ECDIS – Practises and Port State Control Inspections — study guide

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ECDIS is now primary navigation on most ships, and it is also a favourite target of Port State Control inspectors. This guide covers the system's benefits, its requirements, how it is updated and what PSC looks for.[1][2]

What ECDIS is and how it is connected

ECDIS stands for **Electronic Chart Display and Information System**. An Integrated Bridge System is generally connected to the radar, NAVTEX, echo sounder, gyro, position-fixing systems, the power distribution system, ECDIS and the autopilot.

Benefits

ECDIS gives an advanced ability to manage the chart display, safety settings, and audible and visual warnings and alarms. Electronic Navigational Charts (ENCs) include up-to-date chart corrections. Radar, AIS, depth contours and weather information are all available as display overlays, and readily available real-time navigation information makes voyage planning simpler.

Requirements and approvals

Only an approved ECDIS may be used for navigation. It must be **type approved** by the Flag Administration or by another recognised and approved organisation to meet performance standards, must use the International Hydrographic Organization (IHO) approved standards for chart data, and must have an approved (navigation) backup system. Successful completion of generic ECDIS training is required for a new or renewed Certificate of Competency under STCW; no further certificate documentation beyond that is required. Adequate backup arrangements are a set of **paper charts** or a **second independent ECDIS**.

Updating ECDIS

ECDIS is updated using DVDs, USB sticks, CDs, online through an ENC chart-update software service, or email attachments.

Common difficulties

Users may not be familiar with a specific manufacturer's equipment type, system controls and settings. Configuration sub-menus may be overly complex, so users fail to set warnings and alarms correctly. And a complex display that shows too much information at once can cause confusion.

Port State Control deficiencies

A typical PSC inspection may identify failure to demonstrate adequate knowledge of

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how to use the primary and backup systems; failure to provide evidence that ECDIS **type-specific** training has been completed; failure to use the latest correct ENC; failure to have equipment in an acceptable condition; and failure to maintain and update the ECDIS to meet carriage requirements.

Cyber risk

Potential cyber risks to ECDIS include personal computers, tablets and smartphones; crew members inadvertently or maliciously introducing malware into the ship's network and then to the ECDIS; remote software updates and service maintenance from third-party providers via satellite broadband; the ship's network and its connections to other electronic systems on board; and the unauthorised or inadvertent use of compromised portable memory sources such as USB sticks.[3]

Key facts to remember

- ECDIS = Electronic Chart Display and Information System; IBS links it with radar, NAVTEX, echo sounder, gyro, position fixing, power distribution, autopilot.
- Benefits: display/safety management, ENC corrections, radar/AIS/depth/weather overlays, simpler voyage planning.
- Approved ECDIS: type approved, IHO chart-data standards, approved backup system; backup = paper charts or a second independent ECDIS.
- Updates: DVD, USB, CD, online service, email attachment.
- Difficulties: unfamiliar manufacturers, complex sub-menus (wrong alarms), information overload.
- PSC: knowledge of primary/backup, type-specific training evidence, latest ENC, equipment condition, maintenance/carriage compliance.
- Cyber risk: personal devices, malware, remote updates, ship-network links, compromised USB sticks.

Sources

1. SOLAS Chapter V, Regulation 19 — Carriage requirements for shipborne navigational systems and equipment (ECDIS).
2. IMO ECDIS performance standards (IMO Resolution MSC.232(82)) and IHO standards (S-52, S-57, S-63) for ENC data.
3. IMO Guidelines on Maritime Cyber Risk Management (MSC-FAL.1/Circ.3) — cyber risks to navigation systems.