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To： CCS Ship Surveyors, Auditors, Ship Owners and Managers

Notice on Guidelines for Preparation of the Concentrated Inspection Campaign by Hong Kong Marine Department

The Paris MOU and Tokyo MOU will jointly conduct the Concentrated Inspection Campaign (CIC) on Propulsion and Auxiliary Machinery from 1 September to 30 November 2013. To facilitate masters of Hong Kong registered ships to prepare for this CIC exercise, relevant guidelines for preparation of the CIC on Propulsion and Auxiliary Machinery are attached for reference.

Please refer to the attachment of this Notice for details.

The relevant ship owners and managers should be concerned and take necessary measures.

Attachment 1: Press Release by Hong Kong Marine Department

This Notice is published on CCS website (www.ccs.org.cn) and is to be forwarded by CCS branches to shipping companies in relevance to their business area.

Hereby notify the above.

Classed Ship in Service Department
China Classification Society

For any questions，please contact the Classed Ship in Service Dept. of CCS Headquarters without hesitation.

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6 August 2013

To: Shipowners, Ship Managers and Ship Masters

Dear Sirs/Madams,

Concentrated Inspection Campaign on Propulsion and Auxiliary Machinery
Conducted from 1 September to 30 November 2013

The Paris MOU and the Tokyo MOU will jointly conduct the Concentrated Inspection Campaign (CIC) on Propulsion and Auxiliary Machinery from 1 September to 30 November 2013. Other MOUs may follow the same routine during the campaign.

The campaign will target aspects of compliance provisions of SOLAS Chapter II-1 on all vessels regardless of type, which will be conducted in conjunction with the regular port Sate control targeting system. The purpose of this CIC is to get a detailed insight of the compliance of the relevant regulations as applicable.

The CIC will focus on 4 main areas, namely, documentation, main engine and auxiliary engines, auxiliary machinery and operational controls, with respect to the Propulsion and Auxiliary Machinery, which are considered critical that any non-compliance detected by a PSCO may result in ship detention.

To facilitate masters of Hong Kong registered ships to prepare for this CIC exercise, relevant guidelines for preparation of the CIC on Propulsion and Auxiliary Machinery are attached for reference (see Annex I). Your particular attention is drawn to take the following actions before the campaign:

(a) ship management companies should distribute this circular letter and guidelines to their Hong Kong registered ships and make sure that all shipboard staff are fully aware of the campaign;

(b) ship management companies and/or shipboard staff should carry out similar inspection to verify the compliance with the applicable requirements at all times, in particular prior to the commencement of the campaign; and

(c) ship management companies should ensure that masters and officers onboard ship could communicate effectively with PSCOs. Since poor communications with PSCOs during inspection may lead to the detention of your ships.

During the CIC, PSCOs will apply a questionnaire listing a number of items to be covered during the campaign. The questionnaire has been published on the websites of the Paris MOU and the Tokyo MOU:

http://www.parismou.org
http://www.tokyo-mou.org

May I reiterate that maintaining a good PSC record for the Hong Kong registered ships is an on-going task for all of us. Therefore, we should work closely and in co-operation to achieve the target.

If you have any question, please contact Senior Surveyor of Cargo Ships Safety Section as follows:

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Yours faithfully,

(S.H. Tse)
Senior Surveyor/Cargo Ships Safety
for Director of Marine

Encl.

Annex I

Guidelines for Preparation of the Concentrated Inspection Campaign on Propulsion and Auxiliary Machinery for Hong Kong Registered Ships

Introduction

The Paris MOU and the Tokyo MOU will jointly conduct the Concentrated Inspection Campaign (CIC) on Propulsion and Auxiliary Machinery from 1 September to 30 November 2013. Other MOUs may follow the same routine during the campaign.

Purpose

The campaign will target aspects of compliance provisions of SOLAS Chapter II-1 on all vessels regardless of type. The campaign is designed to examine a specific area and is not intended to detract from normal coverage of port State control inspections. The CIC will be conducted in conjunction with the regular port State control targeting system. The purpose of this CIC is to get a detailed insight of the compliance of the relevant regulations as applicable in order to ensure that:

(a) there is compliance with the requirements of the SOLAS convention as applicable;
(b) there is compliance with the safety of propulsion and auxiliary machinery, especially the working order and maintenance of the main engine, auxiliary engines, auxiliary equipment and their related alarm systems;
(c) all officers and crew members in charge of operation of propulsion and auxiliary machinery are familiarized with safety and emergency procedures with regard to the main engine, auxiliary engines and auxiliary equipment; and
(d) to raise awareness among engine crew on propulsion and auxiliary machinery related issues.

Issued to be attended

The CIC will focus on the following 4 areas (11 Questions: Q1-Q11) with respect to propulsion and auxiliary machinery which are considered as critical areas for Documentation (Q1-Q2), Main Engine and Auxiliary Engines (Q3-Q6), Auxiliary Machinery (Q7-Q9) and Operational Controls (Q10-Q11) that any non-compliance detected by a PSCO may result in ship detention. Shipowners, ship management companies and ship masters should pay special attention to the following issues:

DOCUMENTATION

Q1 Are instructions and manuals for ship machinery essential to safe operation, written in a language understood by the ship`s personnel?

- The company and the ship master should ensure that the following SOLAS regulations are complied with:

  - SOLAS Reg. II-1/26.10 "General"

    Operating and maintenance instructions and engineering drawings for ship machinery and equipment essential to the safe operation of the ship shall be written in a language understandable by those officers and crew members who are required to understand such information in the performance of their duties. (For ships constructed on or after 1 July 1986)

  - SOLAS Reg. V/14.3 "Ship's manning"

    On all ships, to ensure effective crew performance in safety matters, a working language shall be established and recorded in the ship's log-book. The company, as defined in regulation IX/1, or the master, as appropriate, shall determine the appropriate working language. Each seafarer shall be required to understand and, where appropriate, give orders and instructions and to report back in that language. If the working language is not an official language of the State whose flag the ship is entitled to fly, all plans and lists required to be posted shall include a translation into the working language. (All ships)

- Note: The company and the ship master should ensure that:

  - the certificates and documents required to be carried on board Hong Kong registered ships are properly maintained. Please refer to Hong Kong Merchant Shipping Information Notes (No. 49/2011): "IMO circular and Hong Kong requirements on certificates, documents and publications that are required or recommended to be carried on board Hong Kong ships engaged in international voyage" for the detailed requirements; and

  - in addition, special attention should be given to the following certificates and documents:

    - ☐ Minimum Safe Manning Certificate;
    - ☐ Certificate of Class;
    - ☐ up-to-date crew list;
    - ☐ maintenance plans and records for propulsion and auxiliary machinery;
    - ☐ periodical inspection records for alarms and safeguards on automatic and remote control equipment;
    - ☐ Records of Continuous Machinery Survey;
    - ☐ Records of safety device test for propulsion and auxiliary machinery; and
    - ☐ training plans and records for emergency operational drills to

propulsion and auxiliary machinery.

Q2 If the ship operates with periodically unattended machinery spaces, has it been provided with documentary evidence of fitness?

- SOLAS Reg. II-1/46.3 "General" requires that:

  Every ship shall be provided with documentary evidence, to the satisfaction of the Administration, of its fitness to operate with periodically unattended machinery spaces. (For ships constructed on or after 1 September 1984)

- If a Hong Kong registered ship operates with periodically unattended machinery spaces, the following documents contain the information of the unattended machinery spaces:

  - Minimum Safe Manning Certificate issued by this Administration (SOLAS Reg. V/14.2); and

  - Certificate of class or relevant documents issued by the ship's classification society.

- The company and the ship master should ensure that:

  - the Hong Kong registered ship is properly manned in accordance with the Minimum Safe Manning Certificate issued by this Administration before the ship is proceeding to next port;

  - if the unattended machinery space system becomes inoperative, additional manning scale may be required; and

  - the crew list is up-to-date before arrival of any ports.

MAIN ENGINE AND AUXILIARY ENGINES

Q3 Do the Oil Mist Detectors or any other automatic shut-off arrangements for the main engine and auxiliary engines appear to be working satisfactory?

- SOLAS Reg. II-1/47.2 "Fire precautions" requires that:

  Internal combustion engines of 2250 kW and above or having cylinders of more than 300 mm bore shall be provided with crankcase oil mist detectors or engine bearing temperature monitors or equivalent devices.
  (For ships constructed on or after 1 September 1984)

- SOALS Reg. II-1/27.5 "Machinery" requires that:

  Main turbine propulsion machinery and, where applicable, main internal combustion propulsion machinery and auxiliary machinery shall be provided with automatic shut-off arrangements in the case of failures such as lubricating oil supply failure which could lead rapidly to complete breakdown, serious damage or explosion. The Administration may permit provisions for overriding automatic shutoff devices.
  (For ships constructed on or after 1 September 1984)

- The company and the ship master should ensure that:

  - ✧ oil mist detectors (or engine bearing temperature monitors or equivalent devices) and other automatic shut-off arrangements for the main engine and auxiliary engines have to be properly maintained in good working condition; and

  - ✧ maintenance plans (including inspection and testing) and records are kept on board.

- Engine crew should be familiar with:

  - ✧ the locations, operational procedures and testing of the oil mist detectors (or engine bearing temperature monitors or equivalent devices); and

  - ✧ other automatic shut-off arrangements for the main engine and auxiliary engines, e.g. L.O. low pressure tripping devices and alarms.

Q4 Are protective arrangements for machinery in place to minimize danger to persons with regard to moving parts, hot surfaces, electrical shock and other hazards?

- SOLAS Reg. II-1/26.1 "General" requires that:

  The machinery, boilers and other pressure vessels, associated piping systems and fittings shall be of a design and construction adequate for the service for which they are intended and shall be so installed and protected as to reduce to a minimum any danger to persons on board, due regard being paid to moving parts, hot surfaces and other hazards. The design shall have regard to materials used in construction, the purpose for which the equipment is intended, the working conditions to which it will be subjected and the environmental conditions on board. (For ships constructed on or after 1 September 1984)

- SOLAS Reg. II-1/45 "Precautions against shock, fire and other hazards of electrical origin" stipulates detailed requirements for electrical safety matters.

Please refer to the regulation for details.

- The company and the ship master should ensure that protective arrangements for machinery are in place to minimize danger to persons with regard to moving parts, hot surfaces, electric shock and other hazards. For examples:

  - ✧ safeguards and fencing are adequately provided for moving parts of machinery, such as flywheels of main engine and auxiliary engines, shaft coupling of main compressors and belt driven pumps, etc.;

  - ✧ protective insulations are provided for hot surfaces, such as fuel oil pipes, exhaust gas manifolds, turbocharger gas inlet and outlet to main and auxiliary engines and boiler mountings, etc.; and

  - ✧ safety protections and adequate measures are provided for avoiding electric shock, such as provision of non-conducting matting in the front and behind each electric switchboard, electric motors are properly maintained, electrical wirings are properly supported and maintained in good condition, and lights in engine room and accommodations are fitted with guards, etc.

Q5 Does propulsion machinery and essential auxiliaries appear to be in operational condition?

- SOLAS Reg. II-1/26.3 "General" requires that:

  Means shall be provided whereby normal operation of propulsion machinery can be sustained or restored even though one of the essential auxiliaries becomes inoperative. Special consideration should be given to the malfunctioning of:

  .1 a generating set which serves as a main source of electrical power;
  .2 the sources of steam supply;
  .3 the boiler feedwater systems;
  .4 the fuel oil supply systems for boilers or engines;
  .5 the sources of lubricating oil pressure;
  .6 the sources of water pressure;
  .7 a condensate pump and the arrangements to maintain vacuum in condensers;
  .8 the mechanical air supply for boilers;
  .9 an air compressor and receiver for starting or control purposes; and
  .10 the hydraulic, pneumatic or electrical means for control in main propulsion machinery including controllable pitch propellers.

  (For ships constructed on or after 1 September 1984)

- The company and the ship master should ensure that essential machinery and electrical installations are properly maintained so that they are capable of

providing continuous power for propulsion and auxiliary services. The relevant inspection and maintenance recorded shall be kept on board.

- Special attention should be given to the operational condition of the following:

  - Auxiliary engines with their electrical generators are essential machinery and electrical installations for providing continuous power for propulsion and auxiliary services. If one electrical generator is out of order, means shall be provided whereby normal operation of the propulsion and auxiliary services can be sustained or restores.

  - Other essential auxiliaries for propulsion machinery include fuel oil supply system, lubricating oil system, jacket cooling fresh water system, starting air system and sea water cooling system, etc.

Q6 Is cleanliness of the Engine Room, including bilges satisfactory?

- SOLAS Reg. II-1/26.7 "General" requires that:

  Provision shall be made to facilitate cleaning, inspection and maintenance of main propulsion and auxiliary machinery including boilers and pressure vessels. (For ships constructed on or after 1 September 1984)

- The company and the ship master should ensure that:

  - no oil leaking from main engine or auxiliary engines;

  - fuel oil pumps, lubricating oil pumps, filters, pipelines and their lagging are maintained in clean condition without oil residues;

  - Engine Room, in particular to Purifier Room, is maintained in clean and tidy condition;

  - main engine, auxiliary engines, equipment, and their floor plating are clean without oil residues; and

  - no oily residues and rags are left in bilges.

AUXILIARY MACHINERY

Q7 Do the Main or Auxiliary Boilers and Boiler Feed Systems appear to be in safe working order?

- SOLAS Reg. II-1/32 "Steam boilers and boiler feed systems" requires that:

.1 Every steam boiler and every unfired steam generator shall be provided with not less than two safety valves of adequate capacity. However, having regard to the output or any other features of any boiler or unfired steam generator, the Administration may permit only one safety valve to be fitted if it is satisfied that adequate protection against overpressure is thereby provided.

.2 Each oil-fired boiler which is intended to operate without manual supervision shall have safety arrangements which shut off the fuel supply and give an alarm in the case of low water level, air supply failure or flame failure.

.3 Water tube boilers serving turbine propulsion machinery shall be fitted with a high-water-level alarm.

.4 Every steam generating system which provides services essential for the safety of the ship, or which could be rendered dangerous by the failure of its feed water supply, shall be provided with not less than two separate feed water systems from and including the feed pumps, noting that a single penetration of the steam drum is acceptable. Unless overpressure is prevented by the pump characteristics means shall be provided which will prevent overpressure in any part of the systems.

.5 Boilers shall be provided with means to supervise and control the quality of the feed water. Suitable arrangements shall be provided to preclude, as far as practicable, the entry of oil or other contaminants which may adversely affect the boiler.

.6 Every boiler essential for the safety of the ship and designed to contain water at a specified level shall be provided with at least two means for indicating its water level, at least one of which shall be a direct reading gauge glass.

(For ships constructed on or after 1 September 1984)

◆ The company and the ship master should ensure that the main or auxiliary boilers and boiler feed water systems are properly maintained as required by the SOLAS regulations. Special attention should be given to the following:

✧ the safety valves and their easing gears are maintained in good working condition;

✧ the fuel oil shut-off arrangements for low water level, air supply failure or flame failure are maintained in good condition;

- ✧ the feed water supply system is maintained in good condition;
- ✧ the two means for indicating water level are in good working condition;
- ✧ all pressure gauges are in good working condition;
- ✧ the lagging is in place and in good condition. (SOLAS Reg. II-1/26.1); and
- ✧ maintenance plans and records are kept on board.

Q8 Do the emergency sources of power and emergency lighting appear to be working satisfactory?

◆ SOLAS Reg. II-1/42, 43 & 44 stipulate the requirements for emergency sources of power and emergency lights. Please refer to the regulations for details.

- ✧ SOLAS Reg. II-1/42 "Emergency source of electrical power in passenger ships";
- ✧ SOLAS Reg. II-1/42.1 "Supplementary emergency lighting for ro-ro passenger ships";
- ✧ SOLAS Reg. II-1/43 "Emergency source of electrical power in cargo ships"; and
- ✧ SOLAS Reg. II-1/44 "Starting arrangements for emergency generating sets".

◆ The company and the ship master should ensure that the relevant SOLAS regulations are complied with. Special attention should be given to the following:

- ✧ emergency generator set including automatic starting arrangements, starting devices and fuel oil tank level are maintained in good condition;
- ✧ starting means, i.e. electric, hydraulic and compressed air, of emergency generators are maintained in good working condition at all times;
- ✧ manual starting, such as manual cranking, inertia starters, manually charged hydraulic accumulators, or powder charge cartridges are maintained in good working condition at all times;
- ✧ emergency source of power is maintained in good condition;

- ✧ all emergency lights are maintained in good working condition;

- ✧ periodic testing of the complete emergency system shall be established on board and shall include the testing of automatic starting arrangements (SOLAS Reg. II-1/42 & 43); and

- ✧ the relevant inspection, testing and maintenance records are kept on board.

Q9 Do the bilge pumping arrangements appear to be in good working order?

◆ SOLAS Reg. II-1/35-1 "Bilge pumping arrangements" requires that:

2 Passenger ships and cargo ships

2.1 An efficient bilge pumping system shall be provided, capable of pumping from and draining any watertight compartment other than a space permanently appropriated for the carriage of fresh water, water ballast, oil fuel or liquid cargo and for which other efficient means of pumping are provided, under all practical conditions. Efficient means shall be provided for draining water from insulated holds.

2.2 Sanitary, ballast and general service pumps may be accepted as independent power bilge pumps if fitted with the necessary connections to the bilge pumping system.

2.3 All bilge pipes used in or under coal bunkers or fuel storage tanks or in boiler or machinery spaces, including spaces in which oil-settling tanks or oil fuel pumping units are situated, shall be of steel or other suitable material.

2.4 The arrangement of the bilge and ballast pumping system shall be such as to prevent the possibility of water passing from the sea and from water ballast spaces into the cargo and machinery spaces, or from one compartment to another. Provision shall be made to prevent any deep tank having bilge and ballast connections being inadvertently flooded from the sea when containing cargo, or being discharged through a bilge pump when containing water ballast.

2.5 All distribution boxes and manually operated valves in connection with the bilge pumping arrangements shall be in positions which are accessible under ordinary circumstances.

2.6 Provision shall be made for the drainage of enclosed cargo spaces situated on the bulkhead deck of a passenger ship and on the freeboard deck of a cargo ship, provided that the Administration may permit the means of

drainage to be dispensed with in any particular compartment of any ship or class of ship if it is satisfied that by reason of size or internal subdivision of those spaces the safety of the ship is not thereby impaired.

2.6.1 Where the freeboard to the bulkhead deck or the freeboard deck, respectively, is such that the deck edge is immersed when the ship heels more than 5°, the drainage shall be by means of a sufficient number of scuppers of suitable size discharging directly overboard, fitted in accordance with the requirements of regulation 15 in the case of a passenger ship and the requirements for scuppers, inlets and discharges of the International Convention on Load Lines in force in the case of a cargo ship.

2.6.2 Where the freeboard is such that the edge of the bulkhead deck or the edge of the freeboard deck, respectively, is immersed when the ship heels 5° or less, the drainage of the enclosed cargo spaces on the bulkhead deck or on the freeboard deck, respectively, shall be led to a suitable space, or spaces, of adequate capacity, having a high water level alarm and provided with suitable arrangements for discharge overboard. In addition it shall be ensured that:

.1 the number, size and disposition of the scuppers are such as to prevent unreasonable accumulation of free water;

.2 the pumping arrangements required by this regulation for passenger ships or cargo ships, as applicable, take account of the requirements for any fixed pressure water-spraying fire extinguishing system;

.3 water contaminated with petrol or other dangerous substances is not drained to machinery spaces or other spaces where sources of ignition may be present; and

.4 where the enclosed cargo space is protected by a carbon dioxide fire extinguishing system the deck scuppers are fitted with means to prevent the escape of the smothering gas.

3 Passenger ships

Please refer to the regulation for details.

4 Cargo ships

At least two power pumps connected to the main bilge system shall be provided, one of which may be driven by the propulsion machinery. If the Administration is satisfied that the safety of the ship is not impaired, bilge pumping arrangements may be dispensed with in particular compartments.

- The company and the ship master should ensure that the SOLAS regulations are complied with. Special attention should be given to the following:

  - the bilge pumping system including bilge pumps, piping, valves (in particular to sea suction valves and overboard discharge valves) and gauges are properly maintained and in good working condition;

  - there is no illegal connection in the bilge pumping system;

  - all cocks and valves operating from above the bulkhead deck are clearly marked and provided with means indicating they are opened or closed (applicable only to passenger ships under SOLAS Reg. II-1/21.22.12); and

  - direct emergency suction valve is properly maintained and in good working condition (applicable only to passenger ships under SOLAS Reg. II-1/21.2.7.2/2.7.3/35-1).

OPERATIONAL CONTROLS

Q10 Where an emergency steering drill was witnessed, was it found to be satisfactory?

- SOLAS Reg. II-1/29 "Steering gear" requires that:

  1 Unless expressly provided otherwise, every ship shall be provided with a main steering gear and an auxiliary steering gear to the satisfaction of the Administration. The main steering gear and the auxiliary steering gear shall be so arranged that the failure of one of them will not render the other one inoperative.

  2.1 All the steering gear components and the rudder stock shall be of sound and reliable construction to the satisfaction of the Administration. Special consideration shall be given to the suitability of any essential component which is not duplicated. Any such essential component shall, where appropriate, utilize anti-friction bearings such as ball bearings, roller bearings or sleeve bearings which shall be permanently lubricated or provided with lubrication fittings.

  2.2 The design pressure for calculations to determine the scantlings of piping and other steering gear components subjected to internal hydraulic pressure shall be at least 1.25 times the maximum working pressure to be expected under the operational conditions specified in paragraph 3.2, taking into account any pressure which may exist in the low pressure side of the system.

At the discretion of the Administration, fatigue criteria shall be applied for the design of piping and components, taking into account pulsating pressures due to dynamic loads.

2.3 Relief valves shall be fitted to any part of the hydraulic system which can be isolated and in which pressure can be generated from the power source or from external forces. The setting of the relief valves shall not exceed the design pressure. The valves shall be of adequate size and so arranged as to avoid an undue rise in pressure above the design pressure.

3 The main steering gear and rudder stock shall be:

.1 of adequate strength and capable of steering the ship at maximum ahead service speed which shall be demonstrated;

.2 capable of putting the rudder over from 35° on one side to 35° on the other side with the ship at its deepest seagoing draught and running ahead at maximum ahead service speed and, under the same conditions, from 35° on either side to 30° on the other side in not more than 28 seconds;

.3 operated by power where necessary to meet the requirements of paragraph 3.2 and in any case when the Administration requires a rudder stock of over 120 mm diameter in way of the tiller, excluding strengthening for navigation in ice; and

.4 so designed that they will not be damaged at maximum astern speed; however, this design requirement need not be proved by trials at maximum astern speed and maximum rudder angle.

4 The auxiliary steering gear shall be:

.1 of adequate strength and capable of steering the ship at navigable speed and of being brought speedily into action in an emergency;

.2 capable of putting the rudder over from 15° on one side to 15° on the other side in not more than 60 seconds with the ship at its deepest seagoing draught and running ahead at one half of the maximum ahead service speed or 7 knots, whichever is the greater; and

.3 operated by power where necessary to meet the requirements of paragraph 4.2 and in any case when the Administration requires a rudder stock of over 230 mm diameter in way of the tiller, excluding strengthening for navigation in ice.

5 Main and auxiliary steering gear power units shall be:

.1 arranged to restart automatically when power is restored after a power failure; and

.2 capable of being brought into operation from a position on the navigation bridge. In the event of a power failure to any one of the steering gear power units, an audible and visual alarm shall be given on the navigating bridge.

6.1 Where the main steering gear comprises two or more identical power units, an auxiliary steering gear need not be fitted, provided that:

.1 in a passenger ship, the main steering gear is capable of operating the rudder as required by paragraph 3.2 while any one of the power units is out of operation;

.2 in a cargo ship, the main steering gear is capable of operating the rudder as required by paragraph 3.2 while operating with all power units;

.3 the main steering gear is so arranged that after a single failure in its piping system or in one of the power units the defect can be isolated so that steering capability can be maintained or speedily regained.

6.2 The Administration may, until 1 September 1986, accept the fitting of a steering gear which has a proven record of reliability but does not comply with the requirements of paragraph 6.1.3 for a hydraulic system.

6.3 Steering gears, other than of the hydraulic type, shall achieve standards equivalent to the requirements of this paragraph to the satisfaction of the Administration.

7 Steering gear control shall be provided:

.1 for the main steering gear, both on the navigating bridge and in the steering gear compartment;

.2 where the main steering gear is arranged in accordance with paragraph 6, by two independent control systems, both operable from the navigating bridge. This does not require duplication of the steering wheel or steering lever. Where the control system consists of an hydraulic telemotor, a second independent system need not be fitted, except in a tanker, chemical tanker or gas carrier of 10,000 tons gross tonnage and upwards;

.3 for the auxiliary steering gear, in the steering gear compartment and, if power operated, it shall also be operable from the navigating bridge and shall be independent of the control system for the main steering gear.

8 Any main and auxiliary steering gear control system operable from the navigating bridge shall comply with the following:

.1 if electric, it shall be served by its own separate circuit supplied from a steering gear power circuit from a point within the steering gear compartment, or directly from switchboard busbars supplying that steering gear power circuit at a point on the switchboard adjacent to the supply to the steering gear power circuit;

.2 means shall be provided in the steering gear compartment for disconnecting any control system operable from the navigating bridge from the steering gear it serves;

.3 the system shall be capable of being brought into operation from a position on the navigating bridge;

.4 in the event of a failure of electrical power supply to the control system, an audible and visual alarm shall be given on the navigating bridge; and

.5 short circuit protection only shall be provided for steering gear control supply circuits.

9 The electric power circuits and the steering gear control systems with their associated components, cables and pipes required by this Regulation and by Regulation 30 shall be separated as far as is practicable throughout their length.

10 A means of communication shall be provided between the navigating bridge and the steering gear compartment.

11 The angular position of the rudder shall:

.1 if the main steering gear is power operated, be indicated on the navigating bridge. The rudder angle indication shall be independent of the steering gear control system;

.2 be recognizable in the steering gear compartment.

- SOLAS Reg. II-1/30.1 "Additional requirements for electric and electro-hydraulic steering gear" requires that means for indicating that the motors of electric and electro-hydraulic steering gear are running shall be installed on the navigating bridge and at a suitable main machinery control position.

- SOLAS Reg. V/26 "Steering gear: Testing and drills" requires that:

1 Within 12 hours before departure, the ship's steering gear shall be checked and tested by the ship's crew. The test procedure shall include, where applicable, the operation of the following:

.1 the main steering gear;
.2 the auxiliary steering gear;
.3 the remote steering gear control systems;
.4 the steering positions located on the navigation bridge;
.5 the emergency power supply;
.6 the rudder angle indicators in relation to the actual position of the rudder;
.7 the remote steering gear control system power failure alarms;
.8 the steering gear power unit failure alarms; and
.9 automatic isolating arrangements and other automatic equipment.

2 The checks and tests shall include:

.1 the full movement of the rudder according to the required capabilities of the steering gear;
.2 a visual inspection for the steering gear and its connecting linkage; and
.3 the operation of the means of communication between the navigation bridge and steering gear compartment.

3.1 Simple operating instructions with a block diagram showing the change-over procedures for remote steering gear control systems and steering gear power units shall be permanently displayed on the navigation bridge and in the steering compartment.

3.2 All ships' officers concerned with the operation and/or maintenance of steering gear shall be familiar with the operation of the steering systems fitted on the ship and with the procedures for changing from one system to another.

4 In addition to the routine checks and tests prescribed in paragraphs 1 and 2, emergency steering drills shall take place at least once every three months in order to practise emergency steering procedures. These drills shall include direct control within the steering gear compartment, the communications procedure with the navigation bridge and, where applicable

the operation of alternative power supplies.

5 The Administration may waive the requirements to carry out the checks and tests prescribed in paragraphs 1 and 2 for ships which regularly engage on voyages of short duration. Such ships shall carry out these checks and tests at least once every week.

6 The date upon which the checks and tests prescribed in paragraphs 1 and 2 are carried out and the date and details of emergency steering drills carried out under paragraph 4, shall be recorded.

- The company and the ship master should ensure that:
  - the requirements of SOLAS Reg. II-1/29 "Steering gear" and SOLAS Reg. II-1/30 "Additional requirements for electric and electro-hydraulic steering gear" are complied with;
  - testing and emergency steering drills required by SOLAS Reg. V/26 "Steering gear: Testing and drills" are carried out and all records are kept on board;
  - the responsible crew members are familiar with the operation of the steering system including in emergency situations;
  - a duty list for emergency steering station is available; and
  - the steering gear compartment is maintained in clean and tidy condition.
- Special attention should be given to the following procedures of emergency steering drill:
  - direct control of the steering gear in the steering gear compartment;
  - communications between steering gear compartment and navigation bridge; and
  - operation of alternative power supplies, where applicable.

Q11 Where an emergency operational drill to main engine was witnessed, was it found to be satisfactory?

- SOLAS Reg. II-1/31 "Machinery controls" requires that:

1 Main and auxiliary machinery essential for the propulsion and safety of the ship shall be provided with effective means for its operation and control.

2 Where remote control of propulsion machinery from the navigating bridge is provided and the machinery spaces are intended to be manned, the following shall apply:

.1 the speed, direction of thrust and, if applicable, the pitch of the propeller shall be fully controllable from the navigating bridge under all sailing conditions, including manoeuvring;

.2 the remote control shall be performed, for each independent propeller, by a control device so designed and constructed that its operation does not require particular attention to the operational details of the machinery. Where multiple propellers are designed to operate simultaneously, they may be controlled by one control device;

.3 the main propulsion machinery shall be provided with an emergency stopping device on the navigating bridge which shall be independent of the navigating bridge control system;

.4 propulsion machinery orders from the navigating bridge shall be indicated in the main machinery control room or at the manoeuvring platform as appropriate;

.5 remote control of the propulsion machinery shall be possible only from one location at a time; at such locations interconnected control positions are permitted. At each location there shall be an indicator showing which location is in control of the propulsion machinery. The transfer of control between the navigating bridge and machinery spaces shall be possible only in the main machinery space or the main machinery control room. This system shall include means to prevent the propelling thrust from altering significantly when transferring control from one location to another;

.6 it shall be possible to control the propulsion machinery locally, even in the case of failure in any part of the remote control system;

.7 the design of the remote control system shall be such that in case of its failure an alarm will be given. Unless the Administration considers it impracticable the preset speed and direction of thrust of the propellers shall be maintained until local control is in operation;

.8 indicators shall be fitted on the navigating bridge for:

.8.1 propeller speed and direction of rotation in the case of fixed pitch propellers;

.8.2 propeller speed and pitch position in the case of controllable pitch propellers;

.9 an alarm shall be provided on the navigating bridge and in the machinery space to indicate low starting air pressure which shall be set at a level to permit further main engine starting operations. If the remote control system of the propulsion machinery is designed for automatic starting, the number of automatic consecutive attempts which fail to produce a start shall be limited in order to safeguard sufficient starting air pressure for starting locally.

3 Where the main propulsion and associated machinery, including sources of main electrical supply, are provided with various degrees of automatic or remote control and are under continuous manual supervision from a control room the arrangements and controls shall be so designed, equipped and installed that the machinery operation will be as safe and effective as if it were under direct supervision; for this purpose regulations 46 to 50 shall apply as appropriate. Particular consideration shall be given to protect such spaces against fire and flooding.

4 In general, automatic starting, operational and control systems shall include provisions for manually overriding the automatic controls. Failure of any part of such systems shall not prevent the use of the manual override.

5 Notwithstanding the requirements of paragraph 1 to 4, ships constructed on or after 1 July 1998 shall comply with the following requirements:

.1 Main and auxiliary machinery essential for the propulsion, control and safety of the ship shall be provided with effective means for its operation and control. All control systems essential for the propulsion, control and safety of the ship shall be independent or designed such that failure of one system does not degrade the performance of another system.";

.2 Where remote control of propulsion machinery from the navigating bridge is provided, the following shall apply:

.2.1 the speed, direction of thrust and, if applicable, the pitch of the propeller shall be fully controllable from the navigating bridge under all sailing conditions, including manoeuvring;

.2.2 the control shall be performed by a single control device for each independent propeller, with automatic performance of all associated services, including, where necessary, means of

preventing overload of the propulsion machinery;

.2.3 the main propulsion machinery shall be provided with an emergency stopping device on the navigating bridge which shall be independent of the navigating bridge control system;

.2.4 propulsion machinery orders from the navigation bridge shall be indicated in the main machinery control room and at the manoeuvring platform;

.2.5 remote control of the propulsion machinery shall be possible only from one location at a time; at such locations interconnected control positions are permitted. At each location there shall be an indicator showing which locations is in control of the propulsion machinery. The transfer of control between the navigating bridge and machinery spaces shall be possible only in the main machinery space or the main machinery control room. This system shall include means to prevent the propelling thrust from altering significantly when transferring control from one location to another;

.2.6 it shall be possible to control the propulsion machinery locally, even in the case of failure in any part of the remote control system. It shall also be possible to control the auxiliary machinery, essential for the propulsion and safety of the ship, at or near the machinery concerned;

.2.7 the design of the remote control system shall be such that in case of its failure an alarm will be given. Unless the Administration considers it impracticable the preset speed and direction of thrust of the propellers shall be maintained until local control is in operation;

.2.8 indicators shall be fitted on the navigation bridge, the main machinery control room and at the manoeuvring platform, for:

.2.8.1 propeller speed and direction of rotation in the case of fixed pitch propellers; and

.2.8.2 propeller speed and pitch position in the case of controllable pitch propellers;

.2.9 an alarm shall be provided on the navigating bridge and in the machinery space to indicate low starting air pressure which shall be set at a level to permit further main engine starting operations.

If the remote control system of the propulsion machinery is designed for automatic starting, the number of automatic consecutive attempts which fail to produce a start shall be limited in order to safeguard sufficient starting air pressure for starting locally.

.3 Where the main propulsion and associated machinery, including sources of main electrical supply, are provided with various degrees of automatic or remote control and are under continuous manual supervision from a control room, the arrangements and controls shall be so designed, equipped and installed that the machinery operation will be as safe and effective as if it were under direct supervision; for this purpose regulations 46 to 50 shall apply as appropriate. Particular consideration shall be given to protect such spaces against fire and flooding.

.4 In general, automatic starting, operational and control systems shall include provisions for manually overriding the automatic controls. Failure of any part of such systems shall not prevent the use of the manual override.

6 Ship constructed on or after 1 July 2004 shall comply with the requirements of paragraphs 1 to 5, as amended, as follows:

.1 a new subparagraph .10 is added to paragraph 2 to read as follows:
".10 automation systems shall be designed in a manner which ensures that threshold warning of impending or imminent slowdown or shutdown of the propulsion system is given to the officer in charge of the navigational watch in time to assess navigational circumstances in an emergency. In particular, the systems shall control, monitor, report, alert and take safety action to slow down or stop propulsion while providing the officer in charge of the navigational watch an opportunity to manually intervene, except for those cases where manual intervention will result in total failure of the engine and/or propulsion equipment within a short time, for example in the case of overspeed." (Adopted by Res. MSC.194(80))

◆ The company and ship master should pay attention to the following matters relating to an emergency operational drill to main engine:

✧ training plans and records for emergency drill are kept on board;

✧ emergency drills are carried out in accordance with the training plans;

✧ training plans should include the most common emergency drills, for

examples:

- ☐ main engine failure;
- ☐ auxiliary engine and generator set failure;
- ☐ bridge control for main engine failure;
- ☐ changeover of controls among wheelhouse, engine control room and engine side; and
- ☐ operation of maneuvering handles after "auto-stop".

✧ crew members are familiar with their duties related to emergency situation with main engine.

◆ The company and the ship master should ensure that crew members are familiar with the operation of the main engine in emergency situation including the following:

✧ communication between Wheelhouse and Engine Control Room including engine side (SOLAS Reg. II-1/37);

✧ monitoring of telegraphs order (SOLAS Reg. II-1/31.2.4);

✧ starting air low pressure alarm (SOLAS Reg. II-1/31.2.9);

✧ changeover control from Wheelhouse to Engine Room (SOLAS Reg. II-1/31.2.5);

✧ changeover control from Engine Control Room to engine side/local control (SOLAS Reg. II-1/31.2.6);

✧ operation of emergency stopping device of main propulsion machinery (SOLAS Reg. II-1/31.2.3);

✧ alarm and restarting after starting failure;

✧ changeover of control station at black out; and

✧ operation and maneuvering from engine side/local control (SOLAS Reg. II-1/31.6).

- The End -