



Australian Government

Australian Maritime Safety Authority

Information for Seafarers regarding WATCHKEEPING STANDARDS (including 2010 Manila Amendments)

The STCW Convention and Code are amended from time to time, and the current requirements must always be consulted and complied with. To assist seafarers, this AMSA information document advises of the content of Chapter VIII of the STCW Code, including 2010 Manila Amendments, at the time of publication of the information.

Paragraph 340(1)(h) of the *Navigation Act 2012* makes provision for the safe navigation and operation of ships by giving effect to:

- (a) Regulation I/14 of the STCW Convention (Responsibilities of companies); and
- (b) Chapter VIII of the STCW Code (Standards regarding watchkeeping).

Under this authority, Marine Order 28 (Operating standards and procedures) 2012 requires that companies, masters, chief engineers and all persons engaged on watchkeeping duties must observe both the standards and the guidance regarding watchkeeping set out in Chapter VIII of the STCW Code.

© Excerpts from the IMO publication 'STCW (with Manila Amendments), 2011 Edition' are reproduced with the permission of the International Maritime Organization (IMO) which holds the copyright. Readers should be aware that IMO material is subject to revision and amendment from time to time, and that partial extracts may be misleading. IMO does not accept any responsibility for the material as reproduced: in case of doubt, the official IMO text will prevail.

This information document is divided into 4 sections:

Section 1	Watchkeeping arrangements and principles to be observed (Section A-VIII/2 of the STCW Code)	Page 1
Section 2	Guidance regarding watchkeeping arrangements and principles to be observed (Section B-VIII/2 of the STCW Code)	Page 13
Section 3	The Navigation and Radio Watch This Section sets out for convenience those parts of Sections 1 and 2 that relate to the navigational and radio watch	Page 17
Section 4	The Engineering Watch This Section sets out for convenience those parts of Sections 1 and 2 that relate to the engineering watch	Page 27

WATCHKEEPING ARRANGEMENTS AND PRINCIPLES TO BE OBSERVED

Section A-VIII/2 of the STCW Code

Part 1 - Certification

1 The officer in charge of the navigational or deck watch shall be duly qualified in accordance with the provisions of chapter II, or chapter VII appropriate to the duties related to navigational or deck watchkeeping.

2 The officer in charge of the engineering watch shall be duly qualified in accordance with the provisions of chapter III, or chapter VII appropriate to the duties related to engineering watchkeeping.

Part 2 - Voyage planning

General requirements

3 The intended voyage shall be planned in advance, taking into consideration all pertinent information, and any course laid down shall be checked before the voyage commences.

4 The chief engineer officer shall, in consultation with the master, determine in advance the needs of the intended voyage, taking into consideration the requirements for fuel, water, lubricants, chemicals, expendable and other spare parts, tools, supplies and any other requirements.

Planning prior to each voyage

5 Prior to each voyage the master of every ship shall ensure that the intended route from the port of departure to the first port of call is planned using adequate and appropriate charts and other nautical publications necessary for the intended voyage, containing accurate, complete and up to date information regarding those navigational limitations and hazards which are of a permanent or predictable nature and which are relevant to the safe navigation of the ship.

Verification and display of planned route

6 When the route planning is verified, taking into consideration all pertinent information, the planned route shall be clearly displayed on appropriate charts and shall be continuously available to the officer in charge of the watch, who shall verify each course to be followed prior to using it during the voyage.

Deviation from planned route

7 If a decision is made, during a voyage, to change the next port of call of the planned route, or if it is necessary for the ship to deviate substantially from the planned route for other reasons, then an amended route shall be planned prior to deviating substantially from the route originally planned.

Part 3 – Watchkeeping principles in general

8 Watches shall be carried out based on the following bridge and engine-room resource management principles:

- .1 proper arrangements for watchkeeping personnel shall be ensured in accordance with the situations;
- .2 any limitation in qualifications or fitness of individuals shall be taken into account when deploying watchkeeping personnel;
- .3 understanding of watchkeeping personnel regarding their individual roles, responsibility and team roles shall be established;
- .4 the master, chief engineer officer and officer in charge of watch duties shall maintain a proper watch, making the most effective use of the resources available, such as information, installations/equipment and other personnel;
- .5 watchkeeping personnel shall understand functions and operation of installations/equipment, and be familiar with handling them;
- .6 watchkeeping personnel shall understand information and how to respond to information from each station/installation/equipment;
- .7 information from the stations/installations/equipment shall be appropriately shared by all the watchkeeping personnel;
- .8 watchkeeping personnel shall maintain an exchange of appropriate communication in any situation; and
- .9 watchkeeping personnel shall notify the master/chief engineer officer/officer in charge of watch duties without any hesitation when in any doubt as to what action to take in the interest of safety.

Part 4 - Watchkeeping

Principles applying to watchkeeping generally

9 Parties shall direct the attention of companies, masters, chief engineer officers and watchkeeping personnel to the following principles, which shall be observed to ensure that safe watches are maintained at all times.

10 The master of every ship is bound to ensure that watchkeeping arrangements are adequate for maintaining a safe navigational or cargo watch. Under the master's general direction; the officers of the navigational watch are responsible for navigating the ship safely during their periods of duty, when they will be particularly concerned with avoiding collision and stranding.

11 The chief engineer officer of every ship is bound, in consultation with the master, to ensure that watchkeeping arrangements are adequate to maintain a safe engineering watch.

Protection of marine environment

12 The master, officers and ratings shall be aware of the serious effects of operational or accidental pollution of the marine environment and shall take all possible precautions to prevent such pollution, particularly within the framework of relevant international and port regulations.

Part 4-1 - Principles to be observed in keeping a navigational watch

13 The officer in charge of the navigational watch is the master's representative and is primarily responsible at all times for the safe navigation of the ship and for complying with the International Regulations for Preventing Collisions at Sea, 1972, as amended.

Lookout

14 A proper lookout shall be maintained at all times in compliance with rule 5 of the International Regulations for Preventing Collisions at Sea, 1972, as amended and shall serve the purpose of:

- .1 maintaining a continuous state of vigilance, by sight and hearing as well as by all other available means, with regard to any significant change in the operating environment;
- .2 fully appraising the situation and the risk of collision, stranding and other dangers to navigation; and
- .3 detecting ships or aircraft in distress, shipwrecked persons, wrecks, debris and other hazards to safe navigation.

15 The lookout must be able to give full attention to the keeping of a proper lookout and no other duties shall be undertaken or assigned which could interfere with that task.

16 The duties of the lookout and helmsperson are separate and the helmsperson shall not be considered to be the lookout while steering, except in small ships where an unobstructed all-round view is provided at the steering position and there is no impairment of night vision or other impediment to the keeping of a proper lookout. The officer in charge of the navigational watch may be the sole lookout in daylight provided that on each such occasion:

- .1 the situation has been carefully assessed and it has been established without doubt that it is safe to do so;

- .2 full account has been taken of all relevant factors including but not limited to:
 - state of weather,
 - visibility,
 - traffic density,
 - proximity of dangers to navigation; and
 - the attention necessary when navigating in or near traffic separation schemes; and
- .3 assistance is immediately available to be summoned to the bridge when any change in the situation so requires.

17 In determining that the composition of the navigational watch is adequate to ensure that a proper lookout can continuously be maintained, the master shall take into account all relevant factors, including those described in this section of the Code, as well as the following factors:

- .1 visibility, state of weather and sea;
- .2 traffic density, and other activities occurring in the area in which the vessel is navigating;
- .3 the attention necessary when navigating in or near traffic separation schemes or other routing measures;
- .4 the additional workload caused by the nature of the ship's functions, immediate operating requirements and anticipated manoeuvres;
- .5 the fitness for duty of any crew members on call who are assigned as members of the watch;
- .6 knowledge of, and confidence in, the professional competence of the ship's officers and crew;
- .7 the experience of each officer of the navigational watch, and the familiarity of that officer with the ship's equipment, procedures, and manoeuvring capability;
- .8 activities taking place on board the ship at any particular time, including radiocommunication activities and the availability of assistance to be summoned immediately to the bridge when necessary;
- .9 the operational status of bridge instrumentation and controls, including alarm systems;
- .10 rudder and propeller control and ship manoeuvring characteristics;
- .11 the size of the ship and the field of vision available from the conning position;
- .12 the configuration of the bridge, to the extent such configuration might inhibit a member of the watch from detecting by sight or hearing any external development; and
- .13 any other relevant standard, procedure or guidance relating to watchkeeping arrangements and fitness for duty which has been adopted by the Organization.

Watch arrangements

18 When deciding the composition of the watch on the bridge, which may include appropriately qualified ratings, the following factors, *inter alia*, shall be taken into account:

- .1 at no time shall the bridge be left unattended;
- .2 weather conditions, visibility and whether there is daylight or darkness;
- .3 proximity of navigational hazards which may make it necessary for the officer in charge of the watch to carry out additional navigational duties;
- .4 use and operational condition of navigational aids such as ECDIS radar or electronic position indicating devices and any other equipment affecting the safe navigation of the ship;
- .5 whether the ship is fitted with automatic steering;
- .6 whether there are radio duties to be performed;
- .7 unmanned machinery space (UMS) controls, alarms and indicators provided on the bridge, procedures for their use and limitations; and
- .8 any unusual demands on the navigational watch that may arise as a result of special operational circumstances.

Taking over the watch

19 The officer in charge of the navigational watch shall not hand over the watch to the relieving officer if there is reason to believe that the latter is not capable of carrying out the watchkeeping duties effectively, in which case the master shall be notified.

20 The relieving officer shall ensure that the members of the relieving watch are fully capable of performing their duties, particularly as regards their adjustment to night vision. Relieving officers shall not take over the watch until their vision is fully adjusted to the light conditions.

21 Prior to taking over the watch, relieving officers shall satisfy themselves as to the ship's estimated or true position and confirm its intended track, course and speed and UMS controls as appropriate and shall note any dangers to navigation expected to be encountered during their watch.

22 Relieving officers shall personally satisfy themselves regarding the:

- .1 standing orders and other special instructions of the master relating to navigation of the ship;
- .2 position, course, speed and draught of the ship;
- .3 prevailing and predicted tides, currents, weather, visibility and the effect of these factors upon course and speed;

- .4 procedures for the use of main engines to manoeuvre when the main engines are on bridge control; and
- .5 navigational situation including, but not limited to:
 - .5.1 the operational condition of all navigational and safety equipment being used or likely to be used during the watch,
 - .5.2 the errors of gyro and magnetic compasses,
 - .5.3 the presence and movement of ships in sight or known to be in the vicinity,
 - .5.4 the conditions and hazards likely to be encountered during the watch, and
 - .5.5 the possible effects of heel, trim, water density and squat on under keel clearance.

23 If at any time the officer in charge of the navigational watch is to be relieved when a manoeuvre or other action to avoid any hazard is taking place, the relief of that officer shall be deferred until such action has been completed.

Performing the navigational watch

24 The officer in charge of the navigational watch shall:

- .1 keep the watch on the bridge;
- .2 in no circumstances leave the bridge until properly relieved; and
- .3 continue to be responsible for the safe navigation of the ship, despite the presence of the master on the bridge, until informed specifically that the master has assumed that responsibility and this is mutually understood.

25 During the watch the course steered, position and speed shall be checked at sufficiently frequent intervals, using any available navigational aids necessary, to ensure that the ship follows the planned course.

26 The officer in charge of the navigational watch shall have full knowledge of the location and operation of all safety and navigational equipment on board the ship and shall be aware and take account of the operating limitations of such equipment.

27 The officer in charge of the navigational watch shall not be assigned or undertake any duties which would interfere with the safe navigation of the ship.

28 When using radar the officer in charge of the navigational watch shall bear in mind the necessity to comply at all times with the provisions on the use of radar contained in the International Regulations for Preventing Collisions at Sea 1972, as amended, in force.

29 In cases of need, the officer in charge of the navigational watch shall not hesitate to use the helm, engines and sound signalling apparatus. However, timely notice of intended variations of engine speed shall be given where possible or effective use made of UMS engine controls provided on the bridge in accordance with the applicable procedures.

30 Officers of the navigational watch shall know the handling characteristics of their ship, including its stopping distances, and should appreciate that other ships may have different handling characteristics.

31 A proper record shall be kept during the watch of the movements and activities relating to the navigation of the ship.

32 It is of special importance that at all times the officer in charge of the navigational watch ensures that a proper lookout is maintained. In a ship with a separate chartroom, the officer in charge of the navigational watch may visit the chartroom, when essential, for a short period for the necessary performance of navigational duties, but shall first ensure that it is safe to do so and that proper lookout is maintained.

33 Operational tests of shipboard navigational equipment shall be carried out at sea as frequently as practicable and as circumstances permit, in particular before hazardous conditions affecting navigation are expected. Whenever appropriate, these tests shall be recorded. Such tests shall also be carried out prior to port arrival and departure.

34 The officer in charge of the navigational watch shall make regular checks to ensure that:

- .1 the person steering the ship or the automatic pilot is steering the correct course;
- .2 the standard compass error is determined at least once a watch and, when possible, after any major alteration of course; the standard and gyro-compasses are frequently compared and repeaters are synchronized with their master compass;
- .3 the automatic pilot is tested manually at least once a watch;
- .4 the navigation and signal lights and other navigational equipment are functioning properly;
- .5 the radio equipment is functioning properly in accordance with paragraph 86 of this section; and
- .6 the UMS controls, alarms and indicators are functioning properly.

35 The officer in charge of the navigational watch shall bear in mind the necessity to comply at all times with the requirements in force of the International Convention for the Safety of Life at Sea, (SOLAS) 1974¹. The officer of the navigational watch shall take into account:

- .1 the need to station a person to steer the ship and to put the steering into manual control in good time to allow any potentially hazardous situation to be dealt with in a safe manner; and
- .2 that with a ship under automatic steering, it is highly dangerous to allow a situation to develop to the point where the officer in charge of the navigational watch is without assistance and has to break the continuity of the lookout in order to take emergency action.

36 Officers of the navigational watch shall be thoroughly familiar with the use of all electronic navigational aids carried, including their capabilities and limitations, and shall use each of these aids when appropriate and shall bear in mind that the echo-sounder is a valuable navigational aid.

37 The officer in charge of the navigational watch shall use the radar whenever restricted visibility is encountered or expected and at all times in congested waters; having due regard to its limitations.

38 The officer in charge of the navigational watch shall ensure that the range scales employed are changed at sufficiently frequent intervals so that echoes are detected as early as possible. It shall be borne in mind that small or poor echoes may escape detection.

39 Whenever radar is in use, the officer in charge of the navigational watch shall select an appropriate range scale and observe the display carefully, and shall ensure that plotting or systematic analysis is commenced in ample time.

40 The officer in charge of the navigational watch shall notify the master immediately:

- .1 if restricted visibility is encountered or expected;
- .2 if the traffic conditions or the movements of other ships are causing concern;
- .3 if difficulty is experienced in maintaining course;
- .4 on failure to sight land, a navigation mark or to obtain soundings by the expected time;
- .5 if, unexpectedly, land or a navigation mark is sighted or a change in soundings occurs;

¹See regulations V/24, V/25 and V/26

- .6 on breakdown of the engines, propulsion machinery remote control, steering gear or any essential navigational equipment, alarm or indicator;
- .7 if the radio equipment malfunctions;
- .8 in heavy weather, if in any doubt about the possibility of weather damage;
- .9 if the ship meets any hazard to navigation, such as ice or a derelict; and
- .10 in any other emergency or if in any doubt.

41 Despite the requirement to notify the master immediately in the foregoing circumstances the officer in charge of the navigational watch shall, in addition, not hesitate to take immediate action for the safety of the ship where circumstances so require.

42 The officer in charge of the navigational watch shall give watchkeeping personnel all appropriate instructions and information which will ensure the keeping of a safe watch; including a proper lookout.

Watchkeeping under different conditions and in different areas

Clear weather

43 The officer in charge of the navigational watch shall take frequent and accurate compass bearings of approaching ships as a means of early detection of risk of collision and shall bear in mind that such risk may sometimes exist even when an appreciable bearing change is evident; particularly when approaching a very large ship or a tow or when approaching a ship at close range. The officer in charge of the navigational watch shall also take early and positive action in compliance with the applicable International Regulations for Preventing Collisions at Sea, 1972, as amended and subsequently check that such action is having the desired effect.

44 In clear weather, whenever possible, the officer in charge of the navigational watch shall carry out radar practice.

Restricted visibility

45 When restricted visibility is encountered or expected, the first responsibility of the officer in charge of the navigational watch is to comply with the relevant rules of the International Regulations for Preventing Collisions at Sea, 1972, as amended with particular regard to the sounding of fog signals, proceeding at a safe speed and

having the engines ready for immediate manoeuvre. In addition, the officer in charge of the navigational watch shall:

- .1 inform the master;
- .2 post a proper lookout;
- .3 exhibit navigation lights; and
- .4 operate and use the radar.

In hours of darkness

46 The master and the officer in charge of the navigational watch, when arranging lookout duty, shall have due regard to the bridge equipment and navigational aids available for use, their limitations; procedures and safeguards implemented.

Coastal and congested waters

47 The largest scale chart on board, suitable for the area and corrected with the latest available information, shall be used. Fixes shall be taken at frequent intervals, and shall be carried out by more than one method whenever circumstances allow. When using ECDIS, appropriate usage code (scale) electronic navigational charts shall be used and the ship's position shall be checked by an independent means of position fixing at appropriate intervals.

48 The officer in charge of the navigational watch shall positively identify all relevant navigation marks.

Navigation with pilot on board

49 Despite the duties and obligations of pilots, their presence on board does not relieve the master or officer in charge of the navigational watch from their duties and obligations for the safety of the ship. The master and the pilot shall exchange information regarding navigation procedures, local conditions and the ship's characteristics. The master and/or the officer in charge of the navigational watch shall cooperate closely with the pilot and maintain an accurate check on the ship's position and movement.

50 If in any doubt as to the pilot's actions or intentions, the officer in charge of the navigational watch shall seek clarification from the pilot and, if doubt still exists, shall notify the master immediately and take whatever action is necessary before the master arrives.

Ship at anchor

51 If the master considers it necessary a continuous navigational watch shall be maintained at anchor. While at anchor the officer in charge of the navigational watch shall:

- .1 determine and plot the ship's position on the appropriate chart as soon as practicable;
- .2 when circumstances permit, check at sufficiently frequent intervals whether the ship is remaining securely at anchor by taking bearings of fixed navigation marks or readily identifiable shore objects;
- .3 ensure that proper lookout is maintained;
- .4 ensure that inspection rounds of the ship are made periodically;
- .5 observe meteorological and tidal conditions and the state of the sea;
- .6 notify the master and undertake all necessary measures if the ship drags anchor;
- .7 ensure that the state of readiness of the main engines and other machinery is in accordance with the master's instructions;
- .8 if visibility deteriorates, notify the master;
- .9 ensure that the ship exhibits the appropriate lights and shapes and that appropriate sound signals are made in accordance with all applicable regulations; and
- .10 take measures to protect the environment from pollution by the ship and comply with applicable pollution regulations.

Part 4-2 - Principles to be observed in keeping an engineering watch

52 The term **engineering watch** as used in parts 4-2, 5-2 and 5-4 of this section means either a person or a group of personnel comprising the watch or a period of responsibility for an officer during which the physical presence in machinery spaces of that officer may or may not be required.

53 The **officer in charge of the engineering watch** is the chief engineer officer's representative and is primarily responsible, at all times, for the safe and efficient operation and upkeep of machinery affecting the safety of the ship and is responsible for the inspection, operation and testing, as required, of all machinery and equipment under the responsibility of the engineering watch.

Watch arrangements

54 The composition of the engineering watch shall, at all times, be adequate to ensure the safe operation of all machinery affecting the operation of the ship, in either automated or manual mode, and be appropriate to the prevailing circumstances and conditions.

55 When deciding the composition of the engineering watch, which may include appropriately qualified ratings, the following criteria, *inter alia*, shall be taken into account:

- .1 the type of ship and the type and condition of the machinery;
- .2 the adequate supervision, at all times, of machinery affecting the safe operation of the ship;
- .3 any special modes of operation dictated by conditions such as weather, ice, contaminated water, shallow water, emergency conditions, damage containment or pollution abatement;
- .4 the qualifications and experience of the engineering watch;
- .5 the safety of life, ship, cargo and port, and protection of the environment;
- .6 the observance of international, national and local regulations; and
- .7 maintaining the normal operations of the ship.

Taking over the watch

56 The officer in charge of the engineering watch shall not hand over the watch to the relieving officer if there is reason to believe that the latter is obviously not capable of carrying out the watchkeeping duties effectively; in which case the chief engineer officer shall be notified.

57 The relieving officer of the engineering watch shall ensure that the members of the relieving engineering watch are apparently fully capable of performing their duties effectively.

58 Prior to taking over the engineering watch, relieving officers shall satisfy themselves regarding at least the following:

- .1 the standing orders and special instructions of the chief engineer officer relating to the operation of the ship's systems and machinery;
- .2 the nature of all work being performed on machinery and systems, the personnel involved and potential hazards;
- .3 the level and, where applicable, the condition of water or residues in bilges, ballast tanks, slop tanks, reserve tanks, fresh water tanks, sewage tanks and any special requirements for use or disposal of the contents thereof;
- .4 the condition and level of fuel in the reserve tanks, settling tank, day tank and other fuel storage facilities;
- .5 any special requirements relating to sanitary system disposals;
- .6 condition and mode of operation of the various main and auxiliary systems, including the electrical power distribution system;

- .7 where applicable, the condition of monitoring and control console equipment, and which equipment is being operated manually;
- .8 where applicable, the condition and mode of operation of automatic boiler controls such as flame safeguard control systems, limit control systems, combustion control systems, fuel supply control systems and other equipment related to the operation of steam boilers;
- .9 any potentially adverse conditions resulting from bad weather, ice, contaminated or shallow water;
- .10 any special modes of operation dictated by equipment failure or adverse ship conditions;
- .11 the reports of engine-room ratings relating to their assigned duties;
- .12 the availability of fire-fighting appliances; and
- .13 the state of completion of engine-room log.

Performing the engineering watch

59 The officer in charge of the engineering watch shall ensure that the established watchkeeping arrangements are maintained and that, under direction, engine room ratings, if forming part of the engineering watch, assist in the safe and efficient operation of the propulsion machinery and auxiliary equipment.

60 The officer in charge of the engineering watch shall continue to be responsible for machinery space operations, despite the presence of the chief engineer officer in the machinery spaces, until specifically informed that the chief engineer officer has assumed that responsibility and this is mutually understood.

61 All members of the engineering watch shall be familiar with their assigned watchkeeping duties. In addition, every member shall, with respect to the ship they are serving in, have knowledge of:

- .1 the use of appropriate internal communication systems;
- .2 the escape routes from machinery spaces;
- .3 the engine-room alarm systems and be able to distinguish between the various alarms, with special reference to the fire extinguishing media alarm; and
- .4 the number, location and types of fire fighting equipment and damage control gear in the machinery spaces, together with their use and the various safety precautions to be observed.

62 Any machinery not functioning properly, expected to malfunction or requiring special service, shall be noted along with any action already taken. Plans shall be made for any further action if required.

63 When the machinery spaces are in the manned condition, the officer in charge of the engineering watch shall at all times be readily capable of operating the propulsion equipment in response to needs for changes in direction or speed.

64 When the machinery spaces are in the periodic unmanned condition, the designated duty officer in charge of the engineering watch shall be immediately available and on call to attend the machinery spaces.

65 All bridge orders shall be promptly executed. Changes in direction or speed of the main propulsion units shall be recorded, except where an Administration has determined that the size or characteristics of a particular ship make such recording impracticable. The officer in charge of the engineering watch shall ensure that the main propulsion unit controls, when in the manual mode of operation, are continuously attended under stand-by or manoeuvring conditions.

66 Due attention shall be paid to the ongoing maintenance and support of all machinery, including mechanical, electrical, electronic, hydraulic and pneumatic systems, their control apparatus and associated safety equipment, all accommodation service systems equipment and the recording of stores and spare gear usage.

67 The chief engineer officer shall ensure that the officer in charge of the engineering watch is informed of all preventive maintenance, damage control, or repair operations to be performed during the engineering watch. The officer in charge of the engineering watch shall be responsible for the isolation, by passing and adjustment of all machinery under the responsibility of the engineering watch that is to be worked on, and shall record all work carried out.

68 When the engine-room is put in a stand-by condition, the officer in charge of the engineering watch shall ensure that all machinery and equipment which may be used during manoeuvring is in a state of immediate readiness and that an adequate reserve of power is available for steering gear and other requirements.

69 Officers in charge of an engineering watch shall not be assigned or undertake any duties which would interfere with their supervisory duties in respect of the main propulsion system and ancillary equipment. They shall keep the main propulsion plant and auxiliary systems under constant supervision until properly relieved, and shall periodically inspect the machinery in their charge. They shall also ensure that adequate rounds of the machinery and steering gear spaces are made for the purpose of observing and reporting equipment malfunctions or breakdowns, performing or directing routine adjustments, required upkeep and any other necessary tasks.

70 Officers in charge of an engineering watch shall direct any other member of the engineering watch to inform them of potentially hazardous conditions which may adversely affect the machinery or jeopardize the safety of life or of the ship.

71 The officer in charge of the engineering watch shall ensure that the machinery space watch is supervised, and shall arrange for substitute personnel in the event of the incapacity of any engineering watch personnel. The engineering watch shall not leave the machinery spaces unsupervised in a manner that would prevent the manual operation of the engine-room plant or throttles.

72 The officer in charge of the engineering watch shall take the action necessary to contain the effects of damage resulting from equipment breakdown, fire, flooding, rupture, collision, stranding, or other cause.

73 Before going off duty, the officer in charge of the engineering watch shall ensure that all events related to the main and auxiliary machinery which have occurred during the engineering watch are suitably recorded.

74 The officer in charge of the engineering watch shall co-operate with any engineer in charge of maintenance work during all preventive maintenance, damage control or repairs. This shall include but not necessarily limited to:

- .1 isolating and bypassing machinery to be worked on;
- .2 adjusting the remaining plant to function adequately and safely during the maintenance period;
- .3 recording, in the engine-room log or other suitable document, the equipment worked on and the personnel involved, and which safety steps have been taken and by whom, for the benefit of relieving officers and for record purposes; and
- .4 testing and putting into service, when necessary, the repaired machinery or equipment.

75 The officer in charge of the engineering watch shall ensure that any engine-room ratings who perform maintenance duties are available to assist in the manual operation of machinery in the event of automatic equipment failure.

76 The officer in charge of the engineering watch shall bear in mind that changes in speed, resulting from machinery malfunction, or any loss of steering, may imperil the safety of the ship and life at sea. The bridge shall be immediately notified, in the event of fire, and of any impending action in machinery spaces that may cause reduction in the ship's speed, imminent steering failure, stoppage of the ship's propulsion system or any alteration in the generation of electric power or similar threat to safety. This notification, where possible, shall be

accomplished before changes are made, in order to afford the bridge the maximum available time to take whatever action is possible to avoid a potential marine casualty.

77 The officer in charge of the engineering watch shall notify the chief engineer officer without delay:

- .1 when engine damage or a malfunction occurs which may be such as to endanger the safe operation of the ship;
- .2 when any malfunction occurs which, it is believed, may cause damage or breakdown of propulsion machinery, auxiliary machinery or monitoring and governing systems; and
- .3 in any emergency or if in any doubt as to what decision or measures to take.

78 Despite the requirement to notify the chief engineer officer in the foregoing circumstances, the officer in charge of the engineering watch shall not hesitate to take immediate action for the safety of the ship, its machinery and crew where circumstances require.

79 The officer in charge of the engineering watch shall give the watchkeeping personnel all appropriate instructions and information which will ensure the keeping of a safe engineering watch. Routine machinery upkeep, performed as incidental tasks as a part of keeping a safe watch, shall be set up as an integral part of the watch routine. Detailed repair maintenance involving repairs to electrical, mechanical, hydraulic, pneumatic or applicable electronic equipment throughout the ship shall be performed with the cognizance of the officer in charge of the engineering watch and chief engineer officer. These repairs shall be recorded.

Engineering watchkeeping under different conditions and in different areas

Restricted visibility

80 The officer in charge of the engineering watch shall ensure that permanent air or steam pressure is available for sound signals and that at all times bridge orders relating to changes in speed or direction of operation are immediately implemented and, in addition, that auxiliary machinery used for manoeuvring is readily available.

Coastal and congested waters

81 The officer in charge of the engineering watch shall ensure that all machinery involved with the manoeuvring of the ship can immediately be placed in the manual mode of operation when notified that the ship is in congested waters. The officer in charge of the engineering watch shall also ensure that an adequate reserve of power is available for steering and other manoeuvring requirements. Emergency steering and other auxiliary equipment must be ready for immediate operation.

Ship at anchor

82 At an unsheltered anchorage the chief engineer officer shall consult with the master whether or not to maintain the same engineering watch as when under way.

83 When a ship is at anchor in an open roadstead or any other virtually “at sea” condition, the engineer officer in charge of the engineering watch shall ensure that:

- .1 an efficient engineering watch is kept;
- .2 periodic inspection is made of all operating and stand-by machinery;
- .3 main and auxiliary machinery is maintained in a state of readiness in accordance with orders from the bridge;
- .4 measures are taken to protect the environment from pollution by the ship, and that applicable pollution prevention regulations are complied with; and
- .5 all damage control and fire-fighting systems are in readiness.

Part 4-3 - Principles to be observed in keeping a radio watch

General provisions

84 Administrations shall direct the attention of companies, masters and radio watchkeeping personnel to comply with the following provisions to ensure that an adequate safety radio watch is maintained while a ship is at sea. In complying with this Code account shall be taken of the Radio Regulations.

Watch arrangements

85 In deciding the arrangements for the radio watch, the master of every seagoing ship shall:

- .1 ensure that the radio watch is maintained in accordance with the relevant provisions of the Radio Regulations and the SOLAS Convention;
- .2 ensure that the primary duties for radio watchkeeping are not adversely affected by attending to radio traffic not relevant to the safe movement of the ship and safety of navigation; and
- .3 take into account the radio equipment fitted on board and its operational status.

Performing the radio watch

86 The radio operator performing radio watchkeeping duties shall:

- .1 ensure that watch is maintained on the frequencies specified in the Radio Regulations and the SOLAS Convention; and
- .2 while on duty, regularly check the operation of the radio equipment and its sources of energy and report to the master any observed failure of this equipment.

87 The requirements of the Radio Regulations and the SOLAS Convention on keeping a radiotelegraph or radio log, as appropriate, shall be complied with.

88 The maintenance of radio records, in compliance with the requirements of the Radio Regulations and the SOLAS Convention, is the responsibility of the radio operator designated as having primary responsibility for radiocommunications during distress incidents. The following shall be recorded, together with the times at which they occur:

- .1 a summary of distress, urgency and safety radiocommunications;
- .2 important incidents relating to the radio service;
- .3 where appropriate, the position of the ship at least once per day; and
- .4 a summary of the condition of the radio equipment including its sources of energy.

89 The radio records shall be kept at the distress communications operating position, and shall be made available:

- .1 for inspection by the master; and
- .2 for inspection by any authorized official of the Administration and by any duly authorized officer exercising control under article X of the Convention.

Part 5 - Watchkeeping in Port

Principles applying to all watchkeeping

General

90 On any ship safely moored or safely at anchor under normal circumstances in port, the master shall arrange for an appropriate and effective watch to be maintained for the purpose of safety. Special requirements may be necessary for special types of ships' propulsion systems or ancillary equipment and for ships carrying hazardous, dangerous, toxic or highly flammable materials or other special types of cargo.

Watch arrangements

91 Arrangements for keeping a deck watch when the ship is in port shall at all times be adequate to:

- .1 ensure the safety of life, of the ship, the port and the environment, and the safe operation of all machinery related to cargo operation;
- .2 observe international, national and local rules; and
- .3 maintain order and the normal routine of the ship.

92 The master shall decide the composition and duration of the deck watch depending on the conditions of mooring, type of the ship and character of duties.

93 If the master considers it necessary, a qualified officer shall be in charge of the deck watch.

94 The necessary equipment shall be so arranged as to provide for efficient watchkeeping.

95 The chief engineer officer, in consultation with the master, shall ensure that engineering watchkeeping arrangements are adequate to maintain a safe engineering watch while in port. When deciding the composition of the engineering watch, which may include appropriate engine-room ratings, the following points are among those to be taken into account:

- .1 on all ships of 3,000 kW propulsion power and over there shall always be an officer in charge of the engineering watch; and
- .2 on ships of less than 3,000 kW propulsion power there may be, at the master's discretion and in consultation with the chief engineer officer, no officer in charge of the engineering watch; and
- .3 officers, while in charge of an engineering watch, shall not be assigned or undertake any task or duty which would interfere with their supervisory duty in respect of the ship's machinery system.

Note: Marine Order 28 (Operations standards and procedures) 2012 requires that, during watchkeeping in port, on all ships of 750 kW propulsion power and over there shall always be an officer in charge of the engineering watch.

Note: The STCW Code defines propulsion power as the total maximum continuous rated output power in kilowatts of all the ship's main propulsion machinery which appears on the ship's certificate of registry or other official document.

Taking over the watch

96 Officers in charge of the deck or engineering watch shall not hand over the watch to their relieving officer if they have any reason to believe that the latter is obviously not capable of carrying out watchkeeping duties effectively, in which case the master or chief engineer shall be notified accordingly. Relieving officers of the deck or engineering watch shall ensure that all members of their watch are apparently fully capable of performing their duties effectively.

97 If, at the moment of handing over the deck or engineering watch, an important operation is being performed it shall be concluded by the officer being relieved, except when ordered otherwise by the master or chief engineer officer.

Part 5-1 - Taking over the deck watch

98 Prior to taking over the deck watch, the relieving officer shall be informed of the following by the officer in charge of the deck watch as to the following:

- .1 the depth of the water at the berth, the ship's draught, the level and time of high and low waters; the securing of the moorings, the arrangement of anchors and the scope of the anchor chain, and other mooring features important to the safety of the ship; the state of main engines and their availability for emergency use;
- .2 all work to be performed on board the ship; the nature, amount and disposition of cargo loaded or remaining, and any residue on board after unloading the ship;
- .3 the level of water in bilges and ballast tanks;
- .4 the signals or lights being exhibited or sounded;
- .5 the number of crew members required to be on board and the presence of any other persons on board;
- .6 the state of fire-fighting appliances;
- .7 any special port regulations;
- .8 the master's standing and special orders;
- .9 the lines of communication available between the ship and shore personnel, including port authorities, in the event of an emergency arising or assistance being required;
- .10 any other circumstances of importance to the safety of the ship, its crew, cargo or protection of the environment from pollution; and
- .11 the procedures for notifying the appropriate authority of any environmental pollution resulting from ship activities.

99 Relieving officers, before assuming charge of the deck watch, shall verify that:

- .1 the securing of moorings and anchor chain is adequate;
- .2 the appropriate signals or lights are properly exhibited or sounded;
- .3 safety measures and fire protection regulations are being maintained;
- .4 they are aware of the nature of any hazardous or dangerous cargo being loaded or discharged and the appropriate action to be taken in the event of any spillage or fire; and
- .5 no external conditions or circumstances imperil the ship and that it does not imperil others.

Part 5-2 - Taking over the engineering watch

100 Prior to taking over the engineering watch, the relieving officer shall be informed by the officer in charge of the engineering watch as to:

- .1 the standing orders of the day, any special orders relating to the ship operations, maintenance functions, repairs to the ship's machinery or control equipment;
- .2 the nature of all work being performed on machinery and systems on board ship, personnel involved and potential hazards;
- .3 the level and condition, where applicable, of water or residue in bilges, ballast tanks, slop tanks, sewage tanks, reserve tanks and special requirements for the use or disposal of the contents thereof;
- .4 any special requirements relating to sanitary system disposals;
- .5 the condition and state of readiness of portable fire-extinguishing equipment and fixed fire-extinguishing installations and fire-detection systems;
- .6 authorized repair personnel on board engaged in engineering activities, their work locations and repair functions and other authorized persons on board and the required crew;
- .7 any port regulations pertaining to ship effluents, fire-fighting requirements and ship readiness, particularly during potential bad weather conditions;
- .8 the lines of communication available between the ship and shore personnel, including port authorities, in the event of an emergency arising or assistance being required;
- .9 any other circumstance of importance to the safety of the ship, its crew, cargo or the protection of the environment from pollution; and
- .10 the procedures for notifying the appropriate authority of environmental pollution resulting from engineering activities.

101 Relieving officers, before assuming charge of the engineering watch, shall satisfy themselves that they are fully informed by the officer being relieved, as outlined above, and:

- .1 be familiar with existing and potential sources of power, heat and lighting and their distribution;
- .2 know the availability and condition of ship's fuel, lubricants and all water supplies; and
- .3 be ready to prepare the ship and its machinery, as far as is possible, for stand-by or emergency conditions as required.

Part 5-3 - Performing the deck watch

102 The officer in charge of the deck watch shall:

- .1 make rounds to inspect the ship at appropriate intervals;
- .2 pay particular attention to:
 - .2.1 the condition and securing of the gangway, anchor chain and moorings, especially at the turn of the tide and in berths with a large rise and fall, if necessary, taking measures to ensure that they are in normal working condition,
 - .2.2 the draught, under-keel clearance and the general state of the ship, to avoid dangerous listing or trim during cargo handling or ballasting,
 - .2.3 the weather and sea state,
 - .2.4 the observance of all regulations concerning safety and fire protection,
 - .2.5 the water level in bilges and tanks,
 - .2.6 all persons on board and their location, especially those in remote or enclosed spaces, and
 - .2.7 the exhibition and sounding, where appropriate, of lights and signals;
- .3 in bad weather, or on receiving a storm warning, take the necessary measures to protect the ship, persons on board and cargo;
- .4 take every precaution to prevent pollution of the environment by the ship;
- .5 in an emergency threatening the safety of the ship, raise the alarm, inform the master, take all possible measures to prevent any damage to the ship, its cargo and persons on board, and, if necessary, request assistance from the shore authorities or neighbouring ships;
- .6 be aware of the ship's stability condition so that, in the event of fire, the shore fire-fighting authority may be advised of the approximate quantity of water that can be pumped on board without endangering the ship;
- .7 offer assistance to ships or persons in distress;
- .8 take necessary precautions to prevent accidents or damage when propellers are to be turned; and
- .9 enter, in the appropriate log book, all important events affecting the ship.

Part 5-4 - Performing the engineering watch

103 Officers in charge of the engineering watch shall pay particular attention to:

- .1 the observance of all orders, special operating procedures and regulations concerning hazardous conditions and their prevention in all areas in their charge;

- .2 the instrumentation and control systems, monitoring of all power supplies, components and systems in operation;
- .3 the techniques, methods and procedures necessary to prevent violation of the pollution regulations of the local authorities; and
- .4 the state of the bilges.

104 Officers in charge of the engineering watch shall:

- .1 in emergencies, raise the alarm when, in their opinion, the situation so demands, and take all possible measures to prevent damage to the ship, persons on board and cargo;
- .2 be aware of the deck officer's needs relating to the equipment required in the loading or unloading of the cargo and the additional requirements of the ballast and other ship stability control systems;
- .3 make frequent rounds of inspection to determine possible equipment malfunction or failure, and take immediate remedial action to ensure the safety of the ship, of cargo operations, of the port and the environment;
- .4 ensure that the necessary precautions are taken, within their area of responsibility, to prevent accidents or damage to the various electrical, electronic, hydraulic, pneumatic and mechanical systems of the ship; and

- .5 ensure that all important events affecting the operation, adjustment or repair of the ship's machinery are satisfactorily recorded.

Part 4-5 - Watch in port on ships carrying hazardous cargo

General

105 The master of every ship carrying cargo that is hazardous, whether explosive, flammable, toxic, health threatening or environment-polluting, shall ensure that safe watchkeeping arrangements are maintained. On ships carrying hazardous cargo in bulk, this will be achieved by the ready availability on board of a duly qualified officer or officers, and ratings where appropriate, even when the ship is safely moored or safely at anchor in port.

106 On ships carrying hazardous cargo other than in bulk, the master shall take full account of the nature, quantity, packing and stowage of the hazardous cargo and of any special conditions on board, afloat and ashore.

Part 4-6 - Cargo watch

107 Officers with responsibility for the planning and conduct of cargo operations shall ensure that such operations are conducted safely through the control of the specific risks, including when non-ship's personnel are involved.

GUIDANCE REGARDING WATCHKEEPING ARRANGEMENTS AND PRINCIPLES TO BE OBSERVED

Section B-VIII/2 of the STCW Code

Part 4-1 - Guidance on keeping a navigational watch

Introduction

2 Particular guidance may be necessary for special types of ships as well as for ships carrying hazardous, dangerous, toxic or highly flammable cargoes. The master should provide this operational guidance as appropriate.

3 It is essential that officers in charge of the navigational watch appreciate that the efficient performance of their duties is necessary in the interests of the safety of life, security and property at sea and of preventing pollution of the marine environment.

Anchor watch

4 The master of every ship at an unsheltered anchorage, at an open roadstead or any other virtually "at sea" conditions in accordance with chapter VIII, section A-VIII/2, part 4-1, paragraph 51 of the STCW Code, should ensure that watchkeeping arrangements are adequate for maintaining a safe watch at all times. A deck officer should at all times maintain responsibility for a safe anchor watch.

5 In determining the watchkeeping arrangements, and commensurate with maintaining the ship's safety and security and the protection of the marine environment, the master should take into account all pertinent circumstances and conditions such as:

- .1 maintaining a continuous state of vigilance by sight and hearing as well as by all other available means;
- .2 ship-to-ship and ship-to-shore communication requirements;
- .3 the prevailing weather, sea, ice and current conditions;
- .4 the need to continuously monitor the ship's position;
- .5 the nature, size and characteristics of anchorage;
- .6 traffic conditions;
- .7 situations which might affect the security of the ship;
- .8 loading and discharging operations;
- .9 the designation of stand-by crew members; and
- .10 the procedure to alert the master and maintain engine readiness.

Part 4-2 - Guidance on keeping an engineering watch

6 Particular guidance may be necessary for special types of propulsion systems or ancillary equipment and for ships carrying hazardous, dangerous, toxic or highly flammable materials or other special types of cargo. The chief engineer officer should provide this operational guidance as appropriate.

7 It is essential that officers in charge of the engineering watch appreciate that the efficient performance of engineering watchkeeping duties is necessary in the interest of the safety of life and property at sea and of preventing pollution of the marine environment.

8 The relieving officer, before assuming charge of the engineering watch, should:

- .1 be familiar with the location and use of the equipment provided for the safety of life in a hazardous or toxic environment;
- .2 ascertain that materials for the administration of emergency medical first aid are readily available, particularly those required for the treatment of burns and scalds; and
- .3 when in port, safely anchored or moored, be aware of:
 - .3.1 cargo activities, the status of maintenance and repair functions and all other operations affecting the watch; and
 - .3.2 the auxiliary machinery in use for passenger or crew accommodation services, cargo operations, operational water supplies and exhaust systems.

Part 4-3 - Guidance on keeping a radio watch

General

9 Among other things, the Radio Regulations require that each ship radio station is licensed, is under the ultimate authority of the master or other person responsible for the ship and is only operated under the control of adequately qualified personnel. The Radio Regulations also require that a distress alert shall only be sent on the authority of the master or other person responsible for the ship.

10 The master should bear in mind that all personnel assigned responsibility for sending a distress alert must be instructed with regard to, be knowledgeable of, and be able to operate properly, all radio equipment on the ship as required by regulation I/14, paragraph 1.4. This should be recorded in the deck or radio log books.

Watchkeeping

11 In addition to the requirements concerning radio watchkeeping, the master of every seagoing ship should ensure that:

- .1 the ship's radio station is adequately manned for the purpose of exchanging general communications – in particular public correspondence, taking into account the constraints imposed by the duties of those authorized to operate it; and
- .2 the radio equipment provided on board and, where fitted, the reserve sources of energy, are maintained in an efficient working condition.

12 Necessary instruction and information on use of radio equipment and procedures for distress and safety purposes should be given periodically to all relevant crew members by the person designated in the muster list to have primary responsibility for radiocommunications during distress incidents. This should be recorded in the radio log.

13 The master of every ship not subject to the SOLAS, 1974 should require that radio watchkeeping is adequately maintained as determined by the Administration, taking into account the Radio Regulations.

Operational

14 Prior to sailing, the radio operator designated as having primary responsibility for radiocommunications during distress incidents should ensure that:

- .1 all distress and safety radio equipment and the reserve source of energy are in an efficient working condition, and that this is recorded in the radio log;
- .2 all documents required by international agreement, notices to ship radio stations and additional documents required by the Administration are available and are corrected in accordance with the latest supplements, and that any discrepancy is reported to the master;
- .3 the radio clock is correctly set against standard time signals;
- .4 antennae are correctly positioned, undamaged and properly connected; and
- .5 to the extent practicable, routine weather and navigational warning messages for the area in which the ship will be navigating are updated together with those for other areas requested by the master, and that such messages are passed to the master.

15 On sailing and opening the station, the radio operator on watch should:

- .1 listen on the appropriate distress frequencies for any possible existing distress situation; and

- .2 send a traffic report (name, position and destination, etc.) to the local coast station and any other appropriate coast station from which general communications may be expected.

16 While the station is open, the radio operator on watch should:

- .1 check the radio clock against standard time signals at least once a day;
- .2 send a traffic report when entering and on leaving the service area of a coast station from which general communications might be expected; and
- .3 transmit reports to ship reporting systems in accordance with the instructions of the master.

17 While at sea, the radio operator designated as having primary responsibility for radiocommunications during distress incidents should ensure the proper functioning of:

- .1 the digital selective calling (DSC) distress and safety radio equipment by means of a test call at least once each week; and
- .2 the distress and safety radio equipment by means of a test at least once each day but without radiating any signal.

The results of these tests should be recorded in the radio log.

18 The radio operator designated to handle general communications should ensure that an effective watch is maintained on those frequencies on which communications are likely to be exchanged, having regard to the position of the ship in relation to those coast stations and to coast earth stations from which traffic may be expected. When exchanging traffic, radio operators should follow the relevant ITU recommendations.

19 When closing the station on arrival at a port, the radio operator on watch should advise the local coast station and other coast stations with which contact has been maintained of the ship's arrival and of the closing of the station.

20 When closing the radio station the radio operator designated as having primary responsibility for radiocommunications during distress incidents should:

- .1 ensure that transmitting antennae are earthed; and
- .2 check that the reserve sources of energy are sufficiently charged.

Distress alerts and procedures

21 The distress alert or distress call has absolute priority over all other transmissions. All stations which receive such signals are required by the Radio Regulations to immediately cease all transmissions capable of interfering with distress communications.

22 In the case of a distress affecting own ship, the radio operator designated as having primary responsibility for radiocommunications during distress incidents should immediately assume responsibility for following the procedures of the Radio Regulations and relevant ITU-R Recommendations.

23 On receiving a distress alert:

- .1 the radio operator on watch should alert the master and, if appropriate, the radio operator designated as having primary responsibility for radiocommunications during distress incidents; and
- .2 the radio operator designated as having primary responsibility for radiocommunications during distress incidents should evaluate the situation and immediately assume responsibility for following the procedures of the Radio Regulations and relevant ITU-R Recommendations.

Urgency messages

24 In cases of urgency affecting own ship, the radio operator designated as having responsibility for radiocommunications during distress incidents should immediately assume responsibility for following the procedures of the Radio Regulations and relevant ITU-R Recommendations.

25 In cases of communications relating to medical advice, the radio operator designated as having primary responsibility for radiocommunications during distress incidents should follow the procedures of the Radio Regulations and adhere to the conditions as published in the relevant international documentation (see paragraph 14.2) or as specified by the satellite service provider.

26 In cases of communications relating to medical transports, as defined in the Protocol additional to the Geneva Conventions of 12 August 1949, and relating to the protection of victims of international armed conflicts (Protocol I), the radio operator designated as having primary responsibility for radiocommunications during distress incidents should follow the procedures of the Radio Regulations.

27 On receiving an urgency message, the radio operator on watch should alert the master and, if appropriate, the radio operator designated as having primary responsibility for radiocommunications during distress incidents.

Safety messages

28 When a safety message is to be transmitted, the master and the radio operator on watch should follow the procedures of the Radio Regulations.

29 On receiving a safety message, the radio operator on watch should note its content and act in accordance with the master's instructions.

30 Bridge-to-bridge communications should be exchanged on VHF channel 13. Bridge-to-bridge communications are described as "Intership Navigation Safety Communications" in the Radio Regulations.

Radio records

31 Additional entries in the radio log should be made in accordance with paragraphs 10, 12, 14, 17 and 33.

32 Unauthorized transmissions and incidents of harmful interference should, if possible, be identified, recorded in the radio log and brought to the attention of the Administration in compliance with the Radio Regulations, together with an appropriate extract from the radio log.

Battery maintenance

33 Batteries providing a source of energy for any part of the radio installation, including those associated with uninterrupted power supplies are the responsibility of the radio operator designated as having primary responsibility for radiocommunications during distress incidents and should be:

- .1 tested on-load and off-load daily and, where necessary, brought up to the fully charged condition;
- .2 tested once per week by means of a hydrometer where practicable, or where a hydrometer cannot be used, by a suitable load test; and
- .3 checked once per month for the security of each battery and its connections and the condition of the batteries and their compartment or compartments.

The results of these tests should be recorded in the radio log.



SECTION 3

THE NAVIGATION AND RADIO WATCH

Marine Order 28 (*Operating standards and procedures*) 2012 requires masters and all persons engaged on watchkeeping duties to observe the standards and guidance regarding watchkeeping set out in Sections A-VIII/2 and B-VIII/2 of the STCW Code. The former is set out in full in Section 1 and the latter in Section 2. The objective is to ensure that a safe continuous watch or watches appropriate to the prevailing circumstances and conditions are maintained in all seagoing ships at all times.

This Section, for convenience sake, amalgamates Sections 1 and 2 into a logical sequence for the assistance of those with responsibility for the navigational and radio watch. In order to make this section “user friendly” minor changes have been made.

The officer in charge of the navigational watch is the master’s representative and is primarily responsible at all times for the safe navigation of the ship and for complying with the International Regulations for Preventing Collisions at Sea, 1972, as amended.

1 Certification

The officer in charge of the navigational or deck watch must be qualified in accordance with Marine Order 3 (Seagoing qualifications) 2004 appropriate to the duties related to navigational or deck watchkeeping.

2 Voyage Planning

2.1 General requirements

The intended voyage must be planned in advance taking into consideration all pertinent information and any course laid down must be checked before the voyage commences.

2.2 Planning prior to each voyage

Prior to each voyage the master of every ship must ensure that the intended route from the port of departure to the first port of call is planned using adequate and appropriate charts and other nautical publications necessary for the intended voyage, containing accurate, complete and up to date information regarding those navigational limitations and hazards which are of a permanent or predictable nature, and which are relevant to the safe navigation of the ship.

2.3 Verification and display of planned route

When the route planning is verified, taking into consideration all pertinent information, the planned route

must be clearly displayed on appropriate charts, and must be continuously available to the officer in charge of the watch who must verify each course to be followed prior to using it during the voyage.

2.4 Deviation from planned route

If a decision is made, during a voyage, to change the next port of call of the planned route, or if it is necessary for the ship to deviate substantially from the planned route for other reasons, then an amended route must be planned prior to deviating substantially from the route originally planned.

3 Watchkeeping

3.1 General principles

3.1.1 Companies, masters and watchkeeping personnel must observe the following principles to ensure that safe watches are maintained at all times.

3.1.2 The master of every ship is bound to ensure that watchkeeping arrangements are adequate for maintaining a safe navigational watch. Under the master’s general direction, the officers of the navigational watch are responsible for navigating the ship safely during their periods of duty, when they will be particularly concerned with avoiding collision and stranding.

3.2 Protection of marine environment

The master, officers and ratings must be aware of the serious effects of operational or accidental pollution of the marine environment and must take all possible precautions to prevent such pollution, particularly within the framework of relevant international and port regulations.

3.3 Lookout

3.3.1 A proper lookout must be maintained at all times in compliance with rule 5 of the International Regulations for Preventing Collisions at Sea, 1972, as amended and is to serve the purpose of:

- (a) maintaining a continuous state of vigilance by sight and hearing as well as by all other available means, with regard to any significant change in the operating environment;
- (b) fully appraising the situation and the risk of collision, stranding and other dangers to navigation; and
- (c) detecting ships or aircraft in distress, shipwrecked persons, wrecks, debris and other hazards to safe navigation.

3.3.2 The lookout must be able to give full attention to the keeping of a proper lookout and no other duties may be undertaken or assigned which could interfere with that task.

3.3.3 The duties of the lookout and helmsperson are separate and the helmsperson must not be considered to be the lookout while steering, except in small ships where an unobstructed all-round view is provided at the steering position and there is no impairment of night vision or other impediment to the keeping of a proper lookout. The officer in charge of the navigational watch may be the sole lookout in daylight provided that on each such occasion:

- (a) the situation has been carefully assessed and it has been established without doubt that it is safe to do so;
- (b) full account has been taken of all relevant factors including, but not limited to:
 - state of weather,
 - visibility,
 - traffic density,
 - proximity of dangers to navigation; and
 - the attention necessary when navigating in or near traffic separation schemes; and
- (c) assistance is immediately available to be summoned to the bridge when any change in the situation so requires.

3.3.4 In determining that the composition of the navigational watch is adequate to ensure that a proper lookout can continuously be maintained, the master and take into account all relevant factors, including those described in this section of the Code, as well as the following factors:

- (a) visibility, state of weather and sea;
- (b) traffic density, and other activities occurring in the area in which the vessel is navigating;
- (c) the attention necessary when navigating in or near traffic separation schemes or other routeing measures;
- (d) the additional workload caused by the nature of the ship's functions, immediate operating requirements and anticipated manoeuvres;
- (e) the fitness for duty of any crew members on call who are assigned as members of the watch;
- (f) knowledge of and confidence in the professional competence of the ship's officers and crew;
- (g) the experience of each officer of the navigational watch, and the familiarity of that officer with the ship's equipment, procedures, and manoeuvring capability;

- (h) activities taking place on board the ship at any particular time, including radiocommunication activities and the availability of assistance to be summoned immediately to the bridge when necessary;
- (i) the operational status of bridge instrumentation and controls, including alarm systems;
- (j) rudder and propeller control and ship manoeuvring characteristics;
- (k) the size of the ship and the field of vision available from the conning position;
- (l) the configuration of the bridge, to the extent such configuration might inhibit a member of the watch from detecting by sight or hearing any external development; and
- (m) any other relevant standard, procedure or guidance relating to watchkeeping arrangements and fitness for duty which has been adopted by the IMO.

3.4 Watch arrangements

When deciding the composition of the watch on the bridge, which may include appropriately qualified ratings, the following factors, *inter alia*, must be taken into account:

- (a) at no time shall the bridge be left unattended;
- (b) weather conditions, visibility and whether there is daylight or darkness;
- (c) proximity of navigational hazards which may make it necessary for the officer in charge of the watch to carry out additional navigational duties;
- (d) use and operational condition of navigational aids such as ECDIS radar or electronic position indicating devices and any other equipment affecting the safe navigation of the ship;
- (e) whether the ship is fitted with automatic steering;
- (f) whether there are radio duties to be performed;
- (g) unmanned machinery space (UMS) controls, alarms and indicators provided on the bridge, procedures for their use and limitations; and
- (h) any unusual demands on the navigational watch that may arise as a result of special operational circumstances.

3.5 Taking over the watch

3.5.1 The officer in charge of the navigational watch must not hand over the watch to the relieving officer if there is reason to believe that the latter is not capable of carrying out the watchkeeping duties effectively, in which case the master must be notified.

3.5.2 The relieving officer must ensure that the members of the relieving watch are fully capable of performing their duties, particularly as regards their adjustment to night vision. Relieving officers must not take over the watch until their vision is fully adjusted to the light conditions.

3.5.3 Prior to taking over the watch relieving officers must satisfy themselves as to the ship's estimated or true position and confirm its intended track, course and speed, and UMS controls as appropriate and must note any dangers to navigation expected to be encountered during their watch.

3.5.4 Relieving officers must personally satisfy themselves regarding the:

- (a) standing orders and other special instructions of the master relating to navigation of the ship;
- (b) position, course, speed and draught of the ship;
- (c) prevailing and predicted tides, currents, weather, visibility and the effect of these factors upon course and speed;
- (d) procedures for the use of main engines to manoeuvre when the main engines are on bridge control; and
- (e) navigational situation, including but not limited to:
 - (i) the operational condition of all navigational and safety equipment being used or likely to be used during the watch,
 - (ii) the errors of gyro and magnetic compasses,
 - (iii) the presence and movement of ships in sight or known to be in the vicinity,
 - (iv) the conditions and hazards likely to be encountered during the watch, and
 - (v) the possible effects of heel, trim, water density and squat on under keel clearance.

3.5.5 If at any time the officer in charge of the navigational watch is to be relieved when a manoeuvre or other action to avoid any hazard is taking place, the relief of that officer must be deferred until such action has been completed.

3.6 Performing the watch

3.6.1 The officer in charge of the navigational watch must:

- (a) keep the watch on the bridge;
- (b) in no circumstances leave the bridge until properly relieved; and
- (c) continue to be responsible for the safe navigation of the ship, despite the presence of the master on the bridge, until informed specifically that the master has assumed that responsibility and this is mutually understood.

3.6.2 During the watch the course steered, position and speed must be checked at sufficiently frequent intervals, using any available navigational aids necessary, to ensure that the ship follows the planned course.

3.6.3 The officer in charge of the navigational watch must have full knowledge of the location and operation of all safety and navigational equipment on board the ship and must be aware and take account of the operating limitations of such equipment.

3.6.4 The officer in charge of the navigational watch must not be assigned or undertake any duties which would interfere with the safe navigation of the ship.

3.6.5 When using radar, the officer in charge of the navigational watch must bear in mind the necessity to comply at all times with the provisions on the use of radar contained in the International Regulations for Preventing Collisions at Sea, 1972, as amended in force.

3.6.6 In cases of need the officer in charge of the navigational watch must not hesitate to use the helm, engines and sound signalling apparatus. However, timely notice of intended variations of engine speed must be given where possible or effective use made of UMS engine controls provided on the bridge in accordance with the applicable procedures.

3.6.7 Officers of the navigational watch must know the handling characteristics of their ship, including its stopping distances, and should appreciate that other ships may have different handling characteristics.

3.6.8 A proper record shall be kept during the watch of the movements and activities relating to the navigation of the ship.

3.6.9 It is of special importance that at all times the officer in charge of the navigational watch ensures that a proper lookout is maintained. In a ship with a separate chart room the officer in charge of the navigational watch may visit the chart room, when essential, for a short period for the necessary performance of navigational duties, but must first ensure that it is safe to do so and that proper lookout is maintained.

3.6.10 Operational tests of shipboard navigational equipment must be carried out at sea as frequently as practicable and as circumstances permit, in particular before hazardous conditions affecting navigation are expected. Whenever appropriate, these tests must be recorded. Such tests must also be carried out prior to port arrival and departure.

3.6.11 The officer in charge of the navigational watch must make regular checks to ensure that:

- (a) the person steering the ship or the automatic pilot is steering the correct course;
- (b) the standard compass error is determined at least once a watch and, when possible, after any major alteration of course; the standard and gyro compasses are frequently compared and repeaters are synchronized with their master compass;
- (c) the automatic pilot is tested manually at least once a watch;
- (d) the navigation and signal lights and other navigational equipment are functioning properly;
- (e) the radio equipment is functioning properly in accordance with 3.5.3; and
- (f) the UMS controls, alarms and indicators are functioning properly.

3.6.13 The officer in charge of the navigational watch must bear in mind the necessity to comply at all times with the requirements in force of the International Convention for the Safety of Life at Sea, (SOLAS) 1974. The officer of the navigational watch must take into account:

- (a) the need to station a person to steer the ship and to put the steering into manual control in good time to allow any potentially hazardous situation to be dealt with in a safe manner; and
- (b) that with a ship under automatic steering it is highly dangerous to allow a situation to develop to the point where the officer in charge of the navigational watch is without assistance and has to break the continuity of the lookout in order to take emergency action.

3.6.14 Officers of the navigational watch must be thoroughly familiar with the use of all electronic navigational aids carried, including their capabilities and limitations, and must use each of these aids when appropriate and must bear in mind that the echo sounder is a valuable navigational aid.

3.6.15 The officer in charge of the navigational watch must use the radar whenever restricted visibility is encountered or expected, and at all times in congested waters having due regard to its limitations.

3.6.16 The officer in charge of the navigational watch must ensure that the range scales employed are changed at sufficiently frequent intervals so that echoes are detected as early as possible. It must be borne in mind that small or poor echoes may escape detection.

3.6.17 Whenever radar is in use, the officer in charge of the navigational watch must select an appropriate range scale and observe the display carefully, and must ensure that plotting or systematic analysis is commenced in ample time.

3.6.18 The officer in charge of the navigational watch must notify the master immediately:

- (a) if restricted visibility is encountered or expected;
- (b) if the traffic conditions or the movements of other ships are causing concern;
- (c) if difficulty is experienced in maintaining course;
- (d) on failure to sight land, a navigation mark or to obtain soundings by the expected time;
- (e) if, unexpectedly, land or a navigation mark is sighted or a change in soundings occurs;
- (f) on breakdown of the engines, propulsion machinery remote control, steering gear or any essential navigational equipment, alarm or indicator;
- (g) if the radio equipment malfunctions;
- (h) in heavy weather, if in any doubt about the possibility of weather damage;
- (i) if the ship meets any hazard to navigation, such as ice or a derelict; and
- (j) in any other emergency or if in any doubt.

3.6.19 Despite the requirement to notify the master immediately in the foregoing circumstances, the officer in charge of the navigational watch must in addition not hesitate to take immediate action for the safety of the ship, where circumstances so require.

3.6.20 The officer in charge of the navigational watch must give watchkeeping personnel all appropriate instructions and information which will ensure the keeping of a safe watch, including a proper lookout.

3.7 Watchkeeping under different conditions and in different areas

Clear weather

3.7.1.1 The officer in charge of the navigational watch must take frequent and accurate compass bearings of approaching ships as a means of early detection of risk of collision and shall bear in mind that such risk may sometimes exist even when an appreciable bearing change is evident, particularly when approaching a very large ship or a tow or when approaching a ship at close range. The officer in charge of the navigational watch

must also take early and positive action in compliance with the applicable International Regulations for Preventing Collisions at Sea, 1972, as amended and subsequently check that such action is having the desired effect.

3.7.1.2 In clear weather, whenever possible, the officer in charge of the navigational watch must carry out radar practice.

Restricted visibility

3.7.2 When restricted visibility is encountered or expected, the first responsibility of the officer in charge of the navigational watch is to comply with the relevant rules of the International Regulations for Preventing Collisions at Sea, 1972, as amended with particular regard to the sounding of fog signals, proceeding at a safe speed and having the engines ready for immediate manoeuvre. In addition, the officer in charge of the navigational watch must:

- (a) inform the master;
- (b) post a proper lookout;
- (c) exhibit navigation lights; and
- (d) operate and use the radar.

In hours of darkness

3.7.3 The master and the officer in charge of the navigational watch when arranging lookout duty must have due regard to the bridge equipment and navigational aids available for use, their limitations; procedures and safeguards implemented.

Coastal and congested waters

3.7.4.1 The largest scale chart on board, suitable for the area and corrected with the latest available information, must be used. Fixes must be taken at frequent intervals, and must be carried out by more than one method whenever circumstances allow. When using ECDIS, appropriate usage code (scale) electronic navigational charts shall be used and the ship's position shall be checked by an independent means of position fixing at appropriate intervals.

3.7.4.2 The officer in charge of the navigational watch must positively identify all relevant navigation marks.

Navigation with pilot on board

3.7.5.1 Despite the duties and obligations of pilots, their presence on board does not relieve the master or officer in charge of the navigational watch from their duties and obligations for the safety of the ship. The master and the pilot must exchange information regarding

navigation procedures, local conditions and the ship's characteristics. The master and/or the officer in charge of the navigational watch shall co operate closely with the pilot and maintain an accurate check on the ship's position and movement.

3.7.5.2 If in any doubt as to the pilot's actions or intentions, the officer in charge of the navigational watch must seek clarification from the pilot and, if doubt still exists, must notify the master immediately and take whatever action is necessary before the master arrives.

Ship at anchor

3.7.6 If the master considers it necessary, a continuous navigational watch must be maintained at anchor. While at anchor, the officer in charge of the navigational watch must:

- (a) determine and plot the ship's position on the appropriate chart as soon as practicable;
- (b) when circumstances permit, check at sufficiently frequent intervals whether the ship is remaining securely at anchor by taking bearings of fixed navigation marks or readily identifiable shore objects;
- (c) ensure that proper lookout is maintained;
- (d) ensure that inspection rounds of the ship are made periodically;
- (e) observe meteorological and tidal conditions and the state of the sea;
- (f) notify the master and undertake all necessary measures if the ship drags anchor;
- (g) ensure that the state of readiness of the main engines and other machinery is in accordance with the master's instructions;
- (h) if visibility deteriorates, notify the master;
- (i) ensure that the ship exhibits the appropriate lights and shapes and that appropriate sound signals are made in accordance with all applicable regulations; and
- (j) take measures to protect the environment from pollution by the ship and comply with applicable pollution regulations.

3.8 Keeping a radio watch

General principles

3.8.1 Companies, masters and radio watchkeeping personnel must comply with 3.8 to ensure that an adequate safety radio watch is maintained while a ship is at sea. In complying with 3.8, account must be taken of the Radio Regulations.

Watch arrangements

3.8.2 In deciding the arrangements for the radio watch, the master of every seagoing ship must:

- (a) ensure that the radio watch is maintained in accordance with the relevant provisions of the Radio Regulations and the SOLAS Convention;
- (b) ensure that the primary duties for radio watchkeeping are not adversely affected by attending to radio traffic not relevant to the safe movement of the ship and safety of navigation; and
- (c) take into account the radio equipment fitted on board and its operational status.

Performing the radio watch

3.8.3.1 The radio operator performing radio watchkeeping duties must:

- (a) ensure that watch is maintained on the frequencies specified in the Radio Regulations and the SOLAS Convention; and
- (b) while on duty regularly check the operation of the radio equipment and its sources of energy and report to the master any observed failure of this equipment.

3.8.3.2 The requirements of the Radio Regulations and the SOLAS Convention on keeping a radiotelegraph or radio log, as appropriate, must be complied with.

3.8.3.3 The maintenance of radio records, in compliance with the requirements of the Radio Regulations and the SOLAS Convention is the responsibility of the radio operator designated as having primary responsibility for radiocommunications during distress incidents. The following must be recorded, together with the times at which they occur:

- (a) a summary of distress, urgency and safety radiocommunications;
- (b) important incidents relating to the radio service;
- (c) where appropriate, the position of the ship at least once per day; and
- (d) a summary of the condition of the radio equipment including its sources of energy.

3.8.3.4 The radio records must be kept at the distress communications operating position, and must be made available:

- (a) for inspection by the master; and
- (b) for inspection by any authorized AMSA officer and by any duly authorized officer exercising control under article X of the STCW Convention.

4 Watchkeeping in Port**4.1 General principles**

On any ship safely moored or safely at anchor under normal circumstances in port, the master must arrange for an appropriate and effective watch to be maintained for the purpose of safety. Special requirements may be necessary for special types of ships' propulsion systems or ancillary equipment and for ships carrying hazardous, dangerous, toxic or highly flammable materials or other special types of cargo.

4.2 Watch arrangements

4.2.1 Arrangements for keeping a deck watch when the ship is in port must at all times be adequate to:

- (a) ensure the safety of life, of the ship, the port and the environment, and the safe operation of all machinery related to cargo operation;
- (b) observe international, national and local rules; and
- (c) maintain order and the normal routine of the ship.

4.2.2 The master must decide the composition and duration of the deck watch depending on the conditions of mooring, type of the ship and character of duties.

4.2.3 If the master considers it necessary, a qualified officer must be in charge of the deck watch.

4.2.4 The necessary equipment must be so arranged as to provide for efficient watchkeeping.

4.3 Taking over the watch

4.3.1 Officers in charge of the deck watch shall not hand over the watch to their relieving officer if they have any reason to believe that the latter is obviously not capable of carrying out watchkeeping duties effectively, in which case the master must be notified accordingly. Relieving officers of the deck watch must ensure that all members of their watch are apparently fully capable of performing their duties effectively.

4.3.2 If, at the moment of handing over the deck watch, an important operation is being performed it must be concluded by the officer being relieved, except when ordered otherwise by the master.

4.3.3 Prior to taking over the deck watch, the relieving officer must be informed of the following by the officer in charge of the deck watch as to:

- (a) the depth of the water at the berth, the ship's draught, the level and time of high and low waters; the securing of the moorings, the arrangement of anchors and the scope of the anchor chain, and other mooring features important to the safety of the ship; the state of main engines and their availability for emergency use;

- (b) all work to be performed on board the ship; the nature, amount and disposition of cargo loaded or remaining, and any residue on board after unloading the ship;
- (c) the level of water in bilges and ballast tanks;
- (d) the signals or lights being exhibited or sounded;
- (e) the number of crew members required to be on board and the presence of any other persons on board;
- (f) the state of fire fighting appliances;
- (g) any special port regulations;
- (h) the master's standing and special orders;
- (i) the lines of communication available between the ship and shore personnel, including port authorities, in the event of an emergency arising or assistance being required;
- (j) any other circumstances of importance to the safety of the ship, its crew, cargo or protection of the environment from pollution; and
- (k) the procedures for notifying the appropriate authority of any environmental pollution resulting from ship activities.

4.3.4 Relieving officers, before assuming charge of the deck watch, must verify that:

- (a) the securing of moorings and anchor chain is adequate;
- (b) the appropriate signals or lights are properly exhibited or sounded;
- (c) safety measures and fire protection regulations are being maintained;
- (d) their awareness of the nature of any hazardous or dangerous cargo being loaded or discharged and the appropriate action to be taken in the event of any spillage or fire; and
- (e) no external conditions or circumstances imperil the ship and that it does not imperil others.

4.4 Performing the deck watch

The officer in charge of the deck watch must:

- (a) make rounds to inspect the ship at appropriate intervals;
- (b) pay particular attention to:
 - (i) the condition and securing of the gangway, anchor chain and moorings, especially at the turn of the tide and in berths with a large rise and fall, if necessary, taking measures to ensure that they are in normal working condition,
 - (ii) the draught, under keel clearance and the general state of the ship, to avoid dangerous listing or trim during cargo handling or ballasting,

- (iii) the weather and sea state,
 - (iv) the observance of all regulations concerning safety and fire protection,
 - (v) the water level in bilges and tanks,
 - (vi) all persons on board and their location, especially those in remote or enclosed spaces, and
 - (vii) the exhibition and sounding, where appropriate, of lights and signals;
- (c) in bad weather, or on receiving a storm warning, take the necessary measures to protect the ship, persons on board and cargo;
 - (d) take every precaution to prevent pollution of the environment by the ship;
 - (e) in an emergency threatening the safety of the ship, raise the alarm, inform the master, take all possible measures to prevent any damage to the ship, its cargo and persons on board, and, if necessary, request assistance from the shore authorities or neighbouring ships;
 - (f) be aware of the ship's stability condition so that, in the event of fire, the shore fire fighting authority may be advised of the approximate quantity of water that can be pumped on board without endangering the ship;
 - (g) offer assistance to ships or persons in distress;
 - (h) take necessary precautions to prevent accidents or damage when propellers are to be turned; and
 - (i) enter in the appropriate log book all important events affecting the ship.

4.5 Watch in port on ships carrying hazardous cargo

4.5.1 The master of every ship carrying cargo that is hazardous, whether explosive, flammable, toxic, health threatening or environment-polluting, must ensure that safe watchkeeping arrangements are maintained. On ships carrying hazardous cargo in bulk, this will be achieved by the ready availability on board of a duly qualified officer or officers, and ratings where appropriate, even when the ship is safely moored or safely at anchor in port.

4.5.2 On ships carrying hazardous cargo other than in bulk, the master must take full account of the nature, quantity, packing and stowage of the hazardous cargo and of any special conditions on board, afloat and ashore.

4.6 Cargo watch

4.6.1 Officers with responsibility for the planning and conduct of cargo operations shall ensure that such operations are conducted safely through the control of the specific risks, including when non-ship's personnel are involved.

5 Guidance on keeping a Navigational Watch

5.1 Introduction

5.1.1 Particular guidance may be necessary for special types of ships as well as for ships carrying hazardous, dangerous, toxic or highly flammable cargoes. The master should provide this operational guidance as appropriate.

5.1.2 It is essential that officers in charge of the navigational watch appreciate that the efficient performance of their duties is necessary in the interests of the safety of life and property at sea and of preventing pollution of the marine environment.

5.2 Anchor watch

5.2.1 The master of every ship at an unsheltered anchorage, at an open roadstead or any other virtually “at sea” conditions in accordance with chapter VIII, section A-VIII/2, part 4-1, paragraph 51 of the STCW Code, should ensure that watchkeeping arrangements are adequate for maintaining a safe watch at all times. A deck officer should at all times maintain responsibility for a safe anchor watch.

5.2.2 In determining the watchkeeping arrangements, and commensurate with maintaining the ship’s safety and security and the protection of the marine environment, the master should take into account all pertinent circumstances and conditions such as:

- (a) maintaining a continuous state of vigilance by sight and hearing as well as by all other available means;
- (b) ship-to-ship and ship-to-shore communication requirements;
- (c) the prevailing weather, sea, ice and current conditions;
- (d) the need to continuously monitor the ship’s position;
 - (a) the nature, size and characteristics of anchorage;
 - (e) traffic conditions;
 - (f) situations which might affect the security of the ship;
 - (g) loading and discharging operations;
 - (h) the designation of stand-by crew members; and
 - (i) the procedure to alert the master and maintain engine readiness.

6 Guidance on keeping a Radio Watch

6.1 General

6.1.1 Among other things, the Radio Regulations require that each ship radio station is licensed, is under the ultimate authority of the master or other person responsible for the ship and is only operated under the

control of adequately qualified personnel. The Radio Regulations also require that a distress alert shall only be sent on the authority of the master or other person responsible for the ship.

6.1.2 The master should bear in mind that all personnel assigned responsibility for sending a distress alert must be instructed with regard to, be knowledgeable of, and be able to operate properly, all radio equipment on the ship as required by regulation I/14, paragraph 1.4. This should be recorded in the deck or radio log-book.

6.2 Watchkeeping

6.2.1 In addition to the requirements concerning radio watchkeeping, the master of every seagoing ship should ensure that:

- (a) the ship’s radio station is adequately manned for the purpose of exchanging general communications – in particular public correspondence, taking into account the constraints imposed by the duties of those authorized to operate it; and
- (b) the radio equipment provided on board and, where fitted, the reserve sources of energy, are maintained in an efficient working condition.

6.2.2 Necessary instruction and information on use of radio equipment and procedures for distress and safety purposes should be given periodically to all relevant crew members by the person designated in the muster list to have primary responsibility for radiocommunications during distress incidents. This should be recorded in the radio log.

6.2.3 The master of every ship not subject to the SOLAS Convention should require that radio watchkeeping is adequately maintained as determined by Marine Orders, taking into account the Radio Regulations.

6.3 Operational

6.3.1 Prior to sailing, the radio operator designated as having primary responsibility for radiocommunications during distress incidents should ensure that:

- (a) all distress and safety radio equipment and the reserve source of energy are in an efficient working condition, and that this is recorded in the radio log;
- (b) all documents required by international agreement, notices to ship radio stations and additional documents required by Marine Orders are available and are corrected in accordance with the latest supplements, and that any discrepancy is reported to the master;
- (c) the radio clock is correctly set against standard time signals;

- (d) antennae are correctly positioned, undamaged and properly connected; and
- (e) to the extent practicable, routine weather and navigational warning messages for the area in which the ship will be navigating are updated together with those for other areas requested by the master, and that such messages are passed to the master.

6.3.2 On sailing and opening the station, the radio operator on watch should:

- (a) listen on the appropriate distress frequencies for any possible existing distress situation; and
- (b) send a traffic report (name, position and destination, etc.) to the local coast station and any other appropriate coast station from which general communications may be expected.

6.3.3 While the station is open, the radio operator on watch should:

- (a) check the radio clock against standard time signals at least once a day;
- (b) send a traffic report when entering and on leaving the service area of a coast station from which general communications might be expected; and
- (c) transmit reports to ship reporting systems in accordance with the instructions of the master.

6.3.4 While at sea, the radio operator designated as having primary responsibility for radiocommunications during distress incidents should ensure the proper functioning of:

- (a) the Digital Selective Calling (DSC) distress and safety radio equipment by means of a test call at least once each week; and
- (b) the distress and safety radio equipment by means of a test at least once each day but without radiating any signal.

The results of these tests should be recorded in the radio log.

6.3.5 The radio operator designated to handle general communications should ensure that an effective watch is maintained on those frequencies on which communications are likely to be exchanged, having regard to the position of the ship in relation to those coast stations and to coast earth stations from which traffic may be expected. When exchanging traffic, radio operators should follow the relevant ITU-R Recommendations.

6.3.6 When closing the station on arrival at a port, the radio operator on watch should advise the local coast station and other coast stations with which contact has been maintained of the ship's arrival and of the closing of the station.

6.3.7 When closing the radio station the radio operator designated as having primary responsibility for radiocommunications during distress incidents should:

- (a) ensure that transmitting antennae are earthed; and
- (b) check that the reserve sources of energy are sufficiently charged.

6.4 Distress alerts and procedures

6.4.1 The distress alert or distress call has absolute priority over all other transmissions. All stations which receive such signals are required by the Radio Regulations to immediately cease all transmissions capable of interfering with distress communications.

6.4.2 In the case of a distress affecting own ship, the radio operator designated as having primary responsibility for radiocommunications during distress incidents should immediately assume responsibility for following the procedures of the Radio Regulations and relevant ITU-R Recommendations.

6.4.3 On receiving a distress alert:

- (a) the radio operator on watch should alert the master and, if appropriate, the radio operator designated as having primary responsibility for radiocommunications during distress incidents; and
- (b) the radio operator designated as having primary responsibility for radiocommunications during distress incidents should evaluate the situation and immediately assume responsibility for following the procedures of the Radio Regulations and relevant ITU-R Recommendations.

6.5 Urgency messages

6.5.1 In cases of urgency affecting own ship, the radio operator designated as having responsibility for radiocommunications during distress incidents should immediately assume responsibility for following the procedures of the Radio Regulations and relevant ITU-R Recommendations.

6.5.2 In cases of communications relating to medical advice, the radio operator designated as having primary responsibility for radiocommunications during distress incidents should follow the procedures of the Radio Regulations and adhere to the conditions as published in the relevant international documentation (see 6.3.1(b) of this Section) or as specified by the satellite service provider.

6.5.3 In cases of communications relating to medical transports, as defined in the Annex 1 to the Protocol additional to the Geneva Conventions of 12 August 1949 and relating to the protection of victims of international armed conflicts (Protocol 1), the radio operator designated as having primary responsibility for radiocommunication during distress incidents should follow the procedures of the Radio Regulations.

6.5.4 On receiving an urgency message, the radio operator on watch should alert the master and, if appropriate, the radio operator designated as having primary responsibility for radiocommunications during distress incidents.

6.6 Safety messages

6.6.1 When a safety message is to be transmitted, the master and the radio operator on watch should follow the procedures of the Radio Regulations.

6.6.2 On receiving a safety message, the radio operator on watch should note its content and act in accordance with the master's instructions.

6.6.3 Bridge-to-bridge communications should be exchanged on VHF channel 13. Bridge-to-bridge communications are described as "Intership Navigation Safety Communications" in the Radio Regulations.

6.7 Radio records

6.7.1 Additional entries in the radio log should be made in accordance with 6.1.2, 6.2.2, 6.3.1, 6.3.4 and 6.8.

6.7.2 Unauthorized transmissions and incidents of harmful interference should, if possible, be identified, recorded in the radio log and brought to the attention of the appropriate Administration in compliance with the Radio Regulations, together with an appropriate extract from the radio log.

6.8 Battery maintenance

Batteries providing a source of energy for any part of the radio installation including those associated with uninterrupted power supplies are the responsibility of the radio operator designated as having primary responsibility for radiocommunications during distress incidents and should be:

- (a) tested on-load and off-load daily and, where necessary, brought up to the fully charged condition;
- (b) tested once per week by means of a hydrometer where practicable, or where a hydrometer cannot be used, by a suitable load test; and

- (c) checked once per month for the security of each battery and its connections and the condition of the batteries and their compartment or compartments.

The results of these tests should be recorded in the radio log.

Marine Order 28 (Operating standards and procedures) 2012 requires chief engineers and all persons engaged on watchkeeping duties to observe the standards and guidance regarding watchkeeping set out in Sections A-VIII/2 and B-VIII/2 of the STCW Code. The former is set out in full in Section 1 and the latter in Section 2. The objective is to ensure that a safe continuous watch or watches appropriate to the prevailing circumstances and conditions are maintained in all seagoing ships at all times.

This Section, for convenience sake, amalgamates Sections 1 and 2 into a logical sequence for the assistance of those with responsibility for the engineering watch. In order to make this section “user friendly” minor changes have been made.

*The term **engineering watch** means either a person or a group of personnel comprising the watch or a period of responsibility for an officer during which the physical presence in machinery spaces of that officer may or may not be required.*

*The **officer in charge of the engineering watch** is the chief engineer officer’s representative and is primarily responsible, at all times, for the safe and efficient operation and upkeep of machinery affecting the safety of the ship and is responsible for the inspection, operation and testing, as required, of all machinery and equipment under the responsibility of the engineering watch.*

1 Certification

The officer in charge of the engineering watch must be qualified in accordance with the provisions of Marine Order 3 (Seagoing qualifications) 2004 appropriate to the duties related to engineering watchkeeping.

2 Voyage Planning

The chief engineer officer shall, in consultation with the master, determine in advance the needs of the intended voyage, taking into consideration the requirements for fuel, water, lubricants, chemicals, expendable and other spare parts, tools, supplies and any other requirements.

3 Watchkeeping at Sea

3.1 General principles

3.1.1 Companies, chief engineer officers and watchkeeping personnel must observe the following principles to ensure that safe watches are maintained at all times.

3.1.2 The chief engineer officer of every ship is bound, in consultation with the master, to ensure that watchkeeping arrangements are adequate to maintain a safe engineering watch.

3.2 Protection of marine environment

Engineer officers and ratings must be aware of the serious effects of operational or accidental pollution of the marine environment and shall take all possible precautions to prevent such pollution, particularly within the framework of relevant international and port regulations.

3.3 Watch arrangements

3.3.1 The composition of the engineering watch shall, at all times, be adequate to ensure the safe operation of all machinery affecting the operation of the ship, in either automated or manual mode and be appropriate to the prevailing circumstances and conditions.

3.3.2 When deciding the composition of the engineering watch, which may include appropriately qualified ratings, the following criteria, *inter alia*, must be taken into account:

- (a) the type of ship and the type and condition of the machinery;
- (b) the adequate supervision, at all times, of machinery affecting the safe operation of the ship;
- (c) any special modes of operation dictated by conditions such as weather, ice, contaminated water, shallow water, emergency conditions, damage containment or pollution abatement;
- (d) the qualifications and experience of the engineering watch;
- (e) the safety of life, ship, cargo and port, and protection of the environment;
- (f) the observance of international, national and local regulations; and
- (g) maintaining the normal operations of the ship.

3.4 Taking over the watch

3.4.1 The officer in charge of the engineering watch shall not hand over the watch to the relieving officer if there is reason to believe that the latter is obviously not capable of carrying out the watchkeeping duties effectively, in which case the chief engineer officer must be notified.

3.4.2 The relieving officer of the engineering watch shall ensure that the other members of the relieving engineering watch, if any, are apparently fully capable of performing their duties effectively.

3.4.3 Prior to taking over the engineering watch, relieving officers shall satisfy themselves regarding at least the following:

- (a) the standing orders and special instructions of the chief engineer officer relating to the operation of the ship's systems and machinery;
- (b) the nature of all work being performed on machinery and systems, the personnel involved and potential hazards;
- (c) the level and, where applicable, the condition of water or residues in bilges, ballast tanks, slop tanks, reserve tanks, fresh water tanks, sewage tanks and any special requirements for use or disposal of the contents thereof;
- (d) the condition and level of fuel in the reserve tanks, settling tank, day tank and other fuel storage facilities;
- (e) any special requirements relating to sanitary system disposals;
- (f) condition and mode of operation of the various main and auxiliary systems, including the electrical power distribution system;
- (g) where applicable, the condition of monitoring and control console equipment, and which equipment is being operated manually;
- (h) where applicable, the condition and mode of operation of automatic boiler controls such as flame safeguard control systems, limit control systems, combustion control systems, fuel-supply control systems and other equipment related to the operation of steam boilers;
- (i) any potentially adverse conditions resulting from bad weather, ice, contaminated or shallow water;
- (j) any special modes of operation dictated by equipment failure or adverse ship conditions;
- (k) the reports of engine-room ratings, relating to their assigned duties;
- (l) the availability of fire-fighting appliances; and
- (m) the state of completion of engine-room log.

3.5 Performing the watch

3.5.1 The officer in charge of the engineering watch shall ensure that the established watchkeeping arrangements are maintained and that under direction, engine-room ratings, if forming part of the engineering watch, assist in the safe and efficient operation of the propulsion machinery and auxiliary equipment.

3.5.2 The officer in charge of the engineering watch shall continue to be responsible for machinery space operations, despite the presence of the chief engineer

officer in the machinery spaces, until specifically informed that the chief engineer officer has assumed that responsibility and this is mutually understood.

3.5.3 All members of the engineering watch shall be familiar with their assigned watchkeeping duties. In addition, every member must with respect to the ship they are serving in have knowledge of:

- (a) the use of appropriate internal communication systems;
- (b) the escape routes from machinery spaces;
- (c) the engine-room alarm systems and be able to distinguish between the various alarms with special reference to the fire-extinguishing media alarm; and
- (d) the number, location and types of fire-fighting equipment and damage-control gear in the machinery spaces, together with their use and the various safety precautions to be observed.

3.5.4 Any machinery not functioning properly, expected to malfunction or requiring special service, shall be noted along with any action already taken. Plans shall be made for any further action if required.

3.5.5 When the machinery spaces are in the manned condition, the officer in charge of the engineering watch shall at all times be readily capable of operating the propulsion equipment in response to needs for changes in direction or speed.

3.5.6 When the machinery spaces are in the periodic unmanned condition, the designated duty officer in charge of the engineering watch must be immediately available and on call to attend the machinery spaces.

3.5.7 All bridge orders shall be promptly executed. Changes in direction or speed of the main propulsion units shall be recorded. The officer in charge of the engineering watch shall ensure that the main propulsion unit controls, when in the manual mode of operation, are continuously attended under stand-by or manoeuvring conditions.

3.5.8 Due attention shall be paid to the ongoing maintenance and support of all machinery, including mechanical, electrical, electronic, hydraulic and pneumatic systems, their control apparatus and associated safety equipment, all accommodation service systems equipment and the recording of stores and spare gear usage.

3.5.9 The chief engineer officer shall ensure that the officer in charge of the engineering watch is informed of all preventive maintenance, damage control, or repair

operations to be performed during the engineering watch. The officer in charge of the engineering watch is responsible for the isolation, by passing and adjustment of all machinery under the responsibility of the engineering watch that is to be worked on, and shall record all work carried out.

3.5.10 When the engine-room is put in a stand-by condition, the officer in charge of the engineering watch must ensure that all machinery and equipment which may be used during manoeuvring is in a state of immediate readiness and that an adequate reserve of power is available for steering gear and other requirements.

3.5.11 Officers in charge of an engineering watch shall not be assigned or undertake any duties which would interfere with their supervisory duties in respect of the main propulsion system and ancillary equipment. They shall keep the main propulsion plant and auxiliary systems under constant supervision until properly relieved, and must periodically inspect the machinery in their charge. They shall also ensure that adequate rounds of the machinery and steering gear spaces are made for the purpose of observing and reporting equipment malfunctions or breakdowns, performing or directing routine adjustments, required upkeep and any other necessary tasks.

3.5.12 Officers in charge of an engineering watch shall direct any other member of the engineering watch to inform them of potentially hazardous conditions which may adversely affect the machinery or jeopardize the safety of life or of the ship.

3.5.13 The officer in charge of the engineering watch shall ensure that the machinery space watch is supervised, and must arrange for substitute personnel in the event of the incapacity of any engineering watch personnel. The engineering watch shall not leave the machinery spaces unsupervised in a manner that would prevent the manual operation of the engine-room plant or throttles.

3.5.14 The officer in charge of the engineering watch shall take the action necessary to contain the effects of damage resulting from equipment breakdown, fire, flooding, rupture, collision, stranding, or other cause.

3.5.15 Before going off duty, the officer in charge of the engineering watch shall ensure that all events related to the main and auxiliary machinery which have occurred during the engineering watch are suitably recorded.

3.5.16 The officer in charge of the engineering watch shall co-operate with any engineer in charge of maintenance

work during all preventive maintenance, damage control or repairs. This includes but is not necessarily limited to:

- (a) isolating and bypassing machinery to be worked on;
- (b) adjusting the remaining plant to function adequately and safely during the maintenance period;
- (c) recording, in the engine-room log or other suitable document, the equipment worked on and the personnel involved, and which safety steps have been taken and by whom, for the benefit of relieving officers and for record purposes; and
- (d) testing and putting into service, when necessary, the repaired machinery or equipment.

3.5.17 The officer in charge of the engineering watch shall ensure that if there are any engine room ratings who perform maintenance duties they are available if required to assist in the manual operation of machinery in the event of automatic equipment failure.

3.5.18 The officer in charge of the engineering watch shall bear in mind that changes in speed, resulting from machinery malfunction, or any loss of steering, may imperil the safety of the ship and life at sea. The bridge shall be immediately notified, in the event of fire, and of any impending action in machinery spaces that may cause reduction in the ship's speed, imminent steering failure, stoppage of the ship's propulsion system or any alteration in the generation of electric power or similar threat to safety. This notification, where possible, must be accomplished before changes are made, in order to afford the bridge the maximum available time to take whatever action is possible to avoid a potential marine casualty.

3.5.19 The officer in charge of the engineering watch shall notify the chief engineer officer without delay:

- (a) when engine damage or a malfunction occurs which may be such as to endanger the safe operation of the ship;
- (b) when any malfunction occurs which, it is believed, may cause damage or breakdown of propulsion machinery, auxiliary machinery or monitoring and governing systems; and
- (c) in any emergency or if in any doubt as to what decision or measures to take.

3.5.20 Despite the requirement to notify the chief engineer officer in the foregoing circumstances, the officer in charge of the engineering watch shall not hesitate to take immediate action for the safety of the ship, its machinery and crew where circumstances require.

3.5.21 The officer in charge of the engineering watch shall give the other watchkeeping personnel, if any, all appropriate instructions and information which will ensure the keeping of a safe engineering watch. Routine machinery upkeep, performed as incidental tasks as a part of keeping a safe watch, shall be set up as an integral part of the watch routine. Detailed repair maintenance involving repairs to electrical, mechanical, hydraulic, pneumatic or applicable electronic equipment throughout the ship shall be performed with the cognizance of the officer in charge of the engineering watch and chief engineer officer. These repairs shall be recorded.

3.6 Watchkeeping under different conditions and in different areas

Restricted visibility

3.6.1 The officer in charge of the engineering watch shall ensure that permanent air or steam pressure is available for sound signals and that at all times bridge orders relating to changes in speed or direction of operation are immediately implemented and, in addition, that auxiliary machinery used for manoeuvring is readily available.

Coastal and congested waters

3.6.2 The officer in charge of the engineering watch shall ensure that all machinery involved with the manoeuvring of the ship can immediately be placed in the manual mode of operation when notified that the ship is in congested waters. The officer in charge of the engineering watch shall also ensure that an adequate reserve of power is available for steering and other manoeuvring requirements. Emergency steering and other auxiliary equipment must be ready for immediate operation.

Ship at anchor

3.6.3.1 At an unsheltered anchorage the chief engineer officer shall consult with the master whether or not to maintain the same engineering watch as when underway.

3.6.3.2 When a ship is at anchor in an open roadstead or any other virtually “at sea” condition, the engineer officer in charge of the engineering watch shall ensure that:

- (a) an efficient engineering watch is kept;
- (b) periodic inspection is made of all operating and stand by machinery;
- (c) main and auxiliary machinery is maintained in a state of readiness in accordance with orders from the bridge;
- (d) measures are taken to protect the environment from pollution by the ship, and that applicable pollution prevention regulations are complied with; and
- (e) all damage control and fire fighting systems are in readiness.

4 Watchkeeping in Port

4.1 General principles

4.1.1 On any ship safely moored or safely at anchor under normal circumstances in port, the master shall arrange for an appropriate and effective watch to be maintained for the purpose of safety. Special requirements may be necessary for special types of ships’ propulsion systems or ancillary equipment and for ships carrying hazardous, dangerous, toxic or highly flammable materials or other special types of cargo.

4.1.2 The chief engineer officer, in consultation with the master, must ensure that engineering watchkeeping arrangements are adequate to maintain a safe engineering watch while in port. When deciding the composition of the engineering watch, which may include appropriate engine-room ratings, the following points are among those to be taken into account:

- (a) on all ships of 750 kW propulsion power and over there shall always be an officer in charge of the engineering watch; and
- (b) officers, while in charge of an engineering watch, must not be assigned or undertake any task or duty which would interfere with their supervisory duty in respect of the ship’s machinery system.

Note: The STCW Code defines propulsion power as the total maximum continuous rated output power in kilowatts of all the ship’s main propulsion machinery which appears on the ship’s certificate of registry or other official document.

4.2 Taking over the watch

4.2.1 Officers in charge of the engineering watch shall not hand over the watch to their relieving officer if they have any reason to believe that the latter is obviously not capable of carrying out watchkeeping duties effectively, in which case the chief engineer must be notified accordingly. Relieving officers of the engineering watch must ensure that all members of their watch are apparently fully capable of performing their duties effectively.

4.2.2 If, at the moment of handing over the engineering watch, an important operation is being performed it must be concluded by the officer being relieved, except when ordered otherwise by the chief engineer officer.

4.2.3 Prior to taking over the engineering watch, the relieving officer must be informed by the officer in charge of the engineering watch as to:

- (a) the standing orders of the day, any special orders relating to the ship operations, maintenance

- functions, repairs to the ship's machinery or control equipment;
- (b) the nature of all work being performed on machinery and systems on board ship, personnel involved and potential hazards;
 - (c) the level and condition, where applicable, of water or residue in bilges, ballast tanks, slop tanks, sewage tanks, reserve tanks and special requirements for the use or disposal of the contents thereof;
 - (d) any special requirements relating to sanitary system disposals;
 - (e) the condition and state of readiness of portable fire-extinguishing equipment and fixed fire-extinguishing installations and fire-detection systems;
 - (f) authorized repair personnel on board engaged in engineering activities, their work locations and repair functions and other authorized persons on board and the required crew;
 - (g) any port regulations pertaining to ship effluents, fire-fighting requirements and ship readiness, particularly during potential bad weather conditions;
 - (h) the lines of communication available between the ship and shore personnel, including port authorities, in the event of an emergency arising or assistance being required;
 - (i) any other circumstance of importance to the safety of the ship, its crew, cargo or the protection of the environment from pollution; and
 - (j) the procedures for notifying the appropriate authority of environmental pollution resulting from engineering activities.

4.2.4 Relieving officers, before assuming charge of the engineering watch, shall satisfy themselves that they are fully informed by the officer being relieved, as outlined above, and:

- (a) be familiar with existing and potential sources of power, heat and lighting and their distribution;
- (b) know the availability and condition of ship's fuel, lubricants and all water supplies; and
- (c) be ready to prepare the ship and its machinery, as far as is possible, for stand-by or emergency conditions as required.

4.3 Performing the watch

4.3.1 Officers in charge of the engineering watch shall pay particular attention to:

- (a) the observance of all orders, special operating procedures and regulations concerning hazardous conditions and their prevention in all areas in their charge;

- (b) the instrumentation and control systems, monitoring of all power supplies, components and systems in operation;
- (c) the techniques, methods and procedures necessary to prevent violation of the pollution regulations of the local authorities; and
- (d) the state of the bilges.

4.3.2 Officers in charge of the engineering watch must:

- (a) in emergencies, raise the alarm when in their opinion the situation so demands, and take all possible measures to prevent damage to the ship, persons on board and cargo;
- (b) be aware of the deck officer's needs relating to the equipment required in the loading or unloading of the cargo and the additional requirements of the ballast and other ship stability control systems;
- (c) make frequent rounds of inspection to determine possible equipment malfunction or failure, and take immediate remedial action to ensure the safety of the ship, of cargo operations, of the port and the environment;
- (d) ensure that the necessary precautions are taken, within their area of responsibility, to prevent accidents or damage to the various electrical, electronic, hydraulic, pneumatic and mechanical systems of the ship;
- (e) ensure that all important events affecting the operation, adjustment or repair of the ship's machinery are satisfactorily recorded.

5 Guidance on keeping a Watch

5.1 Particular guidance may be necessary for special types of propulsion systems or ancillary equipment and for ships carrying hazardous, dangerous, toxic or highly flammable materials or other special types of cargo. The chief engineer officer should provide this operational guidance as appropriate.

5.2 It is essential that officers in charge of the engineering watch appreciate that the efficient performance of engineering watchkeeping duties is necessary in the interest of the safety of life and property at sea and of preventing pollution of the marine environment.

5.3 The relieving officer, before assuming charge of the engineering watch, should:

- (a) be familiar with the location and use of the equipment provided for the safety of life in a hazardous or toxic environment;

- (b) ascertain that materials for the administration of emergency medical first aid are readily available, particularly those required for the treatment of burns and scalds; and
- (c) when in port, safely anchored or moored, be aware of:
 - (i) cargo activities, the status of maintenance and repair functions and all other operations affecting the watch; and
 - (ii) the auxiliary machinery in use for passenger or crew accommodation services, cargo operations, operational water supplies and exhaust systems.