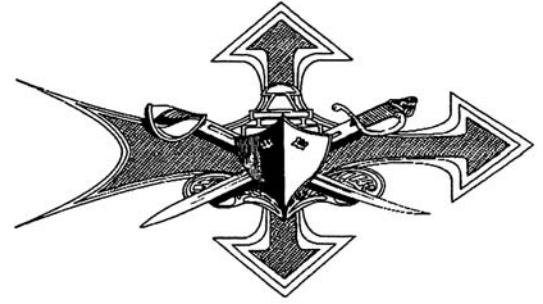


SHIPS' SAFETY BULLETIN

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Suggested routing should include CO, XO, department heads, division officers, CMC, CPO mess, petty officers' lounge, work-center supervisors, and crew's mess.
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More Than A Shocking Experience

By EMCS(SW) Andrew Fanning,
Naval Safety Center

N STM 300, *Electrical-General*, states "Safety precautions must always be observed by persons working around energized electric circuits and equipment. Short circuits can be caused by accidentally placing or dropping a metal tool, flashlight case, or other conducting article across an energized line. These short circuits can cause an arc or fire on even relatively low voltage circuits, and may result in extensive damage to equipment and serious injury to personnel." What about higher energy systems? The future ships of the Navy will include high energy electrical systems up to 15,000 volt range. This will require today's Sailors to understand the hazards associated with arc-flash and arc-blast.

Arc-flash occurs when electric current passes through air between ungrounded conductors, or between ungrounded conductors and grounded conductors. Temperatures can reach 35,000° F. Exposure to these extreme temperatures burns the skin directly and causes ignition of clothing, which adds to the burn injury. The majority of hospital admissions due to electrical accidents are from arc-flash burns, not from shocks. Each year more than 2,000 people are admitted to burn centers with severe arc-flash burns. Arc-flashes have been known to kill at distances of 10 ft.

The tremendous temperature of the arc will cause an explosive expansion of both air and any metal in the arc path. For example, copper will flash from solid to a vapor state almost instantaneously. This expansion is known as arc-blast. The danger associated with arc-blast is one of high pressures, sound, and shrapnel. The high pressures can easily exceed thousands of pounds per square foot, which could knock workers off ladders, rupture eardrums, and collapse lungs. The sound associated with these pressures can

exceed 160dB. Finally, material and molten metal is expelled away from the arc at speeds exceeding 700 miles per hour, fast enough for shrapnel to enter the human body.

These hazards require that all personnel in the electrical ratings understand the safety precautions delineated in NSTM 300 checking for energized high-voltage (4160V) circuits:

- Work on energized high voltage (4160V) equipment is prohibited.

- Personnel must have background, training, and experience with electrical equipment and installations to be qualified for maintenance on shipboard high voltage equipment.

- Equipment shall be considered potentially energized until voltage checks have verified that it is fully de-energized.

- No person shall work alone while conducting voltage checks to verify that 4160V equipment is de-energized.

- DO NOT approach or take conductive object without an approved insulating handle closer than a distance of 2 feet to potentially live high voltage exposed equipment components without proper PPE.

- A person qualified in CPR for electric shock shall be present to oversee testing and grounding operations, and will not be involved in the actual work (testing or grounding).

- All rubber insulating equipment specified below shall be Class 2 (maximum rated use or 17,000 volts) or higher.

- a. Rubber gloves properly inspected for damage before use according to MIP 3000/001 R-3.

- b. Protective leather gloves from Table 300-2-1A of NSTM 300 shall be

worn over the rubber gloves to protect insulating capabilities from incidental damage during work. The leather gloves do not have to completely cover the rubber insulating glove but should come above the wrist.

- c. Rubber insulating covers, matting and blankets shall be used to insulate the deck or standing surface from ground potential. Do not use insulating equipment with a hole, tear, puncture, or snag; ozone damage, embedded foreign object or other forms of damage.

- Maintenance personal shall wear flame resistant outer clothing (arc flash coat, trousers, and arc flash face shield with hood) with a minimum arc thermal performance exposure value (ATPV) of 40 calories per square centimeter when performing initial voltage verification checks of 4160V switchboards according to COMNAVSEASYS COM 291933Z JUN 07 (NOTAL), ISE Advisory 036-07, 4160V Switchboard Maintenance Precautions, sent to type commanders. This newly required flame resistant clothing can be purchased directly from OEM or authorized distributor:

- Oberon Company, Division of Paramount Corp.; P.O. Box 61008; New Bedford, MA 02741. Tel: 508-999-4442.

- COMNAVSEASYS COM 141030Z MAR 07 (NOTAL), CVN-68 Class 4160V Switchboard Modified High Voltage Probe (sent to COMNAV AIRFOR), requires that an original equipment manufacturer (OEM) straight probe tip (P/N GCP-3) and bent probe tip (P/N GCP-3) be used with the Mark IV and Mark V voltmeters to verify that 4160V equipment is de-energized. These new probe tips can be purchased directly from: HD Electric Company;; 1475 Lakeside Dr.;

Waukegan, IL. 60085. Tel: (847) 473-4980 ext. 22.

With the advancements in shipboard electrical systems, it is imperative maintenance personnel fully understand the dangers, and learn the safety precautions, associated with high energy electrical systems.

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Who is in Charge?

*By BMCS(SW) Charles E. Gum
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During any given daily routine, supervisors too often task Sailors on what to do but fail to provide the necessary leadership for them to safely and correctly carry out those tasks.

I have found during recent safety surveys that, in many cases, though the job might be complete, there was no follow-up to ensure that the work was done correctly. The *Joint Fleet Maintenance Manual* (JFMM), COMFLTFORCOMINST 4790.3 (Rev. A Chg. 7A) require quality assurance (QA) checks to verify jobs are completed correctly. This requirement—along with other QA guidance—is found in the ship’s SORM, POD, standing orders, notices, ship bills, and type-commander instructions.

When things go wrong, it is usually because of human error: taking a shortcut, haste, unqualified Sailors doing the work--the list goes on. Senior

supervision is needed--during all aspects of the daily routine--to watch for unsafe conditions and practices. For example, How many of our LCPOs and LPOs question why ventilation is secured in a crew berthing space or in a HazMat stowage room or paint locker when they find it shut down? Yes, it may make a specific work area comfortable in an adjacent space in the short term for a select few, but for the long term, this discrepancy poses a hazardous condition to the whole crew.

How many of you daily—out of habit—poke your head into each of your assigned spaces to check on your people and the space’s material condition? You might be surprised at what you find.

Checklists and other tools designed to help you succeed as a senior supervisor are only as reliable as the person using them. Refer to established procedures and checklists to make sure you comply.

Review the JFMM to help you generate your own checklists, along with those required. You can find the JFMM on the web at:

<http://www.submepp.navy.mil/jfmm/index.htm>.

The answers on these check-sheets are yes or no and, when correctly used, can be a real “toolbox” asset.

Ask yourself, “Am I taking care of my people and promoting a good and safe work environment?” The bottom line is: Follow all available guidance and inspect regularly. Then, and only then, will you get what you expect from your Sailors: battle readiness!

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HazMat Stowage

By HMCS(SW/AW) Vincent Walker
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If the current trend of complacency in hazmat stowage, segregation, and labeling of secondary containers continues, we will see an increase in related Class A mishaps. Of the 223 ships surveyed from 12 Jan 05 to 31 Jul 08, 79.2 % had incompatible items stored in their in-use seven-day lockers. Additionally, 61.7% of the ships had discrepancies involving storage in their hazmat storerooms (e.g., incompatible material, leaking containers, not secured for sea, ventilation terminals blocked) and 59% had HM containers, including secondary containers not labeled properly. A little more than half of the ships (53.6%) had flammable/hazardous material storerooms not properly marked with required placards. On the PPE side, 56.3% of the ships had people wearing the wrong personal protective equipment required to complete the job they were doing.

All afloat units should verify proper storage of flammable and combustible material which is critical to the safety of our ships and Sailors. Hazmat programs must be in compliance with OPNAVINST 5100.19E and NSTM 670-*Stowage, Handling, and Disposal of Hazardous General Use Consumables*, and supervisors must ensure the appropriate training of personnel assigned hazmat responsibilities.

Improperly managed and stored flammable and combustible materials have contributed to the spread and intensity of shipboard fire causing personal injury and costly damage to equipment.

In March 2007, improper storage of AA batteries and CA-104NII/OV respirator filters contributed to a fire starting in a rack and completely destroying two other racks and an overhead light fixture.

In October 2007, Prelube 19 soaked rags were mixed with hydraulic soaked rags and left in a pile in a RAST machinery room upon completion of work. Prelube 19 is capable of spontaneous production of heat. Heat generated by improperly disposing Prelube 19 ignited hydraulic oil resulting RAST being OOC for 13 days for repairs.

Failure of the fleet to properly store flammable and combustible materials can result in unsafe conditions that can lead to personnel injury and damage to vital ship systems.

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Mishap and Near Mishap Reporting

By CDR Eric Covington
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The Naval Safety Center is leading an initiative to establish a more open environment in the afloat community that both encourages and rewards the reporting of hazards, near mishaps, and lessons learned to establish leading indicators, maximize awareness, and prevent similar recurrences. The purpose of this article is to inform safety officers about the initiative.

A hazard report notifies other commands of significant hazardous conditions or near mishaps that have the potential to affect other fleet operators. According to OPNAVINST 5102.1D, hazard reports are required for:

(1) Afloat electrical shock incidents where the mishap did not result in any medical treatment or injury/fatality and where it was determined that the shock was caused by equipment design.

(2) Afloat man overboard mishaps while underway where the mishap did not result in a recordable/reportable injury/fatality.

Hazard reports are also submitted for previously unrecognized hazards so that another agency may determine the appropriate corrective action to eliminate the hazard and any other unusual hazard discovered during maintenance, repair, inspections, or evolutions where

notifying other activities may prevent future mishaps.

Hazard and near mishap reports help fleet units identify their risks and mitigate those risks to allow them to accomplish their mission. Hazard reports also identify hazards to fleet operators, and the corrective actions taken, so others may learn from the experience. Hazard and lesson learned reports are crucial for long term design and technological safety ship alteration improvements in a given class of ship or the implementation of new safety technology.

Safety professionals from Commander, U. S. Fleet Forces Command; Commander, U.S. Pacific Fleet; Commander, Naval Surface Forces; Commander, Naval Surface Forces Atlantic; Commander, Submarine Forces Command; Commander, Submarine Forces Pacific; Commander, Naval Air Forces Atlantic; Commander, Military Sealift Command; Commander, Navy Warfare Development Command; Commander, Naval Safety Center; Commander, Naval Sea Systems Command; DDG Class Squadron; and several ship safety officers are working together to break the barriers preventing the exchange of hazard, near mishap, and lessons learned reporting in the afloat community. The working group participates in monthly round-tables, examining current policy to create instruction and incentive revisions that will encourage and reward hazard, near mishap, and lesson learned reporting.

All safety officers should review hazard and near mishap reporting requirements listed in Chapter 4 of

OPNAVINST 5102.1D. In the future, safety officers should look for instruction changes and new incentives concerning hazard, near mishap, and lessons learned reporting.

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Damage Control Safety Survey

*By CWO3 Robert Randall
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The damage control safety survey begins with either an administrative review of various damage control (DC) items such as the gas-free program and the air quality test logs. After completing the administrative review, the surveyor (usually accompanied by the DC LPO) performs a walk through to survey both portable and fixed damage control fire fighting items. The damage control surveyor will also walk through areas such as the paint locker, flammable liquid storerooms, and gas cylinder storerooms to assess items such as airflow monitors, explosion-proof lighting and ventilation ducting. The damage control check sheet used to assess items during this survey can be downloaded from the Naval Safety Center's website

<http://www.safetycenter.navy.mil>

The surveyor will provide the necessary guidance and technical information to correct damage control

discrepancies identified during the survey. Below is a list of common damage control discrepancy items found throughout the fleet during the survey. Most of them are PMS related.

Common DC Discrepancies:

Airflow monitors: Monitors are not properly set at 50% of normal airflow, power not available and monitored locally or remotely.

Compressed gas cylinders: Compressed gas cylinders are not properly stowed with grade B shock mounting requirements

SAR/SCBA: SAR/SCBAs are not properly maintained, gauges out of calibration, hoses not within hydrostatic test periodicity, or the six year overhaul not complete

OVBD fitting: The 2 ½ and 4 inch fittings are seized and will not swivel, not pollution placards posted, missing connection gaskets, and no classifications posted.

Trunk safety nets: Nets are not connected to staples, nets sag over 9 inches, net opening is over 24 ½ inches, and nets are missing weight test data tags.

Explosion proof lights: Wrong light bulbs, missing lead wire seals, globes are loose, or mounting fixture is loose.

Halon CO2 Actuators: Weights listed on the data card do not correspond with the stamped weight on the collar, or they are out of weight specifications.

These are just a few items that are commonly hit, If your ship is scheduled for an upcoming safety survey, I encourage you to go to our web site and print out the damage control check sheet and do an honest self assessment of your damage-control and fire-fighting equipment.

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Managing HazMat

*By HMCS(SW/AW) Barbara A. Cooper
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There are several ways of controlling and managing the amount of hazardous material onboard ships. One way is to ensure the consolidated hazardous material reutilization and inventory management program (CHRIMP) has been implemented and in full use. This program requires for the establishment of hazardous material minimization centers (HAZMINCENs) onboard for centralized management of all shipboard HM. Proper use of the HAZMINCENs should reduce on board quantities of HM through inventory control and management without compromising the amount of HM that should be available onboard to meet operational and maintenance requirements.

Good housekeeping with hazmat is essential in preventing fires. There is absolutely no need to “save in anticipation for using later.” Properly dispose of all used/excess hazmat.

Remove unauthorized hazmat from work spaces and ensure work-center lockers are secured, labeled and have contents identified. Clean up spills immediately.

Other measures of effectively controlling hazardous materials onboard is by conducting monthly spot-checks of hazmat practices, quarterly inspections of storerooms, and annual ship-wide physical inventory of all hazmat spaces.

Remember, great care must also be taken in handling, using, and storing HM to prevent injury to personnel, damage to equipment, or harm to the environment.

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Do Your SLAD Falls Require Replacement?

*By BMCS (SW) Charles E. Gum
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In-Service Engineering (ISE) advisory 025-06 (NAVSURFWARCEN SHIPSYSENGSTA 211944Z DEC 06 - NOTAL), Recent Hoist Wire Rope Failures on Slewing Arm Davits, alerted ships of hoist wire failures on slewing arm davits. Since ISE advisory 025-06, there have been additional wire rope failures. Research of failure data dating back to 2002 has shown five failures to wire rope on SLAD in addition to those mentioned above. No catastrophic hoist wire rope failures have been reported over this same time frame on non-SLAD

type boat davits. Research of failure and maintenance data on SLAD as well as info received from ships regarding wire rope age and condition, indicate that wire rope failures began to occur once the rope exceeds three years of service.

Many believe the combined effects of the rotation of the wire rope (as the davit slews) and the corrosive environment the wire is exposed to accelerates the degradation of the wire rope. Based upon research completed, relative low cost of a new wire rope and the severity of a catastrophic failure of the davit wire rope, a three-year mandatory SLAD wire rope replacement periodicity has been established by NAVSURFWARCEN SHIPSYSENGSTA 101403Z AUG 07 (NOTAL), ISEA advisory 042-07, Notice of Change to Wire Rope Replacement on Slewing Arm Davits (SLAD), sent to type commanders.

To improve the resistance to corrosion of the SLAD wire rope, drawn galvanized rope will be used in place of the existing uncoated wire rope. The wire rope will have to be open purchased due to unavailability of new type of wire in the stock system. I recommend that all ships having a SLAD installed obtain a copy of NAVSURFWARCEN SHIPSYSENGSTA 101403Z AUG 07 (NOTAL), ISEA advisory 042-07, and read it in its entirety for more specific guidance. COMNAVSURFOR 200124Z AUG 07 (NOTAL) readdressed the NSWCCD-SSES message to ALNAVSURFOR.

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Tag-out Users Manual Revision 04 Released

By EMC(SW) James Simpson,
Naval Safety Center

The latest revision of the Tag-out Users Manual is now on the street. Commands should implement this change as soon as practical to insure implementation does not create delay and disruption or unnecessary costs to the government for ongoing ship maintenance work. You can download the TUM Rev 04 at:
http://www.submepp.navy.mil/Jfmm/tum/tag_out.pdf

Changes to the TUM include both administrative and procedural changes. All personnel who are assigned to prepare tag-outs, review tag-outs, position equipment, post (attach) tags, check posted tags, clear (remove) tags, or perform tag audits shall familiarize themselves with these changes. The complete list of changes to the TUM is listed on page 2 of the NAVSEA Technical Manual Certification Sheet.

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