

MSC Guidelines for General Emergency Alarm & Public Address Systems

Procedure Number: E2-02

Revision Date: April 13, 2016

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Purpose: This document outlines a basic method for submitting general emergency alarm and public address system drawings.

References:

- a) 46 CFR 113.25 – General Emergency Alarm Systems
- b) 46 CFR 113.50 – Public Address Systems
- c) SOLAS (Consolidated Edition 2014) Chapter II-1
- d) Navigation and Vessel Inspection Circular (NVIC) 2-89, “Guide for Electrical Installations on Merchant Vessels and Mobile Offshore Drilling Units”
- e) Navigation and Vessel Inspection Circular (NVIC) 8-93, “Equivalent Alternatives to 46 CFR Subchapter H Requirements Related to Means of Escape, Safe Refuge Areas, and Main Vertical Zone Length”

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 E2-02.

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) through (d). 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 subject to the regulations of Subchapter J.

General Guidance:

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- ❑ General emergency alarm and public address systems are required for each manned vessel over 100GT, except barges, scows, and similar vessels, as per 46 CFR 113.25-1(a) and 113.50-1.
 - ❑ General emergency alarm and public address systems are required for manned tank barges:
 - a) if >100GT on an ocean or coastwise route with a crew divided into watches for steering the vessel (see 46 CFR 113.25-25), or
 - b) if >300GT with sleeping accommodations for more than 6 (see 46 CFR 113.25-30).
 - ❑ As per 46 CFR 120.550(b), vessels regulated under Subchapter K, more than 65 feet in length, and with overnight accommodations for more than 49 passengers must meet the requirements for general alarm systems in 113.25.
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General Alarm Systems:

- ❑ The general alarm system must be provided with power from an emergency power source meeting the requirements of reference (c), Regulation 42 for passenger ships or Regulation 43 for cargo ships, as per 46 CFR 113.25-6.
 - ❑ As per 46 CFR 113.25-8, a feeder distribution panel must be provided to divide the system into zones.
 - a) At least one feeder must be provided for each vertical fire zone that has a general emergency alarm signal.
 - b) If the vessel is not divided into fire zones, the alarm system must be divided into vertical service zones not more than 40m long.
 - c) One or more branch circuit distribution panels must be provided for each zone, and each branch circuit must not supply more than one deck level, unless a single circuit supplies all levels of one space that covers multiple decks.
 - d) Disconnect switches are not allowed.
 - ❑ As per 46 CFR 113.25-7, the cable from the power source, whether a battery bank or a switchboard, must be protected by a fuse or circuit breaker that has a means of locking. If the system is powered by a dedicated battery bank, the overcurrent device must be set at a value not less than 200% of the connected load.
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- As per 46 CFR 113.25-16(c),
 - a) feeder circuit overcurrent protection settings must be as near as practicable to 200% of the load supplied, and
 - b) branch circuit overcurrent protection must not be set higher than 50% of the feeder protection setting.

- General emergency alarm system feeder and branch circuit cables must not pass through staterooms, lockers, galleys, machinery spaces, or other enclosed spaces, unless it is necessary to supply the alarm signal in those spaces, as per 46 CFR 113.25-8(h).

- As per 46 CFR 113.25-9 & -10, the alarm system must include the following:
 - a) Signals that meet the requirements of 113.50, located in the following spaces:
 1. cabins without loudspeakers,
 2. public spaces,
 3. work spaces,
 4. machinery spaces,
 5. workshops,
 6. galleys,
 7. emergency firepump rooms,
 8. bow thruster rooms,
 9. storage and cargo areas,
 10. steering gear rooms,
 11. hold on roll-on/roll-off vessels, and
 12. duct keels with valve operators, unless they are only accessible through bolted manhole covers.
 - b) Additionally, red-flashing lights or rotating beacons in spaces where the alarm signal cannot be heard over background noise. These lights must be supplied by the alarm system power supply or the vessel emergency power source through a relay that is operated by the alarm system.

- Manually-operated contact makers must meet the requirements of 46 CFR 113.25-11 and be provided in the following locations, as per 113.25-5.
 - a) For vessels regulated under Subchapters H, I, L, R, and U:
 1. navigating bridge, and
 2. general alarm feeder distribution panel, if the power supply is not in or next to the navigating bridge.

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- b) For tankships regulated under Subchapter D:
 - 1. navigating bridge,
 - 2. general alarm feeder distribution panel, if the power supply is not in or next to the navigating bridge,
 - 3. deck officer's quarters furthest from the engine room,
 - 4. engine room, and
 - 5. location of the emergency means of stopping cargo transfer required by 33 CFR 155.780 (either on the cargo deck, in the cargo control room, or at the usual operating station of the person in charge of the transfer operation).
 - c) For vessels regulated under Subchapter I-A:
 - 1. main control room,
 - 2. drilling console,
 - 3. feeder distribution panel,
 - 4. navigating bridge, if there is one, and
 - 5. a routinely occupied space that is as far as practicable from all other contact makers.
 - d) If the vessel has an emergency squad, has a manual fire alarm system, or is an ocean-going passenger vessel, the system must also have:
 - 1. an independent manually operated contact maker in the navigating bridge that sounds the general emergency alarm only in the crew's quarters and machinery spaces; or
 - 2. a separate alarm system that sounds only in the crew's quarters and machinery spaces.
- As per 46 CFR 113.25-25, manned tank barges >100GT on an ocean or coastwise route with a crew divided into watches for steering the vessel must meet the following requirements:
- a) The power source must be an automatically charged battery.
 - b) Manually operated contact makers must be provided at the steering station and in the crew accommodation area.
 - c) The system must comply with 113.25-7 and 113.25-9 through 113.25-20.
- As per 46 CFR 113.25-30, manned tank barges >300GT with sleeping accommodations for more than 6 must meet the requirements of 113.25, except:
- a) The number and location of contact makers must be determined by the design, service, and operation of the barge.

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Public Address (PA) Systems:

- ❑ The PA system must be provided with power from an emergency power source meeting the requirements of reference (c), Regulation 42 for passenger ships or Regulation 43 for cargo ships, as per 46 CFR 113.25-6 (referenced by 113.50-5(f)).
- ❑ As per 46 CFR 113.50-20, a feeder distribution panel must be provided to divide the system into zones.
 - a) At least one feeder must be provided for each vertical fire zone that has a general emergency alarm signal.
 - b) If the vessel is not divided into fire zones, the alarm system must be divided into vertical service zones not more than 40m long.
 - c) One or more branch circuit distribution panels must be provided for each zone, and each branch circuit must not supply more than one deck level, unless a single circuit supplies all levels of one space that covers multiple decks.
- ❑ As per 46 CFR 113.25-7 (referenced by 113.50-5(f)), the cable from the power source, whether a battery bank or a switchboard, must be protected by a fuse or circuit breaker that has a means of locking. If the system is powered by a dedicated battery bank, the overcurrent device must be set at a value not less than 200% of the connected load.
- ❑ PA system feeder and branch circuit cables must not pass through staterooms, lockers, galleys, machinery spaces, or other enclosed spaces, unless it is necessary to supply the alarm signal in those spaces, as per 46 CFR 113.50-20(g).
- ❑ As per 46 CFR 113.50-5, the system must meet the following requirements:
 - a) The announcing station must be located adjacent to the general emergency alarm contact maker on the navigating bridge.
 - b) The announcing station must have a means to override all other audio distribution systems.
 - c) If the amplifier system is used for the general emergency alarm, the operation of the contact maker must activate all speakers in the system, unless it is the crew-only contact maker allowed by 113.25-5(e)(2).
 - d) Amplifiers and any devices used to produce the general alarm signal must be provided in duplicate.

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- On passenger vessels, the alarm system must be able to broadcast separately or collectively to the following spaces, as per 46 CFR 113.50-10:
 - a) Survival craft stations, port
 - b) Survival craft stations, starboard
 - c) Survival craft embarkation stations, port
 - d) Survival craft embarkation stations, starboard
 - e) Public spaces used for passenger assembly points
 - f) Crew quarters
 - g) Accommodation spaces and service spaces
- Loudspeakers must meet the requirements of 46 CFR 113.50-15.
- As per reference (d) section 5.2, the general emergency alarm, fire alarm, and public address systems may be combined. When they are integrated, equivalency to the intent of 46 CFR 113.25 and SOLAS Chapter II-2 for PA systems must be determined. The system must meet the following requirements:
 - a) Priority must be given to the general emergency alarm system.
 - b) Operation of the fire alarm may also activate a fire alarm page via the PA system. This must not interfere with the operation of the general alarm.

AEVADS:

- Reference (e), enclosure (2), paragraph 22 outlines the requirements for Automatic Emergency Voice Alarm and Directions Systems (AEVADS). AEVADS is required on Subchapter H vessels with main vertical (fire) zones that exceed 40m. Any other vessel that utilizes an AEVADS must comply with these regulations.
- The AEVADS must be supplied with power from a dedicated branch circuit from the emergency switchboard with a backup of battery supply or final emergency power source as required by 46 CFR 112.05-5 and 112.15-1(j).
- The AEVADS must be fitted with a ground detection system capable of selectively monitoring individual zones.

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- ❑ Type approved fire or smoke alarm systems which incorporate AEVADS must be shown not to degrade the operation or performance of the alarm system.
 - ❑ The AEVADS shall be activated by manual pull stations, alarming of the fire detection system, or sprinkler flow. There must be a 60-second delay between a single detector alarm and activation of the AEVADS.
 - ❑ Upon activation of the AEVADS, all announcing or entertainment systems must be automatically disconnected. The AEVADS must have the capability of being overridden by the operator at the central control station.
 - ❑ If the AEVADS is independent of the PA system, both systems must have loudspeakers that meet the requirements of 46 CFR 113.50-15. The loudspeaker system must be able to temporarily interrupt the automatic message, with the capability to select which zone(s) the manual voice message will be transmitted.
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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.