Chapter 11
Remote control, alarm and safety systems

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 should initiate an audible and visual alarm and should 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 should permit the operating crew to perform the duties for which they are responsible in correct manner without difficulty, fatigue or excessive concentration.

11.2.3 Where control of propulsion or manoeuvring is provided at stations adjacent to but outside the operating compartment, the transfer of control should only be effected from the station which takes charge of control. Two-way voice communication should 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 should 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 should 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 should 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 should 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 station should have direct communication with the operating compartment which should be a continuously manned control station.

11.4 Alarm system

11.4.1 Alarm systems should be provided which announce at the craft's control position, by visual and audible means, malfunctions or unsafe conditions. Alarms should be maintained until they are accepted and the visual indications of individual alarms should remain until the fault has been corrected, when the alarm should 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 should operate again. Alarm systems should incorporate a test facility.

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

.1 activation of a fire detection system;

.2 total loss of normal electrical supply;

.3 overspeed of main engines;

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

11.4.1.2 Primary alarms with a visual display distinct from that of emergency alarms indicate conditions requiring action to prevent degradation to an unsafe condition. These should be provided for at least the following:

.1 exceeding the limiting value of any craft, machinery 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 should be provided at all stations at which control functions may be exercised.

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

Alarms and indicators should comply with the requirements of IMO's Code on Alarms and Indicators, 1995 which was adopted by the Organisation 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 should, so far as is practicable, form an integrated sub-centre incorporating monitoring and activation control for all emergency situations. This sub-centre may require feed-back instrumentation to indicate that actions initiated have been fully implemented.

11.5 Safety system

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