORM training, contact the Naval Safety Center Submarine Division (Code 38). We look forward to visiting your command to provide your crew with operational risk management (ORM) training.

Phone: (757) 444-7089 (DSN 564)
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Email: afloat@safetycenter.navy.mil

"Risk management is no accident."

Heat Stress Program Requirements

HMCS(SS/FMF) Darnell

Here's some information to keep you up to speed on the requirements of the heat stress program contained in OPNAVINST 5100.19D w/ch1. The information, addressing placement of hanging dry-bulb thermometers, is provided so you can ensure your DB placement is in compliance. The paragraph addressing DB temperature recording and trigger points for conducting WBGT surveys is provided because many commands are not in compliance as indicated by recent survey results.

According to paragraph **B0204.b.(1), Dry-Bulb Thermometer Positioning**, a hanging DB thermometer (alcohol in glass - NSN 9G-6685-00-243-9964) shall be permanently mounted at watch and workstations throughout the ship where heat-stress conditions may exist. These thermometers shall be mounted in a position so they indicate the most accurate representative temperature for the area where workers/watchstanders spend the majority of their time. They may be placed in or out of the ventilation air stream but must be hung at least 2 feet from any supply ventilation terminal/opening. The temperature being measured must be representative of the heat-stress environment workers/watchstanders experience. Thermometers shall be hung with a non-heat conducting material such as plastic or string (never hang with metal wire) and positioned to minimize the influence of any adjacent or local heat or cold sources (avoid direct contact between thermometer and hot/cold structural surfaces). Are your DB thermometers in compliance with these requirements?

In paragraph **B0204.b.(3), Dry-Bulb Temperature Readings**, ships are directed to record DB temperature readings when underway or when potential heat-stress conditions exist while in port. Assigned personnel shall monitor compartments as follows:

(a) Every 4 hours for manned spaces if DB temperatures do not exceed 85°F

(b) Every hour for manned spaces if DB temperatures exceed 85° F

(c) Every hour at temporary installations where the DB temperature exceeds 85° F during repair or maintenance operations.

And finally, paragraph **B0204.c.(4) Space Surveys**, directs ships to conduct a survey of spaces for heat stress using the WBGT meter whenever the temperature from a permanently mounted hanging DB thermometer reaches or exceeds the following temperature requirements:

PHEL I through III

Watch/Work length 4 hours or less

DB => 100°F

Watch/Work length greater than 4 hours

DB => 90°F

PHEL IV through VI

DB = 85°F.

The values listed above take into consideration likely levels of relative humidity, watch duration, and levels of activity. Under normal operations, routine watches in engineering spaces are expected to be 4 hours at a PHEL III or lower. PHEL IV through VI applies to above average work rates.

So, what does this mean to you? Under normal operating conditions, most of you will never have to conduct WBGT surveys because conditions will not reach the levels directed in the above paragraph. When you conduct drills, your DB temperatures may be high enough to require taking WBGT readings, but in most cases, the drill will be secured and air conditioning restored long before reaching any reduced stay times.

As you read through this section of the instruction, don't allow yourself to be deceived by the special "Notes" that refer to submarines only. In one such "Note" you are told: "Note - Not applicable to submarines, which have air-conditioned engineering spaces."

This note is referring to the requirement to do space surveys prior to conducting engineering casualty-control drills. It does not mean that you are exempt from the entire heat stress program because you have an air-conditioned engine room.

Another "submarines only" note states "the Medical Department Representative conducts heat-stress surveys in engineering spaces". Don't take that as an excuse to not have some personnel other than the MDR trained and qualified to conduct heat-stress surveys. It doesn't take a rocket scientist to imagine a situation where heat-stress surveys are necessary, and the MDR is not able to conduct the surveys due to a medical emergency elsewhere on the boat. Just make sure that you have a backup to the MDR for heat-stress surveys.

NOTE: To obtain a copy of the PQS for heat stress monitors, go to the following link: **https://wwwcfs.cnet.navy.mil/pqs/home.htm**. The heat stress monitor PQS is watchstation 303 of the Afloat Safety PQS, NAVEDTRA 43460-4B. All of your heat stress monitor personnel need to be trained and qualified using the PQS, in accordance with article B0206b of OPNAVINST 5100.19D.

The Line on Float Lines

MMC(SS) Shull

The first impression any visitor gets of your ship is the appearance of topside. If topside is squared away, the ship is probably squared away; if topside is a mess.... Well, you get the picture. One of the most visible items topside is the floating lifeline. On several recent surveys, we have noticed poorly maintained or missing lines. This item has also been a common deficiency on several recent INSURV inspections.

Many submarines have called for information on construction criteria and supply procedures to order the floats. **NAVSEA Dwg 804-5000915 Rev A,** which can be found on ATIS, describes floating lifeline construction specifications and states:

The floating lifeline system provides a means for man overboard recovery while moored or pierside, by allowing an individual to pull himself along the lifeline and regain access to the ship via the stern or the Jacob's ladder. The floating lifeline system shall **consist of port and starboard assemblies** of floating rope and encapsulated air buoys, which are rigged when moored or pierside.

Each buoy shall provide minimum buoyancy of 10 pounds when fully submerged in salt water. The ends of each assembly shall be secured to the forward most and aft most cleat or chock (if chock is located on the ship centerline). The assembly shall be provided with enough slack so that the line will float clear of the hull. The length (L) of each assembly shall be equal to the distance between the floating lifeline forward and after attachment points (D) multiplied by a factor of 1.05, plus 25 feet; that is L=(1.05xD)+25. For ease of handling and stowage, each assembly shall be constructed in segments, which contain no more than 14 buoys each. Segments shall be joined when deployed using the midspan connection show in Figure 1.

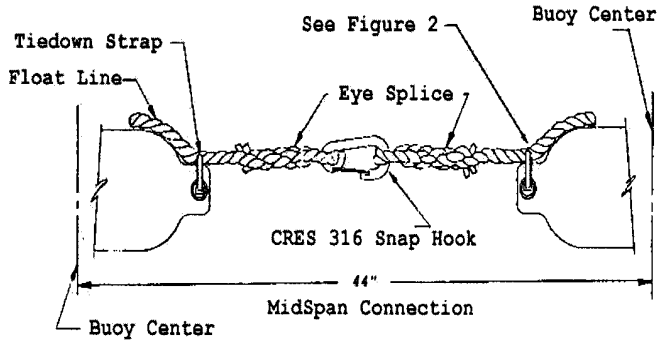


Figure 1

The first buoy at each end of the port and starboard assemblies shall be located where the floating lifeline enters the water. Buoys shall be spaced a maximum of 68 inches on centers, except at the midspan connection where spacing shall be a maximum of 44 inches on centers. Buoy attachment shall be as shown in Figure's 2 and 3.

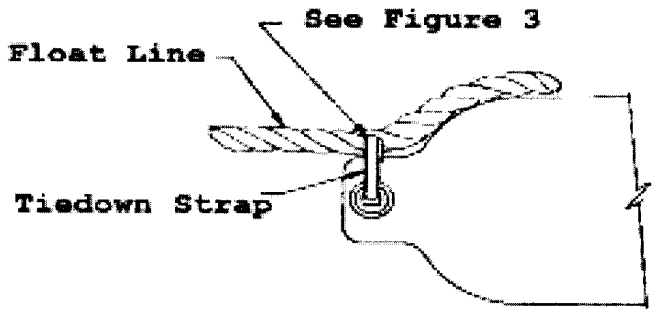
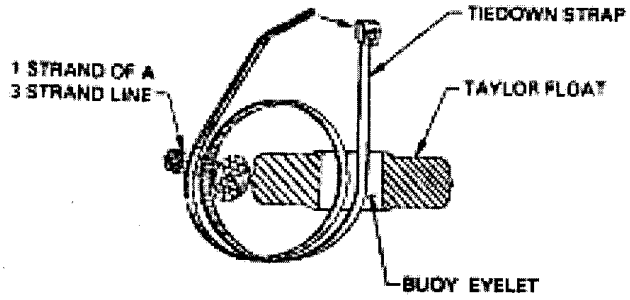


Figure 2

"Lifeline segments shall be stowed in the pressure hull access trunks in laundry bags. The stowage location shall not interfere with hatch operation or with normal passage of personnel



through the trunk."

Figure 3

Figure 4 (next page) shows an example of floating lifeline construction. If the straight-line distance between the forward and after attachment points is 200 feet, each assembly is 235 feet (1.05 x 200)+25. Notice the floats are 68 inches on center except at the midspan connection (Figure 1). There, they are 44 inches on center. In Figure's 2 and 3, you can see how to wrap the tie down strap around two strands of the floating line. Feed it through the line twice.

The materials required for construction:

Polyethylene line, yellow NSN 4020-00-968-1351
Strap, tie down, electrical 5975-00-899-4606
Snap hook, CRES 316 5340-01-282-5661

5 1/2 x 20 inch floats are available by open purchase through mariner suppliers. With the procedure and the correct materials, you can construct a set of floating lifelines that work well, look sharp, and are easy to handle and store.

Reference: (a) NAVSEA Dwg 804-5000915 Rev A.

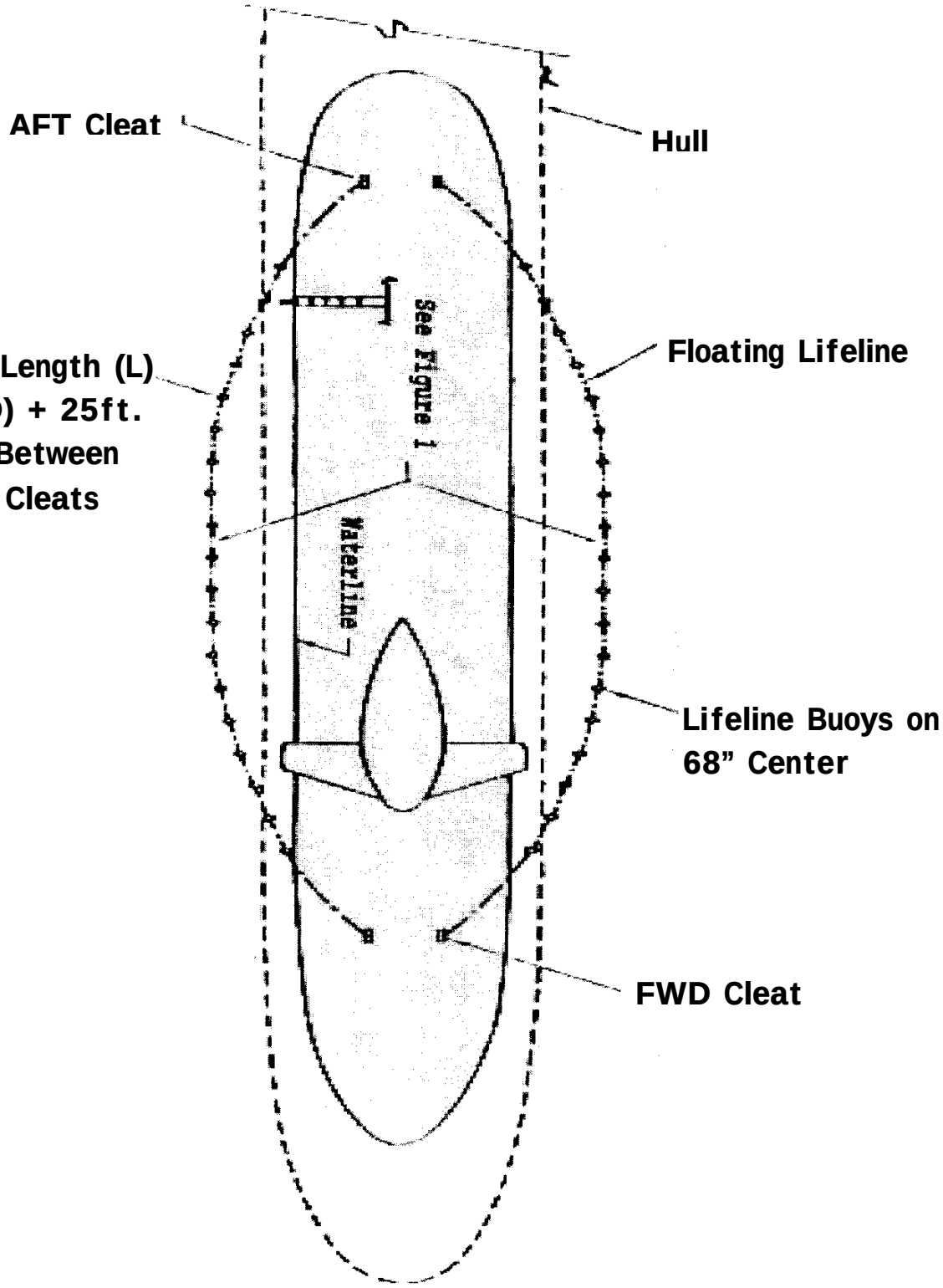

AFT Cleat
Hull
See Figure 1
Floating Lifeline
Total Lifeline Length (L)
L = (1.05 X D) + 25ft.
D = Distance Between
FWD and Aft Cleats
Waterline
Lifeline Buoys on
68” Center
FWD Cleat

Figure 4

STERNS MK 1 LIFE PRESERVERS

FTCM(SS) Clements

The safety center has recently received numerous inquiries concerning the new types of life preservers. When your MK 5 AIULP, old style MILSPEC MK 1 and Kapok life preservers begin to wear out, you can replace them with new commercial Sterns MK 1 life preservers and Sterns inherently buoyant life preserver.

AEL 2-330013101 (Submarine Life Preservers) has been updated to reflect the current stock numbers of the new preservers. When you add the MK 1 life preserver to your ships inventory, you must submit a PMS feedback report to add the new MIP (5832/002) for the MK 1. The MIP does not yet reflect the commercial Sterns MK 1 but is being updated by NAVSEA. MIP 5832/007 is also being updated to reflect the new Sterns inherently buoyant life preserver.

Additionally, we recommend you submit an OPNAV 4790 2CK to document the removal of the MK 5 MOD 0 and the installation of the Sterns MK 1 life preserver. This will ensure the correct AEL is loaded into your COSAL.

The Chickenhead Award

MMC(SS) Shull

The Chickenhead 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 Chickenhead Award consideration, contact me at (757) 444-3520 Ext. 7091 (DSN 564), or e-mail at jshull@safetycenter.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 had no trouble deciding that the lockers pictured to the right are deserving of this most prestigious award. Recently we found these HAZMAT spill kit lockers on a submarine pier during one of our surveys.

What are chances of you being able to clean up a spill using these HAZMAT spill lockers?

If you see something wrong fix it or notify someone who can.

Effective COMNAVSAFECEN Submarine Safety Advisories For 2002

17-00	**201959Z DEC 00**	**Contract Liberty Boat (Water Taxi) Safety**
14-01	**281345Z DEC 01**	**Transferring Oily Waste**
1-02	**021945Z JAN 02**	**Effective COMNAVSAFECEN Afloat Safety Advisories for Surface Ships and Submarines**
3-02	**241315Z JAN 02**	**GPS and Charts**
5-02	**041645Z MAR 02**	**Possibly Defective OBA Canisters**
6-02	**052035Z MAR 02**	**COMNAVSAFECEN Security Clearance Information**
8-02	**201255Z JUN 02**	**Possibly Defective OBA Canisters**

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 Alfoat Messages link and then select the Submarine effective advisories.

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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 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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