Guide to ECDIS audits and inspections
The United Kingdom Hydrographic Office is committed to assisting the shipping industry with the transition to ECDIS. The ADMIRALTY Guide to ECDIS Audits and Inspections has been developed in response to requests from shipping companies and other industry stakeholders for assistance in preparing for an ECDIS audit.

The guide provides concise information in the form of a checklist supplemented by short explanatory notes which identify key issues which can be expected to be examined during any third party inspection or audit of the on-board ECDIS. The content of the checklist is based on the IMO ECDIS carriage requirement and Performance Standards, known inspection criteria and hydrographic office knowledge.

The explanatory notes also provide references to other ADMIRALTY publications and some IMO documents which give further details. The following ADMIRALTY publications have been referred to in this guide and may be consulted for further information:

- NP232 ADMIRALTY Guide to ECDIS Implementation, Policy and Procedures
- NP231 ADMIRALTY Guide to the Practical Use of ENCs
- NP100 The Mariner’s Handbook
- NP5012 ADMIRALTY Guide to ENC Symbols used in ECDIS
- NP294 How to Keep Your ADMIRALTY Products Up-to-date
- NP133C ADMIRALTY ENC Maintenance Record
- ADMIRALTY ECDIS Buyers Guide
- ADMIRALTY Vector Chart Service (AVCS) user guide
# ECDIS Audit checklist

<table>
<thead>
<tr>
<th>Ref</th>
<th>Item</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Applicability and Use</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Is ECDIS installed?</td>
<td>Yes No</td>
</tr>
<tr>
<td>2</td>
<td>Is ECDIS the Primary Means of Navigation?</td>
<td>Yes No Primary Means of Navigation implies compliance with SOLAS Chapter V, regulation 19, 2.1.4, and regulation 27</td>
</tr>
<tr>
<td></td>
<td><strong>System Installation and Maintenance</strong></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Is the system type approved?</td>
<td>Yes No Approval date</td>
</tr>
<tr>
<td>4</td>
<td>Has the ECDIS been correctly installed and are the three mandatory sensors (Transmitting Heading Device, Speed and Distance Measuring Equipment, and Electronic Position Fixing System) correctly aligned?</td>
<td>Yes No</td>
</tr>
<tr>
<td>5</td>
<td>Is the ECDIS application software being maintained?</td>
<td>Yes No</td>
</tr>
<tr>
<td>6</td>
<td>Has the ECDIS been upgraded to IHO presentation Library edition 4.0?</td>
<td>Yes No</td>
</tr>
<tr>
<td>7</td>
<td>If the ECDIS is using IHO presentation library edition 3.4, has the IHO Data Presentation and Performance Check been conducted?</td>
<td>Yes No If yes, what were the results?</td>
</tr>
<tr>
<td></td>
<td><strong>Charts and other navigational Information</strong></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Are official electronic charts (ENC/RNC) being used?</td>
<td>Yes No If ‘No’ then the system is operating in the ECS mode</td>
</tr>
<tr>
<td>9</td>
<td>Are the electronic charts in use up-to-date? (latest edition and updates)</td>
<td>Yes No</td>
</tr>
<tr>
<td>10</td>
<td>Are T&amp;P NMs being used correctly in voyage planning and monitoring?</td>
<td>Yes No</td>
</tr>
<tr>
<td>11</td>
<td>Is the ADMIRALTY Information Overlay (AIO) in use?</td>
<td>Yes No</td>
</tr>
<tr>
<td>12</td>
<td>Has the Weekly Notice to Mariners Section VIII and the README.TXT file been consulted?</td>
<td>Yes No</td>
</tr>
<tr>
<td></td>
<td><strong>Procedures and Documentation</strong></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Is ECDIS included in the Safety Management System?</td>
<td>Yes No</td>
</tr>
<tr>
<td>14</td>
<td>Are there adequate ECDIS Operating Procedures?</td>
<td>Yes No</td>
</tr>
<tr>
<td>15</td>
<td>Which mode of ECDIS operation is in use?</td>
<td>ENC RNC</td>
</tr>
<tr>
<td>16</td>
<td>What are the ECDIS Back-Up arrangements on board?</td>
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<tr>
<td></td>
<td><strong>Training</strong></td>
<td></td>
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<tr>
<td>17</td>
<td>Has adequate ECDIS training been competed?</td>
<td>Yes No</td>
</tr>
<tr>
<td>18</td>
<td>Has onboard ECDIS familiarisation been completed?</td>
<td>Yes No</td>
</tr>
<tr>
<td>19</td>
<td>Can the watchkeepers demonstrate operational competency in the use of ECDIS?</td>
<td>Yes No</td>
</tr>
</tbody>
</table>
**Explanatory notes and references**

1  **Is ECDIS installed?**

Establish the ECDIS mandatory carriage implementation date for the vessel. Given that successful implementation can take 18 months or more, review the strategy for adoption of ECDIS if the vessel is approaching the mandatory date. Existing vessels will be required to fit ECDIS in advance of the first survey after the implementation date.

Where a vessel has fitted ECDIS voluntarily (e.g. prior to any carriage requirement date) then companies must decide if it is to be used as a navigational aid or to be used as the primary means of navigation (see Q2).

Where ECDIS is fitted this will be recorded in the Record of Equipment attached to the relevant safety certificate under SOLAS. This would include:

- Cargo Ship Safety Equipment Certificate – Form E
- Passenger Ship Safety Certificate – Form P
- Cargo Ship Certificate – Form C

Where this is the case, the Record of Equipment will also show what is the back-up arrangement for ECDIS. This will normally be a second ECDIS, another electronic device such as a chart radar, or paper charts.

Ref – NP232 – Part I – Stage 1 Legal Requirements

NP231 – Annex I

2  **Is ECDIS the Primary Means of Navigation?**

Where ECDIS is being used as the Primary Means of Navigation it must be clearly stated as such by the company and a policy in the SMS.

In addition to the entry in the Record of Equipment, the auditor should check for evidence of which means of navigation has been in use. This should include inspection of the vessel’s passage plan and the methods used to monitor the vessel’s position during the voyage. Entries in the deck log book and manoeuvring book should be cross referenced with the plotted vessel’s positions.

Ref – NP232 – Part I – The Transition to ECDIS

SOLAS Ch V Regulation 19.2.1.4

3  **Is the system type-approved?**

All ECDIS systems must be type-approved. It cannot be termed an ‘ECDIS’ if it is not type-approved. A Type Approval certificate for the ECDIS should be available for inspection to confirm that the vessel’s ECDIS complies with the relevant IMO Performance Standards and IEC test standards. The type approval must have been conducted by a notified body authorised by a flag state.

MSC.1/Circ.1503 states ‘where an ECDIS is being used to meet the chart carriage requirements of SOLAS, it must:

i) be type-approved
ii) use up to date Electronic Nautical Charts (ENC)
iii) be maintained so as to be compatible with the latest applicable International Hydrographic Organization (IHO) standards, and
iv) have adequate, independent back-up arrangements in place.’

SOLAS regulation V/18 states ‘Systems and equipment required to meet the requirements of regulations 19 and 20 shall be of a type approved by the Administration. Type approval is the certification process that ECDIS equipment must undergo before it can be considered as complying with IMO performance standards. The process is carried out by flag Administration-accredited type-approval organizations or marine classification societies in accordance with the relevant test standards developed by the International Electrotechnical Commission (IEC).’

Ref – NP232 – Part I Stage 7 Individual Vessel Risk Assessment

ADMIRALTY ECDIS Buyers Guide

4  **Has the ECDIS been correctly installed and are the three mandatory sensors correctly aligned?**

If available, an ECDIS installation survey from the classification society should be examined. Where a second ECDIS or other electronic device is installed as back-up, ensure that the power supply is independent of the primary system.

Heading, position and speed sensors should be checked to ensure correct reading / alignment on the ECDIS. Alarms should not be giving any indication of a sensor failure.

Ref – NP232 – Part I – Stage 7 Individual Vessel Risk Assessment

ADMIRALTY ECDIS Buyers Guide
5  **Is the ECDIS application software being maintained?**

Check the version of the IHO Standards installed on the ECDIS to confirm it is current. An ECDIS that is not updated for the latest version of IHO standards will not be able to display the latest IMO approved symbols and may not meet the chart carriage requirements.

Does the shipping company have a maintenance agreement or some other arrangement with the equipment manufacturer to ensure that any necessary software patches can be supplied?

Latest IHO standards that apply to ECDIS equipment can be found on the IHO website:

http://www.iho.int/mtg_docs/enc/ECDIS-ENC_StdSIn_Force.htm

Ref – NP232 – Part 1 – Stage 4 Procurement, Installation and Onboard Maintenance

NP231 – Section 1.6

IMO MSC.1/Circ. 1503

6  **Has the ECDIS been upgraded to IHO presentation library edition 4.0?**

The IHO have issued a new version of the ECDIS presentation library to resolve known display anomalies and to improve the usability of the system. ECDIS updated to the new IHO presentation Library will benefit from reduced alarms and a number of new symbols. There will be no need to run the IHO ENC/ECDIS data presentation and performance checks on the ECDIS.

The IHO are retiring Presentation Library edition 3.4 on 31st Aug 2017, from this point forward all existing ECDIS must be upgraded to IHO Presentation Library edition 4.0 to comply with the guidance in IMO MSC.1/Circ. 1503. It is strongly recommended that all existing ECDIS users contact their ECDIS manufacturer now to plan properly for the transition to the updated ECDIS Standards. The upgrade requirements will vary between different ECDIS makes and models, so it is important that owners work together with their ECDIS manufacturers to identify the steps to be taken.

Ref – NP232 – Part 2 – Maintenance of ECDIS

NP231 – Annex 6

7  **If the ECDIS is using IHO presentation library edition 3.4, has the IHO Data Presentation and Performance Check been conducted?**

If the ECDIS is using the old IHO presentation Library edition 3.4, has the vessel used the IHO ENC/ECDIS data presentation and performance check to ascertain if their ECDIS is subject to any known display anomalies? If so, have the results been sent back to the IHO and has a copy been noted and retained onboard?

Are there any safety related results from the test?

Has action been taken to resolve any deficiencies? Are any limitations or constraints noted in the ECDIS operating procedures?

Ref – NP232 – Part 2 – Maintenance of ECDIS

NP231 – Annex 6 and 7

8  **Are official electronic charts (ENC/RNC) being used?**

Determine if the electronic charts installed on the ECDIS meet chart carriage requirements i.e. that they have been issued by or on the authority of a Government, authorized Hydrographic Office or other relevant Government institution.

Where ECDIS is fitted as a carriage requirement, or where it is being used as the primary means of navigation, Electronic Navigational Charts (ENCs) must be installed. Raster Navigational Charts (RNCs) may be used with an appropriate folio of paper charts only where ENCs are not available (i.e. not issued).

Determine if the vessel has an adequate outfit of ENCs for the intended voyage. This can be checked by cross-referencing a catalogue such as the ADMIRALTY Digital Catalogue or ADMIRALTY e-Navigator to ensure that all appropriate scales of ENC are installed.

Ref – SOLAS V 2.2

NP232 – Sec 11.3 Selecting the appropriate ENC for a voyage

NP231 – Section 1

NP100 – The Mariner’s Handbook

AVCS user guide
9  Are the electronic charts in use up-to-date (latest edition and updates)?

Interrogate the ENC or RNC on display to determine the edition date and last electronic chart update applied. Compare these with the latest update information available from a digital catalogue or listing to ensure that routine updating is being undertaken.

Ref – NP232 – Sec 11.5 ENC Ordering and Updating
NP231 – Section 7
NP294 How to keep your ADMIRALTY Products up-to-date
AVCS user guide
MGN 285 - The use of risk assessment methodology when operating ECDIS in the Raster Chart Display System (RCDS)

10 Are T&P NMs being used correctly in voyage planning and monitoring?

Ensure the vessel has access to all necessary T&P NM information (not available in all ENCs) and that this is documented. Where relevant to the voyage plan T&P corrections should be inserted on the ECDIS display using manual corrections.

The ADMIRALTY Information Overlay (AIO) provides easy reference to T&P information; this can be displayed on a range of ECDIS or on back of bridge systems such as ADMIRALTY e-Navigator.

Ref – NP232 – Sec 11.6 Temporary & Preliminary (T&P) NMs
NP231

11 Is the ADMIRALTY Information Overlay (AIO) in use?

The AIO also contains all ADMIRALTY Temporary & Preliminary Notices to Mariners (T&P NMs) and EPNMs that show differences between ENCs and published paper charts; these should be consulted and, where appropriate, annotated on the ECDIS display.

Ref – NP232 – Sec 11.7 ENC Preliminary Notices (EPNMs)
NP231
AVCS user guide

12 Has Weekly Notice to Mariners Section VIII and the README.TXT file been consulted?

The Weekly Notice to Mariners Section VIII and the README file contains important safety information relating to ENCs and ECDIS. The file is included on all ENC media but some ECDIS may not be able to display it; it can however be read on any standalone PC. The vessel’s officers should all be aware of the recent content of the file and be able to demonstrate the practical application of the information.

Ref – NP232 – Sec 11.10 Supplementary safety-related information
NP231
NP100 – The Mariner’s Handbook
AVCS user guide

13 Is ECDIS included in the Safety Management System?

The use and maintenance of ECDIS should be included in the vessel’s Safety Management System (SMS).
Details of the planned maintenance schedule for the ECDIS (software and hardware) and timetable for periodic tests (including exercising of the backup system) should be included.

Ref - NP232 – Sec 1.4 ECDIS Carriage and ISM Code

14 Are there adequate ECDIS operating procedures?

The SMS or Bridge Procedures Guide should include policy and procedures for the safe and efficient operation of ECDIS. These should include:

› Voyage Planning and Execution
› Watch keeping with ECDIS
› Ensuring against over-reliance on ECDIS
› Chart Maintenance
› Departure and Arrival checks
› ECDIS failure and backup system
› NP232 – Sec 10.10 Development of Procedures and Standing Orders
15  Which mode of ECDIS operation is in use?

Most ECDIS can display RNCs using a Raster Chart Display System (RCDS) mode of operation. RNCs should only be used where ENCs are not available (i.e. not yet issued). Where it is necessary to use RNCs this should be in conjunction with an appropriate folio of paper charts.

If the vessel is operating ECDIS in RCDS mode, determine that this is necessary and check that an appropriate folio of up-to-date paper charts is being carried.

Ref – NP232 – Sec 11.3 Selecting the appropriate ENCs for a voyage
  NP100 – The Mariner’s Handbook
  MGN 285 – The use of risk assessment methodology when operating ECDIS in the Raster Chart Display System (RCDS)

16  What are the ECDIS back-up arrangements on board?

When ECDIS is fitted, arrangements must be in place to ensure that a safe transition can be made to a back-up system in the event of an ECDIS failure. The back-up system must also ensure safe navigation for the remainder of the voyage. A second, independent, ECDIS or paper charts are the normally accepted solutions. Details will be entered on the Record of Equipment.

The back-up arrangement must be ready for immediate use. If paper charts are used they must be readily available with the voyage plan indicated on them. If the back-up is a second ECDIS or other electronic device, it must be loaded with the relevant up-to-date ENCs and current voyage plan.

The Back-Up system will be listed in the Record of Equipment by the Flag state or classification society.

Ref – NP232 – Sec 10.6 ECDIS Backup
  ADMIRALTY ECDIS Buyers Guide

17  Has adequate ECDIS training been completed?

Is there documentary evidence to show that the Master / navigating and watch keeping officers have undertaken approved generic ECDIS training and ECDIS vessel specific training to be able to operate the ECDIS safely and effectively? The ECDIS vessel specific equipment training should relate to the make and model of the equipment fitted on the vessel on which they are currently serving.

Ref – NP232 – Stage 3 – Training and Familiarisation
  ADMIRALTY ECDIS Buyers Guide

18  Has onboard ECDIS familiarisation been completed?

In addition to generic and vessel specific ECDIS training, the Master and all watch keeping officers must be familiar with the specific ECDIS installation on board the vessel they are serving. This familiarisation will include the backup systems, sensor configuration, and level of integration and current operational status of the ECDIS.

Ref – NP232 – Sec 10.7 Familiarisation with on board ECDIS

19  Can the watch keepers demonstrate operational competency in the use of ECDIS?

The Master and watch keepers should be able to demonstrate their competency with the operation of ECDIS. This can be established by requesting use of basic functionality of the ECDIS in the presence of the auditor. These functions may include:

› Safety Settings
› Setting Voyage Plan
› Checking Voyage Plan
› Interrogating chart updates
› ENC symbol identification
› Manual position fixing

Ref – NP5012 The ADMIRALTY Guide to ENC Symbols Used in ECDIS
  NP232 Guide to ECDIS Implementation, Policy and Procedures
Planning for the future?
Plan with ADMIRALTY Maritime Products & Services, brought to you by the United Kingdom Hydrographic Office.
For more world-class, world-leading products and services visit our website www.admiralty.co.uk

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For more information and advice, contact our global network of chart agents.
Alternatively our in-house customer service team is available day in, day out – whatever the query and wherever your journey takes you.