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PORT STATE CONTROL COMMITTEE INSTRUCTION 58/2025/06

Electronic Chart Display and Information Systems (ECDIS)

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1. INTRODUCTION

1.1 General

The purpose of this instruction is to provide guidance on vessels using ECDIS.

1.2. Application

:The ECDIS may be checked by a PSCO on ships where:

1. carriage is required by SOLAS Ch. V, reg. 19.2 and HSC Codes ; or

2. it has been voluntarily fitted and is noted on the Record of Equipment (RoE) attached to the ship's relevant Safety Certificate. Where an ECDIS has been voluntarily installed only as a navigational aid to enhance situational awareness, it may not be listed on the RoE and would only be considered as an Electronic Chart System (ECS).

The consolidated carriage requirements are:
1. passenger ships of 500 gross tonnage and upwards;
2. tankers of 3,000 gross tonnage and upwards;
3. cargo ships, other than tankers, of 10,000 gross tonnage and upwards;
4. cargo ships, other than tankers, of 3,000 gross tonnage and upwards but less than 10,000 gross tonnage constructed on or after 1 July 2014;
5. High-speed craft (HSC)

There is no requirement for mandatory fit of ECDIS for cargo ships other than tankers less than 10,000 GT constructed before 1 July 2014.

2. INSPECTION

The PSCO should check that the Record of Equipment attached to the Safety Certificate appropriately records ECDIS as fitted and appropriate back up arrangement is available and functional.

To fulfil carriage requirements, the ECDIS, in accordance with Annex A of this Instruction, must be loaded with current and updated Electronic Navigational Charts (ENC).

This may be achieved through inspection of the ECDIS and may also be verified with the vessel's records or other documentation. eg valid ENC Permits, ENCs and Raster Navigational Charts (RNC) are, by IMO definition, "issued officially by or on behalf of a Government…" - see Annex B, section 3 for details.

PSCO may seek confirmation that:
- official ENCs, are being used; and
- regular updates are being supplied to the vessel and incorporated by the ship's crew.

If non-official charts are installed and are in use for voyage planning on ECDIS, then it is operating in Electronic Chart System (ECS) mode and does not fulfil the chart carriage requirements stipulated within SOLAS Ch. V. Reg 19.2.

The correct functioning of the ECDIS system and availability of the backup should be confirmed through checks demonstrable by the watchkeeping officers:

- That the ECDIS and associated position sensor(s) are in working condition (e.g. match the vessel position coordinates on display against the berth);
- That appropriate and adequately updated charts are loaded, evidenced by comparing ENCs with latest available updates via notices to mariners issued by the chart authority;

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- That the ECDIS application software is maintained and kept updated to the latest International Hydrographic Office (IHO) standards, by looking up System reference to the 'Presentation Library'[1] (refer Annex A);
- That a voyage plan for previous and/or next passage can be displayed;
- Familiarity with the use of ECDIS and its functionality such as safety settings, plotting LOP, adding notes / corrections etc and transfer to backup system;
- The backup system listed in RoE is functional/available; and
- That required nautical publications are being carried and updated.

3. CLEAR GROUNDS

A list of clear grounds for a more detailed inspection could be, but is not limited to:

1. Clear evidence of system malfunction (e.g. error in sensor inputs);
2. ECDIS not loaded with official ENCs, or ENC updates not being applied;
3. ECDIS backup is not functional (failure of secondary electronic system) or where paper charts are noted on RoE as backup but are not available or updated;
4. Required nautical publications linked to ECDIS are not available or have not been updated;
5. Watchkeeping officer is unable to demonstrate familiarity in use of the installed ECDIS onboard.

4. MORE DETAILED INSPECTION

Where clear grounds exist, a more detailed inspection should be conducted by the PSCO. Evidence may be gained by conducting further checks and from examination of documentation/certificates.

5.1 ECDIS equipment

1. If the status of the system is in doubt check for a valid ECDIS type approval certificate;
2. Check display of the required sensor/system inputs where available (i.e. SDME7, THD8 and EPFS9);
3. Confirm ECDIS, and the Speed & Distance Measuring Equipment (SDME), Transmitting Heading Device (THD) and Electronic Position Fixing System (EPFS), can be operated from an emergency source of electrical power;
4. Check maintenance log/ schedule to verify upkeep of the system.

5.2 ECDIS Backup

SOLAS Regulation (Chapter V Regulation 19.2.1.5) requires facilities for a safe take-over of ECDIS functions in the event of ECDIS failure to avoid a critical situation developing and a backup arrangement that provides a means of safe navigation for the remaining part of the voyage. The most commonly accepted backups are a second ECDIS or an appropriate portfolio of paper charts. In the case of paper charts as back up, the voyage plan must be also be ready / available on it for safe take over.

However, as allowed within the performance standards, flag States may accept an alternative solution (e.g. Chart Radar with official ENCs); this should be specified on the RoE.

Check that the watchkeeping officer knows the procedures for the transfer to the backup system in event of primary system failure.

Where an electronic backup is specified confirm that:

a. it is operational;
b. the power supply is separate from the primary ECDIS;
c. appropriate and updated charts are installed; and
d. a (current/future) voyage plan can be displayed.

[1] The appearance and content of the chart data displayed on ECDIS is generated as per the specifications characterised by the IHO Presentation Library, as covered in their standard, S-52.

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Where paper charts are used as backup to ECDIS confirm that:

a. adequate charts for the intended voyage are available;
b. a (current/future) voyage plan has been incorporated; and
c. the charts have been updated from appropriate notices to mariners.

Care must be taken that vessels are not considered deficient in cases of a long port stay or next voyage not yet known (awaiting orders), whereby work for the forthcoming voyage is not yet complete. It is the PSCOs professional judgement to conclude if this is the only reason or if there is a significant issue.

5.3 With regard to the Electronic Charts

a. Confirm that the ECDIS is 'loaded with official ENCs[2];
b. Confirm that installed or available ENC coverage is adequate for the intended voyage;
c. Confirm that procedures are in place for ensuring that ENC updates are applied timely; and
d. Confirm that ENCs have been updated for corrections or amendments that have been issued.

5.4 Training - Proficiency in the use of ECDIS

The ECDIS requirements are part of the competency tables in the STCW Code Part A and a Certificate of Competency is prima facie evidence of compliance with ECDIS, there is no provision in STCW for a separate CoC, CoP or documentary evidence of training for ECDIS. Additionally in accordance with Regulation I/14 navigational watch officers should have undergone familiarisation process/training with the onboard system.

Note: STCW Code Part A also stipulates that the training and assessment in the use of ECDIS is not required for those who serve exclusively on ships fitted without ECDIS. These limitations shall be reflected in the endorsements issued to the seafarer concerned.

The PSCO may check/determine if navigational watchkeeping officers demonstrate adequate operational competence in using the installed system.

The PSCO should:

a. Confirm that a randomly selected officer of the watch is able to undertake basic tasks expected during watchkeeping (e.g. select charts, change scale, can explain the meaning of symbols displayed, can call up and is able to insert or amend a waypoint in a route, set the proper safety settings); and

b. Confirm that the Officer of the Watch designated by the Master, or others on watch during the inspection, is able to demonstrate how to install and/or verify official ENC updates.

[2] RNCs may be accepted where ENCs have not been issued – see further information in Annex B

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ANNEX A

ECDIS Compliance

ECDIS in operation comprises hardware, software and data. It is important for the safety of navigation that the application software within the ECDIS works fully in accordance with the Performance Standards and is capable of displaying all the relevant digital information contained within the ENC.

Summary

For the vessel to use ECDIS as the Primary Means of Navigation (PMN) it must comply with IMO requirements for four fundamental elements: system (hardware and software), charts, back-up and proficiency of use (training).

1. ECDIS Equipment:

   - Hardware, *including operating system software:*
     - must be type approved and fitted as per the requirements of the IMO ECDIS performance standards (the listing of ECDIS on the RoE provides evidence of this).
     - If installed on or after 1 January 2029, conform to the performance standards not inferior to those specified in the Annex to IMO resolution MSC.530(106) and;
     - If installed on or after 1 January 2026 and before 1 January 2029, conform to the performance standards not inferior to the to those specified in the Annex to IMO resolution MSC.530(106) or MSC.232(82).
     - if installed on or after 1 January 2009, conform to performance standards not inferior to those specified in the Annex to IMO Resolution MSC.232(82); and
     - if installed on or after 1 January 1996 but before 1 January 2009, conform to performance standards not inferior to those specified in the Annex to resolution A.817(19), as amended by resolutions MSC.64(67) and MSC.86(70).

   - Software*, i.e. the application software producing chart displays* (
     - The latest applicable IHO standards in force from 1 September 2015, are as below;

S-52 Edition 6.1(.1)	Specifications for Chart Content and Display Aspects of ECDIS
PresLib Edition 4.0(.3) (Annex A to S-52)	IHO ECDIS Presentation Library *(Note The "up-to-datedness" of the ECDIS in regard to the installation of the latest Edition of the Standards is represented by the first 2 digits of the Edition number. The 3rd digit of the Edition number (in brackets) indicates a clarification version of the Standard; clarifications have no impact on safety of navigation or ECDIS performance)*
S-64 Edition 3.0.3	IHO Test Data Sets for ECDIS
S-57 Edition 3.1	IHO Transfer Standard for Digital Hydrographic Data

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2. ENCs (or RNCs where applicable) must be loaded in ECDIS and be up-to-date..
3. A functioning backup system (electronic or paper nautical chart - based) must be available.
4. Watchkeeping officers should be conversant with the ECDIS in use.

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ANNEX B

Further Information

1. Hardware / system

ECDIS is often installed as a component part of an Integrated Navigation System (INS) rather than as a stand-alone piece of equipment. In these circumstances there are likely to be 3 or 4 consoles/display screens. These can either be dedicated as a single function (e.g. RADAR, ECDIS or ship conning control) or acting as multi-function displays where a single console can be used to display any one of these functions.

ECDIS systems have a minimum chart display area of 270x270mm.
If the RoE, attached to the Safety Certificate, states that ECDIS is installed then it can be assumed that the system has appropriate type approval and has been installed in accordance with IMO requirements. A PSCO should only need to check on the type approval certificate of the system if alerted to a specific issue (e.g. a desktop or laptop computer on a chart table referred to as the ECDIS or backup ECDIS).

Maintenance of equipment:

SOLAS Chapter V Regulation 16 – Maintenance of Equipment, can be quite adequately applied to a complex hardware and software based system such as the ECDIS. The regulation requires that there are adequate arrangements in place to ensure that the performance of navigational equipment required by SOLAS Chapter V is maintained. In case of deficiencies, evidence of the record of maintenance of the defective equipment should be readily available.

2. Backup system

The ECDIS Performance Standards (Appendix 6 of MSC 232(82) or MSC 530(106)) require that vessels using ECDIS as the PMN must have approved backup 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. The backup has only been specified in functional terms.

The two most commonly accepted backup arrangements are either a second, independently powered, ECDIS or a portfolio of paper charts. Other solutions that may be accepted by a flag State e.g. a chart radar or a high specification electronic chart system (ECS) using official chart data (ENCs where available).

An ECS classified as “Class A” through testing to International Standard IEC62376 may be specified by the flag State as meeting the backup requirements for ECDIS. However, noting this standard was withdrawn in 2013, this will only apply to old existing systems. Such systems may not be used as the PMN to comply with the SOLAS chart carriage requirement.

3. Charts and Publications

ECDIS must be loaded with official electronic chart data, ENC where available or RNC where it is not. If other electronic chart data is loaded then the ECDIS is operating in an ECS mode and does not meet carriage requirements. ECDIS fitted to a vessel subject to the mandatory carriage requirement must install official ENCs even if the flag State has allowed the system to be used as a secondary aid to navigation. Where an electronic system has been fitted as a backup to ECDIS this must also use official ENCs.

SOLAS Chapter V Regulation 27 requires vessels to carry nautical charts and publications ‘necessary for the intended voyage’ and that these shall be ‘adequate and up-to-date’. In relation to ECDIS this means the system must be loaded with adequate official ENCs of an appropriate scale for the voyage and have been updated for notices to mariner updates. These updates will have been supplied either on hard media (CD or DVD) or by remote communications (email or web download).

The coverage of ENCs has increased significantly since 2002 and is complete for all but a few areas within the Paris MoU region, however there are still a few areas around the world where ENCs have not yet been issued. To navigate with ECDIS in these areas Raster Navigational Charts (RNCs) may be used; however the IMO ECDIS Performance Standards stipulate that an appropriate portfolio of up-to-date paper charts must be carried to supplement the RNCs to overcome the differences with ENCs.

There are a number of service providers who supply electronic charts to vessels; the media and documentation provided to the vessel should clearly state whether the charts are official ENCs and meet IMO requirements. The base charts are normally supplied on CD or DVD and ENC updates are issued regularly either on hard media or via remote communications. The majority of ENCs are supplied in encrypted form under a licence agreement for a fixed time period. Service providers commonly issue 'permit' keys for those charts licensed; these permits have a fixed period of validity. ECDIS systems should provide a warning if the permit period is within one month of expiry; ENCs continue to be displayed even after permit expiry however updates cannot be applied and the charts are likely to be out of date.

Notices to Mariners

ENCs should be corrected by Hydrographic Offices in step with paper charts however sometimes this is not the case and the ENC or paper chart may lag behind the other. Where the vessel carries both ENCs and paper charts (as a backup) there should be a process that allows the information from the most up-to-date source to be used in the voyage plan. It should be noted that at present not all ENC producers include T&P NMs in their ENCs and that other sources (e.g. notice to mariners weekly bulletins) should be used to access to this information.

PSCOs should confirm during a more detailed inspection that all relevant charts (paper and digital) and publications (such as sailing directions, list of lights, notices to mariners, tide tables) required for the forthcoming voyage are present; they must be of the latest available edition and, be shown to be kept up-to-date from the latest relevant obtainable notices to mariners and radio navigational warnings.

Carriage of nautical publications:
ENCs do not at present include all of the information that is available in nautical publications and thus for the foreseeable future there will be a requirement for ECDIS fitted vessels to carry paper publications (or their electronic equivalents) and to maintain these for notices to mariners. Publications like charts must be issued officially by or on the authority of a "Government, hydrographic office….." to meet IMO carriage requirements. Where digital nautical publications are used to meet the carriage requirement this will be indicated on the RoE of the SEC which should also show that back up arrangements are in place. Note that MSC-MEPC.2/Circ2 requires that the International Code of Signals and IAMSAR Manual Volume III should always be available onboard in hard copy in cases of emergency

4. Training conversant with system
The PSCO should determine if the master and watchkeeping officers are familiar with the ECDIS equipment including the electronic charts installed and to demonstrate the setting up of equipment. PSCO may check if the master and watch-keeping officers are familiar with the procedures such as periodical tests and checks of the equipment to be carried out. There should be written procedures on the bridge for officers for using ECDIS.

Master and deck watchkeeping officers should be able to produce documentary evidence of ECDIS training or have appropriate endorsements for ships using ECDIS as PMN in lieu of paper charts. PSCO may take appropriate action if that is not the case.

5. Voyage Planning
Voyage planning is necessary to support the bridge team and ensure that the ship can be navigated safely between ports from berth to berth. The voyage plan should cover ocean, coastal and pilotage waters. PSCOs should take into consideration that 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.

PSCO may find passage planning on ships using a combination of electronic and paper charts. PSCO should ensure any one phase of the voyage should be undertaken using either all electronic or all paper charts rather than a mix of chart type. PSCO may find a preliminary plan covering pilotage waters and the role of the bridge team; PSCO could ask to see the Pilot Card. This Card should contain information on draught and ships speed, checklist of equipment available and working.

SOLAS Chapter V Regulation 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

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and nautical publications for the area concerned, taking into account the guidelines and recommendations developed by the IMO[3].

It is important to note that Regulation 34 makes a properly prepared voyage plan mandatory and the plan is liable to be checked during port State control inspections. PSCO should verify if the voyage plan with its details as approved by the master prior commencement of the voyage. The voyage plan shall identify a route which:

1. Takes into account any relevant ships routeing systems;
2. Ensures sufficient sea room for the safe passage of the ship throughout the voyage;
3. Anticipates all known navigational hazards and adverse weather conditions;
4. 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; and
5. Takes into account appropriate contingencies where necessary.

[3] Refer to the IMO Guidelines for voyage planning adopted by resolution A.893(21)