



Technical Circular

No.: 040/2019

Date: 26th November 2019

Subject: Guidance with respect to Questionnaire for 2019 CIC on Emergency Systems and Procedures.

- Reference is made to our Technical Circular No. 024/2019 dated 30th July 2019 regarding Concentrated Inspection Campaign (CIC) by Paris MOU and Tokyo MOU on Emergency Systems and Procedures.
- Following guidance/ recommendations are provided in respect of various requirements as contained in the Questionnaire List for CIC to assist ship owners, managers and ship staff to prepare their ships for the CIC.

➤ **Question 1 – Is the damage control plan readily available onboard?**

Requirements:

The requirement for damage control plan is provided in SOLAS Regulation II-1/19. The applicability of damage control plan and booklet is as follows;

Ship Type	Ship Size	Year of Built	Regulation
Passenger Ships	regardless of size	after 25/05/1980	SOLAS 1974 Regulation II-1/20
Dry Cargo Ships	greater than 500 GT	between 01/02/1992 & 01/01/2009	SOLAS Amend 1989 Regulation II-1/23-1
All Cargo Ship	greater than 500 GT	on or after 01/01/2009	SOLAS Amend 2005 Regulation II-1/19

The damage control plan and booklet are intended to provide ship's officers with clear information on the ship's watertight subdivision and equipment related to maintaining the boundaries and effectiveness of the subdivision so that, in the event of damage to the ship causing flooding, proper precautions can be taken to prevent progressive flooding through openings therein and effective action can be taken quickly to mitigate and, where possible, recover the ship's loss of stability.

Damage stability information must provide the master a simple and easily understandable way of assessing the ship's survivability in all damage cases involving a compartment or group of compartments.



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- . While we have taken utmost care to be as factual as possible, readers/ users are advised to verify the exact text and content of the Regulation from the original source/ issuing Authority.

Recommendations:

Ensure damage control plan is available on board.

Copy of damage control plan is posted on the wheelhouse and in cargo control room/ship's office.

Senior ship's staff is familiar with the use/content of damage control plan.

➤ **Question 2 – Is the public address system capable of broadcasting emergency announcement?**

Requirements:

SOLAS Reg III/6 requires that a general emergency alarm system is to be provided for summoning passengers and crew to muster stations and to initiate the actions included in the muster list. The general emergency alarm system is to be supplemented by either a public address system or other suitable means of communication.

The public address system must be clearly audible above the ambient noise in all spaces and shall be provided with an override function controlled from one location on the navigation bridge and such other places on board as the Administration deems necessary, so that all emergency messages will be broadcast if any loudspeaker in the spaces concerned has been switched off, its volume has been turned down or the public address system is used for other purposes.

The public address system is to be connected to the emergency source of electrical power.

Recommendations:

Public address system is to be included in PMS and tested (at least weekly) to ensure that same is in good working condition.

➤ **Question 3 – For ships with water level detectors installed, is the system and alarm arrangements operational?**

Requirements:

1. The requirement for water level detectors for single hold cargo ships other than bulk carriers and for bulk carriers is provided in SOLAS Reg II-1/25 & SOLAS Reg XII/12 respectively.
2. Cargo ships other than bulk carriers having a length of less than 80 m and a single cargo hold below the freeboard deck or cargo holds below the freeboard deck which are not separated by at least one bulkhead made watertight up to that deck, are to be fitted in such space or spaces with water level detection and alarm systems.

3. Bulk carriers are to be fitted with water level detectors as follows:
 - a. In each cargo hold, giving audible and visual alarms, one when the water level above the inner bottom in any hold reaches a height of 0.5 m and another at a height not less than 15% of the depth of the cargo hold but not more than 2 m. For cargo holds which are used for water ballast, an alarm overriding device may be installed. The visual alarms shall clearly discriminate between the two different water levels detected in each hold;
 - b. In any ballast tank forward of the collision bulkhead required by regulation II-1/12 giving an audible and visual alarm when the liquid in the tank reaches a level not exceeding 10% of the tank capacity. An alarm overriding device may be installed to be activated when the tank is in use; and
 - c. In any dry or void space other than a chain cable locker, any part of which extends forward of the foremost cargo hold, giving an audible and visual alarm at a water level of 0.1 m above the deck. Such alarms need not be provided in enclosed spaces the volume of which does not exceed 0.1% of the ship's maximum displacement volume.
4. The audible and visual alarms are to be located on the navigation bridge.

Recommendations:

The water level detectors and alarm system is to be tested regularly and specially prior to loading cargo (may be included in Pre-cargo loading checklist).

Any alarm/ false alarm is to be investigated and attended to.

Maintenance is to be carried out as per manufacturer's instructions. Sufficient spares is to be available on board.

➤ **Question 4 – Is the steering gear system and its related emergency alarms operational?**

Requirements:

SOLAS Regulation V/26 provides the requirements with respect to testing and drills for steering and emergency steering.

The regulation requires that;

- a. Within 12 hours before departure, the ship's steering gear shall be checked and tested by the ship's crew.
- b. 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.

- c. 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.
- d. In addition to the routine checks and tests, emergency steering drills shall take place at least once every three months in order to practice 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.
- e. The Administration may waive the requirements to carry out the checks and tests prescribed in paragraph 'a' for ships which regularly engage on voyages of short duration. Such ships shall carry out these checks and tests at least once every week.
- f. The date upon which the checks and tests prescribed in paragraph 'a' are carried out and the date and details of emergency steering drills carried out shall be recorded.

Recommendations:

Ensure that tests and drills for steering gear is carried out as per requirements (once in every 3months) and records for same is maintained.

Simple operating instructions with a block diagram showing the change-over procedures is posted in wheel house and in steering gear room and concerned officers and crew are familiar with the operation of steering/ emergency steering system.

Communication system between wheelhouse and steering room is to be tested.

Gyro compass heading repeater, if provided, must be in place and heading is aligned with the gyro compass.

Additionally ensure that steering gear is free of oil leakage, the working access to steering gear machinery and controls include handrails and gratings or other nonslip surfaces. Storage tank for hydraulic steering gear is having sufficient oil to recharge at least one power actuating system including the reservoir.

Power failure, overload and single phase alarms along with low level alarm are to be tested and confirmed to be in working condition.

In case of tankers of 10000GT and above it is to be confirmed that steering capability can be regained in not more than 45 s after the loss of one power actuating system. Loss of hydraulic fluid from one system shall be capable of being detected and the defective system automatically isolated so that the other actuating system or systems shall remain fully operational.

➤ **Question 5 – Does the muster list specify details in accordance with the requirements of SOLAS 1996-1998 amendments, Chapter III, Regulation 37?**

Requirements:

All ships are to be provided with muster list and emergency instructions complying with the requirements of SOLAS Reg.III/ 37 and be exhibited in conspicuous places throughout the ship including the navigation bridge, engine-room and crew accommodation spaces. In the case of passenger ships, these instructions must be drawn up in the language(s) required by its flag State and in the English language.

The muster list must specify which officers are assigned to ensure that life-saving and fire appliances are maintained in good condition and are ready for immediate use. The muster list is to specify substitutes for key persons who may become disabled, taking into account that different emergencies may call for different actions. The muster list must show the duties assigned to members of the crew in relation to passengers in case of emergency.

Recommendations:

The muster list is to be prepared before the ship proceeds to sea and posted in conspicuous places throughout the ship.

After the muster list has been prepared, if any change takes place in the crew which necessitates an alteration in the muster list, the master is to either revise the list or prepare a new list. It is a good practice to keep a copy of latest crew list along with the muster list.

The format of the muster list used on passenger ships is to be approved by the Administration or RO on behalf of the Administration.

➤ **Question 6 – Does the emergency source of electrical power supply its power correctly to essential equipment for safety in an emergency?**

Requirements:

SOLAS Reg. II-1/42 and II-1/43 provides requirements for emergency source of electrical power in passenger ships and cargo ships respectively.

A self-contained emergency source of electrical power is to be provided. The distribution of the emergency power should be such in order to provide an additional period (36 hrs. for passenger ships & 18hrs for cargo ships) of sufficient power to specific systems. Such systems include (indicative list, additional items are included in SOLAS related regulations):

- a. Emergency Lighting
- b. Communication systems
- c. Navigation systems
- d. Fire detection and alarms
- e. Steering gear (period of time required by SOLAS regulation 29.14)
- f. Main engine control and alarms
- g. Fire pumps

The emergency source of electrical power may be either a generator or an accumulator battery.

Recommendations:

Periodic testing of the emergency source of power is to be carried out including the testing of automatic starting arrangements. Record for same is to be maintained onboard.

➤ **Question 7a - Where the emergency source of electrical power is a generator, is it in correct operational condition?**

Requirements:

The Emergency generator should be able to start automatically in case of black out. In order to check the appropriate auto working condition of emergency generator, a simulation test should be conducted (if applicable) by adequate trained and familiarized crew members. The Emergency generator should be able to start manual with two different ways. Crew should be able to demonstrate both ways of starting.

Recommendations:

Ensure operating instructions are posted in the emergency generator room and concerned officers are familiar with the operation.

Emergency generator is to be tested regularly, especially prior arrival port.

Where the emergency generator is automatically started, it shall be able to be automatically connected to the emergency switchboard and this is to be verified.

When testing the emergency generator, ensure that all lights and indicators are properly working on emergency switchboard.

Ensure that the required quantity of fuel oil for emergency generator is always maintained in the fuel oil tank.

➤ **Question 7b - Where the emergency source of electrical power is an accumulator battery, are the batteries and its switchboard in good condition?**

Requirements:

The battery sourced emergency electrical power should be able to auto supply the emergency switch board in case of black out. Additional it should be able to carry the emergency electrical load without recharging while maintaining the voltage of the battery throughout the discharge period within 12% above or below its nominal voltage.

Recommendations:

It is to be confirmed that battery is capable of

- ***carrying the emergency electrical load without recharging while maintaining the voltage of the battery throughout the discharge period within 12% above or below its nominal voltage;***

- *automatically connecting to the emergency switchboard in the event of failure of the main source of electrical power; and*
- *immediately supplying the required load*

Battery charging equipment is to be periodically inspected by adequate trained crew members as per Company's SMS.

Batteries must be maintained in a fully charged condition at all times and are able to carry the emergency electrical load of the ship without recharging while maintaining the voltage of the battery.

The electrolyte level should be maintained and any liquid loss due to evaporation or chemical action should be replaced with distilled water.

Specific gravity of the electrolyte provides a measure of the state of charge of the battery and must be measured regularly and record for same is to be maintained. The value for a fully charged lead-acid battery is 1.280 at 15°C. Apart from checking the specific gravity, the voltage is also monitored. Both specific gravity and voltage checked are compared with a standard chart for comparison provided by the manufacturer.

If the battery is old (more than 2 years old) and specific gravity of the electrolyte/voltage shows a reduced reading, consider replacement of batteries as per Company's SMS.

Protective gears and eye wash is to be kept in the battery room. Ventilation arrangement and ducting are required to be in good condition.

➤ **Question 8 – Is the emergency fire pump in full operational condition?**

Requirements:

The emergency fire pump should be able to start and provide adequate water pressure to fire system. The emergency fire pump should have adequate fuel in tank in order to operate at least for 3 hours. A common item during PSC inspections is the additional fuel availability of reserve fuel outside main machinery space in order to allow the pump to run for additional 15 hours.

Check the capability and pressure level of emergency fire pump by deploying a fire hose on bridge wing and one on the forecastle and check the water stream. This a common practice of PSC officers to inspect the ability of emergency fire pump to provide adequate pressure.

Recommendations:

Instructions are to be clearly posted near the emergency fire pump on start-up procedures and valves are to be clearly marked with their correct operating positions. Ensure suction valve is always kept in open position.

Emergency fire pump is to be tested regularly including remote starting. Ensure crew are familiar with the starting procedure.

Prior entering a port, check the working condition and fuel availability status (in case of diesel engine driven) of emergency fire pump. Priming pump is to be checked for proper operation.

The emergency fire pump must be able to take suction and produce required pressure even in the light draft condition.

➤ **Question 9 – Crew familiarization with emergency systems – where a fire drill and/or abandon ship drill was witnessed, was it found to be satisfactory?**

Requirements:

SOLAS Reg III/19 provides the requirements with respect to fire, abandon ship drill, enclosed space entry and rescue drills.

The regulation requires that every crew member participate in at least one abandon ship drill and one fire drill every month. The drills of the crew must take place within 24 h of the ship leaving a port if more than 25% of the crew have not participated in abandon ship and fire drills on board that particular ship in the previous month. When a ship enters service for the first time, after modification of a major character or when a new crew is engaged, these drills must be held before sailing. The Administration may accept other arrangements that are at least equivalent for those classes of ships for which this is impracticable.

Crew members with enclosed space entry or rescue responsibilities are required to participate in an enclosed space entry and rescue drill to be held on board the ship at least once every two months.

On passenger ships, an abandon ship drill and fire drill must take place weekly. The entire crew need not be involved in every drill, but each crew member must participate in an abandon ship drill and a fire drill each month.

Each abandon ship drill shall include:

- a. summoning of passengers and crew to muster stations with the alarm followed by drill announcement on the public address or other communication system and ensuring that they are made aware of the order to abandon ship;
- b. reporting to stations and preparing for the duties described in the muster list;
- c. checking that passengers and crew are suitably dressed;
- d. checking that lifejackets are correctly donned;
- e. lowering of at least one lifeboat after any necessary preparation for launching;
- f. starting and operating the lifeboat engine;
- g. operation of davits used for launching liferafts;
- h. a mock search and rescue of passengers trapped in their staterooms;and
- i. Instruction in the use of radio life-saving appliances.

Each fire drill shall include;

- a. reporting to stations and preparing for the duties described in the muster list;

- b. starting of a fire pump, using at least the two required jets of water to show that the system is in proper working order;
- c. checking of fireman's outfit and other personal rescue equipment;
- d. checking of relevant communication equipment;
- e. checking the operation of watertight doors, fire doors, fire dampers and main inlets and outlets of ventilation systems in the drill area; and
- f. Checking the necessary arrangements for subsequent abandoning of the ship.

Each enclosed space entry and rescue drill shall include:

- a. checking and use of personal protective equipment required for entry;
- b. checking and use of communication equipment and procedures;
- c. checking and use of instruments for measuring the atmosphere in enclosed spaces;
- d. checking and use of rescue equipment and procedures; and
- e. Instructions in first aid and resuscitation techniques.

Records:

The date when musters are held, details of abandon ship drills and fire drills, enclosed space entry and rescue drills, drills of other life-saving appliances and on board training shall be recorded in such log-book as may be prescribed by the Administration. If a full muster, drill or training session is not held at the appointed time, an entry shall be made in the log-book stating the circumstances and the extent of the muster, drill or training session held.

Recommendations:

Ensure drills are held as required by the regulation and are conducted, as far as practicable, as if there were an actual emergency. Records for drills held onboard are maintained.

Officers and crew members are aware of their duties as per muster list.

Officers and crew are familiar with the operation/use of the ship's life-saving appliances, including survival craft equipment, and in the use of the ship's fire-fighting appliances.

Evaluate the effectiveness of emergency drills and perform additional trainings in case of the need for improvements.

- **Question 10 – Crew familiarization with emergency systems – For the above checked emergency equipment, are the relevant crews familiar with the operation?**

Recommendations:

A training program on board may be established and be focused on deployment and use of various equipment required during emergencies.

All onboard must be familiar with various emergency alarms on board and their duties in various emergencies as stated in muster list.

Senior ship's staff must be familiar with the use/content of damage control plan and damage stability information for use during emergency.

Officers and crew must be familiarized with the operation of following and records for same is to be maintained;

- 1. Various lifesaving appliances and firefighting appliances on board including fixed firefighting system. During drills, officers and crew must be trained in the operation of these equipment.*
- 2. Emergency generator and emergency fire pump.*
- 3. Steering / emergency steering system including communication system between wheelhouse and steering gear room.*
- 4. Alarms and operation of water level detectors/ de-watering system installed on ship. Instructions regarding use of any overriding functions on alarm panel.*

- Ship owners, operators and masters are advised to be guided by above.

Enclosure:

1. Press Release by Paris MoU.
2. Questionnaire for CIC.

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