ASSEMBLY
19th session
Agenda item 10

RESOLUTION A.817(19)
adopted on 23 November 1995

**PERFORMANCE STANDARDS FOR ELECTRONIC CHART DISPLAY AND
INFORMATION SYSTEMS (ECDIS)**

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

RECALLING ALSO regulation V/20 of the International Convention for the Safety of Life at Sea (SOLAS), 1974, which requires all ships to carry adequate and up-to-date charts, sailing directions, lists of lights, notices to mariners, tide tables and all other nautical publications necessary for the intended voyage,

NOTING that the up-to-date charts required by SOLAS regulation V/20 can be provided and displayed electronically on board ships by electronic chart display and information systems (ECDIS), and that the other nautical publications required by regulation V/20 may also be so provided and displayed,

RECOGNIZING the need to prepare performance standards for ECDIS in order to ensure the operational reliability of such equipment, and to ensure that the information provided and displayed electronically is at least equivalent to that of up-to-date charts and, when also provided and displayed, other nautical publications, and to avoid, as far as practicable, adverse interaction between ECDIS and other shipborne navigational and communication equipment,

NOTING FURTHER that the International Hydrographic Organization (IHO) has, in co-operation with IMO, developed complementary recommendations on electronic navigational charts, thereby standardizing the database and the content, structure and format of the information provided and displayed,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its sixty-third session,

1.   ADOPTS the Recommendation on Performance Standards for Electronic Chart Display and Information Systems (ECDIS) set out in the Annex to the present resolution;

2.   RECOMMENDS Governments to ensure that ECDIS used on ships entitled to fly their flag conform to performance standards not inferior to those set out in the Annex to the present resolution;

3.   REQUESTS the Maritime Safety Committee to keep these Performance Standards under review and to adopt amendments thereto, as necessary;

4.   ALSO REQUESTS the Maritime Safety Committee to ensure that any proposed amendments to this resolution are agreed with IHO prior to adoption.

ANNEX

**PERFORMANCE STANDARDS FOR ELECTRONIC CHART DISPLAY AND
INFORMATION SYSTEMS (ECDIS)**

1   INTRODUCTION

1.1   The primary function of the ECDIS is to contribute to safe navigation.

1.2   ECDIS, with adequate back-up arrangements, may be accepted as complying with the up-to-date charts required by regulation V/20 of the 1974 SOLAS Convention.

1.3   In addition to the general requirements for shipborne radio equipment forming part of the global maritime distress and safety system (GMDSS) and the requirements for electronic navigational aids contained in IMO resolution A.694(17)[*], ECDIS should meet the requirements of this performance standard.

1.4   ECDIS should be capable of displaying all chart information necessary for safe and efficient navigation originated by, and distributed on the authority of, government-authorized hydrographic offices.

1.5   ECDIS should facilitate simple and reliable updating of the electronic navigational chart.

1.6   Use of ECDIS should reduce the navigational workload as compared to use of a paper chart. It should enable the mariner to execute in a convenient and timely manner all route planning, route monitoring and positioning currently performed on paper charts. It should be capable of continuously plotting the ship's position.

1.7   ECDIS should have at least the same reliability and availability of presentation as the paper chart published by government-authorized hydrographic offices.

1.8   ECDIS should provide appropriate alarms or indications with respect to the information displayed or malfunction of the equipment (see Appendix 5).

2   DEFINITIONS

For the purpose of these performance standards:

2.1   Electronic chart display and information system (ECDIS) means a navigation information system which, with adequate back-up arrangements, can be accepted as complying with the up-to-date chart required by regulation V/20 of the 1974 SOLAS Convention, by displaying selected information from a system electronic navigational chart (SENC) with positional information from navigation sensors to assist the mariner in route planning and route monitoring, and by displaying additional navigation-related information if required.

[*]IEC Publication 945 (see Appendix 1).

2.2   Electronic navigational chart (ENC) means the database, standardized as to content, structure and format, issued for use with ECDIS on the authority of government-authorized hydrographic offices. The ENC contains all the chart information necessary for safe navigation, and may contain supplementary information in addition to that contained in the paper chart (e.g. sailing directions) which may be considered necessary for safe navigation.

2.3   System electronic navigational chart (SENC) means a database resulting from the transformation of the ENC by ECDIS for appropriate use, updates to the ENC by appropriate means, and other data added by the mariner. It is this database that is actually accessed by ECDIS for the display generation and other navigational functions, and is the equivalent to an up-to-date paper chart. The SENC may also contain information from other sources.

2.4   Standard display means the SENC information that should be shown when a chart is first displayed on ECDIS. The level of the information it provides for route planning or route monitoring may be modified by the mariner according to the mariner's needs.

2.5   Display base means the level of SENC information which cannot be removed from the display, consisting of information which is required at all times in all geographical areas and all circumstances. It is not intended to be sufficient for safe navigation.

2.6   Further information on ECDIS definitions may be found in IHO Special Publication S-52, Appendix 3 (see Appendix 1).

3   DISPLAY OF SENC INFORMATION

3.1   ECDIS should be capable of displaying all SENC information.

3.2   SENC information available for display during route planning and route monitoring should be subdivided into three categories, display base, standard display, and all other information (see Appendix 2).

3.3   ECDIS should present the standard display at any time by a single operator action.

3.4   When a chart is first displayed on ECDIS, it should provide the standard display at the largest scale available in the SENC for the displayed area.

3.5   It should be easy to add or remove information from the ECDIS display. It should not be possible to remove information contained in the display base.

3.6   It should be possible for the mariner to select a safety contour from the depth contours provided by the SENC. ECDIS should give the safety contour more emphasis than other contours on the display.

3.7   It should be possible for the mariner to select a safety depth. ECDIS should emphasize soundings equal to or less than the safety depth whenever spot soundings are selected for display.

3.8   The ENC and all updates to it should be displayed without any degradation of their information content.

3.9   ECDIS should provide a means of ensuring that the ENC and all updates to it have been correctly loaded into the SENC.

3.10   The ENC data and updates to it should be clearly distinguishable from other displayed information, such as, for example, that listed in Appendix 3.

4   PROVISION AND UPDATING[*] OF CHART INFORMATION

4.1   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.

4.2   The contents of the SENC should be adequate and up-to-date for the intended voyage, as required by regulation V/20 of the 1974 SOLAS Convention.

4.3   It should not be possible to alter the contents of the ENC.

4.4   Updates should be stored separately from the ENC.

4.5   ECDIS should be capable of accepting official updates to the ENC data provided in conformity with IHO standards. These updates should be automatically applied to the SENC. By whatever means updates are received, the implementation procedure should not interfere with the display in use.

4.6   ECDIS should also be capable of accepting updates to the ENC data entered manually with simple means for verification prior to the final acceptance of the data. They should be distinguishable on the display from ENC information and its official updates, and not affect display legibility.

4.7   ECDIS should keep a record of updates, including time of application to the SENC.

4.8   ECDIS should allow the mariner to display updates so that the mariner may review their contents and ascertain that they have been included in the SENC.

5   SCALE

ECDIS should provide an indication of whether:

.1   the information is displayed at a larger scale than that contained in the ENC; or

.2   own ship's position is covered by an ENC at a larger scale than that provided by the display.

6   DISPLAY OF OTHER NAVIGATIONAL INFORMATION

6.1   Radar information or other navigational information may be added to the ECDIS display. However, it should not degrade the SENC information, and should be clearly distinguishable from the SENC information.

6.2   ECDIS and added navigational information should use a common reference system. If this is not the case, an indication should be provided.

6.3   Radar

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[*]Appendix 1 to IHO Special Publication S-52 (see Appendix 1).

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