

operations, which presents an immediate danger, shall initiate the automatic shutdown of that part of the plant and that an alarm shall be given. Shutdown of the propulsion system shall not be automatically activated except in cases which could lead to serious damage, complete breakdown, or explosion. Where arrangements for overriding the shutdown of the main propelling machinery are fitted, these shall be such as to preclude inadvertent operation. Visual means shall be provided to indicate when the override has been activated.

57. Special Requirements for Machinery, Boiler and Electrical Installations—(1) The special requirements for the machinery, boiler and electrical installations shall be to the satisfaction of the Chief Surveyor and shall include at least the requirements of this clause.

(2) The main source of electrical power shall comply with the following:

(a) Where the electrical power can normally be supplied by one generator, suitable load-shedding arrangements shall be provided to ensure the integrity of supplies to services required for propulsion and steering as well as the safety of the ship. In the case of loss of the generator in operation, adequate provision shall be made for automatic starting and connecting to the main switchboard of a stand-by generator of sufficient capacity to permit propulsion and steering and to ensure the safety of the ship with automatic restarting of the essential auxiliaries including, where necessary, sequential operations. This requirement for a ship of less than 1,600 gross tonnage may be dispensed with if the Chief Surveyor considers it impracticable.

(b) If the electrical power is normally supplied by more than one generator simultaneously in parallel operation, provision shall be made, for instance, by load shedding, to ensure that, in case of loss of one of these generating sets, the remaining ones are kept in operation without overload to permit propulsion and steering, and to ensure the safety of the ship.

(3) Where stand-by machines are required for other auxiliary machinery essential to propulsion, automatic change-over devices shall be provided.

(4) The control system shall be such that the services needed for the operation of the main propulsion machinery and its auxiliaries are ensured through the necessary automatic arrangements.

An alarm shall be given on the automatic change-over.

An alarm system complying with clause 55 of this Code shall be provided for all important pressures, temperatures and fluid levels and other essential parameters.

A centralised control position shall be arranged with the necessary alarm panels and instrumentation indicating any alarm.

(5) Means shall be provided to keep the starting air pressure at the required level where internal combustion engines are used for main propulsion.

58. Fire protection—(1) Means shall be provided to detect and give alarms at an early stage in case of fires:

(a) in boiler air supply casings and exhausts (uptakes); and

(b) in scavenging air belts of propulsion machinery, unless the Chief Surveyor considers this to be unnecessary in a particular case.

(2) Internal combustion engines of 2250kW and above or having cylinders of more than 300mm bore shall be provided with crankcase oil mist detectors or engine bearing temperature monitors or equivalent devices.

(3) In addition to the requirements of clause 39 and 40 of this Code, the oil fuel and lubricating oil systems shall comply with the following:

(a) Where necessary, oil fuel and lubricating oil pipelines shall be screened or otherwise suitably protected to avoid as far as practicable oil spray or oil leakages on to hot surfaces or

into machinery air intakes. The number of joints in such piping systems shall be kept to a minimum and, where practicable, leakages from high pressure oil fuel pipes shall be collected and arrangements provided for an alarm to be given.

(b) Where daily service oil fuel tanks are filled automatically, or by remote control, means shall be provided to prevent overflow spillages. Other equipment which treats flammable liquids automatically, e.g. oil fuel purifiers, which, whenever practicable, shall be installed in a special space reserved for purifiers and their heaters, shall have arrangements to prevent overflow spillages.

(c) Where daily service oil fuel tanks or settling tanks are fitted with heating arrangements, a high temperature alarm shall be provided if the flashpoint of the oil fuel can be exceeded.

59. Passenger Ships—Passenger ships shall be specially considered by the Chief Surveyor as to whether or not their machinery spaces may be periodically unattended and if so whether additional requirements to those stipulated in this Code are necessary to achieve equivalent safety to that of normally attended machinery spaces.

Part VI

Electrical Installations

60. General—(1) Electrical installations shall be such that;

(a) all electrical auxiliary services necessary for maintaining the ship in normal operational and habitable conditions will be ensured without recourse to the emergency source of electrical power;

(b) electrical services essential for safety will be ensured under various emergency conditions; and

(c) the safety of passengers, crew and ship from electrical hazards will be ensured.

(2) The electrical equipment and installations (including any electrical means of propulsion) shall conform with The Institution of Electrical Engineers' Regulations for the Electrical and Electronic Equipment of Ships' or such other standards as the Chief Surveyor may specify from time to time in 'Instructions to Surveyors' except so far as these are inconsistent with this Code.

61. Main Source of Electrical Power and Lighting Systems—(1) A main source of electrical power of sufficient capacity to supply all those services mentioned in clause 60(1)(a) of this Code shall be provided. This main source of electrical power shall consist of at least two generating sets.

(2) The capacity of these generating sets shall be such that in the event of any one generating set being stopped it will still be possible to supply those services necessary to provide normal operational conditions of propulsion and safety. Minimum comfortable conditions of habitability shall also be ensured which include at least adequate services for cooking, heating, domestic refrigeration, mechanical ventilation, sanitary and fresh water.

(3) The arrangements of the ship's main source of electrical power shall be such that the services referred to in clause 60(1)(a) of this Code can be maintained regardless of the speed and direction of rotation of the propulsion machinery or shafting.

(4) In addition, the generating sets shall be such as to ensure that with any one generator or its primary source of power out of operation, the remaining generating sets shall be capable of providing the electrical services necessary to start the main propulsion plant from a dead ship condition. The emergency source of electrical power may be used for the purpose of starting from a dead ship condition if its capability either alone or combined with that of any other source of electrical power is sufficient to provide at the same time those services required to be supplied by clause 62(5) paragraphs (a) to (c) or clause 64(5) paragraphs (a) to (d) of this Code.