

Design, manufacture and supply communication systems world wide for use in the petrochemical industry.

KB026 American Bureau of Shipping PAGA (Public Address) System Rules

Objective

This knowledge based data sheet is designed to help designers and suppliers of General alarm and Public Address systems with regard to the review and acceptance of such systems. The following guidance covers systems that do not follow conventional design for two separate systems. The document addresses the aspects of the system design, which is reviewed by ABS, and for US registered vessels, which require review by the United States Coast Guard (USCG). The on-site ABS survey aspects of the fabrication are not addressed in this document.

Regulatory/Classification Society Requirements

For US registered vessels, the USCG requirements for conventional public address system and general alarm system are contained within the United States Code of Federal Regulations, Title 46. Additional guidance is USCG publications including MTN 3-95 regarding unconventional systems.

The ABS requirements for two separate conventional systems are contained within the ABS MODU Rules.

As outlined in USCG NVIC 10-82, ABS may conduct plan review and approval on behalf of USCG.

IMO requirements are contained within IMO "Code and Alarm and Indicators" Resolutions A. 668 (170 and A.830 (19)).

Power Supply

1 The system is to be powered from two (main and emergency) sources of power by two independent separate feeders coming to a change over switch. Such a switch is to be in the main PAGA panel or adjacent to it. ABS MODU Rules 4-3-2/15.9.3, 4-3-2/17.1.2, 46 CFR 113.25-6.

2 If back up batteries are to be considered one of the two sources, the batteries are to be sufficient for 18 hours of standby and 0.5 hours of system operation. ABS MODU Rules 4-3-2/5.3.

3 When the power to the PAGA system, from the two sources, is processed through a UPS it is to be in the same space as the main panel and the inverter is to have a bypass. ABS MODU Rules 4-3-2/17.1.2

4 The PAGA system is also to be powered after emergency shutdown of the main and emergency sources on board. ABS MODU Rules 4-3-5/7.

6 The other locations are the second emergency control station on board (for drilling unit it is usually the driller's cabin or the drill floor), for self-propelled units the navigating bridge, and other strategic locations. ABS MODU Rules 4-3-2/15.9, 4-3-2/17.1.2, 46 CFR 113.25-5 (c)

The permanently manned location/control room is to have the main panel, GA activation device, and PA microphone. ABS MODU Rules 4-3-2/15.9.1, 4-3-2/17.1.2, 46 CFR 113.25-5 (c)

7 The contact maker or GA activation device is to be such that the alarm continues to sound after it has been triggered until it is manually turned off, or is it temporarily interrupted by a message on the public address system. ABS MODU Rules 4-3-2/17.1.2

8 Speakers are not to have volume controls. If they do, the system is to have an override function so that any emergency message or emergency alarm should be audible in spite of the position of volume control. Further the system is to broadcast emergency messages or emergency alarms even when the signalling devices are in use for other purposes. ABS MODU Rules 4-3-2/15.9, 46 CFR 133.50-15 (d)

9 For US flags, any panel with fuses is to have a nameplate/directory showing fuse details and ratings. 46 CFR 113.25-20.

10 Locations where noise level is such that it prevents the emergency alarm to be clearly heard, rotating beacons or flashing lights should be installed to alert the personnel.

11 For US flag units, GA activation devices are to be marked "GENERAL ALARM" in red letters on a corrosion resistant plate or on a sign. Further, each signalling device is to be marked "GENERAL ALARM- WHEN EMERGENCY SIGNAL RINGS GO TO YOUR STATION" in red letters at least ½ an inch high. 46 CFR 113.25-20

12 All external devices are to be suitable for use in Class I DIIV 2. ABS MODU Rules 4-3-5/7.1.2

System Design

13 Conventional design requires two independent systems, a General Alarm System and a Public Address System. ABS MODU Rules 4-3-2/15.39, 4-3-2/17.1.1

14 A combined system is permitted provided it shows complete equivalency to an arrangement where two separate independent systems are installed in accordance with Rules and Regulations.

15 For equivalency in accordance with 14 above, a combined system should have duplicated major units/sub-units, including the tone generators, with satisfactory switching arrangements, so that a single failure does not make the whole system in-operable. Further, there is to be redundant coverage in all locations wither by duplicated branches/signalling devices and no significant deterioration in signal consequent to any failure in the loop

16 Any failure in the system should be monitored and alarmed, so that a second non concurrent failure over time does not leave any location/s without coverage. Alternatively, suitable operating procedures are to be in place, for detection of any failure.

17 Branches/Loop cables should be installed so that any damage at a location does not eliminate all coverage to an area location. Further, through-cable runs through lockers, alleys, staterooms and machinery spaces are to be avoided unless they are feeding a device in that space.

18 Over current protection furnished should be 200% of the load supplied. Further, there should be a 50% differential between a downstream OC device and an upstream OC device.

19 The PAGA system is to be capable of separate general emergency alarm, fire alarm and abandon units signals. ABS MODU Rules 4-3-2/17.1.2

20 A software-driven system should employ non volatile memory device for storage of control and/or tone programs.

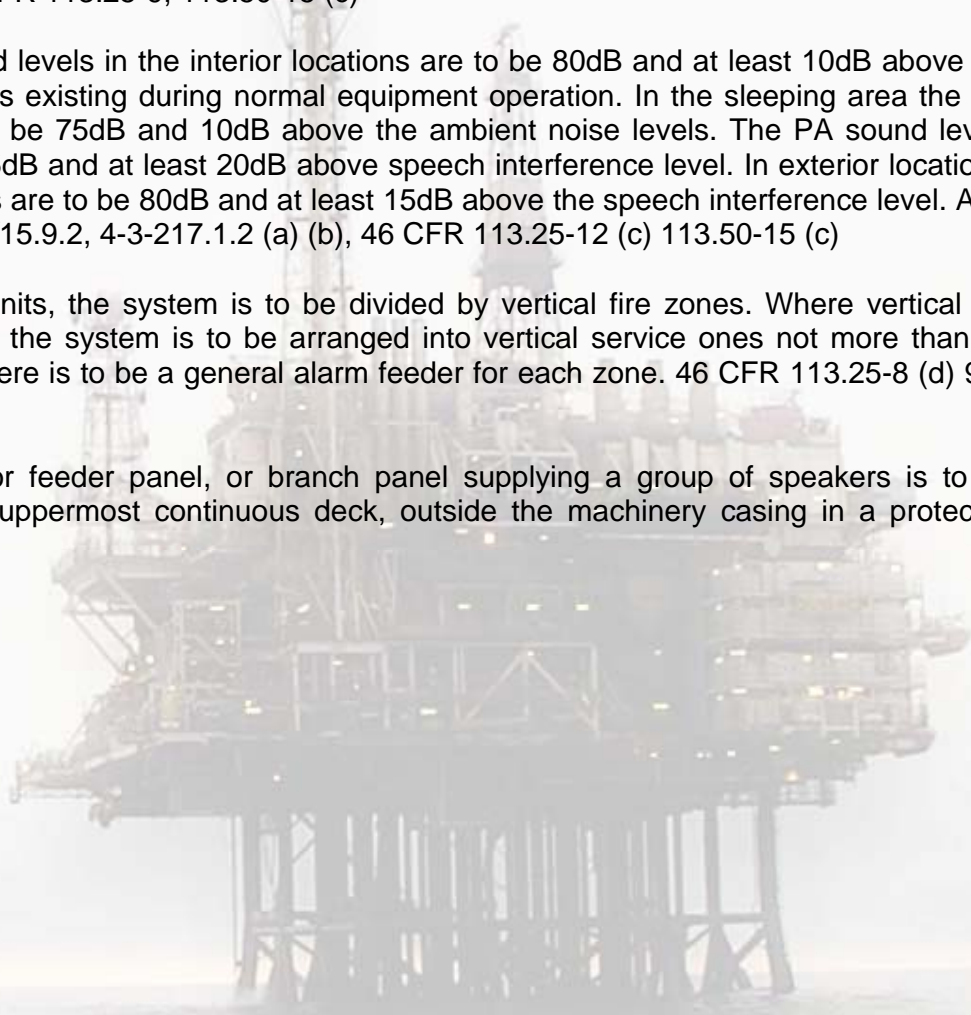
21 For self propelled units, the general alarm is also to sound on units' whistle but with such an operation only from the navigating bridge. ABS MODU Rules 4-3-2/17.1.2

22 The system is to be clearly perceptible in all parts/locations of the vessel. Further, speakers or alarm transducers are to be installed in all cabins. ABS MODU Rules 4-3-2/15.9, 4-3-2/17.1.2 (a), 46 CFR 113.25-9, 113.50-15 (c)

23 The GA sound levels in the interior locations are to be 80dB and at least 10dB above the ambient noise levels existing during normal equipment operation. In the sleeping area the GA sound levels are to be 75dB and 10dB above the ambient noise levels. The PA sound levels interior are to be 75dB and at least 20dB above speech interference level. In exterior locations, the PA sound levels are to be 80dB and at least 15dB above the speech interference level. ABS MODU Rules 4-3-2/15.9.2, 4-3-2/17.1.2 (a) (b), 46 CFR 113.25-12 (c) 113.50-15 (c)

24 For US flag units, the system is to be divided by vertical fire zones. Where vertical fire zones do not exist, the system is to be arranged into vertical service ones not more than 40 metres long, and there is to be a general alarm feeder for each zone. 46 CFR 113.25-8 (d) 9g), 113.50-20 (a) (f)

25 Main panel, or feeder panel, or branch panel supplying a group of speakers is to be located above the uppermost continuous deck, outside the machinery casing in a protected space.



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