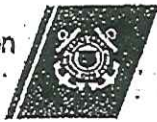


U.S. Department
of Transportation
**United States
Coast Guard**



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NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 2-89

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Subj: Guide for Electrical Installations on Merchant Vessels and Mobile Offshore Drilling Units

1. PURPOSE. This Circular has been prepared to provide guidance concerning electrical installations on merchant vessels and mobile offshore drilling units. It is intended to provide the marine industry with information on regulatory intent and background, and on practices which have been found to provide a level of safety equivalent to that provided for by the specific regulations.
2. DISCUSSION. Enclosure (1) is a guide to the Coast Guard Electrical Engineering Regulations, 46 CFR 110-113. It augments the CFR, giving details on acceptable methods of complying with those regulations as well as other important information related to electrical installations. It must be emphasized that other alternatives may be equally acceptable based upon the specific installation. Nothing contained in this guide shall be taken as amending the applicable requirements set forth in the Code of Federal Regulations, nor as limiting the authority of the Officer in Charge, Marine Inspection in his determination of acceptable materials and installation methods.
3. IMPLEMENTATION. Any party interested in electrical installations on merchant vessels and mobile offshore drilling units should consider the guidance in this Circular.

J. D. SIPES
Chief, Office of Marine Safety
Security and Environmental Protection

Encl: (1) Guide for Electrical Installations on Merchant Vessels and Mobile Offshore Drilling Units

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5.2 General Alarm. A general alarm system meeting 46 CFR Subpart 113.25 must be provided on each manned vessel of over 100 gross tons, except barges, scows and similar vessels to alert the crew and passengers to the existence of an emergency situation and the need to report to their muster stations. Components of the general alarm system, including vibrating bells and flashing lights, do not require type approval by the Commandant. The requirement for component approvals was deleted from the regulations by the revision of 46 CFR Subchapter J which became effective 1 June 1982. Only the system design and equipment installation need now be approved.

The general alarm is intended to be sounded only after a deliberate decision by a member of the crew. This position is consistent with SOLAS Chapter II-2 Regulation 13.1.14. The general alarm must only be initiated manually and is intended to be sounded by the person on watch or other responsible member of the crew only after the determination has been made that an emergency situation exists which warrants mustering the crew and passengers (if any). SOLAS permits the general alarm to be sounded automatically by a safety monitoring system, such as a fire detection and alarm system, if an initiating fire alarm is not acknowledged within a reasonable time (two minutes). This is permitted for spaces other than passenger spaces.

An integrated general alarm, fire alarm and public address system may be considered for equivalence to the intent of 46 CFR 113.25 and to satisfy SOLAS chapter II-2, Regulation 40.5 for a public address system. Any such arrangement must give priority to the general alarm function. Such a system would function similarly to the multi-purpose LMC Emergency Announcing System commonly used on naval vessels. Speakers and electronic tone generators may be used to produce a bell-like signal or tone distinct from any other audible signal on the vessel. The location of speakers and the generated sound level must meet 46 CFR 113.25-9. Either a distinct sound signal or intermittent operation of the general alarm bells (or speakers producing bell-like sounds) may be used to warn of fire. An integrated system must meet the following criteria:

- a) The fire alarm activating switch must be in a normally manned space which can receive alarms from the master fire alarm panel and which has a general alarm contact maker.
- b) The general alarm signal must have priority over the fire alarm signal.
- c) The fire alarm switch should be marked "Fire Alarm" in red letters on a corrosion-resistant plate or sign.
- d) Operation of the fire alarm switch may also activate a fire alarm page via the public address system. This must not interfere with the normal operation of the general alarm.
- e) If the fire alarm signal is generated external to the general alarm system, loss of power to it must not affect the general alarm system.
- f) The fire alarm signal must be distinct from those signals required by 46 CFR 109.503 for MODUs.

The emergency signals required by 46 CFR 109.503 for Mobile Offshore Drilling Units differ considerably from those used on other types of vessels. The intent of this was to recognize and standardize existing industry practice which was different than for vessels. This promotes consistency among offshore rigs, both mobile and fixed, so that an offshore oil worker can recognize the same sound signal and respond in the proper manner to similar emergency situations on either kind of installation. The emergency signals specified in 46 CFR 109.503 should be used for "emergency stations" and "abandon unit" situations on MODU's; other signals, such as fire warnings, must be distinct from these required signals.

Vessels have been allowed, on a case-by-case basis, more than one general alarm contact maker in addition to those required under 46 CFR 113.25-5(a), (b), or (c) where justification was presented. For example, Military Sealift Command vessels have been permitted to use contact makers in weatherproof boxes in the quarterdeck area in order to sound the general alarm in a security/intruder situation. Additional contact makers may be permitted where their installation results in an increase in vessel safety. Any additional contact makers should meet the construction requirements of 46 CFR 113.25-11 and should be labeled per 113.25-20(b). Contact makers in weather locations should be provided with suitable weatherproof enclosures. Where jack boxes are used for these additional contact makers, there must be cut-out switches in the wheelhouse that can isolate the jack boxes from the rest of the general alarm system.

There are no switches available which satisfy the requirements of both 113.25-11 for contact makers and 111.105 for electrical equipment in hazardous areas. For contact makers that must be in hazardous locations, the requirements of 111.105 apply. These switches should be labeled as required for contact makers by 113.25-20(b) and 113.25-11(d), as applicable.

Flashing red lights which augment the general alarm bells must be supplied by the general alarm system power supply, except for flashing red lights in the main machinery space supplied from the emergency source of power through relays operated by the general alarm system. In general, the use of the emergency source of power for all general alarm system flashing red lights meets the intent of 113.25-10(c).

5.3 Sound-Powered Telephones. Section 37.22 of IEEE Standard 45 and military specification MIL-T-15514 may be used as guidance for construction, installation, and performance standards for sound-powered phones.

Sound-powered telephone headsets and jack boxes are not permitted on any telephone system that includes any station required by the regulations, except for use at engineroom local control stations; see 46 CFR 113.30-20(d). The objections to the use of these portable headsets are:

- a) Headsets are often not there when needed.
- b) Headsets have been more prone to damage than fixed handsets.
- c) Headsets introduce noise on the circuit because the earphone is always on and acts as a microphone.

