Isle of Man Ship Registry
Manx Shipping Notice

SOLAS II-1 Construction – Structure, subdivision and stability, machinery and electrical installations	Ref. MSN 059 Issued: March 2016

Introduction

SOLAS Chapter II-1 contains requirements for the subdivision of ships into watertight compartments to be such that after assumed damage to the ship's hull the vessel will remain afloat and stable. Requirements for watertight integrity and bilge pumping arrangements for passenger ships are also laid down as well as stability requirements for both passenger and cargo ships. Requirements covering machinery and electrical installations are designed to ensure that services which are essential for the safety of the ship, passengers and crew are maintained under various emergency conditions.

"Goal-based standards" for oil tankers and bulk carriers were adopted in 2010, requiring new ships to be designed and constructed for a specified design life and to be safe and environmentally friendly, intact and specified damage conditions, throughout their life.

Under SOLAS Chapter II-1, ships should have adequate strength, integrity and stability to minimize the risk of loss of the ship or pollution to the marine environment due to structural failure, including collapse, resulting in flooding or loss of watertight integrity.

Section 1 Isle of Man Regulations implementing SOLAS II-1

The Merchant Shipping (SOLAS II-1) (Ships built on or after 1 January 2009) Regulations 2016.

This new regulation has the following purpose:

a) to require ships to comply with SOLAS Chapter II-1 up to and including amendments adopted by IMO Resolution MSC.365(93) on 22 May 2014, which entered into force on 1 January 2016; and
b) to amend the Merchant Shipping (SOLAS Chapter II-1 Construction) Regulations 2007 (SD 502/07) to limit its application to ships built on or after 1 July 1986 and up to and including 31 December 2008.

A summary of the main provisions of the new Regulations are:

1 Company's responsibility

A Company is required to ensure a ship complies with the Regulations.

In these Regulations, 'Company' means "the owner of a ship to which the Regulations apply or any other organisation or person such as the manager, or the bareboat charterer, who has assumed responsibility for operation of the ship from the owner and who, on assuming such responsibility, has agreed to take over all the duties and responsibilities imposed on the Company by the SOLAS Convention."

2 Requirement to comply with SOLAS Chapter II-1

Manx ships to which the Regulations apply must comply with the requirements of SOLAS Chapter II-1 as appropriate to a ship of its description.

3 Approval, exemption, equivalent arrangements, waivers and type approval

There are various circumstances in the SOLAS II-1 text where approval is required and certain situations where exemptions, equivalent arrangements and waivers may be granted.

a) Approvals
Where SOLAS Chapter II-1, or any part of a code referenced in SOLAS Chapter II-1, requires anything to be approved by the Administration, it must be approved by the Ship Registry or a Recognised Organisation (RO).

b) Equivalent arrangements, exemptions and waivers
The Ship Registry may permit equivalent arrangements, exemptions and waivers on a case by case basis if it is satisfied the arrangements meet the requirements of SOLAS Chapter II-1.

c) Type approval
All equipment requiring type approval must be accompanied by a type approval certificate issued by -

- a Recognised Organisation listed in MSN 20; or
- a Recognised Organisation on behalf of a national Administration; or
- the Ship Registry.

If the equipment has been issued with a type approval certificate by another organisation it may only be used or fitted with the consent of the Ship Registry.

Equipment which has been certified under the Marine Equipment Directive (MED) is acceptable to be used on Isle of Man registered vessels, although it is not a mandatory requirement of the Ship Registry that equipment has been certified under the MED.

Except when it is a Convention requirement, individual test certificates are not required in addition to the type approval certificate.

4 Validity of approval, exemption, equivalent arrangements, waivers

An approval, exemption, equivalent arrangement or waiver is only valid if it is in writing and if any conditions stated in it are complied with.

5 Foreign ships

A foreign ship in the territorial waters of the Island must comply with such of the requirements of SOLAS Chapter II-1 as apply in relation to a ship of its description.

A foreign ship in a port of the Island may be subject to inspection.

If an inspector carries out an inspection on a foreign ship in a port of the Island, and certificates required by regulation 12 or 13 of SOLAS Chapter 1 are not produced, have expired or ceased to be valid, the ship may be detained.

A ship may also be detained if the inspector has clear grounds for believing that the condition of the ship or its equipment does not correspond substantially with the particulars of the certificate or the ship and its equipment are not in compliance with the provisions of SOLAS Chapter 1 Regulation 11(a) and (b).

SECTION 2 Interpretation of SOLAS Chapter II-1 requirements

SOLAS Chapter II-1 requires the ship's Flag Administration to determine how a ship must implement certain requirements. For example, SOLAS Chapter II-1 refers to things being done "to the satisfaction of the Administration" or gives the Administration the ability to permit a method of construction to permit the use of a particular material or to determine a set of guidelines.

Within SOLAS Chapter II-1 there are over 100 of these circumstances and where necessary they have been set out in the Annex to this MSN. In most cases the decisions have been delegated to the ship's Recognised Organisation. Where the Ship Registry has an interpretation or requires compliance with a standard, this is stated in the Annex* to this consultation paper.

The organisations authorised to act as Recognised Organisations by the Ship Registry are listed in MSN 020 which is available on the Ship Registry's website – www.iomshipregistry.com

*References to SOLAS II-1 page numbers in the Annex are from SOLAS consolidated edition 2014. The Regulations have only been summarised and the SOLAS text should be referred to for the full regulation.

SOLAS consolidated edition 2014 Regulation	Summary of the regulation	IOM Ship Registry's Requirements
SOLAS CHAPTER II-1 PART A-1 Structure of ships		
Reg. 3-2.4 page 46	Maintenance of the protective coating system shall be included in the overall ship's maintenance scheme. The effectiveness of the protective coating system shall be verified during the life of a ship by the Administration or an organization recognised by the Administration, based on guidelines developed by the Organization.	Verification must be in accordance with MSC.1/Circ.1330 - Guidelines for maintenance and repair of protective coatings.
Reg. 3-3 Page 46	Every tanker shall be provided with means to enable the crew to gain safe access to the bow even in severe weather conditions. Such means of access shall be approved by the Administration based on guidelines developed by the Organization.	Means of access must be approved in accordance with Resolution MSC.62(67) - Guidelines for safe access to tanker bows.
Reg. 3-4.1.2.2 Page 47	Emergency towing arrangements at both ends shall be of adequate strength taking into account the size and deadweight of the ship, and the expected forces during bad weather conditions. The design, construction and prototype testing of emergency towing arrangements shall be approved by the Administration, based on Guidelines developed by the Organization.	Approval must be in accordance with MSC.35(63) as amended by MSC.132 (75) - Adoption of guidelines for emergency towing arrangements on tankers.
Reg. 3-4.1.3 Page 47	For tankers constructed before 1 July 2002, the design and construction of emergency towing arrangements shall be approved by the Administration, based on the Guidelines developed by the Organization.	Approval must be in accordance with MSC.35(63) as amended by MSC.132 (75) - Adoption of guidelines for emergency towing arrangements on tankers.
Reg. 3-8.3 Page 50	Towing and mooring equipment Arrangements, equipment and fittings provided in accordance with Regulation 3-8.2 shall meet the appropriate requirements of the Administration or an organization recognized by the Administration under regulation I/6.	Must meet the requirements of MSC/Circ.1175 - Guidance on shipboard towing and mooring equipment.
Reg. 3-12 Page 52	On ships delivered before 1 July 2018 and: .1 contracted for construction before 1 July 2014 and the keels of which are laid or which are at a similar stage of construction on or after 1 January 2009 but before 1 January 2015; or .2 in the absence of a building contract, the keels of which are laid or which are at a similar stage of construction on or after 1 January 2009 but before 1 January 2015, measures shall be taken to reduce machinery noise in machinery spaces to acceptable levels as determined by the Administration.	Acceptable levels are in accordance with Resolution A.468(XII) - The Code on noise levels on board ships.
SOLAS CHAPTER II-1 Part B-1 Stability		
Reg. 5.2 Page 55	The Administration may allow the inclining test of an individual cargo ship to be dispensed with, provided basic stability data are available from the inclining test of a sister ship and it is shown to the satisfaction of the Administration that reliable stability information for the exempted ship can be obtained from such basic data, as required by regulation 5-1……	The Ship Registry will consider dispensing with this on a case by case basis under the circumstances stated. Sister ship shall be built by the same yard from the same plans (MSC/Circ.1158).

Reg. 5.3. Page 55	The Administration may also allow the inclining test of an individual ship or class of ships especially designed for the carriage of liquids or ore in bulk to be dispensed with when reference to existing data for similar ships clearly indicates that, due to the ship's proportions and arrangements, more than sufficient metacentric height will be available in all probable loading conditions.	The Ship Registry will consider dispensing with this on a case by case basis under the circumstances stated.
SOLAS CHAPTER II-1 Part B-4 Stability management		
Reg. 20.1 Page 80	On completion of loading of the ship and prior to its departure, the master shall determine the ship's trim and stability and also ascertain and record that the ship is in compliance with stability criteria in relevant regulations. The determination of the ship's stability shall always be made by calculation. The Administration may accept the use of an electronic loading and stability computer or equivalent means for this purpose.	Electronic loading and stability computers are acceptable.
Reg. 22.6 Page 81	Watertight doors fitted in watertight bulkheads dividing cargo between deck spaces in accordance with regulation 13.9.1 shall be closed before the voyage commences and shall be kept closed during navigation; the time of opening such doors in port and of closing them before the ship leaves port shall be entered in the logbook.	The Ship Registry requires this information to be recorded in the Isle of Man Ship Registry's Official Log Book.
Reg. 22.12 Page 82	The master shall ensure, before a ship proceeds on any voyage that an entry in the logbook is made of the time of the last closing of the doors specified in Regulation 22.13 and the time of any opening of particular doors in accordance with Regulation 22.14.	The Ship Registry requires this information to be recorded in the Isle of Man Ship Registry's Official Log Book.
Reg. 22-1 Reg. 25 Page 83	Flooding detection systems for passenger ships carrying 36 or more persons constructed on or after 1 July 2010. A flooding detection system for watertight spaces below the bulkhead deck shall be provided based on the guidelines developed by the Organization.	Apply MSC.1/Circ.1291 - Guidelines for flooding detection systems on passenger ships.
Reg. 23.6 Page 83	Notwithstanding the requirements of Regulation 23.3, the Administration may permit some accesses to be opened during the voyage, but only for a period sufficient to permit through passage and, if required, for the essential working of the ship.	This is permitted under the circumstances stated.
Reg. 23.8 Page 83	Notwithstanding the requirements of Regulation 23.7, the Administration may permit some accesses within such bulkheads to be opened during the voyage but only for sufficient time to permit through passage and, if required, for the essential working of the ship.	This is permitted under the circumstances stated.
Reg. 24.3 Page 84	Watertight doors or ramps fitted to internally subdivide large cargo spaces shall be closed before the voyage commences and shall be kept closed during navigation; the time of opening such doors in port and of closing them before the ship leaves port shall be entered in the logbook.	The Ship Registry requires this information to be recorded in the Isle of Man Ship Registry's Official Log Book.

SOLAS CHAPTER II-1 PART C Machinery installations		
Reg. 27.5 Page 87	Main turbine propulsion machinery and, where applicable, main internal combustion propulsion machinery and auxiliary machinery shall be provided with automatic shutoff arrangements in the case of failures such as lubricating oil supply failure which could lead rapidly to complete breakdown, serious damage or explosion. The Administration may permit provisions for overriding automatic shutoff devices.	Apply MSC.1/Circ.1345 UI of SOLAS Reg II-1/27.5 concerning machinery shut-off arrangements and oil mist detector arrangements.
Reg. 29.1 Page 87	Unless expressly provided otherwise, every ship shall be provided with a main steering gear and an auxiliary steering gear to the satisfaction of the Administration. The main steering gear and the auxiliary steering gear shall be so arranged that the failure of one of them will not render the other one inoperative.	Apply MSC.1/Circ.1398 - Unified Interpretation of SOLAS Regulation II-1/29 concerning mechanical, hydraulic and electrical independency and failure detection and response of steering control systems.
Reg. 29.17.2 Page 90	Where the steering gear includes only a single rudder actuator, special consideration is given to stress analysis for the design including fatigue analysis and fracture mechanics analysis, as appropriate, to the material used, to the installation of sealing arrangements and to testing and inspection and to the provision of effective maintenance. In consideration of the foregoing, the Administration shall adopt regulations which include the provisions of the Guidelines for acceptance of non-duplicated rudder actuators for tankers, chemical tankers and gas carriers of 10,000 gross tonnage and above but less than 100,000 tonnes deadweight, adopted by the Organization.	Apply Resolution A.467(XII) - Guidelines for acceptance of non-duplication rudder actuators for tankers, chemical tankers and gas carriers of 10,000 gross tonnage and above but less than 100,000 tonnes deadweight.
Reg. 32.1 Page 93	Every steam boiler and every unfired steam generator shall be provided with not less than two safety valves of adequate capacity. However, having regard to the output or any other features of any boiler or unfired steam generator, the Administration may permit only one safety valve to be fitted if it is satisfied that adequate protection against overpressure is thereby provided.	It is permitted for only one safety valve to be fitted taking account of the guidance stated in MSC.1/Circ.1286 Unified interpretation of SOLAS Regulation II-1/32.1.
SOLAS CHAPTER II-1 Part D Electrical installations		
Reg. 44.1 Page 107	Emergency generating sets shall be capable of being readily started in their cold condition at a temperature of 0°C. If this is impracticable, or if lower temperatures are likely to be encountered, provision acceptable to the Administration shall be made for the maintenance of heating arrangements, to ensure ready starting of the generating sets.	Heating equipment must be fitted to ships operating in temperatures of less than 0°C to ensure ready starting of the generating sets.
Reg. 45.2 Page 108	Main and emergency switchboards shall be so arranged as to give easy access as may be needed to apparatus and equipment, without danger to personnel. The sides and the rear and, where necessary, the front of switchboards shall be suitably guarded. Exposed live parts having	Exposed live parts having voltages to earth exceeding 50 volts shall not be installed on the front of the switchboards.

	voltages to earth exceeding a voltage to be specified by the Administration shall not be installed on the front of such switchboards. Where necessary, nonconducting mats or gratings shall be provided at the front and rear of the switchboard.	
Reg. 45.5.3 Page 109	Cables and wiring serving essential or emergency power, lighting, internal communications or signals shall so far as practicable be routed clear of galleys, laundries, machinery spaces of category A and their casings and other high fire risk areas. In ro-ro passenger ships, cabling for emergency alarms and public address systems installed on or after 1 July 1998 shall be approved by the Administration having regard to the recommendations developed by the Organization. Cables connecting fire pumps to the emergency switchboard shall be of a fire-resistant type where they pass through high fire risk areas. Where practicable all such cables should be run in such a manner as to preclude their being rendered unserviceable by heating of the bulkheads.	Apply MSC/Circ.808 - Recommendation on performance standards for public address systems on passenger ships, including cabling.
Reg. 45.11 Page 110	In tankers, electrical equipment, cables and wiring shall not be installed in hazardous locations unless it conforms with standards not inferior to those acceptable to the Organization. However, for locations not covered by such standards, electrical equipment, cables and wiring which do not conform to the standards may be installed in hazardous locations based on a risk assessment to the satisfaction of the Administration, to ensure that an equivalent level of safety is assured.	Apply the standards published by the International Electrotechnical Commission, and in particular IEC 60092-502:1999: Electrical installations in ships – Tankers.
SOLAS CHAPTER II-1 PART F Alternative design and arrangements		
Reg. 55.4.1 Page 116	The engineering analysis required in Part F Regulation 3 shall be evaluated and approved by the Administration, taking into account the guidelines developed by the Organization.	The engineering analysis must be submitted to the Ship Registry for approval taking into account the guidelines on alternative design and arrangements for SOLAS chapters II-1 and III (MSC.1/Circ.1212).
Reg. 55.6 Page 116	If the assumptions and operational restrictions that were stipulated in the alternative design and arrangements are changed, the engineering analysis shall be carried out under the changed condition and shall be approved by the Administration.	Must be approved by the Ship Registry.