

GUIDELINES ON THE CONCENTRATED INSPECTION CAMPAIGN (CIC) ON SOLAS CHAPTER V (1 SEPTEMBER - 30 NOVEMBER 2008)

Purpose

The revised Chapter V: Safety of Navigation, of the Annex to the SOLAS Convention came into force on 1 July 2002 and under certain circumstances may require the fitting of other equipment such as:

- Automatic Information Systems (AIS)
- Voyage Data Recorder (VDR)/S-VDR
- Global Navigation Satellite System (GNSS)
- Electronic Chart Display and Information System (ECDIS), in addition to various amendments incorporated in this chapter.

This CIC is to ensure that:

- There is compliance with the carriage requirement for all size and where required there is a valid statutory certification together with relevant record of equipment;
- The equipment has type approval as appropriate and is functioning effectively and
- The master and watch keeping officers are familiar with the bridge equipment.

General

The campaign will target aspects of compliance provisions of SOLAS Chapter V, on all vessels regardless of type, in addition to the normal coverage of PSC inspections.

Question 1

Does the ship comply with the actual provisions as specified on the relevant Record of Equipment form for Navigational Equipment?

SOLAS Chapter I, Regulation 12(iii) and (vi)

For ships 500 GT and above, refer to:

- Record of Equipment for the Passenger Ship Safety Certificate (FORM P) Section 5
- Record of Equipment for the Cargo Ship Safety Equipment Certificate (FORM E) Section 3
- Record of Equipment for the Cargo Ship Safety Certificate (Form C) Section 5

For vessels below convention size for which there is no requirement for Record of Equipment, the ship should be of an acceptable standard and complies with any certificates or other documents issued or on behalf of the flag State Administration and the equipment mentioned therein.

Question 2

Is Navigational equipment operational?

SOLAS Chapter V, Regulation 16

This regulation came into force with the 2000 SOLAS amendments. The regulation requires that all navigational equipment required by SOLAS Chapter V shall be in an efficient working order. In case of deficiencies, evidence of the record of maintenance of the defective equipment should be readily available.

In order to comply with this regulation, malfunctions of the equipment must be repaired. A

ship may be detained until any required repair is carried out.

However, if the ship is in a port where repair facilities are not readily available then the malfunction of the required equipment shall not be considered as making a ship unseaworthy or as a reason for delaying the ship, provided suitable arrangements have been made by the Master to take the inoperative equipment or unavailable information into account in planning a safe voyage to a port where repairs can take place (Regulation V/16.2). Equipment maintenance manuals or company procedures should be clearly understandable by the ship's maintenance personnel.

Note:

Failure to comply with the following requirement may cause a ship to be detained:

SOLAS Regulation I/11(c) - Maintenance of conditions after survey

Whenever an accident occurs to a ship or a defect is discovered, either of which affects the safety of the ship or the efficiency or completeness of its life-saving appliances or other equipment, the master or owner of the ship shall report at the earliest opportunity to the Administration, the nominated surveyor or recognized organization responsible for issuing the relevant certificate, who shall cause investigations to be initiated to determine whether a survey, as required by regulations 6, 7, 8, 9 or 10 of this chapter, is necessary. If the ship is in a port of another Party, the master or owner shall also report immediately to the appropriate authorities of the port State and the nominated surveyor or recognized organization shall ascertain that such a report has been made.

Question 3

Can the master and watch-keeping officers demonstrate familiarization of navigating equipment?

STCW Convention Chapter I, Regulation I/14.4

The master and watch-keeping officers shall be familiar with the bridge control and navigational equipment including electronic charts if fitted and able to demonstrate the setting up of equipment. The master and watch-keeping officers shall be familiar with the procedures such as periodical tests and checks of the equipment to be carried out as part of the SMS (ISM Code section 10.3). The required navigation equipment as mentioned in the Record of Equipment shall be correct and complete.

Following equipment should be in good order:

- Position fixing device (match the berth position on chart)
- Echo sounder and recorder (readings match the depth at the berth)
- Radar 9 GHz and second radar for ships more than 3000 GT – (an officer should be able to demonstrate the procedures for switching on and obtaining a realistic radar picture)
- Automatic radar plotting aid (ARPA) for ships 10,000 GT and over – (the officer in charge should be able to explain the various basic controls)
- Standard magnetic compass including spare compasses (records of regular check made of the compass deviation), check if ships are exempt from carrying spare magnetic compass
- Gyro compass (the reading should match the alignment of the berth, heading and bearing repeaters match the Gyro compass and the latitude and speed correctors if fitted should be properly used)
- Rudder angle indicators
- Distance and speed indicators/recorders
- Navigations lights and emergency source and check to see that visual indicators and audible alarms where applicable are operational
- VHF radios
- VDR/S-VDR as provided shall be operational; an officer shall be able to demonstrate a test of all operational indicators as per manufacturer's instructions. Visual indicators and audible alarms shall be operational. This will also confirm that the VDR/S-VDR is

- switched on
- Automatic Identification System (AIS) shall be operational
- Communications to emergency steering position
- Daylight signalling lamp and independent source of power

Question 4

Are arrangements in place to ensure performance of the equipment?

SOLAS Chapter V, Regulation 16

- Maintenance arrangements for navigational equipment to be in place
- Malfunctions - ship may be delayed until repairs effected
- If no repair facilities in port - ship may be allowed to sail but the master has to take into account of the malfunctions during voyage

This is a new regulation requiring navigational equipment to be adequately maintained so that it meets the functional capabilities laid down in SOLAS Chapter V and the performance standards. Regulation V/16 addresses companies and equipment manufacturers in ensuring that equipment can be properly maintained. Masters should note their responsibilities in Regulation V/16.2 should any navigational equipment malfunction.

Paragraph 1 covers the role of the Administration in ensuring that maintenance arrangements are in place. Proper manuals enabling on-board maintenance are to be available when appropriate, and companies shall ensure a comprehensive back-up service including provision of both spares and maintenance engineers by manufacturers or their agents.

Interpretation of repair facilities being "readily available" is that no repair engineers or spares are available locally. The decision to allow the ship to sail would depend on the equipment involved and the magnitude of the malfunction and its effect on the ship being able to complete the voyage safely.

Question 5

Are there adequate and up-to-date nautical charts and publications, necessary for the voyage?

SOLAS Chapter V, Regulation 27

"Nautical chart" or "nautical publication" is a special-purpose map or book, or a specially compiled database from which such a map or book is derived, that is issued officially by or on the authority of a Government, authorized Hydrographic Office or other relevant government institution and is designed to meet the requirements of marine navigation

Requirements for Nautical Charts and Nautical Publications are given in Regulation V/27.

Nautical charts and nautical publications, such as sailing directions, list of lights, notices to mariners and tide tables that will be required for the voyage shall be corrected. All charts and publications for the voyage must be of the latest available edition and, be kept up to date from the latest relevant obtainable notices to mariners and radio navigational warnings. Voyage plan should be referred to identify the required charts and publications.

In addition, the following publications as mentioned on the record of equipment should be proper:

- International Code of Signals
- IAMSAR Manual, Volume III

All ships, irrespective of size shall have nautical charts and nautical publications to plan the ship's route for the voyage and to plot and monitor positions throughout the voyage.

Question 6

Where Electronic Chart Display and Information System (ECDIS) is the primary means in lieu of paper charts is there a suitable backup arrangement?
SOLAS Chapter V, Regulation 19.2.1.4, .5

Where ECDIS is the primary means as listed in the Record of Equipment Form, it shall be an approved type with a certificate on board.

An Electronic Chart Display and Information System (ECDIS) which meets the performance standards of IMO Resolution A.817(19) may be accepted by a national administration, as complying with the up to date charts required by the current SOLAS regulation.

In the case of the ECDIS, it is generally accepted that the back-up arrangements are either a second independent powered ECDIS or a portfolio of navigational charts. There is a requirement to use an appropriate portfolio of up to date paper charts when the area of operation is not yet covered by Electronic Navigational Charts but is covered by approved raster charts (RCDS mode).

ECDIS must have approved back-up arrangements to ensure a safe transfer of the ECDIS functions in the event of ECDIS failure and to provide safe navigation for the remaining part of the voyage.

Regulation V/19, paragraph 2.1.5. An electronic chart display and information system (ECDIS) may be accepted as meeting the carriage of chart requirements provided there is a back up arrangements on board.

Back-up arrangements for any electronic chart systems may be an appropriate folio of paper charts, as stated in the Record of Equipment for the Cargo Ship Safety Equipment Certificate.

- Back-up arrangement for ECDIS – provided (Paper Charts)
- Back-up arrangements for Electronic nautical publications

The primary consideration must be that navigational safety is not compromised in the event of failure of the electronic chart system and that the vessel is able to navigate to a safe port.

Question 7

Is there a record of navigational activities and incidents?
SOLAS Chapter V, Regulation 28

Regulation V/28.1 requires all ships engaged on international voyages shall keep on board a record of navigational activities and incidents which are of importance to safety of navigation and which must contain sufficient detail to restore a complete record of the voyage, taking into account the recommendations adopted by the Organization*. When such information is not maintained in the ship's log-book, it shall be maintained in another form approved by the Administration. Methods of recording should be permanent and may be handwritten, electronic or mechanical.

Regulation V/28.2 requires that each ship of 500 GT and above, engaged on international voyages exceeding 48 hours, shall submit a daily report to its company, as defined in Regulation IX/1, which shall retain it and all subsequent daily reports for the duration of the voyage. Daily reports may be transmitted by any means, provided that they are transmitted to the company as soon as practicable after determination of the position named in the report. Automated reporting systems may be used, provided that they include a recording function of their transmission and those functions interface with position-fixing equipment are subject to regular verification by the ship's master.

The report shall include the following:

- Ship's position
- Ship's course and speed
- Details of any external or internal conditions that are affecting the ship's voyage or the normal safe operation of the ship

Irrespective of the method of recording, ships should keep records for as long as required by the Administrative concerned, provided the fixed period is not less than one year.

* Refer to the Guidelines for recording events related to navigation adopted by the Organization by resolution A.916 (22).

Question 8

Is there evidence of voyage planning?

STCW Code Part A, Section A-VIII/2, Part 2

Passage planning is necessary to support the bridge team and ensure that the ship can be navigated safely between ports from berth to berth. The passage plan should cover ocean, coastal and pilotage waters. The plan may need to be changed during the voyage; for example, the destination port may not have been known or may alter, or it may be necessary to amend the plan following consultation with the pilot.

Ships may use a combination of electronic and paper charts for passage planning. Any one phase of the voyage should be undertaken using either all electronic or all paper charts rather than a mix of chart type.

Preliminary plan may covers pilotage waters and the role of the bridge team. The Pilot Card shall be available. This Card should contain information on draught and ships speed, checklist of equipment available and working.

Regulation V/34 applies to all ships and requires that prior to proceeding to sea, the master shall ensure that the intended voyage has been planned using the appropriate nautical charts and nautical publications for the area concerned, taking into account the guidelines and recommendations developed by the IMO*.

It is important to note that Regulation V/34 makes a properly prepared voyage plan mandatory and the plan is liable to be checked during port State control inspections. The voyage plan with its details shall be approved by the master prior commencement of the voyage.

The voyage plan shall identify a route which:

- Takes into account any relevant ships routeing systems
- Ensures sufficient sea room for the safe passage of the ship throughout the voyage
- Anticipates all known navigational hazards and adverse weather conditions
- Takes into account the marine environmental protection measures that apply, and avoids, as far as possible, actions and activities which could cause damage to the environment
- Takes into account appropriate contingencies where necessary

The Annex to IMO Resolution A.893(21), "Guidelines for Voyage Planning", may be taken into account when preparing voyage plans.

The key elements of the Voyage Plan are:

- **Appraising** all relevant information
- **Planning** the intended voyage
- **Executing** the plan taking account of prevailing conditions
- **Monitoring** the vessel's progress against the plan continuously

All of the above elements should be included in the plan, but the main elements for inspection are Appraisal and Planning. Execution of the plan may be checked on the day of the departure.

*Refer to the Guidelines for voyage planning adopted by the IMO by resolution A.893(21) and STCW A-VIII/2. Part 2 – Voyage Planning.

Question 9

Is a valid certificate of compliance (annual testing) of the VDR/S-VDR on board?

SOLAS Chapter V, Regulation 18.8

Regulation V/18.8 requires that voyage data recorder system, including all sensors, shall be subjected to an annual performance test. The manufacturer should carry out the test or a person authorized by the manufacturer to verify the accuracy, duration and recoverability of the recorded data. In addition, tests and inspections shall be conducted to determine the serviceability of all protective enclosures and devices fitted to aid location.

The ship shall have a certificate confirming that satisfactory checks have been carried out.

Onboard inspection of equipment to ensure batteries, enclosures and location aids are in good condition and operational. Successful completion of the maintenance routine should be recorded in the ship's onboard planned maintenance log.

A 12-hour recording should cover an operational period when the majority of sensors will be exercised, e.g. arrival, disembarkation, embarkation and departure of a ro-ro ferry. Download of this recorded data or exchange of recording medium. Offline analysis of recorded data by the manufacturer's certified representative to verify the accuracy, duration and recoverability of the recorded data.

A copy of the certificate of conformity or Voyage Data Recorder Performance Test Report issued by the testing facility, stating the date of compliance and the applicable performance standards, shall be retained on board the ship.

Question 10

Can the master and watch keeping officers demonstrate entering voyage related information into the AIS?

SOLAS Chapter V, Regulation 19.2.4.7

IMO Resolution A.917(22) Automatic Identification System (AIS)

The AIS information transmitted by a ship is of three different types:

- Fixed, or static information, which is entered into the AIS on installation and need only be changed if the ship changes its name or undergoes a major conversion from one ship type to another;
- Dynamic information, which, apart from 'Navigational status' information, is automatically updated from the ship sensors connected to AIS; and
- Voyage-related information, which might need to be manually entered and updated during the voyage.

AIS should always be in operation when ships are underway or at anchor. If the master believes that the continual operation of AIS might compromise the safety or security of his/her ship, the AIS may be switched off. This might be the case in sea areas where pirates and armed robbers are known to operate. Actions of this nature should always be recorded in the ship's logbook together with the reason for doing so. The master should however restart the AIS as soon as the source of danger has disappeared. If the AIS is shut-down, static data and voyage related information remains stored. Restart is done by switching on the power to the

AIS unit. Ship's own data will be transmitted after a two minute initialization period. In ports AIS operation should be in accordance with port requirements.

The OOW or a dedicated officer should manually input the following data at start of the voyage and whenever changes occur using the input device such as a keyboard:

- Ship's draught
- Hazardous cargo;
- Destination and ETA;
- Route plan (way-points);
- The correct navigational status; and
- Safety related short messages

In the case of any AIS malfunction an alarm is provided and the unit should stop transmitting.

Question 11

Is cargo on deck loaded so as not to obstruct the horizontal view of the sea surface forward of the beam?

SOLAS Chapter V, Regulation 22

Bridge design to meet the minimum specifications to ensuring good visibility. A vessels safety can depend upon being able to see ahead. All vessels are required to keep a proper look out to avoid collisions and avoid dangerous situations from developing.

A clear view in all directions is preferred, but it is essential to be able to see ahead, and especially directly ahead.

There should be no blind sector caused by cargo forward of the beam which obstructs the view of the sea surface as seen from the navigating and manoeuvring workstation to exceed 10 degrees on each side of the bow and two ship lengths or 500 meters from the stem.

Question 12

Can the master and watch keeping officers concerned with the operation of the steering gear demonstrate the change over procedures and operation of steering systems?

SOLAS Chapter V, Regulation 26

Regulation V/26 applies to all ships which proceed to sea. Regulation 26 summarizes the requirements for:

A simple operating instructions with a block diagram showing the change over procedures for remote steering gear control systems and steering gear power units where applicable, be permanently displayed on the navigating bridge and in the steering gear compartment.

- For testing steering gear prior to departure
- Requirements for instructions
- Officers competence in steering gear operation / maintenance
- Requirements for testing emergency steering gear drills
- Recording of tests and drills

The checks and tests shall include:

- The full movement of the rudder according to the required capabilities of the steering gear;
- A visual inspection for the steering gear and its connecting linkage; and
- The operation of the means of communication between the navigation bridge and steering gear compartment.

Masters and all watch keeping personnel must be familiar with the procedure for changing over from automatic to manual steering as required by Regulation 26, and must ensure that sufficient time is allowed for the operation. The changeover from manual to automatic steering and vice-versa should be made by, or under the supervision of, the officer of the watch or the master.

All ship's 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.

Reference

SOLAS 74	International Convention for the Safety of Life at Sea, Chapter V and Chapter I, Regulation 9
STCW	Standards of Training Certification and watchkeeping for Seafarers Regulation I/4 and Regulation I/14

Reference (for information purposes only)

Res.A.601(15)	Provision and display of manoeuvring information to navigation
Res.A.708(17)	Navigation bridge visibility and functions
Res.A.817(19)	Performance standards for electronic chart display and information systems (ECDIS)
Res.A.893(21)	Guidelines for voyage planning
Res.A.916(22)	Guidelines for the recording of events related to navigation
Res.A.917(22)	Guidelines for the onboard operational use of shipborne Automatic Identification Systems (AIS).
Res.A.956(23)	Amendments to the guidelines for the onboard operational use of shipborne Automatic Identification Systems (AIS) (Resolution A.917(22))
MSC/Circ.1079	Guidelines for preparing Plans for co-operation between search and rescue services and passenger ships
MSC.1/Circ.1222	Guidelines on annual testing of voyage data recorders (VDR) and simplified voyage data recorders (S-VDR).
MSC/Circ.627	Navigation bridge visibility.
MSC/Cir.171(79)	Adoption of amendments to the Protocol of 1988 relating to the International Convention for the Safety of Life at Sea, 1974.
MSC.1/Circ.1224	Unified Interpretation of SOLAS Chapter V (Spare magnetic compass)