

MSC Guidelines for Emergency Generators & Switchboards

Procedure Number: E2-08

Revision Date: 06/14/2016

S. T. Brady, CDR, Chief of Engineering Division

Purpose: This document outlines a basic method for submitting plans regarding emergency generators and switchboards for compliance with the requirements of Subchapter J.

References:

- a) 46 CFR Subchapter J
- b) SOLAS (Consolidated Edition 2009)

Contact Information: If you have any questions or comments concerning this document, please contact the Marine Safety Center (MSC) by email or phone. Please refer to the Procedure Number E2-08.

Email: MSC@uscg.mil
Phone: 202-795-6729
Website: <http://homeport.uscg.mil/msc>

Responsibilities: The submitter shall provide sufficient documentation and plans to indicate compliance with the applicable requirements outlined in references (a) and (b). The submission shall be made electronically to the above email address or, if paper, in triplicate to the MSC's address found on the above website. To facilitate plan review, all plans and information specified in these guidelines should be submitted as one complete package through a single point of contact for the project.

Applicability: This document applies to all vessels inspected under Subchapter J.

General Guidance:

- Generators and switchboards must meet the construction requirements of 46 CFR Subpart 111.30.
- 46 CFR Table 112.05-5(a) identifies which vessels must have temporary and/or final emergency power sources.
- The emergency power source, transforming equipment, and switchboard must be located aft of the collision bulkhead, outside of the machinery casing, and above the uppermost continuous deck. This compartment must

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not contain any machinery not associated with, or equipment not in support of, the normal operation of the emergency power source, as per 46 CFR 112.05-5(d). It also must not be adjacent to a Category A machinery space or space containing the main source of electrical power and its vital components, as per 112.05-5(e).

- ❑ As per 46 CFR 112.50-1(k), if the emergency generator is arranged to start automatically, it must have enough capacity to start at least six consecutive times. A second, separate starting source may be used for three of the six.
- ❑ The emergency generator must be capable of carrying its full rated load within 45 seconds after cranking has started, when intake air, starting equipment, and ambient room temperature are at 0°C, as per 46 CFR 112.50-1(d).
- ❑ As per 46 CFR 112.50-1(g), (h), & (i), the generator must shut down automatically upon loss of lube oil pressure, overspeed, or operation of a fixed fire extinguishing system in the emergency generator room. If the prime mover is a diesel engine, there must be an audible alarm that sounds for low lube oil pressure and high cooling water temperature. If the prime mover is a gas turbine, the control system must automatically shut down the turbine and provide visible and audible alarms as well as an indication of what caused the shutdown.
- ❑ There must be a visible indicator in the machinery space to show when an emergency battery is discharging and when the automatically controlled emergency power source is supplying the emergency loads, as per 46 CFR 112.45-1.
- ❑ As per 46 CFR 112.05-5(b), a stop control for the emergency generator may only be located in the same space. A remote mechanical reach rod to shut off fuel from an independent tank in the space is acceptable.
- ❑ As per 46 CFR 111.30-29, each emergency generator must have an emergency switchboard. Power distribution panelboards or motor control centers are not equivalent to switchboards.
- ❑ As per 46 CFR 112.05-5(g)&(h), the emergency switchboard must be:
 - a) in the same space as the emergency power source if it is a generator.
 - b) as near as practicable, but not in the same space as the emergency power source if it is a battery.

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- ❑ 46 CFR 112.15-1 & -5 identify which equipment must be able to be energized from the temporary and final emergency power sources.
 - ❑ As per 46 CFR 112.05-1, non-emergency loads may only be connected to the emergency switchboard if the purpose is to increase safety due to unique vessel missions or configurations. Connection of non-emergency loads must be specifically approved by the MSC, as per 46 CFR 112.05-1(c).
 - ❑ As per 46 CFR 112.-05-5(a), the emergency generator must be capable of simultaneously powering all connected loads. Any approved non-emergency loads connected to the switchboard must be provided with automatic load shedding (manual reset) that prevents generator overload.
 - ❑ As per 112.05-3, the bus-tie between the main and emergency switchboards must meet the following requirements:
 - a) It must disconnect automatically upon loss of main power.
 - b) It must be arranged to prevent parallel operation of the emergency power source with any other power source, except for interlock systems for momentary transfer of loads.
 - c) Arrangements for feedback of vital loads connected to the main switchboard will be considered on a case-by-case basis and must be specifically approved by the MSC.
 - ❑ No cable from the emergency switchboard may penetrate boundary spaces of an engineroom, boiler room, uptakes or casings except cables that connect the emergency power source to equipment located in these spaces, as per 46 CFR 112.05-5(f).
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Disclaimer:

This guidance is not a substitute for applicable legal requirements, nor is it itself a rule. It is not intended to nor does it impose legally-binding requirements on any party. It represents the Coast Guard's current thinking on this topic and may assist industry, mariners, the general public, and the Coast Guard, as well as other federal and state regulators, in applying statutory and regulatory requirements. You can use an alternative approach for complying with these requirements if the approach satisfies the requirements of the applicable statutes and regulations. If you want to discuss an alternative, you may contact the Marine Safety Center (MSC), the unit responsible for implementing this guidance.