UNITED STATES COAST GUARD
U.S. Department of Homeland Security

MARINE SAFETY ALERT

Inspections and Compliance Directorate

April 30, 2013 03-13b
Washington, DC

Surge Protective Devices Onboard Vessels (correction with additional information)

We've all seen them and used them. Surge protective devices (SPDs), more commonly known as surge protectors or power strips help protect our expensive electronic devices from being damaged from excessive currents and allow us to simultaneously deliver power to multiple devices. This safety alert addresses the use of certain electrical protection devices onboard vessels and the inherent risks they may cause. Most commercially available SPDs are designed for use ashore and will interrupt *only* the hot conductor when a surge occurs. What does that mean for the ship owner/operator? It means that while these devices may provide protection in our homes and offices, these same devices may be a fire risk onboard vessels.

A marine casualty investigation of two separate stateroom fires onboard a U.S. Flag Container ship revealed that the sources of the fires were attributed to the use of SPDs plugged into a lighting circuit. It was discovered that a ground had developed on another circuit that was connected to the same distribution panel providing power to the staterooms. This ground created an imbalance of voltage between the two power conductors supplying the SPDs which caused excessive currents, overheating, and subsequently, a fire. In this instance, even if the SPDs automatically tripped as designed, only one power conductor would have been secured while the other would continue to provide power, possibly shorting to the device's ground wire and the structure of the vessel.

For shipboard applications, it is critical for a device to interrupt both power conductors. ~~Underwriters Lab Standard - UL Marine 1449 – addresses this issue and applies to the use of SPDs.~~

The Coast Guard **recommends** that vessel Owners, Operators, Class Society Surveyors, Insurers, and other inspection personnel examine the risks associated with the use of SPDs aboard their vessels, and if necessary ensure their organizations have policies and procedures relating to their use. Vessels should have defined procedures for checking the condition and grounding capabilities of personal/portable electrical equipment, and trained shipboard personnel should be assigned to check and approve all SPDs in use or brought on board for compatibility with the vessel's electrical distribution system prior to use. Routine checks of switchboard and distribution system 120 VAC ground detection systems are necessary to detect the presence of grounds that may cause similar circumstances with non-marine type SPDs. <u>These recommendations are not mandated rather just an advisory based on lessons learned from the casualty</u>.

Additional Technical Information:

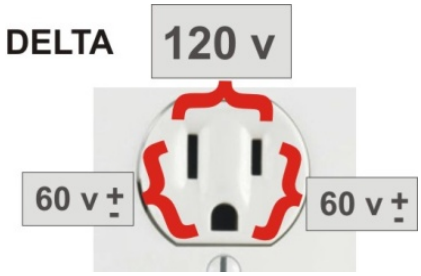
- This safety alert only applies to vessels with alternating current power systems and may be most likely applicable to larger industrial and commercial vessels. It relates to different manners in which power is generated, transformed and supplied throughout the vessel.
- There is no official Underwriters Laboratory standard for Marine Surge Protective Devices despite numerous retailers advertising "UL Marine 1449."

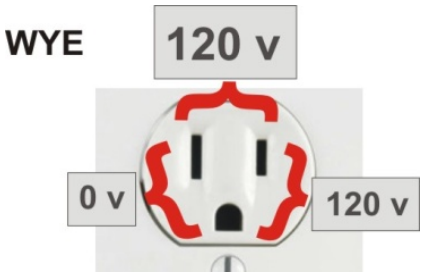
The recommendations on page one of this document remain. Ideally, if there is excessive use of power strips onboard there may be a need to consider the installation of additional permanent components such as distribution panels, breakers, cabling or receptacles. An SPD should be -

- only permitted for use onboard once approved by a trained crewmember,
- removed from service if it is hot to touch,
- unplugged when not in use,
- regularly inspected for damage or wear,
- limited to one SPD per single duplex receptacle outlet and never daisy chained,
- prevented from use in excessively humid or moist environments,
- provided air circulation and not covered with carpet or other items, and
- checked to ensure that all plugs are fully engaged.

The primary concern of this alert is to ensure electrical protection devices such as SPDs operate correctly with the manner in which the 120 volt receptacle circuitry onboard the vessel is wired. Receptacle circuitry may be wired in Delta or WYE configurations.

Using a voltmeter, a marine electrical professional will note that a Delta wired circuit will read the voltage across the terminals as shown in the image on the right. The Delta configuration has two hot leads one at +/-60 VAC, the other at +/- 60 VAC, simultaneously to provide the 120 VAC potential. **Here lies the problem with inexpensive and older SPDs that only disconnect one "hot" terminal lead. The other "hot" terminal remains hot if the circuit breaker supplying the receptacle and SPD does not trip.**





A marine electrical professional using a voltmeter on a WYE wired circuit will read voltage across the terminals as shown in the image on the left. For a WYE configuration 120 VAC is established between the hot terminal and the neutral terminal *and* the hot terminal and the ground terminal of the receptacle.

Owner / operators may wish to purchase equipment meeting MIL Performance Specification MIL-PZRF-32167A which incorporates ASTM F1507 (Standard Specifications for Surge Suppressors for Shipboard Use) and UL 1449 (Safety Standards for Surge Protective Devices). Further, for informational purpose only, US Navy and CG vessels use SPDs with the following National Supply Number (NSN) 6150-01-362-7192.

It should be noted that related issues (mismatches between Delta or WYE systems) have been reported with 120 VAC Uninterrupted Power Supplies purchased ashore and used onboard vessels. Such devices should be selected to match the power supply configuration.

Owner / operators who are not familiar with these issues or have remaining questions should consult their technical departments or a marine electrical professional. These recommendations are an advisory only and not mandatory. Special thanks to personnel from FOSS Maritime, Keystone Shipping and the Philmont Group for sharing their insights and policy pertaining to this matter.

This document is provided for informational purposes only and does not relieve any domestic or international safety, operational or material requirement. Developed by the Office of Investigations and Casualty Analysis, United States Coast Guard Headquarters, Washington, DC. Questions can be addressed to the sender.

UNITED STATES COAST GUARD
U.S. Department of Homeland Security

MARINE SAFETY ALERT

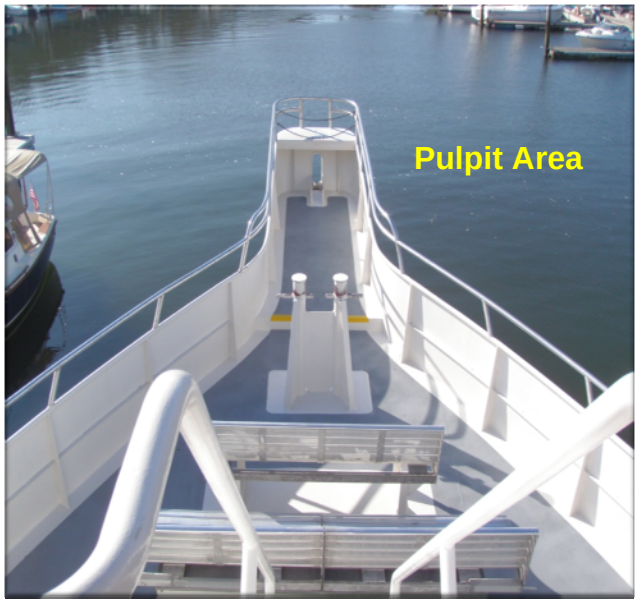
Inspections and Compliance Directorate

March 21, 2013 02-13
Washington, DC

BOW RIDING IN HEAVY WEATHER

Don't get bounced!

Several passengers standing in the bow pulpit of a 106' inspected whale watching vessel were injured while underway. The vessel struck a large wave, its bow rose and slammed down causing the passengers in the pulpit to lose their balance and fall to the deck. Injuries ranged from cuts and bruises to a broken patella (knee) and jaw. Although there were many other passengers on board at the time, only the passengers standing in the pulpit were injured.



The investigation concluded that:

- Proper verbal briefings regarding unfavorable weather conditions were made to the passengers; however, some passengers had disregarded these safety warnings.
- The vessel did not have a policy which outlined operational conditions as to when the bow area and pulpit should be vacated.

The master's judgment is crucial in considering securing access to the bow area when the vessel is operating in less than ideal sea conditions. As the sea state and speed of the vessel increases, the likelihood of the vessel experiencing sudden and erratic motion also increases. These circumstances and passenger demographics should be considered when determining if the closure of the bow area is necessary.

As a result of this casualty, the Coast Guard **strongly recommends** that all vessel owners/operators operating vessels with bow areas open to passengers establish written policy and procedures for vacating the area when operational conditions present risks of injury. The policy and procedures should address the vessel's speed and sea state, in addition informing passengers during the pre-departure safety brief of the restrictions prior to getting underway.

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MARINE SAFETY ALERT

Inspections and Compliance Directorate

March 21, 2013
Washington, DC

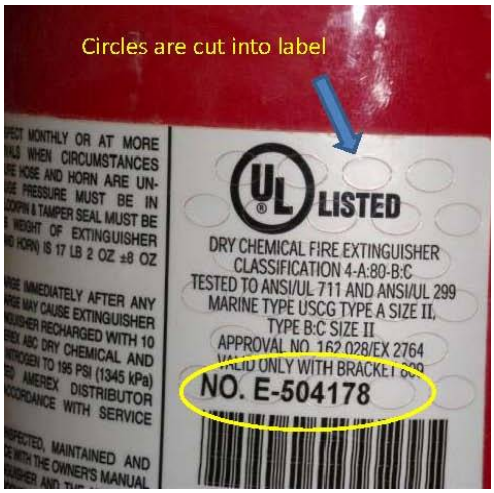
Alert 01-13

Counterfeit Portable Fire Extinguishers

The Coast Guard has recently become aware of counterfeits of *U.S. Coast Guard approved* portable fire extinguishers manufactured by Amerex Corporation and Buckeye Fire Equipment. Both companies are major producers of genuine approved fire extinguishing equipment and serve a worldwide market. These counterfeit extinguishers present a significant safety hazard. Their capability to extinguish a fire is unproven; they may be charged with a powdery substance that is not a fire extinguishing agent, the pressure cylinder is not DOT approved, and the pressure gauge may not function or give false readings.

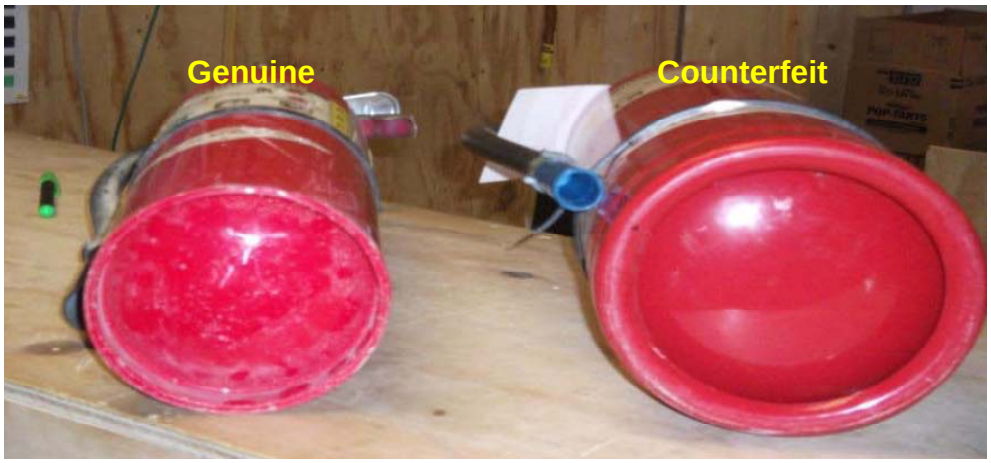
The dry-chemical counterfeit extinguishers are size B-II and may be identified by several distinguishing features:

Counterfeit units may have duplicate serial numbers. Genuine approved extinguishers will have a unique serial number for each extinguisher. For counterfeit Amerex extinguishers, the serial № V-654690 has been reported. There may be other serial numbers used on the counterfeits. For counterfeit Buckeye extinguishers, the serial № K-094927 with a red handle and serial № YM-U76222 with a black handle have been reported.



The labels on counterfeit extinguishers may be simply printed. Labels on genuine approved extinguishers will include a security imprint / texture behind the UL LISTED logo, classification, testing and approval data. Genuine Amerex Corporation extinguishers will have a pattern of scored “circles,” and genuine Buckeye Fire Equipment extinguishers will have the letter “S” scored into the label.

The bottoms of the counterfeits have a rounded curved-in lip as shown on the right side of the image on the right. The bottom of a genuine Amerex extinguisher is shown on the left side of the image. Genuine Buckeye extinguishers will have a date stamped on the bottom.



The counterfeit extinguishers have been reported to have black or red plastic handles. Genuine approved dry-chemical B-II extinguishers typically have handles that are constructed of silver-colored aluminum (although there are some with plastic handles).

Pressure gauges on the counterfeit units may be the wrong color. The gauges on genuine approved Buckeye dry-chemical extinguishers will have a red background.

Counterfeit extinguishers may have welded seams on the sides of the cylinders.

The Coast Guard believes that counterfeit production is not limited to Amerex Corporation and Buckeye Fire Equipment. There has been unconfirmed mention of a possible case with Badger portable fire extinguishers. However, at this time there have been no confirmed reports of counterfeit units from other manufacturers.

The Coast Guard **strongly recommends** that vessel owner / operators inspect their equipment. Inspectors, surveyors, owner / operators and others suspecting that they may have identified counterfeit extinguishers should contact the Coast Guard Office of Design and Engineering Standards immediately. Please provide a description of the suspect units, including if possible photographs showing full front, rear, and bottom views of the extinguishers, along with close-ups of all labels, and submit this information to typeapproval@uscg.mil with a copy to anticounterfeiting@us.ul.com.

This Safety Alert is provided for informational purposes and does not relieve any foreign or domestic requirement. Developed by the Lifesaving and Fire Safety Division, U.S. Coast Guard Headquarters, Washington, DC and distributed by the Office of Investigations and Causal Analysis,

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