INTERNATIONAL MARITIME ORGANIZATION

E

SN.1/Circ.312
9 July 2012

SAFETY OF NAVIGATION

OPERATING ANOMALIES IDENTIFIED WITHIN ECDIS

1   The Sub-Committee on Safety of Navigation, at its fifty-eighth session (2 to 6 July 2012), was tasked by the Maritime Safety Committee at its ninetieth session to circulate further guidance or information that becomes available on operating anomalies identified within ECDIS to supplement the guidance in MSC.1/Circ.1391, and has developed the attached information for the guidance of all concerned.

2   Member Governments are invited to bring the attached information, in the annex and appendix, to the attention of all concerned and, in particular:

   .1   ensure that mariners are aware of the potential for some ECDIS to exhibit display and alarm behaviour anomalies;

   .2   alert mariners to the characteristics of these anomalies;

   .3   note the list of the currently identified anomalies and related advice;

   .4   alert the maritime community to the existence and use of the International Hydrographic Organization (IHO) Data Presentation and Performance Check (DPPC) dataset and to ensure that all installed ECDIS and training equipment is checked; and

   .5   continue to observe the guidance in MSC.1/Circ.1391 dated 7 December 2010 in particular to encourage vessels under their flag to report anomalies with sufficient detail on the ECDIS equipment and ENCs to allow analysis.

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ANNEX

OPERATING ANOMALIES IDENTIFIED WITHIN ECDIS

Introduction

1   The following information and guidance is provided to assist all those involved in the use of ECDIS.

ECDIS anomalies

2   A number of ECDIS operating anomalies have been identified. Due to the complex nature of ECDIS, and in particular because it involves a mix of hardware, software and data, it is possible that further anomalies may exist.

3   These anomalies are particularly apparent in ECDIS units that have been built and type-approved to ECDIS Performance Standards (resolution A.817(19), as amended), (i.e. before 2009). However, ECDIS units type-approved to the revised ECDIS Performance Standards (resolution MSC.232(82)) are still vulnerable to the limitations in appendix, item 5(a).

4   An ECDIS anomaly is an unexpected or unintended behaviour of an ECDIS unit which may affect the use of the equipment or navigational decisions made by the user.

5   Examples include, but are not limited to:

•   failure to display a navigational feature correctly, such as:

  •   navigation areas recently recognized by IMO such as PSSA (Particularly Sensitive Sea Area) and ASL (Archipelagic Sea Lanes);

  •   lights with complex characteristics; and

  •   underwater features and isolated dangers;

•   failure to detect objects by "route checking" in voyage planning mode;

•   failure to alarm correctly; and

•   failure to manage a number of alarms correctly.

6   The existence of such anomalies highlights the importance of maintaining ECDIS software to ensure that operational capability and reliability are maintained in accordance with SN.1/Circ.266/Rev.1. It is recommended that appropriate checks are made with the equipment manufacturer. This is of particular importance where ECDIS is the only source of chart information available.

7   A list of the known anomalies with advice, and information on whether or not the DPPC dataset checks for each anomaly, is in the appendix.

IHO ECDIS Data Presentation and Performance Check (DPPC) dataset

8   IHO has produced an ECDIS DPPC dataset that allows mariners to check some important aspects of the operation of their ECDIS. This dataset contains two fictitious ENC cells which navigating officers can load into their ECDIS units to assess operating performance and to

determine whether there may be any display anomalies that either need to be remedied or otherwise managed in the way that the ECDIS is operated. If the check highlights a problem, the accompanying guidance notes with the check dataset offer suggested courses of action. The check dataset and accompanying instructions can be obtained from ENC service providers, or can be downloaded from the IHO website at:

www.iho.int/srv1/index.php?option=com_content&view=article&id=585:news&catid=166:1news-links&Itemid=828.

Appendix

**LIST OF ECDIS APPARENT OPERATING AND DISPLAY ANOMALIES
(NOT IN PRIORITY ORDER)**

In the following list, items 1, 2, 3, 4, 5(b), 6, 7, and 11 are checked by the IHO DPPC dataset dated November 2011:

1   Inability to correctly display symbols for recently-approved IMO features such as ASLs or PSSAs (SN.1/Circ.266/Rev.1 refers) – ECDIS equipment that does not have the latest version of the IHO Presentation Library installed will, instead of displaying the correct symbol, either show question marks (?) or nothing at all. In some cases the ECDIS may fail to load an ENC that includes such data. An ECDIS retains its type approval certificate regardless of the version of the Presentation Library installed.

Workaround – interrogate any "?" symbol displayed using the "pick report" or refer to paper charts and/or publications.

2   Incorrect display of foul areas and obstructions in some ECDIS equipment – some ECDIS models do not show some underwater features in Standard display mode as expected (however they do activate appropriate alarms). These features are only displayed when the "All" or "Other" display mode is used. Also in some cases different symbols are used to depict these features.

Workaround – use Mode "All" or "Other".

3   On some occasions some stranded/dangerous wrecks and obstructions may not display in any mode; it is believed that this is limited to some ECDIS versions from a single manufacturer who has now produced a software amendment to resolve the problem.

Workaround – use paper charts.

4   An object that falls on a contour line may fail to display in "Standard" Mode in some ECDIS equipment.

Workaround – use Mode "All" or "Other".

5   Small (point) land areas, especially those depicted only on small scale (usage band 1 and 2) ENCs may not always be clearly displayed and do not always activate alarms in route planning or route monitoring modes in some ECDIS equipment:

        (a)   it is possible for small land features to be obscured by other chart detail such as names or contour labels; and

        (b)   some ECDIS equipment may not conduct route checks on small scale ENCs and may not therefore provide an appropriate warning. Where this is the case the land area may not be detected by the "look-ahead" function during route monitoring.

Workaround – careful manual inspection of the largest scale ENC available.

Due to the limitations of ECDIS referred to in 5(a) above, mariners (even those using the most modern systems) should always undertake careful visual inspection of the entire planned route

using the "Other/All" display mode to confirm that it, and any deviations from it, are clear of dangers.

6   Incorrect display of the coloured arcs of light sectors – some ECDIS may not display the coloured arcs of complex lights as intended. This is especially prevalent where the sectors straddle 0/360deg (North).

Workaround – use "pick report" function to check light sectors.

7   Some early models of ECDIS are unable to display correctly time-variable data encoded in ENCs. For example features with Date Start and Date End attributes used for the implementation of new Traffic Routeing measures in ENCs may not be depicted correctly; the result being that both old and new instances are displayed simultaneously. Tests for this were not included in IEC61174 Ed1.

Workaround – use "pick report" function to determine Start/End date/time.

8   Tidal stream data not available in usable form – some early models of ECDIS only provide a comma-separated list of values which is difficult to interpret and use.

Workaround – use Tidal Stream Atlases external to ECDIS.

9   Display of anchorage, berth and channel names may not be easily visible to the mariner and the radius of a maximum swinging circle may not be shown.

Workaround – use "All" or "Other" display mode and "pick report" function to obtain swinging circle information; VTS/Port Authority communications will be able to clarify any necessary names.

10   Three hundred and sixty degree landfall lights not always prominent in comparison to shorter range sector lights.

Workaround – mariners to be aware – use "pick report" to verify light characteristic.

11   ENCs may include certain shoal soundings, especially reported depths, which have been encoded in such a way that they do not display in "Standard" Mode and might not activate an alarm even where the depth is less than the safety contour setting. Most Hydrographic Offices have reported to the IHO that they have updated the relevant ENCs to ensure that significant depths are displayed in Standard Mode.

Workaround – operate in a display Mode where all soundings are shown.

12   Areas of foul ground that have no known depth value may be depicted in some ECDIS as isolated dangers and shown in "Standard" mode; this can result in unnecessary screen clutter.

Workaround – no workaround for clutter problem, mariners to be aware and use "pick report" function to determine if the feature is a danger.

13   Where ECDIS includes an option to show isolated dangers in waters shoaler than the safety contour value the symbology used may vary between manufacturers.

Workaround – mariners to be aware and to use "All" or "Other" Mode when operating in such areas.

14   Screen clutter can be a problem when displaying smaller scale ENCs for areas where larger scale coverage is also loaded in ECDIS. This can be more apparent when the user zooms out. This is due to a combination of each manufacturer's ENC loading strategy and the individual ENC producer's encoding policy. Where HOs use SCAMIN (scale minimum) attributes on chart features then this problem is minimized. The intention of the IHO standard is that ECDIS should not display ENC data which has a compilation scale significantly different from the display scale in use. Improvements could be made, in future, by adopting a standardized ENC loading strategy based on a scale range defined within the ENC.

Workaround – the situation can be improved through use of the standard display mode during voyage monitoring and appropriate (but not over) use of the zoom function. This technique has been included in the IMO 1-27 Model Course syllabus.

15   In some ECDIS equipment the text for some notes in the ENC may be truncated or not displayed at all, and therefore is not available to the mariner.

Workaround – no workaround available; mariners should advise ENC service providers where they observe this problem.

16   Unnecessary alarms and indications – feedback from mariners shows that ECDIS can produce excessive and distracting alarms. This is due to a combination of the interpretation of the requirements of the ECDIS Performance Standards and the ENC encoding. Some control over the number of alarms and indications is available to the mariner in ECDIS built to the revised Performance Standards (resolution MSC.232(82)) but this is not always recognized.

Workaround – the methods available to minimize alarms are included in the IMO 1-27 Model Course syllabus.

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