



Friday 1<sup>st</sup> April 2011

## Bulletin 753 - 04/11 - Reporting of ECDIS anomalies - Worldwide

The UK Maritime authority, the Marine and Coastguard agency (MCA) has issued a Marine Information Notice, MIN, regarding the reporting of anomalies identified within ECDIS. This sits very well alongside the Club's own advice identifying possible areas of difficulty to implement ECDIS systems onboard, overcoming those areas and avoiding potential claims.

### Re MCA MIN 406 (M+F): Reporting Operation Anomalies Identified Within ECDIS

With respect to ECDIS, the Introduction to MIN 406 states:

"An ECDIS anomaly is an unexpected or unintended behaviour of an ECDIS which may affect the use of the equipment or navigational decisions by the user. Examples include, but are not limited to:

- A failure to display a navigational feature correctly;
- A failure to alarm correctly;
- A failure to manage a number of alarms correctly.

Annex 1 contains UKHO NAVAREA1 Warning 317/10 which gives further information on anomalies and the means to overcome the issues raised."

### MIN 406 Annex 1

3.3 The following is the text from the latest NAVAREA1 Warning 317/10 issued on 290525 UTC Oct 2010:

*3.4 As previously notified by NAVAREA warning, mariners using ECDIS are reminded not to rely solely on automated voyage planning and monitoring checks and alarms. Some ECDIS appear only to undertake route check functions on larger scale ENC's and therefore alarms might not activate. This may not be clearly indicated on the ECDIS display. Mariners 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, is clear of dangers<sup>1</sup>*

*Recent preliminary investigation indicates that some ECDIS may not display certain combinations of chart features and attributes correctly and on rare occasions may fail to display a navigational significant feature. This appears to be caused by anomalous behaviour in some ECDIS software, especially early versions. The existence of such anomalies highlights the importance of*

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<sup>1</sup> Club's added emphasis

*maintaining ECDIS software to ensure that operational capability and reliability are maintained. It is recommended that appropriate checks are made with the equipment manufacturer.<sup>1</sup> This is of particular importance where ECDIS is the only source of chart information available to the mariner.*

*The International Hydrographic Organization (IHO) is investigating these matters in consultation with ECDIS equipment manufacturers. Further information will be made available through Notices to Mariners and within the UK element of the README.TXT file included on ENC service media.*

One major manufacturer<sup>2</sup> has included the following data on one of their subsequent update CDs:

#### Use of ECDIS

1. A very small proportion of shoal soundings, especially those marked as “reported” on paper charts, are not visible when operating in the default base or standard display modes and do not trigger automatic grounding alarms in route checking or monitoring modes. Most ENC producers, including the UKHO, have now amended the way in which these particular shoal soundings have been encoded in S-57<sup>3</sup> to resolve this issue.
2. Some ECDIS may not activate alarms for all land areas shown on ENCs, even where these are surrounded by a shoal depth contour. Whilst land areas such as islands are generally clearly identifiable on ECDIS, in some display configurations small islands can be difficult to see as they may be obscured by other detail such as contour labels. This is most likely to be a problem where only very small scale (usage band 1 and 2) ENCs are available. There are many oceanic areas for which the largest scale chart (both paper and ENC) issued is 1:3,500,000.
3. It has been noted that on some ECDIS, some underwater obstruction hazards only display in “full / other” display mode rather than in default standard mode as might be expected. The observed anomalies reinforce the need for the continued application of established navigation principles and skills including the need to avoid over-reliance on a single system. Mariners 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, is clear of dangers.

#### Overlapping cells in the same usage band:

Some data providers issue ENCs which contain overlapping data coverage, both internally and with an adjoining nation’s coverage. This may make them difficult to use in certain ECDIS systems which default to displaying both overlapping cells. Caution should therefore be exercised when using such overlapping data. Mariners should be aware that there will be a possibility that items of significance may be present only in one data set within an area of overlap. They should therefore take care to examine both data sets when planning a voyage through such an area. Some overlaps may be quite small and may not be noticeable when viewing data at the appropriate scale. Discussions are in hand between many of the data producers in order to resolve overlapping data problems.

#### ENCs derived from charts on non-WGS84 compatible datum’s:

Positions obtained from Global Navigation Satellite Systems, such as GPS, are normally referred to WGS84 datum. In many parts of the world however, charts were originally produced on a variety of local datums for which the shift to WGS84 may be unknown or unreliable. ENCs derived from such charts may not be accurately referred to WGS84 datum. This can result in small but

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<sup>2</sup> TRANSAS – Update CD dated 10 March 2011

<sup>3</sup> Electronic data transfer standard, this will probably be superseded by IHO with S-100

noticeable positional differences where adjoining cells have been shifted by slightly different amounts.

A number of GB (Great Britain) cells for example, are derived from charts that cannot be accurately referred to WGS84 datum. The differences between satellite-derived positions and positions on these cells cannot be accurately determined; the estimated values of the differences for these cells are detailed in the Information attribute of Caution Areas thus: "*Positions in this region lie within ± nn metres of WGS84 Datum*". Mariners are warned that these differences MAY BE SIGNIFICANT TO NAVIGATION and are therefore advised to confirm GPS positions shown in the chart display using alternative navigational techniques, particularly when closing the shore or navigating in the vicinity of dangers. Such cells contain a warning encoded as the name of a Sea Area feature covering the cell thus: "*This chart cannot be accurately referenced to WGS84 Datum; see caution message*". They are intended for use with this warning continuously displayed and should not be used otherwise.

#### Updating of ENC's in line with paper charts:

The UKHO's weekly updating service for ENC's includes the latest updates issued by all the contributing Hydrographic Offices. These updates may or may not be synchronised with Notices to Mariners and New Editions produced for their national paper chart series. In some cases, therefore, ENC's may be less up to date than the corresponding paper chart of the same area. Practice also varies between different Hydrographic Offices with regard to the updating of ENC's for Temporary (T) and Preliminary (P) Notices to Mariners. Several ENC producers include T&P NMs in their cells wherever possible, but where this is not the case mariners are advised to consult relevant T&P NMs published in Notices to Mariners bulletins or on the ENC producer's website (if available).

The attributes *Date Start* (DATSTA) and *Date End* (DATEND) are used by UKHO and some other Hydrographic Offices to notify mariners in advance of major changes such as the introduction of new or amended routeing measures. The purpose of these attributes is to allow mariners to preview forthcoming changes and for the ECDIS to apply the changes automatically at the appropriate time. ECDIS approved to IEC 61174 Edition 2 (2002) or later should be able to display the time-related features correctly. However, ECDIS approved prior to IEC 61174 Edition 2 may display both old and new routeing measures simultaneously or fail to give any indication of the changes.

#### Chart display content:

Mariners should be aware that the appearance and content of the data displayed in electronic charts may differ substantially from the same or similar data in paper chart form. The ECDIS chart display is generated "on-the-fly" according to display rules defined by the IHO Presentation Library. The amount of detail that is displayed will depend on a number of factors, including:

- The cells loaded on the ECDIS and available for display;
- The feature content of those cells (including any objects with date, time or scale dependent attributes);
- The display scale set by the ECDIS user;
- The display mode set by the ECDIS user (i.e. "Base", "Standard" or "All");
- The Safety Contour, Safety Depth and Safety Height set by the ECDIS user;
- Other user display options provided by the ECDIS (e.g. options to show isolated dangers in shallow waters, full length light sectors, etc);
- The ECDIS manufacturer's implementation of the IHO Presentation Library.

### Overlay content

The Admiralty Information Overlay contains all Admiralty Temporary & Preliminary Notices to Mariners (T&P NMs) and provides additional preliminary information that is specific to ENC's, such as reported navigational hazards that are not yet charted.

The Overlay gives seafarers an easy way to view the information they need, in addition to the standard chart, to navigate safely and compliantly. The Overlay makes passage planning simpler and safer by clearly showing where important Temporary or Preliminary changes may impact a voyage. It also gives seafarers the same consistent picture of the maritime environment on their ECDIS as they have always had with the Admiralty paper chart. The Overlay includes all Admiralty T&P NMs in force worldwide and additional information that relates specifically to ENC's, published as ENC Preliminary NMs (EP NMs).

The UKHO includes information in the Overlay where it exists in the UKHO archive of hydrographic information. Some ENC's produced by national Hydrographic Offices are the equivalent to their local paper chart series and there is no equivalent Admiralty paper chart. In these areas the UKHO does not have any additional information and the Overlay shows a "No Overlay" feature. Additional information, such as local 'Temporary & Preliminary, Notice to Mariners' (T&P, NMs), may be available in these areas from other sources and seafarers should ensure that all appropriate sources of information have been consulted.

### Overlay availability

The Admiralty Information Overlay is available, free of additional charge, to all users of AVCS and the Admiralty ECDIS who have compatible display equipment (see below). Please contact your Admiralty Chart Agent to add the Overlay to your AVCS or Admiralty ECDIS Service licence.

Although ECDIS has been in use at sea for some years, its employment is not yet widespread and many mariners remain unpractised in its use. Mariners must therefore be aware of the user training requirement. They should satisfy themselves that their ECDIS provides all the navigational functionality that they will need and that they are familiar with the operation of this functionality. For example, some early ECDIS systems may be unable to display the cautionary notes which appear on the paper chart and are included in the ENC. Hence, care is required while experience is gained in the practical use of ECDIS. Some national maritime administrations have issued advice relating to the introduction of ECDIS, and mariners should ensure that they are aware of, and conversant with, that advice<sup>4</sup>.

For more information please contact the Loss Prevention Dept.

[www.lossprevention.ukclub@thomasmiller.com](mailto:www.lossprevention.ukclub@thomasmiller.com)

Source of Information: Capt. N. Gardiner  
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UK P&I Club

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<sup>4</sup> Refer to the UK Clubs series of LP News articles outlining the ramifications of ECDIS application.