MERCHANT SHIPPING (TRAINING, CERTIFICATION, MANNING AND WATCHKEEPING) REGULATIONS, 2004 (LI 1790).

ARRANGEMENT OF REGULATIONS

Regulation

IN exercise of the powers conferred on the Minister responsible for Ports, Harbours and Railways by sections 99 and 156 of the Merchant Shipping Act, 2003 (Act 645), these Regulations are made this 10th day of March, 2004.

Regulation 1—Application

(1) These Regulations shall apply to seafarers serving on board ships registered in Ghana and ships of other countries, except those serving on board,

(a) warships, naval auxiliaries or other ships owned and operated by a state and engaged only on governmental non-commercial service,

(b) fishing vessels,

(c) pleasure yatches not engaged in trade, and

(d) wooden ships of traditional build.

(2) The Administration shall ensure by the adoption of appropriate measures that do not impair the operation or operational capacities of ships owned or operated by the Administration that persons serving on the ships meet the requirements of the Convention.

Regulation 2—Certificates and Endorsements

(1) The Administration shall on being satisfied, issue a certificate for a master, an officer or a rating who meets the requirements for service, age, medical fitness, training, qualification and examinations in

accordance with these Regulations.

(2) The Administration shall endorse a certificate for a master or an officer issued in accordance with sub-regulation (1) in a form prescribed under Schedule 1.

(3) The language of the endorsement shall be English.

(4) A certificate for a master, an officer or a rating shall be issued in the English language.

(5) In respect of radio operators, the Administration shall include the additional knowledge required by the Radio Regulations in the examination for the issue of a certificate.

(6) The endorsement required under subregulation (2)

(a) shall only be issued if the Requirements of these Regulations have been complied with, and

(b) shall be incorporated in the format of a certificates as provided for in Schedule 1.

(7) An endorsement attesting the issue of a certificate shall be assigned the same number as the certificate.

(8) An endorsement expires when the certificate endorsed expires or is withdrawn, suspended or cancelled by the Administration which issued it.

(9) A certificate issued under these Regulations is valid for a period not exceeding five years.

(10) The capacity in which the holder of a certificate is authorized to serve shall be identified in the form of endorsement in terms identical to those used in the applicable safe manning requirements of the Administration.

(11) Subject to Regulation 17, a certificate required by these Regulations shall be kept available in its original form on board the ship on which the holder is serving.

Regulation 3—Dispensation

(1) The Administration may issue a dispensation which permits a seafarer to serve in a ship for a period not exceeding six months in a capacity for which the seafarer does not hold the appropriate certificate.

(2) A dispensation shall not be issued to a radio officer or a radiotelephone operator, except as provided by the relevant Radio Regulations.

(3) The seafarer to whom a dispensation is issued shall be qualified to fill the vacant post in a safe manner.

(4) A dispensation shall not be granted to a master or a chief engineer officer except in circumstances of force majeure and for a period to be determined by the Administration.

(5) A dispensation granted for a post shall be granted only to a person certificated to fill the post immediately below.

(6) Where certification of the post below is not required by these Regulations, a dispensation may be issued to a person whose qualification and experience is equivalent to the requirements for the post to be filled.

(7) A person who does not hold an appropriate certificate, shall be required to pass a test accepted by the

Administration as demonstrating that a dispensation may be issued.

(8) The Administration shall ensure that the post in question is filled by the holder of an appropriate certificate as soon as possible.

(9) The Administration shall on the 1st of January each year, send a report to the Secretary-General giving information of the total number of dispensations in respect of each capacity for which a certificate is required, that have been issued during the preceding year, to seagoing ships together with information as to the number of ships above and below 1600 gross tonnage.

(10) An application for dispensation shall be submitted by the company on behalf of the seafarer in respect of whom the dispensation is being sought.

(11) A questionnaire as detailed in Schedule 2 shall be completed by an applicant for dispensation.

Regulation 4—Principles Governing near Coastal Voyages

(1) The Administration shall prescribe training, experience and certification requirements for a seafarer serving on its ship engaged in a near coastal voyage.

(2) The training, experience and certification requirements shall be the same as those of the party whose coast the ship is engaged.

(3) The certification requirements shall not exceed the requirements of the Convention in respect of ships not engaged on near coastal voyage.

(4) A seafarer serving on a ship which extends its voyage beyond what is defined by the Administration as a near coastal voyage and enters waters not covered by that definition shall fulfil the appropriate competency requirements as required by the Convention for unlimited voyages.

(5) The Administration may afford a ship registered in Ghana, the benefits of near coastal provisions of the Convention when it is regularly engaged off the coast of a State which is not a party to the Convention on near coastal voyage as defined by that State.

Regulation 5—Control

(1) A ship, except a ship excluded by subparagraphs (a), (b) (c) and (d) of Regulation 1, shall be subject, while in Ghana ports, to control by an officer authorized by the Administration to verify that a seafarer serving on board who is required to be certificated by the Convention is certificated or holds an appropriate dispensation.

(2) The certificate shall be accepted, unless the certificate has been fraudulently obtained or the holder of the certificate is not the person to whom that certificate was originally issued.

(3) Where a deficiency is found under sub-regulation (1) or under the procedures specified in Regulation 6, the authorized officer carrying out the control shall inform, in writing, the master of the ship and the consul or, in the consul's absence, the nearest diplomatic representative or the maritime authority of the State where the ship is registered, so that the appropriate action may be taken.

(4) The notification shall specify the details of the deficiency and the grounds on which the authorized officer determines that the deficiency poses a danger to a person, property or the environment.

(5) Where the authorized officer, in exercising control under subregulation (1) takes into account the

(a) size and type of the ship,

(b) length and nature of the voyage,

(c) deficiencies referred to in sub-regulation (3) of regulation 6 are not corrected, and

(d) deficiency that poses a danger to a person, property or the environment,

the officer carrying out the control shall take steps to ensure that the ship does not sail unless the requirements are met to the extent that the danger is removed.

(6) The Administration shall report to the Secretary-General, the facts concerning the action taken.

(7) When exercising control under these Regulations, an effort shall be made to avoid a ship being unduly detained or delayed.

(8) A ship which is unduly detained or delayed is entitled to compensation for any loss or damage resulting from the delay or detention.

(9) These Regulations apply to ships of governments which are not parties to the Convention and ships of governments which are parties to the Convention.

Regulation 6—Control Procedures

(1) The authorized officer shall in exercising control under regulation 5, be limited to the

(a) verification in accordance with sub-regulation (1) of regulation 5 that a seafarer serving on board who is required to be certificated in accordance with the Convention holds an appropriate certificate or a valid dispensation, or provides documentary proof that an application for an endorsement has been submitted to the Administration in accordance with regulation 17,

(b) verification that the number and certificate of the seafarer serving on board are in conformity with the applicable safe manning requirements of the Administration, and

(c) assessment, in accordance with Schedule 13, of the ability of a seafarer of the ship to maintain watchkeeping standards as required by these Regulations, if there are clear grounds for believing that the standards are not being maintained because any of the following have occurred

(i) the ship has been involved in a collision, grounding or stranding,

(ii) there has been a discharge of substances from the ship when under way, at anchor or at berth which is illegal under an international convention,

(iii) the ship has been manoeuvred in an erratic or unsafe manner where routing measures adopted by the organization or safe navigation practices and procedures have not been followed, or

(iv) the ship is otherwise being operated in a manner as to pose a danger to a person, property or the environment.

(2) The Officer shall be limited under subregulation (1) where that officer believes that those standards have not been maintained because

(a) the ship has been involved in a collision, grounding or stranding,

(b) there has been a discharge of substances from the ship when under way, at anchor or at berth which is illegal under any international convention,

(e) the ship has been manoeuvred in an erratic or unsafe manner where routeing measures adopted by the Organization or safe navigation practices and procedures have not been followed, or

(d) the ship is otherwise being operated in such a manner as to pose a danger to persons, property or the environment.

(3) Deficiencies which may be considered to pose a danger to persons, property or the environment include the

(a) failure of seafarers to hold a certificate, to have a valid dispensation or to provide documentary proof that an application for an endorsement has been submitted to the Administration;

(b) failure to comply with applicable safe manning requirements of the Administration;

(c) failure of navigational or engineering watch arrangements to conform to the requirements specified for the ship by the Administration;

(d) absence in a watch of a person qualified to operate equipment essential to safe navigation, safety radio-communications or the prevention of marine pollution; and

(e) inability to provide for the first watch at the commencement of a voyage and subsequent relieving watches, persons, who are sufficiently rested and otherwise fit for duty.

(4) Failure to correct any of the deficiencies referred to in subregulation (3) in so far as it has been determined by the officer carrying out the control that the deficiencies pose danger to persons, property or the environment, shall be the grounds for the detention of the ship by the officer.

Regulation 7—Board of Inquiry

Where there is an allegation that a seafarer

(a) is suffering from any habit or a mental or physical condition rendering that person unfit to be a seafarer,

(b) is guilty of dishonesty, incompetence or misconduct in the performance of that person's functions as a seafarer, or

(c) procured a certificate of competency as a result of a misleading, false or fraudulent misrepresentation,

the Administration shall appoint a Board of Inquiry of at least two persons but not more than three persons, one of whom shall be a senior officer of a ship, to inquire into the allegation and report its findings in writing to the Administration together with its recommendations.

Regulation 8—Powers of the Board

The Board appointed under regulation 7 shall have all the powers of a Community Tribunal.

Regulation 9—Cancellation of Certificate

The Administration, acting on a recommendation made by the Board may cancel, withdraw or suspend the certificate of the seafarer concerned and order that the certificate be surrendered at a place and within the time that the administration may direct.

Regulation 10—Revocation of Certificate

(1) The Administration may in writing withdraw an approval with respect to a certificate either indefinitely or for a temporary period that the Administration may specify in writing.

Regulation 11—Appeals against Cancellation of Certificate

(1) A person who is aggrieved by an order of the Administration under regulation 9 in respect of cancellation or suspension of a certificate, or the withdrawal of an approval under regulation 10, may appeal to the High court against that order.

Regulation 12—Offences

(1) A person who

(a) serves as a seafarer on board a Ghanaian ship without being the holder of a valid certificate appropriate to the category in which the seafarer is engaged to serve; or

(b) in the capacity of an agent, engages a person as a seafarer without taking all necessary steps to ascertain whether that person is the holder of an appropriate valid certificate, or

(c) allows a function or service in a capacity required by these Regulations to be performed by a person holding an appropriate certificate to be performed by a person not holding the required certificate, a valid dispensation on having documentary proof required by Regulation 17

commits an offence and is liable on summary conviction to a fine not exceeding 500 penalty units or to imprisonment for a term not exceeding 2 years or to both.

(2) For the purposes of subparagraph (b) of subsection (1), where it is established that a seafarer is engaged to serve in a category without being the holder of a valid certificate appropriate to that category, the onus is on the person who engaged that seafarer to prove that the necessary steps were taken to ascertain that the seafarer is engaged to serve in that capacity.

(3) A person who

(a) makes or procures or assists in making a false representation for the purpose of obtaining or obtaining for any other person a certificate or a certified copy of the certificate, or

(b) forges, assists in forging or procures the forging of a certificate or copy of the certificate, or

(c) fraudulently alters or assists in the fraudulent alteration of a certificate or copy of the certificate, or procures it to be fraudulently altered; or

(d) fraudulently makes use of a certificate or copy of the certificate that is forged, altered, cancelled, or suspended or which that person is not entitled to; or

(e) fraudulently lends that person's certificate to, or allows it to be used by, any other person; or

(f) makes or has in possession a document resembling a certificate the purpose of which is to deceive,

commits an offence and is liable on summary conviction to a fine not exceeding 500 penalty units or imprisonment for a term not exceeding 2 years, or to both.

(4) A person who

(a) is not the holder of a valid certificate; or

(b) during a period when that person's certificate is suspended or approval is withdrawn, takes or uses a title, or description implying or calculated to lead persons to believe that the person is entitled to serve as a seafarer on a Ghanaian ship,

commits an offence and is liable on summary conviction to a fine not exceeding 500 penalty units or to a term of imprisonment not exceeding 2 years or to both.

(5) A seafarer who, fails to comply with a directive of the Administration to surrender the seafarer's certificate commits an offence and is liable on summary conviction to a fine not exceeding 500 penalty units or to a term imprisonment not exceeding 2 years or to both.

Regulation 13—Training and Assessment

(1) A training and an assessment of a seafarer, as required under these Regulations shall be administered, supervised and monitored in accordance with Schedule 4.

(2) A person who is responsible for the training and assessment of competence of seafarers under these Regulations shall be a qualified person in accordance with Schedule 4 for the type and level of training or assessment involved.

Regulation 14—Quality Standards

(1) The Administration shall establish a quality standards system in accordance with Schedule 5.

(2) The quality standards system shall cover the training, assessment of competence, certification, endorsement and revalidation carried out by an entity under its authority and shall be continuously monitored to ensure the achievement of defined objectives, including those concerning qualifications and experience of instructors and assessors.

(3) An evaluation shall be periodically undertaken in accordance with Schedule 5 by qualified persons.

Regulation 15—Medical Standards—Issue of Certificates

(1) Each candidate for certification shall provide satisfactory proof

(a) of the candidate's identity,

(b) that the candidate's age is not less than that prescribed in the regulation relevant to the certificate applied for,

(c) that the candidate meets the standards of medical fitness, particularly regarding eyesight and hearing, as established in Schedule 6, and

(d) that the candidate holds a valid document attesting to the candidate's medical fitness, issued by a qualified medical practitioner recognised by the Administration, from a hospital that the Administration may determine.

(2) In addition to subregulation (1) a candidate for certification must

(a) have completed the seagoing service and any related compulsory training required by these Regulations for the certificate applied for; and

(b) meet the standards of competence prescribed by these Regulations for the capacities, functions and levels that are to be identified in the endorsement to the certificate.

(3) The Administration shall issue a certificate to a candidate who complies with the requirements of this Regulation.

Regulation 16—Registration of Certificates

(1) The Administration shall

(a) maintain a register of the certificates and endorsements for masters, officers and ratings, which are issued, have expired or have been revalidated, suspended, cancelled or reported lost or destroyed and of dispensations issued under these Regulations, and

(b) make available information on the status of certificates, endorsements and dispensations to other governments and companies which request verification of the authenticity and validity of certificates produced to the governments by seafarers seeking recognition of their certificates under regulation 17 or employment on board a ship.

Regulation 17—Recognition of Certificates

(1) In order to recognise by endorsement a certificate issued by or under the authority of another government to a master, officer or radio operator, the Administration shall have confirmed, through all necessary measures, which may include inspection of facilities and procedures, that the requirements concerning standards of competence, the issue and endorsement of certificates and record keeping have been fully complied with by that government.

(2) In addition to subregulation (1), the Administration shall agree with a government concerned that prompt notification shall be given of a significant change in the arrangement for the training and certification provided in compliance with the Convention.

(3) The endorsement attesting the recognition of a certificate shall be in the form specified in Schedule 1.

(4) The Administration shall institute measures to ensure that a seafarer who presents for recognition, a certificate issued under regulation 23 or 26 has an appropriate knowledge of the maritime legislation relevant to the functions the seafarer is required to perform.

(5) The Administration shall communicate information provided and measures agreed upon under this regulation to the Secretary-General.

(6) A certificate issued by or under the authority of a government, where the Convention has not entered into force, shall not be recognised by the Administration.

(7) Subject to the Radio Regulations, the Administration may, allow a seafarer to serve in a capacity, other than radio officer or radio operator, for a period not exceeding three months on board a Ghanaian ship, while holding an appropriate and valid certificate issued and endorsed by another government for use on board ships registered by that government, but which has not yet been endorsed so as to render it appropriate for service on board Ghanaian ships.

(8) Documentary evidence shall be made available that an application for an endorsement has been submitted to the Administration by the seafarer.

(9) A certificate and an endorsement issued by the Administration under this Regulation in recognition of, or attesting the recognition of a certificate issue by another government, shall not be used as the basis for further recognition by another Administration.

Regulation 18—Revalidation of Certificates

(1) Every master, officer or radio operator holding a certificate issued or recognised under these Regulations, other than for emergency, occupational safety, medical care and survival functions, who is serving at sea or intends to return to sea after a period ashore, shall, in order to continue to qualify for seagoing service, be required at intervals not exceeding five years to

(a) meet the standards of medical fitness prescribed by regulation 15, and

(b) establish continued professional competence in accordance with Schedules 8, 9 and 10.

(2) Every master, officer and radio operator shall, for continuing seagoing service on board a ship for which special training requirement has been internationally agreed upon, successfully complete approved relevant training as in Schedule II.

(3) The Administration shall compare the standards of competence which it requires of a candidate for a certificate issued before 1st February 2002 with those specified for the appropriate certificate in the Schedules to these Regulations and shall determine the need for requiring the holder of that certificate to undergo appropriate refresher of upholding training or assessment.

(4) The Administration shall in consultation with the relevant authority formulate or promote the formulation of a structure of refresher and updating courses as provided for in Schedule 12.

(5) The Administration shall for the purpose of updating the knowledge of masters, officers and radio operators, ensure that the texts of changes in the laws of Ghana and international regulations concerning the safety of life at sea and the protection of the marine environment is made available to a ship registered in Ghana.

Regulation 19—Use of Simulators

A person shall comply with the performance standards and other provisions in Schedule 7 and the requirements specified in the other Schedules for a certificate in respect of

(a) a mandatory simulator-based training,

(b) an assessment of competency required by the Schedules which is carried out by means of a simulator, and

(c) a demonstration, by means of a simulator, of continued proficiency required by the Schedules.

Regulation 20—Responsibilities of Companies

(1) the Administration shall hold a company responsible for the assignment of a seafarer for service in its ship and shall require the company to ensure that

(a) a seafarer assigned to any of its ships holds an appropriate certificate in accordance with these Regulations,

(b) its ship is manned in accordance with the applicable safe manning requirements of the Administration,

(c) documentation and data relevant to a seafarer employed on its ship is maintained and readily accessible, and include, documentation and data on the seafarer's experience, training, medical

fitness and competency in assigned duties,

(d) a seafarer assigned to any of its ships is familiar with the specific duties and with all ships arrangements, installations, equipment, procedures and ships characteristics that are relevant to the seafarer's routine and emergency duties, and

(e) the ship's complement can effectively co-ordinate the seafarer's activities in an emergency situation and in performing functions vital to safety or to the prevention or mitigation of pollution.

(2) Companies, masters and crew members shall ensure that the obligations set out in this regulations are given full and complete effect and that any other measures that may be necessary are taken to ensure that each crew member can make a knowledgeable and informed contribution to the safe operation of the ship.

(3) A company shall provide written instructions to the master of a ship to which these Regulations apply, stating the policies and the procedures to be followed to ensure that all seafarers who are newly employed on board the ship are given reasonable opportunity to become familiar with the shipboard equipment, operating procedures and other arrangements needed for the proper performance of their duties, before being assigned to those duties.

(4) The policies and procedures shall include

(a) an allocation of reasonable period of time during which a newly employed seafarer will have an opportunity to become acquainted with the policies and procedures,

(b) the specific equipment the seafarer will be using or operating,

(c) ship-specific watchkeeping, safety, environmental protection and emergency procedures and arrangements the seafarer needs to know to perform the assigned duties properly, and

(d) designation of a knowledgeable crew member who is responsible for ensuring that an opportunity is provided to the newly employed seafarer to receive essential information in a language the seafarer understands.

(5) A company which contravenes this regulation commits an offence and is liable on summary conviction to a fine not exceeding 2000 penalty units.

Regulation 21—Manning Level—Masters, Deck Officers and Ratings

A Ghanaian ship to which these Regulations apply shall carry masters, deck officers and deck ratings appropriately certificated as prescribed in Schedule 14.

Regulation 22—Certificates of Competency

A certificate of competency shall be issued in accordance with these Regulations in each of the following classes

(a) master (class 1 deck officer),

(b) chief mate (class 2 deck officer),

(c) officer in charge of a navigational watch (class 4 deck officer), and

(d) rating forming part of a navigational watch (deck rating).

Regulation 23—Mandatory Minimum Requirements for Certification—Masters, Deck Officers and Ratings

(1) An officer in charge of a navigational watch serving on a seagoing ship of 500 gross tonnage or more, shall hold an appropriate certificate.

(2) A candidate for certification under sub-regulation (1) shall

(a) not be less than eighteen years of age,

(b) have an approved seagoing service of not less than one year as part of an approved training programme which includes on-board training which meets the requirements of Schedule 8 and is documented in an approved training record book, or otherwise have approved seagoing service of not less than three years,

(c) have performed during the required seagoing service, bridge watchkeeping duties under the supervision of a master or a qualified officer for a period of not less than six months,

(d) satisfy the applicable requirements of regulation 27, for performing designated radio duties in accordance with the Radio Regulations,

(e) have completed approved education and training and meet the standard of competence specified in Schedule 8, and

(f) pass the requisite examinations.

(3) A master and a chief mate on a seagoing ship of between 3000 gross tonnage or more shall hold an appropriate certificate.

(4) A candidate for certification in respect of sub-regulation (3) shall

(a) meet the requirements for certification as an officer in charge of a navigational watch on ships of 500 gross tonnage or more,

(b) have approved seagoing service in that capacity for certification as chief mate, not less than eighteen months, and for certification as master, not less than thirty-six months; but, this period may be reduced to not less than twenty-four months if not less than twelve months of the seagoing service has been served as chief mate.

(c) have completed approved education and training and meet the standard of competence specified in Schedule 8 for masters and chief mates of 3000 gross tonnage or more, and

(d) pass the requisite examinations.

(5) A master and a chief mate on a seagoing ship of between 500 and 3000 gross tonnage shall hold an appropriate certificate.

(6) A candidate for certification under sub-regulation (5) shall,

(a) for certification as chief mate, meet the requirements for certification as an officer in charge of a navigational watch on ships of 500 gross tonnage or more,

(b) for certification as master,

(i) meet the requirements for certification as an officer in charge of a navigational watch on ships of

500 gross tonnage or more, and

(ii) have approved seagoing service of not less than thirty-six months in that capacity; but, this period may be reduced to not less than twenty-four months if not less than twelve months of the seagoing service has been served as chief mate,

(c) have completed approved education and training and meet the standard of competence specified in Schedule 8 for masters and chief mates on ships of between 500 and 3000 gross tonnage, and

(d) pass the requisite examinations.

(7) An officer in charge of a navigational watch serving on a seagoing ship of less than 500 gross tonnage not engaged on near-coastal voyages shall hold an appropriate certificate for ships of 500 gross tonnage or more.

(8) A master serving on a seagoing ship of less than 500 gross tonnage not engaged on near-coastal voyages shall hold an appropriate certificate for service as master on ships of between 500 and 3 000 gross tonnage.

(9) An officer in charge of a navigational watch on a seagoing ship of less than 500 gross tonnage engaged on near-coastal voyages shall hold an appropriate certificate.

(10) A candidate for certification as officer in charge of a navigational watch on a seagoing ship of less than 500 gross tonnage engaged on near-coastal voyages shall

(a) not be less than eighteen years of age,

(b) have completed special training, including a minimum of twelve months seagoing service as required by the Administration, or approved seagoing service in the deck department for not less than three years,

(c) meet the applicable requirements of regulation 27, for performing designated radio duties in accordance with the Radio Regulations,

(d) have completed approved education and training and meet the standards of competence specified in Schedule 8 for officers in charge of a navigational watch on ships of less than 500 gross tonnage engaged on near-coastal voyages, and

(e) pass the requisite examinations.

(11) A master serving on a seagoing ship of less than 500 gross tonnage engaged on near-coastal voyages shall hold an appropriate certificate.

(12) A candidate for certification as a master on a seagoing ship of less than 500 gross tonnage engaged on near-coastal voyages,

(a) shall not be less than twenty years of age,

(b) shall have approved seagoing service of not less than twelve months as officer in charge of a navigational watch,

(c) shall have completed approved education and training and meet the standard of competence specified in Schedule 8 of these regulations for masters on ships of less than 500 gross tonnage engaged on near-coastal voyages, and

(d) shall pass the requisite examinations.

(13) The Administration, if it considers that the size of a ship and the conditions of its voyage renders the application of the full requirements of this regulation and Schedule 8 unreasonable or impracticable, may to that extent exempt the master and the officer in charge of a navigational watch on that ship or class of ships from some of the requirements, taking into consideration the safety of all ships which may be operating in the same waters.

(14) A rating which forms part of a navigational watch on a seagoing ship of 500 gross tonnage or more, other than ratings under training and ratings whose duties while on watch are of an unskilled nature, shall be duly certificated to perform those duties.

(15) A candidate for certification

(a) shall not be less than eighteen years of age,

(b) shall have completed

(i) approved seagoing service including not less than six months training and experience, or

(ii) special training, either pre-sea or on board ship, including an approved period of seagoing service which shall not be less than two months,

(c) meet the standard of competence specified in Schedule 8 of these Regulations, and

(d) pass the requisite examinations.

(16) The seagoing service, training and experience required under sub-paragraph 15 (b) (i) and (ii) of regulation 23

(a) shall be associated with navigational watchkeeping functions, and

(b) involve the performance of duties carried out under the direct supervision of the master, the officer in charge of the navigational watch or a qualified rating.

Regulation 24—Manning Level—Chief Engineer Officers, Engineer Officers and Ratings

A ship to which these Regulations apply shall carry chief engineer officers, engineer officers and ratings appropriately certificated as prescribed in Schedule 14.

Regulation 25—Certificates of competency—Chief Engineer Officers, Engineer Officers and Ratings

A certificate of competency shall be issued in accordance with these Regulations in the following classes

(a) chief engineer officer (class 1 marine engineer officer),

(b) second engineer officer (class 2 marine engineer officer),

(c) officer in charge of an engineering watch (class 3 main engineer officer),

(e) rating forming part of an engineering watch (marine engine mechanic).

Regulation 26—Mandatory Minimum Requirements for Certification—Chief Engineer Officers, Engineer Officers and Ratings

(1) An officer in charge of an engineering watch in a manned engine-room or designated duty engineer officer in a periodically unmanned engine-room on a sea-going ship powered by main propulsion machinery of 750 kw propulsion power or more shall be appropriately certificated.

(2) A candidate for certification in respect of sub-regulation (1)

(a) shall not be less than eighteen years of age,

(b) shall have completed not less than twelve months seagoing service in the engine department in accordance with Schedule 9,

(c) shall have completed approved education and training of at least thirty months which includes on-board training documented in an approved training record book and meet the standards of competence specified in Schedule 9, and

(d) shall pass the requisite examination.

(3) A chief engineer officer and second engineer officer on a sea-going ship powered by main propulsion machinery of 300 kw propulsion power or more shall be appropriately certificated.

(4) A candidate for certification in respect of sub-regulation (3) shall meet the requirements for certification as an officer in charge of an engineering watch, and

(a) for certification as second engineer officer, the candidate shall have not less than eighteen months' approved seagoing service as assistant engineer officer or engineer officer,

(b) for certification as chief engineer officers, shall have not less than thirty-six months' approved seagoing service of which not less than eighteen months shall have been served as an engineer officer in a position of responsibility while qualified to serve as second engineer officer,

(c) shall have completed the approved education and training and meet the standards of competence specified in Schedule 9, and

(d) shall pass the requisite examination.

(5) A chief engineer officer and a second engineer officer on a sea-going ship powered by main propulsion machinery of between 750 kw and 3000 kw propulsion power shall be appropriately certificated.

(6) A candidate for certification under sub-regulation (5) shall meet the requirements for certification as an officer in charge of an engineering watch, and

(a) for certification as a second engineer officer shall have not less than twelve months' approved seagoing service as assistant engineer or engineer officer,

(b) for certification as chief engineer officer, shall have not less than twenty-four months' approved seagoing service of which not less than twelve months shall have been served as an engineer officer in a position of responsibility while qualified to serve as second engineer officer;

(c) shall have completed approved education and training and meet the standards of competence specified in Schedule 9, and

(d) shall pass the requisite examination.

(7) An engineer officer who is qualified to serve as second engineer officer on a ship powered by main

propulsion machinery of 3000 kw propulsion power or more, may serve as chief engineer officer on a ship powered by main propulsion machinery of less than 3000 kw propulsion power, provided that not less than twelve months' approved seagoing service shall have been served as an engineer officer in a position of responsibility and the certificate is so endorsed.

(8) A rating forming part of an engine-room watch or designated to perform duties in a periodically unmanned engine-room on a seagoing ship powered by main propulsion machinery of 750 kw propulsion power or more, other than ratings under training and ratings whose duties are of an unskilled nature, shall be duly certificated.

(9) A rating for certification under sub-regulation (8) shall

(a) not be less than eighteen years of age,

(b) have completed

(i) approved seagoing service including not less than twelve months training and experience, or

(ii) special training, either pre-sea or on board ship, including an approved period of seagoing service which shall not be less than two months,

(c) meet the standard of competence specified in Schedule 9, and

(d) pass the requisite examinations.

(10) Seagoing service, training and experience required by sub-paragraph (b) of sub-regulation (9) shall be associated with engine-room watchkeeping functions and involve the performance of duties carried out under the direct supervision of a qualified engineer officer or a qualified rating.

Regulation 27—GMDSS Radio Personnel—Mandatory Minimum Requirements

(1) A person in charge of or performing radio duties on a ship required to participate in the GMDSS shall hold an appropriate certificate relating to the GMDSS issued or recognised by the Administration under the provisions of the Radio Regulations.

(2) A person seeking certification under this regulation to work on a ship engaged in international voyages which is required to have radio installation other than ships of war, troopships, ships not propelled by mechanical means, wooden ships of traditional build, pleasure crafts not engaged in trade, fishing vessels and cargo ships below 300 gross tonnage, shall

(a) not be less than eighteen years of age,

(b) have completed approved education and training,

(c) meet the standard of competence specified in Schedule 10 of these regulations, and

(d) pass the requisite examinations,

(3) A radio personnel on a ship, which is not required to comply with sub-regulation (2) is required to comply with the Radio Regulations.

(4) The Administration shall issue or recognize an appropriate certificate prescribed by the Radio Regulations in respect of the radio personnel.

(5) A candidate shall prior to any training meet the requirements of medical fitness, including hearing, eyesight and speech as specified in Schedule 6.

Regulation 28—Certificates of Competency—Radio Personnel

The underlisted certificates of competency shall be issued to a person who has undergone approved training and passed the requisite examinations in accordance with Schedule 10 in each of the following classes:

(a) radio officer (first-class radio electronic),

(b) radio officer (second-class radio electronic),

(e) radio officer (general operator),

(d) radio officer (restricted operator).

Regulation 29—Mandatory Minimum Requirements for Masters, Officers and Ratings on Tankers

(1) An officer or rating assigned specific duties and responsibilities relating to cargo or cargo equipment on tankers shall have

(a) completed an approved shore-based fire-fighting course in addition to the training required by sub-regulation (1) of regulation 31,

(b) completed at least three months of approved seagoing service on tankers in order to acquire adequate knowledge of safe operational practices, or

(c) an approved tanker familiarization course covering at least the syllabus given for that course in Schedule 11.

(2) The Administration may accept a period of supervised seagoing service shorter than that prescribed by sub-regulation (1) if

(a) the period accepted is not less than one month,

(b) the tanker is less than 3000 gross tonnage,

(c) the duration of a voyage on which the tanker is engaged during the period does not exceed 72 hours, and

(d) the operational characteristics of the tanker, the number of voyages, the loading and discharging operations completed during the period, allow the same level of knowledge and experience to be acquired.

(3) A master, a chief, a chief engineer officer, a second engineer officer and any person with immediate responsibility for loading, discharging and care in transit or handling of cargo shall, in addition to meeting the requirements of subregulation (1) have

(a) experience appropriate to that person's duties on the type of tanker on which the person is serving, and

(b) completed an approved specialised training programme which at least covers the subjects set out in Schedule 11 that are appropriate to the person's duties on the oil tanker, chemical tanker or liquefied gas tanker on which the person is serving.

(4) The Administration shall ensure that an appropriate certificate is issued to a master and an officer,

who is qualified in accordance with sub-regulation (1) or (2) or that an existing certificate is duly endorsed by the Administration.

(5) A rating who is qualified shall be duly certificated.

Regulation 30—Mandatory Minimum Requirements—Masters, Officers, Rating and other Personnel on ro-ro Passenger Ships

(1) A master, an officer and other personnel

(a) designated on muster lists to assist passengers in emergency on board a ro-ro passenger ship, shall have completed training in crowd management as specified in Schedule 11,

(b) assigned specific duties and responsibilities on board a ro-ro passenger ship shall have completed the familiarization training specified in Schedule 11,

(c) providing direct service to passengers in a passenger space on board a ro-ro passenger ship shall have completed the safety training as specified in Schedule 11.

(2) A master, chief mate, chief engineer officer, second engineer officer and any person assigned the responsibility for

(a) embarking and disembarking passengers, loading, discharging or securing cargo, or closing hull openings on board a ro-ro passenger ship shall have completed the approved training in passenger safety, cargo safety and hull integrity as specified in Schedule 11,

(b) the safety of passengers in emergency situation opening on board a ro-ro passenger ship shall have completed approved training in crisis management and human behaviour as specified in Schedule 11.

(3) The Administration shall issue the documentary evidence of the training which have been completed to each person who is found qualified under these Regulations.

(4) A seafarer who is required to be trained in accordance with sub-regulations (1) and (2) shall at intervals not exceeding five years undertake appropriate refresher training.

(5) This regulation applies to a master, an officer, a rating and other personnel serving on board a ro-ro passenger ship engaged on an international voyage.

Regulation 31—Mandatory Minimum Requirements—Emergency, Occupational Safety, Medical Care and Survival Functions

(1) Prior to an assignment to a duty a person employed or engaged on a seagoing ship other than passengers, shall receive approved familiarization training in personal survival techniques or receive sufficient information and instruction, taking into account the guidance given in Schedule 12.

(2) A seafarer who is employed or engaged in a capacity on board a ship on the business of the ship as part of the ship's complement with designated safety or pollution-prevention duties in the operation of the ship, shall before being assigned to any shipboard duties,

(a) receive appropriate approved basic training,

(b) instruction in personal survival techniques,

(c) fire prevention and fire fighting,

(d) elementary first aid, and

(e) personal safety and social responsibilities as set out in Schedule 12.

(3) The Administration may in respect of a ship other than a passenger ship of more than 500 gross tonnage engaged on an international voyage and tanker, if it considers that a ship's size and the length or character of its voyage renders the application of the full requirements of this regulation unreasonable, exempt to that extent, the seafarer on that ship or class from some of the requirements, taking into consideration the safety of people on board the ship, property and the protection of the marine environment.

(4) A candidate for a certificate of proficiency in survival craft and rescue boats other than fast rescue boats

(a) shall not be less than eighteen years of age,

(b) shall have undergone approved seagoing service of not less than twelve months or have attended an approved training course and have approved seagoing service of not less than six months, and

(c) shall meet the standard of competence for certification for certificates of proficiency in survival craft and rescue boats set out in accordance with Schedule 12.

(5) A candidate for a certificate of proficiency in fast rescue boats

(a) shall be a holder of a certificate of proficiency in survival craft and rescue boats other than fast rescue boats,

(b) shall have attended approved training course, and

(c) shall meet the standards of competence for certificates of proficiency in fast rescue boats in accordance with Schedule 12.

(6) A seafarer designated to

(a) control fire fighting operations shall have successfully completed advance training in techniques for fire fighting with particular empahsis on organisation, tactics and command,

(b) take charge of medical care on board a ship

shall meet the standard of competence set out in Schedule 12.

(7) Where a training in

(a) advance fire fighting, or

(b) medical care,

is not included in the qualifications for the certificate to be issued, a special certificate or documentary evidence shall be issued by the Administration indicating that the holder attended a course of training in advance fire fighting or medical care.

Regulation 32—Watchkeeping Requirements—Fitness for Duty

(1) The Administration shall, for the purpose of preventing fatigue, establish and enforce rest periods for

watchkeeping personnel.

(2) The Administration shall require that a watch system is arranged so that the efficiency of a watchkeeping personnel is not impaired by fatigue and that duties are so organised that the first watch at the commencement of a voyage, and the subsequent relieving watches are sufficiently rested and fit for duty.

(3) A watch schedule shall be posted on board the ship where it is easily accessible.

Regulation 33—Watchkeeping Arrangements and Principles to be Observed

(1) The Administration shall direct the attention of companies, masters, chief engineer officers and all watch keeping Personnel to the requirements, principles and guidance set out in Schedule 13 which shall be observed to ensure that a safe continuous watch appropriate to the prevailing circumstances and conditions are maintained in all seagoing ships at all times.

(2) The master of a ship is required to ensure that watch-keeping arrangement is adequate for maintaining a safe watch, taking into account the prevailing circumstances and conditions and that, under the master's general direction

(a) the officer in charge of a navigational watch is responsible for navigating the ship safely during the officer's period of duty, when the officer is physically present on the navigating bridge or in a directly associated location such as the chartroom or bridge control room at all times;

(b) a radio operator is responsible for maintaining a continuous radio watch on appropriate frequencies during the radio operator's period of duty;

(c) an officer in charge of an engineering watch, as defined in schedule 13 and under the direction of the chief engineer officer, shall be immediately available and on call to attend the machinery spaces and, when required, shall be physically present in the machinery space during that officer's period of responsibility; and

(d) an appropriate and effective watch is maintained for the purpose of safety at all times, while the ship is at anchor or moored and, if the ship is carrying hazardous cargo, the organisation of the watch takes full account of the nature, quantity, packaging and stowage of the hazardous cargo and any special conditions prevailing on board, afloat or ashore.

(3) A person who contravenes this regulation commits an offence and is liable on summary conviction to a fine not exceeding 500 penalty units or to a term of imprisonment not exceeding 2 years or both.

Regulation 34—Loss of Certificate

(1) Where the holder of a certificate of competency, proves to the satisfaction of the Administration that the holder has, without fault, lost or is deprived the use of a certificate, the Administration may, on receipt of the appropriate fee cause a copy of the certificate to be issued to that holder.

(2) Any such copy shall, before it is so issued, be certified by the Administration.

Regulation 35—Computation of Seagoing Service

(1) A qualifying sea service for a certificate of competency as master, deck officer or deck rating shall be performed in the deck department.

(2) The qualifying service specified for a particular certificate of competency shall be performed within a period of five years preceding the date upon which a first attempt is made at the particular examination.

(3) Except where otherwise specified, a qualifying service required for a certificate of competency, shall be performed in a ship which proceeds to sea and is actively engaged in commercial trading.

(4) A proportion of a kind of non-trading service may be accepted in lieu of a limited amount of service in a trading vessel, but non-trading service does not count towards sea service.

(5) A proof of sea service of a foreigner and of a Ghanaian personnel serving in a foreign vessel which cannot be verified by the Administration from the foreign country shall be confirmed by the Master and the government of the foreign country.

(6) Where watchkeeping service is required, a candidate shall prove by the production of a testimonial signed by the Master of the vessel in which the candidate served as a watchkeeping officer for not less than eight hours out of every twenty hours service claimed.

(7) A master or a deck officer shall produce testimonials in respect of any sea service undertaken by that master or deck officer.

Regulation 36—Engine Department

(1) A qualifying sea service for a certificate of competency as a marine engineer officer or a marine engine mechanic shall be performed in the engine department.

(2) The qualifying service specified for a particular certificate of competency shall be performed within a period of five years preceding the date upon which a first attempt is made at a particular examination.

(3) for the purposes of computing seagoing service, the Administration shall not recognise sea service performed in ships where for considerable periods of time, the main propelling machinery is not used.

(4) Sea service shall be computed as one-half times the number of days the machinery is not in use, but under no circumstances shall the sea service exceed one-half the minimum total qualifying sea service.

(5) Sea service performed in a ship where the main propelling machinery operates regularly in the periodically unattended mode shall be accepted at full rate.

(6) Sea service on watchkeeping duties on auxiliary machinery shall be accepted at full rate.

(7) Sea service shall not be accepted as counting towards the minimum required to be spent in watchkeeping on the main propelling machinery.

(8) Engineering work as specified in Schedule 15 carried out at sea, other than that performed on regular watch, shall be accepted at full rate.

(9) Engineering service shall not be accepted, as counting towards the minimum required to be spent on watchkeeping duties on the main propelling machinery.

(10) Sea service in ships operating on lakes or rivers shall be accepted by the Administration at one-half times the number of days.

(11) Sea service in self-propelled mobile offshore drilling units where the unit is undertaking sea-going

passages or well shifts or when it is engaged in maintaining a fixed station by continuous use of the main propelling machinery shall be accepted at fall rate.

(12) An engineer officer shall produce testimonials in respect of any sea service undertaken.

(13) Each testimonial

(a) shall conform to the conditions laid down in Schedule 15, and

(b) shall be signed by the chief engineer officer and endorsed by a representative of the employer.

(14) Testimonials in respect of sea service as chief engineer officer are to be signed by the Engineer Superintendent or some other person authorised by the Engineer Superintendent or some other person authorised by the Engineer Superintendent.

Regulation 37—Interpretation

In these Regulations, unless the context otherwise requires,

"Administration" means the Government of Ghana;

"approved" means approved by the Administration;

"assistant engineer officer" means a person under training to become an engineer officer and designated as such under these Regulation;

"certificate" means a valid document issued by or under the authority of the Administration or recognised by the Administration, authorising the holder to serve as authorised by these Regulations;

"certificated" means properly holding a certificate;

"chief mate" means the officer next in rank to the master and the person upon whom the command of the ship falls in the event of the incapacity or absence of the master;

"chief engineer officer" means the senior engineer officer responsible for the mechanical propulsion and the operation and maintenance of the mechanical and electrical installations of the ship;

"chemical tanker" means a ship constructed or adapted and used for the carriage in bulk of any liquid product listed in chapter 17 of the International Bulk Chemical Code;

"Company" means the owner of the ship or any other organisation or person such as the manager, or the bareboat charterer, who has assumed the responsibility for operation of the ship from the shipowner and who, on assuming that responsibility, has agreed to take over the duties and responsibilities imposed on the company by these Regulations;

"Convention" means the International Convention on Standards of Training Certification and Watchkeeping for Seafarers, 1978 STCW as amended;

"deck officer" means an officer qualified in accordance with Regulation 23;

"engineer officer" means an officer qualified in accordance with Regulation 26;

"function" means is a group of tasks, duties and responsibilities, as specified by these Regulations, necessary for ship operation, safety of life at sea or protection of the marine environment;

"fishing vessel" means a vessel used for catching fish, whales, seals, walrus or other living resources of the sea;

"GMDSS" means Global Maritime Distress and Safety System;

"liquefied gas tanker" means a ship constructed or adapted and used for the carriage in bulk of any liquefied gas or other product listed in chapter 19 of the International Gas Carrier Code;

"management level" means the level of responsibility associated with

(a) serving as master, chief mate, chief engineer officer or second engineer officer on board a seagoing ship, and

(b) ensuring that all functions within the designated area of responsibility are properly performed.

"master" means the person having command of a ship;

"Minister" means the Minister responsible for Ports, Harbours and Railways;

"month" means a calender month of thirty days;

"near coastal trading area" means the area specified in Schedule 3;

"officer" means a member of the crew, other than the master;

"oil tanker" means a ship constructed and used for the carriage of petroleum and petroleum products in bulk;

"Organisation" means the International Maritime Organisation;

"operational level" means the level of responsibility associated with

(a) serving as officer in charge of a navigational or engineering watch or as designated duty engineer for a periodically unmanned machinery spaces or as radio operator on board a seagoing ship, and

(b) maintaining direct control over the performance of all functions within the designated area of responsibility in accordance with proper procedures and under the direction of an individual serving in the management level for area of responsibility;

"propulsion power" means 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;

"Party" means a State for which the Convention has entered into force;

"radio operator" means a person holding an appropriate certificate issued or recognised by the Administration;

"radio duties" include, watch-keeping, technical maintenance, and repairs;

"Radio Regulations" means Radio Regulations annexed to the International Telecommunication Convention;

"ro-ro passenger ship" means a passenger ship with ro-ro cargo spaces or special category spaces as defined in the International Convention for Safety of Life at Sea 1974 as amended;

"rating" means a member of the ship's crew other than the master or an officer;

"second engineer officer" means the engineer officer next in rank to the chief engineer and upon whom the responsibility for the mechanical propulsion and the operation and maintenance of the mechanical and

electrical installations of the ship will fall in the event of the incapacity of the chief engineer officer;

"Secretary-General" means the Secretary-General of the Organisation;

"seagoing service" means service on board a ship relevant to the issue of a certificate or other qualification;

"seagoing ship" means a ship other than those which navigate exclusively in inland waters or in waters within, or closely adjacent to, sheltered waters or areas where port regulations apply;

"support level" means the level of responsibility associated with performing assigned tasks, duties or responsibilities on board a seagoing ship under the direction of an individual serving in the operational or management level;

"STCW Code" means the Seafarers' Training, Certification and Watchkeeping (STCE) Code adopted by the 1995 Conference resolution 2, as it may be amended; and

"unlimited trading area" means an area or place other than near coastal trading area.

Regulation 38—Repeal

The Merchant Shipping (Certificates of Masters and Engineers) Regulations, 1988 are hereby repealed.

Regulation 39—Transitional Provisions

(1) The Administration may until 1st February, 2002 continue to issue, recognise and endorse certificates in accordance with the provisions of the Convention which applied immediately prior to 1st February 1997.

(2) The issuance, recognition and endorsement of such certificates shall apply to only those seafarers who commenced approved seagoing service, an approved education and training programme or an approved training course before 1st August 1998.

(3) Until 1st February 2002, the Administration may continue to renew and revalidate certificates and endorsements in accordance with the provisions of the Convention which applied immediately prior to 1st February 1997.

(4) Where the Administration, pursuant to regulation 18, reissues or extends the validity of certificates originally issued by it under the provisions of the Convention which applied immediately prior to 1st February 1997, the Administration may, at its discretion, replace tonnage limitations appearing on the original certificates as follows:

(a) "200 gross registered tons" may be replaced by "500 gross tonnage"; and

(b) "1,600 gross registered tons" may be replaced by "3,000 gross tonnage

SCHEDULES

SCHEDULE 1

SPECIMEN CERTIFICATES

CERTIFICATE OF COMPETENCY

(Office Seal)

GHANA

CERTIFICATE ISSUED UNDER THE PROVISIONS OF THE INTERNATIONAL CONVENTION ON STANDARDS OF TRAINING, CERTIFICATION AND WATCHKEEPING FOR SEAFARERS, 1978, AS AMENDED IN 1995

The Government of …….. certifies that …… has been found duly qualified in accordance with the provisions of regulation ……. of the above Convention, as amended and has been found competent to perform the following functions, at the levels specified, subject to any limitations indicated until …… or until the date of expiry of any extension of the validity of this certificate as may be shown overleaf.

FUNCTION	LEVEL	LIMITATIONS APPLYING (IF ANY)
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....

The lawful holder of this certificate may serve in the following capacity or capacities specified in the applicable safe manning requirements of the Administration.

CAPACITY	LIMITATIONS APPLYING (IF ANY)
.....	.....
.....	.....

Certificate No. …….. issued on …….....

……..

Official Seal Signature of the duly authorized official

…….....

Name of the duly authorized official

The original of this certificate must be kept available in accordance with regulation 1/2 paragraph 9 of the Convention while serving on a ship.

Date of birth of the holder of the certificate …….....

Signature of the holder of the certificate …….....

Photograph of the holder of the certificate

The validity of this certificate is hereby extended until …….....

(Official seal) .....…….…….....

Signature of the duly authorized official

...…….....

Name of the duly authorized Official

Date of revalidation …….....

The validity of this certificate is hereby extended until …….....

(Official seal) …….....

Signature of the duly authorized official

……...…….....

Name of the duly authorized official

Date of revalidation …….....

The validity of this certificate is hereby extended until …….....

(Official seal) …….…….….....

Signature of the duly authorized official

…….....

Name of the duly authorized official

Date of revalidation …….....

The validity of this certificate is hereby extended until …….....….....

……...….....

(Official seal) Signature of the duly authorized official

……...….....

Name of the duly authorized official

Date of revalidation …….....

CERTIFICATE OF RECOGNITION

(Official Seal)

GHANA

ENDORSEMENT ATTESTING THE RECOGNITION OF A CERTIFICATE UNDER THE PROVISIONS OF THE INTERNATIONAL CONVENTION ON STANDARDS OF TRAINING, CERTIFICATION AND WATCHKEEPING FOR SEAFARERS, 1978, AS AMENDED IN 1995

The Government of …….. certifies that certificate No ……. Issued to …….. by or on behalf of the Government of …… is duly authorized in accordance with regulation 1/10 of the above Convention, as amended and the lawful holder is authorized to perform the following functions, at levels specified, subject to any invitations indicated until …….. or until the date of expiry of any extension of the validity of this endorsement as may be shown overleaf.

FUNCTION	LEVEL	LIMITATIONS APPLYING (IF ANY)
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....

The lawful holder of this certificate may serve in the following capacity or capacities specified in the applicable safe manning requirements of the Administration.

CAPACITY	LIMITATIONS APPLYING (IF ANY)
.....	.....
.....	.....

Certificate No. ……. Issued on ……...

……..

(Official Seal) Signature of the duly authorized official

…….

Name of the duly authorized official

The original of this certificate must be kept available in accordance with regulation 1/2 paragraph 9 of the Convention while serving on a ship.

Date of birth of the holder of the certificate …….....

Signature of the holder of the certificate ……....…….....

Photograph of the holder of the certificate

The validity of this certificate is hereby extended until …….....

(Official seal) …….....….....

Signature of the duly authorized official

…….....

Name of the duly authorized official

Date of revalidation …….....

The validity of this certificate is hereby extended until …….....….....

(Official seal) …….....

Signature of the duly authorized official

…….....….....

Name of the duly authorised official

Date of revalidation …….....

The validity of this certificate is hereby extended until …….....….....

(Official seal) …….....

Signature of the duly authorised official)

…….....

Name of the duly authorised official

Date of revalidation …….....….....

The validity of this certificate is hereby extended until …….....….....

…….....….....

(Official seal) Signature of the duly authorised official

…….....….....

Name of the duly authorised official

Date of revalidation …….....

COAT

OF

ARMS

BASIC SAFETY TRAINING CERTIFICATE

FOR

FIRE PREVENTION AND FIRE FIGHTING

OR

PERSONAL SURVIVAL TECHNIQUES

OR

ELEMENTARY FIRST AID

OR

PERSONAL SAFETY AND SOCIAL RESPONSIBILITIES

COVER PAGE

PAGE ONE

PAGE TWO

logo **THE GOVERNMENT OF GHANA**

The Government of Ghana certifies that

name …….....

date and place of birth …….....

certificate of competency grade (if any)..……..

certificate no …….....

Discharge book no …….....

has satisfactorily completed an approved basic safety training course in ……..... in accordance with the requirements of Regulation VI/1 of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978 as amended in 1995

from ……. to ……

CERTIFICATE NUMBER

photograph

Signature of holder …….....

Nationality …….....

Date of issue …….....

valid for ..... years

…….....

Name of Authorised Official

…….....

Signature of duly authorised official

COAT

OF

ARMS

CERTIFICATE OF TRAINING

FOR

PROFICIENCY IN SURVIVAL CRAFT AND RESCUE BOATS

OR

PROFICIENCY IN FAST RESCUE BOATS

OR

ADVANCED FIRE FIGHTING

OR

MEDICAL FIRST AID AND MEDICAL CARE

COVER PAGE

PAGE ONE

logo **THE GOVERNMENT OF GHANA**

The Government of Ghana certifies that

name.....

date and place of birth.....

certificate of competency grade (if any).....

certificate no.....

discharge book no.....

has satisfactorily completed an approved basic safety training course in …….. in accordance with the requirements of Regulation VI/2, VI/3 or VI/4* of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978 as amended in 1995

from …… to ……

*** delete as appropriate**

PAGE TWO

CERTIFICATE NUMBER

photograph

signature of holder …….....

nationality ……..…...

date of issue ……..…..

valid for ……..... years

…..……..…..

Name of Authorised Official

……...……

Signature of duly authorised official

COAT

OF

ARMS

CERTIFICATE OF TRAINING

FOR

TANKERS

OR

RO-RO PASSENGER SHIPS

COVER PAGE

PAGE ONE

PAGE TWO

logo THE GOVERNMENT OF GHANA

The Government of Ghana certifies that

name.....

date and place of birth.....

certificate of competency grade (if any).....

certificate no.....

discharge book no.....

has satisfactorily completed an approved basic safety training course in …….. in accordance with the requirements of Regulation V/1, V/2* of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978 as amended in 1995

from……. to ……..

*** delete as appropriate**

CERTIFICATE NUMBER

photograph

signature of holder …….....

nationality …….....

date of issue …….....

valid for ……..……. years

…..……...……..

Name of Authorised Official

……...……

Signature of duly authorised official

COLOUR CODING FOR CERTIFICATE COVERS

MASTER AND DECK DEPARTMENT

RADIO PERSONNEL

ENGINE DEPARTMENT

BASIC SAFETY TRAINING

ADVANCED PROFICIENCY TRAINING

TRAINING FOR CERTAIN SHIP TYPES

SCHEDULE 2

APPLICATION FOR DISPENSATION

Any person applying for dispensation shall provide, the Administration with the following information regarding the vessel and the seafarer in respect of whom the dispensation is being sought.

1. Name and address of the company

2. Date of application

3. Particulars of the vessel for which dispensation is required. This shall include:

1. Name of vessel;

2. Port of registry;

3. Official number;

4. Location of vessel at the time of application.

4. Particulars of master of the vessel;

5. Cargo and voyage details of the vessel;

6. Reasons for applying for dispensation;

7. Profile of company making the application. This shall include the company's policy on:

1. employment,

2. training, and

3. retention of seagoing personnel.

8. Dispensation required, which shall include the following:

1. Name and personal details of the seafarer;

2. Qualifications and certificates held by the seafarer;

3. Validity of certificates held;

4. Experience of seafarer in the past five years;

5. Dispensations made on behalf of the seafarer concerned in the past two years; and

6. Dispensation required.

LOGO	**APPLICATION FOR DISPENSATION**

This form must be completed by the person who is making the application on behalf of a seafarer. Please complete all sections in BLOCK LETTERS. If a section is not relevant to your application enter 'Nil'.

Enclose all documents necessary to enable application to be considered on time.

NAME OF COMPANY .....

ADDRESS .....

TEL. ..... FAX. ..... E-mail .....

DATE OF APPLICATION	

1	**PARTICULARS OF VESSEL**

NAME	
PORT OF REGISTRY	
OFFICIAL NUMBER	
PRESENT LOCATION	

2	**PARTICULARS OF MASTER**

NAME	
CERTIFICATE NUMBER	

3	**CARGO AND VOYAGE DETAILS**

CARGO ON BOARD	CARGO TO BE LOADED DURING DISPENSATION PERIOD	INTENDED VOYAGE(S) OVER DISPENSATION PERIOD
INTENDED DATE OF DEPARTURE		

4	**REASON(S) FOR MAKING APPLICATION**

POST CONCERNED	
CIRCUMSTANCE(S) UNDER WHICH POST BECAME VACANT	
DATE ON WHICH POST BECAME VACANT	
EFFORTS MADE TO DATE AND BEING MADE TO LOCATE A QUALIFIED REPLACEMENT	

5	**PERSONAL PROFILE**

WHAT IS COMPANY'S POLICY ON (a) Recruitment	
(b) Training	
(c) Retention of seagoing personnel	

HOW MANY APPLICATIONS FOR DISPENSATIONS HAS THE COMPANY MADE IN THE PAST 2 YEARS	WERE THEY GRANTED

6	**DISPENSATION REQUIRED**

NAME OF SEAFARER	DATE OF BIRTH	CERTIFICATE (IF ANY)	
		HELD	NUMBER

ISSUING AUTHORITY			
DATE OF ISSUE			
DATE OF ENDORSEMENT			
VALID UNTIL			
EXPERIENCE OF SEAFARER WITHIN THE PAST 5 YEARS			
DISPENSATIONS MADE ON BEHALF OF SEAFARER WITHIN THE PAST 2 YEARS			

NAME OF COMPANY'S REPRESENTATIVE .....

DESIGNATION ..... SIGNATURE .....

FOR OFFICIAL USE ONLY

WHAT IS THE ACCIDENT AND INCIDENT RECORD IN PAST 5 YEARS	
WHAT IS THE FREQUENCY AND REASONS FOR COMPANY'S APPLICATIONS IN THE PAST 2 YEARS	
INFLUENCE OR COMPANY'S RECRUITMENT, TRAINING AND SEAFARER RETENTION POLICY ON RATE OF APPLICATIONS	
IS APPLICATION REASONABLE WITHIN THE CIRCUMSTANCES	

ARE PARTICULARS OF SEAFARER CORRECT			
ARE CERTIFICATES OF SEAFARER VALID			
DISPENSATION			
MAY BE GRANTED AS FOLLOWS			CANNOT BE GRANTED FOR FOLLOWING REASONS
POST	LIMITATION	PERIOD	

DATE .....

NAME OF EVALUATING OFFICER .....

SIGNATURE .....

SCHEDULE 3

DEFINITION OF TRADING AREAS

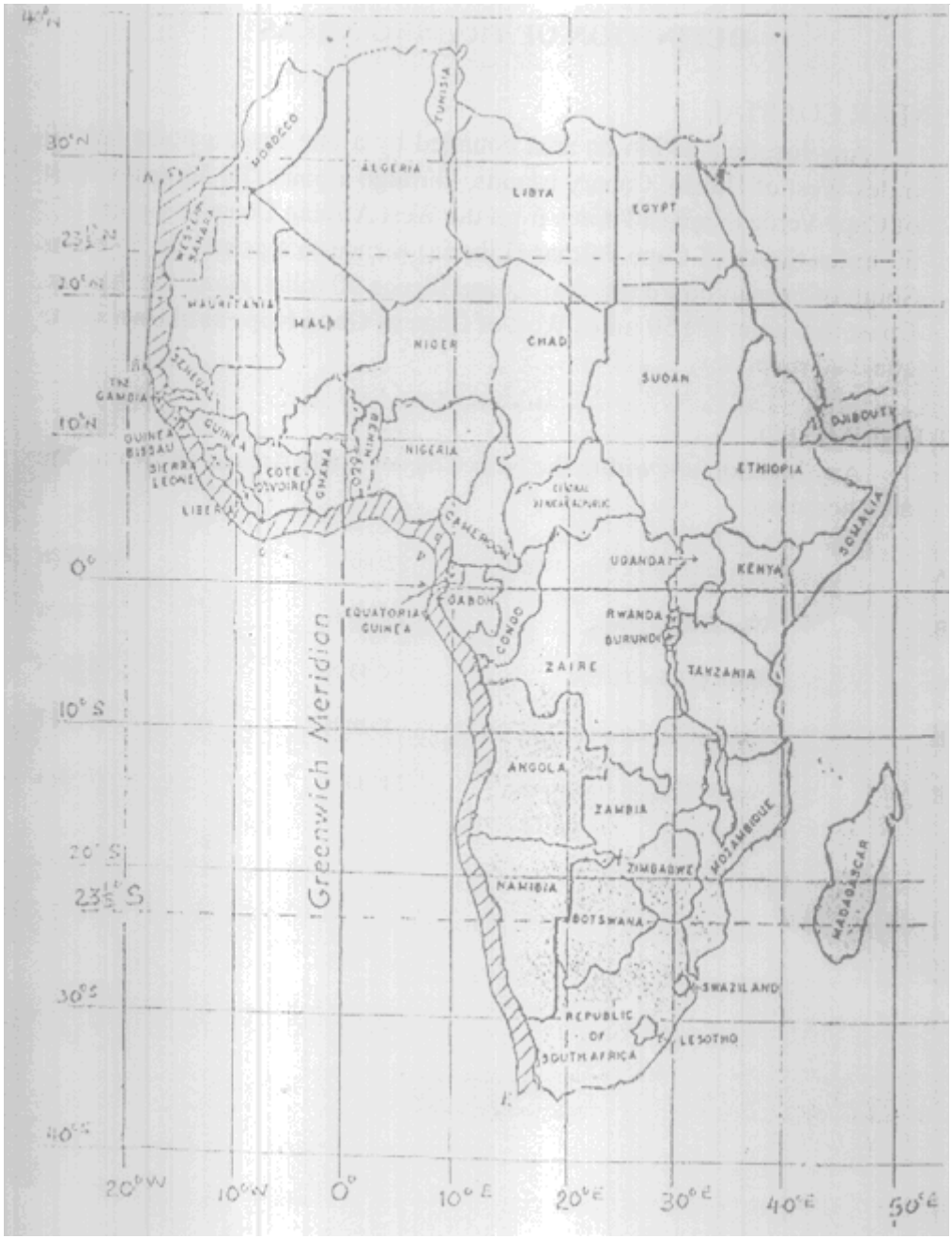
1. **NEAR COASTAL**

Any location within an area bounded by a line from a point (A) 50 miles West of Hierro, Canary Islands, through a point (B) 50 miles West of Cape Verde thence 50 miles from the West African Coast to a point (C) 50 miles South of Cape Palmas (Liberia) thence to a point (D) 50 miles South of Fernan do Po (Bioko) Island thence 50 miles along the African Coast to a point (F) 50 miles West of Cape of Good Hope as shown in the attached map.

2. **UNLIMITED**

Any location not within the Near Coastal Trade Area as shown on the attached map.

A.	50 miles West of Hierro Canary Islands	27º 40' N	19º 07' W
B.	" West of Cape Verde	14º 40' N	18º 20'W
C.	" South of Cape Palmas	3º 33' N	7º 33'W
D.	" South of Fernan do Po (Bioko)	2º 20' N	8º 50'E
E.	" West of Cape of Good Hope	34º00' N	17º 00'E



SCHEDULE 4

GUIDELINES ON TRAINING AND ASSESSMENT

1. Training and Assessment

The Administration shall ensure that all training and assessment of seafarers for certification under the Convention is:

1. structured in accordance with written programmes, including such methods and media of delivery, procedures, and course material as are necessary to achieve the prescribed standard of competence; and

2. conducted, monitored, evaluated and supported by persons qualified in accordance with paragraphs 4, 5 and 6.

2. Persons conducting in-service training or assessment on board ship shall only do so when such training or assessment will not adversely affect the normal operation of the ship and they can dedicate their time and attention to training or assessment.

3. Qualifications of Instructors, Supervisors and Assessors*

The Administration shall ensure that instructors, supervisors and assessors are appropriately qualified for the particular types and levels of training or assessment of competence of seafarers either on board or ashore, as required under the Convention, in accordance with the provisions of this section.

4. In-service Training

Any person conducting in-service training of a seafarer, either on board or ashore, which is intended to be used in qualifying for certification under the Convention, shall:

1. have an appreciation of the training programme and an understanding of the specific training objectives for the particular type of training being conducted;

2. be qualified in the task for which training is being conducted; and

3. if conducting training using a simulator:

3.1 have received appropriate guidance in instructional techniques involving the use of simulators, and

3.2 have gained practical operational experience on the particular type of simulator being used.

5. Any person responsible for the supervision of in-service training of a seafarer intended to be used in qualifying for certification under the Convention shall have a full understanding of the training programme and the specific objectives for each type of training being conducted.

Assessment of competence

6. Any person conducting in-service assessment of competence of a seafarer, either on board or ashore, which is intended to be used in qualifying for certification under the Convention, shall:

1. have an appropriate level of knowledge and understanding of the competence to be assessed;

2. be qualified in the task for which the assessment is being made;

3. have received appropriate guidance in assessment methods and practice;

4. have gained practical assessment experience; and

5. if conducting assessment involving the use of simulators, have gained practical assessment experience on the particular type of simulator under the supervision and to the satisfaction of an experienced assessor.

Training and Assessment Within an Institution

7. Any Administration which recognizes a course of training, a training institution, or a qualification granted by a training institution, as part of its requirements for the issue of a certificate required under the Convention, shall ensure that the qualifications and experience of the instructors and assessors are covered in the application of the quality standard provisions of schedules. Such qualification, experience and application of quality standards shall incorporate appropriate training in instructional techniques, and training and assessment methods and practice, and comply with all applicable requirements of paragraphs 4 to 6.

In-service Training and Assessment

2. Any person, on board or ashore, conducting in-service training of a seafarer intended to be used in qualifying for certification under the Convention should have received appropriate guidance in instructional techniques.*

3. Any person responsible for the supervision of in-service training of a seafarer intended to be used in qualifying for certification under the Convention should have appropriate knowledge of instructional techniques and of training methods and practice.

4. Any person, on board or ashore, conducting an in-service assessment of the competence of a seafarer intended to be used in qualifying for certification under the Convention should have:

1. received appropriate guidance in assessment methods and practices and

2. gained practical assessment experience under the supervision and to the satisfaction of an experienced assessor.

5. Any person responsible for the supervision of the in-service assessment of competence of a seafarer intended to be used in qualifying for certification under the Convention should have a full understanding of the assessment system, assessment methods and practices.

SCHEDULE 5

QUALITY STANDARDS SYSTEM

QUALITY STANDARDS

1. National Objectives and Quality Standards

1. The Administration shall ensure that the education and training objectives and related standards of competence to be achieved are clearly defined and identify the levels of knowledge, understanding and skills appropriate to the examinations and assessments required under the Convention. The objectives and related quality standards may be specified separately for different courses and training programmes and shall cover the administration of the certification system.

2. The field of application of the quality standards shall cover the administration of the certification system, all training courses and programmes, examinations and assessments carried out by or under the authority of an administration and the qualifications and experience required of instructors and assessors, having regard to the policies, systems, controls and internal quality assurance reviews established to ensure achievement of the defined objectives.

3. The Administration shall ensure that an independent evaluation of the knowledge, understanding, skills and competence acquisition and assessment activities, and of the administration of the certification system, is conducted at intervals of not more than five years in order to verify that:

1. all internal management control and monitoring measures and follow-up actions comply with planned arrangements and documented procedures and are effective in ensuring achievement of the defined objectives;

2. the results of each independent evaluation are documented and brought to the attention of those responsible for the area evaluated; and

3. timely action is taken to correct deficiencies.

4. The report of the independent evaluation required by Regulation 14 shall include the terms of reference for the evaluation and the qualifications and experience of the evaluators.

1. GUIDANCE REGARDING QUALITY STANDARDS

1. In applying quality standards under the provisions of Regulation 14 and this schedule to the administration of its certification system, the Administration should take account of existing national or international models, and incorporate the following key elements:

1. an expressed policy regarding quality and the means by which such policy is to be implemented;

2. a quality system incorporating the organizational structure, responsibilities, procedures, processes and resources necessary for quality management;

3. the operational techniques and activities to ensure quality control;

4. systematic monitoring arrangements, including internal quality assurance evaluations, to ensure that all defined objectives are being achieved; and

5. arrangements for periodic external quality evaluations as described in the following paragraphs.

2. In establishing such quality standards for the administration of our national certification system, the Administration should seek to ensure that the arrangements adopted:

1. are sufficiently flexible to enable the certification system to take account of the varying needs of the industry, and that they facilitate and encourage the application of new technology;

2. cover all the administrative matters that give effect to the various provisions of the Convention, and other provisions which enable the Administration to grant dispensations and to withdraw, cancel and suspend certificates;

3. encompass the Administration's responsibilities for approving training and assessment at all levels, from undergraduate-type courses and updating courses for certificates of competency to short courses of vocational training; and

4. incorporate arrangements for the internal quality assurance reviews under paragraph 1.4 involving a comprehensive self-study of the administrative procedures, at all levels, in order to measure achievement of defined objectives and to provide the basis for the independent external evaluation required under this schedule.

3. Quality Standards Model for Assessment of Knowledge, Understanding, Skills and Competence

The quality standards model for assessment of knowledge, understanding, skills and competence should incorporate the recommendations of this section within the general framework of either:

1. a national scheme for education and training accreditation or quality standards; or

2. an alternative quality standards model acceptable to the Organization.

4. The above quality standards model should incorporate:

1. a quality policy, including a commitment by the training institution or unit to the achievement of its stated aims and objectives and to the consequential recognition by the relevant accrediting or quality standards authority;

2. those quality management functions that determine and implement the quality policy, relating to aspects of the work which impinge on the quality of what is provided, including provisions for determining progression within a course or programme;

3. quality system coverage, where appropriate, of the academic and administrative organizational structure, responsibilities, procedures, processes and the resources of staff and equipment;

4. the quality control functions to be applied at all levels to the teaching, training, examination and assessment activities, and to their organization and implementation, in order to ensure their fitness for their purpose and the achievement of their defined objectives;

5. the internal quality assurance processes and reviews which monitor the extent to which the institution, or training unit, is achieving the objectives of the programmes it delivers, and is effectively monitoring the quality control procedures which it employs; and

6. the arrangements made for periodic external quality evaluations required under regulation 14, and described in the following paragraphs, for which the outcome of the quality assurance reviews forms the basis and starting point.

5. In establishing quality standards for education, training and assessment programmes, the organizations responsible for implementing these programmes should take account of the following:

1. where provisions exist for established national accreditation, or education quality standards, such provisions should be utilized for courses incorporating the knowledge and understanding requirements of the Convention. The quality standards should be applied to both management and operational levels of the activity, and should take account of how it is managed, organized, undertaken and evaluated, in order to ensure that the identified goals are achieved.

2. where acquisition of a particular skill or accomplishment of a designated task is the primary objective, the quality standards should take account of whether real or simulated equipment is utilized for this purpose, and of the appropriateness of the qualifications and experience of the assessors, in order to ensure achievement of the set standards.

3. the internal quality assurance evaluations should involve a comprehensive self-study of the programme, at all levels, to monitor achievement of defined objectives through the application of quality standards. These quality assurance reviews should address the planning, design, presentation and evaluation of programmes as well as the teaching, learning and communication activities. The outcome provides the basis for the independent evaluation required under this schedule.

6. The independent evaluation

Each independent evaluation should include a systematic and independent examination of all quality activities, but should not evaluate the validity of the defined objectives. The evaluation team should:

1. carry out the evaluation in accordance with documented procedures;
2. ensure that the results of each evaluation are documented and brought to the attention of those responsible for the area evaluated; and
3. check that timely action is taken to correct any deficiencies.

7. The purpose of the evaluation is to provide an independent assessment of the effectiveness of the quality standard arrangements at all levels. In the case of an education or training establishment, a recognized academic accreditation or quality standards body or Government agency should be used. The evaluation team should be provided with sufficient advance information to give an overview of the tasks in hand. In the case of a major training institution or programme, the following items are indicative of the information to be provided:

1. the mission statement of the institution;
2. details of academic and training strategies in use;
3. an organization chart and information on the composition of committees and advisory bodies;
4. staff and student information;
5. a description of training facilities and equipment; and
6. an outline of the policies and procedures on:

6.1. student admission,

6.2. the development of new courses and review of existing courses,

6.3. the examination system, including appeals and resits,

6.4. staff recruitment, training, development, appraisal and promotion,

6.5. feedback from students and from industry, and

6.6. staff involvement in research and development.

The report

8. Before submitting a final report, the evaluation team should forward an interim report to the management seeking their comments on their findings. Upon receiving their comments, the evaluators should submit their final report, which should:

1. include brief background information about the institution or training programme;
2. be full, fair and accurate;
3. highlight the strengths and weaknesses of the institution;
4. describe the evaluation procedure followed;
5. cover the various elements identified in paragraph 4;
6. indicate the extent of compliance or non-compliance with the requirements of the Convention and the effectiveness of the quality standards in ensuring achievement of defined aims and objectives; and

7. spell out clearly the areas found deficient, offer suggestions for improvement and provide any other comments the evaluators consider relevant.

SCHEDULE 6

MEDICAL STANDARDS

1. The medical standards may differentiate between those persons seeking to start a career at sea and those seafarers already serving at sea. In the former case, for example, it might be appropriate to designate higher standards in certain areas, while in the latter case some reduction may be made for age.

2. The Administration has the discretionary authority to grant a variance or waiver of any of the standards set out in table B-1/9 hereunder, based on an assessment of a medical evaluation and any other relevant information concerning an individual's adjustment to the condition and proven ability to satisfactorily perform assigned shipboard functions. However, if the aided distant visual acuity of either eye is less than the standard, the aided distant visual acuity in the better eye should be at least 0.2 higher than the standard indicated in the table. The unaided distant visual acuity in the better eye should be at least 0.1.

3. Persons requiring the use of spectacles or contact lenses to perform duties should have a spare pair conveniently available on board the ship. Any need to wear visual aids to meet the required standards should be recorded on each certificate and endorsement issued.

4. Eyes of seafarers should be free of disease. Any permanent or progressing debilitating pathology without recovery should be cause for a determination of unfitness.

TABLE B-1/9

Minimum in-service Eyesight Standards

STCW Convention Regulation	Category of Seafarer	Distance vision		Near/immediate vision	Colour vision	Visual fields	Night Blindness	Diplo (doub visio
		one eye	other eye	Both eyes together Aided or unaided				
1/11 11/1 11/2 11/3 11/4	Masters, deck Officers and ratings required to undertake lookout duties			Vision required for ships navigation (e.g. chart and nautical publication reference, use of bridge instrumentation and equipment, and identification of aids to navigation)		Normal visual fields	Vision required to perform all necessary functions in darkness without compromise	No signi condi evide
	Aided:	0.5	0.5					
	Unaided	0.1	0.1					

1/11 111/1 111/2 111/3 111/4	All engineer officers and ratings forming part of an engine-room watch			Vision required to read instruments in close proximity, to operate equipment, and to identify systems/components as necessary	Sufficient visual fields	Vision required to perform all necessary functions in darkness without compromise	No signif condi evide
	Aided:	0.4	0.4				
	Unaided:	0.1	0.1				

STCW Convention Regulation	Category of Seafarer	Distance vision		Near/immediate vision	Colour vision	Visual fields	Night Blindness	Dip (do vis
		one eye	other eye	Both eyes together Aided or unaided				
1/11 IV/2	Radio Officers and electrical/ electronic officers			Vision required to read instruments in close proximity to operate equipment, and to identify systems components as necessary		Sufficient visual fields	Vision required to perform all necessary functions in darkness without compromise	No sig cor evi
	Aided:	0.4	0.4					
	Unaided:	0.1	0.1					

*Note: Values given in Snellen decimal notation.

note.—A value of at least 0.7 in one eye is recommended to reduce the risk of undetected underlying eye disease

MEDICAL AND VISUAL STANDARDS FOR SERVING SEAFARERS

General Introduction

Seafaring is a potentially hazardous occupation which calls for a high standard of health and fitness in those entering or re-entering the industry. A satisfactory standard of continuing good health is necessary for serving seafarers throughout their career because of the high inherent risks of the occupation. It is better, therefore, at an initial examination, to exclude an applicant if there is any doubt about his continuing fitness.

Flexibility Should be Exercised only During Examinations for Retention.

These medical and visual standards, which have been based on standards prepared by shipping industry doctors, give guidance on the health criteria to be met. Allowance should be made for the inevitable

impairment of health that time and chance may bring so that a reasonably fit seafarer can, if he wishes it, continue at sea until the approved age or retirement. Finn recommendations have been made to exclude those suffering from medical conditions considered to be incompatible with continued seafaring.

It is clearly impossible to encompass within the standards specific advice on every medical condition. However, as a general rule the medical examiner should be satisfied in each case that no disease or defect is present which could either be aggravated by working at sea or represent an unacceptable health risk to the individual seafarer, other crew members or safety of the vessel.

Apart from the purely medical aspects, the occupational background should be considered especially in all cases where there is doubt. It is necessary to emphasise that a ship is not only a place of work requiring attention throughout the day and night, also a temporary home in which the crew must eat, sleep and find recreation. Most important of all is the need to adjust to each other, often for long periods, during a voyage.

Much is done to ameliorate living and working conditions but certain inherent characteristics remain. A crew is a closed community living in a ship that is seldom quiet or still. Individual eating habits and tastes cannot easily be met; facilities for physical exercise are limited; forced ventilation systems are used; the tedium of routine can easily become oppressive in the absence of normal diversion enjoyed by those ashore. An inability to fit in, or unwillingness to take responsibility, or to accept a reasonable measure of necessary discipline, could impair the safe efficient working of the ship.

Very few merchant ships carry doctors. Acute illness or injury is dealt with by the designated ship's officers whose training is limited to first aid or medical aid treatment. It should also be borne in mind that a crew complement is craftily adjusted in terms of its size. Sickness can throw a burden on other crewmembers or even impair the efficient working of a ship. The examining doctor should therefore be satisfied that no condition is present which is likely to cause trouble during a voyage and no treatment is being followed, which might cause worrying side effects. It would be unsafe practise to allow seafaring with any know medical condition where the possibility of serious exacerbation requiring expert treatment could occur as a calculated risk.

The absence of doctors in most ships means that seafarers will not be able readily to consult a doctor or obtain special treatment until the next port of call. Ship turnaround in port is often very rapid allowing no time for necessary investigation subsequent to consulting a doctor.

The standard of medical practice abroad varies and facilities, which we in this country would regard as necessary, may not be available at smaller, remote ports. It is doubtful that it is ever wise to permit seafaring if the loss of a necessary medicament could precipitate the rapid deterioration of a condition.

It should be remembered that some trades will require lengthy periods in tropical climates and most seafarers will need to join and leave ships by air travel. They should, therefore, be free from any condition which precludes air travels, eg pneumothorax and conditions which predispose to barotrauma.

Where medication is acceptable for serving seafarers, arrangements should be made for a reserve stock of the prescribed drugs to be held in a safe place, with the agreement of the ship's master.

EMPLOYMENT STANDARDS AND ADMINISTRATIVE PROCEDURES

Frequency of Medical Examination

1. (a) All seafarers below the age of 18 shall have a yearly medical examination.

(b) Seafarers between the age of 18 and 40 shall be examined at intervals not exceeding five years.

(c) Seafarers aged 40 years and over shall be examined at intervals not exceeding two years.

(d) Seafarers serving on bulk chemical carriers shall be subjected to annual examinations and blood tests at yearly or more frequent intervals, according to the cargo.

2. The value of medical surveillance, after sickness absence, in maintaining the health of the seafarer should not be forgotten, particularly after illness ashore lasting for a month or more.

3. Disposal in accordance with the Medical and Visual Standard for seafarers is as follows:

A. For unrestricted sea service.

Note: category A (T) may be used where a serving seafarer can be considered fit for all shipping trades, geographical areas, types of ships or jobs but where medical surveillance is required at intervals. The medical certificate should be validated only for the appropriate which would take into account the expected duration of the tour of duty. E. for restricted service only

Restriction ..... The standard has not been met:

B. permanently

C. indefinitely: review in ..... months

D. temporarily: review in ..... weeks

Approved doctors should make full use of the categories B, C, and D before declaring a serving seafarer permanently unfit.

It is the responsibility of the employer, or those authorised to act on his behalf, to ensure that the category recommended by the approved doctor is taken fully into account when the engagement or the continued employment of a seafarer is under consideration.

4. Article 4 of ILO Convention 147 states that "when prescribing the nature of the examination due regard shall be had to the age of the person to be examined and the nature of the duties to be performed". In addition, Article 3 of the same Convention states that a serving seafarer should have a medical certificate "attesting to his fitness for the work for which he is to be employed at sea".

In reaching his conclusion, the doctor should therefore consider any medical conditions present, the age and experience of the seafarer, the specific work on which he will be employed and the trade in which he will be engaged-where this can be determined.

If a seafarer is found to be fit to continue in his present job but does not meet the full Category "A" Standard, a restricted service certificate must be issued stating the restrictions applicable.

5. The Standard are framed to provide the maximum flexibility in their interpretation compatible with the paramount importance of maintaining the safety of vessels at sea, the safe performance of the serving seafarer's duties whilst, at the same time, protecting his health.

Conditions not specified in the Standards, which interfere with job requirements, should be assessed in the light of the general principle outlined above.

6. It may be necessary on occasion, with the seafarer's consent, for the approved doctor to consult the General Practitioner. When is necessary to consult with other doctors the usual ethical considerations

will pertain, but it should be clearly understood that the decision on fitness in accordance with the required Medical Standard, rests with the approved doctor, subject to the medical appeal machinery.

7. Full clinical notes should be kept of any detailed medical examination. All section of the approved form of report should be completed without exception and the form retained for 6 years.

Restricted Service

8. Restricted service means that the serving seafarer's employment is restricted to certain shipping trades, geographical areas, types of ships or jobs for such periods of time as may be stipulated by the approved doctor. The type of restriction and the length of time it will operate should be made clear. The requirements of an advised treatment regimen should never be set aside.

9. Unlike many industries, there is no light work at sea-although the physical requirement may vary between types of ships, their departments and individual jobs in them: all jobs need an acceptable degree of fitness, in accordance with these Standards, which is uniform for all shipping trades. For instance, coastal and ferry work can be arduous and uncomfortable even though the voyage may be short. Therefore, restriction to these types of work should be advised only if the shortness of the voyage will permit adequate treatment or surveillance of a condition which is not affecting the performance of the seafarer's duties.

Permanent Unfitness

10. In a serving seafarer, a decision of permanent unfitness should be reached only after a UI investigation and consideration of the case and should be fully discussed with the seafarer. The seafarer's medical practitioner should be informed of the decision and the reasons for it in the context of the medical standard, provided permission to do so has been obtained from the seafarer.

Medical Appeals

11. All serving seafarers found permanently unfit or fit only for restricted service have a right of appeal to an independent Medical Referee appointed by the Administration. Where possible, Medical Referees should be assisted by the disclosure, in confidence, of any necessary medical information.

12. Medical Referees are empowered, while working to the same Standards:

- to ensure that the diagnosis has been established beyond reasonable doubt, in accordance, with the medical evidence on which the approved doctor reached his decision and, normally, with the assistance of a report from a Consultant in the appropriate speciality;
- to determine whether the Standards have been properly interpreted;
- and to consider the possibility of a seafarer, previously declared unfit, returning to sea.

In cases not provided for in the Medical Standard or for Category "B" conditions where exceptional medical considerations apply, the Medical Referee should decide an appropriate disposal after consultation with the approved doctor involved and consideration of all the evidence presented to him.

MEDICAL STANDARDS

1. INFECTIOUS DISEASES

Gastro-Intestinal Infectious Diseases—D until satisfactorily treated. Special care should be taken in respect of catering staff.

Other Infectious or Contagious Diseases—D

Active Pulmonary Tuberculosis

When the examining doctor is satisfied, on the advice of a chest physician, that the lesion is fully healed and that the patient has completed a full course of chemotherapy, then re-entry should be considered. In such cases Category "A(T)" would be appropriate initially to allow for adequate surveillance. Cases where either one or both lungs have been seriously affected are rarely suitable for re-employment. All relapsed cases should be B.

Sexually Transmissible Diseases

All cases of acute infection are D while under treatment. Cases under surveillance having finished treatment will usually be fit for normal service but restricted service may be necessary if facilities for supervision are inadequate. In all cases evidence of satisfactory tests of cure should be provided.

AIDS—All confirmed cases—B.

II. MALIGNANT NEOPLASMS

Malignant Neoplasms—including Lymphoma, Leukaemia and similar conditions.

Each case should be graded C on diagnosis. Later progression to Categories A, A(T), E or B should be dependent on assessment of progress, prognosis, measures of disability and the need for surveillance following treatment. No unrestricted A grading should be given within 5 years of completion of treatment, except in cases of skin cancer.

III. ENDOCRINE AND METABOLIC DISEASES

(1) Thyroid disease

Serving seafarers developing thyroid disease - D for investigation, then A, A(T), E or B on case assessment.

(2) All other cases of endocrine disease in serving seafarers - D for investigation, upon which assessment will depend.

(3) Diabetes Mellitus

(a) all cases requiring Insulin—B.

(b) Serving seafarers whose diabetes is controlled by food restriction: an initial period of 6 months should be allowed to achieve stabilisation—C. Thereafter, to be subject to medical review at appropriate intervals. The current treatment regimen should be confirmed with the general practitioner at each review. A(T).

(c) Serving seafarers requiring oral hypoglycaemic agents: an initial period of 6 months should be allowed to achieve stabilisation—C. Thereafter, in the absence of any complications, service may be considered subject to 6-monthly medical reviews and assessment for suitable job and trade. A(T) on case assessment.

Obesity

(4) A degree of obesity, with or without complications, adversely affecting exercise tolerance/mobility/general health -D for treatment. Refractory or relapsing cases—B.

Note: A standard set of height/weight tables (preferably the Metropolitan Life tables) should be used - making an allowance of up to 25 per cent excess weight.

IV. DISEASES OF THE BLOOD AND BLOOD FORMING ORGANS

There should not be any significant disease of the haemopoetic system.

Symptomatic anaemia - D, then A, A(T), E or B on case assessment.

V. MENTAL DISORDERS

Acute Psychosis, whether organic, or functional listed in the International Classification of Diseases - B.

Alcohol Abuse (Dependency)

If persistent and affecting health by causing physical or behavioural disorder - B

Drug Dependence

A history of abuse of drugs or substances within the last 5 years -B.

Pschoneurosis -D, then for assessment.

If assessed chronic or recurrent -B.

VI. DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS

Organic Nervous Disease-usually B, especially those conditions causing defect of muscular power, balance, mobility and co-ordination.

Some minor localised disorders not causing symptoms of incapacity and unlikely to progress, may be A.

Epilepsy

Any type of epilepsy since the age of 5 years - B.

A single fit in a serving seafarer - D, then for investigation. Providing that the past medical history is clear and investigation has shown no abnormality re-entry can be considered if there is no recurrence of fits over one continuous year without treatment or after 1 year following the cessation of treatment.

A serving seafarer-not directly involved with the safety of any passengers with established epilepsy controlled, without fits for a minimum period of 2 years, may be considered for service on a vessel carrying a medical officer -E

Serving seafarers who have had cranial surgery or significant traumatic brain damage - C for 12 months then A, B or E on case assessment.

Migraine-slight infrequent attacks responding quickly to treatment -A. Frequent attacks causing incapacity - B.

Syncope and Other Disturbances of Consciousness-D then for assessment. Recurrent attacks with complete or partial loss of consciousness should be B. Merniere's Disease-B.

SPEECH DEFECTS

If likely to interfere with communication -B

EAR

Acute and Chronic Otitis Externa-D Should be completely healed before returning to sea. Care is required in passing fit for tropics.

Acute Otitis Media - D. Until satisfactorily treated.

Chronic Otitis Media-D. May become A or E after satisfactory treatment or surgery. Special care is required in passing fit for tropics, where air travel is required or if the job involves food handling. Loss of hearing - A degree of impairment sufficient to interfere with communication - B.

Unilateral Loss of hearing in serving seafarers - assessment of this condition should be considered in relation to the job.

A serving seafarer in whom impaired hearing acuity is found should be referred for full investigation by an ENT surgeon.

Hearing Aids

The use of a satisfactory hearing aid at work by certain catering department personnel could be considered where hearing impairment would not result in a danger to the seafarer or others. The hearing aid should be sufficiently effective to allow communication at normal conversational tones.

The use of a hearing aid by those working in, or associated with, the deck or engine room departments, including electricians and radio officers, should not be permitted.

VII. CARDIOVASCULAR SYSTEM

The Cardiovascular System should be free from acute or chronic disease causing significant disability.

Valvular disease causing significant impairment or having required surgery—B.

Satisfactorily treated patent ductus arteriosus or atrial septal defect could be accepted.

HYPERTENSION

All cases of hypertension must be categorised D and slated for investigation.

Serving seafarers with hypertension whose blood pressure can be maintained below 170/100mm by dietary control - A(T) for annual assessment.

Serving seafarers with hypertension whose blood pressure can be maintained below 170/100 by anti hypertension therapy without significant side effect-A(T) to allow for health surveillance and to ensure that arrangements have been made for continuation of treatment.

All other cases - B.

ISCHAEMIC HEART DISEASE

A history of Coronary Thrombosis -B

Confirmed cases of angina - B.

OTHER CARDIOVASCULAR DISORDERS

Any clinically significant abnormality of rate or rhythm or disorder of conduction - B.

CEREBRO-VASCULAR DISEASES

Any cerebro-vasular accident including transsient ischaemic attacks -B.

General cerebral arteriosclerosis: including dementia and senility -B.

DISEASES OF ARTERIES

A history of intermittent claudication: including any case where vascular surgery was required - B.

DISEASE OF VEINS

Varicose Veins - slight degree -A. Moderate degree without symptoms of oedema may be A, but with symptoms D or for treatment. If recurrent after operation, with symptoms - C for surgical opinion or, if not suitable for further treatment - B.

Chronic varicose ulceration - B. Thin unhealthy scars of healed ulcers or unhealthy skin of varicose eczema -B.

Recurrent or persistent deep vein thromboses or thrombophlebitis - B.

Haemorrhoids-not prolapsed, bleeding or causing symptoms - A. Other cases should be D until satisfactory treatment has been obtained.

Varicocoele - symptomless - A. With symptoms - D or surgical opinion.

VIII. RESPIRATORY SYSTEM

The respiratory system should be free from acute or chronic disease causing significant disability. Acute Sinusitis - D until resolved.

Chronic Sinusitis - if disabling and frequently relapsing despite treatment- B. Nasal Obstruction. Septal abnormality or polypus -D. Until satisfactorily treated.

A history of frequent sore throats or unhealthy tonsils with adenitis - D. Until satisfactorily treated. Chronic Bronchitis and Emphysema-Class depends on severity. Mild uncomplicated cases with good exercise tolerance may be A, but cases with recurring illness causing significant disability in relation to the job should be - B.

Bronchial, Asthma -D for investigation. If confirmed - B.

Except for a history of bronchial asthma resolving, without recurrence, before the age of 16.

Occupational Asthma -E to avoid the allergen.

Pneumthorax—All cases to be classified C for at least 12 months. With recurrences -B.

IX. DISEASE OF THE DIGESTIVE SYSTEM

DISEASES OF THE ORAL CAVITY

Mouth or gum infection- D until satisfactorily treated.

Dental defects - D until satisfactory treated. Seafarers should be dentally fit.

DISEASES OF THE OESOPHAGUS, STOMACH AND DUODENUM

Peptic Ulceration - D for investigation.

Cases of proven ulceration should not return to seafaring until they are free from symptoms. There should also be evidence of healing on gastroscopy and the seafarer should have been on ordinary diet, without treatment, for at least 3 months - A(T).

Where there has been gastrointestinal bleeding, perforation or recurrent peptic ulceration (in spite of maintenance H2 blocker treatment) or an unsatisfactory operation result normally B.

Recurrent attacks of appendicitis- D pending surgical removal.

Hernia - D until repaired.

Diaphragmatic Hernia- To be assessed according to the disability. Non-Infective Enteritis and Colitis severe or recurrent or requiring special diet - B.

Intestinal Stoma-B

DISEASES OF THE LIVER AND PANCREAS

Cirrhosis of the Liver-D for investigation, then where condition is serious or progressive or where complications such as oesophageal varices or ascites are present.

Biliary Tract Diseases

After complete surgical cure - A or A(T) on case assessment.

Pancreatitis

Recurrent pancreatitis and all cases where alcohol is an aetiological factor—B.

X. DISEASES OF THE GENITO-URINARY SYSTEM

All cases of proteinuria, glycosuria or other urinary abnormalities should be referred for investigation.

Acute Nephritis-D until resolved.
Subacute or chronic Nephritis or Nephrosis- D for investigation then E or B on case assessment.

INFECTIONS OF KIDNEY

Acute urinary infection - D until satisfactorily treated. Recurrent cases - B unless investigation has proved satisfactory.

Renal or Uretric Calculus - D for investigation and any necessary treatment. An isolated attack of renal colic with passage of small calculus may be A after a period of observation, provided urine and renal function remain normal and there is no clinical and radiological evidence of other calculi. Recurrent stone formation - B.

Urinary Obstruction - from any cause - D for investigation, B if hot remediable. Removal of kidney - In serving seafarers, provided the remaining kidney is healthy with normal function -A(T). Such cases may be unsuitable for service in the tropics or areas of high temperature - E.

Incontinence of Urine - D for investigation. If irremediable - B. Enlarged Prostate - D for investigation.

Hydrocoele—Small and symptomless - A.

Large and/or recurrent D or, if untreated - B.

Abnormality of the primary and Secondary Sexual Characteristics - D for investigation upon which final assessment will rest.

GYNAECOLOGICAL CONDITIONS

There should be no gynaecological disorder or disease such as heavy vaginal bleeding, lower abdominal

pain or prolapse of the genital organs likely to cause trouble on the vovage or affect working capacity.

XI. PREGNANCY

The doctor should discuss with the seafarer the implications of continuing to work at sea, particularly if it is a first pregnancy.

A seafarer with normal pregnancy before the 28th week may be permitted to work on short haul trips or along haul trip on a vessel carrying a doctor- E - to allow for ante-natal care.

Employment shall not be permitted after the 28th week of pregnancy until at least 6 weeks after delivery. Abnormal Pregnancy, on diagnosis -C.

XII. SKIN

Special care is required in passing fit for service in the tropics if there is a history of skin trouble. Catering staff in particular should have no focus of skin sepsis.

Any condition liable to be aggravated by beat, sea air, oil, caustics or detergents - or due to specific occupational allergens may be A(T), B, C, D or E on case assessment.

INFECTIONS OF SKIN

D until satisfactorily treated.

Acne. Most cases A but severe pustular cystic acne - B.

OTHER INFLAMATORY SKIN CONDITIONS

Atopic Dermatitis and related conditions - D until satisfactorily treated.

Contact Dermatitis - D. Refer for dermatological opinion.

Acute Eczema - D. No seafarer should return to duty until skin is healthy. Recurrent Eczema of more than minimal extent - B.

Psoriasis - Most cases can be A, but some widespread or ulcerated cases should be D for treatment. Severe cases resistant to treatment, frequently relapse or associated with joint disease- B.

XIII. MUSCULO-SKELETAL SYSTEM

It is essential that seafarers should not have any defect of the musculo-skeletal system which might interfere with the discharge of their duties; muscular power, balance, mobility and co-ordination should be unimpaired.

Osteo-arthritis-D for assessment.

Advanced cases where disability is present -B.

Normally a limb prosthesis would not be acceptable.

Back Pain—Recurrent incapacitating back pain - B.

Eyesight Standard

1. No person should be accepted for training or sea service of any irremediable morbid condition of either eye, or the lids of either eye, is present and liable to the risk of aggravation or recurrence.
2. Binocular vision is necessary for all categories of seafarers. However, the following monocular

seafarers should be allowed to continue at sea;

(a) Seafarers in deck department employment with a satisfactory record of service prior to 1 September 1976 and not requiring visual aids;

(b) Seafarer in non-deck employment with a satisfactory record of service prior to 1983.

3. In all cases where visual aids (spectacles or contact lenses) are required for the efficient performance of duties, a spare pair must be carried when seafaring. Where different visual aids are used for distant and near vision a spare pair of each must be carried.

4. The distant vision standard for the watchkeeping deck department personnel is identical to the requirements of the Administration letter test for applicants to enter the Administration's requirements are contained in the Regulations. The Administration's tests are carried out at designated sight testing centres.

Colour Vision

5. The method of testing colour vision differ, the Administration currently uses a lantern test but the industry uses Ishihara plates. Where examination results conflicts, the Administration test is accepted as the dominant test.

6. Colour vision for deck officers and ratings may be regarded as normal, when using the Ishihara method, if plates 1, 11, 15, 22 and 23 are read correctly.

7. A seafarer, with a record of efficient service, who if required to pass the modified colour vision test but fails should be given the opportunity to pass a suitable trade test.

MEDICAL STANDARDS

Deck Department

Officers, Cadets, Apprentices and Ratings	**Distant Vision Better Eye**	**Other Eye**	**Together**	**Near vision both eyes together aided or unaided vision**	**Colour Vision**
1. Seafarers required to undertake lookout duties and under the age of 40 years with or without glasses or contact lenses	6/6	6/9	6/6	A vision acuity sufficient to carry out duties efficiently	Normal
Unaided vision not less than	6/12	6/24	6/12	"	"
2. Seafarers required to undertake lookout duties and over the age of 40 years With or without glasses or contact lenses	6/6	6/12	6/6	"	"

Unaided vision not less than	6/24	6/24	6/24	"	"
3. Seafarers required to operate lifting plant of type used in dockwork etc.					
With or without visual aids	6/9	6/12	6/9	"	"
Unaided vision not less than	6/60	6/60	6/60	"	"
4. Seafarers not required to perform the duties in 1, 2 or 3 above					
Aided vision if necessary	6/18	6/60	6/18	"	"
Other Departments					
Engine Room Aided vision if necessary	6/18	6/60	6/18	A vision acuity sufficient to carry efficiently	Personnel should pass the modified colour test on charts supplied
Radio Officer Electrician Officer	A visual acuity (aided if necessary) sufficient to carry out duties efficiently. Less than 6/60 in the "other eye" is unacceptable. Monocular sight - B See para 2				Personnel should pass the modified colour test as for engine department
Catering Dept and Miscellaneous (including Surgeon, Purser, etc.)	A visual acuity (aided if necessary) sufficient to carry out duties efficiently. Less than 6/60 in the "other eye" is unacceptable. Monocular sight - B See para 2				Not tested

SCHEDULE 7

STANDARDS GOVERNING THE USE OF SIMULATORS

PART 1—PERFORMANCE STANDARDS

1. General Performance Standards for Simulators Used in Training

The Administration shall ensure that any simulator used for mandatory simulator-based training shall:

1. be suitable for the selected objectives and training tasks;

2. be capable of simulating the operating capabilities of shipboard equipment concerned, to a level of physical realism appropriate to training objectives, and include the capabilities, limitations and

possible errors of such equipment;

3. have sufficient behavioural realism to allow a trainee to acquire the skills appropriate to the training objectives;

4. provide a controlled operating environment, capable of producing a variety of conditions, which may include emergency, hazardous or unusual situations relevant to the training objectives;

5. provide an interface through which a trainee can interact with the equipment, the simulated environment and, as appropriate, the instructor; and

6. permit an instructor to control, monitor and record exercises for the effective debriefing of trainees.

2. General Performance Standards for Simulators used in Assessment of Competence

The Administration shall ensure that any simulator used for the assessment of competence required under the Convention or for any demonstration of continued proficiency so required shall:

1. be capable of satisfying the specified assessment objectives;

2. be capable of simulating the operating capabilities of the shipboard equipment concerned to a level of physical realism appropriate to the assessment objectives, and include the capabilities, limitations and possible errors of such equipment;

3. have sufficient behavioural realism to allow a candidate to exhibit the skills appropriate to the assessment objectives;

4. provide an interface through which a candidate can interact with the equipment and simulated environment;

5. provide a controlled operating environment, capable of producing a variety of conditions, which may include emergency, hazardous or unusual situations relevant to assessment objectives; and

6. permit an assessor to control, monitor and record exercises for the effective assessment of the performance of candidates.

3. Additional Performance Standards

In addition to meeting the basic requirements set out in paragraphs 1 and 2, simulation equipment to which this regulation applies shall meet the performance standards given hereunder in accordance with their specific type.

4. Radar Simulation

Radar simulation equipment shall be capable of simulating the operational capabilities of navigational radar equipment which meets all applicable performance standards adopted by the Organisation and incorporate facilities to:

1. operate in the stabilized relative motion mode and sea and ground stabilized true motion modes.

2. model weather, tidal streams, current, shadow sectors, spurious echoes and other propagation effects, and generate coastlines, navigational buoys and search and rescue transponders; and

3. create a real-time operating environment incorporating at least two own-ship stations with ability to change own ship's course and speed, and include parameters for at least 20 target ships and appropriate communication facilities.

5. Automatic Radar Plotting Aid (ARPA) Simulation

ARPA simulation equipment shall be capable of simulating the operational capabilities of ARPAs which meet all applicable performance standards adopted by the Organisation, and shall incorporate the facilities for:

1. manual and automatic target acquisition;
2. past track information;
3. use of exclusion areas;
4. vector/graphic time-scale and data display; and
5. trial manoeuvres.

PART 2—OTHER PROVISIONS

6. Simulator Training Objectives

The Administration shall ensure that the aims and objectives of simulator-based training are defined within an overall training programme and that specific training objectives and tasks are selected so as to relate as closely as possible to shipboard tasks and practices.

7. Training Procedures

In conducting mandatory simulator-based training, instructors shall ensure that:

1. trainees are adequately briefed beforehand on the exercise objectives and tasks and given sufficient planning time before the exercise starts;
2. trainees have adequate familiarization time on the simulator and with its equipment before any training or assessment exercise commences;
3. guidance given and exercise stimuli are appropriate to the selected exercise objectives and tasks and to the level of trainee experience;
4. exercises are effectively monitored, supported as appropriate by audio and visual observation of trainee activity and pre- and post- exercise evaluation reports;
5. trainees are effectively debriefed to ensure that training objectives have been met and that operational skills demonstrated are of an acceptable standard;
6. the use of peer assessment during debriefing is encouraged; and
7. simulator exercises are designed and tested so as to ensure their suitability for the specified training objectives.

8. Assessment Procedures

Where simulators are used to assess the ability of candidates to demonstrate levels of competency, assessors shall ensure that:

1. performance criteria are identified clearly and explicitly and are valid and available to the candidates;
2. assessment criteria are established clearly and are explicit to ensure reliability and uniformity of assessment and to optimise objective measurement and evaluation, so that subjective judgements are

kept to the minimum;

3. candidates are briefed clearly on the tasks and/or skills to be assessed and on the tasks and performance criteria by which their competency will be determined;

4. assessment of performance takes into account normal operating procedures and any behavioural interaction with other candidates on the simulator or simulator staff,

5. scoring or grading methods to assess performance are used with caution until they have been validated; and

6 the prime criterion is that a candidate demonstrates the ability to carry out a task safely and effectively to the satisfaction of the assessor.

9. Qualifications of Instructors and Assessors

The Administration shall ensure that instructors and assessors are appropriately qualified and experienced for the particular types and levels of training and corresponding assessment of competence as specified in regulation 14 and schedule 4.

GUIDANCE REGARDING THE USE OF SIMULATORS

1. When simulators are being used for training or assessment of competency, the following guidelines should be taken into consideration in conducting any such training or assessment.*

TRAINING AND ASSESSMENT IN RADAR, OBSERVATION AND PLOTTING

2. Training and assessment in radar observation and plotting should:

.1 incorporate the use of radar simulation equipment; and

.2 conform to standards not inferior to those given in paragraphs 3 to 17 below.

3. Demonstrations of and practice in radar observation should be undertaken where appropriate on live marine radar equipment, including the use of simulators. Plotting exercises should preferably be undertaken in real time, in order to increase trainees' awareness of the hazards of the improper use of radar data and improve their plotting techniques to a standard of radar plotting commensurate with that necessary for the safe execution of collision avoidance manoeuvring under actual seagoing conditions.

GENERAL

4. Factors Affecting Performance and Accuracy

An elementary understanding should be attained of the principles of radar, together with a full practical knowledge of:

.1 range and bearing measurement, characteristics of the radar set which determine the quality of the radar display, radar antennae, polar diagrams, the effects of power radiated in directions outside the main beam, a non-technical description of the radar system, including variations in the features encountered in different types of radar set, performance monitors and equipment factors which affect maximum and minimum detection ranges and accuracy of information;

.2 the current marine radar performance specification adopted by the Organization;

.3 the effects of the siting of the radar antenna, shadow sectors and arcs of reduced sensitivity, false

echoes, effects of antenna height on detection ranges and of siting radar units and storing spares near magnetic compasses, including magnetic safe distances; and

.4 radiation hazards and safety precautions to be taken in the vicinity of antenna and open waveguides.

5. Detection of Misrepresentation of Information, Including False echoes and sea Returns

A knowledge of the limitations to target detection is essential, to enable the observer to estimate the dangers of failure to detect targets. The following factors should be emphasized:

.1 performance standard of the equipment;

.2 brilliance, gain and video processor control settings;

.3 radar horizon;

.4 size, shape, aspect and composition of targets;

.5 effects of the motion of the ship in a seaway;

.6 propagation conditions;

.7 meteorological conditions; sea clutter and rain clutter;

.8 anti-clutter control settings;

.9 shadow sectors; and

.10 radar-to-radar interference.

6. A knowledge should be attained of factors which might lead to faulty interpretation, including false echoes, effects of nearby pylons and large structures, effects of power lines crossing rivers and estuaries, echoes from distant targets occurring on second or later traces.

7. A knowledge should be attained of aids to interpretation, including corner reflectors and radar beacons; detection and recognition of land targets; the effects of topographical features; effects of pulse length and beamwidth; ra-dar-conspicuous and inconspicuous targets; factors which affect the echo strength from targets.

PRACTICE

8. Setting up and maintaining displays

A knowledge should be attained of:

.1 the various types of radar display mode; unstabilized ship's-head-up relative motion; ship's-head-up, course-up and north-up stabilized relative motion and true motion;

.2 the effects of errors on the accuracy of information displayed; effects of transmitting compass errors on stabilized and true motion displays; effects of transmitting log errors on a true motion display; and the effects of inaccurate manual speed settings on a true motion display;

.3 methods of detecting inaccurate speed settings on true motion controls; the effects of receiver noise limiting ability to display weak echo returns, and the effects of saturation by receiver noise, etc.; the adjustment of operational controls; criteria which indicate optimum points of adjustment; the importance of proper adjustment sequence, and the effects of maladjusted controls; the detection of maladjustments and corrections of-

.3.1 controls affecting detection ranges, and

.3.2 controls affecting accuracy;

.4 the dangers of using radar equipment with maladjusted controls; and

.5 the need for frequent regular checking of performance, and the relationship of the performance indicator to the range performance of the radar set.

9. Range and bearing

A knowledge should be attained of:

.1 the methods of measuring ranges; fixed range markers and variable range markers;

.2 the accuracy of each method and the relative accuracy of the different methods;

.3 how range data are displayed; ranges at stated intervals, digital counter and graduated scale;

.4 the methods of measuring bearings; rotatable cursor on transparent disc covering the display, electronic bearing cursor and other methods;

.5 bearing accuracy and inaccuracies caused by: parallax, heading marker displacement, centre maladjustment;

.6 how bearing data are displayed; graduated scale and digital counter; and

.7 the need for regular checking of the accuracy of ranges and bearings, methods of checking for inaccuracies and correcting or allowing for inaccuracies.

10. Plotting Techniques and Relative Motion Concepts

Practice should be provided in manual plotting techniques, including the use of reflection plotters, with the objective of establishing a thorough understanding of the interrelated motion between own ship and other ships, including the effects of manoeuvring to avoid collision. At the preliminary stages of this training, simple plotting exercises should be designed to establish a sound appreciation of plotting geometry and relative motion concepts. The degree of complexity of exercises should increase throughout the training course until the trainee has mastered all aspects of the subject. Competence can best be enhanced by exposing the trainee to real-time exercises performed on a simulator or using other effective means.

11. Identification of critical echoes

A thorough understanding should be attained of:

.1 position fixing by radar from land targets and sea marks;

.2 the accuracy of position fixing by ranges and by bearings;

.3 the importance of cross-checking the accuracy of radar against other navigational aids; and

.4 the value of recording ranges and bearings at frequent, regular intervals when using radar as an aid to collision avoidance.

Course and speed of other ships

12. A thorough understanding should be attained of:

.1 the different methods by which course and speed of other ships can be obtained from recorded ranges and bearings, including:

.1.1 the unstabilized relative plot,

.1.2 the stabilized relative plot, and

.1.3 the true plot; and

.2 the relationship between visual and radar observations, including detail and the accuracy of estimates of course and speed of other ships, and the detection of changes in movements of other ships.

Time and distance of closest approach of crossing, meeting or overtaking ships

13. A thorough understanding should be attained of:

.1 the use of recorded data to obtain:

.1.1 measurement of closest approach distance and bearing, and

.1.2 time to closest approach, and

.2 the importance of frequent, regular observations.

Detecting course and speed changes of other ships

14. A thorough understanding should be attained of—.

.1 the effects of changes of course or speed by other ships on their tracks across the display;

.2 the delay between change of course or speed and detection of that change; and

.3 the hazards of small changes as compared with substantial changes of course or speed in relation to rate and accuracy of detection.

Effect of changes in own ship's course or speed or both

15. A thorough understanding of the effects on a relative motion display of own ship's movements, and the effects of other ships' movements and the advantages of compass stabilization of a relative display.

16. In respect of true motion displays, a thorough understanding should be attained of:

.1 the effects of inaccuracies of—

.1.1 speed and course settings, and

.1.2 compass stabilization data driving a stabilized relative motion display;

.2 the effects of changes in course or speed or both by own ship on tracks of other ships on the display; and

.3 the relationship of speed to frequency of observations.

Application of the International Regulations for Preventing Collisions at Sea

17. A thorough understanding should be attained of the relationship of the International Regulations for Preventing Collisions at Sea to the use of radar, including:

.1 action to avoid collision, dangers of assumptions made on inadequate information and the hazards of

small alterations of course or speed;

.2 the advantages of safe speed when using radar to avoid collision;

.3 the relationship of speed to closest approach distance and time and to the manoeuvring characteristics of various types of ships;

.4 the importance of radar observation reports and radar reporting procedures being well defined;

.5 the use of radar in clear weather, to obtain an appreciation of its capabilities and limitations, compare radar and visual observations and obtain an assessment of the relative accuracy of information;

.6 the need for early use of radar in clear weather at night and when there are indications that visibility may deteriorate;

.7 comparison of features displayed by radar with charted features; and

.8 comparison of the effects of differences between range scales.

TRAINING AND ASSESSMENT IN THE OPERATIONAL USE OF AUTOMATIC RADAR PLOTTING AIDS (ARPA)

18. Training and assessment in the operational use of automatic radar plotting aids (ARPA) should:

.1 require prior completion of the training in radar observation and plotting or combine that training with the training given in paragraphs 19 to 35 below;

.2 incorporate the use of APPA simulation equipment; and

.3 conform to standards not inferior to those given in paragraphs 19 to 35 below.

19. Where APPA training is provided as part of the general training under the 1978 STCW Convention, masters, chief mates and officers in charge of a navigational watch should understand the factors involved in decision-making based on the information supplied by APPA in association with other navigational data inputs, having a similar appreciation of the operational aspects and of system errors of modern electronic navigational systems. This training should be progressive in nature, commensurate with the responsibilities of the individual and the certificates issued by Parties under the 1978 STCW Convention.

Theory and demonstration

Possible risks of over-reliance on ARPA

20. Appreciation that ARPA is only a navigational aid and:

.1 that its limitations, including those of its sensors, make over-reliance on ARPA dangerous, in particular for keeping a look-out; and

.2 the need to observe at all times the Principles to be observed in keeping a navigational watch and the Guidance on keeping a navigational watch.

Principal types of APPA systems and their display characteristics

21. Knowledge of the principal types of ARPA systems in use; their various display characteristics and an understanding of when to use ground or sea stabilized modes and north-up, course-up or head-up presentations.

IMO performance standards for ARPA

22. An appreciation of the IMO performance standards for APPA, in particular the standards relating to accuracy.*

Factors affecting system performance and accuracy

23. Knowledge of APPA sensor input performance parameters radar, compass and speed inputs and the effects of sensor malfunction on the accuracy of ARPA data.

24. Knowledge of:

.1 the effects of the limitations of radar range and bearing discrimination and accuracy and the limitations of compass and speed input accuracies on the accuracy of APPA data; and

.2 factors which influence vector accuracy.

Tracking capabilities and limitations

25. Knowledge of:

.1 the criteria for the selection of targets by automatic acquisition;

.2 the factors leading to the correct choice of targets for manual acquisition;

.3 the effects on tracking of "lost" targets and target fading;

.4 the circumstances causing "target swap" and its effects on displayed data.

Processing delays

26. Knowledge of the delays inherent in the display of processed ARPA information, particularly on acquisition and re-acquisition or when a tracked target manoeuvres.

Operational warnings, their benefits and limitations

27. Appreciation of the uses, benefits and limitations of ARPA operational warnings and their correct setting, where applicable, to avoid spurious interference.

System operational tests

28. Knowledge of:

.1 methods of testing for malfunctions of APPA systems, including functional self-testing; and

.2 precautions to be taken after a malfunction occurs.

Manual and automatic acquisition of targets and their respective limitations

29. Knowledge of the limits imposed on both types of acquisition in multi-target scenarios, and the effects on acquisition of target fading and target swap.

True and relative vectors and typical graphic representation of target information and danger areas

30. Thorough knowledge of true and relative vectors; derivation of targets' true courses and speeds including:

.1 threat assessment, derivation of predicted closest point of approach and predicted time to closest point

of approach from forward extrapolation of vectors, the use of graphic representation of danger areas;

.2 the effects of alterations of course and/or speed of own ship or targets on predicted closest point of approach and predicted time to closest point of approach and danger areas;

.3 the effects of incorrect vectors and danger areas; and

.4 the benefit of switching between true and relative vectors.

Information on past positions of targets being tracked

31. Knowledge of the derivation of past positions of targets being tracked, recognition of historic data as a means of indicating recent manoeuvring of targets and as a method of checking the validity of the ARPA's tracking. Practice

Setting up and maintaining displays

32. Ability to demonstrate:

.1 the correct starting procedure to obtain the optimum display of ARPA information;

.2 the selection of display presentation; stabilized relative motion displays and true motion displays;

.3 the correct adjustment of all variable radar display controls for optimum display of data;

.4 the selection, as appropriate, of required speed input to ARPA;

.5 the selection of ARPA plotting controls, manual/automatic acquisition, vector/graphic display of data;

.6 the selection of the time scale of vectors/graphics;

.7 the use of exclusion areas when automatic acquisition is employed by ARPA; and

.8 performance checks of radar, compass, speed input sensors and ARPA

System operational tests

33. Ability to perform system checks and determine data accuracy of AF including the trial manoeuvre facility, by checking against basic radar plot.

Obtaining information from the ARPA display

34. Demonstrate the ability to obtain information in both relative and true motion modes of display, including:

.1 the identification of critical echoes;

.2 the speed and direction of target's relative movement;

.3 the time to, and predicted range at, target's closest point of approach;

.4 the courses and speeds of targets;

.5 detecting course and speed changes of targets and the limitations of information;

.6 the effect of changes in own ship's course or speed or both; and

.7 the operation of the trial manoeuvre facility.

Application of the International Regulations for Preventing Collisions at SC

35. Analysis of potential collision situations from displayed information, determination and execution of action to avoid close-quarters situations in accordance with the International Regulations for Preventing Collisions at Sea in force.

RECOMMENDED PERFORMANCE STANDARDS FOR NON-MANDATORY TYPES OF SIMULATION

36. Performance standards for non-mandatory simulation equipment used training or assessment of competence or demonstration of skills are set in hereunder. Such forms of simulation include, but are not limited to, the following types:

.1 navigation and watchkeeping;

.2 ship handling and manoeuvring;

.3 cargo handling and stowage;

.4 radiocommunications; and

.5 main and auxiliary machinery operation

Navigation and Patching simulation

37. Navigation and watchkeeping simulation equipment should, in addition to meeting all applicable performance standards set out in this schedule, be capable of simulating navigational equipment and bridge operational controls which meet all applicable performance standards adopted by the Organization, incorporate facilities to generate soundings and:

.1 create a real-time operating environment, including navigation control and communications instruments and equipment appropriate to the navigation and watchkeeping tasks to be carried out and the manoeuvring skills to be assessed;

.2 provide a realistic visual scenario by day or by night, including variable visibility, or by night only as seen from the bridge, with a minimum horizontal field of view available to the trainee in viewing sectors appropriate to the navigation and watchkeeping tasks and objectives; and

.3 realistically simulate 'own ship' dynamics in open water conditions, including the effects of weather, tidal stream, currents and interaction with other ships.

Ship handling and manoeuvring simulation

38. In addition to meeting the performance standards set out in paragraph 37, ship handling simulation equipment should:

.1 provide a realistic visual scenario as seen from the bridge by day and by night with variable visibility throughout a minimum horizontal field of view available to the trainee in viewing sectors appropriate to the ship handling and manoeuvring training tasks and objectives; and

.2 realistically simulate 'ownship' dynamics in restricted waterways, including shallow-water and bank effects.

39. Where manned scale models are used to provide ship handling and manoeuvring simulation, in addition to the performance standards set out in paragraphs 37.3 and 38.2, such equipment should:

.1 incorporate scaling factors which present accurately the dimensions, areas, volume and displacement,

speed, time and rate of turn of a real ship; and

.2 incorporate controls for the rudder and engines to the correct time-scale.

Cargo handling and stowage simulation

40. Cargo handling simulation equipment should be capable of simulating cargo handling and control equipment which meets all applicable performance standards adopted by the Organization, and incorporate facilities to:

.1 create an effective operational environment, including a cargo-control station with such instrumentation as may be appropriate to the particular type of cargo system modelled;

.2 model loading and unloading functions and stability and stress data appropriate to the cargo-handling tasks to be carried out and the skills to be assessed; and

.3 simulate loading, unloading, ballasting and deballasting operations and appropriate associated calculations for stability, trim, list, longitudinal strength, torsional stress and damage stability.

GMDSS communication simulation

41. GMDSS communication simulation equipment should be capable of simulating GMDSS communication equipment which meets all applicable performance standards adopted by the Organization, and incorporate facilities to:

.1 simulate the operation of VHF, VHF-DSC, NAVTEX, EPIRB and watch receiver equipment as required for the Restricted Operator's Certificate (ROC);

.2 simulate the operation of INMARSAT-A, -B and -C ship earth stations, MF/HF NBDP, MF/HF-DSC, VHF, VHF-DSC, NAVTEX, EPIPB and watch-receiver equipment as required for the General Operator's Certificate (GOC);

.3 provide voice communication with background noise;

.4 provide a printed text communication facility; and

.5 create a real-time operating environment, consisting of an integrated system, incorporating at least one instructor/assessor station and at least two GMDSS ship or shore stations.

Main and auxiliary machinery operation simulation

42. Engine-room simulation equipment should be capable of simulating a main and auxiliary machinery system and incorporate facilities to:

.1 create a real-time environment for seagoing and harbour operations with communication devices and simulation of appropriate main and auxiliary propulsion machinery equipment and control panels;

.2 simulate relevant sub-systems that should include but not be restricted to boiler, steering gear, electrical power general and distribution systems, including emergency power supplies, and fuel, cooling water, refrigeration, bilge and ballast systems;

.3 monitor and evaluate engine performance and remote sensing systems;

.4 simulate machinery malfunctions;

.5 allow for the variable external conditions to be changed so as to influence the simulated operations: weather, ship's draught, seawater and air temperatures;

.6 allow for instructor-controlled external conditions to be changed: deck steam, accommodation steam, deck air, ice conditions, deck-cranes, heavy power, bow thrust, ship load;

.7 allow for instructor-controlled simulator dynamics to be changed: emergency run, process responses, ship responses; and

.8 provide a facility to isolate certain processes, such as speed, electrical system, diesel oil system, lubricating oil system, heavy oil system, seawater system, steam system, exhaust boiler and turbo generator, for performing specific training tasks.

SCHEDULE 8

STANDARDS REGARDING MASTER AND DECK DEPARTMENT

MANDATORY MINIMUM REQUIREMENTS FOR CERTIFICATION OF OFFICERS IN CHARGE OF A NAVIGATIONAL WATCH ON SHIPS OF 500 GROSS TONNAGE OR MORE

Standard of competence

1. Every candidate for certification shall:

.1 be required to demonstrate the competence to undertake, at operational level, the tasks, duties and responsibilities listed in column I of table A-11/1;

.2 at least hold an appropriate certificate for performing VHF radiocommunications in accordance with the requirements of the Radio Regulations; and

.3 if designated to have primary responsibility for radiocommunications during distress incidents, hold an appropriate certificate issued or recognized under the provisions of the Radio Regulations.

2. The minimum knowledge, understanding and proficiency required for certification is listed in column 2 of table A- 11/1.

3. The level of knowledge of the subjects listed in column 2 of table A-11/1 shall be sufficient for officers of the watch to carry out their watchkeeping duties.

4. Training and experience to achieve the necessary level of theoretical knowledge, understanding and proficiency shall be based on schedule 13. Principles to be observed in keeping a navigational watch, and shall also take into account the relevant requirements of this part and the guidance given in this schedule.

5. Every candidate for certification shall be required to provide evidence of having achieved the required standard of competence in accordance with the methods for demonstrating competence and the criteria for evaluating competence tabulated in columns 3 and 4 of table -11/1.

On-board training

6. Every candidate for certification as officer in charge of a navigational watch of ships of 500 gross tonnage or more whose seagoing service, in accordance with regulation 23 forms part of a training programme approved as meeting the requirements of this section shall follow an approved programme of on-board training which:

.1 ensures that during the required period of seagoing service the candidate receives systematic practical training and experience in the tasks, duties and responsibilities of an officer in charge of a navigational

watch, taking into account the guidance regarding the master and the deck department in this schedule.

.2 is closely supervised and monitored by qualified officers aboard the ships in which the approved seagoing service is performed; and .

3. is adequately documented in a training record book or similar document.

Near-coastal voyages

7. The following subjects may be omitted from those listed in column 2 of table A-11/1 for issue of restricted certificates for service on near-coastal voyages, bearing in mind the safety of all ships which may be operating in the same waters:

.1 celestial navigation; and

.2 those electronic systems of position fixing and navigation that do not cover the waters for which the certificate is to be valid.

TABLE A-II/1

Specification of minimum standard of competence for officers in charge of a navigational watch on ships of 500 gross tonnage or more

Functions: Navigation at the operational level

Column 1	Column 2	Column 3	Column
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for ev competer**

Plan and conduct a passage and determine position	Celestial navigation Ability to use celestial bodies to determine the ship's position Terrestial and coastal navigation Ability to determine the ship's position by use of 1. landmarks 2. aids to navigation, including lighthouses, beacons and buoys. 3. dead reckoning, taking into accounts winds, tides, currents and estimated speed	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved simulator training where appropriate 4. approved laboratory equipment training using chart catalogues, charts, navigational publications, radio navigational warnings, sextant, azimuth mirror, electronic, navigation equipment, echo-sounding equipment, compass	The information ob navigational charts publications is rele interpreted correctl properly applied. A navigational hazarc accurately identifie The primary metho the ship's position appropriate to the p circumstances and The position is dete within the limits of instrument/system The reliability of th information obtaine primary methods o fixing is checked at appropriate interva Calculations and measurements of na information are acc

Function: Navigation at the operational level (continued)

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer

Plan and conduct a passage and determine position (continued)	Thorough knowledge of and ability to use navigational charts and publications, such as sailing directions, tide tables, notices to mariners, radio navigational warnings and ships' routeing information NOTE: ECDIS systems are considered to be included under the term "charts"		The charts selected largest scale suitab area of navigation and publications ar in accordance with information availab
	Electronic systems of position fixing and navigation. Ability to determine the ship's position by use of electronic navigational aids		Performance check to navigation syste with manufacturer' recommendations a navigational practi
	Echo-sounders Ability to operate the equipment and apply the information correctly		
	Compass – magnetic and gyro Knowledge of the principles of magnetic and gyro-compasses		
	Ability to determine errors of the magnetic and gyro-compasses, using celestial and terrestrial means, and to allow for such errors		Errors in magnetic gyro-compasses ar determined and co applied to courses a
	Steering control systems Knowledge of steering control systems, operational procedures and change-over from manual to automatic		The selection of th steering is the most the prevailing weat traffic conditions a

Function: Navigation at the operational level (continued)

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer
Maintain a safe navigational watch	**Watchkeeping** Thorough knowledge of the content, application and intent of the International Regulations for Preventing Collisions at Sea Thorough knowledge of the Principles to be observed in keeping a navigational watch Thorough knowledge of effective bridge teamwork procedures The use of routing in accordance with the General Provisions on Ships' Routeing	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved simulator training where appropriate 4. approved laboratory equipment training	The conduct, hando relief of the watch with accepted princ procedures. A proper look-out i maintained at all ti such a way as to co accepted principles procedures Lights, shapes and signals conform wi requirements conta International Regul Preventing Collisio and are correctly re The frequency and monitoring of traffi and the environmer with accepted princ procedures A proper record is of the movements a activities relating t navigation of the sh Responsibility for t navigation is clearl all times, including when the master is bridge and while u pilotage

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer
Use of radar and ARPA to maintain safety of navigation Note: Training and assessment in the use of ARPA is not required for those who serve exclusively on ships not fitted with ARPA. This limitation shall be reflected in the endorsement issued to the seafarer concerned.	Radar navigation Knowledge of the fundamentals of radar and automatic radar plotting aids (ARPA) Ability to operate and to interpret and analyse information obtained from radar, including the following: Performance, including: 1. factors affecting performance and accuracy 2. setting up and maintaining displays 3. detention of misrepresentation of information, false echoes, sea return, etc., recons and SARTs Use, including: 1. range and bearings; course and speed of other ships; time and distance of closet approach of crossing, meeting overtaking ships 2. identification of critical echoes, detecting course and speed changes of other ships; effect of changes in own ship's course or speed or both	Assessment of evidence obtained from approved radar simulator and ARPA simulator training plus in-service experience	Information obtain radar and ARPA is interpreted and ana taking into account limitations of the e and prevailing circ and conditions Action taken to avo encounter or collisi other vessels is in a with the Internatio Regulations for Pre Collisions at Sea Decisions to amen and/or speed are bo and in accordance accepted navigatio Adjustments made ship's course and s maintain safety of Communication is concise and acknov times in a seamanli Manoeuvring signa at the appropriate t in accordance with International Regul Preventing Collisio

Function: Navigation at the operational level (continued)

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer
Use of radar and ARPA to maintain safety of navigation Note: Training and assessment in the use of ARPA is not required for those who serve exclusively on ships not fitted with ARPA. This limitation shall be reflected in the endorsement issued to the seafarer concerned.	3. application of the International Regulations for Preventing Collisions at Sea 4. plotting techniques and relative and true motion concepts 5. parallel indexing Principal types of ARPA, their displays characteristics, performance standards and the dangers of over-reliance on ARPA Ability to operate and to interpret and analyse information obtained from ARPA, including: 1. system performance and accuracy, tracking capabilities and limitations, and processing delays 2. use of operational warnings and systems tests 3. methods of target acquisition and their limitations 4. true and relative vectors, graphic representation of target information and danger areas 5. deriving and analysing information, critical echoes, exclusion areas and trial manoeuvres		

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer
Respond to emergencies	*Emergency procedures* Precautions for the protection and safety of passengers in emergency situations Initial action to be taken following a collision or a grounding, initial damage assessment and control Appreciation of the procedures to be followed for rescuing persons from the sea, assisting a ship in distress, responding to emergencies which arise in port	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved simulator training where appropriate 4. practical training	The type and scale emergency is prom identified Initial actions and, appropriate, manoe the ship are in acco contingency plans a appropriate to the u the situation and na emergency
Respond to a distress signal at sea	*Search and rescue* Knowledge of the contents of the IMO Merchant Ship Search and Rescue Manual (MERSAR)	Examination and assessment of evidence obtained from practical instruction or approved simulator training, where appropriate	The distress or eme signal is immediate recognized Contingency plans instructions in stan are implemented ar with

Function: Navigation at the operational level (continued)

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer

Use the Standard Marine Navigational Vocabulary as replaced by the IMO Standard Marine Communication Phrases and use English in written and oral form	*English language* Adequate knowledge of the English language to enable the officer to use charts and other nautical publications, to understand meteorological information and messages concerning ship's safety and operation, to communicate with other ships and coast stations and to perform the officer's duties also with a multilingual crew, including the ability to use and understand the Standard Marine Navigational Vocabulary as replaced by the IMO Standard Marine Communication Phrases	Examination and assessment of evidence obtained from practical instruction	English language n publications and m relevant to the safe ship are correctly i or drafted Communications a understood
Transmit and receive information by visual signalling	**Visual signalling** Ability to transmit and receive signals by Morse light Ability to use the International Code of Signals	Assessment of evidence obtained from practical instruction	Communications w operator's area of responsibility are c successful

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for ev competer**

Manoeuvre at the ship	*Ship manoeuvring and handling* Knowledge of: 1. the effects of deadweight, draught, trim, speed and under-keel clearance on turning circles and stopping distances 2. the effects of wind and current on ship handling 3. manoeuvres and procedures for the rescue of person overboard 4. squat, shallow-water and similar effects 5. proper procedures for anchoring and mooring	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved simulator training, where appropriate 4. approved training on a manned scale ship model where appropriate	Safe operating limi propulsion, steering systems are not exc normal manoeuvres Adjustments are ma ship's course and s maintain safety of n

Function: Cargo handling and stowage at the operational level

Monitor the loading, stowage, securing and unloading of cargoes and their care during the voyage	*Cargo handling, stowage and securing* Knowledge of the effects of cargo including heavy lifts on the sea worthiness and stability of the ship Knowledge of safe handling, stowage and securing of cargoes, including dangerous, hazardous and harmful cargoes and their effect on the safety of life and of the ship	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved simulator training, where appropriate	Cargo operations a out in accordance w cargo plan or other and established saf rules/regulations, e operating instructio shipboard stowage The handling of da hazardous and harm complies with inter regulations and rec standards and code practice

Function: Controlling the operation of the ship and care for persons on board at the operational level

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for ev competer**

Ensure compliance with pollution-prevention requirements	*Prevention of pollution of the marine environment and anti-pollution procedures* Knowledge of the precautions to be taken to prevent pollution of the marine environment Anti-pollution procedures and all associated-equipment	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience	Procedures for mor shipboard operatio ensuring complianc MARPOL requiren fully observed.
Maintain seaworthiness of the ship	*Ship stability* Working knowledge and application of stability, trim and stress tables, diagrams and stress-calculating equipment Understanding of fundamental actions to be taken in the event of partial loss of intact buoyancy Understanding of the fundamentals of watertight integrity *Ship construction* General knowledge of the principal structural members of a ship and the proper names for the various parts	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved simulator training, where appropriate 4. approved laboratory equipment training	The stability condit comply with the IM stability criteria un conditions of loadi Actions to ensure a the watertight integ ship are in accorda accepted practice

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for ev competer**

Prevent, control and fight fires on board	*Fire prevention and fire-fighting appliances* Knowledge of fire prevention Ability to organize fire drills Knowledge of classes and chemistry of fire Knowledge of fire-fighting systems Knowledge of action to be taken in the event of fire, including fires involving oil systems	Assessment of evidence obtained from approved fire-fighting training and experience as set out in section A-V1/3	The type and scale problem is promptl and initial actions c with the emergency and contingency pl ship Evacuation, emerge shutdown and isola procedures are appr the nature of the en and are implemente The order of priorit levels are time-scal making reports and personnel on board relevant to the natu emergency and refl urgency of the prob
Operate life-saving appliances	*Life-saving* Ability to organize abandon ship drills and knowledge of the operation of survival craft and rescue boats, their launching appliances and arrangement, and their equipment, including radio life-saving appliances, satellite EPIRBs, SARTs, immersion suits and thermal protective aids Knowledge of survival at sea techniques	Assessment of evidence obtained from approved training and experience as set out in section A-V1/2, paragraphs 1 to 4	Actions in respond abandon ship and s situations are appro the prevailing circu and conditions and with accepted safet and standards

Function: Controlling the operation of the ship and care for persons on board at the operational level (continued)

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer

Apply medical first aid on board ship	*Medical aid* Practical application of medical guides and advice by radio, including the ability to take effective action based on such knowledge in the case of accidents or illnesses that are likely to occur on board ship	Assessment of evidence obtained from approved training as set out in section A-V1/4, paragraphs 1 to 3	The identification c cause, nature and e injuries or conditio and treatment mini immediate threat to
Monitor compliance with legislative requirements	Basic working knowledge of the relevant IMO conventions concerning safety of life at sea and protection of the marine environment	Assessment of evidence obtained from examination or approved training	Legislative require relating to safety of and protection of th environment are co identified

GUIDANCE REGARDING THE CERTIFICATION OF OFFICERS IN CHARGE OF A NAVIGATIONAL WATCH ON SHIPS OF 500 GROSS TONNAGE OR MORE

Training

8. Every candidate for certification as officer in charge of a navigational watch should have completed a planned and structured programme of training designed to assist a prospective officer to achieve the standard of competence in accordance with table A-11/1.

9. The structure of the programme of training should be set out in a training plan which clearly expresses for all parties involved the objectives of each stage of training on board and ashore. It is important that the prospective officer, tutors, ships' staff and company personnel are clear about the competences which are to be achieved at the end of the programme and how they are to be achieved through a combination of education, training and practical experience on board and ashore.

10. The mandatory periods of seagoing service are of prime importance in learning the job of being a ship's officer and in achieving the overall standard of competence required. Property planned and structured, the periods of sea-going service will enable prospective officers to acquire and practice skills and will offer opportunities for competences achieved to be demonstrated and assessed.

11. Where the seagoing service forms part of an approved training programme, the following principles should be observed:

.1 The programme of on-board training should be an integral part of the overall training plan.

.2 The programme of on-board training should be managed and coordinated by the company which manages the ship on which the seagoing service is to be performed.

.3 The prospective officer should be provided with a training record book* to enable a comprehensive record of practical training and experience at sea to be maintained. The training record book should be laid out in such a way that it can provide detailed information about the tasks and duties which should be undertaken and the progress towards their completion. Duly completed, the record book will provide unique evidence that a structured programme of on-board training has been completed which

can be taken into account in the process of evaluating competence for the issue of a certificate.

.4 At all times, the prospective officer should be aware of two identifiable individuals who are immediately responsible for the management of the programme of on-board training. The first of these is a qualified seagoing officer, referred to as the shipboard training officer, who, under the authority of the master, should organise and supervise the programme of training for the duration of each voyage. The second should be a person nominated by the company, referred to as the company training officer, who should have an overall responsibility for the training programme and for co-ordination with colleges and training institutions.

.5 The company should ensure that appropriate periods are set aside for completion of the programme of on-board training within the normal operational requirements of the ship.

Roles and responsibilities

12. The following section summarises the roles and responsibilities of those individuals involved in organizing and conducting on-board training:

.1 The company training officer should be responsible for:

.1.1 overall administration of the programme of training,

.1.2 monitoring the progress of the prospective officer throughout, and

.1.3 issuing guidance as required and ensuring that all concerned with the training programme play their parts.

.2 The shipboard training officer should be responsible for:

.2.1 organizing the programme of practical training at sea,

.2.2 ensuring in a supervisory capacity that the training record book is properly maintained and that all other requirements are fulfilled, and

.2.3 making sure, so far as is practicable, that the time the prospective officer spends on board is as useful as possible in terms of training and experience, and is consistent with the objectives of the training programme, the progress of training and the operational constraints of the ship.

.3 The master's responsibilities should be to:

.3.1 provide the link between the shipboard training officer and the company training officer ashore,

.3.2 fulfill the role of continuity if the shipboard training officer is relieved during the voyage, and

.3.3 ensure that all concerned are effectively carrying out the on-board training programme.

.4 The prospective officer's responsibilities should be to:

.4.1 follow diligently the programme of training as laid down,

.4.2 make the most of the opportunities presented, be they in or outside working hours, and

.4.3 keep the training record book up to date and ensure that it is available at all times for scrutiny.

Induction

13. At the beginning of the programme and at the start of each voyage on a different ship, prospective officers should be given full information and guidance as to what is expected of them and how the

training programme is to be organized. Induction presents the opportunity to brief prospective officers about important aspects of the tasks they will be undertaking, with particular regard to safe working practices and protection of the marine environment.

Shipboard, programme of training

14. The training record book should contain, amongst other things, a number of training tasks or duties which should be undertaken as part of the approved programme of on-board training. Such tasks and duties should relate to at least the following areas:

.1 steering systems;

.2 general seamanship;

.3 mooring, anchoring and port operations;

.4 life-saving and fire-fighting appliances;

.5 systems and equipment;

.6 cargo work;

.7 bridge work and watchkeeping; and

.8 engine-room familiarization.

15. It is extremely important that the prospective officer is given adequate opportunity for supervised bridge watchkeeping experience, particularly in the later stages of the on-board training programme.

16. The performance of the prospective officers in each of the tasks and duties itemized in the training record book should be initialed by a qualified officer when, in the opinion of the officer concerned, a prospective officer has achieved a satisfactory standard of proficiency. It is important to appreciate that a prospective officer may need to demonstrate ability on several occasions before a qualified officer is confident that a satisfactory standard has been achieved.

Monitoring and reviewing

17. Guidance and reviewing are essential to ensure that prospective officers are fully aware of the progress they are making and to enable them to join in decisions about their future programme. To be effective, reviews should be linked to information gained through the training record book and other sources as appropriate. The training record book should be scrutinized and endorsed formally by the master and the shipboard training officer at the beginning, during and at the end of each voyage. The training record book should also be examined and endorsed by the company training officer between voyages.

Assessment of abilities and skills in navigational watchkeeping

18. A candidate for certification who is required to have received special training and assessment of abilities and skills in navigational watchkeeping duties should be required to provide evidence, through demonstration either on a simulator or on board ship as part of an approved programme of ship-board training, that the skills and ability to perform as officer in charge of a navigational watch in at least the following areas have been acquired, namely to:

.1 prepare for and conduct a passage, including:

.1.1 interpreting and applying information obtained from charts,

.1.2 fixing position in coastal waters,

.1.3 applying basic information obtained from tide tables and other navigational publications,

.1.4 checking and operating bridge equipment,

.1.5 checking magnetic and gyro-compasses,

.1.6 assessing available meteorological information,

.1.7 using celestial bodies to fix position,

.1.8 determining the compass error by celestial and terrestrial means, and

.1.9 performing calculations for sailings of up to 24 hours;

.2 operate and apply information obtained from electronic navigation systems;

.3 operate radar and ARPA and apply radar information for navigation and collision avoidance;

.4 operate propulsion and steering systems to control heading and speed;

.5 implement navigational watch routines and procedures;

.6 implement the manoeuvres required for rescue of persons overboard

.7 initiate action to be taken in the event of an imminent emergency situation (e.g. fire, collision, stranding) and action in the immediate aftermath of an emergency;

.8 initiate action to be taken in event of malfunction or failure of major items of equipment or plant (e.g. steering gear, power, navigation systems);

.9 conduct radiocommunications and visual and sound signalling in normal and emergency situations; and

.10 monitor and operate safety and alarm systems, including internal communications.

19. Assessment of abilities and skills in navigational watchkeeping should:

.1 be made against the criteria for evaluating competence for the function of navigation set out in table A-11/1,

.2 ensure that the candidate performs navigational watchkeeping duties in accordance with the Principles to be observed in keeping a safe navigational watch in this schedule.

Evaluation of competence

20. The standard of competence to be achieved for certification as officer in charge of a navigational watch is set out in table A-11/1. The standard specifies the knowledge and skill required and the application of that knowledge and skill to the standard of performance required on board ship.

21. Scope of knowledge is implicit in the concept of competence. Assessment of competence should, therefore, encompass more than the immediate technical requirements of the job, the skills and tasks to be performed, and should reflect the broader aspects needed to meet the full expectations of competent performance as a ships' officer. This includes relevant knowledge, theory, principles and cognitive skills which, to varying degrees, underpin all levels of competence. It also encompasses

proficiency in what to do, how and when to do it, and why it should be done. Properly applied, this will help to ensure that a candidate can:

.1 work competently in different ships and across a range of circumstances;

.2 anticipate, prepare for and deal with contingencies; and

.3 adapt to new and changing requirements.

22. The criteria for evaluating competence (column 4 of table A-11/1) identify, primarily in outcome terms, the essential aspects of competent performance. They are expressed so that assessment of a candidate's performance can be made against them and should be adequately documented in the training record book.

23. Evaluation of competence is the process of—

.1 collecting sufficient valid and reliable evidence about the candidate's knowledge, understanding and proficiency to accomplish the tasks, duties and responsibilities listed in column I of table A-11/1; and

.2 judging that evidence against the criteria specified in the standard.

24. The arrangements for evaluating competence should be designed to take account of different methods of assessment which can provide different types of evidence about candidates' competence, e.g.:

.1 direct observation of work activities (including seagoing service);

.2 skills/proficiency/competency tests;

.3 projects and assignments;

.4 evidence from previous experience; and

.5 written, oral and computer-based questioning techniques.*

25. One or more of the first four methods listed should almost invariably be used to provide evidence of ability, in addition to appropriate questioning techniques to provide evidence of supporting knowledge and understanding.

MANDATORY MINIMUM REQUIREMENTS FOR CERTIFICATION OF MASTERS AND CHIEF-MATES ON SHIPS OF 500 GROSS TONNAGE OR MORE

Standard of competence

26. Every candidate for certification as master or chief mate of ships of 500 gross tonnage or more shall be required to demonstrate the competence to undertake, at the management level, the tasks, duties and responsibilities listed in column I of table A-11/2.

27. The minimum knowledge, understanding and proficiency required for certification is listed in column 2 of table A-11/2. This incorporates, expands and extends in depth the subjects listed in column 2 of table A-11/1 for officers in charge of a navigational watch.

28. Bearing in mind that the master has ultimate responsibility for the safety of the ship, its passengers, crew and cargo, and for the protection of the marine environment against pollution by the ship and that a chief mate shall be in a position to assume that responsibility at any time, assessment in these subjects shall be designed to test their ability to assimilate all available information that affects the safety of the ship, its passengers, crew or cargo, or the protection of the marine environment.

29. The level of knowledge of the subjects listed in column 2 of table A-11/2 shall be sufficient to enable the candidate to serve in the capacity of master or chief mate.*

30. The level of theoretical knowledge, understanding and proficiency required under the different sections in column 2 of table A-11/2 may be varied according to whether the certificate is to be valid for ships of 3,000 gross tonnage or more or for ships of between 500 gross tonnage and 3,000 gross tonnage.

31. Training and experience to achieve the necessary level of theoretical knowledge, understanding and proficiency shall take into account the relevant requirements of this part and the guidance given in this schedule.

32. Every candidate for certification shall be required to provide evidence of having achieved the required standard of competence in accordance with the methods for demonstrating competence and criteria for evaluating competence tabulated in columns 3 and 4 of table A-11/2.

Near-coastal voyages

33. An Administration may issue a certificate restricted to service on ships engaged exclusively on near-coastal voyages and, for the issue of such a certificate, may exclude such subjects as are not applicable to the waters or ships concerned, bearing in mind the effect on the safety of all ships which may be operating in the same waters.

TABLE A-II/2

Specification of minimum standard of competence for masters and chief mates on ships of 50 gross tonnage or more

Function: Navigation at the management level

Column 1	Column 2	Column 3	Column
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for ev competer**

Plan a voyage and conduct navigation	Voyage planning and navigation for all conditions by acceptable methods of plotting ocean tracks, taking into account, e.g.: 1. restricted waters 2. meteorological conditions 3. ice 4. restricted visibility 5. traffic separation schemes 6. areas of extensive tidal effects Routeing in accordance with the General Principles on Ship's Routeing Reporting in accordance with the Guidelines and Criteria for Ship Reporting Systems	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved simulator training, where appropriate 3. approved laboratory equipment training using chart catalogues, charts, nautical publications and ship particulars	The equipment, cha nautical publicatior for the voyage are e and appropriate to t conduct of the voya The reasons for the route are supported and statistical data from relevant sourc publications. Positions, courses, and time calculatio correct within acce accuracy standards navigational equipr All potential naviga hazards are accurat identified.

Function: Navigation at the management level (continued)

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer

missing words – highlighters) -tion and the accuracy of resultant position fix by any means	(**missing words – highlighters**) 1. by celestial observations 2. by terrestrial observation, including the ability to use appropriate charts, notices to mariners and other publications to assess the accuracy of the resulting position fix 3. using modern electronic navigational aids, with specific knowledge of their operating principles, limitations, sources of error, detention of misrepresentation of information and methods of correction to obtain accurate position fixing	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved simulator training, where appropriate approved laboratory equipment training using 1. charts, nautical almanac, plotting sheets, chronometer, sextant and a calculator 2. charts, navigational publications and instruments (azimuth mirror sextant, log, sounding equipment, compass) and manufacturers' manuals 3. radar, Decca, Loran, satellite navigation systems and appropriate navigational charts and publications	(missing word) chosen for fixing th position is the most appropriate to the p circumstances and The fix obtained by observations is with accuracy levels The fix obtained by observations is with accuracy levels The accuracy of the fix is properly asse The fix obtained by electronic navigatio within the accuracy of the systems in us possible errors affe accuracy of the resu position are stated methods of minimi effects of system er resulting position a applied

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer

Determine and allow for compass error	Ability to determine and allow for errors of the magnetic and gyro-compasses Knowledge of the principles of magnetic and gyro-compasses An understanding of systems under the control of the master gyro and a knowledge of the operation and care of the main types of gyro-compasses	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved simulator training, where appropriate 3. approved laboratory equipment training using: celestial observations, terrestrial bearings and comparison between magnetic and gyro-compasses	The method and fre checks for errors of and gyro-compasse accuracy of inform

Function: Navigation at the management level (continued)

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for ev competer**

Co-ordinate search and rescue operations	A thorough knowledge of and ability to apply the procedures contained in the IMO Merchant Ship Search and Rescue Manual (MERSAR)	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved simulator training, where appropriate 3. approved laboratory equipment training using: relevant publications, charts, meteorological data, particulars of ship involved, radiocommunication equipment and other available facilities and one or more of the following: 1. approved SAR training course 2. approved simulator training, where appropriate 3. approved laboratory equipment training	The plan for co-ord search and rescue o in accordance with international guidel standards Radiocommunicati established and cor communication pro followed at all stag search and rescue o

Establish watch-keeping arrangements and procedures	Thorough knowledge of content, application and intent of the International Regulations for Preventing Collisions at Sea Thorough knowledge of the content, application and intent of the Principles to be observed in keeping a navigational watch Effective bridge teamwork procedures	Examination and assessment of evidence obtained from one or more of the following 1. approved in-service experience 2. approved simulator training, where appropriate	Watchkeeping arra and procedures are and maintained in c with international r and guidelines so a the safety of naviga protection of the m environment and sa ship and persons or

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for ev competer**
Maintain safe navigation through the use of radar and ARPA and modern navigation systems to assist command decision-making Note: Training and assessment in the use of ARPA is not required for those who serve exclusively on ships not fitted with ARPA. This limitation shall be reflected in the endorsement issued to the seafarer concerned.	An appreciation of system errors and thorough understanding of the operational aspects of modern navigational systems, including radar and ARPA Blind pilotage techniques Evaluation of navigational information derived from all sources, including radar and ARPA, in order to make and implement command decisions for collision avoidance and for directing the safe navigation of the ship The inter-relationship and optimum use of all navigational data available for conducting navigation	Assessment of evidence obtained from approved radar simulator and ARPA simulator training	Information obtain radar and ARPA is interpreted and ana taking into account limitations of the e and prevailing circ and conditions Action taken to avo encounter or collisi another vessel is in with the Internatior Regulations for Pre Collisions at Sea

Function: Navigation at the management level (continued)

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer
Forecast weather and oceanographic conditions	Ability to understand and interpret a synoptic chart and to forecast area weather, taking into account local weather conditions and information received by weather fax Knowledge of the characteristics of various weather systems, including tropical revolving storms and avoidance of storm centres and the dangerous quadrants Knowledge of ocean current systems Ability to calculate tidal conditions Use all appropriate navigational publications on tides and currents	Examination and assessment of evidence obtained from one or more of the following 1. approved in-service experience 2. approved laboratory equipment training	The likely weather predicted for a dete period are based or available informati Actions taken to m safety of navigatio any risk to safety o Reasons for intend are backed by statis and observations o weather conditions

Respond to navigational emergencies	Precautions when beaching a ship Action to be taken if grounding is imminent, and after grounding Refloating a grounded ship with and without assistance Action to be taken if collision is imminent and following a collision or impairment of the watertight integrity of the hull by any cause Assessment of damage control Emergency steering Emergency towing arrangements and towing procedures	Examination and assessment of evidence obtained from practical instruction, in-service experience and practical drills in emergency procedures	The type and scale problem is promptl and decisions and a minimize the effect malfunction of the systems Communications a and comply with es procedures Decisions and actic maximize safety of board

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for ev competer**

Manoeuvre and handle a ship in all conditions	Manoeuvring and handling a ship in all conditions, including: 1. manoeuvres when approaching pilot stations and embarking or disembarking pilots, with due regard to weather, tide, headreach and stopping distances 2. handling ship in rivers, estuaries and restricted waters, having regard to the effects of current, wind and restricted water on helm response 3. application of constant rate of turn techniques 4. manoeuvring in shallow water, including the reduction in under-keel clearance caused by squat, rolling and pitching 5. interaction between passing ships and between own ship and nearby banks (canal effect) 6. berthing and unberthing under various conditions of wind, tide and current with and without tugs 7. ship and tug interaction 8. use of propulsion and manoeuvring systems	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved simulator training, where appropriate 3. approved manned scale ship model, where appropriate	All decisions conce berthing and ancho based on a proper a of the ship's manoe engine characteristi forces to be expect berthed alongside c anchor While under way, a assessment is made effects of shallow a restricted waters, ic tidal conditions, pa and own ship's bov wave so that the sh safely manoeuvred various conditions and weather

Function: Navigation at the management level (continued)

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer

Manoeuvre and handle a ship in all conditions (continued)	9. choice of anchorage; anchoring with one or two anchors in limited anchorages and factors involved in determining the length of anchor cable to be used 10. dragging anchor, clearing fouled anchors 11. dry-docking, both with and without damage 12. management and handling of ships in heavy weather, including assisting a ship or aircraft in distress; towing operations; means of keeping an immanageable ship out of trough of the sea, lessening drift and use of oil 13. precautions in manoeuvring to launch rescue boats or survival craft in bad weather 14. methods of taking on board survivors from rescue boats and survival craft 15. ability to determine the manoeuvring and propulsion characteristics of common types of ships with special reference to stopping distances and turning circles at various draughts and speeds		

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for ev competer**

Manoeuvre and handle a ship in all conditions (continued)	16. importance of navigating at reduced speed to avoid damage caused by own ship's bow wave and stern wave 17. practical measures to be taken when navigating in or near ice or in conditions of ice accumulation on board 18. use of, and manoeuvring in and near, traffic separation schemes and in vessel traffic service (VTS) areas		
Operate remote controls of propulsion plant and engineering systems and services	Operating principles of marine power plants Ship's auxiliary machinery General knowledge of marine engineering terms	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved simulator training, where appropriate	Plant auxiliary mac equipment is opera accordance with te specifications and operating limits at

Function: Cargo handling and stowage at the management level

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer

Plan and ensure safe loading, stowage, securing, care during the voyage and unloading of cargoes	Knowledge of and ability to apply relevant international regulations, codes and standards concerning the safe handling, stowage, securing and transport of cargoes Knowledge of effect on trim and stability of cargoes and cargo operations Use of stability and trim diagrams and stress-calculating equipment, including automatic data-based (ADB) equipment, and knowledge of loading cargoes and ballasting in order to keep hull stress within acceptable limits Stowage and securing of cargoes on board ships, including cargo-handling gear and securing and lashing equipment Loading and unloading operations, with special regard to the transport of cargoes identified in the Code of Safe Practice for Cargo Stowage and Securing General knowledge of tankers and tanker operations	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved simulator training, where appropriate using: stability, trim and stress tables, diagrams and stress-calculating equipment.	The frequency and cargo condition mo appropriate to its na prevailing conditio Unacceptable or un variations in the co specification of the promptly recognize remedial action is i taken and designed safeguard the safety and those on board Cargo operations a and executed in acc with established pr and legislative requ Stowage and securi cargoes ensures tha and stress condition within safe limits a during the voyage

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer

Carriage of dangerous cargoes	International regulations, standards, codes and recommendations on the carriage of dangerous cargoes, including the International Maritime Dangerous Goods (IMDG) Code and the Code of Safe Practice for Solid Bulk Cargoes (BC Code) Carriage of dangerous, hazardous and harmful cargoes; precautions during loading and unloading and care during the voyage	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved simulator training where appropriate 3. approved specialist training	Planned distributio based on reliable ir and is in accordanc established guideli legislative requiren Information on dan hazards and special requirements is rec format suitable for reference in the eve incident

Function: Controlling the operation of the ship and care for person on board at the management level

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for ev competer**
Control trim, stability and stress	Understanding of fundamental principles of ship construction and the theories and factors affecting trim and stability and measures necessary to preserve trim and stability Knowledge of the effect on trim and stability of a ship in the event of damage to and consequent flooding of a compartment and countermeasures to be taken Knowledge of IMO recommendations concerning ship stability	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved simulator training, where appropriate	Stability and stress are maintained witl limits at all times

Monitor and control compliance with legislative requirements and measures to ensure safety of life at sea and the protection of the marine environment	Knowledge of international maritime law embodied in international agreements and conventions Regards shall be paid especially to the following subjects: 1. certificates and other documents required to be carried on board ships by international conventions, how they may be obtained and their period of validity 2. responsibilities under the relevant requirements of the International Convention on Load Lines	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved simulator training, where appropriate	Procedures for mor operations and mai comply with legisl requirements Potential non-comp promptly and fully Planned renewal ar of certificates ensu continued validity items and equipme

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for ev competer**

Monitor and control compliance with legislative requirements and measures to ensure safety of life at sea and the protection of the marine environment (continued)	3. responsibilities under the relevant requirements of the International Convention for the Safety of Life at Sea 4. responsibilities under the International Convention for the Prevention of Pollution from Ships 5. maritime declarations of health and the requirements of the International Health Regulations 6. responsibilities under international instruments affecting the safety of the ship, passengers, crew and cargo 7. methods and aids to prevent pollution of the marine environment by ships 8. national legislation for implementing international agreements and conventions		

Function: Controlling the operation of the ship and care for persons on board at the management level (continued)

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for ev competer**

Maintain safety and security of the ship's crew and passengers and the operational condition of life-saving, fire-fighting and other safety systems	A thorough knowledge of life-saving appliances regulations (International Convention for the Safety of Life at Sea) Organization of fire and abandon ship drills Maintenance of operational condition of life-saving, fire-fighting and other safety systems Actions to be taken to protect and safeguard all persons on board in emergencies Actions to limit damage and salve the ship following a fire, explosion, collision or grounding	Examination and assessment of evidence obtained from practical instruction and approved in-service training and experience	Procedures for mor fire-detection and s systems ensure that are detected promp acted upon in accor established emerge procedures
Develop emergency and damage control plans and handle emergency situations	Preparation of contingency plans for response to emergencies Ship construction, including damage control Methods and aids for fire prevention, detection and extinction Functions and use of life-saving appliances	Examination and assessment of evidence obtained from approved in-service training and experience	Emergency proced accordance with th established plans fo emergency situatio

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer
Organize and manage the crew	The knowledge of personnel management, organization and training on board ship A knowledge of related international maritime conventions and recommendations and national legislation	Examination and assessment of evidence obtained from approved in-service training and experience	The crew are alloca and informed of ex standards of work a behaviour in a man appropriate to the i concerned Training objectives activities are based assessment of curre competence and ca and operational req
Organize and manage the provision of medical care on board	A thorough knowledge of the use and contents of the following publications: 1. International Medical Guide for Ships or equivalent national publications 2. Medical section of the International Code of Signals 3. Medical First Aid Guide for Use in Accidents Involving Dangerous Goods	Examination and assessment of evidence obtained from approved training	Action taken and p followed correctly make full use of ad available

MANDATORY MINIMUM REQUIREMENTS FOR CERTIFICATION OF OFFICERS IN CHARGE OF A NAVIGATIONAL WATCH AND OF MASTERS ON SHIPS OF LESS THAN 500 GROSS TONNAGE, ENGAGED ON NEAR-COASTAL VOYAGES

OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

Standard of competence

34. Every candidate for certification shall:

.1 be required to demonstrate the competence to undertake, at operational level, the tasks, duties and responsibilities listed in column I of table A-11/3;

.2 at least hold an appropriate certificate for performing VHF radio-communications in accordance with the requirements of the Radio Regulations; and

.3 if designated to have primary responsibility for radiocommunications during distress incidents, hold an appropriate certificate issued or recognized under the provisions of the Radio Regulations.

35. The minimum knowledge, understanding and proficiency required for certification is listed in column 2 of table A-11/3.

36. The level of knowledge of the subjects listed in column 2 of table A-11/3 shall be sufficient to enable the candidate to serve in the capacity of officer in charge of a navigational watch.

37. Training and experience to achieve the necessary level of theoretical knowledge, understanding and proficiency shall be based on section A-VIII/2, part 3-1 - Principles to be observed in keeping a navigational watch, and shall also take into account the relevant requirements of the guidance given in this Schedule.

38. Every candidate for certification shall be required to provide evidence of having achieved the required standard of competence in accordance with the methods for demonstrating competence and the criteria for evaluating competence tabulated in columns 3 and 4 of table A-11/3.

Special training

39. Every candidate for certification as officer in charge of a navigational watch on ships of less than 500 gross tonnage, engaged on near-coastal voyages, who, in accordance with paragraph 4.2.1 of regulation 11/3, is required to have completed special training, shall follow an approved programme of on-board training which:

.1 ensures that during the required period of seagoing service the candidate receives systematic practical training and experience in the tasks, duties and responsibilities of an officer in charge of a navigational watch, taking into account the guidance given in this schedule.

.2 is closely supervised and monitored by qualified officers on board the ships in which the approved seagoing service is performed; and

.3 is adequately documented in a training record book or similar document.

MASTER

40. Every candidate for certification as master on ships of less than 500 gross tonnage, engaged on near-coastal voyages, shall meet the requirements for an officer in charge of a navigational watch set out below and, in addition, shall be required to provide evidence of knowledge and ability to carry out all the duties of such a master.

TABLE A-II/3

Specification of minimum standard of competence for officers in charge of a navigational watch and for masters on ships of less than 500 gross tonnage engaged on near-coastal voyages

Function: Navigation a the operational level

Column 1	Column 2	Column 3	Column
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for ev competer**

Plan and conduct a coastal passage and determine position	Navigation Ability to determine the ship's position by the use of: 1. landmarks 2. aids to navigation, including lighthouses, beacons and buoys 3. dead reckoning, taking into account winds, tides, currents and estimated speed	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved simulator training, where appropriate 4. approved laboratory equipment training using: chart catalogues, charts, navigational publications, radio navigational warnings, sextant, azimuth mirror, electronic navigation equipment, echo-sounding equipment, compass	Information obtain navigational charts publications is rele interpreted correctl properly applied The primary metho the ship's position appropriate to the p circumstances and The position is dete within the limits of instruments/system The reliability of th information obtain primary method of fixing is checked at appropriate interva Calculations and measurements of na information are acc
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for ev competer**

Plan and conduct a coastal passage and determine position (continued)	Thorough knowledge of and ability to use navigational charts and publications, such as sailing directions, tide tables, notices to mariners, radio navigational warnings and ships' routeing information		Charts and publicat selected are the larg on board suitable fo of navigation and c corrected in accord the latest informati
	Reporting in accordance with the Guidelines and Criteria for Ship Reporting Systems		
	Note: This item only required for certification as master		
	Navigational aids and equipment		
	Ability to operate safely and determine the ship's position by use of all navigational aids and equipment commonly fitted on board the ships concerned	Assessment of evidence obtained from approved radar navigation and ARPA simulator training	Performance check navigational systen with manufacturer' recommendations, navigational practic resolutions on perfo standards for navig equipment
			Interpretation and a information obtaine radar is in accordar accepted navigation and takes account o and accuracy levels
	Compass		
	Knowledge of the errors and corrections of magnetic compasses		Errors in magnetic are determined and correctly to courses bearings
	Ability to determine errors of the compass using terrestrial		

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer

Maintain a safe navigational watch	*Watchkeeping* Thorough knowledge of content application and intent of the International Regulations for Preventing Collisions at Sea Knowledge of content of the Principles to be observed in keeping a navigational watch Use of routeing in accordance with the General Provisions on Ship's Routeing	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved simulator training, where appropriate 4. approved laboratory equipment training	The conduct, hando relief of the watch with accepted princ procedures A proper look-out i maintained at all ti conformity with ac principles and proc Lights, shapes and signals conform wi requirements conta International Regul Preventing Collisio and are correctly re The frequency and monitoring of traffi and the environmer with accepted princ procedures Action to avoid clo encounters and coll other vessels is in a with the Internatior Regulations for Pre Collisions at Sea Decisions to adjust and/or speed are bo and in accordance accepted navigatio procedures A proper record is of movements and relating to the navi the ship

Respond to emergencies	Emergency procedures, including: 1. precautions for the protection and safety of passengers in emergency situations 2. initial assessment of damage and damage control 3. action to be taken following a collision 4. action to be taken following a grounding In addition, the following material should be included for certification as master: 1. emergency steering 2. arrangements for towing and for being taken in tow 3. rescuing persons from sea 4. assisting a vessel in distress 5. appreciation of the action to be taken when emergencies arise in port	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved simulator training, where appropriate 4. practical instruction	The type and scale emergency is prom identified Initial actions and, appropriate, manoe in accordance with contingency plans a appropriate to the u the situation and th the emergency
Respond to a distress signal at sea	Search and rescue Knowledge of the contents of the IMO Merchant Ship Search and Rescue Manual (MERSAR)	Examination and assessment of evidence obtained from practical instruction or approved simulator training, where appropriate	The distress or eme signal is immediate recognized Contingency plans instructions in stan are implemented ar with

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer

Manoeuvre the ship and operate small ship power plants	*Ship manoeuvring and handling* Knowledge of factors affecting safe manoeuvring and handling The operation of small ship power plants and auxiliaries Proper procedures for anchoring and mooring	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved simulator training, where appropriate	Safe operating limi propulsion, steering systems are not exc normal manoeuvres Adjustments made ship's course and s maintain safety of n Plant, auxiliary ma equipment is opera accordance with tec specifications and v operating limits at a

Function: Cargo handling and stowage at the operational level

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer
Monitor the loading, stowage, securing and unloading of cargoes and their care during the voyage	*Cargo handling, stowage and securing* Knowledge of safe handling, stowage and securing of cargoes including dangerous, hazardous and harmful cargoes and their effect on the safety of life and the ship Use of the International Maritime Dangerous Goods (IMDG) Code	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved simulator training, where appropriate	Cargo operations a out in accordance v cargo plan or other and established saf rules/regulations, e operating instructio shipboard stowage The handling of da hazardous and harn complies with inter regulations and rec standards and code practice

Function: Controlling the operation of the ship and care for persons on board at the operational level

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer

Ensure compliance with pollution-prevention requirements	*Prevention of pollution of the marine environment and anti-pollution procedures* Knowledge of the precautions to be taken to prevent pollution of the marine environment and anti-pollution procedures Anti-pollution procedures and all associated equipment	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience	Procedures for mor shipboard operatio ensuring complianc MARPOL requiren fully observed
Maintain sea-worthiness of the ship	*Ship stability* Working knowledge and application of stability, trim and stress, tables diagrams and stress-calculating equipment Understanding of fundamental actions to be taken in the event of partial loss of intact buoyancy Understanding of the fundamentals of watertight integrity *Ship construction* General knowledge of the principal structural members of a ship and the proper names for the various parts	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved simulator training, where appropriate 4. approved laboratory equipment training	Stability conditions with the IMO intac criteria under all co loading Actions to ensure a the watertight integ ship are in accorda accepted practice

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for ev competer**

Prevent, control and fight fires on board	*Fire prevention and fire-fighting appliances* Knowledge of fire prevention Ability to organize fire drills Knowledge of classes and chemistry of fire Knowledge of fire-fighting systems Understanding of action to be taken in the even of fire, including fires involving oil systems	Assessment of evidence obtained from approved fire-fighting training and experience as set out in section A-V1/3	The type and scale problem is promptl and initial actions c with the emergency and contingency pl ship Evacuation, emerge shutdown and isola procedures are appı the nature of the en and are implemente The order of priorit levels and time-sca making reports and personnel on board relevant to the natu emergency and refl urgency of the prob
Operate life-saving appliances	*Life-saving* Ability to organize abandon ship drills and knowledge of the operation of survival craft and rescue boats, their launching appliances and arrangements and their equipment, including radio life-saving appliances, satellite EPIRBs, SARTs, immersion suits and thermal protective aids Knowledge of survival at sea techniques	Assessment of evidence obtained from approved training and experience as set out in section A-V1/2, paragraphs 1 to 4	Actions in respondi abandon ship and s situations are appro the prevailing circu and conditions and with accepted safet and standards

Function: Controlling the operation of the ship and care for persons on board at the operational level (continued)

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer

Apply medical first aid on board ship	*Medical aid* Practical application of medical guides and advice by radio, including the ability to take effective action based on such knowledge in the case of accidents or illnesses that are likely to occur on board ship	Assessment of evidence obtained from approved training as set out in section A-V1/4, paragraph 1 to 3	The identification c cause, nature and e injuries or conditio and treatment mini immediate threat to
Monitor compliance with legislative requirements	Basic working knowledge of the relevant IMO conventions concerning safety of life at sea and protection of the marine environment	Assessment of evidence obtained from examination or approved training	Legislative require relating to safety of and protection of th environment are co identified

MANDATORY MINIMUM REQUIREMENTS FOR CERTIFICATION OF RATINGS FORMING PART OF A NAVIGATIONAL WATCH

Standard of competence

41. Every rating forming part of a navigational watch on a seagoing ship of 500 gross tonnage or more shall be required to demonstrate the competence to perform the navigation function at the support level, as specified in column I of table A-11/4.

42. The minimum knowledge, understanding and proficiency required of ratings forming part of a navigational watch on a seagoing ship of 500 gross tonnage or more is listed in column 2 of table A-11/4.

43. Every candidate for certification shall be required to provide evidence of having achieved the required standard of competence in accordance with the methods for demonstrating competence and the criteria for evaluating competence specified in columns 3 and 4 of table A-11/4. The reference to "practical test" in column 3 may include approved shore-based training in which the students undergo practical testing.

44. Where there are no tables of competence for the support level in respect to certain functions, it remains the responsibility of the Administration to determine the appropriate training, assessment and certification requirements to be applied to personnel designated to perform those functions at the support level.

TABLE A-II/4

Specification of minimum standard of competence for ratings forming part of a navigational watch

Function: Navigation at the support level

Column 1	Column 2	Column 3	Column

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer
Steer the ship and comply with helm orders also in the English language	Use of magnetic and gyro-compasses Helm orders Change-over from automatic pilot to hand steering and vice versa	Assessment of evidence obtained from: 1. practical test, or 2. approved in-service experience or approved training ship experience	A steady course is s within acceptable li regard to the area o and prevailing sea s Alterations of cours smooth and control Communications ar concise at all times are acknowledged i seamanlike manner
Keep a proper look-out by sight and hearing	Responsibilities of a look-out, including reporting the approximate bearing of a sound signal, light or other object in degrees or points	Assessment of evidence obtained from: 1. practical test, or 2. approved in-service experience or approved training ship experience	Sound signals, ligh objects are promptl and their appropria in degrees or points to the officer of the

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer

Contribute to monitoring and controlling a safe watch	Shipboard terms and definitions Use of appropriate internal communication and alarm systems Ability to understand orders and to communicate with the officer of the watch in matters relevant to watchkeeping duties Procedures for the relief, maintenance and handover of a watch Information required to maintain a safe watch Basic environmental protection procedures	Assessment of evidence obtained from approved in-service experience or approved training ship experience	Communications ar concise and advice/clarification from the officer on where watch inforn instructions are not understood Maintenance, hand relief of the watch i conformity with ac practices and proce
Operate emergency equipment and apply emergency procedures	Knowledge of emergency duties and alarm signals Knowledge of pyrotechnic distress signals, satellite EPIRBs and SARTs Avoidance of false distress alerts and action to be taken in event of accidental activation	Assessment of evidence obtained from demonstration and approved in-service experience or approved training ship experience	Initial action on be aware of an emerge abnormal situation conformity with est practices and proce Communications ar concise at all times are acknowledged i seamanlike manner The integrity of em and distress alertin maintained at all ti

Guidance regarding the training and certification of ratings forming part of a navigational watch

45. In addition to the requirements stated in table A-11/4 of this schedule, Parties are encouraged for safety reasons to include the following subjects in the training of ratings forming part of a navigational watch:

1. a basic knowledge of the International Regulations for Preventing Collisions at Sea:

2. rigging a pilot ladder;

3. an understanding of wheel orders given by pilots in English;

4. training for proficiency in survival craft and rescue boats;

5. support duties when berthing and unberthing and during towing operations;

6. a basic knowledge of anchoring;

7. a basic knowledge of dangerous cargoes;

8. a basic knowledge of stowage procedures and arrangements for bringing stores on board; and

9. a basic knowledge of deck maintenance and tools used on deck.

SCHEDULE 9

STANDARDS OF COMPETENCE REGARDING THE ENGINE DEPARTMENT

Standards regarding the engine department

MANDATORY MINIMUM REQUIREMENTS FOR CERTIFICATION OF OFFICERS IN CHARGE OF AN ENGINEERING WATCH IN A MANNED ENGINE-ROOM OR AS DESIGNATED DUTY ENGINEERS IN A PERIODICALLY UNMANNED ENGINE-ROOM

Training

1. The education and training required by this schedule shall include training in mechanical and electrical workshop skills relevant to the duties of an engineer officer.

On-board training

2. Every candidate for certification as officer in charge of an engineering watch in a manned engine-room or as designated duty engineer in a periodically unmanned engine-room of ships powered by main propulsion machinery of 750 kW or more shall follow an approved programme of on-board training which:

.1 ensures that during the required period of seagoing service the candidate receives systematic practical training and experience in the tasks, duties and responsibilities of an officer in charge of an engine-room watch, taking into account the guidance regarding engine department in this schedule

.2 is closely supervised and monitored by a qualified and certificated engineer officer aboard the ships in which the approved seagoing service is performed; and

.3 is adequately documented in a training record book.

Standard of competence

3. Every candidate for certification as officer in charge of an engineering watch in a manned engine-room or as designated duty engineer in a periodically unmanned engine-room on a seagoing ship powered

by main propulsion machinery of 750 kW propulsion power or more shall be required to demonstrate ability to undertake, at the operational level, the tasks, duties and responsibilities listed in column I of table A-111/1.

4. The minimum knowledge, understanding and proficiency required for certification is listed in column 2 of table A-111/1.

5. The level of knowledge of the material listed in column 2 of table A-111/1 shall be sufficient for engineer officers to carry out their watchkeeping duties.*

6. Training and experience to achieve the necessary theoretical knowledge, understanding and proficiency shall be based on this schedule. Principles to be observed in keeping an engineering watch, and shall take into account the relevant requirements of this part and the guidance given in this schedule.

7. Candidates for certification for service in ships in which steam boilers do not form part of their machinery may omit the relevant requirements of table A-111/1. A certificate awarded on such a basis shall not be valid for service on ships in which steam boilers form part of a ship's machinery until the engineer officer meets the standard of competence in the items omitted from table A-111/1. Any such limitation shall be stated on the certificate and in the endorsement.

8. Every candidate for certification shall be required to provide evidence of having achieved the required standard of competence in accordance with the methods for demonstrating competence and the criteria for evaluating competence tabulated in columns 3 and 4 of table A-111/1.

Near-coastal voyages

9. The requirements of paragraphs 2.2 and 2.3 of this schedule may be varied for engineer officers of ships powered by main propulsion machinery of less than 3,000 kW propulsion power engaged on near-coastal voyages, bearing in mind the effect on the safety of all ships which may be operating in the same waters. Any such limitation shall be stated on the certificate and in the endorsement.

Specification of minimum standard of competence for officers in charge of an engineering watch in a manned engine-room or designated duty engineers in a periodically unmanned engine-room

Function: Marine engineering at the operational level

Column 1	Column 2	Column 3	Column
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for ev competer**

Use appropriate tools for fabrication and repair operations typically performed on ships	Characteristics and limitations of materials used in construction and repair of ships and equipment Characteristics and limitations of processes used for fabrication and repair Properties and parameters considered in the fabrication and repair of systems and components Application of safe working practices in the workshop environment	Assessment of evidence obtained from one or more the following: 1. approved workshop skills training 2. approved practical experience and tests	Identification of im parameters for fabr typical ship related components is appr Selection of materi appropriate Use of equipment a tools is appropriate
Use hand tools and measuring equipment for dismantling, maintenance, repair and reassembly of shipboard plant and equipment	Design characteristics and selection of materials in construction of equipment Interpretation of machinery drawings and handbooks Operational characteristics of equipment and systems	Assessment of evidence obtained from one or more of the following: 1. approved workshop skills training 2. approved practical experience and tests	Safety procedures f appropriate Selection of tools a gear is appropriate Dismantling, inspe repairing and reass equipment is in acc with manuals and g practice Re-commissioning performance testing accordance with ma good practice

Function: Marine engineering at the operational level (continued)

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer

Use hand tools, electrical and electronic measuring and test (missing words) fault finding maintenance and repair operations	Safety requirements for working on shipboard electrical systems Construction and operational characteristics of shipboard AC and DC electrical systems and equipment Construction and operation of electrical test and measuring equipment	Assessment of evidence obtained from one or more of the following 1. approved workshop skills training 2. approved practical experience and tests	Implementation of procedures is satisf Selection and use o equipment is {miss and interpretation c accurate Selection of proced conduct of repair a maintenance is in a with manuals and g practice Commissioning an performance testing equipment and syst brought back into s repair is in accorda manuals and good
Maintenance of engineering watch	Thorough knowledge of principles to be observed in keeping an engineering watch, including: 1. duties associated with taking over and accepting a watch 2. routine duties undertaken during a watch 3. maintenance of the machinery space log book and the significance of the readings taken 4. duties associated with handing over a watch	Assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved simulator training, where appropriate 4. approved laboratory equipment training	The conduct, hando relief of the watch with accepted princ procedures The frequency and monitoring of engi equipment and syst conforms to manuf recommendations a principles and proc including Principle observed in keepin engineering watch A proper record is of the movements a activities relating t engineering system

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer
Maintain a safe engineering watch (continued)	Safety and emergency procedures change-over of remote/automatic to local control of all systems Safety precautions to be observed during a watch and immediate actions to be taken in the event of fire or accident, with particular reference to oil systems		
Use English in written and oral form	Adequate knowledge of the English language to enable the officer to use engineering publications and to perform engineering duties	Examination and assessment of evidence obtained from practical instruction	English language p relevant to enginee are correctly interp Communications a understood

Operate main and auxiliary machinery and associated control systems	Main and auxiliary machinery: 1. preparation of main machinery and preparation of auxiliary machinery for operation 2. operation of steam boilers, including combustion systems 3. methods of checking water level in steam boilers and action necessary if water level is abnormal 4. location of common faults in machinery and plant in engine and boiler rooms and action necessary to prevent damage	Examination and assessment of evidence obtained from one or more of the following 1. approved in-service experience 2. approved training ship experience 3. approved simulator training, where appropriate 4. approved laboratory equipment training	Operations are plan carried out in accor established rules an procedures to ensu operations and avoi of the marine envir Deviations from th promptly identified The output of plant engineering system consistently meets requirements, inclu orders relating to cl speed and direction The causes of mach malfunctions are pr identified and actio designed to ensure safety of the ship a having regard to th circumstances and

Function: Maintenance and repair at the operational level

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer

Maintain marine engineering systems, including control systems	*Marine systems* Appropriate basic mechanical knowledge and skills *Safety and emergency procedures* Safe isolation of electrical and other types of plant and equipment required before personnel are permitted to work on such plant or equipment Undertake maintenance and repair to plant and equipment	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved simulator training, where appropriate 4. approved laboratory equipment training	Isolation, dismantli reassembly of plant equipment is in acc with accepted pract procedures. Action to the restoration of the method most su appropriate to the p circumstances and

Function: Controlling the operation of the ship and care for persons on board at the operational level

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer
Ensure compliance with pollution-prevention requirements	*Prevention of pollution of the marine environment* Knowledge of the precautions to be taken to prevent pollution of the marine environment Anti-pollution procedures and all associated equipment	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience	Procedures for mor shipboard operatio ensuring complianc MARPOL requiren fully observed

Function: Controlling the operation of the ship and care for persons on board at the operational level (continued)

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer

Maintain seaworthiness of the ship	*Ship stability* Working knowledge and application of stability, trim and stress tables, diagrams and stress-calculating equipment Understanding of the fundamentals of watertight integrity Understanding of fundamental actions to be taken in the event of partial loss of intact buoyancy *Ship construction* General knowledge of the principal structural members of a ship and the proper names for the various parts	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved simulator training, where appropriate 4. approved laboratory equipment training	The stability condit comply with the IM stability criteria un conditions of loadi Actions to ensure a the watertight integ ship are in accorda accepted practice

Prevent, control and fight fires on board	*Fire prevention and fire-fighting* appliances Knowledge of fire prevention Ability to organize fire drills Knowledge of classes and chemistry of fire Knowledge of fire-fighting systems Actions to be taken in the even of fire, including fires involving oil systems	Assessment of evidence obtained from approved fire-fighting training and experience as set out in section A V1/3	The type and scale problem is promptl and initial actions c with the emergency and contingency pl ship Evacuation, emerge shutdown and isola procedures are appı the nature of the en and are implemente The order of priorit levels and time-sca making reports and personnel on board relevant to the natu emergency and refl urgency of the prob

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for ev competer**
Operate life-saving appliance	*Life-saving* Ability to organize abandon ship drills and knowledge of the operation of survival craft and rescue boats, their launching appliances and arrangements, and their equipment, including radio life-saving appliances, satellite EPIRBs, SARTs, immersion suits and thermal protective aids Knowledge of survival at sea techniques	Assessment of evidence obtained from approved training and experience as set out in section A-V1/2, paragraphs 1 to 4	Actions in respondi abandon ship and s situations are appro the prevailing circu and conditions and with accepted safet and standards

Apply medical first aid on board ship	*Medical aid* Practical application of medical guides and advice by radio, including the ability to take effective action based on such knowledge in the case of accidents or illness that are likely to occur on board ship	Assessment of evidence obtained from approved training as set out in section A-VI/4, paragraphs 1 to 3	Identification of pr cause, nature and e injuries or conditio and treatment mini immediate threat to
Monitor compliance with legislative requirements	Basic working knowledge of the relevant IMO conventions concerning safety of life at sea and protection of the marine environment	Assessment of evidence obtained from examination or approved training	Legislative require relating to safety of and protection of th environment are co identified

Guidance regarding the certification of officers in charge of an engineering watch in a manned engine-room or as designated duty engineers in a periodically unmanned engine-room

10. In table A-111/1, column 1, top block, the tools referred to should include hand tools, common measuring equipment, centre lathes, drilling machines, welding equipment and milling machines as appropriate.

11. Training in workshop skills ashore can be carried out in a training institution or approved workshop.

On-board training should be adequately documented in the training record book by qualified assessors.

MANDATORY MINIMUM REQUIREMENTS FOR CERTIFICATION OF CHIEF ENGINEER OFFICERS AND SECOND ENGINEER OFFICERS ON SHIPS POWERED BY MAIN PROPULSION MACHINERY OF 3,000 kW PROPULSION POWER OR MORE

Standard of competence

1. Every candidate for certification as chief engineer officer and second engineer officer of seagoing ships powered by main propulsion machinery of 3,000 kW power or more shall be required to demonstrate ability to undertake, at the management level, the tasks, duties and responsibilities listed in column 1 of table A-111/2.

2. The minimum knowledge, understanding and proficiency required for certification is listed in column 2 of table A-111/2. This incorporates, expands and extends in depth the subjects listed in column 2 of table A-111/1 for officers in charge of an engineering watch.

3. Bearing in mind that a second engineer officer shall be in a position to assume the responsibilities of the chief engineer officer at any time, assessment in these subjects shall be designed to test the candidate's ability to assimilate all available information that affects the safe operation of the ship's machinery and the protection of the marine environment.

4. The level of knowledge of the subjects listed in column 2 of table A-111/2 shall be sufficient to enable the candidate to serve in the capacity of chief engineer officer or second engineer officer.*

5. Training and experience to achieve the necessary level of theoretical knowledge, understanding and proficiency shall take into account the relevant requirements of this part and the guidance given in this schedule.

6. The Administration may omit knowledge requirements for types of propulsion machinery other than those machinery installations for which the certificate to be awarded shall be valid. A certificate awarded on such a basis shall not be valid for any category of machinery installation which has been omitted until the engineer officer proves to be competent in these knowledge requirements. Any such limitation shall be stated on the certificate and in the endorsement.

7. Every candidate for certification shall be required to provide evidence of having achieved the required standard of competence in accordance with the methods for demonstrating competence and the criteria for evaluating competence tabulated in columns 3 and 4 of table A-111/2.

Near-coastal voyages

8. The level of knowledge, understanding and proficiency required under the different sections listed in column 2 of table A-111/2 may be varied for officers of ships with limited propulsion power engaged on near-coastal voyages, as considered necessary, bearing in mind the effect on the safety of all ships which may be operating in the same waters. Any such limitation shall be stated on the certificate and in the endorsement.

TABLE A-III/2

Specification of minimum standard of competence for chief engineer officers and second engineer officers on ships powered by main propulsion machinery of 3,000 kW propulsion power or more

Function: Marine engineering at the management level

Column 1	Column 2	Column 3	Column
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for ev competer**

Plan and schedule operations	*Theoretical knowledge* Thermodynamics and heat transmission Mechanics and hydromechanics Operating principles of ship power installations (diesel, steam and gas turbine) and refrigeration Physical and chemical properties of fuels and lubricants Technology of materials Naval architecture and ship construction, including damage control	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience; 2. approved training ship experience; or 3. approved simulator training, where appropriate	The planning and p of operations is sui design parameters installation and to t requirements of the

Start up and shut down main propulsion and auxiliary machinery, including associated systems		Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience; 2. approved training ship experience; or 3. approved simulator training, where appropriate	The methods of pre start-up and of mak available fuels, lubi cooling water and a most appropriate Checks of pressure temperatures and re during the start-up warm-up period are accordance with tec specifications and a plans Surveillance of mai propulsion plant an systems is sufficien maintain safe opera conditions The methods of pre shutdown and of su the cooling down o are the most approp

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer

Operate, monitor and evaluate engine performance and capacity	Practical knowledge Operation and maintenance of: 1. marine diesel engines 2. marine steam propulsion plant 3. marine gas turbines Operation and maintenance of auxiliary machinery, including pumping and piping systems, auxiliary boiler plant and steering-gear systems Operation, testing and maintenance of control systems Operation and maintenance of cargo-handling equipment and deck machinery	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved simulator training, where appropriate	The methods of me load capacity of the are in accordance v technical specificat Performance is che against bridge orde Performance levels accordance with tec specifications
Maintain safety of engine equipment, systems and services		Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience	Arrangements for e safe and efficient o and condition of th installation are suit modes of operation

Manage fuel and ballast operations	Operation and maintenance of machinery, including pumps and piping systems	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved simulator training, where appropriate	Fuel and ballast op meet operational re and are carried out prevent pollution o environment

Function: Marine engineering at the management level (continued)

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer
Use internal communication systems	Operation of all internal communication systems on board	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved simulator training, where appropriate 4. approved laboratory equipment training	Transmission and r messages are consi successful Communication rec complete, accurate with statutory requi

Function: Electrical, electronic and control engineering at the management level

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer

Operate electrical and electronic control equipment	*Theoretical knowledge* Marine electrotechnology, electronics and electrical equipment Fundamentals of automation, instrumentation and control systems *Practical knowledge* Operation, testing and maintenance of electrical and electronic control equipment, including fault diagnostics	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved simulator training, where appropriate 4. approved laboratory equipment training	Operation of equip system is in accord operating manuals Performance levels accordance with te specifications
Test, detect faults and maintain and restore electrical and electronic control equipment to operating condition		Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved simulator training, where appropriate 4. approved laboratory equipment training	Maintenance activi correctly planned i accordance with te legislative, safety a procedural specific The effects of malf associated plant an accurately identifie technical drawings correctly interprete measuring and calil instruments are cor and actions taken a

Function: Maintenance and repair at the management level

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for ev competer**

Organize safe maintenance and repair procedures	*Theoretical knowledge* Marine engineering practice *Practical knowledge* Organizing and carrying out safe maintenance and repair procedures	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved workshop training	Maintenance activi correctly planned a out in accordance v technical, legislativ and procedural spe Appropriate plans, specifications, mat equipment are avai maintenance and re Action taken leads restoration of plant suitable method
Detect and identify the cause of machinery malfunctions and correct faults	*Practical knowledge* Detention of machinery malfunction, location of faults and action to prevent damage	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved simulator training, where appropriate	The methods of co actual operating co in accordance with recommended prac procedures Actions and decisic accordance with re operating specifica limitations
Ensure safe working practices	*Practical knowledge* Safe working practices	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience	Working practices accordance with le requirements, code practice, permits to environmental con

Function: Controlling the operation of the ship and care for persons on board at the management level

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for ev competer**

Control trim, stability and stress	Understanding of fundamental principles of ship construction and the theories and factors affecting trim and stability and measures necessary to preserve trim and stability Knowledge of the effect on trim and stability of a ship in the event of damage to and consequent flooding of a compartment and countermeasures to be taken Knowledge of IMO recommendations concerning ship stability	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved simulator training, where appropriate	Stability and stress are maintained with limits at all times

Monitor and control compliance with legislative requirements and measures to ensure safety of life at sea and protection of the marine environment	Knowledge of relevant international maritime law embodied in international agreements and conventions Regard shall be paid especially to the following subjects: 1. certificates and other documents required to be carried on board ships by international conventions, how they may be obtained and the period of their legal validity 2. responsibilities under the relevant requirements of the International Convention on Load Lines 3. responsibilities under the relevant requirements of the International Convention for the Safety of Life at Sea 4. responsibilities under the International Convention for the Prevention of Pollution from Ships 5. maritime declaration of health and the requirements of the International Health Regulations 6. responsibilities under international instruments affecting the safety of the ships, passengers, crew or cargo 7. methods and aids to prevent pollution of the	Examination and assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience 3. approved simulator training, where appropriate	Procedures for mor operations and mai comply with legisla requirements Potential non-comp promptly and fully Requirements for r extension of certifi continued validity items and equipme

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for ev competer
Maintain safety and security of the vessel, crew and passengers and the operational condition of life-saving fire-fighting and other safety systems	A thorough knowledge of life-saving appliance regulations (International Convention for the Safety of Life at Sea) Organization of fire and abandon ship drills Maintenance of operational condition of life-saving, fire-fighting and other safety systems Actions to be taken to protect and safeguard all persons on board in emergencies Actions to limit damage and save the ship following fire, explosion, collision or grounding	Examination and assessment of evidence obtained from practical instruction and approved in-service training and experience	Procedures for mor fire-detention and s systems ensured in are detected promp acted upon in accor established emerge procedures
Develop emergency and damage control plans and handle emergency situations	Ship construction, including damage control Methods and aids for fire prevention detection and extinction Functions and use of life-saving appliances	Examination and assessment of evidence obtained from approved in-service training and experience	Emergency proced accordance with th established plans fo emergency situatio

Organize and manage the crew	A knowledge of personnel management, organization and training on board ships A knowledge of international maritime conventions and recommendations and related national legislation	Examination and assessment of evidence obtained from approved in-service training and experience	The crew are alloca and informed of ex standards of work a behaviour in a man appropriate to the i concerned Training objectives activities are based assessment of curre competence and ca and operational req

MANDATORY MINIMUM REQUIREMENTS FOR CERTIFICATION OF CHIEF ENGINEER OFFICERS AND SECOND ENGINEER OFFICERS ON SHIPS POWERED BY MAIN PROPULSION MACHINERY OF BETWEEN 750 KW AND 3000 KW PROPULSION POWER

Standard of competence

1. Every candidate for certification as chief engineer officer and second engineer officer of seagoing ships powered by main propulsion machinery of between 750 kW and 3,000 kW power shall be required to demonstrate ability to undertake, at management level, the tasks, duties and responsibilities listed in column I of table A-111/2.

2. The minimum knowledge, understanding and proficiency required for certification is listed in column 2 of table A-111/2. This incorporates, expands and extends in depth the subjects listed in column 2 of table A-111/1 for officers in charge of an engineering watch in a manned engine-room or designated duty engineers in a periodically unmanned engine-room.

3. Bearing in mind that a second engineer officer shall be in a position to assume the responsibilities of the chief engineer officer at any time, assessment in these subjects shall be designed to test the candidate's ability to assimilate all available information that affects the safe operation of the ship's machinery and the protection of the marine environment.

4. The level of knowledge of the subjects listed in column 2 of table A-111/2 may be lowered but shall be sufficient to enable the candidate to serve in the capacity of chief engineer officer or second engineer officer at the range of propulsion power specified in this section.

5. Training and experience to achieve the necessary level of theoretical knowledge, understanding and proficiency shall take into account the relevant requirements of this part and the guidance given in this schedule.

6. The Administration may omit knowledge requirements for types of propulsion machinery other than those machinery installations for which the certificate to be awarded shall be valid. A certificate awarded on such a basis shall not be valid for any category of machinery installation which has been omitted until the engineer officer proves to be competent in these items. Any such limitation shall be stated on the certificate and in the endorsement.

7. Every candidate for certification shall be required to provide evidence of having achieved the required standard of competence in accordance with the methods for demonstrating competence and the criteria for evaluating competence tabulated in columns 3 and 4 of table A-111/2.

Near-coastal voyages

8. The level of knowledge, understanding and proficiency required under the different sections listed in column 2 of table A-111/2 may be varied for officers of ship engaged on near-coastal voyages, as considered necessary, bearing in mind the effect on the safety of all ships which may be operating in the same waters. Any such limitation shall be stated on the certificate and in the endorsement.

MANDATORY MINIMUM REQUIREMENTS FOR CERTIFICATION OF RATING FORMING PART OF A WATCH IN A MANNED ENGINE-ROOM OR DESIGNATED TO PERFORM DUTIES IN A PERIODICALLY UNMANNED ENGINE-ROOM

Standard of competence

1. Every rating forming part of an engine-room watch on a seagoing ship shall be required to demonstrate the competence to perform the marine engineering function at the support level, as specified in column I of table A-111/4.

2. The minimum knowledge, understanding and proficiency required of rating forming part of an engine-room watch is listed in column 2 of table A-111/4.

3. Every candidate for Certification shall be required to provide evidence of having achieved the required standard of competence in accordance with the methods for demonstrating competence and the criteria for evaluating competence specified in columns 3 and 4 of table A-111/4. The reference to "practical test" in column 3) include approved shore-based training in which the students undergo practical testing.

4. Where there are no tables of competence for the support level in respect to certain functions, it remains the responsibility of the Administration to determine the appropriate training, assessment and certification requirements to be applied to personnel designated to perform those functions at the support level.

TABLE A-III/4

Specification of minimum standard of competence for ratings forming part of an engineering watch

Function: Marine engineering at the support level

Column 1	Column 2	Column 3	Column
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for ev competer**

Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch Understand orders and be understood in matters relevant to watchkeeping duties	Terms used in machinery spaces and names of machinery and equipment Engine-room watchkeeping procedures Safe working practices as related to engine-room operations Basic environmental protection procedures Use of appropriate internal communication system Engine-room alarm systems and ability to distinguish between the various alarms, with special reference to fire-extinguishing gas alarms	Assessment of evidence obtained from one or more of the following: 1. approved in-service experience; 2. approved training ship experience; or 3. practical test	Communications ar concise and advice clarification is soug officer of the watch watch information instructions are not understood Maintenance, hand relief of the watch i conformity with ac principles and proc
For keeping a boiler watch Maintain the correct water levels and steam pressures	Safe operation of boilers	Assessment of evidence obtained from one or more of the following: 1. approved in-service experience 2. approved training ship experience; or 3. practical test	Assessment of boil is accurate and base relevant informatio from local and rem indicators and phys inspections The sequence and t adjustments mainta and optimum effici

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for ev competer**

Operate emergency equipment and apply emergency procedures	Knowledge of emergency duties Escape routes from machinery spaces Familiarity with the location and use of fire-fighting equipment in the machinery spaces	Assessment of evidence obtained from demonstration and approved in-service experience or approved training ship experience	Initial action on be aware of an emerge abnormal situation with established pr Communications a concise at all times are acknowledged i seamanlike manner

GUIDANCE REGARDING THE TRAINING AND CERTIFICATION OF RATINGS FORMING PART OF A WATCH IN A MANNED ENGINE-ROOM OR DESIGNATED TO PERFORM DUTIES IN A PERIODICALLY UNMANNED ENGINE-ROOM

33. In addition to the requirements stated in table A-111/4 of this schedule, Parties are encouraged for safety reasons to include the following items in the training of ratings forming part of an engineering watch:

.1 a basic knowledge of routine pumping operations, such as bilge, ballast and cargo pumping systems;

.2 a basic knowledge of electrical installations and the associated dangers;

.3 a basic knowledge of maintenance and repair of machinery and tools used in the engine-room; and

.4 a basic knowledge of stowage and arrangements for bringing stores on board.

SCHEDULE 10

STANDARDS OF COMPETENCY REGARDING RADIOCOMMUNICATION AND RADIO PERSONNEL MANDATORY MINIMUM REQUIREMENTS FOR CERTIFICATION OF GMDSS RADIO PERSONNEL

Standard of competence

1. The minimum knowledge, understanding and proficiency required for certification of GMDSS radio personnel shall be sufficient for radio personnel to carry out their radio duties. The knowledge required for obtaining each type of certificate defined in the Radio Regulations shall be in accordance with those regulations. In addition, every candidate for certification shall be required to demonstrate ability to undertake the tasks, duties and responsibilities listed in column 1 of table A-IV/2.

2. The knowledge, understanding and proficiency for endorsement under the Convention of certificates issued under the provisions of the Radio Regulations are listed in column 2 of table A-IV/2.

3. The level of knowledge of the subjects listed in column 2 of table A-IV/2 shall be sufficient for the candidate to carry out his duties.

4. Every candidate shall provide evidence of having achieved the required standard of competence

through:

.1 demonstration of competence to perform the tasks and duties and to assume responsibilities listed in column I of table A-IV/2, in accordance with the methods for demonstrating competence and the criteria for evaluating competence tabulated in columns 3 and 4 of that table; and

.2 examination or continuous assessment as part of an approved course training based on the material set out in column 2 of table A-IV/2.

Table A-IV/2

Specification of minimum standard of competence for GMDSS radio operators

Function: Radiocommunications at the operational level

Column 1	Column 2	Column 3	Column
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for ev competer**

Transmit and receive information using GMDSS subsystems and equipment and fulfilling the functional requirements of GMDSS	In addition to the requirements of the Radio Regulations, a knowledge of: 1. search and rescue radiocommunications, including procedures in the IMO Merchant Ship Search and Rescue Manual (MERSAR) 2. the means to prevent the transmission of false distress alerts and the procedures to mitigate the effects of such alerts 3. ship reporting system 4. radio medical services 5. use of the International Code of Signals and the Standard Marine Navigational Vocabulary as replaced by the Standard Marine Communication Phrases 6. the English language, both written and spoken, for the communication of information relevant to safety of life at sea Note: This requirement may be reduced in the case of the Restricted Radio Operator's Certificate	Examination and assessment of evidence obtained from practical demonstration of operational procedures using: 1. approved equipment 2. GMDSS communication simulator, where appropriate* 3. radiocommunication laboratory equipment	Transmission and r communications co international regula procedures and are efficiently and effe English language n relevant to the safe ship and persons or protection of the m environment are co handled

Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for ev competer**

Provide radio services in emergencies	The provision of radio services in emergencies such as: 1. abandon ship 2. fire on board ship 3. partial or full breakdown of radio installations preventive measures for the safety of ship and personnel in connection with hazards related to radio equipment, including electrical and non-ionizing radiation hazards	Examination and assessment of evidence obtained from practical demonstration of operational procedures using: 1. approved equipment 2. GMDSS communication simulator, where appropriate* 3. radiocommunication laboratory equipment	Response is carried efficiently and effe

GUIDANCE REGARDING TRAINING AND CERTIFICATION OF GMDSS RADIO PERSONNEL TRAINING RELATED TO THE FIRST-CLASS RADIOELECTRONIC CERTIFICATE

General

1. The requirements of medical fitness, especially as to hearing, eyesight and speech, should be met by the candidate before training is commenced.

2. The training should be relevant to the provisions of the STCW Convention, the provisions of the Radio Regulations annexed to the International Telecommunication Convention (Radio Regulations) and the provisions of the International Convention for the Safety of Life at Sea (SOLAS Convention) currently in force, with particular attention given to provisions for the global maritime distress and safety system (GMDSS). In developing training requirements, account should be taken of at least the knowledge and training given in paragraphs 3 to 14 hereunder.

Theory

3. Knowledge of the general principles and basic factors necessary for safe and efficient use of all sub-systems and equipment required in the GMDSS, sufficient to support the practical training provisions given in paragraph 13.

4. Knowledge of the use, operation and service areas of GMDSS sub-systems, including satellite system characteristics, navigational and meteorological warning systems and selection of appropriate communication circuits.

5. Knowledge of the principles of electricity and the theory of radio and electronics sufficient to meet the provisions given in paragraphs 6 to 10 below.

6. Theoretical knowledge of GMDSS radiocommunication equipment, including narrow-band

direct-printing telegraphy and radiotelephone transmitters and receivers, digital selective calling equipment, ship earth stations, emergency position-indicating radio beacons (EPIRBs), marine antenna systems, radio equipment for survival craft together with all auxiliary items, including power supplies, as well as general knowledge of the principles of other equipment generally used for radio navigation, with particular reference to maintaining the equipment in service.

7. Knowledge of factor's that affect system reliability, availability, maintenance procedures and proper use of test equipment.

8. Knowledge of microprocessors and fault diagnosis in systems using micro-processors.

9. Knowledge of control systems in the GMDSS radio equipment, including testing and analysis.

10. Knowledge of the use of computer software for the GMDSS radio equipment and methods for correcting faults caused by loss of software control of the equipment.

Regulations and documentation

11. Knowledge of:

.1 the SOLAS Convention and the Radio Regulations, with particular emphasis on:

.1.1 distress, urgency and safety radiocommunications,

.1.2 avoiding harmful interference, particularly with distress and safety traffic, and

.1.3 prevention of unauthorized transmissions;

.2 other documents relating to operational and communication procedures for distress, safety and public correspondence services, including charges, navigational warnings, and weather broadcasts in the Maritime Mobile Service and the Maritime Mobile Satellite Service; and

.3 use of the International Code of Signals and the Standard Marine Navigational Vocabulary as replaced by the IMO Standard Marine Communication Phrases.

Watchkeeping and procedures

12. Knowledge of and training in:

.1 communication procedures and discipline to prevent harmful interference in GMDSS subsystems;

.2 procedures for using propagation-prediction information to establish optimum frequencies for communications;

.3 radiocommunication watchkeeping relevant to all GMDSS subsystems, exchange of radiocommunication traffic, particularly concerning distress, urgency and safety procedures on radio records;

.4 use of the international phonetic alphabet;

.5 monitoring a distress frequency while simultaneously monitoring or working on at least one other frequency-,

.6 ship reporting systems and procedures;

.7 radiocommunication procedures of the IMO Merchant Ship Search and Rescue Manual (MERSAR);

.8 radio medical systems and procedures; and

.9 causes of false distress alerts and means to avoid them.*

Practical

13. Practical training, supported by appropriate laboratory work, should be given in:

.1 correct and efficient operation of all GMDSS sub-systems and equipment under normal propagation conditions and under typical interference conditions;

.2 safe operation of all the GMDSS communication equipment and ancillary devices, including safety precautions;

.3 adequate and accurate keyboard skills for the satisfactory exchange of communications;

.4 operational techniques for:

.4.1 receiver and transmitter adjustment for the appropriate mode of operation, including digital selective calling and direct-printing telegraphy,

.4.2 antenna adjustment and re-alignment, as appropriate,

.4.3 use of radio life-saving appliances, and

.4.4 use of emergency position-indicating radio beacons (EPIRBs);

.5 antenna rigging, repair and maintenance, as appropriate;

.6 reading and understanding pictorial, logic and circuit diagrams;

.7 use and care of those tools and test instruments necessary to carry out at-sea electronic maintenance;

.8 manual soldering and desoldering techniques, including those involving semiconductor devices and modern circuits, and the ability to distinguish whether the circuit is suitable to be manually soldered or desoldered;

.9 tracing and repair of faults to component level where practicable, and to board/module level in other cases;

.10 recognition and correction of conditions contributing to the fault occurring;

.11 maintenance procedures, both preventive and corrective, for all GMDSS communication equipment and radio navigation equipment; and

.12 methods of alleviating electrical and electromagnetic interference such as bonding, shielding and bypassing.

Miscellaneous

14. Knowledge of and/or training in:

.1 the English language, both written and spoken., for the satisfactory exchange of communications relevant to the safety of life at sea;

.2 world geography, especially the principal shipping routes, services of rescue co-ordination centres (RCCS) and related communication routes;

.3 survival at sea, the operation of lifeboats, rescue boats, liferafts, buoyant apparatus and their equipment, with special reference to radio life-saving appliances;

.4 fire prevention and fire fighting, with particular reference to the radio installation;

.5 preventive measures for the safety of ship and personnel in connection with hazards related to radio equipment, including electrical, radiation, chemical and mechanical hazards;

.6 first aid, including heart-respiration revival techniques; and

.7 coordinated universal time (UTC), global time zones and the international date line.

TRAINING RELATED TO THE SECOND-CLASS RADIOELECTRONIC CERTIFICATE

General

15. The requirements of medical fitness, especially as to hearing, eyesight and speech, should be met by the candidate before training is commenced.

16. The training should be relevant to the provisions of the STCW Convention, and the SOLAS Convention currently in force, with particular attention given to provisions for the global maritime distress and safety system (GMDSS). In developing training requirements, account should be taken of at least the knowledge and training given in paragraphs 17 to 28 hereunder.

Theory

17. Knowledge of the general principles and basic factors necessary for safe and efficient use of all sub-systems and equipment required in the GMDSS, sufficient to support the practical training provisions given in paragraph 27 below.

18. Knowledge of the use, operation and service areas of GMDSS sub-systems, including satellite system characteristics, navigational and meteorological warning systems and selection of appropriate communication circuits.

19. Knowledge of the principles of electricity and the theory of radio and electronics sufficient to meet the provisions given in paragraphs 20 to 24 below.

20. General theoretical knowledge of GMDSS radiocommunication equipment, including narrow-band direct-printing telegraph and radiotelephone transmitters and receivers, digital selective calling equipment, ship earth stations, emergency position-indicating radio beacons (EPIRBs), marine antenna systems, radio equipment for survival craft together with all auxiliary items, including power supplies, as well as general knowledge of other equipment generally used for radionavigation, with particular reference to maintaining the equipment in service.

21. General knowledge of factors that affect system reliability, availability, maintenance procedures and proper use of test equipment.

22. General knowledge of microprocessors and fault diagnosis in systems using microprocessors.

23. General knowledge of control systems in the GMDSS radio equipment, including testing and analysis.

24. Knowledge of the use of computer software for the GMDSS radio equipment and methods for correcting faults caused by loss of software control of the equipment.

Regulations and documentation

25. Knowledge of—

.1 the SOLAS Convention and the Radio Regulations, with particular emphasis on:

.1.1 distress, urgency and safety radiocommunications,

.1.2 avoiding harmful interference, particularly with distress and safety traffic, and

.1.3 the prevention of unauthorized transmissions;

.2 other documents relating to operational and communication procedures for distress, safety and public correspondence services, including charges, navigational warnings, and weather broadcasts in the Maritime Mobile Service and the Maritime Mobile Satellite Service; and

.3 the use of the International Code of Signals and the Standard Marine Navigational Vocabulary as replaced by the IMO Standard Marine Communication Phrases.

Watchkeeping and procedures

26. Training should be given in:

.1 communication procedures and discipline to prevent harmful interference in GMDSS sub-systems;

.2 procedures for using propagation-prediction information to establish optimum frequencies for communications;

.3 radiocommunication watchkeeping relevant to all GMDSS sub-systems, exchange of radiocommunication traffic, particularly concerning distress, urgency and safety procedures and radio records;

.4 use of the international phonetic alphabet;

.5 monitoring a distress frequency while simultaneously monitoring or working on at least one other frequency;

.6 ship reporting systems and procedures;

.7 radiocommunication procedures of the IMO Merchant Ship Search (and Rescue Manual (MERSAR);

.8 radio medical systems and procedures; and

.9 causes of false distress alerts and means to avoid them.

Practical

27. Practical training, supported by appropriate laboratory work, should be given in:

.1 correct and efficient operation of all GMDSS sub-systems and equipment under normal propagation conditions and under typical interference conditions;

.2 safe operation of all the GMDSS communication equipment and ancillary devices, including safety precautions;

.3 adequate and accurate keyboard skills for the satisfactory exchange of communications;

.4 operational techniques for:

.4.1 receiver and transmitter adjustment for the appropriate mode of operation, including digital selective calling and direct-printing telegraphy,

.4.2 antenna adjustment and re-alignment, as appropriate,

.4.3 use of radio life-saving appliances, and

.4.4 use of emergency position-indicating radio beacons (EPIRBs);

.5 antenna rigging, repair and maintenance, as appropriate;

.6 reading and understanding pictorial, logic and module interconnection diagrams;

.7 use and care of those tools and test instruments necessary to carry out at sea; electronic maintenance at the level of unit or module replacement;

.8 basic manual soldering and desoldering techniques and their limitations;

.9 tracing and repair of faults to board/module level;

.10 recognition and correction of conditions contributing to the fault occurring;

.11 basic maintenance procedures, both preventive and corrective, for all the GMDSS communication equipment and radionavigation equipment; and

.12 methods of alleviating electrical and electromagnetic interference such as bonding, shielding and bypassing.

Miscellaneous

28. Knowledge of, and/or training in:

1. the English language, both written and spoken, for the satisfactory exchange of communications relevant to the safety of life at sea;

2. world geography, especially the principal shipping routes, services of rescue co-ordination centres (RCCS) and related communication routes;

3. survival at sea, the operation of lifeboats, rescue boats, liferafts, buoyant apparatus and their equipment, with special reference to radio life-saving appliances;

4. fire prevention and fire fighting, with particular reference to the radio installation;

5. preventive measures for the safety of ship and personnel in connection with hazards related to radio equipment, including electrical, radiation, chemical and mechanical hazards,

6. first aid, including heart-respiration revival techniques; and

7. coordinated universal time (UTC), global time zones and international date line.

TRAINING RELATED TO THE GENERAL OPERATOR'S CERTIFICATE

General

29. The requirements of medical fitness, especially as to hearing, eyesight and speech, should be met by the candidate before training is commenced.

30. The training should be relevant to the provisions of the STCW Convention, the Radio Regulations and the SOLAS Convention currently in force, with particular attention given to provisions for the global maritime distress and safety system (GMDSS). In developing training requirements, account should be taken of at least the knowledge and training given in paragraphs 31 to 36 hereunder.

Theory

31. Knowledge of the general principles and basic factors necessary for safe and efficient use of all sub-systems and equipment required in the GMDSS sufficient to support the practical training provisions given in paragraph 35 below.

32. Knowledge of the use, operation and service areas of GMDSS sub-systems, including satellite system characteristics, navigational and meteorological warning systems and selection of appropriate communication circuits

Regulations and documentation

33. Knowledge of:

.1 the SOLAS Convention and the Radio Regulations, with particular emphasis on:

.1.1 distress, urgency and safety radiocommunications,

.1.2 avoiding harmful interference, particularly with distress and safety traffic, and

.1.3 prevention of unauthorized transmissions;

.2 other documents relating to operational and communication procedures for distress, safety and public correspondence services, including charges, navigational warnings, and weather broadcasts in the Maritime Mobile Service and the Maritime Mobile Satellite Service; and

.3 use of the International Code of Signals and the Standard Marine Navigational Vocabulary as replaced by the IMO Standard Marine Communication Phrases.

Watchkeeping and procedures

34. Training should be given in:

.1 communication procedures and discipline to prevent handful interference in GMDSS sub-systems;

.2 procedures for using propagation-prediction information to establish optimum frequencies for communications;

.3 radiocommunication watchkeeping relevant to all GMDSS sub-systems, exchange of radiocommunication traffic, particularly concerning distress, urgency and safety procedures and radio records;

.4 use of the international phonetic alphabet;

.5 monitoring a distress frequency while simultaneously monitoring or working on at least one other frequency;

.6 ship reporting systems and procedures;

.7 radiocommunication procedures of the IMO Merchant Ship Search and Rescue Manual (MERSAR);

.8 radio medical systems and procedures; and

.9 causes of false distress alerts and means to avoid them.

Practical

35. Practical training should be given in:

.1 correct and efficient operation of all GMDSS sub-systems and equipment under normal propagation conditions and under typical interference conditions;

.2 safe operation of all the GMDSS communications equipment and ancillary devices, including safety precautions;

.3 accurate and adequate keyboard skills for the satisfactory exchange of communications; and

.4 operational techniques for:

.4.1 receiver and transmitter adjustment for the appropriate mode of operation, including digital selective calling and direct-printing telegraphy,

.4.2 antenna adjustment and re-alignment as appropriate,

.4.3 use of radio life-saving appliances; and

.4.4 use of emergency position-indicating radio beacons (EPIR-Bs).

Miscellaneous

36. Knowledge of, and/or training in:

.1 the English language, both written and spoken, for the satisfactory exchange of communications relevant to the safety of life at sea;

.2 world geography, especially the principal shipping routes, services of rescue co-ordination centres (RCCs) and related communication routes;

.3 survival at sea, the operation of lifeboats, rescue boats, liferafts, buoyant apparatus and their equipment, with special reference to radio life-saving appliances;

.4 fire prevention and fire fighting, with particular reference to the radio installation;

.5 preventive measures for the safety of ship and personnel in connection with hazards related to radio equipment, including electrical, radiation, chemical and mechanical hazards;

.6 first aid, including heart-respiration revival techniques; and

.7 co-ordinated universal time (UTC), global time zones and international date line.

TRAINING RELATED TO THE RESTRICTED OPERATOR'S CERTIFICATE

General

37. The requirements of medical fitness, especially as to hearing, eyesight and speech, should be met by the candidate before training is commenced.

38. The training should be relevant to the provisions of the STCW Convention, the Radio Regulations and the SOLAS Convention currently in force, with particular attention given to provisions for the global maritime distress and safety system (GMDSS). In developing training guidance, account should be taken of at least the knowledge and training given in paragraphs 39 to 44 hereunder.

Theory

39. Knowledge of the general principles and basic factors, including VHF range limitation and antenna height effect necessary for safe and efficient use of all sub-systems and equipment required in

GMDSS in sea area Al, sufficient to support the training given in paragraph 43 below.

40. Knowledge of the use, operation and service areas of GMDSS sea area Al sub-systems, e.g. navigational and meteorological warning systems and the appropriate communication circuits.

Regulations and documentation

41. Knowledge of:

.1 those parts of the SOLAS Convention and the Radio Regulations relevant to sea area Al, with particular emphasis on:

.1.1 distress, urgency and safety radiocommunications,

.1.2 avoiding harmful interference, particularly with distress and safety traffic, and

.1.3 prevention of unauthorized transmissions;

.2 other documents relating to operational and communication procedures for distress, safety and public correspondence services, including charges, navigational warnings and weather broadcasts in the Maritime Mobile Service in sea area Al; and

.3 use of the International Code of Signals and the Standard Marine Navigational Vocabulary as replaced by the IMO Standard Marine Communication Phrases.

Watchkeeping and procedures

42. Training should be given in:

.1 communication procedures and discipline to prevent harmful interference in GMDSS sub-systems used in sea area Al;

.2 VHF communication procedures for:

.2.1 radiocommunication watchkeeping, exchange of radiocommunication traffic, particularly concerning distress, urgency and safety procedures and radio records,

.2.2 monitoring a distress frequency while simultaneously monitoring or working on at least one other frequency, and

.2.3 the digital selective calling system;

.3 use of the international phonetic alphabet;

.4 ship reporting systems and procedures;

.5 VHF radiocommunication procedures of the IMO Merchant Ship Search and Rescue Manual (MERSAR);

.6 radio medical systems and procedures; and

.7 causes of false distress alerts and means to avoid them.

Practical

43. Practical training should be given in:

.1 correct and efficient operation of the GMDSS sub-systems and equipment prescribed for ships operating in sea area Al under normal propagation conditions and under typical interference

conditions;

.2 safe operation of relevant GMDSS communication equipment and ancillary devices, including safety precautions; and

.3 operational techniques for use of—

.3.1 VHF, including channel, squelch, and mode adjustment, as appropriate,

.3.2 radio life-saving appliances,

.3.3 emergency position-indicating radio beacons (EPIPBs), and

.3.4 NAVTEX receivers.

Miscellaneous

44. Knowledge of, and/or training in:

.1 the English language, both written and spoken, for the satisfactory exchange of communications relevant to the safety of life at sea;

.2 services of rescue co-ordination centres (RCCs) and related communication routes;

.3 survival at sea, the operation of lifeboats, rescue boats, liferafts, buoyant apparatus and their equipment, with special reference to radio life-saving appliances;

.4 fire prevention and fire fighting, with particular reference to the radio installation;

.5 preventive measures for the safety of ship, and personnel in connection with hazards related to radio equipment, including electrical, radiation, chemical and mechanical hazards; and

.6 first aid, including heart-respiration revival techniques.

TRAINING RELATED TO MAINTENANCE OF GMDSS INSTALLATIONS ON BOARD SHIPS

General

45. Reference is made to the maintenance requirements of SOLAS Convention regulation IV/15, and to IMO resolution A.702 (17) on Radio maintenance guidelines for the GMDSS related to sea areas A3 and A4, which includes in its annex the following provision:

"4.2 The person designated to perform functions for at-sea electronic maintenance should either hold an appropriate certificate as specified by the Radio Regulations, as required, or have equivalent at-sea electronic maintenance qualifications, as may be approved by the Administration, taking into account the recommendations of the Organization on the training of such personnel."

46. The following guidance on equivalent electronic maintenance qualifications is provided for use by Administrations as appropriate.

47. Training as recommended below does not qualify any person to be an operator of GMDSS radio equipment who does not hold an appropriate Radio Operator's Certificate.

Maintenance training equivalent to the First-Class Radioelectronic Certificate

48. In determining training equivalent to the elements of the listed First-Class Radioelectronic Certificate:

.1 the theory content should cover at least the subjects given in paragraphs 3 to 10;

.2 the practical content should cover at least the subjects given in paragraph 13; and

.3 the miscellaneous knowledge included should cover at least the subjects given in paragraph 14.

Maintenance training equivalent to the Second-Class Radioelectronic Certificate

49. In determining training equivalent to the maintenance elements of the Second-Class Radioelectronic Certificate:

.1 the theory content should cover at least the subjects given in paragraphs 17 to 24;

.2 the practical content should cover at least the subjects given in paragraph 27; and

.3 the miscellaneous knowledge included should cover at least the subjects given in paragraph 28.

SCHEDULE 11

SPECIAL TRAINING REQUIREMENTS FOR PERSONNEL OF CERTAIN TYPES OF SHIPS MANDATORY MINIMUM REQUIREMENTS FOR THE TRAINING AND QUALIFICATIONS OF MASTERS, OFFICERS AND RATINGS ON TANKERS

TANKER FAMILIARIZATION COURSE

1. The tanker familiarization course referred to in Regulation 29 shall cover at least the syllabus given in paragraphs 2 to 7 below.

Characteristics of cargoes

2. An outline treatment including practical demonstration of the physical properties of oil, chemicals and gases carried in bulk; vapour pressure/temperature relationship; influence of pressure on boiling temperature; explanation of saturated vapour pressure, diffusion, partial pressure, flammability limits, flashpoint and auto-ignition temperature; practical significance of flashpoint and lower flammable limit; simple explanation of types of electrostatic charge generation; chemical symbols structures; elements of the chemistry of acids and bases and chemical reactions of well known groupings sufficient to enable proper utilization of codes.

Toxicity

3. Simple explanation of principles and basic concepts; toxicity limits, both acute and chronic effects of toxicity, systemic poisons and irritants.

Hazards

4. An explanation of hazards, including:

.1 explosion and flammability hazards, flammability limits and sources of ignition and explosion;

.2 health hazards, including the dangers of skin contact, inhalation and ingestion; oxygen deficiency, with particular reference to inert gas systems; harmful properties of cargo carried; accidents to personnel and associated first-aid do's and don'ts;

.3 hazards to the environment, covering: the effect on human and marine life from the release of oil, chemicals or gases; effect of specific gravity and solubility; danger from vapour cloud drift; effect of vapour pressure and atmospheric conditions;

.4 reactivity hazards; self-reaction; polymerization; effects of temperature; impurities as catalysts;

reaction with air, water and other chemicals; and

.5 corrosion hazards, covering: the dangers to personnel; attacks on constructional materials; effects of concentration and evolution of hydrogen.

Hazard Control

5. Inerting, water padding, drying agents and monitoring techniques; antistatic measures; ventilation; segregation; cargo inhibition and the importance of compatibility of materials.

Safety equipment and protection of personnel

6. The function and calibration of measuring instruments and similar equipment; specialized fire-extinguishing appliances; breathing apparatus and tanker evacuating equipment; safe use of protective clothing and equipment; use of resuscitators and other rescue and escape equipment.

Pollution prevention

7. Procedures to be followed to prevent air and water pollution and measures to be taken in the event of spillage, including the need to:

.1 immediately report all relevant information to the appropriate officials when a spill is detected or when a malfunction has occurred which poses a risk of a spill;

.2 promptly notify shore-based response personnel and

.3 properly implement shipboard spill-containment procedures.

OIL TANKER TRAINING

1. The training required by Regulation 29 in respect of oil tankers should be divided into two parts, a general part concerning principles involved and a part on the application of those principles to ship operation. Any of this training may be given on board or ashore. It should be supplemented by practical instruction on board and, where appropriate, in a suitable shore-based installation. All training and instruction should be given by properly qualified and suitably experienced personnel.

As much use as possible should be made of shipboard operation and equipment manuals, films and suitable visual aids, and the opportunity should be taken to introduce discussion of the part to be played by the safety organization on board ship and the role of safety officers and safety committees.

OIL TANKER TRAINING PROGRAMME

8. The specialized training programme referred to in Regulation 29 appropriate to duties on oil tankers shall provide theoretical and practical knowledge of the subjects specified in paragraphs 9 to 14 below.

Regulations and codes of practice

9. Familiarization with the appropriate provisions of relevant international conventions; relevant international and national codes; the IMO Manual on Oil Pollution; relevant tanker safety guides and relevant port regulations as commonly applied.

Design and equipment of oil tankers

10. Familiarization with piping, pumping, tank and deck arrangements; types of cargo pumps and their application to various types of cargo; tank cleaning, gas-freeing and inerting systems; cargo tank venting and accommodation ventilation; gauging systems and alarms; cargo heating systems; and the

safety aspects of electrical systems.

Cargo characteristics

11. Knowledge of the chemical and physical properties of different oil cargoes.

Ship operations

12. Cargo calculations; loading and discharging plans; loading and discharge procedures, including ship-to-ship transfers; checklists; use of monitoring equipment; importance of proper supervision of personnel; gas-freeing operations and tank cleaning operations; where appropriate, crude oil washing procedures and the operation and maintenance of inert gas systems; control of entry into pump-rooms and enclosed spaces; use of gas-detecting and safety equipment; load-on-top and proper ballasting and deballasting procedures; air and water pollution prevention.

Repair and maintenance

13. Precautions to be taken before and during repair and maintenance work, including that affecting pumping, piping, electrical and control systems; safety factors necessary in the performance of hot work; control of hot work and proper hot work procedures.

Emergency operations

14. The importance of developing ship emergency plans; cargo operations emergency shutdown; action in the event of failure of services essential to cargo; fire fighting on oil tankers; action following collision, stranding or spillage; medical first-aid procedures and the use of resuscitation equipment, use of breathing apparatus for safe entry into and rescue from enclosed spaces.

CHEMICAL TANKER TRAINING

15. The training required by Regulation 29 in respect of chemical tankers should be divided into two parts, a general part concerning principles involved and a part on the application on board of those principles to ship operations. Any of this training may be given on board or ashore. It should be supplemented by practical instruction on board and, where appropriate, in a suitable shore-based installation. All training and instruction should be given by properly qualified and suitably experienced personnel.

16. As much use as possible should be made of shipboard operation and equipment manuals, films and suitable visual aids, and the opportunity should be taken to introduce discussion of the part to be played by the safety organisation on board ship and the role of safety officers and safety committees.

CHEMICAL TANKER TRAINING PROGRAMME

17. The specialized training programme referred to in Regulation 29 appropriate to duties on chemical tankers shall provide theoretical and practical knowledge of the subjects specified in paragraphs 18 to 23 below.

Regulations and codes of practice

18. Familiarization with relevant international conventions and relevant IMO and national codes and with relevant tanker safety guides and relevant port regulations as commonly applied.

Design and equipment of chemical tankers

19. A brief description of specialized piping, pumping and tank arrangements, overflow control; types of

cargo pumps and their application to various types of cargo; tank cleaning and gas-freeing systems; cargo tank venting, vapour-return systems; accommodation ventilation, airlocks; gauging systems and alarms; tank temperature control systems and alarms; the safety factors of electrical systems.

Cargo characteristics

20. Sufficient knowledge of liquid chemical cargo characteristics to allow proper use of relevant cargo safety guides.

Ship operations

21. Cargo calculations; loading and discharging plans; loading and discharge procedures, vapour-return systems; checklists; use of monitoring equipment; gas-freeing operations and tank cleaning operations, including proper use of absorption and wetting agents and detergents; use and maintenance of inert atmospheres; control of entry into pump-rooms and enclosed spaces; use of detecting and safety equipment; disposal of waste and washings.

Repair and maintenance

22. Precautions to be taken before the repair and maintenance of pumping, piping, electrical and control systems.

Emergency operations

23. The importance of developing ship emergency plans; cargo operations emergency shutdown; action in the event of failure of services essential to cargo; fire fighting on chemical tankers; action following collision, stranding or spillage; medical first-aid procedures and the use of resuscitation, and decontamination equipment; use of breathing apparatus and escape equipment; safe entry into and rescue from enclosed spaces.

LIQUEFIED GAS TANKER TRAINING

24. The training required by Regulation 29 in respect of liquefied gas tankers should be divided into the following two parts:

1. supervised instruction, conducted in a shore-based facility or on board a specially equipped ship having training facilities and special instructors for this purpose, dealing with the principles involved and the application of these principles to ship operation, so however that Administrations may, in special situations, permit junior officers or ratings to be trained on board liquefied gas tankers on which they are serving, provided that such service is for a limited period, as established by the Administration, and that such crew members do not leave duties or responsibilities in connection with cargo or cargo equipment and provided further that they are later trained in accordance with this guidance for any subsequent service; and

2. supplementary shipboard training and experience, wherein the principles learned are applied to a particular type of ship and cargo-containment system.

All training and instruction should be given by properly qualified and suitably experienced personnel.

As much use as possible should be made of shipboard operation and equipment manuals, films and suitable visual aids, and the opportunity should be taken to introduce discussion of the part to be played by the safety organization on board ship and the role of safety officers and safety committees.

LIQUEFIED GAS TANKER TRAINING PROGRAMME

25. The specialized training programme referred to in Regulation 29 appropriate to the duties on liquefied gas tankers shall provide theoretical and practical knowledge of the subjects specified in paragraphs 26 to 37 below.

Regulations and codes of practice

26. Familiarization with relevant international conventions and relevant IMO, national and industry codes.

Design and equipment of gas tankers

27. Familiarization with the ship design and equipment of liquefied gas tankers; types of liquefied gas tankers; cargo-containment systems (construction, surveys); cargo-handling equipment (pumps, piping systems); cargo conditioning systems; (warm-up, cool-down); tank atmosphere control systems (inert gas, nitrogen); instrumentation of cargo-containment and—handling systems; fire-fighting system and safety and rescue equipment.

Fire-fighting

28. Advanced practical fire-fighting techniques and tactics applicable to gas tankers, including the use of water-spray systems.

Chemistry and physics

29. An introduction to basic chemistry and physics as it relates to the safe carriage of liquefied gases in bulk in ships, covering:

.1 the properties and characteristics of liquefied gases and their vapours, including the definition of gas; simple gas laws; the gas equation; density of gases; diffusion and mixing of gases; compression of gases; liquefaction of gases; refrigeration of gases; critical temperature, the practical significance of flashpoint; upper and lower explosive limits; auto-ignition temperature; compatibility of gases; reactivity, polymerization and inhibitors.

.2 the properties of single liquids, including densities of liquids and vapours; variation with temperature, vapour pressure and temperature; enthalpy; vaporization and boiling liquids; and

.3 the nature and properties of solutions, including the solubility of gases in liquids; miscibility between liquids and effects of temperature change; densities of solutions and dependence on temperature and concentration; effects of dissolved substances on melting and boiling points; hydrates, their formation and dispersion; hygroscopicity; drying of air and other gases; dewpoint and low-temperature effects.

Health hazards

30. Familiarization with health hazards relevant to the carriage of liquefied gas, covering:

.1 toxicity, including the modes by which liquefied gases and their vapours may be toxic; the toxic properties of inhibitors and of products of combustion of both materials of construction and of liquefied gases carried; acute and chronic effects of toxicity, systemic poisons and irritants; and the Threshold Limit Value (TLV);

.2 hazards of skin contact, inhalation and ingestion; and

.3 medical first aid and administering of antidotes.

Cargo containment

31. Principles of containment systems; rules; surveys; tank construction, materials, coatings, insulation and compatibility.

Pollution

32. Hazards to human life and to the marine environment; the effect of specific gravity and solubility; danger from vapour cloud drift and the jettisoning of cryogenic liquids.

Cargo-handling systems

33. A description of the main types of pumps and pumping arrangements and vapour-return systems, piping systems and valves; an explanation of pressure, vacuum, suction, flow, head; filters and strainers; expansion devices; flame screens; commonly used inert gases; storage, generation and distribution systems; temperature and pressure monitoring systems; cargo vent systems; liquid re-circulation and re-liquefaction systems; cargo gauging, instrumentation systems and alarms; gas detection and monitoring systems; CO_2 monitoring systems; cargo boil-off systems and auxiliary systems.

Ship operating procedures

34. Loading and discharging preparations and procedures; checklists; cargo condition maintenance on passage and in harbour; segregation of cargoes and procedures for cargo transfer; changing cargoes, tank cleaning procedures; cargo sampling; ballasting and deballasting; warm up and gas-freeing procedures; and procedures for cool down of a gas-free system from ambient temperature and the safety precautions involved.

Safety practices and equipment

35. The function, calibration and use of portable measuring instruments; fire-fighting equipment and procedures; breathing apparatus; resuscitators; escape sets; rescue equipment; protective clothing and equipment; entry into enclosed spaces; precautions to be observed before and during repair and maintenance of cargo and control systems; supervision of personnel during potentially hazardous operations; types and principles of certified safe electrical equipment and sources of ignition.

Emergency procedures

36. The importance of developing ship emergency plans; emergency shutdown of cargo operations; emergency cargo valve closing systems; action to be taken in the event of failure of systems or services essential to cargo; and action to be taken following collision or stranding, spillage and envelopment of the ship in toxic or flammable vapour.

General principles of cargo operations

37. Inerting cargo tank and void spaces; tank cool down and loading; operations during loaded and ballasted voyages; discharging and tank stripping and emergency procedures, including pre-planned action in the event of leaks, fire, collision, stranding, emergency cargo discharge and personnel casualty.

ON-BOARD TRAINING FOR ALL TANKER PERSONNEL

38. All tanker personnel should undergo training on board and, where appropriate, ashore, which should

be given by qualified personnel experienced in the handling and characteristics of oil, chemical or liquefied gas cargoes as appropriate and the safety procedures involved. The training should at least cover the matters set out in paragraphs 39 to 45 below.

Regulations

39. Knowledge of the ship's rules and regulations governing the safety of personnel on board a tanker in port and at sea.

Health hazards and precautions to be taken

40. Dangers of skin contact; inhalation and accidental swallowing of cargo; oxygen deficiency, with particular reference to inert-gas systems; the harmful properties of cargoes carried, personnel accidents and associated first aid; lists of do's and don'ts.

Fire prevention and fire fighting

41. Control of smoking and cooking restrictions; sources of ignition; fire and explosion prevention; methods of fire fighting; of portable extinguishers and fixed installations.

Pollution prevention

42. Procedures to be followed to prevent air and water pollution and measures which will be taken in the event of spillage.

Safety equipment and its use

43. The proper use of protective clothing and equipment, resuscitators, escape and rescue equipment.

Emergency procedures

44. Familiarization with the emergency plan procedures.

Cargo equipment and operations

45. A general description of cargo-handling equipment; safe loading and discharge procedures and precautions and safe entry into enclosed spaces.

ON-BOARD TRAINING FOR LIQUEFIED GAS TANKER PERSONNEL

46. Personnel who are required to be trained under Regulation 29 should be provided supplementary shipboard training and experience based on the ship's operation manual. Such training and experience should cover the following systems as applicable:

.1 the cargo-handling system, including piping systems; pumps; valves; expansion devices and vapour systems; service requirements and operating characteristics of the cargo-handling systems and liquid re-circulation;

.2 instrumentation systems, including cargo level indicators; gas-detection systems; hull and cargo temperature monitoring systems; the various methods of transmitting a signal from a sensor to the monitoring station and automatic shutdown systems;

.3 boil-off disposal, including use as fuel; compressors; heat exchanger; gas piping and ventilation in machinery and manned spaces; principles of dual-fuel boilers, gas turbines, diesel engines; emergency venting and re-liquefaction;

.4 auxiliary systems, including ventilation and inerting; quick-closing, remote control, pneumatic, excess flow, safety relief, and pressure/vacuum valves, steam systems for voids, ballast tanks and condenser; and

.5 general principles of operating the cargo-handling plant, including inerting cargo tanks and void spaces; tank cool-down and loading; operations during loaded and ballasted voyages; discharging and tank stripping; emergency procedures, and pre-planned action in the event of leaks, fires, collision, stranding, emergency cargo discharge and personnel casualty.

PROOF OF QUALIFICATION

47. The master of every oil, chemical and liquefied gas tanker should ensure that the officer primarily responsible for the cargo possesses an appropriate certificate, issued or endorsed or validated as required by Regulation 29, and has had adequate recent practical experience on board an appropriate type of tanker to permit that officer to safely perform the duties assigned.

MANDATORY MINIMUM REQUIREMENTS FOR THE TRAINING AND QUALIFICATIONS OF MASTERS, OFFICERS, RATINGS AND OTHER PERSONNEL ON RO-RO PASSENGER SHIPS

(a) Crowd management training

1. The crowd management training required by Regulation 30 for personnel designated on muster lists to assist passengers in emergency situations shall include, but not necessarily be limited to:

.1 awareness of life-saving appliance and control plans, including:

.1.1 knowledge of muster lists and emergency instructions,

.1.2 knowledge of the emergency exits, and

.1.3 restrictions on the use of elevators;

.2 the ability to assist passengers en route to muster and embarkation stations, including—

.2.1 the ability to give clear reassuring orders,

.2.2 the control of passengers in corridors, staircases and passageways,

.2.3 maintaining escape routes clear of obstructions,

.2.4 methods available for evacuation of disabled persons and persons needing special assistance, and

.2.5 search of accommodation spaces;

.3 mustering procedures, including:

.3.1 the importance of keeping order,

.3.2 the ability to use procedures for reducing and avoiding panic,

.3.3 the ability to use, where appropriate, passenger lists for evacuation counts, and

.3.4 the ability to ensure that the passengers are suitably clothed and have donned their lifejackets correctly.

(b) Familiarization Training

.2 The familiarization training required by Regulation 30 shall at least ensure attainment of the abilities that are appropriate to the capacity to be filled, and the duties and responsibilities to be taken up, as follows:

Design and Operational Limitations

.1 Ability to properly understand and observe any operational limitations imposed on the ship, and to understand and apply performance restrictions, including speed limitations in adverse weather, which are intended to maintain the safety of life, ship and cargo.

Procedures for Opening, Closing and Securing Hull Openings

2. Ability to apply properly the procedures established for the ship regarding the opening, closing and securing of bow, stern, and side doors and ramps and to correctly operate the related systems.

Legislation, Codes and Agreements Affecting Ro-ro Passenger ships

3. Ability to understand and apply international and national requirements for ro-ro passenger ships relevant to the ship concerned and the duties to be performed.

Stability and Stress Requirements and Limitations

4. Ability to take proper account of stress limitations for sensitive parts of the ship such as bow doors and other closing devices that maintain watertight integrity and of special stability considerations which may affect the safety of ro-ro passenger ships.

Procedures for the Maintenance of special Equipment on Ro-ro Passenger ships

5. Ability to apply properly the shipboard procedures for maintenance of equipment peculiar to ro-ro passenger ships such as bow, stern and side doors and ramps, scuppers and associated systems.

Loading and Cargo Securing manuals and Calculators

6. Ability to make proper use of the loading and securing manuals in respect of all types of vehicles and rail cars where applicable, and to calculate and apply stress limitations for vehicle decks.

Dangerous Cargo Areas

7. Ability to ensure proper observance of special precautions and limitations applying to designated dangerous cargo areas.

Emergency Procedures

8. Ability to ensure proper application of any special procedures to:

8.1 prevent or reduce the ingress of water on vehicle decks,

8.2 remove water from vehicle decks, and

8.3 minimize effects of water on vehicle decks.

(**c) Safety training for personnel providing direct service to passengers in passenger spaces**

3. The additional safety training required by Regulation 30 shall at least ensure attainment of the abilities as follows:

Communication

1. Ability to communicate with passengers during an emergency, taking into account:

1.1. the language or languages appropriate to the principal nationalities of passengers carried on the particular route,

1.2. the likelihood that an ability to use an elementary English vocabulary for basic instructions can provide a means of communicating with a passenger in need of assistance whether or not the passenger and crew member share a common language,

1.3. the possible need to communicate during an emergency by some other means such as by demonstration, or hand signals, or calling attention to the location of instructions, muster stations, life-saving devices or evacuation routes, when oral communication is impractical

1.4. the extent to which complete safety instructions have been provided to passengers in their native language or languages, and

1.5. the languages in which emergency announcements may be broadcast during an emergency or drill to convey critical guidance to passengers and to facilitate crew members in assisting passengers.

Life-saving Appliances

2. Ability to demonstrate to passengers the use of personal life-saving appliances.

(d) Passenger Safety, Cargo Safety and Hull Integrity Training

4. The passenger safety, cargo safety and hull integrity training required by Regulation 30 for masters, chief mates, chief engineer officers, second engineer officers and persons assigned immediate responsibility for embarking and disembarking passengers, for loading, discharging or securing cargo or for closing hull openings shall at least ensure attainment of the abilities that are appropriate to their duties and responsibilities as follows:

Loading and Embarkation Procedures

1. Ability to apply properly the procedures established for the ship regarding:

.1.1 loading and discharging vehicles, rail cars and other cargo transport units, including related communications,

.1.2. lowering and hoisting ramps,

.1.3 setting up and stowing retractable vehicle decks, and

.1.4 embarking and disembarking passengers, with special attention to disabled persons and persons needing assistance.

Carriage of Dangerous Goods

2. Ability to apply any special safeguards, procedures and requirements regarding the carriage of dangerous goods on board ro-ro passenger ships.

Securing Cargoes

3. Ability to:

.3.1 apply correctly the provisions of the Code of Safe Practice for Cargo Stowage and Securing to the

vehicles, rail cars and other cargo transport units carried; and

.3.2 use properly the cargo-securing equipment and materials provided, taking into account their limitations.

Stability, Trim and Stress Calculations,

4. Ability to:

.4.1 make proper use of the stability and stress information provided,

.4.2 calculate stability and trim for different conditions of loading, using the stability calculators or computer programs provided,

.4.3 calculate load factors for decks, and

.4.4 calculate the impact of ballast and fuel transfers on stability, trim and stress.

Opening, Closing and Securing Hull Openings

5. Ability to

.5.1 apply properly the procedures established for the ship regarding the opening, closing and securing of bow, stem and side doors and ramps and to correctly operate the associated systems, and

.5.2 conduct surveys on proper sealing.

Ro-ro Deck Atmosphere

6. Ability to:

.6.1 use equipment, where carried, to monitor atmosphere in ro-ro cargo spaces, and

.6.2 apply properly the procedures established for the ship for ventilation of ro-ro cargo spaces during loading and discharging of vehicles, while on voyage and in emergencies.

(**e) Crisis management and human behaviour training**

5. The crisis management and human behaviour training required by Regulation 30 for masters, chief engineer officers, second engineer officers and any person having responsibility for the safety of passengers in emergency situations shall be to the satisfaction of the Administration based on standards developed by the Organization.

TABLE A—V/2

Specification of minimum standard of competence is crisis management and human behaviour

Column 1	Column 2	Column 3	
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Cri

Organize shipboard emergency procedures	Knowledge of: 1. the general design and layout of the ship 2. safety regulations 3. emergency plans and procedures The importance of the principles for the development of ship-specific emergency procedures including: 1. the need for pre-planning and drills of shipboard emergency procedures 2. the need for all personnel to be aware of and adhere to pre-planned emergency procedures as carefully as possible in the event of an emergency situation	Assessment of evidence obtained from approved training, exercises with one or more prepared emergency plans and practical demonstration	The s procedu readines emerge
Optimize the use or resources	Ability to optimize the use or resources taking into account: 1. the possibility that resources available in an emergency may be limited 2. the need to make full use of personnel and equipment immediately available and if necessary to improvise Ability to organize realistic drills to maintain a state of readiness, taking into account lessons learnt from previous accidents involving passenger ships, debriefing after drills	Assessment of evidence obtained from approved training, practical demonstration and shipboard training and drills off emergency procedures	Conting the use Allocati respons known individu Roles a teams clearly

Control response to emergencies	Ability to make an initial assessment and provide an effective response to emergency situations in accordance with established emergency procedures Leadership skills Ability to lead and direct others in emergency situations, including the need: 1. to set an example during emergency situations 2. to focus decision making, given the need to act quickly in an emergency 3. to motivate, encourage and reassure passengers and other personnel Stress handing Ability to identify the development of symptoms of excessive personal stress and those of other members of the ship's emergency team Understanding that stress generated by emergency situations can affect the performance of individuals and their ability to act on instructions and follow procedures.	Assessment of evidence obtained from approved training, practical demonstration and shipboard training and drills off emergency procedures	Procedu accorda principl manage Objecti appropr emerge contingc optimur resource Actions contribu and con
Control passengers and other personnel during emergency situations	Human behaviour and responses Ability to control passengers and other personnel in emergency including 1. awareness of the general reaction patterns of passengers and other personnel in emergency situations, including the possibility that 1.1 generally it takes some time before people accept the fact that there is an emergency situation 1.2 some people may panic and not behave with a normal level of rationality, that their ability to comprehend may be impaired and they may not be as responsive to instructions as in non-situations	Assessment of evidence obtained from approved training, practical demonstration and shipboard training and drills of emergency procedures	Actions contribu and con

	2. awareness that passengers and other personnel may inter alia 2.1 start looking for relatives, friends and/or their belongings as a first reaction when something goes wrong 2.2 seek safety in their cabins or in other places on board where they think that they can escape danger 2.3 tend to move to the upper side when the ship is listing 3. appreciation of the possible problem of panic resulting from separating families		
Establish and maintain effective communication	Ability to establish and maintain effective communication including 1. the importance of clear and concise instructions and reports 2. the need to encourage an exchange of information with and feedback from passengers and other personnel Ability to provide relevant information to passengers and other personnel during an emergency situation to keep them apprised of the overall situation and to communicate any action required of them, taking into account	Assessment of evidence obtained from approved training, practical demonstration	Informa sources and co possible the eme Informa individu respons is accur Informa informe the em required

	1. the language or languages appropriate to the principal nationalities of passengers and other personnel carried on the particulars route 2. the possible need to communicate during an emergency by some other means such as by demonstration or by hand signals or calling attention to the location of instructions, muster stations, life-saving devices or evacuation routes when oral communication is impractical 3. the language in which emergency announcements may be broadcast during an emergency or drill to convey critical guidance to passengers and to facilitate crew members in assisting passengers		

GUIDANCE REGARDING ADDITIONAL TRAINING FOR MASTERS AND CHIEF MATES OF LARGE SHIPS WITH UNUSUAL MANOEUVRING CHARACTERISTICS

1. It is important that masters and chief mates should have had relevant experience and training before assuming the duties of master or chief mate of large ships or ships having unusual manoeuvring and handling characteristics significantly different from those in which they have recently served. Such characteristics will generally be found in ships which are of considerable deadweight or length or of special design or of high speed.

2. Prior to their appointment to such a ship, masters and chief mates should:

.1 be informed of the ship's handling characteristics by the company, particularly in relation to the knowledge, understanding and proficiency listed under ship manoeuvring and handling in column 2 of table A-11/2—Specification of the minimum standard of competence for masters and chief mates of ships of 500 gross tonnage or more; and

.2 be made thoroughly familiar with the use of all navigational and manoeuvring aids fitted in the ship concerned, including their capabilities and limitations.

3. Before initially assuming command of one of the ships referred to above, the prospective master should have sufficient and appropriate general experience as master or chief mate, and either:

.1 have sufficient and appropriate experience manoeuvring the same ship under supervision or in manoeuvring a ship having similar manoeuvring characteristics; or

.2 have attended an approved ship handling simulator course on an installation capable of simulating the manoeuvring characteristics of such a ship

4. The additional training and qualifications of masters and chief mates of dynamically supported and high-speed craft should be in accordance with the relevant guidelines of the IMO Code of Safety for

Dynamically Supported Craft and the IMO Code of Safety for High-Speed Craft (HSC Code), as appropriate.

GUIDANCE REGARDING TRAINING OF OFFICERS AND RATINGS

Responsible for Cargo Handling on Ships Carrying Dangerous and Hazardous Substances in Solidform in Bulk

1. Training should be divided into two parts, a general part on the principles involved and a part on the application of such principles to ship operation. All training and instruction should be given by property qualified and suitably experienced personnel and cover at least the subjects given in paragraphs 2 to 14 hereunder.

PRINCIPLES

Characteristics and Properties

2. The important physical characteristics and chemical properties of dangerous and hazardous substances, sufficient to give a basic understanding of the intrinsic hazards and risks involved.

Classification of Materials Possessing Chemical Hazards

3. IMO dangerous goods classes 4-9 and materials hazardous only in bulk (MHB) and the hazards associated with each class.

Health Hazards

4. Dangers from skin contact, inhalation, ingestion and radiation.

Conventions, Regulations and Recommendations

5. General familiarization with the relevant requirements of chapters 11-2 and VII of the 1974 SOLAS Convention as amended.

6. General use of and familiarization with the Code of Safe Practice for Solid Bulk Cargoes (BC Code) with particular reference to:

1. safety of personnel, including safety equipment, measuring instruments their use and practical application and interpretation of results;

2. hazards from cargoes which have a tendency to shift; and

3. materials possessing chemical hazards.

SHIPBOARD APPLICATION

Class 4.1 - Flammable solids

Class 4.2 - Substances liable to spontaneous combustion

Class 4.3 - Substances which, in contact with water, emit flammable gases

Carriage, stowage and control of temperature to prevent decomposition and possible explosion; stowage categories; general stowage precautions, including those applicable to self-reactive and related substances; segregation requirements to prevent heating and ignition; the emission of poisonous or flammable gases aid the formation of explosive mixtures.

Class 5. 1—Oxidizing Substances

8. Carriage, stowage and control of temperature to prevent decomposition and possible explosion; stowage categories; general stowage precautions and segregation requirements to ensure separation from combustible material, from acids and heat sources to prevent fire, explosion and the formation of toxic gases.

Class 6.1—Toxic Substances

9. Contamination of foodstuffs, working areas and living accommodation and ventilation.

Class 7—Radioactives

10. Transport index; types of ores and concentrates; stowage and segregation from persons, undeveloped photographic film and plates and foodstuffs; stowage categories; general stowage requirements; special stowage requirements; segregation requirements and separation distances; segregation from other dangerous goods.

Class 8—Corrosives

11. Dangers from wetted substances.

Class 9—Miscellaneous Dangerous Substances and Articles

12. Examples and associated hazards; the hazards of materials hazardous only in bulk (MHB); general and specific stowage precautions; working and transport precautions; segregation requirements.

Safety Precautions and Emergency Procedures

13. Electrical safety in cargo spaces; precautions to be taken for entry into enclosed spaces that may contain oxygen-depleted, poisonous or flammable atmospheres; the possible effects of fire in shipments of substances of each class; use of the Emergency Procedures for Ships Carrying Dangerous Goods; emergency plans and procedures to be followed in case of incidents involving dangerous and hazardous substances and the use of individual entries in the Code of Safe Practice for Solid Bulk Cargoes in this respect.

Medical First Aid

14. The IMO Medical First Aid Guide for Use in Accidents Involving Dangerous Goods (MFAG) and its use and application in association with other guides and medical advice by radio.

GUIDANCE REGARDING TRAINING OF OFFICERS AND RATINGS

Responsible for Cargo Handling on Ships carrying Dangerous and Hazardous Substances in Packaged Form

1. Training should be divided into two parts, a general part on the principles involved and a part on the application of such principles to ship operation. All training and instruction should be given by property qualified and suitably experienced personnel and cover at least the subjects given in paragraphs 2 to 19 hereunder.

PRINCIPLES

Characteristics and Properties

2. The important physical characteristics and chemical properties of dangerous and hazardous substances, sufficient to give a basic understanding of the intrinsic hazards and risks involved.

Classification of Dangerous and Hazardous Substances and Materials Possessing Chemical Hazards

3. IMO dangerous goods classes 1-9 and the hazards associated with each class; materials hazardous only in bulk (MHB).

Health Hazards

4. Dangers from skin contact, inhalation, ingestion and radiation.

Conventions, Regulations and Recommendations

5. General familiarization with the relevant requirements of chapters 11-2 and VI, of the 1974 SOLAS Convention and of Annex III of MAPPOL 73/78, including its implementation through the IMDG Code.

Use of and familiarization with the International Maritime Dangerous Goods (IMDG)

Code

6. General knowledge of the requirements of the IMDG Code concerning declaration, documentation, packing, labelling and placarding; freight container and vehicle packing; portable tanks, tank containers and road tank vehicles, and other transport units used for dangerous substances.

7. Knowledge, of identification, marking and labelling for stowage, securing, separation and segregation in different ship types mentioned in the IMDG Code.

8. Safety of personnel, including safety equipment, measuring instruments, their use and practical application and the interpretation of results.

SHIPBOARID APPLICATION

Class 1—Explosives

9. The 6 hazard divisions and 13 compatibility groups; packagings and magazines used for carriage of explosives; structural serviceability of freight containers and vehicles; stowage provisions, including specific arrangements for on-deck and under-deck stowage; segregation from dangerous goods of other classes within class 1 and from non-dangerous goods; transport and stowage on passenger ships; suitability of cargo spaces; security precautions; precautions to be taken during loading and unloading.

Class 2—Gases (compressed, liquefied, or dissolved under pressure), Flammable, Non-flammable, Non-toxic and Toxic

10. Types of pressure vessels and portable tanks, including relief and closing devices used; stowage categories; general stowage precautions, including those for flammable and poisonous gases and gases which are marine pollutants.

Class 3—Flammable Liquids

12. Packaging, tank containers, portable tanks and road tank vehicles; stowage categories; including the specific requirements for plastics receptacles; general stowage precautions, including those for marine pollutants; segregation requirement; precautions to be taken when carrying flammable liquids at elevated temperatures.

Class 4.1—Flammable Solids

Class 4.2—Substances Liable to Spontaneous Combustion

Class 4.3—Substances which, in Contact with Water, Emit Flammable Gases

12. Types of packagings; carriage and stowage under controlled temperatures to prevent decomposition and possible explosion; stowage categories; general stowage precautions, including those applicable to self-reactive and related substances, desensitized explosives and marine pollutants; segregation requirements to prevent heating and ignition, the emission of poisonous or flammable gases and the formation of explosive mixtures.

Class 5.1—Oxidizing Substances Class 5.2 - Organic Peroxides

13. Types of packagings; carriage and stowage under controlled temperature to prevent decomposition and possible explosion; stowage categories; general stowage precautions, including those applicable to marine pollutants; segregation requirements to ensure separation from combustible material, from acids and heat sources to prevent fire, explosion and the formation of toxic gases; precautions to minimize friction aid impact which can initiate decomposition.

Class 6. 1—Toxic Substances

Class 6.2—Infectious Substances

14. Types of packagings; stowage categories; general stowage precautions, including those applicable to toxic, flammable liquids and marine pollutants; segregation requirements, especially considering that the characteristic common to these substances is their ability to cause death or serious injury to human health; decontamination measures in the event of spillage.

Class 7—Radioactives

15. Types of packagings; transport index in relation to stowage and segregation; stowage aid segregation from persons, undeveloped photographic film and plates and foodstuff, stowage categories; general stowage requirements; segregation requirements and separation distances; segregation from other dangerous goods.

Class 8—Corrosives

16. Types of packagings; stowage categories; general stowage precautions, including those applicable to corrosive, flammable liquids and marine pollutants; segregation requirements, especially considering that the characteristic common to, these substances is their ability to cause severe damage to living tissue.

Class 9—Miscellaneous Dangerous Substances and Articles

17. Examples of hazards including marine pollution.

Safety Precautions and Emergency Procedures

18. Electrical safety in cargo spaces; precautions to be taken for entry into enclosed spaces that may contain oxygen-depleted, poisonous or flammable atmosphere; the possible effects of spillage or fire in shipments of substances of each class; consideration of events on deck or below deck; use of the IMO Emergency Procedures for Ships Carrying Dangerous Goods; emergency plans and procedures to be followed in case of incidents involving dangerous substances.

Medical First Aid

19. The IMO Medical First Aid Guide for Use in Accidents Involving Dangerous Goods (MFAC,) and its use and application in association with other guides and medical advice by radio.

SCHEDULE 12

EMERGENCY, OCCUPATIONAL SAFETY, MEDICAL CARE AND SURVIVAL FUNCTIONS

MANDATORY MINIMUM REQUIREMENTS FOR FAMILIARIZATION AND BASIC SAFETY TRAINING AND INSTRUCTION FOR ALL SEAFARERS

Familiarization Training

1. Before being assigned to shipboard duties, all persons employed or engaged on a seagoing ship other than passengers, shall receive approved familiarization training in personal survival techniques or receive sufficient information and instruction, taking account of the guidance given in this schedule, to be able to:

.1 communicate with other persons on board on elementary safety matters and understand safety information symbols, signs and alarm signals;

.2 know what to do if—

.2.1 a person falls overboard,

.2.2 fire or smoke is detected, or

.2.3 the fire or abandon ship alarm is sounded;

.3 identify muster and embarkation stations and emergency escape routes;

.4 locate and don lifejackets;

.5 raise the alarm and have basic knowledge of the use of portable fire extinguishers;

.6 take immediate action upon encountering an accident or other medical emergency before seeking further medical assistance on board; and

.7 close and open the fire, weathertight and watertight doors fitted in the particular ship other than those for hull openings.

Basic Training

2. Seafarers employed or engaged in any capacity on board ship on the business of that ship as part of the ship's complement with designated safety or pollution- prevention duties in the operation of the ship shall, before being assigned to any shipboard duties:

.1 receive appropriate approved basic training or instruction in:

.1.1 personal survival techniques as set out in table A-VI/ 1 – 1,

.1.2 fire prevention and fire fighting as set out in table A-VI/1 – 2,

.1.3 elementary first aid as set out in table A-VI/ 1 – 3, and

.1.4 personal safety and social responsibilities as set out in table A-VI/ 1 – 4,

.2 be required to provide evidence of having achieved the required standard of competence to undertake the tasks, duties and responsibilities listed in column 1 of tables A-VI/ 1–1, A-VI/ 1-2, A-VI/1–3 and A-VI/1–4 within the previous five years through:

.2.1 demonstration of competence, in accordance with the methods and the criteria for evaluating competence tabulated in columns 3 and 4 of those tables; and

.2.2 examination or continuous assessment as part of an approved training programme in the subjects listed in column 2 of those tables.

.3 The Administration may, in respect of ships other than passenger ships of more than 500 gross tonnage-engaged on international voyages and tankers, if it considers that a ship's size and the length or character of its voyage are such as to render the application of the full requirements of this section unreasonable or impracticable exempt to that extent the seafarers on such a ship or class of ship from some of the requirements, bearing in mind the safety of people on board, the ship and property and the protection of the marine environment.

TABLE A-VI/1-1

Specification of Minimum Standard of Competence in Personal Survival Techniques

Column 1	**Column 2**	**Column 3**	
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Crit
Survive at in the event of ship abandonment	Types of emergency situations which may occur, such as collision, fire, foundering	Assessment of evidence obtained from approved instruction or during attendance at an approved course or approved in-service experience and examination, including practical demonstration of competence to:	Action muster si the indi complies procedur
	Types of life-saving appliances normally carried on ships	1. don a lifejacket	The tim individua appropria circumsta and mini and threa
	Equipment in survival craft	2. don and use an immersion suit	Method craft is a dangers t
	Location of personal life-saving appliances	3. safely jump from a height into the water	Initial ac ship and in water survival

	Principles concening survival, including: 1. value of training and drills 2. personal protective clothing and equipment 3. need to be ready for any emergency 4. actions to be taken when called to survival craft stations 5. actions to be taken when-required to abandon ship 6. actions to be taken when in the water 7. actions to be taken when aboard a survival craft 8. main dangers to survivors	4. right an inverted liferaft while wearing a lifejacket 5. swim while wearing a lifejacket 6. keep afloat without a lifejacket 7. board a survival craft from ship and water while wearing a lifejacket 8. take initial actions on boarding survival craft to enhance chance of survival 9. stream a drogue or sea-anchor 10. operate survival craft equipment 11. operate location devices, including radio equipment	

TABLE A-VI/1-2

Specification of Minimum Standard of Competence in Fire Prevention and Fire Fighting

Column 1	Column 2	Column 3	
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Crit
Minimize the risk of fire and maintain a state of readiness to emergency situations involving fire	Shipboard fire-fighting organization	Assessment of evidence obtained from approved instruction or attendance at an approved course	Initial a aware conform practices
	Location of fire-fighting appliances and emergency escape routes		Action muster si the indi complies procedur

	Types and sources of ignition Flammable materials, fire hazards and spread of fire The need for constant vigilance Actions to be taken on board ship Fire and smoke detection and automatic alarm systems Classification of fire and applicable extinguishing agents		

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Crit
Fight and extinguish fires	Fire-fighting equipment and its location on board	Assessment of evidence obtained from approved instruction or during attendance at an approved course, including practical demonstration in spaces which provide truly realistic training conditions (e.g. simulated shipboard conditions) and, whether possible and practical, in darkness, of the ability to:	Clothing appropria fire-fight The tu individua appropria circumsta Extinguis achived procedur -fighting

	Instruction in: 1. fixed installations 2. firefighter's outfits 3. personal equipment 4. fire-fighting appliances and equipment 5. fire-fighting methods 6. fire-fighting agents 7. fire-fighting procedures 8. use of breathing apparatus for fighting fires and effecting rescues	1. use various types of portable fire extinguishers 2. use self-contained breathing apparatus 3. extinguish smaller fires, e.g. electrical fires, oil fires, propane fires 4. extinguish extensive fire with water, using jet and spray nozzles 5. extinguish fires with foam, powder or any other suitable chemical agent 6. enter and pass through, with life-line but without breathing apparatus, a compartment into which high-expansion foam has been injected 7. fight fire in smoke-filled enclosed spaces wearing self-contained breathing apparatus 8. extinguish fire with water fog or any other suitable fire-fighting agent in an accommodation room or simulated engine-room with fire and heavy smoke 9. extinguish oil fire with fog applicator and spray nozzles, dry chemical powder or foam applicators 10. effect a rescue in a smoke-filled space wearing breathing apparatus	Breathing and tech accepted procedur

TABLE A-VI/1-3

Specification of Minimum Standard of Competence in Elementary First Aid

Column 1	Column 2	Column 3	
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Crit
Take immediate action upon encountering an accident or other medical emergency	Assessment of needs of casualties and threats to own safety	Assessment of evidence obtained from approved instruction or during attendance at an approved course	The ma raising th to the accident

	Appreciation of body structure and functions		Identifica cause, r injuries i and the p actions i potential
	Understanding of immediate measures to be taken in cases of emergency, including the ability to: 1. position casualty 2. apply resuscitation techniques 3. control bleeding 4. apply appropriate measures of basic shock management 5. apply appropriate measures in event of burns and scalds, including accidents caused by electric current 6. rescue and transport a casualty 7. improvise bandages and use materials in emergency kit		Risk of f casualty times

TABLE A-VI/1-4

Specification of Minimum Standard of Competence in Personal Safety and Social Responsibilities

Column 1	Column 2	Column 3	
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Crit
Comply with emergency procedures	Types of emergency which may occur; such as collision, fire foundering	Assessment of evidence obtained from approved instruction or during attendance at an approved course	Initial a aware conforms emergenc procedur
	Knowledge of shipboard contingency plans for response to emergencies		Informati alarm i complete

	Emergency signals and specific duties allocated to crew members in the muster list; muster stations; correct use of personal safety equipment Action to take on discovering potential emergency, including fire, collision, foundering and ingress of water into the ship Action to take on hearing emergency alarm signals Value of training and drills Knowledge of escape routes and internal communication and alarm systems		
Take precautions to prevent pollution of the marine environment	Effects of operational or accidental pollution of the marine environment		
	Basic environmental protection procedures	Assessment of evidence obtained from approved instruction or during attendance at an approved course	Organiza designed marine observed
Observe safe working practices	Importance of adhering to safe working practices at all times	Assessment of evidence obtained from approved instruction or during attendance at an approved course	Safe w observed and pro correctly
	Safety and protective devices available to protect against potential hazards aboard ship Precautions to be taken prior to entering enclosed spaces Familiarization with international measure concerning accident prevention and occupational health		

Understand orders and be understood in relation to shipboard duties	Ability to understand orders and to communicate with others in relation to shipboard duties	Assessment of evidence obtained from approved instruction or during attendance at an approved course	Commun effective
Contribute to effective human relationships on board ship	Importance of maintaining good human and working relationships aboard ship	Assessment of evidence obtained from approved instruction or during attendance at an approved course	Expected behaviou times
	Social responsibilities, employment conditions, individual rights and obligations, dangers of drug and alcohol abuse		

GUIDANCE REGARDING FAMILIARIZATION AND BASIC SAFETY TRAINING AND INSTRUCTION FOR ALL SEAFARERS

FIRE PREVENTION AND FIRE FIGHTING

1. The basic training in fire prevention and fire fighting required by section A-VI/ I should include at least the theoretical and practical elements itemized in paragraphs 2 to 4 hereunder.

The Theoretical Training

2. The theoretical training should cover:

.1 the three elements of fire and explosion (the fire triangle): fuel; source of ignition; oxygen;

.2 ignition Sources: chemical; biological; physical;

.3 flammable materials: flammability; ignition point; burning temperature; burning; speed; thermal value; lower flammable limit (LFL;) upper flammable limit (UFL); flammable range; inserting electricity; flashpoint; auto-ignition;

.4 fire hazard and spread of fire by radiation, convection, and conduction;

.5 reactivity;

.6 classification of fires and applicable extinguishing agents;

.7 main causes of fire on board ships: oil leakage in engine-room; cigarettes overheating (bearings); galley appliances (stoves, flues, fryers, hotplates etc.); spontaneous ignition (cargo, wastes, etc.); hot work (welding cutting, etc.); electrical apparatus (short circuit, non-professional repairs) reaction, self-heating and auto-ignition; arson; static electricity;

.8 fire prevention;

.9 fire and smoke detection systems; automatic fire alarms;

.10 fire-fighting equipment, including:

.10.1 fixed installations on board and their locations; fire mains, hydrants; international shore connection;

smothering installations, carbon dioxide (CO2), foam; halogenated hydrocarbons; pressure water spray system in special category spaces, etc.; automatic sprinkler system; emergency fire pump; emergency generator; chemical powder applicants; general outline of required and available mobile apparatus; high-pressure fog system; high-expansion foam; new developments and equipment;

.10.2. firefighter's outfit, personal equipment; breathing apparatus; resuscitation apparatus; smoke helmet or mask; fireproof lifeline and harness; and their location on board; and

.10.3 general equipment, including fire hoses, nozzles, connections, fire axes; portable fire extinguishers; fire blankets;

.11 construction and arrangements, including escape routes; means for gas-freeing tanks; Class A, B and C divisions; inert gas systems;

.12 ship fire-fighting organization, including general alarm; fire control plans, muster stations and duties of individuals; communications, including ship-shore when in port; personnel safety procedures; periodic shipboard drips; patrol systems.

.13 practical knowledge of resuscitation methods;

.14 fire-fighting methods, including sounding the alarm; locating and isolating; jettisoning; inhibiting; cooling; smothering; extinguish; reflash watch; smoke extraction; and

.15 fire-fighting agents, including water, solid jet, spray, fog, flooding; foam, (high or medium and low-expansion); carbon dioxide (CO2); aqueous-film-frothing foam (AFFF); dry chemical powder; new developments and equipment.

Practical training

3. The practical training given below should take place in spaces which provide truly realistic training conditions (e.g. simulated shipboard conditions), and whenever possible and practical should also be carried out in darkness as well as by daylight and should allow the trainees to acquire the ability to:

.1 use various types of portable fire extinguishers;

.2 use self-contained breathing apparatus;

.3 extinguish smaller fires, e.g. electrical fires, oil fires and propane fires;

.4 extinguish extensive fires with water jet and spray nozzles);

.5 extinguish fires with either foam, powder or any other suitable chemical agent;

.6 enter and pass through, with lifeline but without breathing apparatus, a compartment into which high-expansion foam has been injected;

.7 fight fire in smoke-filled enclosed spaces wearing self-contained breathing apparatus;

.8 extinguish fire with water fog or any other suitable fire-fighting agent in an accommodation room or simulated engine-room with fire and heavy smoke;

.9 extinguish an oil fire with fog applicator and spray nozzles; dry chemical powder or foam applicators;

.10 effect a rescue in a smoke-filled space wearing breathing apparatus.

General

4. Trainees should also be made aware of the necessity of maintaining a state of readiness on board.

ELEMENTARY FIRST AID

5. The training in elementary first aid required by Regulation 31 as part of the basic training should be given at an early stage in vocational training, preferably during pre-sea training, to enable seafarers to take immediate action upon encountering an accident or other medical emergency until the arrival of a person with first-aid skills or the person in charge of medical care on board.

PERSONAL SAFETY AND SOCIAL RESPONSIBILITIES

6. The Administration should bear in mind the significance of communication and language skills in maintaining safety of life and property at sea and in preventing marine pollution. Given the international character of the maritime industry, the reliance on voice communications from ship-to-ship and ship-to-shore, the increasing use of multinational crews, and the concern that crew members should be able to communicate with passengers in an emergency, adoption of a common language for maritime communications would promote safe practice by reducing the risk of human error in communicating essential information.

7. Although not universal, by common practice English is rapidly becoming the standard language of communication for maritime safety purposes, partly as a result of the use of the Standard Marine Navigational Vocabulary, as replaced by the IMO Standard Marine Communication Phrases.

8. The Administration should consider the benefits of ensuring that seafarers have an ability to use at least an elementary English vocabulary, with an emphasis on nautical terms and situations.

MANDATORY MINIMUM REQUIREMENTS FOR THE ISSUE OF CERTIFICATES OF PROFICIENCY IN SURVIVAL CRAFT, RESCUE BOATS AND FAST RESCUE BOATS

PROFICIENCY IN SURVIVAL CRAFT AND RESCUE BOATS OTHER THAN FAST RESCUE BOATS

Standard of Competence

1. Every candidate for a certificate of proficiency in survival craft and rescue boats other than fast rescue boats shall be required to demonstrate competence to undertake the tasks, duties and responsibilities listed in column I of table A-VI/2-1.

2. The level of knowledge of the subjects listed in column 2 of table A-VI/2-1 shall be sufficient to enable the candidate to launch and take charge of a survival craft or rescue boat in emergency situations.

3. Training and experience to achieve the necessary level of theoretical knowledge understanding and proficiency shall take account of the guidance given in this Schedule.

4. Every candidate for certification shall be required to provide evidence of having achieved the required standard of competence within the previous five years through

.1 demonstration of competence to undertake the tasks, duties and responsibilities listed in column I of table A-VI/2-1, in accordance with the methods for demonstrating competence and the criteria for evaluating competence tabulated in columns 3 and 4 of that table; and

.2 examination or continuous assessment as part of an approved training programme covering the material

set out in column 2 of table A-VI/2-1.

PROFICIENCY IN FAST RESCUE BOATS

Standard of competence

5. Every candidate for a certificate of proficiency in fast rescue boats shall be required to demonstrate competence to undertake the tasks, duties and responsibilities listed in column I of table A-VI/2-2.

6. The level of knowledge of the subjects listed in column 2 of table A-VI/2-2 shall be sufficient to enable the candidate to launch and take charge of a fast rescue boat in emergency situations.

7. Training and experience to achieve the necessary level of theoretical knowledge, understanding and proficiency shall take account of the guidance given in this Schedule.

8. Every candidate for certification shall be required to provide evidence of having achieved the required standard of competence within the previous five years through:

.1 demonstration of competence to undertake the tasks, duties and responsibilities listed in column 1 of table A-VI/2-2, in accordance with the methods for demonstrating competence and the criteria for evaluating competence tabulated in columns 3 and 4 of that table; and

.2 examination or continuous assessment as part of an approved training programme covering the material set out in column 2 of table A-VI/2-2.

Table A-VI/2-1

Specification of the minimum standard of competence in survival craft and rescue boats other than fast rescue boats

Column 1	Column 2	Column 3	
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Crit
Take charge of survival craft or rescue boat during and after launch	Construction and outfit of survival craft and rescue boats and individual items of their equipment	Assessment of evidence obtained from practical demonstration of ability to:	Preparati launchin within and ena clear the
	Particular characteristics and facilities of survival craft rescue boats	1. right an inverted liferaft while weaning a lifejacket	Initial a ship mini
	Various types of device used for launching survival craft and rescue boats	2. interpret the markings on survival craft as to the number of persons they are intended to carry	Recovery rescue equipme

	Methods of launching survival craft into a rough sea	3. give correct commands for launching and boarding survival craft, clearing the ship and handling and disembarking persons from survival craft	
	Methods of recovering survival craft	4. prepare and safely launch survival craft and clear the ship's side quickly	
	Action to be taken after leaving the ship	5. safely recover survival craft and rescue boats	
	Methods of launching and recovering rescue boats in a rough sea	using inflatable liferaft and open or enclosed lifeboat with inboard engine	

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Crit
Operate a survival craft engine	Methods of starting and operating a survival craft engine and its accessories together with use of the fire extinguisher provided	Assessment of evidence obtained from practical demonstration of ability to start and operate an inboard engine fitted in an open or enclosed lifeboat	Propulsic maintain manoeuv
Manage survivors and survival craft after abandoning ship	Handling survival craft in rough weather	Assessment of evidence obtained from practical demonstration of ability to:	Survival appropri circumst
	Use of painter sea-anchor and all other equipment	1. row and steer a boat and steer by compass	
	Apportionment of food and water in survival craft	2. use individual items of equipment of survival craft	
	Action taken to maximize detectability and location of survival craft	3. rig devices to aid location	
	Method of helicopter rescue		
	Effects of hypothermia and its prevention; use of protective covers and garments, including immersion suits and thermal protective aids		

	Use of rescue boats and its lifeboats for marshalling liferafts and rescue of survivors and persons in the sea Beaching survival craft		

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Crit
Use locating devices, including communication and signalling apparatus and pyrotechnics	Radio life-saving appliances carried in survival craft, including satellite EPIRBs and SARTs Pyrotechnic distress signals	Assessment of evidence obtained from practical demonstration of ability to: 1. use portable radio equipment for survival craft 2. use signalling equipment, including pyrotechnic	Use communi apparatus prevailin condition
Apply first aid to survivors	Use of the first-aid kit and resuscitation techniques Management of injured persons, including control of leeding and shock	Assessment of evidence obtained from practical demonstration of ability to deal with injured persons both during and after abandonment, using first-aid kit and resuscitation techniques	Identifica cause, r injuries c and accu Priority treatment to life

Table A-VI/2-2

Specification of the minimum standard of competence in fast rescue boats

Column 1	**Column 2**	**Column 3**	
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Crit
Take charge of fast rescue boat during and after launch	Construction and outfit of fast rescue boats and individual items of their equipment Particular characteristics and facilities of fast rescue boats	Assessment of evidence obtained from practical demonstration of ability to: 1. control safe launching and recovery of a fast rescue boat	Preparati launching rescue equipmer

	Safety precautions during launch and recovery of a fast rescue boat Procedures for righting a capsized fast rescue boat How to handle a fast rescue boat in prevailing and adverse weather and sea conditions Navigational and safety equipment available in a fast rescue boat Search patterns and environmental factors affecting their execution Assessment of the readiness of fast rescue boats and related equipment for immediate use Knowledge of the maintenance, emergency repairs, normal inflation and deflation of buoyancy compartments of inflated fast rescue boats	2. right a capsized fast rescue boat 3. handle a fast rescue boat in prevailing weather and sea conditions 4. swim in special equipment 5. use communication and signalling equipment between the fast rescue boat and a helicopter and a ship 6. use the emergency equipment carried 7. recover a casualty from the water and transfer a casualty to a rescue helicopter or to a ship or to a place of safety 8. carry out search patterns, taking account of environmental factors	

Column 1	Column 2	Column 3	
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Crit
Operate a fast rescue boat engine	Methods of starting and operating a fast rescue boat engine and its accessories	Assessment of evidence obtained from practical demonstration of ability to start and operate a fast rescue boat engine	Engine is required

GUIDANCE REGARDING CERTIFICATION FOR PROFICIENCY IN SURVIVAL CRAFT, RESCUE BOATS AND FAST RESCUE BOATS

1. Before training is commenced the requirement of medical fitness, particularly regarding eyesight and hearing, should be met by the candidate.

2. The training should be relevant to the provisions of the International Convention for the Safety of Life at Sea (SOLAS), as amended.

MANDATORY MINIMUM TRAINING IN ADVANCED FIRE FIGHTING

Standard of competence

1. Seafarers designated to control fire-fighting operations shall have successfully completed advanced training in techniques for fighting fire, with particular emphasis on organization, tactics and command, and shall be required to demonstrate competence to undertake the tasks, duties and responsibilities listed in column I of table A-VI/3.

2. The level of knowledge and understanding of the subjects listed in column 2 of table A-VI/3 shall be sufficient for the effective control of fire-fighting operations on board ship.

3. Training and experience to achieve the necessary level of theoretical knowledge, understanding and proficiency shall take account of the guidance given in this Schedule.

4. Every candidate for certification shall be required to provide evidence of having achieved the required standard of competence within the previous five years, in accordance with the methods for demonstrating competence and the criteria for evaluating competence tabulated in columns 3 and 4 of table A-VI/3.

TABLE A-VI/3.

Specification of the minimum standard of competence in advanced fire fighting

Column 1	Column 2	Column 3	
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Crit
Control fire-fighting operations aboard ships	Fire-fighting procedures as sea and in port with particular emphasis on organization, tactics and command	Practical exercises and instruction conducted under approved and truly realistic training conditions (e.g., simulated shipboard conditions) and, whenever possible and practicable, in darkness	Actions t based c assessme using all informati
	Use of water for fire-extinguishing, the effect on ship stability, precautions and corrective procedures		The ord and seq appropria requirem and to r potential injuries impairme effectiver
	Communication and co-ordination during fire-fighting operations		Transmis prompt, clear

	Ventilation control, including smoke extractor Control of fuel and electrical systems Fire-fighting process hazards (dry distillation, chemical reactions, boiler uptake fires, etc.) Fire fighting involving dangerous goods Fire precautions and hazards associated with the storage and handling of materials (paints, etc.) Management and control of injured persons Procedures for co-ordination with shore-based fire fighters		Personal control a at all tim

Column 1	**Column 2**	**Column 3**	
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Crit
Organized and train fire parties	Preparation of contingency plans Composition and allocation of personnel to fire parties Strategies and tactics for control of fires in various parts of the ship	Practical exercises and instruction conducted under approved and truly realistic training conditions e.g., simulated shipboard conditions	Composi of fire co prompt implemer plans and

Inspect and service fire-detection and extinguishing systems and equipment	Fire-detection systems; fixed fire-extinguishing systems; portable and mobile fire-extinguishing equipment including appliance, pumps and rescue, salvage, life-support, personal protective and communication equipment Requirement for statutory and classification surveys	Practical exercises using approved equipment and systems in a realistic training environment	Operatio fire-detec systems maintain accordan specifica requirem
Investigate and compile reports on incidents involving fire	Assessment of cause of incidents involving fire	Practical exercises in a realistic training environment	Causes o the counterm

MANDATORY MINIMUM REQUIREMENTS RELATED TO MEDICAL FIRST AID MEDICAL CARE

Standard of Competence for Seafarers Designated to Provide Medical First Aid on Board Ship

1. Every seafarer who is designated to provide medical first aid on board ship shall be required to demonstrate the competence to undertake the tasks, duties and responsibilities listed in column I of table A-VI/4-1.

2. The level of knowledge of the subjects listed in column 2 of table A-VI/4-1, shall be sufficient to enable the designated seafarer to take immediate effective action in the case of accidents or illness likely to occur on board ship.

3. Every candidate for certification under the provisions of Regulation 31, shall be required to provide evidence that the required standard of competence has been achieved in accordance with the methods for demonstrating competence and the criteria for evaluating competence tabulated in columns 3 and 4 of table A-VI/4-1.

Standard of competence for seafarers designated to take charge of medical care on board ship

4. Every seafarer who is designated to take charge of medical care on board ship shall be required to demonstrate the competence to undertake the tasks, duties and responsibilities listed in column I of table A-VI/4-2.

5. The level of knowledge of the subjects listed in column 2 of table A-VI/4-2 shall be sufficient to enable the designated seafarer to take immediate effective action in the case of accidents or illness likely to occur on board ship.

6. Every candidate for certification under the provisions of Regulation 31 shall be required to provide evidence that the required standard of competence has been achieved in accordance with the methods for demonstrating competence and the criteria for evaluating competence tabulated in columns 3 and 4 of table A-VI/4-2.

TABLE A-VI/4-1.

Specification of the minimum standard of proficiency in medical first aid

Column 1	Column 2	Column 3	
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Crit
Apply immediate first aid in the event of accident or illness on board	First-aid kit	Assessment of evidence obtained from practical instruction	The ider cause, r injuries i conforms practice
	Body structure and function		Risk of h is minim
	Toxicological hazards on board, including use of the Medical First Aid Guide for use in Accidents Involving Dangerous Goods (MEAG) or its national equivalent		Treatmer patient's appropria recognize internatio
	Examination of casualty or patient		
	Spinal injuries		
	Burns, scalds and effects of heat and cold		
	Fractures, dislocations and muscular injuries		
	Medical care of rescued persons		
	Radio medical advice		
	Pharmacology		
	Sterilization		
	Cardiac arrest drowning and asphyxia		

TABLE A-VI/4-2.

Specification of the Minimum Standard of Proficiency for Persons in Charge of Medical Care on Board Ship

Column 1	Column 2	Column 3	

Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Crit
Provide medical care to the sick and injured while they remain on board	Care of casualty involving: 1. head and spinal injuries 2. injuries of ear, nose, throat and eyes 3. external and internal bleeding 4. burns, scalds and frostbite 5. fractures, dislocations and muscular injuries 6. wounds, wound healing and infection 7. pain relief 8. techniques of sewing and clamping 9. management of acute abdominal conditions 10. minor surgical treatment 11. dressing and banding	Assessment of evidence obtained from practical instruction and demonstration Where practicable, approved practical experience at a hospital or similar establishment	Identifica based c clinical medical k Protectio spread o and effec
	Aspects of nursing: 1. general principles 2. nursing care		Personal Confiden
Provide medical care to the sick and injured while they remain on board	Diseases, including: 1. medical conditions and emergencies 2. sexually transmitted diseases 3. tropical and infectious diseases		Treatmer condition conforms practice and ir guides
	Alcohol and drug abuse		The dosa drugs an with recomme medical p
	Dental care		The sign patient's recognize
	Gynaecology, pregnancy and childbirth		
	Medical care of rescued persons		

	Death at sea Hygiene Disease prevention, including: 1. disinfection, disinfestation, de-ratting 2. vaccinations Keeping records and copies of applicable regulations: 1. keeping medical records 2. international and national maritime medical regulations		

Column 1	**Column 2**	**Column 3**	
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Crit
Participate in co-ordinated schemes for medicals assistance to ships	External assistance, including: .1 radio medical advice .2 transportation of the all and injured, including helicopter evacuation .3 medical care of sick seafarers involving co-operation with port health authorities or out-patient wards in put		Clinical procedur comply received The meth evacuatic with recc is desig welfare c Procedur medical establish recomme

SCHEDULE 13

WATCHKEEPING STANDARDS

Fitness for duty

1. All persons who are assigned duty as officer in charge of a watch or as a rating forming part of a watch shall be provided a minimum of 10 hours of rest in any 24- hour period.

2. The hours of rest may be divided into no more than two periods, one of which shall be at least 6 hours in length.

3. The requirements for rest periods laid down in paragraphs 1 and 2 need not be maintained in the case of an emergency or drill or in other overriding operational conditions.

4. Notwithstanding the provisions of paragraphs 1 and 2, the minimum period of ten hours may be reduced to not less than 6 consecutive hours provided that any such reduction shall not extend beyond two days and not less than 70 hours of rest are provided each seven-day period.

5. The Administration shall require that watch schedules be posted where they are easily accessible.

WATCHKEEPING ARRANGEMENTS AND PRINCIPLES TO BE OBSERVED

PART 1—-CERTIFICATION

1. The officer in charge of the navigational or deck watch shall be duly qualified in accordance with the provisions of Regulation 23 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 Regulation 26 appropriate to the duties related to engineering watchkeeping.

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 AT SEA

Principles Applying to Watchkeeping Generally

8. The Administration 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.

9. 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.

10. 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

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

Part 31—Principles to be Observed in Keeping a Navigational Watch

12. 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.

Look-out

13. A proper look-out shall be maintained at all times in compliance with rule of the International Regulations for Preventing Collisions at Sea, 1972 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.

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

15. The duties of the look-out and helmsperson are separate and the helmsperson shall not be considered to be the took-out 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 look-out. The officer in charge of the navigational watch may be the sole look-out

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.

16. In determining that the composition of the navigational watch is adequate to ensure that a proper look-out can continuously be maintained, the master shall take into account all relevant factors, including those described in this schedule, 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 routeing 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

17. 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 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

18. 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.

19. 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.

20. 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.

21. 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.

22. 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

23. 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;

.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; and

.4 notify the master when in any doubt as to what action to take in the interest of safety.

24. 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.

25. 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.

26. 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.

27. Officers of the navigational watch shall make the most effective use of all navigational equipment at their disposal.

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, 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 look-out 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 look-out 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, schedule; 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), 1974. 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 look-out 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 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;

.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 look-out.

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 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 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 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 look-out;

.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 look-out 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.

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

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 co-operate 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 look-out 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 3-2—Principles to be Observed in Keeping an Engineering Watch

52. The term engineering watch as used in parts 3 -2, 4-2 and 4-4 of this schedule mean 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 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 he 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, or 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 the 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,

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, bypassing 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 break-down, 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 be limited to:

.1 isolating and by passing machinery to be worked on;

.2 adjusting the remaining plant to function adequately and safety during the maintenance period.

.3 recording in the engine-room log or other suitable document, 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 of 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 of 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 charges 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 shall be ready for immediate operation.

Ship at Anchor

82. At an unsheltered anchorage the chief engineer officer shall consult with the roaster 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 3-3—PRINCIPLES TO BE OBSERVED IN KEEPING A RADIO WATCH

General provisions

84. The Administration 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 schedule, 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 relation 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 Regulation 6.

PART 4—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;

.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.

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 4-l—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:

.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 fights 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; .

.5 no external conditions or circumstances imperil the ship and that it does not imperil others.

Part 4-2—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 4-3—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 4-4—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 system;

.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;

.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 duty qualified officer or officers, and ratings where appropriate, even when the ship is safety 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.

Prevention of Fatigue

1. In observing the rest period requirements, "overriding operational conditions" should be construed to mean only essential shipboard work which cannot be delayed for safety or environmental reasons or which could not reasonably have been anticipated at the commencement of the voyage.

2. Although there is no universally accepted technical definition of fatigue, every one involved in ship operations should be alert to the factors which can contribute to fatigue, including, but not limited to, those identified by the Organization,* and take them into account when making decisions on ship operations.

3. In applying Regulation 33 the following should be taken into account:

.1 provisions made to prevent fatigue should ensure that excessive or unreasonable overall working hours are not undertaken. In particular, the minimum rest periods specified in this schedule should not be interpreted as implying that all other hours may be devoted to watch- keeping or other duties;

.2 the frequency and length of leave periods, and the granting of compensatory leave, are material factors in preventing fatigue from building up over a period of time; and

.3 the provisions may be varied for ships on short sea voyages, provided special safety arrangements are put in place.

4. The Administration should consider the introduction of a requirement that records of hours of work or rest of seafarers should be maintained and that such records are inspected by the Administration at appropriate intervals to ensure compliance with regulations concerning working hours or rest periods.

5. Based on information received as a result of investigating maritime casualties, the Administration should keep their provisions on prevention of fatigue under review.

1. The following operational guidance should be taken into account by companies, masters and watchkeeping officers.

PART 3-1—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 and property at sea and of preventing pollution of the marine environment.

Bridge Resource Management

4. Companies should issue guidance on proper bridge procedures and promote the use of checklists appropriate to each ship, taking into account national and international guidance.

5. Companies should also issue guidance to masters and officers in charge of the navigational watch on each ship concerning the need for continuously reassessing how bridge-watch resources are being allocated and used, based on bridge resource management principles such as the following:

.1 a sufficient number of qualified individuals should be on watch to ensure all duties can be performed effectively;

.2 all members of the navigational watch should be appropriately qualified and fit to perform their duties efficiently and effectively or the officer in charge of the navigational watch should take into account any limitation in qualifications or fitness of the individuals available when making navigational and operational decisions;

.3 duties should be clearly and unambiguously assigned to specific individuals, who should confirm that they understand their responsibilities;

.4 tasks should be performed according to a clear order of priority;

.5 no member of the navigational watch should be assigned more duties or more difficult tasks than can be performed effectively,

.6 individuals should be assigned at all times to locations at which they can most efficiently and effectively perform their duties, and individuals should be reassigned to other locations as circumstances may require;

.7 members of the navigational watch should not be assigned to different duties, tasks or locations until the officer in charge of the navigational watch is certain that the adjustment can be accomplished efficiently and effectively;

.8 instruments and equipment considered necessary for effective performance of duties should be readily available to appropriate members of the navigational watch;

.9 communications among members of the navigational watch should be clear, immediate, reliable, and relevant to the business at hand;

.10 non-essential activity and distractions should be avoided, suppressed or removed;

.11 all bridge equipment should be operating properly and if not, the officer in charge of the navigational watch should take into account any malfunction which may exist in making operational decisions;

.12 all essential information should be collected, processed and interpreted, and made conveniently available to those who require it for the performance of their duties;

.13. non-essential materials should not be placed on the bridge or any work surface; and

.14 members of the navigational watch should at all times be prepared to respond efficiently and effectively to changes in circumstances.

Part 3-2—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 3-3—GUIDANCE ON KEEPING A RADIO WATCH

9. Among other things, the Radio Regulations require that each ship radio station is licensed, is 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 28. This should he recorded in the deck or radio log-book.

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, here 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 Convention 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 up-dated 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 radio-communications 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 Annex I to the Protocol additional to the Geneva Conventions of 12 August 1949 relating to the protection of victims of international armed conflicts (Protocol 1), the radio operator designated as having primary responsibility for radio-communication 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 supplier, are the responsibility of the radio operator designated as having primary responsibility for radio-communications 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.

PART 3—GUIDANCE ON PREVENTION OF DRUG AND ALCOHOL ABUSE

34. Drug and alcohol abuse directly affect the fitness and ability of a seafarer to perform watchkeeping duties. Seafarers found to be under the influence of drugs or alcohol should not be permitted to perform watchkeeping duties until they are no longer impaired in their ability to perform those duties.

Drug and Alcohol Abuse Screening Programme Guidelines

35. The Administration shall ensure that adequate measures are taken to prevent alcohol and drugs from impairing the ability of watchkeeping personnel, and should establish screening programmes as necessary which:

.1 identify drug and alcohol abuse;

.2 respect the dignity, privacy, confidentiality and fundamental legal rights of the individuals concerned; and

.3 take into account relevant international guidelines.

SCHEDULE 14

SAFE MANNING REQUIREMENTS

MASTER AND DECK DEPARTMENT

LIMITATION		CAPACITY								
TRADING AREA	GROSS TONNAGE (GT)	REQUIRED CLASS OF CERTIFICATE AND [NUMBERS TO BE CARRIED SHOWI								
		Master			Chief Mate			Officer of the Watch		
		CLASS	REG	STCW	CLASS	REG	STCW	CLASS	REG	
	<3000	1a[1]	23(3.4)	11/2(2)	2a[1]	23(3.4)	11/2(2)			
	<500						3a[3]		23(1.2)	1
UNLIMITED	>500 <3000	1b[1]	23(5.6)	11/2(4)	2b[1]	23(5.6)	11/2(4)			
	<500	1b[1]	23(8)	11/3(2)	—	—	—	3a[3]	23(7)	1
	<500	1c[1]	Sh8(33)	A-11/2(8).	2c[1]	Sh8(33)	A-11/2(8).	3b[2]	Sh8(7)	A

NEAR-COASTAL	<500	1d[1]	23(11.12)	11/3(6).	—	—	—	3c[1]	23(9.10)	1

NOTE

REG = RELEVANT MERCHANT SHIPPING CERTIFICATION, TRANING MANNING AND WATCHKEEPING REGULATION

Sh = RELEVANT MERCHANT SHIPPING CERTIFICATION, TRANING MANNING AND WATCHKEEPING SCHEDULE

STCW = RELEVANT STCW REGULATION OR ASSOCIATED CODE

SAFE MANNING REQUIREMENTS

ENGINE DEPARTMENT

LIMITATION		CAPACITY								
TRADING AREA	PROPULSION POWER (kw)	REQUIRED CLASS OF CERTIFICATE AND [NUMBERS TO BE CARRIED SHOWI								
		Chief Engineer Officer			Second Engineer Officer			Officer of the Watch		
		CLASS	REG	STCW	CLASS	REG	STCW	CLASS	REG	
	3000	1a[1]	26(3.4)	111/2	2a[1]	26(3.4)	111/2			
	750							3a[3]	26(1.2)	1
UNLIMITED	750 <000	1b.2a[1]	26(5.6)	111/3	2b[1]	26(5.6)	111/3	3a[3]	26(1.2)	1
	3000	1a[1]			2a[1]	—	—	3a[3]		–
	750									
NEAR-COASTAL	750 <3000	1c[1]	Sh9(19) Sh9(27)	A-111/2(8). A-111/3(8).	2c[1]	Sh9(19) Sh9(27)	A-111/2(8). A-111/3(8).	3b[2]		A

NOTE

REG = RELEVANT MERCHANT SHIPPING CERTIFICATION, TRANING MANNING AND WATCHKEEPING REGULATION

Sh = RELEVANT MERCHANT SHIPPING CERTIFICATION, TRANING MANNING AND WATCHKEEPING SCHEDULE

STCW = RELEVANT STCW REGULATION OR ASSOCIATED CODE

SAFE MANNING REQUIREMENTS

RADIO COMMUNICATION AND RADIO PERSONEL

LIMITATION (TRADING AREA)	CAPACITY		
	CLASS	REG.	STCW
UNLIMITED	GENERAL OPERATOR	28	IV/2
NEAR-COASTAL	RESTRICTED OPERATOR	28	IV/2

NOTE

REG = RELEVANT MERCHANT SHIPPING CERTIFICATION, TRANING MANNING AND WATCHKEEPING REGULATION

STCW = RELEVANT STCW REGULATION

SCHEDULE 15

SAMPLE TESTIMONIALS

TESTIMONIAL OF WATCHKEEPING SERVICE DECK OFFICERS

PART 1

This is to certify that M ..... has served on S.S./M. V..... from ..... to ..... in the capacity of*(1) Watchkeeping Officer under my command.

During this period the above-named Officer was in full charge of a watch for not less than ..... hours out of every 24 hours whilst the vessel was at sea on Unlimited*(2)/Near coastal voyages.

*(3)In addition he has regularly carried out other duties in connection with the routine and maintenance of the ship.

*(4)Bridge watches were doubled during the following periods and at no other times .....

During these periods the above-named Officer served as the *(5) Senior/Junior of two bridge-keeping officers.

During the period of engagement stated above, the above-named officer:

**(6) (a) was granted no leave of absence

**(7) (b) was granted leave of absence as follows:

…….....

which period(s)*(8) was/were deducted from his total leave entitlement.

PART 2

During the period the vessel was in the final stages of construction and the above-named officer served on board.

His conduct during the period stated has been…….....

His ability has been .....…….....

His sobriety has been ….....……

Signature of Marine Superintendent/Master**(9) …….....

Date .....…….

*Delete if not applicable ** Delete as appropriate

TESTIMONIAL FOR SEA GOING SERVICE ENGINEER OFFICERS

I certify that the following is the full and true statement of the sea service performed by…….....

Under my supervision on board the…….....

Period of Service		Rank of Officer and actual seniority on watch	Type of main engines and boilers Single or Twin-Screw	Nature of duties as appropriate *(10)
From	To			

Report as to ability…….....

Report as to conduct…….....

Report as to sobriety…….....

Signature of Chief Engineer…….....

Signature of Engineer Superintendent…….....

*(11)DESCRIPTION OF DUTIES

.1 On fitters' work either by day or regular watch

i. Within main engine and boiler spaces

ii. Outside main engine and boiler spaces

.2 On refrigerating or other machinery not essential to the propulsion of the vessel.

.3 On auxiliary engines separated from main propelling units but worked in conjunction therewith

.4 On regular watch on Main Engines as

i. First Engine Room Assistant under the senior in full charge

ii. Second Engine Room Assistant

iii. Junior Engine Room Assistant

5. On regular watch on Main Boilers.

i. In charge of all stokeholds

ii. In charge of a section or one stokehold only.

iii. As boiler Room Assistant.

6. On regular watch on Main Engines and Boilers simultaneously.

i. In full charge of the entire watch.

ii. As first Assistant to the Senior in full charge.

iii. As Junior Assistant.

*NOTE: It is recommended that this form should be used when Engineer reported, on or when the Chief Engineer leaves a ship.

TESTIMONIAL FOR TANKER CARGO TRAINING ON BOARD

This is to certify that …… has successfully completed a special training courses for*(12) …….. tankers in accordance with Regulation V/1 of the STCW Convention 78 as amended in 1995 and is accordingly being recommended to the Administration for the issue of an appropriate certificate.

PERIOD OF TRAINING		DETAILS OF TRAINING
FROM	TO	

Report as to ability…….....

Report as to conduct ……....

Report as to sobriety ……....

…….

Signature of Master or Chief Engineer

*SPECIFY AS APPROPRIATE

- OIL
- CHEMICAL
- LIQUEFIED GAS

TESTIMONIAL FOR RO-RO PASSENGER SHIP TRAINING ON BOARD

This is to certify that…… has successfully completed a special training course in *(13) …….. in accordance with Regulation V/2 of the STCW Convention 78 as amended in 1995 and is being accordingly recommended to the Administration for the issue of appropriate certificate.

PERIOD OF TRAINING		DETAILS OF TRAINING
FROM	TO	

Report as to ability……....

Report as to conduct ……....

Report as to sobriety ……....

Signature of Chief Engineer

*SPECIFY AS APPROPRIATE

- Crowd management
- Familiarization
- Safety for providing direct service to passengers

- Passenger safety, cargo safety and hull integrity
- Crisis management and human behaviour

TESTIMONIAL FOR BASIC SAFETY TRAINING

This is to certify that…… has successfully completed the underlisted training courses in accordance with Regulation VI/1 of the STCW Convention 78 as amended in 1995 and is accordingly being recommended for the issue of the appropriate certificate by the Administration.

PERIOD OF TRAINING		DETAILS OF TRAINING *(14)
FROM	TO	

Report as to ability…….....

Report as to conduct …….....

Report as to sobriety …….....

_____

Signature of Principal

*SPECIFY AS APPROPRIATE

- Personal Survival Techniques
- Fire Prevention and Fire Fighting
- Elementary First Aid
- Personal Safety and Social Responsibilities

TESTIMONIAL FOR ADVANCED SAFETY TRAINING

This is to certify that…… has successfully completed the*(15)……..training courses in accordance with Regulation**(16) …….. of the STCW Convention 78 as amended in 1995 and is accordingly being recommended for the issue of the appropriate certificate by the Administration.

PERIOD OF TRAINING		DETAILS OF TRAINING *(17)
FROM	TO	

Report as to ability……

Report as to conduct ……

Report as to sobriety ……

Signature of Principal

*SPECIFY AS APPROPRIATE

- Survival Craft and Rescue Boats
- Fast Rescue Boats
- Advance Fire Fighting
- Medical First Aid and Medical Care

**SPECIFY AS APPROPRIATE

- VI/2
- VI/3
- VI/4

PROF. C. AMEYAW-AKUMFI

Minister for Ports, Harbours and Railways

Date of Gazette Notification: 19th March, 2004

Entry into force:

Endnotes

1 (Popup - Popup)

Delete if not applicable

2 (Popup - Popup)

Delete if not applicable

3 (Popup - Popup)

Delete if not applicable

4 (Popup - Popup)

Delete if not applicable

5 (Popup - Popup)

Delete if not applicable

6 (Popup - Popup)

Delete as appropriate

7 (Popup - Popup)

Delete as appropriate

8 (Popup - Popup)

Delete if not applicable

9 (Popup - Popup)

Delete as appropriate

10 (Popup - Popup)

It is recommended that this form should be used when Engineer reported, on or when the Chief Engineer leaves a ship.

11 (Popup - Popup)

It is recommended that this form should be used when Engineer reported, on or when the Chief Engineer leaves a ship.

12 (Popup - Popup)

SPECIFY AS APPROPRIATE

- OIL
- CHEMICAL
- LIQUEFIED GAS

13 (Popup - Popup)

SPECIFY AS APPROPRIATE

- Crowd management
- Familiarization
- Safety for providing direct service to passengers
- Passenger safety, cargo safety and hull integrity
- Crisis management and human behaviour

14 (Popup - Popup)

SPECIFY AS APPROPRIATE

- Personal Survival Techniques
- Fire Prevention and Fire Fighting
- Elementary First Aid
- Personal Safety and Social Responsibilities

15 (Popup - Popup)

SPECIFY AS APPROPRIATE

- Survival Craft and Rescue Boats
- Fast Rescue Boats
- Advance Fire Fighting
- Medical First Aid and Medical Care

16 (Popup - Popup)

SPECIFY AS APPROPRIATE

- VI/2
- VI/3
- VI/4

17 (Popup - Popup)

SPECIFY AS APPROPRIATE

- Survival Craft and Rescue Boats
- Fast Rescue Boats
- Advance Fire Fighting
- Medical First Aid and Medical Care