

CHAPTER 11

REMOTE CONTROL, ALARM AND SAFETY SYSTEMS

EU Directive on Electromagnetic Compatibility (89/336/EEC, repealed by 2004/108/EC of 15 December 2004)

Electrical and electronic equipment that may either generate or be affected by electromagnetic disturbance shall meet the requirements of EU Directive 89/336/EEC, repealed by 2004/108/EC of 15 December 2004. Equipment complying with this directive should have an EC mark or CE marking in accordance with EU Directives 2004/108/EC of 15 December 2004, or 93/68/EEC (with Corrigendum dated 30 August 1993), as amended.

EU Directive on Electrical Equipment designed for use within certain voltage limits (73/23/EEC repealed by 2006/95/EC of 12 December 2006)

Electrical Equipment designed for use with a voltage rating of between 50 and 1000 volts for alternating current and between 75 and 1500 volts for direct current shall meet the requirements of EU Directive 73/23/EEC, repealed by 2006/95/EC of 12 December 2006, except for specialised electrical equipment, for use on ships, which comply with the safety provisions drawn up by international bodies in which the Member States participate.

11.1 Definitions

11.1.1 "Remote control systems" comprise all equipment necessary to operate units from a control position where the operator cannot directly observe the effect of his actions.

11.1.2 "Back-up control systems" comprise all equipment necessary to maintain control of essential functions required for the craft's safe operation when the main control systems have failed or malfunctioned.

11.2 General

11.2.1 Failure of any remote or automatic control systems shall initiate an audible and visual alarm and shall not prevent normal manual control.

Where remote control is provided, local control should be unaffected by a fault, including a cable fault, when local control is selected.

11.2.2 Manoeuvring and emergency controls shall permit the operating crew to perform the duties for which they are responsible in correct manner without difficulty, fatigue or excessive concentration.

Manually operated controls should be demonstrated to show that this requirement can be met.

11.2.3 Where control of propulsion or manoeuvring is provided at stations adjacent to but outside the operating compartment, the transfer of control shall only be effected from the station which takes charge of control. Two-way voice communication shall be provided between all stations from which control functions may be exercised and between each such station and the look-out position. Failure of the operating control system or of transfer of control shall bring the craft to low speed without hazarding passengers or the craft.

11.2.4 For category B and cargo craft, remote control systems for propulsion machinery and directional control shall be equipped with back-up systems controllable from the operating compartment. For cargo craft, instead of a back-up system described above, a back-up system controllable from an engine control space such as an engine control room outside the operating compartment, is acceptable.

11.3 Emergency controls

11.3.1 In all craft, the station or stations in the operating compartment from which control of craft manoeuvring and/or of its main machinery is exercised shall be provided, within easy reach of the crew member at that station, with controls for use in an emergency to:

- .1 activate fixed fire-extinguishing systems;
- .2 close ventilation openings and stop ventilating machinery supplying spaces covered by fixed fire-extinguishing systems, if not incorporated in .1;
- .3 shut off fuel supplies to machinery in main and auxiliary machinery spaces;
- .4 disconnect all electrical power sources from the normal power distribution system (the operating control shall be guarded to reduce the risk of inadvertent or careless operation); and
- .5 stop main engine(s) and auxiliary machinery.

11.3.2 Where control of propulsion and manoeuvring is provided at stations outside the operating compartment, such stations shall have direct communication with the operating compartment which shall be a continuously manned control station.

11.3.3 In addition, for category B craft control of propulsion and manoeuvring as well as emergency functions referred to in 11.3.1 shall be provided in a station outside the operating compartment. Such stations shall have direct communication with the operating compartment, which shall be a continuously manned control station.

11.4 Alarm system

11.4.1 Alarm systems shall be provided which announce at the craft's control position, by visual and audible means, malfunctions or unsafe conditions. Alarms shall be maintained until they are accepted and the visual indications of individual alarms shall remain until the fault has been corrected, when the alarm shall automatically reset to the normal operating condition. If an alarm has been accepted and a second fault occurs before the first is rectified, the audible and visual alarms shall operate again. Alarm systems shall incorporate a test facility.

11.4.1.1 Emergency alarms giving indication of conditions requiring immediate action shall be distinctive and in full view of crew members in the operating compartment, and shall be provided for the following:

- .1 activation of a fire-detection system;
- .2 total loss of normal electrical supply;
- .3 overspeed of main engines; and

- .4 thermal runaway of any permanently installed nickel-cadmium battery.

11.4.1.2 Alarms with a visual display distinct from that of alarms referred to in 11.4.1.1 shall indicate conditions requiring action to prevent degradation to an unsafe condition. These shall be provided for at least the following:

- .1 exceeding the limiting value of any craft, machinery or system parameter other than engine overspeed;
- .2 failure of normal power supply to powered directional or trim control devices;
- .3 operation of any automatic bilge pump;
- .4 failure of compass system;
- .5 low level of a fuel tank contents;
- .6 fuel oil tank overflow;
- .7 extinction of side, masthead or stern navigation lights;
- .8 low level of contents of any fluid reservoir the contents of which are essential for normal craft operation;
- .9 failure of any connected electrical power source;
- .10 failure of any ventilation fan installed for ventilating spaces in which inflammable vapours may accumulate; and
- .11 diesel engine fuel line failure as required by 9.4.2.

11.4.1.3 All warnings required by 11.4.1.1 and 11.4.1.2 shall be provided at all stations at which control functions may be exercised.

11.4.2 The alarm system shall meet appropriate constructional and operational requirements for required alarms.*

* Refer to the Code on Alarms and Indicators, 1995, adopted by the Organization by resolution A.830(19).

It is necessary to establish a priority level for different alarms and for the systems to generate different alarm tones.

11.4.3 Equipment monitoring the passenger, cargo and machinery spaces for fire and flooding shall, so far as is practicable, form an integrated sub-centre incorporating monitoring and activation control for all emergency situations. This sub-centre may require feedback instrumentation to indicate that actions initiated have been fully implemented.

11.5 Safety system

Where arrangements are fitted for overriding any automatic shutdown system for the main propulsion machinery in accordance with 9.2.2, they shall be such as to preclude inadvertent operation. When a shutdown system is activated, an audible and visual alarm shall be given at the control station and means shall be provided to override the automatic shutdown except in cases where there is a risk of complete breakdown or explosion.