

directly adjacent to and on the same level as the generator room).

(h) *Three-wire, single-phase and four-wire, three-phase generators.* There must be circuit breaker poles for each generator lead, except in the neutral lead.

(i) *Three-wire, direct-current generators.* Each three-wire, direct current generator must meet the following requirements:

(1) *Circuit breaker poles.* There must be separate circuit breaker poles for the positive and negative leads, and, unless the main poles provide protection, for each equalizer lead. If there are equalizer poles for a three-wire generator, each overload trip must be of the "Algebraic" type. If there is a neutral pole in the generator circuit breaker, there must not be an overload trip element for the neutral pole. In this case, there must be a neutral over-current relay and alarm system that is set to function at a current value not more than the neutral rating.

(2) *Equalizer buses.* For each three-wire generator, the circuit breaker must protect against a short circuit on the equalizer bus.

(j) *Circuit breaker reclosing.* Generator circuit breakers must not automatically close after tripping.

[CGD 74-125A, 47 FR 15236, Apr. 8, 1982, as amended by CGD 81-030, 53 FR 17847, May 18, 1988; CGD 94-108, 61 FR 28277, June 4, 1996; 62 FR 23908, May 1, 1997]

§ 111.12-13 Propulsion generator protection.

For general requirements, see § 111.35-1 of this chapter.

Subpart 111.15—Storage Batteries and Battery Chargers: Construction and Installation

§ 111.15-1 General.

Each battery must meet the requirements of this subpart.

[CGD 94-108, 61 FR 28277, June 4, 1996]

§ 111.15-2 Battery construction.

(a) A battery cell, when inclined at 40 degrees from the vertical, must not spill electrolyte.

(b) Each fully charged lead-acid battery must have a specific gravity that meets section 22 of IEEE 45-2002 (incor-

porated by reference; see 46 CFR 110.10-1).

(c) Batteries must not evolve hydrogen at a rate exceeding that of a similar size lead-acid battery under similar charging condition.

(d) Batteries must be constructed to take into account the environmental conditions of a marine installation, including temperature, vibration, and shock.

[CGD 94-108, 61 FR 28277, June 4, 1996, as amended by USCG-2003-16630, 73 FR 65196, Oct. 31, 2008]

§ 111.15-3 Battery categories.

(a) A battery installation is classified as one of three types, based upon power output of the battery charger, as follows:

(1) *Large.* A large battery installation is one connected to a battery charger that has an output of more than 2 kw computed from the highest possible charging current and the rated voltage of the battery installation.

(2) *Moderate.* A moderate battery installation is one connected to a battery charger that has an output of between 0.2 kw and 2 kw computed from the highest possible charging current and the rated voltage of the battery installation.

(3) *Small.* A small battery installation is one connected to a battery charger that has an output of less than 0.2 kw computed from the highest possible charging current and the rated voltage of the battery installation.

(b) Batteries that generate less hydrogen under normal charging and discharging conditions than an equivalent category of lead-acid batteries (e.g., sealed batteries) may have their battery category reduced to an equivalent category of lead-acid batteries.

[CGD 74-125A, 47 FR 15236, Apr. 8, 1982, as amended by CGD 94-108, 61 FR 28278, June 4, 1996]

§ 111.15-5 Battery installation.

(a) *Large batteries.* Each large battery installation must be in a room that is only for batteries or a box on deck. Installed electrical equipment must meet the hazardous location requirements in subpart 111.105 of this part.