



FLASH

actual Lines About submarine Hazards

October-December 2015 Edition

FLASH is a periodic release by the Afloat Safety Directorate of the Naval Safety Center. The information contained herein is a summary of research from selected reports of submarine hazards to assist the Submarine Force with mishap prevention programs. The FLASH is intended to give advanced 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 newsletter be made available to All Hands.**



IMPORTANCE OF EYE PROTECTION

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From the Submarine Safety Division Head

CDR Eric Stein

"Requesting an Afloat Operational Safety Assessments (AOSA)"

TYCOMs, ISICs, or individual units may request an AOSA outside of normal periodicity. Requests made by the TYCOM or ISIC will be given top scheduling priority. The Submarine Division requests as much advanced notification as possible in order to budget for the trip and to coordinate it with existing planned travel. We can tailor an AOSA to review specific program areas. The AOSA can be exceptionally helpful to a submarine that has been through an extended availability or has had a large crew turnover.

Our annual scheduling message also advertises this "service". We are transitioning to a quarterly scheduling message in 2016 that will repeatedly advertise this service as well.

Self-assessments by a knowledgeable Safety Officer and an engaged Safety Council can be quite effective as well. Our checklists are available on-line and they are continuously updated whenever a Force Revision comes out and whenever any of the references are updated. The Submarine Division also adds or removes line items from the checklists based on trends and repeat observations seen throughout the fleet. All pertinent references are in each line item on each checklist.

"Submarine Safety Officer Course"

Section A0503.a. of OPNAVINST 5100.19E states that "submarine safety officers shall attend the Submarine Safety Officer Course (F-4J-0020) prior to, or within six months of, assuming their duties." This course is offered on-line by the Naval Safety & Environmental Training Center (NSETC), a subordinate command of the Naval Safety Center (NAVSAFECEN). The NSETC on-line course requires the student to log in Monday through Friday for various lengths of time, essentially a five day course on the unclassified side. If interested in taking the class via this method, contact us for instructions on how to connect. The face-to-face



NAVSAFECEN course, taught by the Submarine Division, is a two day course and is usually taught when the Submarine Division is conducting an AOSA in a fleet concentration area. Individual submarines should request the school via their ISIC Safety Officer so the ISIC Safety Officer can poll other boats and other ISICs in order to maximize training impact in that region.

Recent Mishaps/Lessons Learned

1. (Mishap) Fall (SSN/SSBN/SSGN). A Sailor was conducting an audit of safety tags in Missile Compartment Lower Level when he stepped on a temporary wooden deckplate and it gave way. The temporary wooden deckplate was installed while the Naval shipyard was refurbishing the permanent deckplates. He landed in the bilge below, only sustaining a bruised shin and lightly sprained wrist. Upon further investigation it appeared that the wood was brittle and damaged after initial installation. Temporary equipment and systems should be thoroughly inspected for satisfactory material condition and proper installation, regardless of its seemingly simplistic nature.
2. (Mishap) Fall (SSN/SSBN/SSGN). A Sailor was working in the forward port side of the Torpedo Room when he fell due to a poorly placed shipyard wooden deckplate which was not fully seated or cut to fit around temporary ventilation piping routed into the bilge below. Upon falling, the Sailor incurred injuries to the back of his head and hip. The Sailor's head hit an installed PAIU firefighting agent causing an abrasion as well as an indentation of the flesh.
3. (Mishap) Electric shock (SSN/SSBN/SSGN). A Sailor was hydro-lancing a main condenser and dropped a 120V droplight in water. Though the light had been electrically safety checked, a crack had developed and when he picked it up (while it was still plugged in) he felt a slight shock. Electrical equipment should be tagged out or unplugged before handling if an unsafe condition exists or is suspected.
4. (Mishap) Electric shock (SSN/SSBN/SSGN). A Sailor received an electrical shock in the vicinity of liquid level switches while cleaning in Missile Compartment aft bilge. The suspected circuit was immediately tagged out and IVV check was performed. During investigation, it was determined that the high and low bilge level switches had been improperly wired causing moisture to enter the probes and voltage to be



present on the outside of the probe. Proper maintenance practices and procedural compliance are vital to prevent creating hazards to personnel.

5. (Mishap) Equipment damage (SSN/SSBN/SSGN). Improper draining of the Aft Escape Trunk lower hatch caused damage to two high pressure air compressors resulting in more than \$100,000 in damage to equipment. Procedural compliance is vital when performing risky evolutions to prevent personnel injuries and equipment damage.

6. (Mishap) Personnel injury (SSN/SSBN/SSGN). A Sailor was working in Auxiliary Machinery Room 2 when an o-ring on the #1 EOG catastrophically failed which resulted in rapid depressurization of the #1 EOG. This led to the release of KOH fumes from the EOG into the space. One Sailor remained in the space for approximately 2-3 minutes to clear other personnel from the space and combat the casualty and also inhaled KOH fumes from the EOG causing breathing problems. Personnel need to be aware of possible hazards in the workspace and PPE requirements when responding to a casualty.

7. (Mishap) Fire (SSN/SSBN/SSGN). Engine Room (ER) watch standers observed light smoke issuing from multiple seams in the port Ships Service Turbine Generator (SSTG) lagging. The port SSTG was secured electrically and mechanically. Ship's force began emergency removal of lagging to determine the source of the smoke. A minor fire had started in the lagging due to oil impregnation from an undetected oil leak from the piston rod of the governor control valve. Long term exposure of oil and high temperatures resulted in degradation of the oil, allowing the oil impregnated lagging to flash. Routine inspections and cleanliness of equipment are important to help identify potentially hazardous conditions.

8. (Mishap) Stores On-load (SSN/SSBN/SSGN). A Sailor suffered a neck strain after being struck by cargo (terry cloth roll) he was helping load onboard through the missile compartment logistics escape trunk. Conducting an evolution brief highlighting the potential hazards prior to commencing the evolution would identify potential fall hazards. Supervisors should know how the workers intend on conducting the evolution to ensure all personnel involved understand the risks involved.



MEDICAL

1. Eye Injuries (SSN/SSBN/SSGN). The COB's three favorite words are "Commence Field Day". These three words immediately conjure images of Submariners in bilges and outboards forward and aft attempting to meet the COB's "almost attainable" standard for cleanliness and preservation. There is no MRC for this evolution (except the one found deep within the COB's mind) so most sailors don't associate "Field Day" as an evolution that would require eye protection. Much of the cleaning and preservation that goes on during Field Day is exactly like, or very similar, to evolutions occurring during maintenance which would require some sort of eye protection. Eye injuries are very serious onboard a submarine due to the limited equipment the IDC has onboard to treat them. Most minor eye injuries such as the corneal abrasion (see front page) are easily diagnosed and treated onboard. More serious injuries such as lacerations and foreign bodies can easily become MEDEVAC issues or require a trip to the local ER or Ophthalmologist if there is the potential for loss of eyesight. Most all external eye injuries can easily be prevented by simply wearing the proper eye protection. Appendix B5-A of OPNAVINST 5100.19 contains information that describes the type of protective eye wear frequently used on ships.

DAMAGE CONTROL

1. Portable CO2 fire extinguishers (SSN/SSBN/SSGN). COMSUBPAC recently sent a readdressal of NAVSEA FLEET SAFETY ADVISORY 05-2015, which addresses the possible issue of broken or dislodged portable CO2 fire extinguisher lever rivets and how to correct any problems with them. It is applicable to all platforms that use 15 lb. CO2 portable fire extinguishers. A recent fire from improper hot work controls required the deployment of ship's CO2 fire extinguishers. During actions to combat this fire, seven of seven CO2 extinguishers brought to the fire scene had lever failures that prevented discharge of the extinguisher. Subsequent investigation revealed that the rivet joining the valve lever to the valve handle had become dislodged, preventing the lever from



being exercised. A post-fire survey found 20 percent of ship's extinguishers were similarly impaired. Initial reports indicate some extinguishers had the rivet replaced with a cotter pin, which reportedly did not inhibit operation, but are non-standard items that should have been discovered during PMS execution. This could have been deadly if it happened on a submarine. It is very important for Damage Control Petty Officers to read and comply with this safety advisory and ensure all CO2 fire extinguishers are in good condition and ready to fight a fire when required. We don't want to find out in a casualty that our firefighting equipment doesn't work.

COMBAT SYSTEMS

1. Physical Security Gear (SSN/SSBN/SSGN). Recently in a coordinated COMSUBLANT/COMSUBPAC message applicable to all units, clarification was provided for new life jacket requirement changes to the Submarine Organization and Regulations Manual (SORM) CH-3, and the Submarine Operations Manual (SOM) REV A with CH-3, with regard to topside security force personnel. If available, topside physical security force watchstanders shall wear the TFV (tactical float vest) with neutrally buoyant ballistic plates (NBBP). If NBBP are not available, National Institute of Justice (NIJ) Type III buoyant plates may be used in combination with the TFV. Enhanced small arms protective insert (ESAPI) plates are not authorized for use with the TFV. For ships not in receipt of the TFV, topside physical security force watchstanders shall wear inherently buoyant life jackets in combination with the naval security forces vest (NSFV). NSFVs are not authorized with auto-inflatable life jackets. In warm and/or humid climates, heat stress mitigation for personnel wearing inherently buoyant life jackets and the NSFV shall be implemented as appropriate. TFV with NBBPs are expected to be delivered to all units NLT FY16Q4. Contact your ISIC for any questions concerning the delivery. All physical security gear can be ordered using AEL 2-320024503. Referenced message DTG: 031817Z Nov 15.



Naval Security Forces Vest (NSFV):

- Replaces CTRC and NFV
- Navy design for Navy threat environment
- Provides protection against LE, fragmentation threats
- Designed to operate with ESAPI for increased protection
- Government testing and QA
- Fielding completed May 2015
- Sustainment ongoing



Enhanced Small Arms Protective Insert (ESAPI) Plates:

- Fielded 2007-2008 in conjunction with Concealable Tactical Response Carrier (CTRC) armor system to provide rifle threat protection
- Currently used in conjunction with NSFV
- US Army design managed and distributed by DLA
- Ceramic plate produced in five sizes ranging from 3.75 to 7.2 lbs



LBT-2564A VBSS Tactical Flotation Vest (TFV):

- Type V Personal Flotation Device
- Designed to operate with 10x12 torso and 5x7 side neutrally buoyant plates to provide ballistic protection
- Provides protection against NIJ Type III LE threats
- Sustainment ongoing via DLA



Neutrally Buoyant Ballistic Plate (NBBP):

- Replaces NIJ Type III
- Navy design for Navy threat environment
- Provides protection against LE, fragmentation threats
- Provides protection against Blunting Gap





threats

- Fielding initiated June 2015; completion anticipated August 2016
- Model numbers: 23600-3-NBBP and 23600-12-NBBP

COTS NIJ Type III Buoyant Plates:

- Fielded in conjunction with VBSS TFV to provide ballistic protection to VBSS boarding teams
- NIJ Type III protection
- Unprocurable since 2012 due to implementation of DOT&E government testing mandate
- Dispose of via DRMO upon receipt of NBBP





Afloat Safety Advisories

Effective COMNAVSAFECEN Submarine Safety Advisories		
2010		
6-10	081904Z Dec 10	ASBESTOS REMOVAL PROTECTION
2011		
2-11	041532Z Mar 11	HEAT STRESS METER CLARIFICATION
3-11	071634Z Mar 11	HEAT STRESS SURVEY CLARIFICATION
5-11	021648Z May 11	REPORTABLE MISHAP CLARIFICATION AND REPORTING
9-11	181607Z Nov 11	AFLOAT FALL PROTECTION
2012		
3-12	231505Z Aug 12	REPORTING AFLOAT MISHAPS
4-12	291342Z Aug 12	REPLACEMENT OF OPNAVINST 5100.28, HMUG, WITH NSTM 670
2013		
4-13	29557Z Aug 13	HEAT STRESS METER CLARIFICATION
2014		
2-14	101655Z Feb 14	NAVAL SAFETY SUPERVISOR COURSE REQUIREMENT CHANGE
4-14	151837Z APR 14	ELECTRICAL SAFETY DURING PMS
2015		
1-15	061446Z JAN 15	EFFECTIVE COMNAVSAFECEN AFLOAT SAFETY ADVISORIES FOR SURFACE SHIPS AND SUBMARINES
2-15	301542Z JAN 2015	SHOCK HAZARD FOR IET MODEL 1864-1644 AND 1864-9700 MEGOHMMETERS IN USN INVENTORY
2-15	191853Z MAY 15	FOLLOW-UP ON COMNAVSAFECEN AFLOAT SAFETY ADVISORY 2-15, SHOCK HAZARD FOR IET MODEL 1864-1644 AND 1864-9700 MEGOHMMETERS IN USN INVENTORY



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