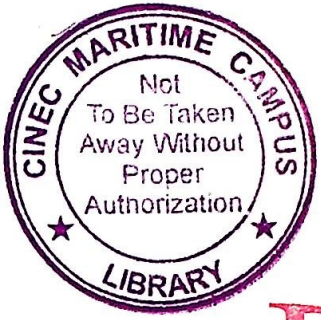
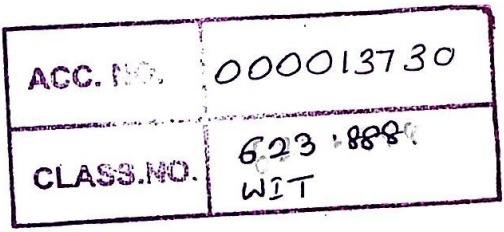


Regulatory Primer for 2nd & Chief Engineers

Questions and Answers

Covering Current and New Regulations

10th Edition: 2019/2020



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Contents

Regulatory Primer for 2nd & Chief Engineers Covering Current and New Regulations

Cargo Ship Related Questions

Que. What is the IMSBC Code and what does it cover?

Ans. The International Maritime Solid Bulk Cargoes Code (IMSBC Code) is mandatory under SOLAS Chapter VI. In 2011, it replaced the Code of Safe Practice for Solid Bulk Cargoes (BC Code), which was first adopted as a recommendatory code in 1965 and has been updated at regular intervals since then. The aim of the IMSBC Code is to facilitate the safe stowage and shipment of solid bulk cargoes, by providing information on the dangers associated with the shipment of certain types of cargo and instructions on the appropriate procedures to be adopted.

The IMSBC Code Supplement includes revised updates for:

- The Code of Practice for the Safe Loading and Unloading of Bulk Carriers (BLU Code)
- the manual on loading and unloading of solid bulk cargoes for terminal representatives (BLU Manual)
- uniform method of measurement of the density of bulk cargoes
- lists of solid bulk cargoes for which a fixed gas fire-extinguishing system may be exempted or for which a fixed gas fire-extinguishing system is ineffective
- recommendations for entering enclosed spaces aboard ships
- recommendations on the safe use of pesticides in ships applicable to the fumigation of cargo holds
- guidelines for the submission of information and completion of the format for the properties of cargoes not listed in the IMSBC Code and their conditions of carriage

- guidelines for developing and approving procedures for sampling, testing and controlling the moisture content for solid bulk cargoes which may liquefy
- contact names and addresses of the offices of designated national competent authorities responsible for the safe carriage of grain and solid bulk cargoes.

Que. What are the recent amendments to the IMSBC Code?

Ans. Amendment 02-13 entered into force on 1st January 2015. IMO Resolution MSC.354(92) contains amendments to Sections 4 and 8 of the IMSBC Code. These aim to increase the responsibility of the competent authority of the load port for approving and ensuring implementation of procedures for sampling, testing and controlling moisture content at a safe level until the cargo is on board the ship. The amendments also highlight that even *"if samples remain dry following a can test, the moisture content of the material may still exceed the Transportable Moisture Limit (TML)"*. Therefore, proper testing by the load port authorities is vital. The Resolution contains other amendments, which also entered into force on 1st January 2015, affecting in-transit fumigation and hazardous cargoes.

Amendment 03-15 entered into force on 1st January 2017. IMO Resolution MSC.393(95) specifies the amendments, which relate to the following sections: application and implementation of the Code, safety of personnel and ship, assessment of acceptability of consignments for safe shipment, cargoes that may liquefy, materials possessing chemical hazards and prevention of pollution by cargo residues from ships. The various appendices, which cover cargoes, were also amended.

Amendment 04-17 entered into force on 1st January 2019. This includes matters relating to substances harmful to the marine environment (HME) and amendments to paragraphs 4.5.1 and 4.5.2 of the IMSBC Code, highlighting the responsibility of the shipper

for ensuring that a test to determine the TML of a solid bulk cargo is conducted. Amendment 05-19 was adopted in June 2019 and will enter into force on 1st January 2021. The 2019 amendments include updates to various schedules (such as a new individual schedule for BAUXITE FINES as a Group A cargo), as well as editorial amendments. The amendments are incorporated into a consolidated IMSBC Code. Amendments may be applied in whole, or in part, on a voluntary basis from 1st January 2020.

Que. What are the IMSBC Code cargo groups and how are they applied?

Ans. The IMSBC Code categorises cargoes into three groups:

- Group A – cargoes that may liquefy if shipped at a moisture content exceeding their Transportable Moisture Limit (TML)
- Group B – cargoes that possess a chemical hazard that could give rise to a dangerous situation
- Group C – cargoes that are neither liable to liquefy (Group A) nor possess chemical hazards (Group B), but can still be hazardous.

Que. What sources of guidance are available for personnel carrying out tanker operations?

Ans. The ship's safety management system (SMS) should be the first point of reference before carrying out any operation. Additional sources of guidance include, but are not limited to:

- Industry guidance from bodies such as CDI, ICS, INTERTANKO, OCIMF and SIGTTO, including publications such as:
  - *'International Safety Guide for Oil Tankers and Terminals'* (ISGOTT)
  - *'Liquefied Gas Handling Principles on Ships and in Terminals'* (LGHP4)
  - *'Ship to Ship Transfer Guide for Petroleum, Chemicals and Liquefied Gases'*

- Codes such as the IMDG Code, IBC Code and IGC Code
- Guidance Manual for Tanker Structures
- The MARPOL and SOLAS Conventions
- Material Safety Data Sheets (MSDS)
- Onboard plans and manuals
- Code of Safe Working Practices for Merchant Seafarers (COSWP).

Que. Are tankers permitted to blend liquid cargoes at sea?

Ans. The physical blending of bulk liquid cargoes at sea is prohibited. Regulation 5-2 of SOLAS Chapter VI, on the prohibition of the blending of bulk liquid cargoes and production processes during sea voyages, has been in force since 1st January 2014.

There are separate requirements for the transport and handling of limited amounts of hazardous and noxious liquid substances in bulk on offshore support vessels (see Resolution A.673(16), as amended).

Ref: SOLAS Consolidated Edition, MSC.325(90)

Que. What are the current UK regulations and guidance on ship to ship (STS) operations?

Ans. The UK Ship to Ship Transfer Regulations 2010/2012 are set out in MSN 1829. The key points are:

- Ship to ship transfers, including most bunkering operations, outside of port authority areas are prohibited within the UK territorial sea with the exception of an identified area near Southwold on the east coast, for operations
- for transfers within the area, detailed technical requirements apply to STS operations including a need to provide 72 hours' notice
- outside of the UK territorial sea, but within the UK Pollution Control Zone, ship to ship transfers are permitted but must be

notified to the MCA no less than 48 hours before the transfer on a 'for information' basis

- UK-flagged oil tankers involved in STS operations internationally are required to carry a plan prescribing how to conduct STS operations in line with MARPOL Annex I.

Additionally, the *'Ship to Ship Transfer Guide for Petroleum, Chemicals and Liquefied Gases'* is a joint industry-wide publication that contains specific guidance for STS operations. It includes information on effective planning, executing the operation, risk assessment, ship compatibility and the management of workloads to minimise fatigue.

Ref: MSN 1829, Ship to Ship Transfer Guide

Que. What are the requirements for inert gas on tankers and why?

Ans. Inert gas is a mixture of gases that together contain insufficient oxygen to support combustion. It is an essential safety system to prevent ignition of flammable vapours in cargo tanks carrying hydrocarbons. Inert gas, principally composed of nitrogen, is usually produced by inert gas generators or flue exhaust gas systems on board, although it can be obtained in limited circumstances from ashore.

The requirements for tankers to be fitted with inert gas systems have been phased in, by size since 1974, by SOLAS. The most recent amendment to SOLAS and the Fire Safety Systems Code on inert gas was in 2014. This stated that from 1st January 2016 all new tankers of 8,000 DWT and above must use inert gas. However, vessels of less than 20,000 DWT are permitted to use inert gas supplied from ashore. In practice, most tankers are fitted with inert gas systems, so they can operate safely and effectively in tanker terminals.

Que. How is the atmosphere in cargo spaces monitored on tankers?

Ans. SOLAS Regulation II-2/4 requires that all oil tankers are fitted with equipment that can measure both oxygen concentrations and flammable vapour concentrations on board. This is in addition to requirements for the carriage of at least one portable instrument capable of measuring flammable vapour concentrations. It is essential that these values are monitored during inerting, purging and gas-freeing operations. Monitoring the values during purging (when inert gas is added to prevent ignition of flammable vapours) is necessary to prevent the atmosphere in the tank entering the flammable range during the gas-freeing process (when oxygen is introduced).

Additionally, tankers greater than 20,000 DWT, constructed on or after 1st January 2012, that do not have a constant inerting system for ballast and void spaces adjacent to cargo tanks are required by SOLAS to be provided with a fixed hydrocarbon gas detection system, fitted with audible and visual alarms in the CCR and ECR and on the bridge.

Other portable measuring units should be available on board to monitor the particular characteristics of the cargo, particularly where it requires the application of additional safety procedures, for example hazardous chemical cargoes or cargoes such as benzene.

Que. On a tanker, what information would you expect to find that deals with the management of emissions of cargo vapours or VOCs (volatile organic compounds) into the atmosphere?

Ans. There should be an approved VOC Management Plan on board that demonstrates the procedure for eliminating VOC emissions. The plan should be compiled in accordance with IMO guidelines (MEPC.185(59) and MEPC.1/Circ.680) and should provide details on managing emissions during loading, passage and discharge. It should include information on the Vapour Emission Control

System (VECS) on board the vessel, in compliance with the requirements under Regulation 15 of MARPOL Annex VI.

The plan should be ship specific and provide written procedures for minimising VOC emissions during loading, sea passage and discharge of cargo. It should give consideration to the additional VOCs generated by crude oil washing. It should identify a person responsible for implementing the plan and be in the working language of the vessel.

Que. What checks are required regarding the use of Vapour Emission Control Systems (VECS) and in what ports?

Ans. MARPOL Annex VI, Regulation 15 applies to tankers operating in ports and terminals of signatory states that have been notified to the IMO as being designated for VOC regulation. As of September 2018, there are 91 signatory nations to IMO Annex VI, representing 97% of global tonnage. Operators trading to these countries will have to check whether the individual port is designated for VOC regulation.

Onboard checklists should cover inspection of the system before use (including, as applicable, testing the monitoring system) and regular checks throughout operations. The *'International Safety Guide for Oil Tankers and Terminals'* (ISGOTT) states that, where a vapour return line is connected, the system must be discussed and agreed by ship and shore personnel during completion of the ship/shore safety checklist. Maximum and minimum operating pressures should be highlighted.

Ref: IMO website and ISGOTT

Que. What is the IGC Code?

Ans. The International Code of the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code) has been mandatory under SOLAS Chapter VII since 1st July 1986. It applies to ships

carrying liquefied gases with the characteristics described in the Code (listed in Chapter 19 of the 2016 edition).

The Code includes design and construction standards, and equipment requirements. Gas carriers constructed prior to 1st July 1986 should comply with the requirements of the older Code for the Construction Equipment of Ships Carrying Liquefied Gases in Bulk (GC Code) and the Code for Existing Ships Carrying Liquefied Gases in Bulk (EGC Code).

Que. What are the recent amendments to the IGC Code?

Ans. The complete text of the IGC Code was replaced under Resolution MSC.370(93), which entered into force on 1st January 2016. Two other amendments entered into force on 1st January 2020. The first of these was approved in November 2016 (Resolution MSC.411(97)) to include new ship and fire integrity arrangements. The other was approved in May 2018 (Resolution MSC.441(99)) to include a revised model form of the Certificate of Fitness.

Que. Which IMO Code applies specifically to chemical tankers?

Ans. The International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk (IBC Code) applies to chemical tankers built on or after 1st July 1986. Prior to this date, ships are covered under the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (BCH Code), the predecessor of the IBC Code.

Note that IMO Conventions also specifically deal with carriage of chemicals, in SOLAS Chapter VII – The carriage of dangerous goods and in MARPOL Annex II – Regulations for the control of pollution by noxious liquid substances in bulk.

Que. What are the three types of ship design standards in the IBC Code?

Ans. Ships subject to the Code are designed according to one of the following standards:

- A type 1 ship is a chemical tanker intended to transport Chapter 17 products with very severe environmental and safety hazards which require maximum preventive measures to preclude an escape of such cargo
- a type 2 ship is a chemical tanker intended to transport Chapter 17 products with appreciably severe environmental and safety hazards which require significant preventive measures to preclude an escape of such cargo
- a type 3 ship is a chemical tanker intended to transport Chapter 17 products with sufficiently severe environmental and safety hazards which require a moderate degree of containment to increase survival capability in a damaged condition.

Therefore, a type 1 ship is a chemical tanker intended for the transportation of products considered to present the greatest overall hazard and types 2 and 3 for products with lesser hazards. A type 1 ship should survive the most severe standard of damage and its cargo tanks must be located at the maximum prescribed distance inboard from the shell plating. Chapter 17 of the IBC Code contains tables of the minimum requirements for carriage of noxious liquid substances, according to product name and the associated hazards/pollution category under MARPOL Annex II.

Que. What are the recent amendments to the IBC Code?

Ans. The most recent amendments to the IBC Code entered into force on 1st January 2016. They made the provision of a stability instrument mandatory on board all chemical tankers. The stability instrument must be capable of verifying compliance with intact stability and damage stability requirements as set out in Resolutions MSC.369(93) and MEPC.250(66).

Amendments to the contents of the model form of the Certificate of Fitness, approved in 2018, entered into force on 1st January 2020 (Resolutions MSC.440(99) and MEPC.302(72)).

Substantial amendments were approved in 2019 and these will enter into force on 1st July 2021. These amendments include revised Chapters 17 (Summary of minimum requirements), 18 (List of products to which the code does not apply), 19 (Index of products carried in bulk) and 21 (Criteria for assigning carriage requirements for products subject to the IBC Code).

Que. What requirements entered into force on 1st January 2009 for new build chemical tankers >2,000 GT?

Ans. Any category A machinery space exceeding 500 m^3 in volume must be provided with an approved type of fixed water-based or equivalent local application fire-fighting system, based on MSC/Circ.913, in addition to the required fixed fire-extinguishing system.

Ref: IBC Code and MSC.219(82) http://tinyurl.com/nd9p7df

Que. What is the P&A Manual?

Ans. MARPOL Annex II, Regulation 14 requires every ship certified to carry NLS cargoes to have on board a Procedures and Arrangements (P&A) Manual approved by the Administration. The Manual identifies the arrangements and procedures for cargo handling, tank cleaning, slops handling and other operations such as ballasting.

Que. All crude oil tankers and crude oil/product carriers >500 GT delivered on or after 1st January 2016 must have their upper deck and the bottom of cargo oil tanks protected against corrosion. How is this achieved?

Ans. It is achieved by the application of protective coatings that comply with the new IMO Cargo Oil Tank Corrosion Prevention Standard (COTCPS). Alternative means of corrosion protection or the use

of corrosion-resistant material may be applied as long as they are able to maintain required structural integrity for 25 years.

Que. What is the Certificate of Fitness?

Ans. The International Certificate of Fitness for the Carriage of Liquefied Gases in Bulk applies to gas carriers under the IGC Code. The International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk applies to chemical tankers under the IBC Code. A Certificate indicates that the ship has been surveyed in accordance with the appropriate Code and that its construction, equipment, arrangements and fittings are in accordance with the relevant provisions, signifying that the ship is suitable for the carriage of cargoes under the Code. A Certificate of Fitness should be accompanied by an approved loading and stability manual.

Que. When carrying road freight units that require an electrical supply, who is responsible for the extension cable between the vessel and the road freight unit?

Ans. The quality of the vessel's electrical equipment is the liability of the shipowner and the quality of the electrical installations on the road freight unit is the liability of the unit's owner and driver. The party responsible for providing the extension cable between the vessel and the road freight unit is responsible for its condition and performance.

Que. What is the IMDG Code and what is the most recent edition?

Ans. The International Maritime Dangerous Goods (IMDG) Code is a uniform code for the international transport of dangerous goods by sea. The Code falls under SOLAS Chapter VII, which requires the carriage of dangerous goods to be in compliance with the relevant provisions of the Code.

The Code covers topics such as packing, transportation, stowage and segregation of incompatible cargoes. Under the Code,

dangerous goods are divided into a series of classes according to hazard, e.g. explosive, flammable or radioactive. The Code is split into two volumes (the 1st volume provides detailed guidance on hazardous goods classification, packing and consignment and the 2nd volume is the Dangerous Goods List) and a supplement (covering emergency response, medical first aid and reporting procedures).

The latest edition of the IMDG Code is the 2018 edition, which was approved at MSC 99 in May 2018. This edition entered into force on 1st January 2020 (as per Resolution MSC.442(99)). The 2014 edition entered into force on 1st January 2016 and was itself amended by amendment 38-16 (see next question).

Ref: IMDG Code

Que. What are the most recent amendments to the IMDG Code?

Ans. In May 2016, the IMO adopted amendment 38-16 to the IMDG Code. These amendments entered into force on 1st January 2018. The amendments have substantially revised the text of the Code and included are new UN numbers and a new Class 9 label for use when lithium metal and lithium ion cells are being shipped.

Amendment 39-18 to the IMDG Code entered into force on 1st January 2020 (as per Resolution MSC.442(99), incorporating revision of the classification categories). The Emergency Response Procedures for Ships Carrying Dangerous Goods (EmS Guide) have also been completely revised by this amendment. For UK ships, MSN 1893 explains the amendment 39-18 and the changes to the IMDG Code.

Que. What is the Document of Compliance in relation to dangerous goods?

Ans. The Document of Compliance (DOC) for ships carrying dangerous goods is required under SOLAS Regulation II-2/19. This Regulation provides specific construction and equipment requirements for ships carrying dangerous goods, including separation requirements, additional water and fire-fighting requirements, bilge pumping and drainage arrangements, ventilation arrangements and RoRo specific requirements. The DOC is evidence of compliance with these requirements.

In the UK, the MCA includes an annual survey for the arrangements of the DOC within the Safety Equipment Survey. Further information is contained in MGN 36.

Que. When given a specific UN number, how should the IMDG Code be consulted?

Ans. Volume 2 of the IMDG Code should be consulted first, specifically Part 3 as this contains the Dangerous Goods List. This lists the most commonly transported DGs and is organised by UN number. The list can be used to identify the UN number, proper shipping name and appropriate provisions for safe transportation (including Class, subsidiary hazards, packing group, special provisions, EmS details, stowage, handling and segregation). Reference should then be made to the IMDG Code Volume 1 and also the Supplement to obtain further, more detailed guidance on each aspect.

Que. What is OVID?

Ans. OVID (Offshore Vessel Inspection Database) is a web-based inspection tool and database of inspection reports; it is underpinned with professional, trained and accredited inspectors. Released by OCIMF in early 2010, it is hoped that OVID will form a tool that is central to the selection and assurance of offshore vessels, complemented by an Offshore Vessel Management Self-Assessment

(OVMSA) protocol, which will inform oil company assurance teams of the capabilities of the vessel/unit's managing organisation.

OVID covers the following types of offshore vessels:

- Supply vessels
- AHTS
- standby vessels
- DSVs
- drill ships
- cable-laying vessels
- semi-submersibles, etc.

OVID does not include vessels such as shuttle tankers that are already covered in SIRE (Ship Inspection Report Programme).

Note:
OVID was designed to provide a number of positive benefits to OCIMF/OGP members and vessel managers. In using a database where inspection reports are available to OVID participating members, experience has demonstrated that inspection numbers will drop over time. Assurance checks as a part of the chartering process may be speeded up as the assurance personnel have access instantly to credible information on the vessel and its safety performance.

OCIMF members have cooperated to develop a common inspection document and format that will eliminate the need for inspectors to conduct inspections using a core document and client-specific supplements. This should simplify the inspection process for both inspectors and ships' staff and also provide assurance personnel in the oil companies with increased confidence in the inspection report content.

The provision of a document detailing vessel/unit principal dimensions and equipment will give vessel operators the ability to 'showcase' its capabilities and provide a tool to project teams to pre-screen vessels that are capable of undertaking the required activities.

Having this document controlled by the vessel/unit operator allows for rapid amendment to reflect vessel enhancements and allows project teams to quickly evaluate the vessel's improved capabilities.

Que. What is CMID?

Ans. CMID is the Common Marine Inspection Document, which is an alternative to OVID. It is administered by the International Marine Contractors Association (IMCA). As the inspection system is voluntary, the use of either CMID or OVID is the decision of the company.

Que. What publications should be used to guide best practice and safe operations in the offshore industry?

Ans. The offshore industry is covered by the Code of Safe Practice for the Carriage of Cargoes and Persons by Offshore Supply Vessels (OSV) Code.

The *Guidelines for the Design and Construction of Offshore Supply Vessels, 2006* were adopted under MSC.235(82). They also cover port operations, sea transport and operations at the offshore installation.

The OSV Chemical Code, approved by the IMO in June 2017, is scheduled to be adopted for use in the offshore sector. It specifies information on the transport and handling of hazardous and noxious liquid substances in bulk on offshore support vessels.

In addition, the industry has its own comprehensive set of guidelines – the *Guidelines for Offshore Marine Operations (G-OMO).* These provide best practice guidance to ensure the safety of personnel on vessels that are servicing and supporting offshore facilities.

The Special Purpose Ships (SPS) Code exists for certain types of ship of not less than 500 GT, e.g. ships engaged in research, expedition and survey purposes, as well as training ships. In the UK, further guidance on the SPS Code is contained in MGN 515.

Que. What specific safety certificates apply to cargo ships?

Ans. Along with cargo-specific requirements, there are four cargo ship certificates specified under SOLAS Regulation I/12 and issued subject to survey. These are:

- Cargo Ship Safety Construction Certificate (SCC)
- Cargo Ship Safety Equipment Certificate (SEC)
- Cargo Ship Safety Radio Certificate (SRC)
- Cargo Ship Safety Certificate (CSSC).

It should be noted that cargo ships of 500 GT and above may be issued with a sole CSSC as an alternative to the three separate certificates (SCC, SEC and SRC). The maximum period of validity is 5 years.

Que. Which code applies to ships carrying timber cargoes?

Ans. The Code of Safe Practice for Ships Carrying Timber Deck Cargoes (TDC Code) is a non-mandatory code that applies to all ships over 24 m in length carrying a timber deck cargo. The Code aims to ensure that stowage and cargo securing arrangements for timber deck cargoes are safe and arranged rationally, to prevent timber from shifting. The Code includes design principles, practices for safe transportation, methodologies for safe stowage and securing, guidance on information to be included in ships' cargo securing manuals and sample checklists for safe stowage and securing. The most recent edition was issued in 2011, replacing the 1991 edition.

Que. Which code applies to the carriage of nuclear fuel/radioactive material?

Ans. The International Code for the Safe Carriage of Packaged Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes on board Ships (INF Code) has been mandatory since 2001 for ships carrying nuclear fuel, plutonium and radioactive wastes. It includes recommendations for the design of ships and on issues such as fire protection and damage stability.

Equipment Related Questions

1. Life-Saving Appliances

Que. What are most recent amendments to the LSA Code?

Ans. The International Life-Saving Appliance (LSA) Code is mandatory under SOLAS Regulation III/3.1. It has been amended several times, most recently as a result of MSC.368(93). These amendments, which principally concern lifejackets, entered into force on 1st January 2016 and are now incorporated as a 2016 supplement to the Life-Saving Appliances Code.

MSC 96 in May 2016 and MSC 98 in June 2017 (MSC.425(98)) saw adoption of amendments to SOLAS Regulations II/3 and II/20 to make mandatory the requirements for maintenance, thorough examination, operational testing, overhaul and repair of survival craft, launching appliances and release gear. In addition, the LSA Code has been amended with regard to the static tests and proof loads of launching appliances. These amendments entered into force on 1st January 2020.

Que. When testing the SWL of LSA equipment, what weight of person must be taken into account?

Ans. The average mass of a person when determining the carrying capacity of survival craft increased from 75 kg to 82.5 kg from 1st January 2012. For free-fall lifeboats, the requirements for seats, seat arrangement and passage between seats were revised.

Ref: LSA Code, Chapter 4-4.

Que. Following the grounding of the *'Costa Concordia'*, what SOLAS amendment was made that entered into force on 1st January 2015?

Ans. SOLAS Chapter III, Regulation 19. This states that ships carrying passengers who are to be on board for more than 24 hours must take musters of newly-embarked passengers prior to or

immediately upon departure. Passengers must be instructed in the use of lifejackets and on what action to be taken in the event of an emergency. Passenger safety briefings must be given prior to or immediately after departure. This must be made by an announcement on the ship's public address system or equivalent means and may be supplemented by information cards, posters or videos.

Que. How many infant lifejackets are required to be carried on passenger ships carrying more than 12 passengers?

Ans. All passenger ships on voyages of less than 24 hours are to be provided with a number of infant lifejackets equal to at least 2.5% of the number of passengers on board.

Passenger ships on voyages of 24 hours or more are to be provided with infant lifejackets for each infant on board. Also, if the adult lifejackets provided are not designed to fit persons weighing up to 140 kg and with a chest girth of up to 1,750 mm, a sufficient number of suitable accessories must be available on board to allow them to be secured to such persons.

Ref: SOLAS Regulation III/7

Que. How frequently should the rotational deployment of Marine Evacuation Systems (MES) be carried out?

Ans. SOLAS Chapter III, Regulation 20.8.2 requires that the rotational deployment cannot exceed 6 years. Servicing of MES should be carried out annually.

MGN 558 provides clarification with regard to MES servicing and rotational deployment and the roles that different parties should play in the deployment and the fail criteria for the deployment.

Que. What is the required frequency of inspection for immersion suits under SOLAS?

Ans. A physical check must take place every month and it is recommended that immersion suits up to 10 years old are subject to an air pressure test every 3 years, with suits over 10 years old subjected to an air pressure test every 2 years.

Ref: SOLAS Regulation III/20

Que. What is the purpose of the air pressure test?

Ans. It tests that the suit remains of adequate strength and checks the watertight integrity of seams and closures.

Que. Are there any exceptions from the requirement for a physical monthly check?

Ans. Some manufacturers offer airtight packing of immersion suits to ensure that they remain in good condition during storage. The monthly inspection changes from a physical check of the immersion suit itself to a close visual examination of the visible parts of the packed immersion suit and a check of the integrity of the airtight packaging. This requires the airtight packaging to be completely transparent. However, such inspection exceptions are subject to decisions of the flag State.

Que. Where can full information be found regarding UK inspections of immersion suit airtight packing?

Ans. MGN 529 – Life-Saving Appliances – Immersion Suits – Acceptance Criteria for Airtight Packaging.

Que. What are lifeboat fall preventer devices?

Ans. A fall preventer device is a system that prevents unintentional release of a lifeboat due to failure or misuse of its main method of connection to the fall wire(s).

In 2009, the 86th session of the IMO's Maritime Safety Committee approved *'Guidelines for the fitting and use of fall preventer devices (FPDs)'*. It was emphasised that FPDs are only to be considered as an interim risk mitigation measure and are only to be used in connection with existing on-load release hooks, and that wires or chains should not be used as FPDs as they do not absorb shock loads.

Note:
FPDs are to be used at the discretion of the Master, pending the wide implementation of improved hook designs with enhanced safety features.

A number of the current designs of on-load release hooks are designed to open under the lifeboat's own weight and often need to be held closed by the operating mechanism, with the result that any defects or faults in the operating mechanism, errors by the crew or incorrect resetting of the hook after being previously operated can result in premature release.

Ref: Guidelines for the fitting and use of fall preventer devices (FPDs)

Que. What information has the MCA issued regarding fall preventer devices (FPDs)?

Ans. In October 2015, the MCA issued MGN 540 – Lifeboats and Rescue Boats – Fitting of 'Fall Preventer Devices' to Reduce the Danger of Accidental Hook Release. This notice replaced MGN 445.

MGN 540 states that existing systems that do not comply with the revised LSA Code, as per SOLAS III/1.5, must be replaced by the first scheduled dry-docking after 1st July 2014, and not later than 1st July 2019. The MCA strongly urges that all UK vessels fitted with lifeboat on-load release systems should be equipped with FPDs, pending an evaluation of the systems for compliance with the revised LSA Code. The notice is therefore applicable to davit-launched lifeboats fitted with on-load release hooks and similar on-load systems fitted to rescue boats.

In addition, the MCA released MGN 541 on the evaluation and replacement of lifeboat release and retrieval systems.

Que. What information has the MCA recently issued regarding LSA?

Ans. In October 2016, the MCA issued MGN 560, which compiles current guidance on the safe servicing, testing, maintenance and drills for lifeboats, launching appliances, winches and on-load release gear. It replaced MSN 1803.

Que. What are the SOLAS amendments that affect lifeboat release mechanisms?

Ans. The Maritime Safety Committee of the IMO revised paragraph 5 of SOLAS Regulation III/1 to require lifeboat on-load release mechanisms not complying with new International Life- Saving Appliances (LSA) Code requirements to be replaced no later than the first scheduled dry-docking of the ship after 1st July 2014, but in any case not later than 1st July 2019. As this date has now past, all non-compliant hooks should have been replaced.

The SOLAS amendment, which entered into force on 1st January 2013, requires stricter safety standards for lifeboat release and retrieval systems and is aimed at preventing accidents during lifeboat launching. It required the assessment and replacement of a large number of lifeboat release hooks.

Notes:

The *'Guidelines for evaluation and replacement of lifeboat release and retrieval systems'* (MSC.1/Circ.1392) ensure release mechanisms for lifeboats are replaced with those complying with new, stricter safety standards, in order to reduce the number of accidents involving lifeboats, particularly those that have occurred during drills or inspections.

SOLAS Regulation III/1.5 requires that, for all ships, lifeboat on-load release mechanisms not complying with paragraphs 4.4.7.6.3 to 4.4.7.6.5 of the LSA Code, as amended by the appropriate resolution at MSC.88, shall be replaced no later than the next scheduled dry-docking of the ship.

Ref: MSC.317(89)

Que. What types of lifeboat release hooks may not meet the relevant requirements, particularly if they fall out of tolerance due to wear?

Ans. Examples include flat to flat cam hooks, forward rotating round cam with a self-locking capability and flat to flat cam with some self-locking capability.

Que. What action should be taken if a design review of lifeboat hooks reveals that a release mechanism does not comply with paragraphs 4.4.7.6.3 to 4.4.7.6.5 of the LSA Code, or a design review cannot be carried out because design documentation is not available?

Ans. Release mechanisms that do not comply should be replaced at the earliest available opportunity, and no later than the next scheduled dry-docking.

Until the release mechanisms are replaced, additional safety measures, including the use of fall preventer devices in accordance with MSC.1/Circ.1327, should be employed.

Note:
As an alternative to replacement, the hooks may be modified to comply with the requirements of paragraphs 4.4.7.6.3 to 4.4.7.6.5 of the LSA Code, as amended by the appropriate resolution at MSC.88, provided that the modifications are approved by the Administration.

Que. What amendment affecting free-fall lifeboats came into effect on 1st January 2014?

Ans. SOLAS Regulation III/20.11.2. This requires that operational testing of free-fall lifeboat release systems shall be performed either by free-fall launch with only the operating crew on board or by a simulated launching carried out based on guidelines developed by the IMO.

Que. What circulars have the IMO issued recently on lifeboats?

Ans. In June 2017, the IMO issued MSC.1/Circ.1578 – *'Guidelines on safety during abandon ship drills using lifeboats'* and MSC.1/Circ.1579 containing amendments to *'Guidelines for developing operation and maintenance manuals for lifeboat systems'.*

Ref: https://tinyurl.com/y7jszcsv and https://tinyurl.com/yakho6cm

Que. What amendment to SOLAS Regulation III/20 entered into force on 1st January 2020?

Ans. The 'Requirements for maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear' (Resolution MSC.404(96)) became mandatory on 1st January 2020.

The requirements aim to create a uniform, safe, documented standard for the servicing of survival craft.

The requirements state that for lifeboats (including free-fall lifeboats), rescue boats and fast rescue boats, the following items shall be thoroughly examined and checked for satisfactory condition and operation:

- Condition of the boat structure including fixed and loose equipment (including a visual examination of the external boundaries of the void spaces, as far as practicable)
- engine and propulsion system
- sprinkler system, where fitted
- air supply system, where fitted
- manoeuvring system
- power supply system
- bailing system
- fender/skate arrangements
- rescue boat righting system, where fitted.

For release gear of lifeboats (including free-fall lifeboats), rescue boats, fast rescue boats and liferafts, the following shall be thoroughly examined for satisfactory condition and operation after the annual operational test of the winch brake with the empty boat or equivalent load:

- Operation of devices for activation of release gear
- excessive free play (tolerances)
- hydrostatic interlock system, where fitted
- cables for control and release
- hook fastening.

The requirements state that the five yearly operational test of the winches of the launching appliances shall be carried out with a proof load equal to 1.1 times the weight of the survival craft or rescue boat and its full complement of persons and equipment. When the proof load has reached its maximum lowering speed, the brake shall be abruptly applied. Following these tests, the stressed structural parts shall be reinspected where the structure permits the reinspection.

The operational tests and overhaul at five-year intervals of release gear for lifeboats (including free-fall lifeboats), rescue boats, fast rescue boats and liferafts shall include:

- Dismantling of hook release units
- examinations with regard to tolerances and design requirements
- adjustment of release gear system after assembly
- operational tests, as applicable
- examinations of vital parts with regard to defects and cracks.

Following annual thorough testing, overhaul and repairs, a statement must be issued to confirm that the lifeboat arrangements are safe for purpose.

Ref: http://Shippingregs.org/8596.re

Que. What is the period of abandonment in SOLAS for passenger ships?

Ans. SOLAS Regulation III/21/1.3 states that all survival craft required to provide for abandonment by the total number of persons on board should be capable of being launched with their full complement of persons and equipment within a period of 30 minutes from the time the abandon ship signal is given, after all persons have been assembled, with lifejackets donned.

Que. What are the survival craft carriage requirements on passenger ships engaged on deep sea international voyages?

Ans. They must carry partially or totally enclosed lifeboats on each side of such aggregate capacity as will accommodate not less than 50% of the total number of persons on board. In addition, inflatable or rigid liferafts of such aggregate capacity as will accommodate at least 25% of the total number of persons on board must be carried. These liferafts must be served by at least one launching appliance on each side.

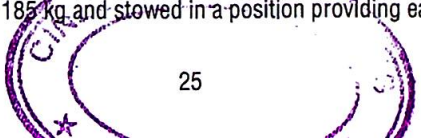
The Administration may permit the substitution of lifeboats by liferafts of equivalent total capacity, provided that there should never be less than sufficient lifeboats on each side of the ship to accommodate 37.5% of the total number of persons on board. A marine evacuation system or systems may be substituted for the equivalent capacity of liferafts and launching appliances.

Passenger ships must also carry at least one rescue boat.

Ref: SOLAS Regulation III/21

Que. What are the survival craft carriage requirements on cargo ships?

Ans. Cargo ships must carry one or more totally enclosed lifeboats of such aggregate capacity on each side of the ship as will accommodate the total number of persons on board. In addition, they must carry one or more inflatable or rigid liferafts of a mass of less than 185 kg and stowed in a position providing easy side-to-



side transfer and of such aggregate capacity as will accommodate the total number of persons on board. If the liferaft or liferafts are not less than 185 kg and are not easily transferred, the total capacity available on each side must be sufficient to accommodate the total number of persons on board. Cargo ships must carry at least one rescue boat.

Cargo ships may in lieu of the above carry one or more free-fall lifeboats capable of being launched over the stern, of such aggregate capacity as will accommodate the total number of persons on board.

Additional liferafts are also required if one survival craft is more than 100 m from another. This should be a liferaft stowed as far forward or aft as is reasonable and practicable.

Alternative arrangements exist for cargo ships less than 85 m in length.

Ref: SOLAS Regulation III/31

Que. What amendments to SOLAS II-2/13 entered into force on 1st January 2020?

Ans. Resolution MSC.404(96) extends the minimum requirements for evacuation analysis on all passenger ships (previously just RoRo ships). They concern the mandatory evaluation of escape routes in the design process of passenger vessels to avoid congestion, facilitate crew movement and ensure flexibility if certain escape routes are unavailable. Associated revised guidelines for new and existing passenger ships were approved at MSC 96 in May 2016 (MSC.1/Circ.1533).

Que. What are the amendments to SOLAS regarding the recovery of persons from the water?

Ans. Resolution MSC.338(91) saw amendments adopted to SOLAS and a new Regulation III/17-1, which took effect on 1st July 2014.

All ships are required to have ship-specific plans and procedures for the recovery of persons from the water. The plans and procedures must identify the equipment used for recovery purposes. The plans must have measures in place that will minimise the risk to shipboard personnel in recovery operations. MSC.1/Circ.1447 sets out IMO guidelines for the development of these plans.

Que. Where can you find information on emergency drills and training under the UK flag?

Ans. MGN 71 contains guidance on musters (including the content of muster lists, e.g. alarm signals, duties and actions in the event of an alarm signal), drills, onboard training and instructions, and decision support systems.

2. Fire-Fighting Equipment

Que. What is the FSS Code?

Ans. The International Code for Fire Safety Systems (FSS Code) contains engineering specifications for fire safety equipment and systems as required under SOLAS Chapter II-2, including international shore connections, fire extinguishers, fixed systems, fire pumps, means of escape and detection systems.

Que. What are the recent amendments to the FSS Code?

Ans. Recent amendments to the FSS Code entered into force on 1st January 2020. These are changes to the means of escape in relation to capacity (Resolution MSC.410(97)), changes to Chapter 9 to prevent corrosion in fire-fighting systems, specifically the clogging of sprinklers, and a new Chapter 17 on mandatory requirements for helicopter facility fire-fighting requirements (Resolution MSC.403(96)).

Another recent amendment was adopted in 2019 relating to inert gas systems (specifically inert gas lines, indicators and alarms). This amendment will not enter into force until 1st January 2024.

Que. What amendment to SOLAS concerned Self-Contained Breathing Apparatus (SCBA) equipment?

Ans. With effect from 1st July 2014, SOLAS Regulation II-2/10.10.1 amended the Fire Safety Systems (FSS) Code to require an audible alarm device and a visual or other device to alert users before the volume of air in an SCBA cylinder is reduced to no less than 200 litres.

Que. What fire-fighting requirements came into force for all ships >500 GT from 1st January 2010?

Ans. Fixed carbon dioxide fire-extinguishing systems for the protection of machinery spaces and cargo pump rooms are to be upgraded to comply with the provisions for control under the Fire Safety

Systems Code. This includes provision of two separate controls located inside a release box clearly identified for the particular space to release the CO_2 and an audible alarm upon release.

Ref: SOLAS Chapter II-2 Fixed CO_2 System Upgrades, June 2009

Note:
The USCG issued a safety alert in June 2015 regarding the criticality of ensuring that operators of fixed CO_2 systems are familiar with their operation and that they carry out periodic inspections for readiness.

Que. What are the fire detection requirements on new build passenger ships built after 1st July 2012 carrying more than 12 passengers?

Ans. Fixed fire detection and fire alarm systems must be capable of remotely and individually identifying each detector and manually operated call point. A section of fire detectors and manually operated call points must not be situated in more than one main vertical zone, except on cabin balconies.

Ref: FSS Code, June 2012

Que. What are the recent SOLAS requirements for fire-fighter's communication?

Ans. SOLAS Regulation II-2/10-10.4 states that ships constructed on or after 1st July 2014 must carry on board a minimum of 2 two-way portable radiotelephone apparatus for each fire party, for fire-fighter's communication. They must be of an explosion-proof type or intrinsically safe. All other ships constructed before 1st July 2018 must comply with these requirements not later than the first survey after 1st July 2018.

Que. What are the SOLAS requirements for the number of fire pumps on ships?

Ans. SOLAS Regulation II-2/10-2.2 states that ships must be provided with independently driven fire pumps as follows:

- On passenger ships of 4,000 GT and above – at least three fire pumps
- on passenger ships of less than 4,000 GT – at least two fire pumps
- on cargo ships of 1,000 GT and above – at least two fire pumps
- on cargo ships of less than 1,000 GT – at least two power-driven fire pumps, one of which must be independently driven.

Que. What are the SOLAS requirements for the number of fire-fighter's outfits on ships?

Ans. SOLAS Regulation II-2/10-10.2 states that ships must have at least two fire-fighter's outfits. In addition:

- For passenger ships of 36 m and over, there must be two fire-fighter outfits for each main vertical zone (excepting stairway enclosures defined in the regulation)
- on tankers, a further two fire-fighter's outfits must be provided.

The Administration may also require additional outfits and equipment having due regard to the size and type of ship. Two spare charges must be provided for each required breathing apparatus.

Que. What are the SOLAS requirements for fire hose lengths on ships?

Ans. Fire hoses should have a length of at least 10 m, but not more than:

- 15 m in machinery spaces
- 20 m in other spaces and open decks
- 25 m for open decks on ships with a maximum breadth in excess of 30 m.

Que. What are the requirements for fire detection systems in machinery spaces?

Ans. Fire detection system requirements are contained in SOLAS Regulation II-2/Regulation 7 – Detection and Alarm. A ship must have a fixed fire detection and alarm system that is SOLAS approved. There are additional requirements for the protection of machinery spaces. Specifically, a fixed fire detection and alarm system must be installed in periodically unattended machinery spaces, in machinery spaces with automatic and remote control systems, and in enclosed spaces containing incinerators. These systems should take into account the height and ventilation arrangements of the machinery space. The detection system must initiate distinctive audible and visual alarms that can be heard and seen on the bridge and by a responsible engineer officer.

Further information is contained in the FSS Code, specifically Chapter 8 – Automatic sprinkler, fire detection and fire alarm systems, Chapter 9 – Fixed fire detection and fire alarm systems and Chapter 10 – Sample extraction smoke detection systems.

Que. What information is available on fire-fighting equipment on UK ships?

Ans. The principal regulations are the Merchant Shipping (Fire Protection: Large Ships) Regulations 1998. MSN 1665 references these regulations in relation to fire-fighting equipment. It has the following schedules:

- Schedule 1: International shore connection
- Schedule 2: Non-portable foam fire extinguishers
- Schedule 3: Non-portable carbon dioxide fire extinguishers
- Schedule 4: Non-portable dry powder fire extinguishers
- Schedule 5: Breathing apparatus
- Schedule 6: Portable foam-applicator units
- Schedule 7: Fire pumps and fire main
- Schedule 8: Fire extinguishers.

The Merchant Shipping (Fire Protection) Regulations (Amendment) Regulations 2003 contain amendments to the 1998 Regulations.

In addition, MSN 1666 covers fixed fire detection alarm and extinguishing systems.

Note that halon fire-fighting systems are not permitted due to their damaging effect on the stratospheric ozone layer (see MGN 258 for more information).

3. SOLAS General Questions and Other Equipment

Que. What requirements entered into force for new builds constructed after 1st January 2009 carrying more than 36 passengers?

Ans. All tanks and watertight spaces located below the bulkhead deck must be provided with a flooding detection system.

Ref: SOLAS II-1, Regulation 22-1 Flooding

Que. What are the requirements for drainage openings from closed vehicle spaces?

Ans. On new build cargo ships >500 GT constructed from 1st January 2010, the drainage openings from closed vehicle spaces, RoRo spaces or special category spaces that are protected by fixed pressure water-spraying systems must be fitted with a non-operational means to prevent blockage.

Ref: SOLAS II-2, Regulation 20.6 Drainage System Protection, May 2008
http://tinyurl.com/p35jw3z

Que. What are the ventilation requirements on all new build ships >500 GT built after 1st July 2010?

Ans. Ducts must be constructed of steel or equivalent material (as opposed to a non-combustible material). Short ducts (2 m) need not comply provided the ducts are used at the end of the ventilation device; not situated <600 mm from an opening in an 'A' or 'B' class division or 'B' class ceiling; not more than 0.2 m^2 sectional area; and made of heat-resisting non-combustible material (internally and externally faced with low flame-spread membranes having a calorific value 45 MJ/m^2 of their surface area for the thickness used. Exhaust ducts from galley ranges that pass through accommodation spaces or spaces containing combustible materials will now be required to have a fire damper in the upper end of the duct, in addition to the lower end. Exhaust ducts from galley ranges that pass through accommodation spaces or spaces containing

combustible materials will now be required to have a fire damper in the upper end of the duct, in addition to the lower end.

Ref: SOLAS II-2, Regulation 9-7 Ventilation systems

Que. What is the supplementary lighting requirement on new build passenger ships carrying more than 12 passengers built on or after 1st July 2010?

Ans. Supplementary lighting must be provided in all cabins to clearly indicate the exit. The lighting may be powered from an emergency source of power or have a self-contained source of electrical power in each cabin. Lighting must illuminate automatically when power to cabin lighting is lost and must remain illuminated for at least 30 minutes.

Ref: SOLAS II-1, Regulation 41 Main source of electrical power and lighting systems

Que. What are the requirements for all new build ships constructed on or after 1st August 2010 with respect to bunker tank protection?

Ans. Ships having an aggregate FO capacity of 600 m^3 and greater are required to 'protectively locate' each bunker tank (which excludes tanks that do not normally carry fuel oil, such as overflow tanks) having a capacity greater than 30 m^3 in accordance with the requirements of MARPOL Annex I, Regulation 12A.

Ref: MARPOL Annex I, Regulation 12A Oil Fuel Tank Protection, MEPC.141(54)

Que. Can hydrochlorofluorocarbons (HCFCs) be used?

Ans. For all ships, Regulation 12 of MARPOL VI prohibits the use of HCFCs from 1st January 2020. However, this does not apply to 'permanently sealed equipment where there are no refrigerant charging connections or potentially removable components containing ozone depleting substances'.

Regulation (EC) No 1005/2009 prohibits the use of virgin HCFCs in the maintenance and servicing of refrigeration and air conditioning units on EU-flagged ships. The prohibition extends to non-EU-

flagged ships where an EU company is performing maintenance or servicing on board. New HCFCs are no longer supplied.

Ref: Regulation (EC) No 1005/2009 and MARPOL VI, Regulation 12

Que. What information has the MCA issued regarding lithium batteries on board vessels?

Ans. In April 2016, the MCA issued MGN 550 – Guidance for Safe Design, Installation and Operation of Lithium-ion Batteries.

Que. What information is available regarding UK electrical equipment and installations at sea?

Ans. The MCA publishes a series of guidance notes relating to electrical equipment. These are:

- MGN 52 – Testing of emergency sources of electrical power
- MGN 132 – Electrical equipment, maintenance and incidents
- MGN 177 – Accidents involving electrical test equipment.

Que. What is the Ship Structure Access Manual?

Ans. SOLAS Regulation II-1/3-6-4 states that a ship should have on board an approved Ship Structure Access Manual. The manual should include items such as plans to show the means of access (with technical specifications and dimensions), instructions for inspection and maintenance, as well as rigging instructions and guidance on close-up inspections.

Que. What are the regulatory requirements for the possession of ship construction drawings?

Ans. SOLAS Regulation II-1/3-7 states that a set of as-built construction drawings and other plans showing any subsequent structural alterations must be kept on board a ship constructed on or after 1st January 2006. An additional set must be kept ashore. Further information is contained in MSC/Circ.1135.

Que. What is the Ship Construction File?

Ans. SOLAS Regulation II-1/3-10 requires a Ship Construction File (SCF) to be kept on board oil tankers and bulk carriers over 150 m in length, for which the building contract is placed on or after 1st July 2016, or the keel was laid on or after 1st July 2017 and for all ships for which the delivery is on or after 1st July 2020. The SCF contains specific information on the construction of the ship and, as detailed in MSC.1/Circ.1343, must be updated throughout the ship's life in order to facilitate safe operation, maintenance, survey, repair and emergency measures.

Que. What are the regulatory requirements for steam safety valves and oil-fired boiler safety arrangements?

Ans. SOLAS Regulation II-1/32 requires every steam boiler and every unfired steam generator to be provided with not less than two safety valves of adequate capacity. However, the Administration may permit only one safety valve if it is satisfied that there is adequate protection against overpressure.

The Regulation also states that for each oil-fired boiler (operated without manual supervision) there must be safety arrangements that shut off the fuel supply and give an alarm in the case of low water level, air supply failure or flame failure.

There are additional requirements for adequate feedwater supply arrangements, including the means to supervise and control the quality of the feedwater and monitor its water level.

Que. What are the regulatory requirements for ventilation systems in machinery spaces?

Ans. SOLAS Regulation II-1/35 states that category A machinery spaces must be adequately ventilated, so as to ensure that, when machinery and boilers are operating at full power, in all weather conditions, an adequate supply of air is maintained to the spaces for the safety and comfort of personnel and the operation of the machinery.

Que. What are the emergency power requirements on a cargo ship?

Ans. SOLAS Regulation II-1/43 requires a ship on international voyages to have a self-contained emergency source of electrical power that is sufficient to supply all services that are essential for safety in an emergency.

This includes for a period of 18 hours:

- Emergency lighting and navigation lights
- various items of communication equipment (both internal and external)
- navigation equipment as required by SOLAS Regulation V/19, as well as intermittent operation of the signalling lamp and ship's whistle
- the ship's fire detection and fire alarm system
- one of the ship's fire pumps.

Different requirements exist for passenger ships (see SOLAS Regulation II-1/42), including requirements for emergency power for a period of 36 hours.

Que. What amendments to SOLAS entered into force on 1st January 2016?

Ans.
- SOLAS Regulation II-1/29, updating the requirements on steering gear
- SOLAS Regulation II-2/5.5, introducing mandatory requirements for inert gas systems on board new tankers of 8,000 DWT and above. It also included amendments to fire protection systems, means of escape and the Fire Safety Systems (FSS) Code.

Que. What amendments to SOLAS entered into force on 1st July 2016?

Ans.
- SOLAS Chapter VI/2 – amendments to require mandatory verification of the gross mass of containers
- SOLAS Regulation XI-1/7 – introduction of a new regulation on atmosphere testing instruments in enclosed spaces. It is

now a requirement for vessels to carry an appropriate portable testing instrument that is capable of measuring oxygen, flammable gases and vapours, hydrogen sulphide (H_2S) and carbon monoxide. Testing must be conducted prior to entry to an enclosed space.

Que. What amendments to SOLAS entered into force on 1st January 2017?

Ans.

- SOLAS Chapter V, Regulation 19 – requiring all ships over 500 GT to be fitted with BNWAS
- SOLAS, IGF Code – the Code provides mandatory provision on low flashpoint fuels
- SOLAS Chapter XIV – a new chapter on safety measures for ships operating in polar waters; this made mandatory the provisions of the Polar Code.

Que. What amendments to SOLAS entered into force on 1st January 2020?

Ans. There are several amendments to SOLAS that entered into force including:

- II-1, Regulation 6 – revised subdivision index R, acceptance of butterfly valves, tank heights, double bottom arrangements, revision of definitions
- II-1, Regulation 8 – requires an onboard stability computer or access to shore-based support for the purpose of providing operational information to the Master for facilitating the safe return to port after a flooding casualty on existing passenger ships. Compliance is required no later than the first renewal survey completed after 1st January 2025
- II-2, Regulation II-2/3.56 on the definition of vehicle carrier as a pure truck/car carrier and Regulation II-2/20.2 on the protection of vehicle, special category and RoRo spaces
- III, Regulations III/1.4, III/30 and III/37 on damage control drills for passenger ships

- IV, Radiocommunications – Inmarsat is replaced with the term 'Recognised mobile satellite service'. This is a result of the approval of Iridium as a GMDSS provider
- Appendix: draft amendments to the appendix (certificates).

Que. What requirement was introduced for all Emergency Position-Indicating Radio Beacons (EPIRBs) carried on ships from 1st July 2010?

Ans. The amendments to SOLAS Chapter IV – Radiocommunications require ships to carry an EPIRB capable of transmitting a distress alert through the polar orbiting satellite service (COSPAS-SARSAT) operating in the 406 MHz band.

Que. What regulatory changes were introduced regarding Search and Rescue Transponders (SARTs) in 2010?

Ans. From 1st January 2010, approved AIS SARTs may be carried instead of Radar SARTs. The AIS SART symbol is a circle containing a cross and the MMSI number prefix '970'.

Que. Can you give an overview of LRIT (Long-Range Identification and Tracking)?

Ans. Tracking vessels outside the range of AIS coastal networks requires satellite positioning systems. The EU LRIT satellite communication network receives information on ~9,600 EU ships' positions every six hours, collecting data on their identity as well as their position.

The system provides coastal States with data in sufficient time to allow the relevant government to assess the security risk posed by a ship approaching its coasts. The flag State receives four messages a day about the position of its ships worldwide. LRIT data is also disseminated on request to marine search and rescue centres.

The data is transmitted via satellite directly to 40 LRIT centres around the world in an ongoing exchange process. Originally

introduced to enhance security for government authorities by providing an early warning of the ships approaching their coastal waters, LRIT has also demonstrated benefits that enhance maritime safety, marine environment protection, and search and rescue.

The EU LRIT Data Centre is the largest of a global network of LRIT data centres that enable the identification and positioning of all ships over 300 GT.

Que. What emergency towing requirements came into force for cargo ships from 1st January 2012?

Ans. By 1st January 2012, a procedure for establishing capabilities to tow the ship from the fore and aft locations had to be provided on board all cargo ships >500 GT.

This procedure is to be carried on board for use in emergency situations and must be based on existing arrangements and equipment available on board the ship, taking into account MSC.1/Circ.1255.

Ref: SOLAS Chapter II-1, Regulation 3-4 Emergency Towing Arrangements and Procedures, MSC.256(84), MSC.35(63)

Note:

Emergency towing arrangements should be designed to facilitate salvage and emergency towing operations, primarily to reduce the risk of pollution. At least one of the arrangements should, at all times, be capable of rapid deployment in the absence of main power on the ship to be towed and provide easy connection to the towing vessel.

Such fittings, located at both ends, usually consist of an anchor point in the form of a Smit bracket, to which is secured a chafing chain that is led through a Panama fairlead. The purpose of this arrangement is to permit a tug to take the vessel in tow in the event that the vessel starts to founder.

The principal idea is that the ship's crew, prior to abandoning the vessel, will have the opportunity to deploy the chafing chains through the Panama chocks, making them accessible to arriving salvage tugs. Even with no one left on board, with weather permitting, a salvage tug would then have the ability to secure a towline to the anchored chafe chain.

Que. What information did the UK recently issue regarding mooring and towing equipment?

Ans. MGN 592, issued in August 2018, entitled Mooring, Towing or Hauling Equipment on all Vessels: Safe Installation and Safe Operation, emphasises the importance of seeking expert advice on the repair and maintenance of equipment. It advises that risk assessments covering the use of mooring equipment and operations should take full account of the potential dangers of unusual or non-standard mooring arrangements, bights in mooring warps and snap-back zones. It also advises that dangerously weighted heaving lines must not be used.

Que. What is the Safety Training Manual?

Ans. SOLAS Regulation III-35 requires that all ships must have a SOLAS Safety Training Manual, approved by the Administration. Contents must include a list of safety equipment, including methods of use, launching as applicable and recovery, along with information on safety training and actions in emergencies. Plans are ship specific.

Que. What regulations govern the operation and testing of steering gear?

Ans. SOLAS Chapter V, Regulations 24, 25 and 26 cover the use, power supply and testing requirements of steering gear (SOLAS Chapter II-1, Regulations 29 and 30 cover construction standards). Regulation 26 requires a vessel's steering gear to be checked and tested within 12 hours of departure. In addition, an emergency steering gear test and drill must be conducted every 3 months. All checks and tests must be recorded.

Environment Related Questions

1. Pollution Prevention and MARPOL

ANNEX I

REGULATIONS FOR THE PREVENTION OF POLLUTION BY OIL

- **Regulation 12 –** oil residues (sludge). Discharging and piping requirements are updated, effective 1st January 2017.
- **Regulation 43 –** heavy fuel oil as ballast is prohibited in the Antarctic, effective 1st March 2016.
- **Appendix II –** amended (relating to form B of the IOPP Certificate) to reflect the phase-out of older designs/arrangements, effective 1st March 2018.
- **Entire Annex –** updated to make mandatory the environment-related provisions of the Polar Code, effective 1st January 2017.

QUESTION:

WHICH AMENDMENTS TO MARPOL HAVE RECENTLY ENTERED INTO FORCE OR ARE DUE TO ENTER INTO FORCE?

ANNEX II

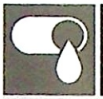
REGULATIONS FOR THE CONTROL OF POLLUTION BY NOXIOUS LIQUID SUBSTANCES IN BULK

- Carriage of stability instrument requirements within the BCH and IBC Codes. This was effective from 1st January 2016 and requires oil and chemical tankers to carry a stability instrument on board, with reference to carrying out damage stability calculations.
- The revised GESAMP Hazard Evaluation Procedure, effective 1st September 2017.
- **Entire Annex –** updated with reference to sewage special areas, gas-fuelled engines and NOx Tier III reporting, effective 1st September 2017.
- **Entire Annex –** updated to make mandatory the environment-related provisions of the Polar Code, effective 1st January 2017.

ANNEX III

PREVENTION OF POLLUTION BY HARMFUL SUBSTANCES CARRIED BY SEA IN PACKAGED FORM

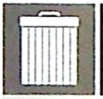
- The appendix on criteria for the identification of harmful substances in packaged form is updated, effective 1st March 2016.



ANNEX IV

PREVENTION OF POLLUTION BY SEWAGE FROM SHIPS

- **Entire Annex –** updated with reference to sewage special areas, gas-fuelled engines and NOx Tier III reporting, effective 1st September 2017.
- **Entire Annex –** updated to make mandatory the environment-related provisions of the Polar Code, effective 1st January 2017.



ANNEX V

PREVENTION OF POLLUTION BY GARBAGE FROM SHIPS

- Amendments relating to HME substances and the form of the Garbage Record Book, specifically division into two parts, one part of which is for ships carrying solid bulk cargoes, effective 1st March 2018.
- **Entire Annex –** updated to make mandatory the environment-related provisions of the Polar Code, effective 1st January 2017.

ANNEX VI

PREVENTION OF AIR POLLUTION FROM SHIPS

The entire Annex was comprehensively revised and entered into force on 1st July 2010. Subsequent amendments have followed.

- **Chapter 4 –** a new chapter was adopted to implement a mandatory Energy Efficiency Design Index (EEDI) for vessels to reduce CO_2 emissions, effective 1st January 2013.
- **Regulations 2 and 13, Appendix I –** a supplement was added to the International Air Pollution Prevention (IAPP) Certificate reflecting NOx tiers and engine certification. Definitions and references to gas and fuels were also updated, effective 1st March 2016.
- **Regulation 13 –** new paragraphs and changes for record requirements for operational compliance with NOx Tier III ECAs, effective 1st September 2017.
- **Regulations 13 –** these amendments concern the designation of the Baltic Sea and the North Sea Emission Control Areas (ECAs) for NOX Tier III control and changes to the information to be included in the bunker delivery note (BDN), effective 1st January 2019.
- **Regulations 13 and 21 –** updated with ECAs and the required EEDI for RoRo cargo ships and RoRo passenger ships, effective 1st September 2019.
- **Regulation 14 –** requiring that the sulphur content of any fuel oil used on board ships shall not exceed 0.50% m/m (subject to authorised exceptions), effective 1st January 2020.
- **Regulation 22A –** reporting requirements for the IMO ship fuel oil consumption database, effective 1st March 2018.
- **Entire Annex –** updated with reference to sewage special areas, gas-fuelled engines and NOx Tier III reporting, effective 1st September 2017.

Que. What is an ECA?

Ans. ECA stands for Emission Control Area. The recognised Annex VI ECAs are:

- Baltic Sea – SOx in effect since 2006
- Baltic Sea – NOx enters into force on 1st January 2021
- North Sea – SOx in effect since 2006
- North Sea – NOx enters into force on 1st January 2021
- North American ECA – SOx and PM in effect since 2012
- North American ECA – NOx in effect since 2016
- US Caribbean Sea ECA – SOx and PM in effect since 2014
- US Caribbean Sea ECA – NOx in effect since 2016.

The NOx ECA will apply to a ship constructed and operating in the ECA on or after the respective entry into force dates. Compliance must be in accordance with the NOx Tier III standards in Regulation 13.5 of MARPOL Annex VI.

The revised Annex VI allows for an ECA to be designated for SOx and particulate matter (PM), or NOx, or all three types of emissions from ships, subject to a proposal from a Party or Parties to the Annex, which would be considered for adoption by the Organization, if supported by a demonstrated need to prevent, reduce and control one or all three of those emissions from ships.

It is important to note that there is a difference between IMO ECAs under MARPOL and regional ECAs. The latter are determined according to local regulations, e.g. the Chinese ECAs and the European SECA.

Que. What are the requirements for low-sulphur fuels?

Ans. Amendments to MARPOL Annex VI in 2008 set a reduction of sulphur emissions in ECAs. These areas include the Baltic Sea, North Sea and English Channel. Ships in these areas will need to use fuels with a sulphur content of 0.1% sulphur as of 2015.

Ships sailing in the rest of the world are working to a sulphur limit that is currently 3.5%. However, at MEPC 70 in 2016, the IMO agreed that the global sulphur limit was to be reduced to 0.5%. This requirement entered into force on 1st January 2020. Ships in an ECA must continue to use 0.1%.

Ships can comply with the low-sulphur requirements by using:

- Low-sulphur fuel oil (MGO/distillates)
- alternative fuels with negligible sulphur (gases and other low flashpoint fuels as per the IGF Code)
- an approved equivalent method such as an exhaust gas cleaning system (also known as a scrubber) that cleans the emissions before they are released.

This usage is subject to approval by the Administration, with the subsequent issue of an International Air Pollution Prevention (IAPP) Certificate to the ship. During Port State Control inspections, samples may be taken and documentation such as the bunker delivery note (BDN) will be inspected for compliance.

Que. What is the IMO high-sulphur fuel carriage ban?

Ans. Under amendments to Regulation 14 and Appendix I of MARPOL VI (adopted in 2018), a ban on the carriage of high-sulphur fuel oil will enter into force on 1st March 2020. This specific provision requires that the sulphur content of fuel oil used on board ships shall not exceed 0.50%. This provision does not apply to fuel oil being carried as cargo or where an equivalent arrangement is in place (e.g. scrubber is fitted).

Note that Regulation 2.9 of MARPOL Annex VI provides the following definition for 'fuel oil': *"Fuel oil means any fuel delivered to and intended for combustion purposes for propulsion or operation on board a ship, including gas, distillate and residual fuels."*

Que. What are scrubbers under IMO regulations?

Ans. Exhaust gas cleaning systems are commonly known as scrubbers. Under Regulation 4 of MARPOL Annex VI, flag States are allowed to approve 'equivalents' to comply with the low-sulphur requirements. There are several different approved scrubber types. These include the 'closed-loop configuration' and the 'open-loop configuration'.

The IMO has adopted strict criteria for the discharge of washwater from scrubbers. Any residues, where generated by the unit usually in a closed-loop configuration, should be delivered ashore to adequate reception facilities. Such residues should not be discharged to the sea or incinerated on board.

Open-loop scrubbers add water to the exhaust gas, which turns sulphur oxides (SOx) to sulphates/sulphuric acid. These scrubbers return washwater to the sea. The washwater must meet strict criteria, so that discharge washwater should have a pH of no less than 6.5. There are also strict limits on discharge of PAHs (Polycyclic Aromatic Hydrocarbons) and nitrates. Note that a number of coastal and port States have set their own national requirements on washwater discharge.

Que. What is a FONAR?

Ans. A fuel oil non-availability report (FONAR) is a discretionary tool that can be issued by States to ships on which a breach has or is about to occur under the sulphur requirements of MARPOL Annex VI. Regulation 18.2 of MARPOL Annex VI sets out the process for when a ship is not able to get compliant fuel oil.

The FONAR is not a waiver/exemption but rather was introduced to alleviate concerns over non-availability of low-sulphur fuels throughout the initial entrance into force on the 0.5% requirements.

The FONAR consists of a detailed questionnaire to be sent by the shipowners to the flag State. It will be subject to inspection during Port State Control (PSC).

Que. What must you check when planning a voyage to an ECA?

Ans. Before entering the ECA, the ship must have on board sufficient fuel of the appropriate sulphur content for the voyage time in the ECA.

Que. How will authorities monitor that ships are using low-sulphur fuels?

Ans. Confirmation that the sulphur content of fuel oil is within the limit may be obtained from the following:

- The bunker delivery note specifying the sulphur content
- provision of an appropriate shipboard installation that allows fuel oil changeover
- a log book entry confirming that a fuel oil changeover was made prior to entry into a SOx Emission Control Area (SECA)
- Port State Control inspections within the scope of IMO legislation and the framework of the Paris MoU.

Control of the sulphur content of marine diesel oil used at berth is performed by the relevant Ministry in cooperation with the seaport authorities of the port State.

Que. The North American Emission Control Area came into effect on 1st August 2012. What area does this ECA cover?

Ans. It comprises the sea area located 200 nautical miles from the Atlantic, Gulf and Pacific coasts except where this impacts on the territorial waters of other States.

Que. What are exhaust gas cleaning systems?

Ans. They are an engineering solution that provides an alternative to low-sulphur fuels and can reduce sulphur emissions to 0.1%.

Removing sulphur from the engine exhaust will allow a ship to continue to use a more regular, higher sulphur content, and thus cheaper, marine fuel oil.

Que. What are the chemical groupings that are commonly referred to as SOx?

Ans.
- Lower sulphur oxides (S_nO, S_7O_2 and S_6O_2)
- sulphur monoxide (SO)
- sulphur dioxide (SO_2)
- sulphur trioxide (SO_3).

Que. What are the chemical groupings that are commonly referred to as NOx?

Ans. NOx is a generic term for mono-nitrogen oxides (NO and NO_2).

These oxides are produced during combustion, particularly combustion at high temperatures.

At ambient temperatures, the oxygen and nitrogen gases in air will not react with each other. In an internal combustion engine, combustion of a mixture of air and fuel produces temperatures high enough to drive endothermic reactions between atmospheric nitrogen and oxygen in the flame, yielding various oxides of nitrogen. In areas such as large cities that have a high level of motor vehicle traffic, the amount of nitrogen oxides emitted into the atmosphere can be quite substantial.

In the presence of excess oxygen (O_2), nitric oxide (NO) will be converted to nitrogen dioxide (NO_2), with the time required dependent on the concentration in air.

Que. What are the NOx Tier III standards?

Ans. The NOx Tier III standards are a requirement under Regulation 13 of MARPOL Annex VI. They have been applicable to all new ships since 1st January 2016 with an engine output of ≥130 kW and to

ships operating within the North American and US Caribbean Sea ECA-NOx areas. Tier III engines in ECAs must meet minimum emission values and may use alternative fuels, such as natural gas, or may be fitted with reducing devices, such as selective catalytic reduction (SCR), exhaust gas recirculation (EGR) or a fuel oil treatment system. The emission value is determined in accordance with the NOx Technical Code 2008.

Que. What changes began coming into force in 2012 regarding SOx?

Ans. The changes to MARPOL Annex VI reflect a progressive reduction in sulphur oxide (SOx) emissions from ships, with the global sulphur cap reduced initially to 3.5% from 1st January 2012, then progressively to 0.5% from 1st January 2020. The sulphur cap for ships operating inside an ECA is more stringent and has been set at 0.1% since 1st January 2015.

Que. What are the issues with low-sulphur fuels during fuel changeover?

Ans. If the fuel changeover is rushed, the engine may be starved of fuel, resulting in the ship blacking out.

Que. What are the ECA requirements in China?

Ans. Three emission control areas in China are not part of the IMO ECAs. These were created to reduce the levels of ship-generated air pollution in China and they focus mainly on the sulphur content of fuels. The three areas are the Pearl River Delta, the Yangtze River Delta and Bohai Sea. The ship must not exceed 0.5% sulphur emissions when berthing, excluding one hour after and before departure. The ECAs became operational as of 1st January 2017, but are part of a gradual implementation scheme. With effect from 1st October 2018, all ships must change over to low-sulphur fuel prior to entering the ECAs.

Que. How is the sulphur content of fuel monitored?

Ans. The IMO states that, *"The first level of control in this respect is therefore on the actual sulphur content of the fuel oils as bunkered. This value is to be stated by the fuel oil supplier on the bunker delivery note and hence this, together with other related aspects, is directly linked to the fuel oil quality requirements as covered under regulation 18. Thereafter it is for the ship's crew to ensure, in respect of the ECA compliant fuel oils, that through avoiding loading into otherwise part filled storage, settling or service tanks, or in the course of transfer operations, that such fuel oils do not become mixed with other, higher sulphur content fuel oils, so that the fuel oil as actually used within an ECA exceeds the applicable limit."*

Que. On 1st January 2013, a new Chapter 4 to MARPOL Annex VI entered into force. What does it contain?

Ans. For new ships: Regulation 20 – Attained Energy Efficiency Design Index requires that the EEDI must be calculated taking into account the guidelines developed by the IMO. The 2012 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships are set out in the annex to Resolution MEPC.212(63).

For existing ships: Regulation 22 of MARPOL Annex VI requires each ship to keep on board a ship-specific Ship Energy Efficiency Management Plan (SEEMP) taking into account guidelines developed by the IMO and set out in Resolution MEPC.213(63).

Que. What is EEDI?

Ans. The Energy Efficiency Design Index (EEDI) requires new ships to meet a minimum level of energy efficiency in order to reduce greenhouse gas emissions from international shipping. The requirement entered into force on 1st January 2013 under Chapter 4 of MARPOL Annex VI.

EEDI is a non-prescriptive, performance-based mechanism that leaves the choice of technologies to use in a specific ship design to the industry. As long as the required energy-efficiency level is attained, ship designers and builders are free to use the most cost-efficient solutions for the ship to comply with the regulations.

Ref: Edmund Hughes, 'A new chapter for MARPOL Annex VI', February 2013
http://tinyurl.com/oxst7gy

Que. Where would you find information on how to calculate the Energy Efficiency Design Index (EEDI) for new ships?

Ans. Resolution MEPC.245(66) sets out the 2014 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships. These Guidelines have been amended by Resolutions MEPC.254(67) and MEPC.261(68) adopted in 2015. These include a consolidated text of the guidelines.

Ref: https://tinyurl.com/y76ez44m

Que. What is SEEMP?

Ans. Under Chapter 4 of MARPOL Annex VI, from 1st January 2013 a Ship Energy Efficiency Management Plan (SEEMP) is required for all ships. SEEMP establishes a mechanism for operators to improve the energy efficiency of their ships.

Ref: Edmund Hughes, 'A new chapter for MARPOL Annex VI', February 2013
http://tinyurl.com/oxst7gy

Que. Where would you find information on the development of a Ship Energy Efficiency Management Plan (SEEMP) for existing ships?

Ans. Resolution MEPC.282(70) set out 2016 Guidelines for the development of a Ship Energy Efficiency Management Plan (SEEMP).

Ref: https://tinyurl.com/yclslv2o

Que. What are the changes in Regulation 22A of MARPOL Annex VI?

Ans. The IMO has adopted a new fuel consumption data collection system for ships over 5,000 GT. It is mandatory under new Regulation 22A, which entered into force on 1st March 2017. Ships will have to collect data on their consumption of fuel oil, including the type and quantity. This data can then be analysed by the IMO as part of a three-step process in making a decision on a CO_2 reduction strategy. The IMO fuel data collection program is currently separate from the EU MRV system (see the EU and UK Regulations sub-chapter for questions and answers on this topic).

Que. How will ships comply with the new MARPOL requirements for mandatory fuel oil consumption data collection?

Ans. Ships of 5,000 GT and above must submit to their Administration annual reports on their fuel consumption via a methodology included in the SEEMP. On verification of the data, the Administration will issue the ship with a Statement of Compliance. Administrations will compile the data and send an aggregate report to the IMO, to be compiled into the IMO database.

Information required from the ship includes:

- Identity details and characteristics of ship (IMO number, gross tonnage, etc)
- every type of fuel consumption on board for any purpose (in metric tonnes)
- distance travelled over the ground
- hours underway
- information on the method used to collect fuel consumption data as required by MARPOL Regulation VI/22A.

Fuel consumption collecting and reporting begins from 1st January 2019 and must be reported to the Administration by the end of the calendar year.

Que. What changes relating to sewage came into force on 1st August 2010?

Ans. On 1st August 2010, amendments to MARPOL Annex IV came into force for existing ships. The original legislation entered into force on 1st August 2005 applying only to new ships on international voyages of 400 GT and above or certified to carry more than 15 persons.

Under the regulations, ships are prohibited from discharging sewage unless one of the following criteria is complied with:

- Uncomminuted or non-disinfected sewage can only be discharged at a distance of more than 12 nautical miles from the nearest land
- comminuted and disinfected sewage can be discharged at a distance of more than 3 nautical miles from the nearest land
- a certified sewage treatment plant is in operation meeting Regulation 9.1.1 of Annex IV.

This requires ships to be equipped with one of the following:

- A type-approved sewage treatment plant
- an approved sewage comminuting and disinfecting system
- a sewage holding tank.

Que. When was the Baltic Sea designated as a Special Area under MARPOL Annex IV (Sewage)?

Ans. The Baltic Sea was designated as an Annex IV Special Area on 1st January 2013.

Que. What plans should ships have in order to prevent and if necessary respond to an incident of pollution?

Ans. MARPOL Annex I requires all ships over 400 GT (and tankers over 150 GT) to carry a Shipboard Oil Pollution Emergency Plan (SOPEP). The SOPEP should contain an action plan to prevent or respond to pollution, a list and location of SOPEP equipment on

board, and general information on pollution prevention. Similarly, for all ships over 150 GT carrying noxious liquid substances in bulk (NLS), MARPOL Annex II, Regulation 17 requires carriage of a Shipboard Marine Pollution Emergency Plan (SMPEP).

Que. What is contained in an Inventory of Hazardous Materials (IHM)?

Ans. In 2011, the IMO adopted Resolution MEPC.197(62) – Guidelines for the Development of the Inventory of Hazardous Materials (IHM). The Guidelines provide recommendations for ships of 500 GT and above for the hazardous waste inventory required for the issue of the International Certificate on Inventory of Hazardous Materials, as required by Regulation 5 of the Hong Kong International Convention.

The Guidelines will remain voluntary until the Convention is ratified and enters into force, making them mandatory.

The IHM is divided into three parts:

- Part I – Materials contained in ship structure or equipment
- Part II – Operationally-generated wastes
- Part III – Stores.

Part I – Materials contained in ship structure or equipment
Table A of the Guidelines includes the following substances and where they may be found on board:

- Asbestos
- polychlorinated biphenyls (PCBs)
- ozone-depleting substances
- anti-fouling systems containing organotin compounds as a biocide.

Table B is primarily aimed at new ships, but encourages existing ships to identify substances to support the recycling process. It provides an indicative list of substances (and compounds), specifically:

- Cadmium
- hexavalent chromium
- lead
- mercury
- polybrominated biphenyls (PBBs)
- polybrominated diphenyl ethers (PBDEs)
- polychlorinated naphthalenes
- radioactive substances
- certain shortchain chlorinated paraffins.

These materials need not be listed when they are used in general construction and are inherent in metals or metal alloys.

Part II – Operationally-generated wastes
Table C lists potentially hazardous solids, liquids and gases, including lubricants, hydraulic oils, solvents, refrigerants, antifreeze, propane, oxygen, garbage, incinerator ash, cargo residues, etc. The table identifies whether they should be listed under Part II or Part III.

Part III – Stores
Table D describes regular consumable goods, potentially containing hazardous materials, that are not ship-specific operational equipment, e.g. electrical goods, office equipment, personal computers, light bulbs, TVs, etc.

Any spare parts containing materials listed in Tables A or B are required to be listed in Part III.

A standard format for Tables A and B is provided in Appendix 2 of the Guidelines, to indicate the material, location and quantity on board, with space for any additional information.

Que. What is the purpose of the Code on Noise Levels on Board Ships?

Ans. The Code is intended to provide standards to prevent the occurrence of potentially hazardous noise levels on board ships

and to provide standards for an acceptable environment for seafarers. These standards were developed to address passenger and cargo ships. The Code entered into force on 1st July 2014 and applies to all new ships greater than 1,600 GT.

The Code is intended to provide the basis for a design standard, with compliance based on the satisfactory conclusion of sea trials that result in issuance of a Noise Survey Report.

Ongoing operational compliance is predicated on the crew being trained in the principles of personal protection and maintenance of mitigation measures. These would be enforced under the dynamic processes and practices put in place under SOLAS Chapter IX.

Que. What is a ship's 'Green Passport'?

Ans. The Ship Recycling Convention introduces the concept of a ship's 'Green Passport', which is essentially an inventory of materials present in a ship's structure, systems and equipment that may be hazardous to health or the environment. This is kept up to date for the service life of the ship. Prior to breaking, details of any further hazards and waste material are added, which will help the recycling yard to develop a safer and more environmentally acceptable plan.

Green Passports, which are currently voluntary, are typically verified by Classification Societies who now provide an approval and verification service for new buildings and existing ships.

For ISO 14001 certified companies, a Green Passport for each ship assists in demonstrating best practice in managing tonnage in an environmentally responsible manner.

Que. What are EIAPP and IAPP Certificates?

Ans. The Engine International Air Pollution Prevention (EIAPP) Certificate is issued after the meeting of survey and certification requirements relating to the control of diesel engine NOx emissions under MARPOL Annex VI, Regulation 13. The EIAPP Certificate

is issued for the life of the engine and details are derived from within the NOx Technical Code. Consequently, the IMO states that, *"a diesel engine having an EIAPP Certificate is approved, by or on behalf of the flag State of the ship onto which it is to be installed, to a stated Tier for one or more duty test cycles, for a particular rating or rating range, and with defined NOx critical components, settings and operating values including options if applicable. Any amendments to these aspects are to be duly approved and documented. Additionally for each NOx certified diesel engine there must be on board an approved Technical File, NOx Technical Code 2008, regulation 2.3.4, which both defines the engine as approved and provides the applicable survey regime together with any relevant approved amendment documentation."*

The International Air Pollution Prevention (IAPP) Certificate is issued for 5 years, subject to survey, under MARPOL Annex VI, Regulations 6 and 9. The certificate demonstrates that the ship has been surveyed in accordance with Regulation 5 of MARPOL Annex VI and that the emissions specified are controlled via a record of construction and equipment.

Que. What are IOPP, ISPP and IEE Certificates?

Ans. The International Oil Pollution Prevention (IOPP) Certificate is a requirement of MARPOL Annex I, Regulation 7. It is issued subject to a 5-yearly survey and is a requirement for tankers over 150 GT and all ships over 400 GT.

The International Sewage Pollution Prevention (ISPP) Certificate is a requirement of MARPOL Annex IV, Regulation 5. It is issued subject to a 5-yearly survey for all ships over 400 GT. It demonstrates that the ship is equipped with a sewage treatment plant, comminuter or holding tank, along with pipes, fittings and arrangements compliant with MARPOL Annex IV.

The International Energy Efficiency (IEE) Certificate is a requirement of MARPOL Annex VI, Regulation 21. Issued for

the life of the ship, subject to major conversion, it demonstrates that the ship is in compliance with the applicable requirements of MARPOL Annex VI, particularly EEDI (Regulations 20 and 21) and SEEMP (Regulation 22).

Que. What should the garbage management plan contain?

Ans. On 1st January 2013, the 2012 Guidelines for the Development of Garbage Management Plans, which are intended to minimise shipboard waste and assist in the prevention of pollution from garbage, entered into force. The Guidelines provide assistance for the implementation of the 2011 IMO amendments to MARPOL Annex V, Regulation 10, requiring that *"every ship of 100 gross tonnage and above, and every ship which is certified to carry 15 or more persons, and fixed or floating platforms shall carry a garbage management plan"*.

Where waste or garbage is generated on the ship, each distinct component should be evaluated separately and the garbage management plan should provide written procedures that include:

- Collecting, transporting and storing the material in suitable identified receptacles
- processing the material, including identification of the responsible person(s), training requirements, processing equipment and processing locations
- storing reusable or recyclable material, including the storage location, material handling procedures and training requirements
- discharging procedures either ashore to port reception facilities or, in the restricted instances where it is permitted, to the sea.

Que. For how long must you keep any receipts for using a shore waste reception facility?

Ans. Two years.

Que. Which vessels are required to carry a garbage record book?

Ans. Every vessel over 400 GT and every ship licensed to carry 15 passengers or more on international voyages are required to keep a garbage record book.

Que. What changes were made recently to the format of the garbage record book?

Ans. Amendments to MARPOL Annex V entered into force on 1st March 2018. These included various changes for garbage discharge and changes to the garbage record book format:

- The garbage record book is split into two parts. Part I is for all garbage other than cargo residues and is applicable to all ships. Part II is for cargo residues and is only applicable to ships carrying solid bulk cargo
- the criteria for determining whether cargo residues are harmful to the marine environment (HME) have been amended, as harmful cargoes have stricter discharge requirements. Solid bulk cargo, other than grain is now classified as per the new appendix I of MARPOL Annex V. The shipper must declare whether or not the cargo is HME. The garbage record book category for cargo residues has been split into HME (harmful to the marine environment) and non-HME
- the garbage categories have been amended to include e-waste.

The garbage record book, as well as receipts obtained from reception facilities, is required to be kept on board for at least two years.

Ships must demonstrate compliance with MARPOL with the possession of an approved, but updated, garbage management plan, a garbage record book and with updated placards noting the discharge requirements.

Que. What are the special areas in force under Annex V?

Ans. Garbage special areas in force include:

- The Mediterranean Sea
- the Baltic Sea
- the Black Sea
- the Red Sea
- the Gulfs (between Ras al Hadd, Oman and Ras al Faste, Iran)
- the North Sea
- the Antarctic
- the wider Caribbean region including the Gulf of Mexico and the Caribbean Sea.

Although the Black Sea and Red Sea areas have entered into force, they are not in effect as of October 2018. This is because there are insufficient reception facilities among the MARPOL Parties whose coastlines border these special areas.

Que. What regulatory changes to SOLAS were introduced on 1st January 2011 concerning asbestos?

Ans. New installation of materials containing asbestos is prohibited on all ships.

Ref: SOLAS Chapter II-1, Regulation 3-5, January 2011

The UK government has subsequently updated the Merchant Shipping (Health and Safety at Work) (Asbestos) Regulations. Refer to MGN 493, last updated in June 2015, for further guidance.

Que. What are the regulations on biofouling?

Ans. The Guidelines for the control and management of ships' biofouling to minimise the transfer of invasive aquatic species (Biofouling Guidelines) were adopted in 2011. These aim to help reduce biofouling as a significant vector for the transfer of invasive aquatic species. These guidelines are not mandatory. However,

ships that implement the measures will benefit from increased energy efficiency.

Some States also apply mandatory rules in relation to biofouling for ships entering their coastal waters. For example, New Zealand requirements for biofouling entered into force in May 2018. They require ships to carry out best practice in biofouling management and to demonstrate reports of this compliance. If biofouling exceeds this threshold, cleaning/treatment is required.

Additionally, the International Convention on the Control of Harmful Anti-Fouling Systems on Ships, 2001 (AFS Convention) addresses anti-fouling systems on ships. The convention prohibits the use of harmful organotins in anti-fouling paints used on ships. It also establishes a mechanism to prevent the potential future use of other harmful substances in AFS.

Que. Shipboard emissions can be reduced by the use of abatement technologies. What are abatement technologies?

Ans. Abatement technologies refers to exhaust gas cleaning equipment that provides a reduction in sulphur emissions from ships. This equipment removes SOx, NOx and particulate matter after combustion, but before emission.

Que. Where can information be found on the UK government's approach to the use of exhaust gas cleaning systems?

Ans. Reference should be made to MGN 510 – Use of Exhaust Gas Cleaning Systems under the Merchant Shipping (Prevention of Air Pollution from Ships) and Motor Fuel (Composition and Content) (Amendment) Regulations 2014 (2014 No.3076).

Ref: http://tinyurl.com/joqvpmw

Que. Which regulations govern the Oily Water Separator (OWS) and the operational discharge of oil.

Ans. MARPOL Annex I , Regulation 14 requires ships over 400 GT but less than 10,000 GT to be fitted with oil filtering equipment in accordance with paragraph 6, and ships over 10,000 GT in accordance with paragraph 7. The system must ensure that the oil content does not exceed 15 ppm. Some ship types, such as hotel ships and storage vessels, are instead permitted to use a holding tank for total retention of oily bilge water for subsequent discharge to reception facilities.

MARPOL Annex I, Regulation 15 covers the control of discharge of oil and contains specific requirements for discharges outside special areas (except in Arctic waters) and discharges in special areas.

MARPOL Annex I, Regulation 17 states that every ship over 400 GT and every oil tanker over 150 GT must be provided with an Oil Record Book Part 1 (Machinery space operations).

Que. What are the MARPOL requirements for shipboard incinerators?

Ans. MARPOL Annex VI, Regulation 16 requires all shipboard incinerators to be type approved and to possess an IMO Type Approval Certificate. Shipboard incinerators must operate within the following limits:

- O_2 in combustion chamber: 6 to 12%
- CO in flue gas maximum average: 200 mg/MJ
- soot number maximum average: Bacharach 3 or Ringelman 1
- unburned components in ash residues: maximum 10% by weight
- combustion chamber flue gas outlet temperature range: 850 to 1,200°C.

The manufacturer's operating manual must be retained on board.

The discharge into the sea of incinerator ashes from plastic is prohibited under MARPOL Annex V, Regulation 3. Additionally, Regulation 16 prohibits shipboard incineration of the following substances:

- Residues of cargoes subject to Annex I, II or II or related contaminated packing materials
- polychlorinated biphenyls (PCBs)
- garbage containing more than traces of heavy metals
- refined petroleum products containing halogen compounds
- sewage sludge and sludge oil either of which is not generated on board the ship
- exhaust gas cleaning system residues.

These must be discharged to a reception facility.

Discharges of permitted incinerator ash must be recorded in the garbage log book (garbage category E).

Que. What document must a ship carry regarding the rate of sewage discharge?

Ans. The document of approval for the rate of sewage discharge is required under MARPOL Annex IV, Regulation 11.1.1. It states that untreated sewage from ships, other than passenger ships in all areas and from passenger ships outside special areas that has been stored in holding tanks, must be discharged at a moderate rate as approved by the Administration. The maximum permissible discharge rate is 1/200,000 (or one 200,000th part) of swept volume.

Que. What technical documentation must a ship with diesel engines installed have on board?

Ans. The NOx Technical Code, paragraph 2.3.4 requires that every marine diesel engine installed on board a ship must be provided with a Technical File. The Technical File must be approved by the

Administration and accompany the engine throughout its life. It should contain the following:

- Identification of those components, settings and operating values of the engine which influences its NOx emissions including any NOx reducing device or system
- identification of the full range of allowable adjustments or alternatives for the components of the engine
- full record of the relevant engine's performance, including the engine's rated speed and rated power
- a system of onboard NOx verification procedures to verify compliance with the NOx emission limits during onboard verification surveys in accordance with Chapter 6
- a copy of the relevant Parent Engine test data, as given in section 2 of appendix 5 of the NOx Technical Code
- if applicable, the designation and restrictions for an engine which is an engine within an Engine Family or Engine Group
- specifications of those spare parts/components which, when used in the engine, according to those specifications, will result in continued compliance of the engine with the applicable NOx emission limit
- the EIAPP Certificate, as applicable.

Que. Where must adjustments and modifications to an engine be recorded?

Ans. The NOx Technical Code, paragraph 2.3.7 requires that, if any adjustments or modifications are made to an engine after its pre-certification, then a full record of these must be entered in the engine's Record Book of Engine Parameters.

2. Ballast Water Management

Que. What is the Ballast Water Management (BWM) Convention 2004 and when did it enter into force?

Ans. The BWM Convention sets out standards and procedures for the management and control of ships' ballast water and sediments. It aims to prevent the spread of harmful aquatic organisms to different marine environments.

There are two standards in the Convention, D1 and D2. The D1 standard requires ships to carry out a ballast water exchange. The D2 standard requires the use of an approved ballast water treatment system.

After conditions were met for ratification in 2016, the Convention entered into force on 8th September 2017. Subject to a phased implementation schedule, all applicable ships will now have to comply with the D2 standard by 2024.

Que. What documentation must a ship carry to demonstrate compliance with the BWM Convention?

Ans. Ships must carry:

- A Ballast Water Management Plan (BWMP) specific to the ship including actions taken to implement the Convention requirements
- a ballast water record book, to record ballast operations, whether treated or exchanged and discharged
- an International Ballast Water Management Certificate. This applies to ships of 400 GT and above and is issued by the Administration.

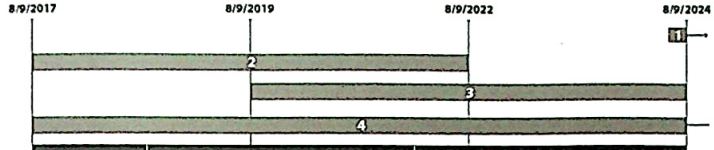
Compliance with the BWM Convention may be ascertained during a Port State Control inspection, specifically by inspection to verify the validity of the Certificate, the plan and the contents of the

record book, including where necessary sampling of the ship's ballast water in accordance with the G2 Guidelines.

Que. Do you know when your ship will have to comply with the BWM Convention?

Ans. In July 2017, MEPC 71 adopted amendments to the Convention to allow an additional time extension for installation of a treatment system compliant with D2 standards to be fitted to existing ships. In certain cases, this may be delayed until 8th September 2024. The amendments adopted to Regulation B-3 of the Convention require that:

- New ships, with keels laid on or after 8th September 2017, must install a treatment system at delivery of the ship
- existing ships, which have completed an IOPP renewal survey between 8th September 2014 and 7th September 2017, must install a treatment system at the first renewal survey following 8th September 2017
- existing ships, other than the above, must install a treatment system at the second IOPP renewal survey following 8th September 2017 or at the IOPP renewal survey on or after 8th September 2019, whichever comes first
- existing ships that do not require IOPP Certificates, i.e. oil tankers less than 150 GT and all other ships less than 400 GT, must install a system by no later than 8th September 2024.



Keel laid		--	Deadline for the BWMS installation
BEFORE*	1	Vessels that do not have IOPP Certificate	By 8th September 2024
	2	Vessels completed IOPP renewal survey on or after 8th September 2014 but prior to 7th September 2017	By the completion date of first renewal survey associated with the IOPP certificate on or after 8th September 2017
	3	Vessels other than the above	By the completion date of second renewal survey associated with the IOPP Certificate on or after 8th September 2017 or the renewal survey associated with the IOPP Certificate on or after 8th September 2019, whichever comes first
ON/AFTER*	4	All vessels	By the completion date of the construction

*8th September 2017

Que. What is a Ballast Water Management Plan (BWMP) and what should it include?

Ans. A BWMP is designed to assist governments, appropriate authorities, ships' Masters, operators, owners, port authorities and other interested parties in the prevention and minimisation of the risk of introducing harmful aquatic organisms and pathogens from ships' ballast water and associated sediments. All ships will have to carry a BWMP and the plan should be ship specific.

A BWMP should contain the information required by Regulation B-1 of the BWM Convention and include a detailed description of the actions to be taken to implement the ballast water management requirements and any supplemental practices. A BWMP should include the following:

- The ship's particulars
- the purpose of the plan
- plans/drawings of the ballast system

- additional details, such as procedures for the disposal of sediments, crew training and operational or safety restrictions
- a list of conditions under which ballast water exchange at sea is not to be undertaken
- duties of the BWM officer.

A BWMP should be written in the working language of the crew and, if the text is not in English, French or Spanish, should include a translation into one of these languages.

Que. What information should be entered in the ship's ballast water record book (BWRB)?

Ans. Along with the BWMP, all ships over 400 GT must carry and fill out a BWRB to record all ballast operations carried out on board. This includes routine ballast operations (exchange or treatment) and non-routine operations, e.g. emergencies. Information to be recorded includes location, time/date of discharge or uptake, volumes and the treatment method.

Que. List four examples of the many types of technology that could be used in a BWMS to control the transfer of aquatic species.

Ans. Any four from the following list:

- Physical separation, e.g. hydrocyclone (centrifugal) and filtration systems
- heat treatment
- ultraviolet radiation/advanced oxidation technology
- plasma technology
- deoxygenation/supersaturation technology
- ultrasonic and cavitation/shear force technology
- magnetic/electric fields technology
- chemical and biocide technology
- electrochemical technology.

Note:
Some of the technologies listed above have no commercial examples, some are used as the sole method of ballast water treatment, but most are used alongside others to provide multiple processes for disinfection. When more than one technology is used, it is to make allowance for the variations in size, species and development stage of the potentially invasive aquatic organisms present in ballast water.

Que. What guidelines are available from the IMO on BWM?

Ans. The IMO has published several sources of information to help with implementation of the Convention, including:

- Guidelines for ballast water sampling (G2)
- Guidelines for ballast water management and development of ballast water management plans (G4)
- Guidelines for ballast water exchange (G6)
- Guidelines for risk assessment under Regulation A-4 of the BWM Convention (G7)
- *'Ballast Water Management – How to do it'* publication.

Ref: https://tinyurl.com/y763u5df

Que. What amendments to the BWM Convention entered into force on 13th October 2019?

Ans. Several amendments entered into force, including:

- Amendments to Regulations A-1 and D-3 (Code for Approval of Ballast Water Management Systems (BWMS Code)), specifically that ballast water management systems installed on or after 28th October 2020 must be approved in accordance with the BWMS Code and they should take into account the Guidelines (Resolution MEPC.296(72)). The 2016 Guidelines for approval of BWMS (G8) were revoked
- amendments to Regulation B-3 (Implementation schedule of ballast water management for ships), as per Resolution MEPC.297(72), along with a resolution relating to the determination of the survey referred to in Regulation B-3 (Resolution MEPC.298(72))

- amendments to Regulations E-1 and E-5 (Endorsements of additional surveys on the International Ballast Water Management Certificate) (Resolution MSC.299(72)).

Que. What information is available from the UK MCA concerning ballast water management?

Ans. MIN 569 provides details on where to find updated information regarding the Ballast Water Management Convention and its implementation within the UK. The MCA also have a stand-alone guidance document outside the M-notice system. This is the 'Ballast Water Management FAQ'.

Ref: https://tinyurl.com/yaryzl6o

Que. When did the USCG Regulation for controlling ballast water discharge in US waters come into effect and when will it be mandatory for all vessels?

Ans. The US Coast Guard Ballast Water Discharge Standard Rule was published in 2012. It became mandatory for all vessels operating in US waters from the first dry-docking after 1st January 2016. It is important to note that the US is not party to the BWM Convention. The US has its own ballast water regulations and requirements for vessels ballasting in US waters. Compliance with the BWM Convention does not confer compliance with US ballast water discharge rules and vessels have been penalised for this.

Vessel Category and BW Capacity (m^3)		**Vessel Construction (keel laid) Date**	**Vessel Compliance Date**
New vessels	All	On or after 1st December 2013	On delivery
Existing vessels	<1,500 m^3	Before 1st December 2013	First dry-docking after 1st January 2016
Existing vessels	1,500 to 5,000 m^3	Before 1st December 2013	First dry-docking after 1st January 2014
Existing vessels	>5,000 m^3	Before 1st December 2013	First dry-docking after 1st January 2016

Que. What is an Alternate Management System (AMS) and who applies for it?

Ans. An AMS is a ballast water management system, type approved by a non-US Authority, that has been allowed short-term acceptance for operation in US waters. This temporary designation is for a period of 5 years after a vessel's compliance date with the USCG Ballast Water Discharge Rule 2012. An AMS is applied for by the BWMS manufacturer.

Note:
In order for ships to continue to operate a BWMS with AMS acceptance after the 5-year deadline, the manufacturer must apply for US Coast Guard Type Approval. BWMS that are US type approved differ from those approved under the IMO BWM Convention. US type approved systems are approved for a period of 5 years at a time. A list is available from the USCG Maritime Information Exchange.

Que. What is a Vessel General Permit (VGP) and when does the existing coverage expire?

Ans. The 2013 Vessel General Permit (VGP) is required by the US Environmental Protection Agency (EPA) and reflects the US Coast Guard 2012 ballast water standards (in general). The legislation is intended to eliminate all pollutants, including invasive species, from US inland and territorial waters. The VGP also contains requirements for effluent limits for oil to sea interfaces and for the washwater from exhaust gas scrubber systems. The 2013 VGP will expire on 19th December 2018.

The 2013 VGP was due to expire on 19th December 2018. However, on 4th December 2018, the US Vessel Incidental Discharge Act (VIDA) entered into force. While this requires new national standards of performance to be developed, the VGP remains in effect until the new regulations are final and enforceable. As such, for all ships visiting the US, it is advisable to establish in advance the current regulatory requirements with the agent before arrival.

3. Bunkering

Que. What must be supplied to the ship during bunkering operations?

Ans. Ships carrying oil or oil fuel must be provided with a material safety data sheet (MSDS) prior to loading a bulk oil cargo or bunkering oil fuel (SOLAS Regulation VI/5-1).

Que. What must a bunker delivery note (BDN) show and for how long must it be kept?

Ans. The sulphur content of each parcel of oil fuel intended for use on board ship must be documented by means of a bunker delivery note, which must be kept on board for three years after delivery of the fuel.

The BDN must be readily available for inspection at all reasonable times and must be accompanied by a representative sample of the fuel oil delivered. The sample should be sealed and signed by the supplier and an officer in charge of the bunkering operation. The sample must be kept for at least 12 months. Further information is provided in MARPOL Annex VI, Regulation 18.

Que. What records should be kept for a bunkering operation?

Ans. The following records should be maintained:

- Bunker loading plan (including safety checklists)
- accurate sounding/ullage records
- calculations for tank levels
- entries in oil record books and deck/engine log books
- time sheet
- bunker delivery note (BDN)
- any letters of protest
- material safety data sheets (MSDS)
- fuel oil quality certificates.

Que. What guidance did the IBIA and BIMCO issue in 2013 regarding bunkering and what should be recorded on a fuel sample label?

Ans. The International Bunker Industry Association (IBIA) and the Baltic and International Maritime Council (BIMCO) issued a Bunkering Guide for use prior to and during bunkering operations. It covers the two types of bunker fuel oil in use (residual fuel and distillate fuel) and provides information on loading operations and hazards, record-keeping and monitoring to prevent pollution.

The minimum information that should be recorded on a sample label is:

- Name and IMO number of receiving ship
- place or port of bunkering
- name of bunker supplier and vessel
- type/grade of fuel
- date and time delivery commenced
- sampling method
- location at which sample was drawn
- name and signature of receiver's representative
- seal number (cross-checked with BDN).

Que. What is the CCAI? What are the ISO standards for marine fuel?

Ans. It is the Calculated Carbon Aromaticity Index (CCAI). The CCAI is an index of the ignition quality of residual fuel oil. To avoid potential damage or malfunction, it is important to use fuel that falls within the permissible range for the engine. ISO:8217 issued in 2017 states that for residual fuels, depending on the grade, the maximum CCAI value is between 850 and 870. It also specifies other general test standards for marine fuel oils, including maximum values for density, viscosity, flashpoint, hydrogen sulphide, water, ash and other minerals. The International Organization for Standardization (ISO) reissues standards from time to time and it is useful to have an awareness of these

standards, in particular those that apply to bunkers coming on board the ship.

Que. What certificate of insurance is required for liability in the event of bunker pollution?

Ans. The 'Certificate of insurance or other financial security in respect of civil liability for bunker oil pollution damage' is required for ships of 1,000 GT or greater under Article 7 of the International Convention on Civil Liability for Bunker Oil Pollution Damage, 2001 (the Bunkers Convention). In the UK, further information on the Certificate is available in MGN 507.

Que. What information will Port State Control inspectors expect to see regarding bunkering?

Ans. Inspectors will need to see Bunker Delivery Notes (BDNs). MARPOL Annex VI, Regulation 18 requires BDNs to be retained for 3 years after the fuel oil has been delivered on board. The BDN should indicate that the fuel oils delivered and used on board do not exceed the maximum permitted sulphur content limits set out in MARPOL Annex VI, Regulation 14.

Security Questions

1. General Security

Que. Which Code governs security in port and on board ships?

Ans. The International Ship and Port Facility Security (ISPS) Code is a mandatory publication under SOLAS Chapter XI-2. It is divided into two sections. Part A contains detailed maritime security related requirements that must be adhered to. Part B provides recommendatory guidelines on meeting the requirements contained within the provisions of Part A. Section 9 of Part A requires ships to carry a Ship Security Plan (SSP) with appropriate measures in place to ensure adequate security. Vessels must have a Ship Security Officer (SSO). There are similar requirements for ports and companies.

Que. What documentation is required under the ISPS Code?

Ans. The ISPS Code requires a Ship Security Plan (SSP) approved by the Administration, as set out in paragraphs A/9.4 and B/9.2 of the ISPS Code, and an International Ship Security Certificate (ISSC) to be carried on board.

The purpose of an SSP is to ensure the security of the ship is maintained by preventing illegal acts from taking place. An SSP is developed following a Ship Security Assessment (SSA).

An SSP contains information such as:

- The location of restricted areas
- measures to prevent dangerous items and substances coming on the ship (gangway watch and searching procedures)
- procedures in the event of a security threat to the ship
- security duties of seafarers
- procedures for training and drills

- procedures on alerts and alarms, including the ship security alarm system (SSAS).

In the UK, the SSP must be approved by the MCA.

The ISSC may be a full issued certificate or an interim one. It states that the ship's security system, including its SSP, meets the requirements of the ISPS Code.

Que. What qualifications are required for appointment as a Ship Security Officer?

Ans. Every Ship Security Officer must hold a certificate of proficiency after acquiring approved seagoing service of not less than 12 months or appropriate seagoing service and possessing knowledge of ship operations and meeting the standard of competence as set out in the STCW Code.

Que. What are the duties of the Ship Security Officer?

Ans. Section 12.2 of the ISPS Code sets out the duties and responsibilities of the Ship Security Officer. These include but are not limited to:

.1 Undertaking regular security inspections of the ship to ensure that appropriate security measures are maintained
.2 maintaining and supervising the implementation of the ship security plan, including any amendments to the plan
.3 co-ordinating the security aspects of the handling of cargo and ship's stores with other shipboard personnel and with the relevant port facility security officers
.4 proposing modifications to the ship security plan
.5 reporting to the company security officer any deficiencies and non-conformities identified during internal audits, periodic reviews, security inspections and verifications of compliance and implementing any corrective actions
.6 enhancing security awareness and vigilance on board

.7 ensuring that adequate training has been provided to shipboard personnel, as appropriate
.8 reporting all security incidents
.9 co-ordinating implementation of the ship security plan with the company security officer and the relevant port facility security officer
.10 ensuring that security equipment is properly operated, tested, calibrated and maintained, if any.

Que. What recommendations should be followed with regard to onboard technology and cyber-risk management?

Ans. The IMO has issued *'Guidelines on maritime cyber risk management'*. These are recommended, but not mandatory. In June 2017, the IMO also issued Resolution MSC.428(98) on Maritime Cyber Risk Management in Safety Management Systems. The Guidelines provide high-level recommendations on maritime cyber risk management to safeguard shipping from current and emerging cyberthreats and vulnerabilities. They also include functional elements that support effective cyber risk management.

In September 2017, the UK government issued *'A Code of Practice – Cyber Security for Ships'*. This document contains information on implementing and maintaining good cyber security practices on maritime vessels.

In addition, a group of industry bodies, including BIMCO, CLIA, ICS, INTERCARGO and INTERTANKO, have published their own joint free *'Guidelines on Cyber Security Onboard Ships'*, to prevent issues arising from cyber incidents on board ships. A *'Cyber Security Workbook for On Board Ship Use'* is also available from Witherbys, BIMCO and ICS.

Ref: MSC-FAL.1/Circ.3, https://tinyurl.com/y74ak8jb

2. Piracy

Que. Where would you find information on onboard measures and practices that may be implemented to reduce the likelihood of a piracy attack?

Ans. The Best Management Practices (BMP5) booklet is the principal industry resource. The 5th edition was published in September 2018. It is available free of charge at https://tinyurl.com/y973hnnp and from chart agents and industry trade associations.

The purpose of BMP5 is to assist ships to avoid, deter or delay piracy attacks off the coast of Somalia, including the Gulf of Aden and the Arabian Sea area. Experience, supported by data collected by Naval forces, shows that the application of the recommendations contained within the booklet can and will make a significant difference in preventing a ship becoming a victim of piracy.

For the purposes of BMP5, the term 'piracy' includes all acts of violence against ships, crew and cargo. This includes armed robbery and attempts to board and take control of the ship, wherever this may take place. BMP5 covers threats and risk assessment, planning, ship protection measures, reporting requirements and actions if a ship is under attack.

Where possible, the booklet should be read with reference to the Maritime Security Centre – Horn of Africa website (www.mschoa.org), which provides additional and updating advice. MSCHOA is the planning and coordination unit for EU Naval forces (EU NAVFOR).

A list of IMO documents relating to piracy, including 'Measures to prevent acts of piracy and armed robbery against ships', is available at http://tinyurl.com/q6qav8n

Que. Which route should you follow in the Gulf of Aden?

Ans. Merchant ships in this area should use the Maritime Security Transit Corridor (MSTC). This is an established military corridor in which Naval forces focus their presence. It is shown on maritime security chart Q6099 and consists of:

- The Internationally Recommended Transit Corridor (IRTC) in the Gulf of Aden, created to lessen the risk of piracy attacks. The IRTC has been established by navies operating in the region. Ships in transit are recommended to conduct their passage through the IRTC in convoys, based on planned transit speeds. Group convoy transits are designed to ensure that ships avoid high profile piracy areas at the most dangerous times, while benefiting from maximum coordination of military assets in the region and enhanced mutual protection. It is not however a TSS
- the BAM TSS and the TSS west of the Hanish Islands
- a two-way route directly connecting the IRTC and the BAM TSS.

Que. What maritime security charts are available?

Ans. The UKHO has published a series of anti-piracy maritime security charts:

- Chart Q6099 covers the Red Sea, Gulf of Aden and Arabian Sea, including the 'High Risk Area' (HRA)
- Chart Q6110 covers North Africa, the Mediterranean Sea and the Black Sea
- Chart Q6111 covers the Persian Gulf and Arabian Sea (including the Strait of Hormuz)
- Chart Q6112 covers the Indian Ocean and SE Asia, from Karachi to Hong Kong.

Que. You are joining a ship that utilises armed security guards when transiting the waters off the east of Africa. What recommendations and guidance should you refer to?

Ans. You should refer to the IMO *'Interim recommendations for flag States regarding the use of privately contracted armed security personnel on board ships in the High Risk Area'* (MSC.1/Circ.1406) and *'Interim guidance to shipowners, ship operators, and shipmasters on the use of privately contracted armed security personnel (PCASP) on board ships in the High Risk Area'* (MSC.1/Circ.1405). Both sets of guidance are aimed at addressing the complex issue of the employment of private armed security personnel on board ships.

The guidance includes sections on risk assessment, selection criteria, insurance cover, command and control, management and use of weapons and ammunition, and rules for the use of force as agreed between the shipowner, the private maritime security company and the Master.

Additional guidance is set out in MSC.1/Circ.1443 on private maritime security companies providing PCASP on board ships in the HRA. This guidance incorporates a set of rules on the use of force, to complement the existing guidance and to facilitate greater harmonisation of PCASP policies at the international level. Companies should only employ private maritime security companies (PMSC) that meet the International Standard ISO 28007: Guidelines for private maritime security companies providing privately contracted armed security personnel on board ships. However, the applicable legal operation of armed security depends on the attitude of the Administration and also any local coastal States.

The UK government published an updated guide in December 2015 called *'Interim Guidance to UK Flagged Shipping on the Use of Armed Guards to Defend Against the Threat of Piracy*

in Exceptional Circumstances'. It highlights the importance of conducting a full risk assessment in planning and that the decision on the use of armed guards is ultimately under the authority of the Master.

Que. What UK guidance is available on piracy and armed robbery against ships?

Ans. MGN 440 contains 'Measures to Counter Piracy, Armed Robbery and other Acts of Violence against Merchant Shipping'. It covers:

- Specific guidance for Somalia, Northwest Indian Ocean and Gulf of Aden
- recommended practices to deter acts of piracy and armed robbery
- legal issues, including jurisdiction, intervention and the role of port and coastal states
- procedures for reporting incidents.

3. Stowaways

Que. What is a stowaway?

Ans. The FAL Convention defines a stowaway as *'A person who is secreted on a ship, or in cargo which is subsequently loaded on the ship, without the consent of the shipowner or the Master or any other responsible person and who is detected on board the ship after it has departed from a port, or in the cargo while unloading it in the port of arrival, and is reported as a stowaway by the Master to the appropriate authorities.'*

Que. Which IMO Codes and Conventions covers stowaways?

Ans. 1. The FAL Convention (Convention on Facilitation of International Maritime Traffic) – the 2003 amendments were particularly significant to the handling of stowaways.

The basic principles for dealing with stowaways were adopted in the 1997 Resolution A.871(20) – 'Guidelines on the Allocation of Responsibilities to Seek the Successful Resolution of Stowaway Cases'. These standards and recommendations were incorporated into the FAL Convention amendment, making them legally binding.

2. The ISPS Code.

Que. What UK guidance is available concerning stowaways?

Ans. MGN 70 contains guidelines on the allocation of responsibilities to seek the successful resolution of stowaway cases.

Que. Which areas are 'hot spots' for stowaways boarding ships?

Ans. The hot spots include ports throughout Africa, certain South American countries and the Caribbean. Although it is difficult to predict accurately which specific ports are high risk, broad and relatively long-term high risk areas can be deduced from previous incidents and current events.

Que. Who should you notify upon finding a stowaway?

Ans. The shipowner, P&I Club and agents at the previous and next port of call should be notified as soon as possible. Local correspondents can also be contacted directly for support. Prompt contact with your P&I Club, as well as following their guidance, is the key to successfully resolving a stowaway problem. It is important that the P&I Club receives the ship's schedule and a completed stowaway questionnaire as soon as possible. This is because some ports are more agreeable to the disembarkation and repatriation of stowaways than others. The Club should also be told whether the ship is returning directly to the country of the stowaway's embarkation. One of the reasons that prompt notification is so important is that heavy fines can be imposed if ports are not informed of the presence of stowaways on board. However, the situation can be controlled, the penalties avoided and repatriation plans drawn up if the appropriate authorities are notified.

Que. What precautions can you take to prevent stowaways boarding while at anchor?

Ans.

- Cover and secure hawser pipes on the anchor chains
- raise gangways and accommodation ladders when not in use
- hoist the pilot ladder immediately after use
- restrict the size of the rudder housing opening to prevent access
- retrieve rafts used for painting after completion of the work
- lock deck stores
- carry out regular and frequent deck patrols with the lookout doubled in poor visibility
- make use of security lighting when available and also rig lighting to shine outboard

- be suspicious of any small vessels approaching, such as fishing or pleasure craft, as they may have potential intruders on board, or even pirates. The ship should use all means available to prevent boarding of the ship from such boats. The port authority should be informed immediately of any attempt at boarding.

Que. Where do stowaways tend to hide on board?

Ans.
- Cargo holds
- containers
- funnel casings
- chain lockers
- storerooms
- cabins
- crane cabs
- mast houses
- engine room bilges
- the rudder shaft space accessed through the rudder trunk.

Crew Related Questions

1. Training and STCW

Que. What do you understand by the term 'The Human Element'?

Ans. The Human Element refers to people's ability and capability to deal effectively and safely with the complexity, difficulty, pressures and workload of their daily tasks, both during routine operations and in emergency situations.

A 2010 publication sponsored by the MCA entitled *'The Human Element: a guide to human behaviour in the shipping industry'* provides an insight as to why people take risks often with *"dreadful consequences"* and that decisions are a *"trade-off between the available information and the available time"*.

There is a strong view that what the shipping industry really lacks is training in dealing with the human factor. The MCA guide covers stress, fatigue, decision making, working with others and communication. It also advises Masters how to exercise control of a ship simply and effectively.

The book's inspiration was a train crash in 2002 that killed 7 and injured 76. After the incident, the authors wrote a 200-page guide to human factors in the rail industry. In 2008, they conducted a three-month feasibility study on the shipping industry. This book is the result and deals with everything from *"the engine rooms and decks of the smallest cargo ships to the conventions of the regulation makers and the boardrooms of the business strategists"*.

The MCA has issued two MGNs on the Human Element: MGN 505 – Human Element Guidance – Part 1: Fatigue and Fitness for Duty and MGN 520 – Human Element Guidance – Part 2: The Deadly Dozen – 12 Significant People Factors in Maritime Safety.

The IMO also addresses the human element at sea by recognising that *"the safety and security of life at sea, protection of the marine environment and over 90% of the world's trade depends on the professionalism and competence of seafarers"*. As such, they state that the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) addresses the issue of minimum standards of competence for seafarers.

In addition, the International Safety Management (ISM) Code aims to moderate human behavioural factors in the shipping industry. The ISM Code is aimed at improving the safety of international shipping and at reducing pollution from ships by guiding the way in which ships are managed and operated. The Code sets an international standard for the safe management and operation of ships and the formation of a safety management system (SMS).

Ref: 'The Human Element: a guide to human behaviour in the shipping industry' IMO website 'Human Element', http://tinyurl.com/jrcr5st

Que. Following adoption of the Manila amendments on 25th June 2010, the revised International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (the STCW Convention) and its associated Code entered into force on 1st January 2012. What were the main changes to STCW?

Ans. There were a number of important changes to each chapter of the Convention and Code, including:

- Improved measures to prevent fraudulent practices associated with certificates of competency and to strengthen the evaluation process (monitoring of Parties' compliance with the Convention)
- revised requirements on hours of work and rest and new requirements for the prevention of drug and alcohol abuse, as well as updated standards relating to medical fitness standards for seafarers

- new certification requirements for able seafarers
- new requirements relating to training in modern technology such as electronic charts and information systems (ECDIS)
- new requirements for marine environment awareness training and training in leadership and teamwork
- new training and certification requirements for electro-technical officers
- updating of competence requirements for personnel serving on board all types of tankers, including new requirements for personnel serving on liquefied gas tankers
- new requirements for security training, as well as provisions to ensure that seafarers are properly trained to cope if their ship comes under attack by pirates
- introduction of modern training methodology including distance learning and web-based learning
- new training guidance for personnel serving on board ships operating in polar waters
- new training guidance for personnel operating dynamic positioning systems.

Note:
These are the first updates to the STCW Convention and Code since 1995. For seafarers who started their seagoing service before 1st July 2013, the existing arrangements applied until 1st January 2017. The Manila amendments are now fully implemented and in force. All seafarers must comply with the updated course, certificate and revalidation provisions, subject to the requirements of their flag State. For more information, go to http://tinyurl.com/stcw2010-summary

Que. What are the fitness for duty/hours of rest requirements specified in STCW 2011 that entered into force on 1st January 2012?

Ans.
- Rest periods of not less than 10 hours in any 24-hour period and 77 hours in any 7-day period
- no more than two rest periods, one of which must be at least 6 hours
- intervals of no more than 14 hours between rest periods.

The following exceptions apply in cases of emergency and overriding operational conditions:

- Reduction in minimum rest hours to 70 in a 7-day period, but for a maximum of 2 weeks and a gap of twice the period of exception before there is any further exception
- increase in rest periods from two to three – one of at least 6 hours and the others no less than 1 hour
- interval between rest periods no more than 14 hours
- only applicable for 2 days in any 7-day period.

Que. What extra training and certification does STCW require for personnel on tankers and passenger ships?

Ans. There are two types of training for tankers, divided into basic and advanced. The advanced courses are divided into oil, chemical and gas. All personnel assigned cargo-related duties must complete the basic training. All officers responsible for cargo operations must complete the advanced training.

As per STCW Regulation V/2 for passenger ships, any personnel involved in assisting passengers in emergency situations must receive crowd management training and appropriate safety training for passengers in passenger spaces. In addition, personnel designated on muster lists must undertake crisis management and human behaviour training.

Details of the special training requirements for personnel on tankers and passenger ships are provided in MSN 1866.

Que. What amendments to STCW entered into force on 1st July 2018?

Ans. Various amendments to STCW were adopted at MSC 97. These include new requirements for Polar Code training, specifically new minimum requirements for special training for officers/Masters and for those operating passenger ships. The amended STCW Code is also included.

Que. Which chapter of the STCW Code contains standards regarding the engine room and what is the relevant MSN in the UK?

Ans. Chapter III of the STCW Code applies to the engine department. It covers onboard training, standards of training and competence, and knowledge and certification requirements.

The UK requirements for engineer officers and operators are provided in MSN 1857, with an outline of the relevant certification, examination and training requirements.

Que. What information does MGN 69 contain?

Ans. MGN 69 provides information and guidance concerning the conduct of UK MCA oral examinations and sets out the oral examination syllabuses for STCW certificates of competency.

Que. What recent MGN has the MCA issued regarding STCW?

Ans. MGN 590 was issued by the UK in May 2018. It explains the current alcohol limits for seafarers under the STCW Convention (as amended).

Under STCW, the alcohol limits are:

- Blood – 0.05%
- Breath – 0.25 milligrammes per litre
- Urine – N/A.

Under UK law, the limits are:

- Blood – 50 milligrammes in 100 millilitres
- Breath – 25 microgrammes in 100 millilitres
- Urine – 67 milligrammes in 100 millilitres.

Ships operating internationally must ensure they are aware of, and comply with, these limits.

2. Maritime Labour Convention

Que. What is the Maritime Labour Convention (MLC)?

Ans. The MLC was adopted by the ILO (International Labour Organization) and entered into force on 20th August 2013.

It governs seafarers' working and living conditions, i.e. issues such as payment of wages; hours of work or rest; recruitment and placement; manning levels; accommodation, recreational facilities, food and catering; health protection, medical care, welfare and social security protection; and seafarers' complaint procedures, etc.

The MLC is often referred to as the seafarers' 'bill of rights' and the fourth pillar of maritime legislation, after SOLAS, MARPOL and STCW.

All ships are required to be inspected, but ships of over 500 GT operating internationally and flying the flag of a member State must have certification to demonstrate compliance. Port State Control inspections, relating to MLC (2006) requirements, will also be carried out in addition to the inspections by the flag Administrations or organisations acting on their behalf.

The Maritime Labour Certificate is a 5-year certificate requiring an intermediate inspection in the second and third year. The certification process will apply to ships of 500 GT or above engaged in international voyages, flying the flag of a member State and operating from a port in another country.

The regulations in the MLC cover the following:

- Title 1: minimum requirements for seafarers to work on a ship – age, medical and training certificates
- title 2: conditions of employment – wages, working hours, rest and leave, career development

- title 3: accommodation, recreational facilities, food and catering
- title 4: health protection, medical care, welfare and social security protection
- title 5: compliance and enforcement.

The MLC does not apply to ships operating only in inland waters or sheltered waters covered by port regulations. It also does not apply to fishing boats and ships not normally used in commercial activities.

In the UK, MGN 471 explains the UK's interpretation and understanding of specific terms used in the MLC.

Que. How does the MLC differ from existing ILO Conventions?

Ans. There are requirements for regular inspection and certification, and also control by a port State.

Que. When did the MLC become effective?

Ans. The MLC became effective in August 2013, but in the UK it entered into force on 7th August 2014. MSN 1848 (Amendment 2) – Maritime Labour Convention, 2006 – Survey and Certification of UK Ships sets out requirements for compliance. The MSN highlights that seafarers must have a recognised contract in the form of an SEA (Seafarer Employment Agreement). It also mentions aspects of the MLC, including holiday pay, repatriation, accommodation, medical care, shipowners' liabilities, complaint procedures, wages, and training and qualification requirements.

Que. What are the minimum requirements for a Seafarer Employment Agreement (SEA)?

Ans. The minimum requirements are set out within the text of the MLC and summarised by the MCA in MGN 477. Requirements include:

- Every seafarer on a UK ship must have a legally enforceable SEA
- an SEA must include the minimum information specified by the MLC, including names of the seafarer and the company, place of work, wages, means of payment of wages, paid leave, notice of termination, protection benefits, repatriation and compensation, and disciplinary and grievance procedures
- the notice period for termination must be at least 7 days
- the SEA may contain more than one document, e.g. a collective bargaining agreement
- a seafarer must receive a record of service on board their ship.

Que. Who will carry out the inspection and certification for Flag?

Ans. Any Recognised Organisation (RO) will be authorised to carry out these services. The RO need not be the Classification Society for the ship, nor the ISM or ISSC provider.

Que. What were the recent amendments to the MLC?

Ans. On 18th January 2017, amendments ILO.103 entered into force. These amendments required all ships to have certificates issued by a provider confirming that insurance or financial security is in place for the costs of crew repatriation and wages. In addition, ships must have a certificate for liability claims regarding seafarer personal injury, disability or death.

On 8th January 2019, a further set of amendments entered into force. These add to the guidelines of Regulation 4.3 and relate to health and safety protection, as well as accident prevention. Under these amendments, shipowners are expected to adopt measures

to better protect seafarers against shipboard harassment and bullying. The amendments also include a change to the mandatory Standard A5.1.3, to allow for an extension of the validity of maritime labour certificates in circumstances where ships have passed the relevant inspection but where a new certificate cannot immediately be issued and made available on board.

Que. How can a company and vessel ensure MLC compliance?

Ans. Study the MLC requirements and MSN 1848 (Amendment 2), in particular the Regulations and Part A of the Code. It is likely that your company already does much of what is required. The key steps are identifying specific procedures that need to be put into place or perhaps made more robust. Over time, the vessel's SMS should address all conditions required for compliance with the MLC and for ongoing validity of the Maritime Labour Certificate.

Que. What MINs has the MCA issued recently regarding the MLC?

Ans. In January 2017, the MCA issued MIN 537 on shipowner liability for claims for compensation for death, personal injury and abandonment of seafarers. In November 2017, they issued MIN 559 on food and catering.

Que. What MSN has the MCA issued recently regarding hours of work and entitlement to leave?

Ans. MSN 1877 Amendment I was issued in March 2018 and contains the detailed mandatory requirements under the Merchant Shipping (Maritime Labour Convention) (Hours of Work) Regulation 2018 together with guidance on application.

Que. What information is available on minimum age requirements under the MLC in the UK?

Ans. MSN 1838 is entitled 'Maritime Labour Convention, 2006: Minimum Age'. It states that the minimum age for seafarers is 16 years and it sets out the requirements for protection of young seafarers (under 18 years) working on board UK ships. Specifically, it excludes night work unless part of recognised training. It requires employers to carry out a risk assessment with regard to young persons and they must not be assigned work likely to jeopardise their health and safety. It sets out rest periods for young seafarers. The basic principle is that young persons should be provided with a minimum of 12 consecutive hours of rest in every 24 hour period and a rest period of at least 2 days in every week. They should receive a 30 minute break if working more than 4 hours and 30 minutes.

Que. What UK MSNs apply to food and catering on the ship (title 3 of the MLC)?

Ans.
- MSN 1845 – Provision of Food and Fresh Water
- MSN 1846 – Ship's Cooks and Catering Staff
- MIN 559 – Food and Catering: Recognised Qualifications.

Que. What information is available for seafarers on their rights under the MLC, in the UK?

Ans. The MCA has issued several MGNs regarding seafarers' rights under the MLC. These include:

- MGN 476 – Seafarers' protection, rights and entitlements under the MLC, and advice on working on a ship registered with a country that has not ratified the MLC
- MGN 477 – Seafarers' Employment Agreements (SEA)
- MGN 478 – Minimum requirements for seafarers' wages, including allotments and penalties under the MLC

- MGN 479 – The circumstances in which shipowners are required to repatriate seafarers under the MLC
- MGN 480 (Amendment 2) – Shipowners' liabilities including seafarer compensation under the MLC
- MGN 481 (Amendment 1) – Crew accommodation requirements under the MLC
- MGN 482 – Medical care under the MLC
- MGN 486 – Access to shore-based welfare facilities
- MGN 487 – On-shore complaints under the MLC.

Que. What is a DMLC?

Ans. A Declaration of Maritime Labour Compliance (DMLC) is required under the Maritime Labour Convention, Regulation 5.2.1 as evidence of a ship's compliance with the Convention. It contains two parts. Part 1 is completed by the ship's flag State. Part 2 is completed by the shipowner and verified by the attending surveyor at the first inspection. It includes procedures for ongoing compliance between inspections.

General Law Related Questions

1. EU and UK Regulations

Que. What is the EU Advance Cargo Declaration Regime/Entry Summary Declaration (ENS)?

Ans. This is the EU mandatory advance notification requirement regarding the import, export and transit of goods. This applies in addition to existing customs regulations. For goods being imported, cargo information in the form of an 'Entry Summary Declaration' (ENS) needs to be submitted in advance to the customs office at the first port of entry into the EU. For goods being exported, cargo information is to be submitted in advance either in the form of a 'Customs Declaration for Export, Re-export or Outward Processing' or, if such a declaration does not apply, then in the form of an 'Exit Summary Declaration' (EXS). The rules are strictest for container ship operators loading outside Europe, who must make the Entry Summary Declaration (ENS) 24 hours ahead of loading.

Que. On 1st January 2012, the EU Insurance Directive entered into force for all ships. What is this?

Ans. The Directive requires ships to carry on board certificates proving the existence of P&I insurance. Clubs are working towards an acceptance by states that a Certificate of Entry will be sufficient and that no special European Certificate will be required.

Que. What types of safety information are issued by the UK Maritime and Coastguard Agency (MCA)?

Ans.
1. MSN – Merchant Shipping Notices
2. MGN – Marine Guidance Notices
3. MIN – Marine Information Notices

1. Merchant Shipping Notices are used to convey mandatory information that must be complied with under UK legislation.

2. Marine Guidance Notes provide significant advice and guidance relating to the improvement of the safety of shipping and of life at sea, and to prevent or minimise pollution from shipping.

3. Marine Information Notices are intended for a more limited audience, such as training establishments or equipment manufacturers. MINs when issued have a cancellation date, which will typically be 12 months after publication.

Each series of Marine Notices is numbered in sequence. Suffixes are used to indicate whether the notices are applicable to merchant vessels (M) or fishing vessels (F) or all UK vessels (M+F).

Que. What MSN has the MCA issued regarding Personal Protective Equipment (PPE)?

Ans. In February 2016, the MCA published MSN 1870 – The Merchant Shipping and Fishing Vessels (Personal Protective Equipment) Regulations 1999. This notice highlights the updated safety standards and extended duties to protect workers through the provision of PPE, as required by the PPE Regulations and the Merchant Shipping (MLC) (Health and Safety) (Amendment) Regulations 2014. MSN 1870 was updated in September 2019 to reflect the changes in regulations since the original publication of this MSN. It updates the PPE standards quoted from the British Standards and EU Commissions Harmonised Standards website.

Que. What recent MIN and MGN notices apply to health and safety on ships?

Ans. There have been several recent M notices. MGN 559 published in October 2016 advises on health and safety at work as regards electromagnetic fields (EMFs). MIN 548 published in June 2017 advises the industry on the Codes of Practice for Controlling Risks due to Noise and Vibration on Ships. MGN 352, amended in October 2019, contains guidance on the control of noise at work regulations.

MGN 90, amended in October 2019 contains guidance on the factors affecting the risks of manual handling on ships.

Que. What emission requirements for ships in EU member ports took effect on 1st January 2015?

Ans. EU Directive 2012/33/EC on the sulphur content of marine fuels requires that ships visiting the Baltic, North Sea and English Channel (known as the sulphur emission control area (SECA)) must use fuels with a sulphur content of not more than 0.1%. Higher sulphur content fuel use is still possible, but only if appropriate exhaust gas cleaning systems are in place.

This requirement is intended to reduce shipping emissions of sulphur dioxide and particulates around coastal and port areas to prevent damage to the environment, human health and property and to reduce acid rainfall.

Que. What are the MRV Regulations?

Ans. EU Regulation 2015/757 covers the monitoring, reporting and verification (MRV) of carbon dioxide (CO_2) emissions arising from maritime transport. It entered into force on 1st July 2015. The objective of the regulation is to increase understanding of fuel consumption and ships' emissions within Europe, in order to inform on future greenhouse gas reduction initiatives.

The regulation applies to ships over 5,000 GT on a commercial voyage into, out of, or between EU ports. All ships are required to have a ship-specific monitoring plan. This is assessed by a third party verifier each year. The vessel will monitor fuel consumption and other parameters, including per voyage statistics and miles travelled. Emissions can be compiled from bunker fuel delivery notes, fuel tank soundings, flow meters or direct emission measurement instruments.

At the end of each year, a ship-specific emissions report is prepared and a Document of Compliance issued. Vessels must have their plan assessed and implemented before the first monitoring period commences on 1st January 2018.

From 1st January 2018, a ship must monitor its emissions over an annual period from 1st January to 31st December, when a new reporting period will begin. Officers should be aware of their ship-specific monitoring plan and the information to be recorded.

Ref: https://tinyurl.com/ya42afek

Que. Which MGN covers the reporting requirements and procedures for marine casualties and marine incidents?

Ans. Guidance is contained within MGN 564 – Marine Casualty and Marine Incident Reporting, dated September 2017.

Que. What are the notification and reporting requirements for ships arriving in the UK?

Ans. MSN 1831 sets out the Vessel Traffic Monitoring Notification and Reporting Requirements for Ships and Ports. The information to be provided concerns:

- 24 hours' notice, prior to entry into a UK port, for all ships of 300 GT and above
- notification by all ships regardless of size, either departing from or bound to a UK port carrying dangerous or polluting goods
- reporting requirements in the event of an accident/incident.

In addition, MIN 540 provides information on the Consolidated European Reporting System (CERS).

Que. Which UK regulations govern the use of work equipment and lifting equipment?

Ans. These are the Merchant Shipping and Fishing Vessels (Provision and Use of Work Equipment) Regulations 2006 (PUWER) and the Merchant Shipping and Fishing Vessels (Lifting Operations and Lifting Equipment) Regulations 2006 (LOLER).

All tools, machinery and equipment used at work (work equipment) are covered by the requirements of PUWER. Guidance on compliance with the work equipment regulations is contained in MGN 331. MGN 331 was updated in October 2019 to reflect changes in extending duties under the PUWER legislation. Lifting equipment and lifting operations are subject to the requirements of LOLER. Information on lifting equipment and operations, as well as compliance with the law is contained in MGN 332. MGN 332 was updated in October 2019 to reflect changes in extending duties under the LOLER legislation.

Note that the 2006 Regulations were amended in 2008 to correct technical errors. Information on the amendments is contained in MGN 378.

Que. When was the latest Code of Safe Working Practices published?

Ans. The Code of Safe Working Practices for Merchant Seafarers (COSWP) was published in September 2015 and last updated in December 2017. It contains guidance for improving the health and safety of seafarers on board ships. The MCA considers (see Section 13) that the Code should be provided in appropriate formats and in sufficient quantity to ensure easy access on board.

In addition, the Merchant Shipping (Code of Safe Working Practices) (Amendments and Revocation) Regulations 2015 came into force on 20th October 2015. For more information, refer to MGN 539 – Carriage of the Code of Safe Working Practices for Merchant Seafarers.

The most recent amendments to the Code are contained within MIN 561 and MIN 601. The amendments include guidance on sunglasses for seafarers, precautions to be taken when dealing with discarded sharps, guidance on solid carbon dioxide, safe access to small craft, etc.

The MIN 601 amendments, issued in November 2019, include:

- A risk matrix for training purposes
- information on e-cigarettes and the risks from battery packs
- updates due to the MLC Convention amendments on bullying and harassment
- a new sub-section on raising pilot ladders from lower levels and updating information on safe rigging of pilot ladders
- updating warnings for hot work and from mild steel welding fumes.

Que. What UK regulations apply to working with chemicals?

Ans. In November 2018, the UK issued MSN 1888 on the chemical agents regulations.

Que. What are the UK requirements for the ship Safety Officer, safety representative and the safety committee?

Ans. Implemented by The Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997, under Chapter 13 in COSWP, the requirements for a Safety Officer are that they must be competent and have at least 2 years' consecutive sea service, served after reaching the age of 18. The Safety Officer on board an oil tanker must have at least 6 months' service on such ships.

The Safety Officer is the safety adviser to all on board the ship and should assist the company and the Master in meeting the statutory responsibilities for health and safety on board. The Safety Officer should receive suitable training, be familiar with the principles and practice of risk assessment and be aware of all safety tasks

and programmes used on board. All seagoing ships that employ 5 or more people must have a Safety Officer. The appointment is recorded in the official log book. The Master can be appointed, but this is not recommended. The Safety Officer has a number of defined responsibilities, as listed in COSWP, Chapter 13, and these include promoting safety generally and carrying out safety inspections and investigations.

All seagoing ships that employ 5 or more people must also elect safety representatives. The service requirements are the same as for the Safety Officer. The number of safety representatives will vary depending on the number of seafarers on board. All ranks and departments should be represented. The safety representatives should represent the crew on matters affecting their health and safety.

The safety committee must meet regularly on all ships with five or more seafarers. Chaired by the Master, its members must include the Safety Officer and the safety representatives. The committee should ensure that the safety provisions of COSWP are being complied with and should report to the company/operator on health and safety issues as appropriate.

Que. What are the UK requirements for posting of the ship's freeboard?

Ans. The Draught of Water and Freeboard Notice (MSF 2004, previously known as FRE 13) must be posted in a conspicuous place that is accessible to crew at sailing. The officer completing the form should enter the freeboard details of the ship. Normally, these details will also be entered by the Master in the official log book (OLB) at the same time, so that the completing officer can countersign the OLB. A copy of form MSF 2004 is provided in MSN 1752.

Que. Where can you find information on the medical stores required on a ship under the UK flag?

Ans. The relevant legislation is The Merchant Shipping and Fishing Vessels (Medical Stores) Regulations 1995. These contain a list of statutory treatment and required medicines. A full list of medical equipment and medical stores on ships is contained in MSN 1768. Additional medical stores are required for ships carrying DG cargo, as identified in the Medical First Aid Guide (MFAG) requirements of the IMDG Code (and associated IMO/WHO/ILO Medical First Aid Guide).

For diagnosis and administration of medicines, the Ship Captain's Medical Guide and/or radio medical advice, as appropriate, should be consulted first by the person in charge of medical care on the ship.

Que. Where can you find information for UK ships on safe work on machinery and power systems?

Ans. Chapter 20 in the Code of Safe Working Practices for Merchant Seafarers (COSWP) contains safe working practices for machinery and power systems. A few examples include:

- No work that may affect the supply of water to the fire main or sprinkler system should be started without the prior permission of the master and chief engineer (20.2.1)
- no alarm system should be isolated without the permission of the master and chief engineer (20.2.2)
- removal of safety guards, e.g. for maintenance or inspection, should only be undertaken when the machinery is not operating. Removal should be authorised by a competent person and suitable precautions implemented, e.g. warning notices, additional lighting, instruction in safe systems of work, etc (20.2.4)

- personnel should wear suitable hearing protection when working in machinery spaces that have high noise levels (20.3.3)
- when working alone in an unmanned machinery space (UMS), engineer officers must report to a deck officer before entry, at regular intervals whilst in the space and on leaving the space (20.4).

Que. Which regulations apply to pressure equipment on UK and EU ships?

Ans. The Pressure Equipment (Safety) Regulations 2016 transpose EU Directive 2014/68/EU relating to pressure equipment. The 2014 EU Directive repeals and replaces an earlier EU Directive 1997/23/EC, which was previously implemented by the Pressure Equipment Regulations 1999. In the 2016 Regulations, 'pressure equipment' means vessels, piping, safety accessories and pressure accessories, including, where applicable, elements attached to pressurised parts such as flanges, nozzles, couplings, supports and lifting lugs.

Que. What information from the MCA is available on auxiliary boilers?

Ans. MSN 1405 on 'Auxiliary boilers on board UK registered ships' explains the dangers of auxiliary boilers, their recommended maintenance and cleaning, as well as the in and out of service periods of boilers.

2. Polar Code

Que. What is the objective of the International Code for Ships Operating in Polar Waters (Polar Code) and when did it enter into force?

Ans. The objective is to provide for safe ship operation and protection of the polar environment by addressing risks present in polar waters that are not adequately covered within present legislation. The Polar Code entered into force on 1st January 2017.

Que. Briefly outline the information contained in the Polar Code.

Ans. The Polar Code is divided into two main sections:

- Part I relates to safety measures (SOLAS) and forms the basis of the Polar Water Operational Manual
- Part II concerns environmental protection by pollution prevention measures (MARPOL). As such, there are related amendments to MARPOL. Part II is subdivided into parts A and B. Part A contains mandatory requirements and Part B contains further information and additional recommendations.

All ships (both new and existing) that intend to operate in polar areas will be assessed for their compliance with the Code. Compliant ships will be issued with, and must carry on board, a Polar Ship Certificate. Additional equipment for use in very low temperatures will be required. The Code covers LSA, navigation, communication, voyage planning, ship structure and stability, watertight and weathertight integrity, machinery installations, fire safety/protection, voyage planning, and manning and training.

Que. How are vessels categorised for operations in ice conditions?

Ans.
- Category A: A ship designed for operation in at least medium first-year ice, which may include old ice inclusions
- Category B: A ship not included in Category A, designed for operation in at least thin first-year ice, which may include old ice inclusions
- Category C: A ship designed to operate in open water or in ice conditions less severe than those in categories A and B.

Que. In which regions will ships need to comply with the Polar Code?

Ans. The Polar Code affects ships intending to operate in the defined polar regions of the Arctic and Antarctic.

Que. Where are the Arctic and Antarctic regions defined?

Ans. They are defined within the SOLAS and MARPOL Conventions. Maps of the regions are provided within the Polar Code.

Que. What is the second phase of the Polar Code?

Ans. The second phase of the Polar Code is currently being discussed by the IMO. This includes the possible extension of the Code to non-SOLAS vessels such as yachts and small cargo ships below 500 GT. In 2018, the IMO agreed to develop recommendatory safety measures, with a view to further mandatory measures in the future.

regime (NIR). In the UK, for example, this is implemented under the Merchant Shipping (Port State Control) Regulations 2011.

Each ship is assigned a ship risk profile (SRP), in accordance with Annex 7 of the Paris MoU. This SRP determines the ship's priority for inspection, the interval between inspections and the scope of the inspection. The SRP assesses the type and age of ship, the number of previous deficiencies and detentions, the performance of the flag of the ship, and the performance of the recognised organisation(s). It also considers a company's performance and takes into account the detention and deficiency history of all ships in a company's fleet in the Paris MoU area in the last 36 months.

SRPs are automatically recalculated daily and after inspections, or after a change of flag/RO performance, into one of three categories:

- Low risk ships – due an inspection every 24 to 36 months
- standard risk ships – due an inspection every 10 to 12 months
- high risk ships – due an inspection every 5 to 6 months.

Additional inspections may be carried out for various safety reasons. The type of inspection will depend on the ship's risk profile; the minimum for a high risk ship will be an expanded inspection. To maintain a low risk status, a vessel must have no more than five deficiencies during any one inspection and no detention recorded in the preceding 3 years.

The Paris MoU publishes its results in an annual report. This includes the White, Grey and Black (WGB) List. It contains a list of flag States, ranked according to the number of detentions of ships under their flag, as a result of a Paris MoU inspection. The White List contains flags with a lower than average detention record. The Black List contains flags with a higher than average detention record. The Grey List contains flags with neither a substantially higher nor lower than average detention record.

Que. What are the Paris MoU reporting requirements?

Ans. Under the Paris MoU, a ship has to report 24 hours (24 ETA) before arriving at a port or anchorage of the Paris MoU region or before leaving the previous port or anchorage if the voyage is expected to take less than 24 hours. This pre-arrival notification has to be reported to all ports in the Paris MoU region at which the ship will call and should include ship identification, port of destination, ETA/ETD and total number of persons on board.

Ships due for an expanded inspection have to report 72 hours (72 ETA) before arriving at a port or anchorage of the Paris MoU region or before leaving the previous port or anchorage if the voyage is expected to take less than 72 hours. The following information must be supplied to the port authority:

(a) Ship identification (name, flag, call sign, IMO or MMSI number)
(b) port of destination
(c) estimated time of arrival (ETA)
(d) estimated time of departure (ETD)
(e) planned duration of the call
(f) for tankers:
    i. configuration: single hull, single hull with SBT, double hull
    ii. condition of the cargo and ballast tanks: full, empty, inerted
    iii. volume and nature of cargo
(g) planned operations at the port or anchorage of destination (loading, unloading, other)
(h) planned statutory survey inspections and substantial maintenance and repair work to be carried out whilst in the port of destination
(i) date of last expanded inspection in the Paris MoU region.

3. Port State Control

Que. What is the role of Port State Control?

Ans. Port State Control is a check on visiting foreign ships to ensure they comply with international rules on safety, pollution prevention and seafarers' living and working conditions. It is a means of enforcing compliance where the owner and flag State have failed in their responsibility to implement or ensure compliance. The port State can require defects to be put right and may detain the ship for this purpose if necessary. It is therefore also a port State's defence against visiting substandard shipping.

Que. What is a Port State Control MoU?

Ans. A Memorandum of Understanding (MoU) is an official document in which participating maritime authorities agree to follow a harmonised system of Port State Control. The establishment of the regional Port State Control organisations and implementation of Memoranda of Understanding facilitate regional inspections. There are nine regional MoUs:

- Abuja MoU
- Vina del Mar MoU
- Black Sea MoU
- Caribbean MoU
- Indian Ocean MoU
- Mediterranean MoU
- Paris MoU
- Riyadh MoU
- Tokyo MoU.

Que. What is the Concentrated Inspection Campaign (CIC)?

Ans. A CIC is an organised effort to focus for a period on one agreed subject of concern. This may be due to a new regulation entering into force or due to a growing safety concern that requires greater effort to mitigate through inspections. A CIC is usually carried out by a single MoU, but may sometimes be conducted jointly between different regions. Campaigns vary in duration, but usually take place yearly, over a period of 3 months between September and November. Sometimes, a CIC in one MoU may be similar to a previous MoU's CIC, but occurs in a later year. For example, in the Paris and Tokyo MoUs, the 2017 CIC was on the safety of navigation and the 2018 CIC is on MARPOL Annex VI.

Que. What is the Paris MoU?

Ans. The Paris MoU consists of 27 participating maritime Administrations that cover the waters of the European coastal States and the North Atlantic basin from North America to Europe. On average, more than 18,000 ship inspections take place annually within the Paris MoU.

The MoU is based on an official text document, which received its 39th amendment in 2016. The text consists of the agreement of the States on:

- Their commitments and the relevant international conventions that apply to inspections
- the inspection procedures and the investigation of operational procedures
- the exchange of information to aid further awareness and understanding
- the structure of the organisation and amendment procedures.

The Paris MoU was made mandatory in EU member States under the Port State Control Directive (Directive 2009/16/EC), which entered into force on 1st January 2011 with a new inspection

regime (NIR). In the UK, for example, this is implemented under the Merchant Shipping (Port State Control) Regulations 2011.

Each ship is assigned a ship risk profile (SRP), in accordance with Annex 7 of the Paris MoU. This SRP determines the ship's priority for inspection, the interval between inspections and the scope of the inspection. The SRP assesses the type and age of ship, the number of previous deficiencies and detentions, the performance of the flag of the ship, and the performance of the recognised organisation(s). It also considers a company's performance and takes into account the detention and deficiency history of all ships in a company's fleet in the Paris MoU area in the last 36 months.

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(a) Ship identification (name, flag, call sign, IMO or MMSI number)
(b) port of destination
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(d) estimated time of departure (ETD)
(e) planned duration of the call
(f) for tankers:
    i. configuration: single hull, single hull with SBT, double hull
    ii. condition of the cargo and ballast tanks: full, empty, inerted
    iii. volume and nature of cargo
(g) planned operations at the port or anchorage of destination (loading, unloading, other)
(h) planned statutory survey inspections and substantial maintenance and repair work to be carried out whilst in the port of destination
(i) date of last expanded inspection in the Paris MoU region.

Que. What are prohibition, improvement and detention notices?

Ans. Prohibition and improvement notices are enforcement notices issued by the UK government concerning statutory health and safety violations.

A prohibition notice is issued to prohibit the carrying out of an operation or the use of a particular item of equipment because it is unsafe.

An improvement notice requires improvements to be made to protect safety on the ship in accordance with legislation.

A failure to comply with these notices will lead to prosecution and/or associated fines. In the UK, these notices are issued by MCA inspectors under the authority of the Merchant Shipping Act. Other countries have similar statutory notices that may be issued following a port State inspection.

A failure to comply with a prohibition or improvement notice, as well as more serious safety violations and also violations of important legislation to protect seafarers (such as violating crew rights or overloading loadlines), may lead to issue of a detention notice. This prohibits a ship from departing. For the ship to be able to depart, all deficiencies identified must be rectified.

In EU countries (in compliance with the Directive on Port State Control (2009/16/EC)), the maritime authorities are required to publish details of foreign-flagged vessels detained in each country, including the nature of the defects that lead to the ship being detained.

Que. What are some of the common areas that Port State Control inspectors will assess in the engine room?

Ans. Among other things, inspectors will look for regulatory compliance with the codes and conventions applicable to the flag State. Importantly, they will need to see accurate records demonstrating inspection, testing and maintenance of equipment, such as:

- Bilge alarms
- ventilators, closers, fire dampers and fan stops
- emergency stops
- engine room alarms, including fire and CO_2 systems
- main/auxiliary oil mist detector
- bilge separator – 15 ppm alarm and 3-way valve
- emergency steering gear and communication
- high/low voltage earth alarms
- emergency fire pump.

4. General Questions – Other Conventions and Codes

Que. How does the International Maritime Organization (IMO) work and what regulations and information do they produce?

Ans. The IMO consists of an assembly, council and five main committees: the Maritime Safety Committee (MSC), the Marine Environment Protection Committee (MEPC), the Legal Committee, the Technical Cooperation Committee and the Facilitation Committee. There are a number of sub-committees that submit documents and reports to the main committees. The committees meet once or twice a year. Member States (with industry groups on a non-voting basis) attend the committees. They discuss and agree on changes to formal maritime conventions and codes. Changes and agreed guidance are issued through resolutions or circulars. It is up to the member States (acting in a port State or flag State capacity) to enforce the changes or new regulations agreed at the IMO, once they have entered into force.

Que. What are IMO conventions and codes?

Ans. A convention is a written formal treaty of international law that is binding on the States in accordance with its contents. The principal maritime conventions are UNCLOS, SOLAS, MARPOL, the Load Line Convention, the COLREGS, STCW, the Maritime Labour Convention (MLC), the BWM Convention and the Tonnage Convention. Most maritime conventions are created through the remit of the IMO, although other organisations also create conventions. For example, the MLC originates from the International Labour Organization (ILO).

Conventions usually enter into force once a specified number of states, representing a specified percentage of global tonnage, have become party to the convention. Amendments to conventions can be made either by explicit acceptance or by the tacit acceptance procedure. The principal method used at the IMO is the tacit

acceptance procedure, where the amendment will enter into force on a specified date unless a specified number of States object.

Codes are issued by the IMO on a variety of technical subjects. They contain technical information, usually of a complexity that is not suited to a convention, e.g. the full specifications of fire-fighting systems in the FSS Code. Including this information in a separate code allows amendments to be made easily following technical changes and improvements. Most IMO codes are mandatory, although some contain recommendations and guidelines, such as the CSS Code.

Que. What is UNCLOS?

Ans. The United Nations Convention on the Law of the Sea (UNCLOS), also known as the Law of the Sea, is the international convention that defines the rights and responsibilities of nations with respect to their use of the world's oceans. A key aspect of the Convention is that it entitles coastal States to exercise sovereignty over their territorial sea up to a limit of 12 nautical miles from the baseline. It also includes guidelines for ships' rights (e.g. 'innocent passage' through territorial waters and 'transit passage' through international straits), as well as for businesses, the environment and the management of marine resources. The Convention, concluded in 1982, replaced four 1958 treaties and entered into force in 1994. As of September 2018, the Convention has 169 parties, including observers.

Que. What is the ILO responsible for?

Ans. The International Labour Organization (ILO) is the UN agency responsible for setting work and labour standards. They have a direct role in regulating international labour and working practices in the maritime environment. The Maritime Labour Convention (MLC) is an ILO convention.

Que. What is the Tonnage Convention?

Ans. It is the International Convention on Tonnage Measurement of Ships, 1969 and applies to all ships of 24 m or more in length. A ship's gross and net tonnages are determined, and the ship is then issued with an International Tonnage Certificate (ITC).

Que. What is the ISM Code?

Ans. It is the International Management Code for the Safe Operation of Ships and for Pollution Prevention. The ISM Code became mandatory in 1998 through SOLAS Chapter IX. The objectives of the ISM Code are *"to ensure safety at sea, prevention of human injury or loss of life, and avoidance of damage to the environment, in particular to the marine environment and to property"*. The Code requires companies to ensure their ships have a safety management system (SMS) and a designated person ashore (DPA). A company is issued with a document of compliance (DOC) at 5-year intervals subject to an annual external audit. The ship is provided with a safety management certificate (SMC) if the company and the seafarers are operating the ship in accordance with the approved SMS.

A number of amendments have entered into force. The most recent, coming into force on 1st January 2015, require a company to ensure that their ships are manned with suitably qualified, certificated and medically fit seafarers.

Ref: The ISM Code and Guidelines on Implementation of the ISM Code.

Que. What is the role of the Designated Person Ashore (DPA) under the ISM Code?

Ans. Part A, Regulation 4 of the ISM Code states that the role of the DPA is to ensure the safe operation of each ship and to provide a link between the company and those on board. Every company, as appropriate, should designate a person or persons ashore having direct access to the highest level of management.

The responsibility and authority of the DPA(s) should include monitoring the safety and pollution prevention aspects of the operation of each ship and ensuring that adequate resources and shore-based support are applied, as required.

Que. What is the SMS and why does it apply to engineers?

Ans. Part A, Regulation 1 of the ISM Code requires a vessel to have a Safety Management System (SMS). As part of this, or in addition to it, there should be a planned maintenance system (PMS) on board. This should cover the status of systems, ongoing works and maintenance reports (see Part A, Regulation 10). Usually, there is a spare part inventory system. These systems are usually part of the Chief or 2nd Engineers' responsibilities. Engineers should be aware of the critical systems and company requirements for safe operation of their vessel.

Senior engineer officers have a duty under the ISM Code to ensure that internal audits and management reviews of the SMS are carried out, so its effectiveness can be continually assessed. The SMS should specify procedures for accident reporting and for reporting non-conformities and safety observations. Senior engineers should be aware of these procedures.

Que. What regulations govern load lines internationally and in the UK?

Ans. The International Convention on Load Lines 1966 contains provisions for determining the freeboard of ships by division and stability calculations, taking into account the hazards that exist in different zones and in different seasons. It sets out the marking of assigned load lines based on 'conditions of assignment'. There are special requirements for type A ships, some type B ships and for ships with timber freeboards. The Convention has been amended and updated, chiefly by the 1988 Protocol, taking account of updated survey and certification requirements. Following an initial survey, ships on international voyages are issued with an

International Load Line Certificate (ILLC). Renewal surveys are required at 5-year intervals and an annual survey is required within 3 months before or after each anniversary date of the certificate. The ILLC is part of the Harmonised System of Survey and Certification (HSSC).

In the UK, the Merchant Shipping (Load Line) Regulations 1998, as amended by the Merchant Shipping (Load Line) (Amendment) Regulations 2000, are contained in MSN 1752. Additionally, MGN 579 contains guidance and clarification on the Merchant Shipping (International Load Line Convention) (Amendment) Regulations 2018.

Que. What is the Wreck Removal Convention?

Ans. The Nairobi International Convention on the Removal of Wrecks (Wreck Removal Convention) entered into force on 14th April 2015. It covers reporting and locating shipwrecks, the criteria for determining the hazard posed by the wreck, measures to facilitate the removal of wrecks, and the liability of the owner, including settling disputes. Under the Convention, owners of ships over 300 GT that are registered in a contracting State of the Convention or are using a port in the territory of a contracting State will need insurance cover that meets the requirements of the Convention. This must be demonstrated on board by the carriage of a Wreck Removal Certificate.

Que. There continues to be loss of life due to incorrect entry into enclosed spaces. SOLAS was amended on 1st January 2015 to try to prevent such occurrences. What does the amendment contain?

Ans. SOLAS Chapter III, Regulation 19 requires that crew members with enclosed space entry or rescue responsibilities must participate in an enclosed space entry and rescue drill to be held on board

the ship at least once every two months. These must include the following:

- Checking and use of personal protective equipment required for entry
- checking and use of communication equipment and procedures
- checking and use of instruments for measuring the atmosphere in enclosed spaces
- checking and use of rescue equipment and procedures
- instructions in first aid and resuscitation techniques.

Ref: SOLAS III, Regulation 19, Supplement, December 2014
http://tinyurl.com/qd5utr7

Que. What is the RO Code?

Ans. The RO Code is the Code for Recognized Organizations, which was adopted at MSC 92 and took effect on 1st January 2015.

The Code aims to provide a standardised, global approach to assis flag States in recognising, authorising and monitoring their ROs. The Code will apply to all ROs that are either being considered for recognition or are already performing statutory certification and other services for flag States.

Que. What is the IGF Code?

Ans. The International Code of Safety for Ships using Gases or Other Low-flashpoint Fuels provides industry standards for ships that use fuels with a flashpoint of less than 60°C. The IGF Code recognises that the use of gas as a fuel, in particular liquefied natural gas and other low-flashpoint fuels, poses its own set of safety challenges. The IGF Code entered into force on 1st January 2017.

The IGF Code contains mandatory provisions for the arrangement, installation, control and monitoring of machinery, equipment and systems using low-flashpoint fuels, focussing initially on LNG.

Que. What are the recent amendments to the IGF Code?

Ans. In June 2017, amendments relating to fire safety regulations and bridge window design were adopted. These entered into force on 1st January 2020.

In June 2019, amendments relating to ship design and arrangements, the fuel containment system, the fuel supply to consumers, power generation (including propulsion and other gas consumers), and fire safety regulations were adopted. These are due to enter into force on 1st January 2024.

Que. Which IMO regulations apply to high-speed craft?

Ans. High-speed craft are covered by the International Code of Safety for High-Speed Craft (HSC Code). The Code has been mandatory since 1996 under SOLAS Chapter X – Safety measures for high-speed craft. In 2000, the HSC Code was revised by a new edition named the 2000 HSC Code. The 2000 HSC Code applies to all HSC built after 1st July 2002. The Codes have been amended several times. The most recent amendments were adopted in June 2017 and entered into force on 1st January 2020.

Que. Which IMO regulations govern anti-fouling systems?

Ans. The International Convention on the Control of Harmful Anti-fouling Systems on Ships (AFS Convention) was adopted on 5th October 2001 and entered into force on 17th September 2008. Anti-fouling systems to be prohibited or controlled are listed in Annex 1 of the Convention, which is updated as necessary.

Que. What is the MODU Code?

Ans. It is the Code for the Construction and Equipment of Mobile Offshore Drilling Units 2009. The MODU Code provides an international standard for MODUs of new construction, which will facilitate their international movement and operation and ensure a level of safety for such units and for personnel on

board, equivalent to that required by the SOLAS and Load Line Conventions.

Que. Which code applies to casualty investigation?

Ans. The Code of the International Standards and Recommended Practices for a Safety Investigation into a Marine Casualty or Marine Incident (Casualty Investigation Code). It includes mandatory standards and recommended practices for accident investigation.

Que. Which IMO regulations apply to stability on ships?

Ans. The International Code on Intact Stability (IS Code) presents mandatory and recommendatory stability criteria. The Code sets out fundamental precautions, including safe criteria regarding metacentric heights (GM) and righting levers (GZ), weather criteria (severe wind and rolling), the effect of free surfaces and ice accretion, and watertight integrity requirements. The Code also contains operational procedures to ensure stability of ships. The most recent edition is the 2008 IS Code, which took effect on 1st July 2010. There have been several amendments, including most recently in April 2018. Further amendments, concerning ships engaged in anchor handling, towing and lifting operations, as well as to part A of the Code, entered into force on 1st January 2020.

5. General Questions – Miscellaneous

Que. What are goal-based construction standards?

Ans. The IMO goal-based standards are broad, over-arching safety, environmental and/or security standards that ships are required to meet during their lifecycle. The aim is to allow innovative ship design, while ensuring safety and ease of inspection and maintenance.

Goal-based construction standards are divided into five tiers. The standards are set within the top three tiers and the detailed requirements in the fourth and fifth. They are not about setting standards for individual ships, but govern the development of the rules and regulations that impact on ship design.

In its very simplest form, tier one is the ultimate goal: a ship designed to have a safe operating life of 25 years. The second tier consists of the functional requirements on how that is achieved. This could consist of objectives such as sufficient structural strength, power generation, seakeeping performance, or any one of a range of other needs for the vessel to remain safe. The third tier is the verification of compliance, by the IMO, that the detailed requirements in the final two tiers meet the stated objectives in tier two.

Tiers one, two and three became mandatory on 1st January 2012. 12 verification requests were submitted by Class Societies to the IMO. At MSC 96 in May 2016, the IMO confirmed that the rules conformed to the goals and functional requirements set by the Organization for new oil tankers and carriers.

Ref: http://tinyurl.com/ph4uq5j

Que. What is a risk assessment?

Ans. The ISM Code requires that companies establish safeguards against all identified risks. The UK government in the Health and

Safety at Work Regulations specifies that regular risk assessments should be carried out on board ships and they should be reviewed at least every year and whenever there are significant changes to the ship or the working activities. Chapter 1 of COSWP sets out the basic requirements for risk assessments. It states, *"The risk assessment process identifies hazards present in a work undertaking, analyses the level of risk, considers those in danger and evaluates whether hazards are adequately controlled, taking into account any measures already in place."* Seafarers should ensure that a risk assessment is carried out appropriately for the work being undertaken on board. Consideration should be given to the guidance on effective risk assessments in COSWP and to those who may require special consideration, e.g. young persons or new joiners.

Que. Where can you find a list of certificates and documents required to be carried on board ship?

Ans. SOLAS Part 2, Annex 1 contains a list of certificates and documents required to be carried on board ships. Additionally, in July 2017, the IMO issued a joint MSC/MEPC/FAL/LEG circular entitled *'List of certificates and documents required to be carried on board ships, 2017'*. This contains a comprehensive list and is a useful resource for senior officers on the carriage requirements of their vessel.

Ref: https://tinyurl.com/yd5nmwuz

Que. Why are Material Safety Data Sheets (MSDS) required at sea?

Ans. MSDSs provide information on the properties, potential hazards and safe working practices for chemicals and hazardous substances. The International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code) requires ships to carry on board a cargo stowage plan indicating all cargo on board and including data for the safe carriage of each dangerous chemical.

Ships carrying fuel oil or oil cargo (as defined in MARPOL Annex I) must be provided with an MSDS prior to loading a bulk oil cargo or bunkering of oil fuel (in accordance with SOLAS VI/5-1).

Que. What is ACS and what are the requirements?

Ans. ACS is the Alternative Compliance Scheme. It is a system to streamline the survey and certification process for shipowners, operators and recognised organisations. It allows for the maintaining of standards while preventing the duplication of work with classification systems. It can apply to UK vessels provided they meet eligibility criteria and request enrolment into the scheme. MGN 537, published in June 2015, provides guidance on Surveys and the Alternative Compliance Scheme.

Que. What are enhanced surveys?

Ans. The Enhanced Survey Programme (ESP) is a programme that applies to bulk carriers and oil tankers. It aims to ensure a more stringent survey and inspection regime to enhance maritime safety. The International Code on the Enhanced Programme of Inspections During Surveys of Bulk Carriers and Oil Tankers (ESP Code) is mandatory and replaced guidelines under Resolution A.744(18). Principally, enhanced surveys involve detailed examinations of the ship's structure, tanks and covers, together with thickness measurements and pressure tests. This enhanced survey is carried out by Classification Society surveyors during normal scheduled surveys and a notation is then issued, usually 'ESP'. In the UK, enhanced surveys are mandatory. Further information is contained in MGN 144.

Que. What is the HSSC?

Ans. The Harmonised System of Survey and Certification (HSSC) is an IMO survey to harmonise the survey requirements, dates and periods of validity for ship certificates. This is to simplify the entire process by preventing the need for multiple surveys and different

dates for all the certificates required on the ship. Adopted in December 2015, IMO Resolution A.1104(29) contains the Survey Guidelines under the HSSC.

Under the HSSC, there are seven types of survey:

- Initial survey
- Renewal survey
- Periodical survey
- Intermediate survey
- Annual survey
- Inspection of the outside of the ship's bottom of cargo ships
- Additional survey.

In the UK, further information on the HSSC is contained in MSN 1751.

Que. What is the Continuous Synopsis Record?

Ans. The Continuous Synopsis Record (CSR) is a document, under SOLAS Regulation XI-1, that remains with the ship for its whole life and records all changes of owner, flag, name, Class, etc. The numbers of new documents have consecutive numbers, so it should show a complete record. The document remains with the ship even when sold. The Master should ensure that the CSR is properly maintained by amending it as quickly as possible following changes to the details of the ship. The CSR is usually subject to inspection by Port State Control.

Que. What are the training guidelines for crew using DP systems?

Ans. In 2017, the IMO approved and issued the *'Guidelines for Dynamic Positioning System (DP) Operator Training'* (MSC.1/Circ.738/Rev.2). In addition, the IMO approved amendments to Part B of the STCW Code, relating to Section B-V/f on guidance on dynamic positioning system (DP) operator training. These are expected to be adopted by the IMO in the near future. The industry also

maintains its own DP training schemes, such as those provided by the Nautical Institute.

Ref: https://tinyurl.com/ydhrmfkt

Que. What documents apply to disciplinary procedures for crew on board?

Ans. Ship disciplinary procedures should be explained in the SMS, as well as outlined or referred to in Seafarers' Employment Agreements (SEA).

On UK ships, the Code of Conduct for the Merchant Navy is an established document for disciplinary matters and is approved by the MCA. The document sets out the conduct expected in various situations and the disciplinary rules that apply to respective breaches of discipline and misconduct. These range from an act of gross misconduct to less serious acts of misconduct. Depending on the severity of the misconduct, shipboard disciplinary procedures range from an initial meeting, with informal warning, to formal actions, a disciplinary hearing and dismissal from the ship. When the Master is conducting an investigation into a disciplinary matter on the ship, he should do so without undue delay, and he must decide whether a warning or further action is required. If there has been a prior warning or it is an act of gross misconduct, a disciplinary hearing should be held. The seafarer should receive a written notice, detailing the date, time and place of the hearing, along with details of the matter and their rights at the hearing. In the most serious cases, immediate suspension may occur. In such events disciplinary action is initiated ashore, as dismissal from a ship alone does not operate to terminate employment from the company. The shore hearing may decide to impose a written or final warning as an alternative to dismissal. An appeals process exist.

Further information is contained in the Master's Guide to Shipboard Disciplinary Procedures, published by the UK Chamber of Shipping.

Que. What are the requirements governing the use of High Voltage (HV) systems at sea?

Ans. In the marine environment, high voltage systems are those above 1kV. There are numerous dangers associated with HV systems, specifically that human contact with a live conductor is almost certain to result in a fatal electric shock or at least severe injury and burns. HV training is a requirement for new or revalidated certification under STCW (see Tables A-III/2 and A-III/6).

Vessels should conduct a risk assessment and this should form the basis of a permit to work. This should highlight the necessity of safe disconnection and isolation of any system prior to it being worked on. An example of a permit to work for HV installations is provided in the Code of Safe Working Practices for Merchant Seafarers (COSWP). This permit should be part of a vessel's Safety Management System (SMS). The technical requirements for HV systems are covered in the relevant classification society rules.

Que. The switching of fuel when entering an ECA presents a number of hazards and is one of the leading causes of propulsion failure. What measures can the ship take to manage risk and improve safety?

Ans.

- Consult engine and boiler manufacturers for fuel switching guidance
- consult manufacturers to determine whether system modifications or additional safeguards are necessary for intended fuels
- develop detailed fuel switching procedures
- establish a fuel system inspection and maintenance schedule

- ensure system pressure and temperature alarms, flow indicators, filter differential pressure transmitters, etc are all operational
- ensure system seals, gaskets, flanges, fittings, brackets and supports are maintained and in serviceable condition
- ensure a detailed system diagram is available
- conduct initial and periodic crew training
- exercise tight control when possible over the quality of the fuel oils received
- complete fuel switching well offshore prior to entering restricted waters or traffic lanes
- test main propulsion machinery, ahead and astern, while on marine distillates.

Ref: USCG Marine Safety Alert regarding Fuel Switching Safety, July 2011

Que. Which M notice covers the hazards of arc flash associated with high and low voltage equipment?

Ans. MGN 452 highlights potential hazards of arc flash associated with high and low voltage electrical equipment on board vessels. Its key points are:

- The best approach for electrical safety to prevent an arc flash incident is to only perform work on de-energised equipment that has been placed into an electrically safe condition
- after control measures to reduce the risk of an arc flash have been investigated/implemented, protective clothing and PPE requirements should be carefully selected
- one of the major hazards associated with an arc flash is burn injury from the exposure to the thermal energy from an arc flash.

Ref: MGN 452, June 2012

Que. What measures have the MCA taken to improve standards of care on board vessels with respect to noise and vibration?

Ans. The MCA has produced three codes of practice providing guidance and interpretation to assist compliance with the Merchant Shipping and Fishing Vessels (Control of Vibration at Work) Regulations 2007 and the Merchant Shipping and Fishing Vessels (Control of Noise at Work) Regulations 2007. These are:

- Code of Practice for Controlling Risks due to Noise on Ships
- Code of Practice for Controlling Risks due to Whole-body Vibration on Ships
- Code of Practice for Controlling Hand-transmitted Vibration on Ships.

Information on these Codes is provided in MIN 502 – Codes of Practice for Controlling Risks due to Noise and Vibration on Ships, which can be found at http://tinyurl.com/nqgzf52

Que. What is the noise survey report?

Ans. Since 1st July 2014, new ships over 1,600 GT must carry on board a noise survey report as per SOLAS Regulation II-1/3-12 and the Code on noise levels on board ships (Resolution MSC.337(91)). It should be available for consultation by crew.

Que. What is hot work?

Ans. Hot work means any work involving sources of ignition or temperatures sufficiently high to cause the ignition of a flammable gas mixture. This includes any work requiring the use of welding, burning or soldering equipment, blow torches, some power-driven tools, portable electrical equipment that is not intrinsically safe or contained within an approved explosion-proof housing, and internal combustion engines.

Ref: OCIMF 'Guidelines on Safety Management Systems for Hot Work and Entry into Enclosed Spaces', September 2008 http://tinyurl.com/pe8uh92

Que. Where can guidance be found on carrying out machinery maintenance in a safe manner on UK ships?

Ans. MGN 248 highlights the need for safety preparations to be carried out prior to machinery maintenance. It stresses that procedures for the isolation of machinery prior to maintenance should be included in a company's planned maintenance system (PMS).

Que. What are the requirements for a vessel to operate with an Unattended Machinery Space (UMS)?

Ans. The regulations governing UMS on ships are contained in SOLAS Chapter II-1, Part E. In order for a vessel to operate with a UMS, there must be adequate working fire alarm arrangements, throughout the space, but also with alarm systems in the boiler air supply casings, exhausts and scavenges. Engines over 2,250 kW must have crankcase oil mist detectors or engine bearing temperature monitors.

A vessel must have suitable protection against flooding, including bilge alarms and appropriately located sea valve controls. It must be possible for the vessel to be fully controlled from the bridge in all sailing conditions, otherwise the engine room cannot operate unattended. Automatic start of the emergency generator must be provided together with a centralised engine control system and reliable communication methods.

A safety system, with an alarm, must be provided to initiate automatic shutdown of machinery or boiler installations in the event of immediate danger or serious malfunction.

If at any time the systems in Part E are not functional, the space should be manned.

Que. What is 'cold ironing' (also called Alternative Maritime Power, AMP)?

Ans. During cold ironing, a ship at berth obtains its electricity for cargo handling and hotel requirements from a shore-based source via a high-voltage shore connection (HVSC). This method of saving onboard fuel is particularly useful for ships that have high power requirements and spend a relatively long time at berth on a regular basis such as tankers, cruise ships, container ships and reefers.

Pollution concerns have made this technique an attractive option in some ports since it has an immediate impact on ship emissions. The use of cold ironing undoubtedly improves the air quality in and around ports by removing SOx, NOx and PM from the stack emissions. However, it does not necessarily have an overall positive impact on the total CO_2 emissions of fuel generation unless the electricity is produced from a non-fossil fuel source, such as nuclear or hydro.

Que. What guidelines are available to engineers for maintaining the Oil Record Book (ORB)?

Ans. The IMO published a circular in 2011 – MEPC.1/Circ.736/Rev.2 – Guidance for the recording of operations in the Oil Record Book, Part 1 – Machinery Space Operations (All Ships). It is intended to facilitate compliance with MARPOL requirements by providing advice on recording various operations, including the use of correct codes and numbers to allow for uniform standards in Port State Control inspections.

The industry body INTERTANKO published the 3rd edition of *'A Guide for Correct Entries in the Oil Record Book (Part 1 – Machinery Space Operations)'* in March 2014. This addresses the increasing problem of ship detention by providing information on accurate completion of the ORB by ships' officers.

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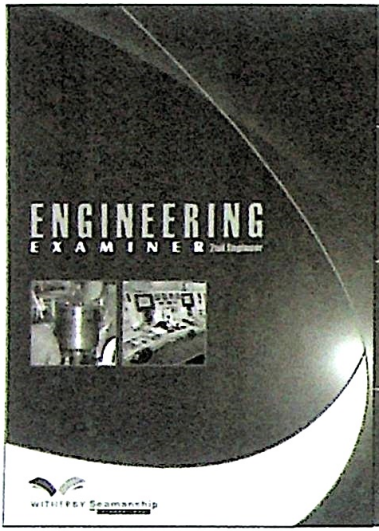

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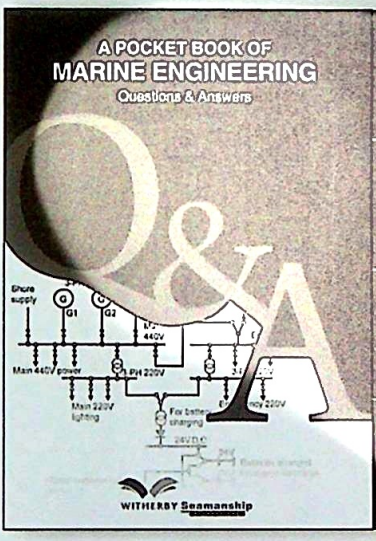

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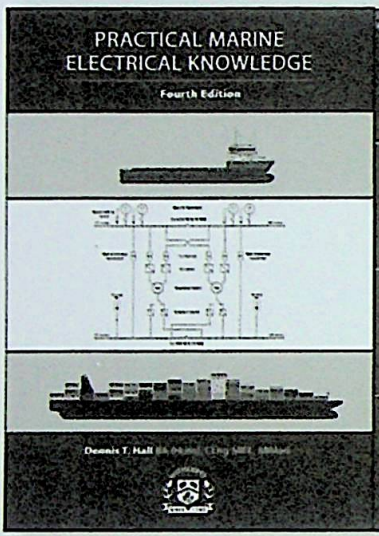

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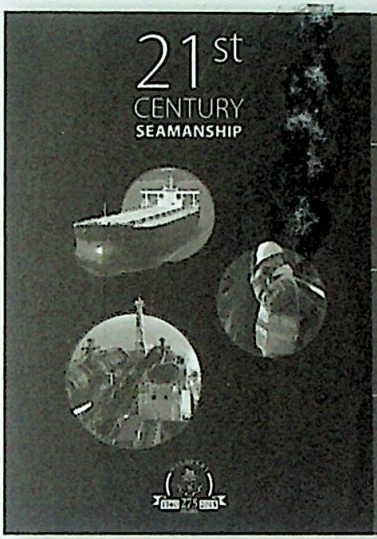

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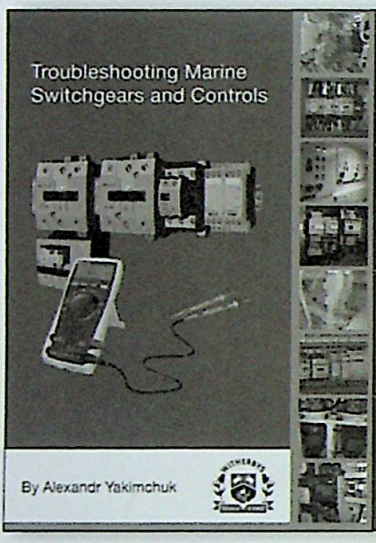

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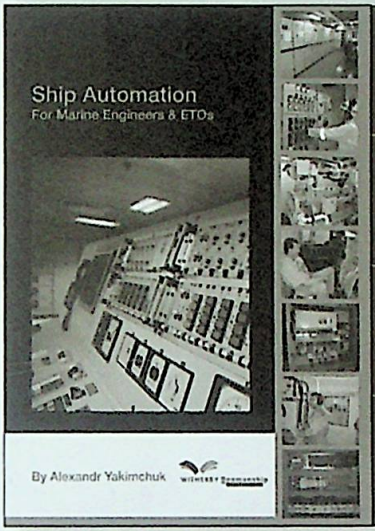

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