

For discussion on
26 March 2018

Legislative Council Panel on Economic Development

Incorporating in Local Legislation the Latest Requirements of the International Convention for the Safety of Life at Sea

Merchant Shipping (Safety) Ordinance (Cap. 369)

Purpose

This paper seeks Members' comments on two legislative proposals to incorporate the latest requirements of the International Convention for the Safety of Life at Sea ("SOLAS") of the International Maritime Organization ("IMO") relating to the construction and survey, as well as the fire safety requirements of ships.

SOLAS

2. SOLAS governs the standards for the construction, equipment and operation of ships to ensure maritime safety. It was adopted in 1974 and came into force internationally in 1980. Different aspects of maritime safety are covered under different chapters of SOLAS¹. In Hong Kong, the requirements of SOLAS are implemented through the Merchant Shipping (Safety) Ordinance (Cap. 369) ("the Ordinance") and its subsidiary legislation. The requirements apply to all Hong Kong-registered ocean-going vessels ("OGVs") and all OGVs in Hong Kong waters. Mandatory safety aspects for ships on international voyages in respect of construction and fire safety are mainly covered under Chapter II-1 and Chapter II-2 of SOLAS respectively.

¹ SOLAS covers different aspects of maritime safety, as follows:

Chapter I:	General Provisions;
Chapter II-1:	Construction– structure, subdivision and stability, machinery and electrical installations;
Chapter II-2:	Construction– fire protection, fire detection and fire extinction;
Chapter III:	Life-saving appliances and arrangements;
Chapter IV:	Radiocommunications;
Chapter V:	Safety of navigation;
Chapter VI:	Carriage of cargoes and oil fuels;
Chapter VII:	Carriage of dangerous goods;
Chapter VIII:	Nuclear ships;
Chapter IX:	Management for the safe operation of ships;
Chapter X:	Safety measures for high-speed craft;
Chapter XI-1:	Special measures to enhance maritime safety;
Chapter XI-2:	Special measures to enhance maritime security;
Chapter XII:	Additional safety measures for bulk carriers;
Chapter XIII:	Verification of compliance; and
Chapter XIV:	Safety measures for ships operating in polar waters.

(I) Construction and Survey

Background

3. Requirements on the structure, stability, machinery and electrical installations of OGVs are set out under Chapter II-1 of SOLAS. Some specific requirements with regard to the construction and survey of oil tankers and bulk carriers are set out under Chapter XI-1 and Chapter XII of SOLAS. IMO adopted substantial amendments to Chapter II-1 of SOLAS in 2005 to further enhance the safety of ships.

Legislative Proposal

4. We propose to make a new subsidiary legislation under the Ordinance and amend nine existing pieces of subsidiary legislation² to reflect the latest requirements of Chapter II-1, Chapter XI-1 and Chapter XII of SOLAS. Some of the major requirements proposed to be incorporated include —

- (a) *Safety for ships using low-flashpoint fuels* — There are increasing number of ships using fuels with a flashpoint of less than 60°C (i.e. low-flashpoint fuels) such as liquefied natural gas (“LNG”). Having regard to the properties of low-flashpoint fuels, IMO has laid down the mandatory provisions for the installation, control and monitoring of machinery, equipment and systems for ships using such fuels in the International Code of Safety for Ships using Gases or other Low-flashpoint Fuels (“IGF Code”). The IGF Code, which came into force on 1 January 2017, forms part of the mandatory requirements under Chapter II-1 of SOLAS and regulates ships using low-flashpoint fuels constructed on or after 1 July 2017. Some examples of the mandatory requirements of the IGF Code include requiring the fuel tanks of ships using low-flashpoint fuels to be installed with a double shield to minimise the risk of leakage and accumulation of flammable and explosive gas fuels on

² The nine pieces of subsidiary legislation are:

- i. Examination of Hull, Ship-side Fittings and Boilers (Exemption) (Consolidation) Notice (Cap. 369I);
- ii. Corridor Bulkheads Serving Accommodation Spaces and Control Stations (Cap. 369J);
- iii. Merchant Shipping (Safety) Ordinance (Exemption) Notice (Cap. 369P);
- iv. Merchant Shipping (Safety) (Cargo Ship Construction and Survey) (Ships Built Before 1 September 1984) Regulations (Cap. 369R);
- v. Merchant Shipping (Safety) (Cargo Ship Construction and Survey) (Ships Built On or After 1 September 1984) Regulations (Cap. 369S);
- vi. Merchant Shipping (Safety) (Closing of Openings in Hulls and in Watertight Bulkheads) Regulations (Cap. 369U);
- vii. Merchant Shipping (Safety) (Passenger Ship Construction) (Ships Built Before 1 September 1984) Regulations (Cap. 369AL);
- viii. Merchant Shipping (Safety) (Passenger Ship Construction and Survey) (Ships Built On or After 1 September 1984) Regulations (Cap. 369AM); and
- ix. Merchant Shipping (Safety) (Subdivision and Damage Stability of Cargo Ships) Regulation (Cap. 369AT).

board. Such ships are also required to have gas detectors and ventilation systems on board to detect incidental leakage and prevent gas accumulation. We propose to incorporate all the mandatory requirements in the IGF Code into our local legislation. The trade has been informed of the requirements relevant to OGVs constructed on or after 1 July 2017 and intended to use low-flashpoint fuels prior to their construction and there should be no compliance problem in this regard.

(b) ***Specific requirements for oil tankers and bulk carriers*** — As oil tankers and bulk carriers constitute around 60% of the gross tonnage of the world's merchant fleet, IMO has imposed specific construction requirements to enhance the safety of these ships as well as that of their crew members. For instance, oil tankers constructed on or after 1 January 2007 will be required to provide safe access for crew members to reach the bow³ even in severe weather conditions. Due to the special design⁴ of oil tankers, they can afford to have lesser freeboard⁵ than normal cargo ships without compromising their safety and stability. With this low-freeboard design, the deck level of oil tankers is more susceptible to being washed over by sea waves, especially in extreme weather. Possible means of safe access may take the form of a walkway of a certain width on deck meeting various construction standards, including the use of fire-resistant and non-slipping materials, to allow crew members to reach the bow safely for carrying out their duties⁶. Moreover, all bulk carriers regardless of their year of construction are required to be installed with water level detectors and alarms in each cargo hold to detect any sea waves or rainwater infiltrating into the cargo area or leakage from piping systems.

(c) ***Maintaining construction drawings on board and ashore*** — We propose to require OGVs constructed on or after 1 January 2007 to keep on board and ashore a set of drawings that detail their construction and design, as well as any subsequent structural alterations. Such drawings should show the different parts of a ship, the capacity plan and the diagrams of ships' cargo piping system to allow surveyors to check for any unauthorised alterations of a ship. Keeping such drawings ashore with the management company will also improve provision of support and emergency response services in case of accidents.

³ A ship's bow is the most forward part of a ship.

⁴ Oil tankers usually have greater subdivision and smaller openings on deck than normal cargo ships due to the type of cargo they carry.

⁵ Freeboard refers to the vertical distance between the deck and the sea level.

⁶ A wide range of duties have to be carried out by the crew at a ship's bow including anchoring and towing when in emergency.

(II) Fire Safety Requirements

Background

5. Chapter II-2 of SOLAS stipulates the fire safety requirements for all ships and specific measures for passenger ships, cargo ships and tankers to prevent the occurrence of fire, control fire and explosion, as well as reduce the risk to life and damages to the ship, its cargo and the environment caused by fire. As fire is one of the most common and dangerous emergency on ships which could lead to disastrous results, IMO adopted substantial amendments to Chapter II-2 of SOLAS in 2000 to further protect life and property on ships.

Legislative Proposal

6. We propose to make a new subsidiary legislation under the Ordinance and amend seven existing pieces of subsidiary legislation⁷ to reflect the latest requirements of Chapter II-2 of SOLAS. Some of the major requirements proposed to be incorporated include —

- (a) ***Emergency escape breathing device for crew use in the event of fire*** — An emergency escape breathing device (“EEBD”) is a lifesaving device that supplies air or oxygen used for escaping an area with hazardous conditions such as fire, smoke and poisonous gases. We propose to mandate the provision of EEBDs on all existing and new OGVs. The quantity of EEBDs that should be provided will be dependent on the layout of the ship. The EEBDs should be located at easily visible and accessible areas of machinery spaces (e.g. engine control room) and near escape routes for use in the event of fire.

- (b) ***Deep-fat cooking equipment***⁸ — Hot cooking oils are highly flammable and deep frying on board of ships can be risky. We propose to require

⁷ The seven pieces of subsidiary legislation are:

- i. Merchant Shipping (Safety) (Fire Protection) (Ships Built Before 25 May 1980) Regulations (Cap 369W);
- ii. Merchant Shipping (Safety) (Fire Appliances) (Ships Built On or After 25 May 1980 but Before 1 September 1984) Regulations (Cap. 369X);
- iii. Merchant Shipping (Safety) (Fire Protection) (Ships Built On or After 1 September 1984) Regulations (Cap. 369Y);
- iv. Merchant Shipping (Safety) (Cargo Ship Construction and Survey) (Ships Built Before 1 September 1984) Regulations (Cap. 369R);
- v. Merchant Shipping (Safety) (Cargo Ship Construction and Survey) (Ships Built On or After 1 September 1984) Regulations (Cap. 369S);
- vi. Merchant Shipping (Safety) (Passenger Ship Construction) (Ships Built Before 1 September 1984) Regulations (Cap. 369AL); and
- vii. Merchant Shipping (Safety) (Passenger Ship Construction and Survey) (Ships Built On Or After 1 September 1984) Regulations (Cap 369AM).

⁸ Deep-fat cooking equipment refers to a fixed cooking appliance that is capable of, and intended to, being filled up with cooking oil.

OGVs that are installed with deep-fat cooking equipment on or after 1 July 2002 be equipped with fire extinguishing systems. The systems should have a primary and backup thermostat with an alarm and should be able to cut off electricity automatically upon activation of the extinguishing system.

- (c) ***Safe return to port*** — To facilitate safe evacuation of passengers in case of fire, IMO has introduced the concept of ship-specific casualty threshold for passenger ships with a length of 120 metres or more on international voyages. The casualty threshold is, according to the design basis, the amount of damage a ship is able to withstand after the occurrence of a fire and is still able to return to port safely without requiring passengers to abandon the ship. Passenger ships subject to this requirement should be constructed in such a way that they are capable of proceeding to a safe port under its own power after a fire casualty not exceeding the casualty threshold occurred. During the “safe return to port” period, all persons on board should be safely accommodated in a “safe area” and be provided with basic services (e.g. food, water, sanitation, alternate medical care, lighting and ventilation). If the casualty threshold is exceeded, it is required that some essential systems⁹ of the ships should remain operational for at least three hours. This proposed requirement will apply to all Hong Kong-registered passenger ships with a length of 120 metres or more and are constructed on or after 1 July 2010.
- (d) ***Ships carrying gas-fuelled motor vehicles*** — With the emergence of motor vehicles fuelled by compressed hydrogen or natural gas, IMO has imposed requirements for all ships carrying such motor vehicles to be provided with at least two portable gas detectors to monitor any leakage of flammable gases from the vehicles. This proposed requirement will apply to all Hong Kong-registered OGVs. For Hong Kong-registered OGVs constructed on or after 1 January 2016 carrying gas-fuelled motor vehicles, they will be required to be provided with electrical equipment and wiring of specific types which have been certified to be safe for use in area with explosive methane and air mixtures; as well as fans designed to avoid a possibility of ignition of hydrogen and air mixtures. There are currently no Hong Kong-registered OGVs carrying gas-fuelled motor vehicles that are constructed on or after 1 January 2016.

Consultation

7. The Shipping Consultative Committee of the Marine Department has been consulted. Members supported the legislative proposals.

⁹ Essential systems include fire main, internal communications (in support of fire-fighting, crew notification and evacuation), means of external communications, bilge systems for removal of fire-fighting water, lighting along escape routes, at assembly stations and at embarkation stations of life saving appliances and guidance systems for evacuation.

Advice Sought

8. Members are invited to comment on the proposal. Subject to Members' views, we plan to introduce the legislative proposals into the Legislative Council in the 2018-19 legislative session.

**Transport and Housing Bureau
Marine Department
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