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MARITIME SAFETY COMMITTEE
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WORK PROGRAMME

**Proposal to consider permitting ships to use the Raster Chart Display System (RCDS)
mode of ECDIS, without the requirement to carry paper charts**

Submitted by Australia

SUMMARY

<i>Executive summary:</i>	In order to promote the greater use of ECDIS, in accordance with Resolution A...(23) on the Provision of Hydrographic Services, the proposed work item seeks to permit ships to operate ECDIS in the RCDS mode without the need to carry paper charts. This is facilitated due to advances in technology since the ECDIS Performance Standards were approved by means of Resolution A. 817 (19), as amended by MSC 86(70).
<i>Action to be taken:</i>	Paragraph 7
<i>Related documents:</i>	Resolution A.817 (19), Resolution MSC 86 (70) and S/N Circ 207

Introduction

1 Resolution .. (23) Provision of Hydrographic Services, approved at the recent 23rd Assembly is in Australia's view a timely and relevant resolution which, inter alia, invites Governments, in addition to the existing obligations contained in SOLAS regulation V/9 to "promote, through their national maritime administrations, the use of Electronic Chart Display and information Systems (ECDIS) together with the use and further production of official Electronic Navigational Charts (ENCs)."

2 ECDIS is a powerful navigational aid and a valuable information source on the ship's bridge. However, although SOLAS provides for the carriage of ECDIS as an equivalent to a paper chart since July 2002, the uptake of the technology has not been as rapid as anticipated. Port State control inspections during the period indicate that very few of the ships calling at Australian ports are fitted with ECDIS. Further, there is no indication that there will be a rapid increase in its uptake in the short term.

3 Australia's PSC surveyors and coastal pilots have noted that, of the few ships that are fitted with ECDIS, the majority continue to carry a full folio of paper charts. There appears

to be two main reasons for doing this; a) the requirement for paper charts to be carried when ECDIS is used in the RCDS mode and b) as a simple, practical option that legally meets the backup arrangements for ECDIS (in the absence of consistent guidelines on backup arrangements across different maritime jurisdictions).

4 There appears to be varied interpretation of the relevant Resolutions by flag and port States. Two areas of the Performance Standard need clearer guidance to be issued by national administrations:

- a. back-up arrangements in the event of a failure of the ECDIS unit (interpretation of Appendix 6 of Res A.817 (19), as amended by MSC 86(70)) and
- b. the recommendation in Appendix 7 of the same Resolution, section 1.2 that *“When operating in the RCDS mode, ECDIS equipment should be used together with an appropriate folio of up to date paper charts”*.

It is Australia’s view that shipowners and operators appear to be delaying installing ECDIS on board their ships until they have clearer guidance. It also appears that, for the majority of shipowners, there is little incentive to fit ECDIS if it is interpreted that they must effectively carry, maintain, and use paper charts in conjunction with ECDIS.

5 The current Resolution, which the IHO was actively involved in drafting, with its references to back-up arrangements and the requirement to carry an ‘appropriate folio of up-to-date paper charts’ (when using ECDIS in the RCDS mode), is now considered to be a significant impediment to the practical uptake of ECDIS. Resolution A...(23) was initiated by IHO, which indicates their intention to promote the greater use of ECDIS as much as possible.

6 Australia is of the view that there will be a marked improvement in the safety of navigation and hence the protection of the marine environment, if there is widespread adoption of ECDIS as soon as possible. There have been considerable advances in technology in relation to ENC’s since the original performance standards were adopted by the Organization in Res. A. 817(19) as amended later by the MSC in Res. 86 (70). The relevant references related to ECDIS should be amended to state that the carriage of paper charts is not necessary so long as ships are fitted with type approved ECDIS and with suitable back-up arrangements that can operate with either conforming electronic or raster charts, as appropriate. Paper charts can remain as an acceptable option in any back-up arrangements. More detail on the contemporary operational abilities of raster charts is at annex.

Action requested of the Committee

7 The Committee is invited to consider the above and add this to the work programme of the Sub-Committee on the Safety of Navigation, for consideration as a high priority item.

ANNEX**PROPOSED WORK PROGRAMME ITEM****AMENDMENT TO APPENDIX 7 OF IMO RESOLUTION A.817 (19), TO PERMIT THE USE OF ECDIS IN THE RCDS MODE, WITHOUT THE REQUIREMENT TO CARRY PAPER CHARTS.****Scope of the proposal;**

Approval of amendments to Appendix 7 of IMO Resolution A.817 (19). The basis of this proposal is outlined in paragraphs 1-5 of the covering paper to this Annex.

Need or compelling need;

The anticipated uptake of ECDIS is not meeting expectations. Action is required to encourage mariners and ship operators to use ECDIS more widely and as a viable, at least as effective, alternative to paper charts in order to obtain the benefits of the technology. In Australia's view:

1. The use of raster charts in ECDIS is at least as effective as using equivalent paper charts. However, there are currently significant disincentives to the practical use of raster charts in ECDIS.
2. The widespread availability of zoom-in / zoom-out and chart switching capabilities in commercially available "dual-fuel" ECDIS provides an adequate look-ahead and route planning capability. Prior to the adoption of the RCDS mode of operation, limited look-ahead was a perceived limitation and formed the primary reason for including a paper chart carriage requirement. Australia is of the view that the perceived look-ahead limitation of Raster Navigational Charts (RNC's) has not been borne out in reality.
3. By comparison with paper charts, raster charts (like ENCs) are very easy to keep up-to-date and accurate. Application of Notices to Mariners to raster charts is simple, time efficient, and error-free. The use of up to date RNCs rather than paper charts must result in a significant and immediate improvement in the maintenance of charts on board ships.
4. The "appropriate folio of up-to-date paper charts" specified in Appendix 7 of Res A.817 (19) has proved to be difficult to define and implement uniformly. The requirements imposed by national maritime authorities in this regard have varied widely, which has lead to confusion and possible reluctance towards the adoption of ECDIS as a means of navigation.
5. Some national maritime administrations, for example in Australia, the United Kingdom and The Netherlands have advised the Organization that they permit vessels in their waters to use ECDIS in the RCDS mode without the requirement to carry paper charts, provided a safety case (risk assessment) is presented to them. There is no evidence to suggest that this approach has contributed in any way to navigation incidents. On the contrary, it is more likely that this has reduced workloads, improved situational awareness and generally contributed to safer navigation.

6. The limited coverage of ENC's is well known. Despite renewed efforts by the IHO and individual hydrographic offices to improve the rate of global ENC production, full ENC coverage is still some way off. For example, in Australia (as in many other parts of the world, particularly outside the European and North American regions), a number of existing charts are not in metric units, or are not of sufficient quality to convert into ENCs. Nevertheless, these same charts can, and have in the majority of cases, already been published as official RNCs, sanctioned by the relevant national authorities for use in ECDIS and are being used successfully in electronic chart navigation.
7. Another concern regarding the use of ECDIS in the RCDS mode was the effect of image degradation when displays are 'over zoomed'. There are two points to note:
 - a. warnings are generated by ECDIS to indicate that zoom limits have been exceeded and hence mariners can manage the problem.
 - b. most ENC's are based on equivalent paper charts and hence the ENC, due to its original usage code, is not able to be used at scales larger than the corresponding paper or raster chart.
8. More widespread use of RNCs and the RCDS mode of operation will have no impact on the rate of production of ENCs - in fact it should encourage the production of ENCs because there will be more ECDIS' in use and therefore more potential customers.

Analysis of the issues involved, having regard to both the costs to the maritime industry, as well as the associated legislative and administrative burdens, at a global level;

While there are costs involved in installation, the amendments to Appendix 7 will offer an incentive to ship-owners to implement ECDIS, which was the original objective of the Resolution. There are benefits to be gained, by way of improved safety of navigation and the consequential improvements in the level of environmental protection.

There are no legislative burdens – customary promulgation of the amendments to Appendix 7, will suffice.

The administrative burden for national maritime administrations and ship owners will be reduced, as there will be a consistent application of the recommendations of the Organization on the use of ECDIS.

Benefits which would accrue from the proposal;

Widespread uptake of ECDIS, followed by a commensurate improvement in the safety of navigation and protection of the environment.

Priority and target completion date;

This proposal should be deemed high priority. It is envisaged that this will be forwarded to the forthcoming 50th Session of NAV in July 2004, for initial consideration, with a completion date of 2005 to enable the amendments to be adopted by the Committee as soon as possible .

Specific indication of the action required including draft texts of the proposed requirements, if possible.

Resolution A. 817 (19), as amended by MSC 86(70). Appendix 7:

Remove reference to para 1.2

“1.2 When operating in the RCDS mode, ECDIS equipment should be used together with an appropriate folio of up-to-date paper charts.”

Remarks on the criteria for general acceptance, as provided in Appendix 1 to the Guidelines:

Is the subject of the proposal within the scope of IMO’s objectives?

Yes

Do adequate industry standards exist?

Yes. IMO Resolution A.817 (19) as amended incorporates the various IHO Standards for data and display. No new standards are required.

Do the benefits justify the proposed action?

Yes. ECDIS is widely acknowledged as a very positive step to improving the safety of navigation and the protection of the marine environment. This proposal will encourage the increasing use of ECDIS.

Identification of which committee/subsidiary body(ies) are essential to complete the work: Estimation of the number of sessions needed to complete the work.

Two sessions of Sub Committee on Safety of Navigation (NAV)
