

**§ 111.05-23**

**§ 111.05-23 Location of ground indicators.**

Ground indicators must:

- (a) Be at the vessel's ship's service generator distribution switchboard for the normal power, normal lighting, and emergency lighting systems;
- (b) Be at the propulsion switchboard for propulsion systems; and
- (c) Be readily accessible.
- (d) Be provided (at the distribution switchboard or at another location, such as a centralized monitoring position for the circuit affected) for each feeder circuit that is isolated from the main source by a transformer or other device.

NOTE TO PARAGRAPH (d): An alarm contact or indicating device returned to the main switchboard via a control cable, that allows the detecting equipment to remain near the transformer or other isolating device for local troubleshooting, is allowed.

[CGD 74-125A, 47 FR 15236, Apr. 8, 1982, as amended by CGD 94-108, 61 FR 28276, June 4, 1996; 62 FR 23907, May 1, 1997]

**§ 111.05-25 Ungrounded systems.**

Each ungrounded system must be provided with a suitably sensitive ground detection system located at the respective switchboard which provides continuous indication of circuit status to ground with a provision to momentarily remove the indicating device from the reference ground.

[CGD 94-108, 61 FR 28276, June 4, 1996]

**§ 111.05-27 Grounded neutral alternating current systems.**

Grounded neutral and high-impedance grounded neutral alternating current systems must have a suitably sensitive ground detection system which indicates current in the ground connection, is able to withstand the maximum available fault current without damage, and provides continuous indication of circuit status to ground. A provision must be included to compare indications under fault conditions with those under normal conditions.

[CGD 94-108, 62 FR 23907, May 1, 1997]

**§ 111.05-29 Dual voltage direct current systems.**

Each dual voltage direct current system must have a suitably sensitive

**46 CFR Ch. I (10-1-06 Edition)**

ground detection system which indicates current in the ground connection, has a range of at least 150 percent of neutral current rating and indicates the polarity of the fault.

[CGD 94-108, 61 FR 28276, June 4, 1996]

**GROUNDING CONDUCTORS**

**§ 111.05-31 Grounding conductors for systems.**

(a) A conductor for grounding a direct-current system must be the larger of:

- (1) The largest conductor supplying the system; or
- (2) No. 8 AWG (8.4mm<sup>2</sup>).

(b) A conductor for grounding the neutral of an alternating-current system must meet Table 111.05-31(b).

TABLE 111.05-31(b)—NEUTRAL GROUNDING CONDUCTOR FOR ALTERNATING-CURRENT SYSTEM

Size of the largest generator cable or equivalent for parallel generators—AWG-MCM (mm <sup>2</sup> )		Size of the system grounding conductor—AWG(mm <sup>2</sup> )
Greater than	Less than or equal to	
.....	2 (33.6) .....	8 (8.4)
2 (33.6) .....	0 (53.5) .....	6 (13.3)
0 (53.5) .....	3/0 (85.0) .....	4 (21.2)
3/0 (85.0) .....	350 MCM (177) .....	2 (33.6)
350 MCM (177) .....	600 MCM (304) .....	0 (53.5)
600 MCM (304) .....	1100 MCM (557) .....	2/0 (67.5)
1100 MCM (557) .....	.....	3/0 (85.0)

**§ 111.05-33 Equipment safety grounding (bonding) conductors.**

(a) Each equipment grounding conductor must be sized in accordance with article 250-95 of the National Electrical Code (the NEC) (NFPA 70).

(b) Each equipment grounding conductor (other than a system grounding conductor) of a cable must be permanently identified as a grounding conductor in accordance with the requirements of article 310-12(b) of the NEC.

[CGD 94-108, 61 FR 28276, June 4, 1996, as amended at 62 FR 23907, May 1, 1997]

**§ 111.05-37 Overcurrent devices.**

(a) A permanently grounded conductor must not have an overcurrent device unless the overcurrent device simultaneously opens each ungrounded conductor of the circuit.

(b) The neutral conductor of the emergency-main switchboard bus-tie