



IHB File N° S3/8157

**CIRCULAR LETTER 91/2012
06 November 2012**

3RD UPDATE REPORT ON IHO ACTIONS CONCERNING ECDIS SOFTWARE ISSUES

References: a) IHO Circular Letter 18/2012 dated 10 February - *Update report on IHO action concerning ECDIS software issues*
b) IHO Circular Letter 74/2012 dated 24 July - *2nd Update report on IHO action concerning ECDIS software issues*

Dear Hydrographer,

1 This letter provides an update on actions in relation to resolving various operational implementation issues concerning ECDIS. It is a follow-up to the reports provided at references a) and b). This report takes into account the outcomes of two recent meetings held at IMO headquarters in London and the 4th meeting of the IHO Hydrographic Services and Standards Committee (HSSC) in Taunton, UK.

Report of ECDIS Checks

2 About a hundred additional reports have been received at the IHB since the Circular Letter at reference b) was issued. They confirm the analysis reported in that Circular Letter and no new significant issues have been identified. Although some concerns have been expressed that the check data set has not reached all of its intended audience, the Directing Committee considers that it now has a representative sample covering the majority of ECDIS models in use at sea. Most manufacturers now have systems in place to enable equipment to be updated if it is required. However, there are a few systems in use for which there is no upgrade path - either because of the age of the equipment or the manufacturer no longer supports ECDIS. In addition, there is no clear requirement in IMO instruments for older ECDIS equipment to be upgraded to conform to the latest relevant IHO standards.

ECDIS manufacturers meeting at IMO (11 September 2012)

3 As reported in his address at the opening of the 58th Session of the Sub-Committee on Safety of Navigation (NAV58), the IMO Secretary-General convened a meeting of ECDIS Manufacturers to discuss operating anomalies in ECDIS in order to provide appropriate guidance to shipping companies and seafarers. Eighteen manufacturers, out of about 30 known manufacturers of ECDIS, participated in the meeting. The IHO was represented by Robert Ward - President. The manufacturers confirmed their commitment to address proactively the issues involved and to work with national Maritime Administrations and the IHO to address any new issues should they arise and at the same time seek

preventative measures wherever possible. In the short term, it was agreed that the IHO would post contact information provided by manufacturers on the IHO website so as to enable mariners to identify and if necessary obtain upgrades for their ECDIS operating software. That measure has been implemented and a list is now available via the “ENC & ECDIS” page of the IHO web site¹. So far, 11 of the 29 ECDIS manufacturers listed have provided information. The list will be updated as new information is made available by the manufacturers.

3rd IHO Workshop of Technical Experts on Resolving Operating Anomalies in ECDIS (15-16 October 2012)

4 The workshop announced in reference b) was held at the IMO Headquarters in London on 15 and 16 October 2012 under the chairmanship of Robert Ward. The workshop was attended by 48 technical and operational experts representing the key stakeholders - including those from the IMO Secretariat, IMO and IHO Member States, Non-Governmental International Organizations, data service providers, ECDIS manufacturers, type-testing authorities, and seafarers’ organizations. A record of the discussions, prepared with the assistance of the Secretariat of the *Comité International Radio-Maritime* (CIRM), is attached in Annex A. CIRM is an active Observer organization in the IHO that represents navigation equipment manufacturers including the manufacturers of ECDIS. The workshop considered the summary of mariners’ feedback from the IHO ECDIS data presentation and performance check campaign, discussed progress on implementing the outcomes of recent IMO committee and sub-committee meetings (MSC90, NAV58) and was provided with an update on progress with the maintenance and improvement of the relevant IHO standards.

5 Useful feedback was provided by the participants on issues such as display requirements, alarm management, and testing procedures. This feedback will benefit not only the maintenance and improvement of existing IHO standards related to ECDIS but also the development of related standards that will be based on S-100, such as S-101, the next generation ENC product specification. The participants at the workshop provided input for the consideration of IMO Member States. These inputs related to the consolidation of ECDIS related circulars and the revision of footnotes to SOLAS Regulation V/27. The IMO delegate representing Australia is leading the preparation of several submissions related to ECDIS for the consideration of the 59th session of the IMO Sub-Committee on Safety of Navigation (NAV59) in September 2013. These submissions will be developed by correspondence in liaison with all interested parties.

6 The meeting reached the conclusion that all ECDIS should be up to date so as to conform to the latest edition of the relevant IHO Standards reported to the IMO, whatever their date of installation. This is necessary to enable ENCs to be “adequate and up to date” as required by SOLAS Regulation V/27 and in conformance with the ECDIS Performance Standard that stipulates that: “*The chart information to be used in ECDIS should be the latest edition of information originated by a government-authorized hydrographic office, and conform to IHO standards*”. It was also concluded that it would be useful if there was a check data set that allows a mariner to confirm that an ECDIS is up to date in relation to the applicable IHO standards. Seafarer representatives noted that at the moment this is a particularly contentious issue in relation to Port State Control inspections in some States and they would welcome an easy-to-use IHO “proof” of conformance.

7 An IHO Member State attending the workshop indicated that recent feedback had shown that some mariners have difficulty determining whether their ENCs are up to date because the relevant information is not readily apparent in some ECDIS equipment. The ECDIS manufacturers represented at the meeting encouraged the IHO to provide clearer guidance in terms of what information is required to be presented to the mariner and in what form.

8 The meeting, which had the widest spread of stakeholder representatives of any similar meeting held so far, provided a very useful forum for the exchange of views and information. It was agreed that the meeting had been informative for all participants and that on-going actions will benefit from

¹ http://www.iho.int/mtg_docs/enc/enc_prod/latest_version_of_ECDIS_software_provided_by_OEMs.pdf.

the discussions that took place at the meeting. The fact that the workshop had not identified any new work items or initiatives to be followed was taken as a sign of continuing progress. Although work remains to be done, there was widespread agreement that ECDIS remains a powerful and valuable tool on the bridge of ships.

TSMAD and DIPWG Sub Working Group Meetings

9 On conclusion of the workshop, some of the workshop participants took the opportunity to join two IHO Working Group events that were held over the remaining part of the week in the IMO Headquarters. A sub-Group of TSMAD (Transfer Standards Maintenance and Applications Development Working Group) that is continuing the revision of S-64 - *IHO Test Data Sets for ECDIS* met. A sub-Group of DIPWG (Digital Information Portrayal Working Group) that is continuing the revision of S-52 - *Specifications for Chart Content and Display Aspects of ECDIS* and the data presentation aspects of S-101 - *S-100-based ENC Product Specification* also met. The participation of mariners and ECDIS manufacturers was considered to be both valuable and essential to the work of both groups.

HSSC Activities

10 At its 4th meeting held in Taunton, United Kingdom, 25 to 28 September 2012, HSSC reviewed the progress of actions under its supervision. In particular, it was agreed that the new editions of IHO Publications S-58 - *Recommended ENC Validation Checks* - and S-64 - *IHO Test Data Sets for ECDIS* - will be presented for endorsement at HSSC5. The two relevant working groups, TSMAD and – DIPWG, continue to monitor the feedback and information gained from ECDIS anomalies and take them into account in their on-going work.

11 As reported above, TSMAD and DIPWG took the opportunity of the presence of industry experts at the IHO workshop on ECDIS operating anomalies to conduct follow-on meetings that will assist with the finalisation of the revision of S-64 and the further development of the data portrayal model for S-101 – *S-100 based ENC Product Specification*. The outcomes will be considered by the next plenary meetings of both working groups respectively in January and May 2013.

Overview and Perspective

12 Progress in resolving the outstanding issues with ECDIS operating anomalies is well underway with the active involvement of all key stakeholders. No major new issue has been identified since the previous report. Further investigation concerning the reported difficulty of mariners to monitor ENC updating in some ECDIS is being undertaken by the reporting HO. This may result in the need for an additional work item for DIPWG.

13 With the uptake of ECDIS use associated with the entry into force of carriage requirements since 1st July 2012, vigilance and attentiveness are still relevant. The IHB will continue to monitor the evolution of ECDIS and the associated standards, actively pursuing ways to resolve any future issues whenever they arise, whilst continuing to report progress to Member States, to the IMO MSC and NAV and to the wider maritime community.

Action Requested of Member States

14 Member States are invited to inform the Directing Committee of any direct and relevant feedback that they may receive from stakeholders concerning ECDIS operation and maintenance.

15 Member States are invited to encourage ECDIS users that have not already done so to refer to the ECDIS data presentation and performance check. The data and documentation will remain accessible via the IHO website home page for the foreseeable future.

16 The Directing Committee would welcome assistance in contacting and encouraging those ECDIS manufacturers that have yet to provide the IHB with contact details concerning ECDIS software update information for posting on the IHO website.

On behalf of the Directing Committee
Yours sincerely,

A handwritten signature in black ink, appearing to read 'Gilles Bessero', written in a cursive style.

Gilles BESSERO
Director

Copy: Participants to the 3rd IHO workshop on ECDIS operating anomalies (*by e-mail*)

Annex:

A. Record of the 3rd IHO Workshop of Technical Experts on Resolving Operating Anomalies in ECDIS (*in English only*)

**Record of the 3rd IHO Workshop of Technical Experts
on Resolving Operating Anomalies in ECDIS
IMO - London - UK
15-16 October 2012**

The IHO hosted a technical workshop at the IMO Headquarters in London, United Kingdom, on 15 and 16 October 2012, to review progress in resolving various operational implementation issues concerning ECDIS (taking into account the input and feedback provided by the most recent meetings of the relevant IMO committees and sub committees), and consider what actions may still be required.

The workshop was attended by 48 technical and operational experts representing the key stakeholders - including those from the IMO Secretariat, IMO and IHO Member States, Non-Governmental International Organizations, data service providers, ECDIS manufacturers, type-testing authorities, and seafarers' organizations. The workshop was chaired by the IHB.

The workshop reviewed the feedback received from the IHO Data Presentation and Performance Checks for Ships set in place in 2011. To date, the results show that 50% of systems reported are fully satisfactory. 31 % display the appropriate information in the relevant mode but not necessarily in the correct way. The transition to correct the 50 % which are not fully satisfactory is well under way. The worrying issue concerns the tracing and updating of legacy systems. Participants expressed concern that IMO Circulars and the check data set had not always reached the intended audience. Ship managers also commented that it was unacceptable for software upgrades to come "thick and fast" as it was not possible to train people to keep up. They indicated that a five-year timeframe was acceptable but that a piece of equipment three years old and not fit for purpose was not. They also noted that standard display should be appropriate for navigation in all circumstances.

Several ECDIS manufacturers present said that upgrades should be made by the service engineer - even when limited to applying a patch. They would be able to validate that the system was then working properly. Some were in agreement that this was the best solution.

Concerning the status of new fit systems, it was reported that 80 % of systems show all the required underwater obstructions but they do not all necessarily show them in the same way. 20 % do not show some of the underwater obstructions in the standard display mode.

The IHB reported that the IHO website page compiling OEM maintenance support information was under construction. It was noted that the response rate from OEMs had been poor so far.

It was agreed that the best option forward was for an IMO Member State or States to make a submission to NAV59 under "Any other business" remembering that any substantive decision would then go to the wider membership at MSC. As discussed at the earlier IMO/CIRM meeting, IMO Member States need to be approached on an individual basis to seek support.

Noting that ENC's are not certified, work is underway through the revision of S-64 to devise checks to ensure that all ENC's that are released are fit for use. This may be completed by end of 2013 after review at HSSC5. CIRM will continue to speak on behalf of the manufacturers at HSSC. The S-101 ENC Product Specifications will benefit from this work.

Concerning the use of ECDIS in the Polar Regions, it was reported that some systems might be unable to display ENC data correctly at high latitudes and that further investigation was required. It was noted that there was no particular requirement in the ECDIS Performance Standard concerning projections, nor should there be. It was suggested that the environmental requirements might be looked at as well, since the assumption is that ECDIS must operate globally. Impact on the draft Polar Code should be considered. Other issues related to limited survey coverage and datum

uncertainties were mentioned. It was recalled that mariners are invited to feed information back to the HOs.

The general issue of ENC availability and quality was considered also, noting that HOs need continuing government support to improve the quality of the surveys from which the charts are derived.

Progress in revising the IHO S-64 test data set was reported. It was noted that inputs from OEMs and Type Approval Authorities were welcome to ensure a robust solution. It was indicated that the new edition will not be out as expected in 2012 but probably in 2013.

As regards the Presentation Library, concerns were expressed on whether there was a compelling need for the new edition now in preparation and whether it would be compatible with existing systems. It was explained that the amendments were addressing Presentation Library issues and not chart correction issues. For the most part, they related to new symbols and clarifying rules on the way the symbols appear on the screen and when. The impact on alarm management was discussed also, noting that far too many alarms were causing distraction and taking attention away from watchkeeping. The new edition of the Presentation Library will take into account the IMO code on alerts and indicators. There appeared to be general agreement that this new edition would be useful and contribute to improving safety of navigation. It was noted that there should be reasonable notice ahead of the date of implementation.

Further consideration was given on display requirements. It appeared that there was a consensus in favour of eliminating the notion of “base display” and defining a revised “standard display” based on the existing standard display complemented with soundings, main feature names, chart boundaries and additional conditional display such as cables and pipelines when the depth allows for emergency anchoring. In practice it was felt that the end-user must have flexibility beyond a standard display and that he should be able to store or lock whatever configuration he has selected.

As regards alarms, it was noted that existing alarms are satisfactory for oceanic passage but become more an issue than a help when the ship moves into a pilotage area. Some preference was expressed in favour of conditional alarms which could be configured as part of the voyage planning. Another requirement that the feature which generates an alarm should be easily identified (i.e. flashing mode?) was mentioned. The view that HOs were overusing “caution areas” was also expressed. It was suggested that alarm functionality could be password protected and some agreed that was what was needed. If mariners want no alarm and to switch them on when they want, i.e. when entering or leaving a port, the manufacturers can configure that. There could be a permanent indication on the screen so alarms can clearly be seen to be set or not.

On the matter of training, some thought that type specific training was an impractical solution and that the generic IMO model course was adequate. Thereafter type specific equipment training should be the responsibility of the shipping company. This should apply to all other equipment as well. The need for further IMO guidance on the certification of familiarisation training was mentioned.

The new NAV work item on consolidating ECDIS related IMO circulars was discussed, based on input from the delegate from the Australian maritime administration. It was supported to aim at presenting a draft of proposals at NAV59 for finalising at NAV60 and then submission to MSC for approval in late 2014. Two options were considered: merge the existing ECDIS circulars or relevant extracts of non-specific circulars in a single text or prepare a covering circular which would simply list the existing circulars and outline their contents so that the cross-references in various documents would not need revision. The meeting recommended elaborating a draft IMO Circular which should consolidate and explain all relevant texts, in their present state rather than introducing significant changes or new requirements. The Circular should be structured for a complex multiple readership, i.e. Flag States, Coastal States, Port States, mariners and ship operating companies. Australia indicated that it would lead the preparation of a submission for NAV59 in liaison with all interested

parties. The intention was to submit an information paper to STW44 first, for consideration of the training aspects.

As regards the other new NAV work item on SOLAS V/27 footnote, ICS reiterated its concern that footnotes could introduce uncontrolled constraints. The IMO Secretariat explained that footnotes should be short (no more than 3 lines and in all cases not longer than the text they refer to). If further developments would appear necessary, they should be provided through a circular to which the footnote could refer.

Views on the need for developing guidance to Port States and/or Flag States on implementing IMO instruments were exchanged. Australia shared its practice, explaining when and how ships would be retained at ports, when not compliant. Some thought that developing guidance would be helpful but others thought the subject was outside the remit of this group. However it was agreed that implementation was a substantive issue.

In relation with ECDIS carriage requirement, some concern was expressed that all existing ENC's were not universally available. It was suggested that any difficulty should be reported to Administrations and onward to IMO through a submission to NAV.

The meeting discussed whether further work was required to address legacy systems. Some participants saw a potential contradiction between SN.1/Circ.266 which requires all ECDIS to be updated to the latest version of the IHO Standards and article 4 of SOLAS regulation V/18 which stipulates that "... (ECDIS systems) shall conform to the relevant performance standards not inferior to those adopted by the Organization in effect on the date of installation, or, for systems installed before 1 January 1999, not inferior to the performance standards adopted by the Organization on 23 November 1995." However, it was reminded that article 4.1 of the 1995 edition of the ECDIS Performance Standards stipulates that "*The chart information to be used in ECDIS should be the latest edition of information originated by a government-authorized hydrographic office, and conform to IHO standards*". This was understood by the participants to mean that the ECDIS software must conform to the latest edition of the IHO Standards in order that the ENC data used in an ECDIS would also conform - especially for such things as S-52 and S-63. It was agreed that this should be reflected when revising the footnote to SOLAS regulation V/27. It was also agreed that there was a need to have a check data set that allow the mariner to check that his ECDIS is up to date. Seafarer representatives noted that this is a contentious issue from a Port State Control perspective and they would welcome an easy to use IHO "proof" of "uptodateness".

The question was raised whether the provision of the IHO check data set was sufficient or whether it should be considered in conjunction with some type of annual inspection. Various ideas were considered on what should be checked and who should carry out the check. It was pointed out that other instruments, such as the EU Directive on Marine Equipment, set specific requirements that should be met by OEMs. Although some participants viewed ECDIS as a/the critical equipment requiring annual check, it appeared that there was not sufficient support to submit a paper to NAV about annual inspection.

Testing procedures were discussed. It was suggested that the IHO could draw on the example of how INMARSAT is involved in the testing procedures of satellite communication equipment. The relative merits of witness testing and in house testing were considered. The meeting did not identify any need to review testing procedures and recommended that the IHO should continue improving S-64 (and S-58) and endeavour solving the "grey" issues in practical terms.

IEC expressed a concern about how S101 was to be introduced and stressed the need to have a comprehensive testing of the complete system involving all stakeholders, including HOs and manufacturers. There was huge expectation and responsibility on IHO, not just for S-101 but for S-100 in general.

The UKHO pointed out that recent feedback had shown potential for mariners to be confused on whether their ENC's are up to date or not. Different systems have different ways of displaying update status and experience seems to indicate that warnings might be misunderstood or ignored. It was felt that there was a need to provide an easy way to access information on update status such as "single press the button report" for the mariner as well as for Port State Control purposes. Noting that the OEMs would welcome guidance in terms of what they need to present to the mariner for this, the meeting invited the IHO to investigate further this issue.

In conclusion, it was agreed that the meeting had been informative for all participants and that on-going actions will benefit from the various inputs and discussions. The fact that the meeting had not discovered another standard to look at or organize was noted as a sign of progress. Although work remains to be done, it was emphasized that ECDIS was considered over all as a powerful tool on the bridge.