

DEVELOPMENT OF CARRIAGE REQUIREMENTS FOR ECDIS

Proposal to amend Regulation 19 of SOLAS Chapter V

Submitted by United Kingdom

SUMMARY

<i>Executive summary:</i>	This document contains a proposal by the United Kingdom to amend Regulation 19 of SOLAS Chapter V to implement a carriage requirement for Electronic Chart Display and Information Systems (ECDIS)
<i>Strategic direction:</i>	5.2 – Enhancing technical, operational and safety management standards
<i>High-level action:</i>	5.2.4 – Keep under review measures to improve navigational safety, including e-Navigation, ships' routing systems, ship reporting systems, vessel traffic services, requirements and standards for shipborne navigational aids and systems
<i>Planned output:</i>	5.2.4.1 – Development of carriage requirements for ECDIS
<i>Action to be taken:</i>	Paragraph 21
<i>Related documents:</i>	NAV 51/10, MSC 81/23/13, MSC 81/24/5, MSC 81/INF.9, NAV 53/14, NAV 53/INF.3, NAV 53/14/1, Circular Letter No. 2831, Resolution A.989(25), Resolution A.990(25)

Introduction

1. At NAV 53 the Chairman of the Sub-Committee, in summing up the debate on the development of carriage requirements for Electronic Chart Display and Information Systems (ECDIS), invited Member States and observers to submit input of value to enable the Sub-Committee to further consider the matter and take a professional, well-informed and balanced decision at NAV 54.

2. The United Kingdom (UK) has been a long-standing supporter of the potential for ECDIS as an efficient and cost-effective risk control measure for safe navigation. At the same time, the UK readily acknowledges that there have been several justifiable concerns by certain Member States which have, to date, prevented the full potential of ECDIS from being realised. Considerable progress has been made to address these concerns since NAV53 and the UK firmly believes that there is now ample

justification for a mandatory carriage requirement for ECDIS on classes of vessel additional to High Speed Craft (HSC).

3. The UK, therefore, proposes an amendment to Regulation 19 of SOLAS Chapter V that would mandate ECDIS on passenger and cargo ships, including tankers, of various sizes in accordance with the timetable set out in Annex I.

Background

4. The development of carriage requirements for ECDIS was first endorsed by the Maritime Safety Committee at MSC 81, in May 2006, following consideration of an ECDIS Formal Safety Assessment (FSA) submitted in support of a paper from Denmark and Norway (MSC 81/23/13). The FSA showed clear evidence of the safety benefits of ECDIS for a range of vessel types other than passenger ships and High Speed Craft. The Committee included a high priority item in the NAV Sub-Committee's work programme with a target completion date of 2008 and also instructed NAV 52 (July 2006) to give preliminary consideration to the matter.

5. At NAV 52, the Sub-Committee discussed at length the matter of developing an ECDIS carriage requirement, during which a report by Japan on the cost effectiveness of installation of ECDIS on cargo ships received considerable support. In summing up, the Chairman felt, nonetheless, that a majority of delegates held the view that Electronic Navigational Chart (ENC) coverage was a necessary prerequisite for the introduction of a mandatory ECDIS carriage requirement. This, according to the delegations of some Member States, did not necessarily mean 100% coverage.

6. Discussions on the development of an ECDIS carriage requirement continued at NAV 53, in July 2007. These were based around input papers from Denmark, Finland, Norway and Sweden (NAV 53/14 and NAV 53/INF.3) and Japan (NAV 53/14/1). The former proposed draft amendments to Regulation 19 of SOLAS Chapter V, using a comprehensive report which they commissioned on the effect of ENC coverage on ECDIS risk reduction, as supporting evidence. Likewise the Japanese paper also proposed an amendment to Regulation 19 to implement an ECDIS carriage requirement.

7. The debate at NAV 53 was extensive and concerns by various delegations for opposing ECDIS carriage requirements included:

- € Justifying the necessity, feasibility and cost-effectiveness of such carriage requirements;
- € Mandating ECDIS unnecessarily on ship types and trades where safe navigation using paper charts was already well proven;
- € Inadequate ENC coverage to facilitate global trade;
- € Impact of ECDIS mandatory carriage on developing countries, small island developing States and Least Developed Countries;
- € Issues relating to the human element and training aspects.

8. In assessing some of the merits that the carriage of ECDIS would bring, the Russian Federation informed the Sub-Committee on a study it had undertaken to measure the stress levels of users navigating with and without ECDIS. Preliminary

analysis suggested that the use of ECDIS resulted in a lessening of stress in the bridge team, as shown by a reduction in a user's pulse rate by some 10-12%.

Addressing the Concerns

9. As far back as June 2005, Norway argued in favour of an ECDIS carriage requirement on the basis of a study it had undertaken on the navigation safety of large passenger ships. This study provided compelling evidence that ECDIS was a cost-effective risk control option on these vessels due to the potential to avert multiple fatalities to passengers and crew in the event of an accident. However it also indicated there was potential benefit for other vessel classes in the fitting of ECDIS.

10. The FSA presented to MSC 81, referred to in paragraph 4 above, investigated these potential benefits and looked at the cost-effectiveness of ECDIS on a variety of ship types. This study concluded that it was cost-effective to fit ECDIS on a wide range of vessels primarily due to the reduction in risk of a grounding incident and consequential environmental damage.

11. The evidence gathered in these and other studies show that ECDIS can significantly reduce the risk of grounding and, therefore, from a safety of navigation perspective, there is a sound basis to implement a phased ECDIS carriage requirement for a range of vessel types. Norway and other Member States have also indicated that they believe that a carriage requirement for ECDIS would have additional beneficial effects by providing certainty and clear direction to mariners, equipment manufacturers and Hydrographic Offices; thus giving an impetus to accelerate the use of and support for ECDIS, including completing the ENC production task.

12. Whilst there was some debate at NAV 53 on the adequacy of the studies conducted to date, most informed observers will, nonetheless, admit that a properly trained mariner using ECDIS with good quality ENCs is significantly less likely to have a navigational accident which could result in loss of life and/or damage to the marine environment. The mariner's ability to preserve real-time situational awareness when operating in navigationally-challenging areas whilst, for example, manoeuvring to avoid a collision with other vessels in close proximity, is much easier to achieve using ECDIS and its warning capabilities in association with automatic position-fixing systems. Intelligent integration of the radar image and AIS information with the ECDIS display brings further practical benefits to facilitate safe navigation and bridge watch-keeping. ECDIS also provides significant efficiencies in voyage planning, execution and monitoring, additionally the update of the ENC database can be implemented in a fraction of the time which the navigator devotes to paper chart corrections. In these respects the ECDIS carriage requirement is being driven by the needs of the end user to navigate safely and efficiently rather than by the fact that the technology exists and a need for it is being sought.

13. The safety studies referred to above assumed that comprehensive ENC coverage existed in the areas where the ECDIS-equipped vessels were operating. The UK has always recognised that the availability of seamless and consistent ENC coverage of major routes and ports, at a reasonable cost, is fundamental for the implementation of any ECDIS carriage requirement. Lack of adequate ENC coverage has in the past been correctly identified as a barrier to further ECDIS adoption. However the

International Hydrographic Organization (IHO) reported at NAV 53 that the number of ENC's was increasing rapidly and that at the IHO Conference, in May 2007, a Resolution had been passed which exhorted IHO members to deliver "adequate coverage, availability, consistency and quality of ENC's by 2010".

14. In October 2007 an extraordinary meeting of the IHO Worldwide Electronic Navigational Chart Database (WEND) Committee was convened to specifically deal with these matters. In associated meetings the UK outlined proposals to assist IHO in meeting its objectives to ensure that adequate ENC coverage (defined by the IHO as that required to cover the top 800 ports worldwide and the routes between them) would be available in advance of 2010. The UK considers that significant progress has been made over the last year in addressing the issues raised at NAV 53; though, in the light of operational experience of providing an integrated ENC service, it recognizes that further work is required to resolve all of these. Safety of navigation is acknowledged as the primary aim of all IHO Member States and the UK, in particular, is working within the IHO framework to ensure that mariners have access to ENC's and services of at least the same level of quality and content as that available with the paper charts they have traditionally used. Given the IHO's clear intent to act in the interests of the mariner to resolve the remaining issues, the UK is confident that adequate ENC coverage of appropriate quality can be made available in advance of 2010.

15. The impact of mandating ECDIS on developing countries needs to be considered not only in terms of the effect on their merchant fleets and mariners but also in terms of the resources necessary to produce ENC's of their national waters. In regard to the former concern, the UK proposal mitigates the problem by excluding smaller vessels that are associated with national trade and which are of lesser risk from the proposed carriage requirement. With regard to the provision of hydrographic services and ENC's, considerable work is being done by the IHO's Capacity Building Committee, Regional Hydrographic Commissions and individual Hydrographic Offices to further develop coastal state charting capability. In addition, as an interim measure, the UK, along with other nations, is undertaking the provision of ENC's for countries where hydrographic and cartographic capabilities are currently limited. Technical assistance will continue to be provided to these nations with the expectation that in the future each coastal state will be responsible for the provision of ENC's (either directly or through agreement with others) as envisaged under SOLAS V Regulation 9.

16. Human element and training issues are currently being addressed by the STW Sub-Committee which was instructed by MSC, in May 2006, to consider the proposal originally put forward by Denmark and Norway (MSC 81/23/13) for the development of an ECDIS carriage requirement, in the context of a new work item to comprehensively review the STCW Convention and STCW Code. At its 39th Session in March 2008, the STW Sub-Committee gave initial consideration and agreement to several ECDIS related amendments to the STCW Convention and STCW Code proposed by Australia (STW 39/7/38). These amendments are being further developed and, in the light of any proposal made by NAV 54 on an ECDIS carriage requirement, will be further considered at an inter-sessional meeting of an STW working group in September 2008.

e-Navigation

17. MSC 81 tasked the NAV and COMSAR Sub-Committees to take forward as a high priority work item, with a completion date of 2008, the “Development of an e-Navigation strategy”. The IMO Correspondence Group set up to take this work item forward identified the key strategic elements of e-Navigation and recognised ECDIS and ENC’s to be foundation stones underpinning the concept. The major future role of ECDIS within e-Navigation is generally accepted and this is an additional factor, in the consideration of a mandatory carriage requirement at this time. UK believes that ECDIS has an important role to play in increasing safety of navigation now and given that sensible transition arrangements will have to be made for a range of legacy systems in the development of any e-Navigation implementation strategy does not consider that this work should impede an early agreement on an ECDIS carriage requirement.

UK Proposal

18. The UK, in considering all of the foregoing, and taking account of proposals of a similar nature submitted to NAV 53 by Denmark, Finland, Norway and Sweden (NAV 53/14) and by Japan (NAV 53/14/1), believes that ECDIS should only be mandated on those vessel types and sizes where the risks of fatalities to passengers and crew or damage to the marine environment are greatest and therefore the benefits of fitting ECDIS are maximised. As well, the UK considers that an implementation plan spanning several years is necessary to ensure a smooth transition for the mariner from paper based to electronic navigation. The start date and phase in period(s) proposed are, *inter alia*, to allow sufficient time to enable the maritime education and training establishments to develop and deliver good quality, cost effective, training solutions and to ensure marine equipment manufacturers and their service agents, are able to meet the increased demand for shipboard installations of ECDIS.

19. Based upon the above, the UK is proposing that, in general, ECDIS should be made mandatory for:

- € all passenger ships of 500 gross tonnage and upwards;
- € all tankers of 3,000 gross tonnage and upwards;
- € all cargo ships, other than tankers, of 10,000 gross tonnage and upwards.

20. Draft amendments to Regulation 19 of SOLAS Chapter V that reflect the UK proposals are contained in Annex I of this document.

Action requested of the Sub-Committee

21. The Sub-Committee is requested to consider the proposed amendments set out in the Annex and take such action as deemed appropriate.

**PROPOSED AMENDMENTS TO THE INTERNATIONAL CONVENTION
FOR THE SAFETY OF LIFE AT SEA, 1974, AS AMENDED**

CHAPTER V

SAFETY OF NAVIGATION

Regulation 19

Carriage requirements for shipborne navigational systems and equipment

1. Add new paragraph x.x as follows:
 - x.x Ships engaged on international voyages shall be fitted with an Electronic Chart Display and Information System (ECDIS) as follows:
 - x.x.1 passenger ships of 500 gross tonnage and upwards constructed on or after [1 July 2012];
 - x.x.2 tankers of 3,000 gross tonnage and upwards constructed on or after [1 July 2012];
 - x.x.3 cargo ships, other than tankers, of 10,000 gross tonnage and upwards constructed on or after [1 July 2013];
 - x.x.4 passenger ships of 500 gross tonnage and upwards constructed before [1 July 2012], not later than the first annual renewal survey on or after [1 July 2014];
 - x.x.5 tankers of 3,000 gross tonnage and upwards constructed before [1 July 2012], not later than the first annual survey for the Cargo Ship Safety Equipment Certificate on or after [1 July 2015];
 - x.x.6 cargo ships, other than tankers, of 50,000 gross tonnage and upwards constructed before [1 July 2012], not later than the first annual survey for the Cargo Ship Safety Equipment Certificate on or after [1 July 2016];
 - x.x.7 cargo ships, other than tankers, of 20,000 gross tonnage and upwards but less than 50,000 gross tonnage constructed before [1 July 2012], not later than the first annual survey for the Cargo Ship Safety Equipment Certificate on or after [1 July 2017];
 - x.x.8 cargo ships, other than tankers, of 10,000 gross tonnage and upwards but less than 20,000 gross tonnage constructed before [1 July 2012], not later than the first annual survey for the Cargo Ship Safety Equipment Certificate on or after [1 July 2018];
 - x.x.9 Administrations may exempt tankers of less than 10,000 gross tonnage from the application of the requirements of sub-paragraph .5 and cargo ships of less than 20,000 gross tonnage from the requirements of sub-paragraph .8 when such ships will be taken out of service within [two] years after the implementation date specified in sub-paragraphs .5 and .8 above.
2. Renumber existing paragraph y.y as z.z and a.a as b.b