If you’re an afloat safety officer or division officer, you have a challenging, important role at your command. This series of pamphlets will help you meet your bi-monthly training requirements. Modify and use them at quarters or muster. You can also check the Naval Safety Center website at http://www.public.navy.mil/navsafecen/Pages/safety-gouge/SafetyGouge.aspx for the latest issues. We welcome feedback so we can continue to provide you with topics you need. Email LTJG Melissa Balint at melissa.balint@navy.mil.

This series is prepared by the Naval Safety and Environmental Training Center and the Naval Safety Center.

Introduction

According to the Occupational Safety and Health Administration (OSHA), approximately 3 million workers service equipment. These workers face the greatest risk of injury if lockout/tag-out is not properly implemented. Compliance with the lockout/tag-out standard (29 CFR 1910.147) prevents an estimated 120 fatalities and 50,000 injuries each year. Workers injured on the job from exposure to hazardous energy lose an average of 24 workdays for recuperation.

This is why we do not work on equipment that is energized unless we have the Commanding Officer’s permission in order to do preventive or corrective maintenance. Before starting maintenance, you have to tag-out and verify that the system is indeed tagged out and no voltage is present.

Cont., Page 2
A Costly Example

In August 2011, while underway, personnel aboard a ship prepared to tag out one of the four main propulsion diesel engines. The MPA placed the tag out in the night orders. His LPO was on watch as the Engineering Officer of the Watch. The EOOW drained the engine sump of lube oil in preparation for the tag out. He designated an ENFN as the primary person on the tag out and himself as secondary.

This ENFN was not qualified in any engineering underway watch stations, had only recently qualified as 3M maintenance man, and had never tagged out an engine. Once inside the space, the ENFN prepared to de-clutch the engine but couldn’t locate the engine's clutch control panel.

The Engineman of the Watch noticed the confused ENFN but did not leave his post until minutes later when the engine (which was being tagged out) clutched in and began to spin. The ENFN had successfully located the clutch control panel but misinterpreted the indicating arrows and accidently clutched in the engine. This mishap caused more than $800,000 in damage.

Introduction, cont.

Some critical do’s and don’ts:

- Always de-energize installed electrical equipment and tag-out with red “Danger, Do Not Operate” tags before starting any maintenance or repair.
- Test for energized circuits per 5100.19E, Vol. II chapter C9 and NSTM CH 300 section 2.5.1. This is where your friendly electricians come in to lend you a hand.
- Ensure you are familiar with all equipment that pertains to the maintenance you are doing.
- Do not touch a conductor or electronic component unless it is proven it to be de-energized through initial-voltage-verification (IVV) procedures. Call an electrician to verify.
- Always follow the Tagout Users Manual (TUM) and your ship’s tag-out instruction.

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Best Practices for Electrical Safety

**Hands-On Activity:** Walk down the work site, identify the equipment to be worked on, and make sure it is clearly marked. Know all the power sources going to that equipment. Remind your people that if they miss something, it can kill them. Make sure they know proper tag-outs using the Tag-out Users Manual (TUM). Ensure the equipment to be worked on is isolated from all sources in accordance with ship drawings.

Make sure Sailors know to stop work if they encounter unanticipated electrical hazards or conditions, in which case they should seek help. This will prevent injuries due to the unknown or unplanned conditions. If at any time someone can’t complete the work in accordance with PMS, or the tech manual, all work stops—until they get further documentation.

**Resources:** Make sure you have properly rated PPE. For electrical work, PPE has been updated per NSTM 300 and requires the use of 12 cal/cm squared arc flash rated faceshields (for use with voltages >30V to 1000V) and coveralls (for use between 300-1000V). Ensure accurate tag-outs per NAVSEA Technical Manual SO400-AD-URM-010, the TUM, and ship drawings.

The ship’s force is responsible for ensuring the adequacy and accuracy of all tag-outs, including those proposed by a repair activity (RA). They must also verify that tags which are no longer needed are removed as soon as possible after the task has been cleared from the Tag-out Record Sheet (TORS). The ship’s force is also responsible for restoring the involved system (e.g., valve/switch lineups) after tags are cleared.

Equipment Guide Lists (EGLs) are to be prepared by the work center supervisor (WCS), reviewed independently by the division officer and approved by the department head prior to use.

Other resources include:
- 3M manual
- PQS standards
- EOSS uses guide
- EOPs
- OPNAVINST 5100.19E series
- On the Job Training (OJT)
- Naval Ships Technical Manual 300 (NSTM)
- PMS
- Lessons learned on the Naval Safety Center website
Are You Inspection Ready?

At a minimum, block 2 on the tag must match the label-plate circuit number or value number (Tag-out Users Manual 1.6). The TUM requires “minimal isolation” in order to limit tags and better maintain control of the tag-out process. If the chain of command believes watchstanders’ “awareness” requires more tags, then that language should be incorporated in your ship’s local tag-out instruction. It is always okay to amplify the parent instruction, but it is never okay to contradict it.

2. Select “NAVOSH Environmental Protection” in the left column.
3. Select “Getting Prepared” at the bottom of the page, then select “NAVOSH/EP Checksheets.”

Tag-Out: Right Ways and Wrong Ways

**Correct** way to post a tag on a breaker (large or small). The tag is inserted through the hole on the breaker handle.

**Correct** method for applying a danger tag to a valve. Tags may be placed on the stem in cases where the handwheel must be removed for maintenance.

**Correct** method for applying a danger tag to a recessed breaker. The tag is attached to the breaker handle.
Tag-Out: **Right Ways and Wrong Ways, cont.**

<table>
<thead>
<tr>
<th>Image</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Correct method" /></td>
<td><strong>Correct</strong> method for attaching a danger tag to a power panel. The tag is attached over the label plate in a manner that allows viewing of the plate beneath the tag.</td>
</tr>
<tr>
<td><img src="image2" alt="Incorrect method" /></td>
<td><strong>Incorrect</strong> method for applying a danger tag to fuses removed from a panel. You can’t tell which component that fuses have been removed from.</td>
</tr>
<tr>
<td><img src="image3" alt="Incorrect methods" /></td>
<td><strong>Incorrect</strong> methods for tagging fuses removed from a power panel. One tag has been posted <em>between</em> two label plates. One identification placard has been <em>bent away</em> from the cover so that the string could be tied around it.</td>
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