UK P&I CLUB

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New ECDIS mandatory requirements Part 1: Introduction

Latest SOLAS Convention amendments now clearly include ECDIS within the definition of nautical charts and publications

The background

This introduction to ECDIS is the first in a series of three short articles which attempts to provide a user friendly guide to the mystery surrounding electronic chart display and information systems (ECDIS).

With the amendments to SOLAS Chapter V Regulation 19 governing the statutory introduction of ECDIS now being adopted from the 1 January 2011, the 'ticking time bomb' associated with ECDIS mandating process has now taken on a level of greater urgency with the shipping fraternity ultimately coming to the end of its breath holding exercise.

As with the introduction of previous mandatory requirements to fit equipment such as Radar, VDR or AIS systems onboard commercially operated vessels, many technical managers will now be faced with the task of acquiring full compliance with the ECDIS carriage regulations at the lowest possible capital expenditure.

Although this approach may undoubtedly resolve the short term issues it may be prudent on this occasion to adopt a more proactive approach towards the implementation of ECDIS systems especially when

taking into account that the primary function of ECDIS forms in many ways the foundation and cornerstones upon which safe navigation practices are formed.

With this in mind we now consider the legislation surrounding the mandatory introduction of ECDIS equipment and peer under the veil of technical magic and mystery which has enshrouded this subject over the last decade.

SOLAS Chapter V

The amendments to SOLAS Chapter V Regulation 19 – Carriage Requirements for Shipborne Navigational Systems and Equipment came into effect on 1 January 2011.

The amendments to the SOLAS Convention now clearly include ECDIS systems within the definition of nautical charts and publications with section 2.4 stating that "*An Electronic Chart Display and Information System (ECDIS) is also accepted as meeting the chart carriage requirements of this subparagraph.*"

A new paragraph 2.10 further identifies a requirement for ships engaged on international voyages to be fitted with an ECDIS system under the implementation schedule shown in the chart below.

ECDIS performance standards

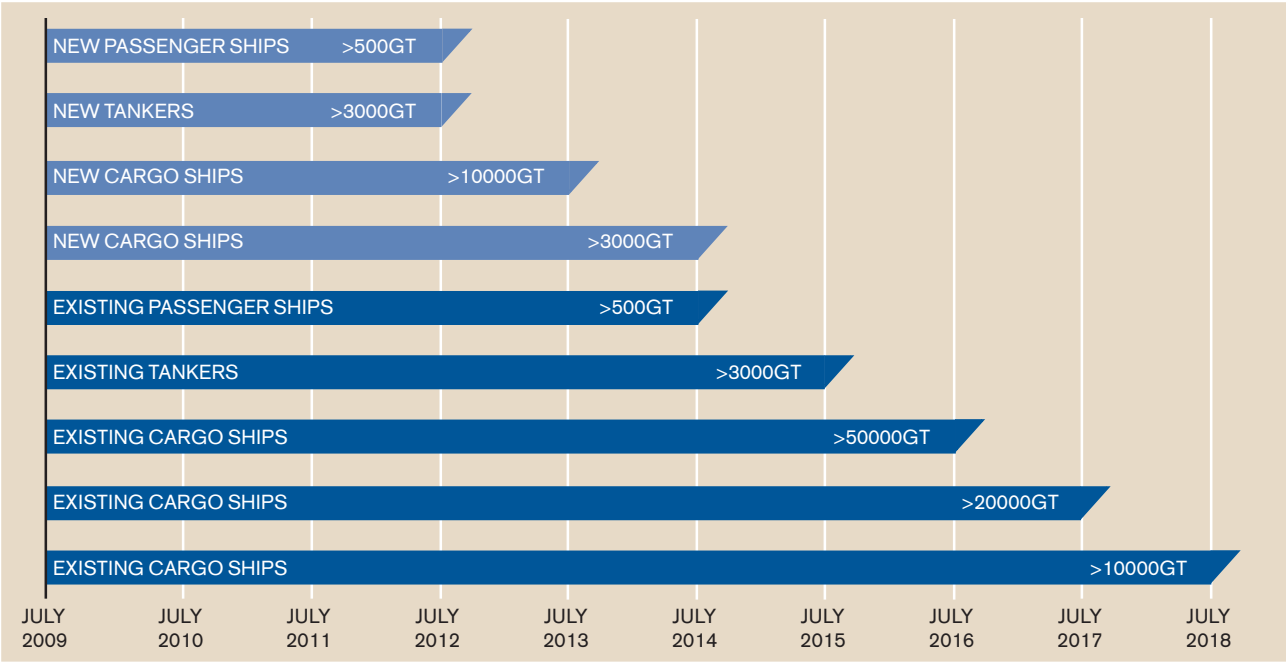
An area which often leads to confusion is the simple question of what makes one system an ECDIS and the other an ECS (Electronic Chart System). The answer to this question is simply that one system complies fully with the IMO ECDIS performance standards and can be accepted as meeting the requirements of SOLAS Chapter V regulation 19 and the other does not. These requirements are identified as follows:

- The ECDIS equipment must be type approved to the performance standards as outlined in IMO Resolution A. 817 (19) as amended by MSC 64(67) & MSC 86(70) relating to back up arrangements for ECDIS systems and operation in RCDS mode.

Illustrations by C Smart

- The system must use official ENC data (Vectorised Electronic Navigational Charts) to IHO S57 standard, which must be supplied by or authorised by a National Hydrographic Office. Such ENC data must be corrected weekly.
- The vessel must have an adequate back-up system. This may be another ECDIS system or paper charts.
- IMO has ruled that ECDIS equipment having Raster Chart Display System (RCDS) capability may operate as a primary aid to navigation in the RCDS

ECDIS system implementation schedule



mode. Such charts must also be corrected on a weekly basis.

- When ECDIS equipment is used in RCDS mode, it must be used in conjunction with an appropriate folio of paper charts. The definition of 'appropriate' is to be decided by national administrations.

STCW – Statutory training

Under the provisions of the STCW 95 Code, general training obligations relating to the use of ECDIS exist. This is indicated by Table A-II-1 of the Code where it is stated "*ECDIS systems are considered to be included in the word charts*."

The degree of knowledge and competency concerning the use of charts is explicitly defined within Table A-II-1 as requiring the navigational officer to posses "*a thorough knowledge of and ability to use navigational charts and publications*". He must additionally show "*evidence of skill and ability to prepare for and conduct a passage, including interpretation and applying information from charts*".

The IMO Model Course 1.27 *The Operational Use of Electronic Chart Display and Information System (ECDIS)* is regarded as setting minimum requirements a candidate should have gone through to receive an ECDIS certificate and covers all relevant safety aspects and overall system knowledge expected under a generic ECDIS training course.

An element of confusion has however developed relating to the need for training where an ECDIS system has been fitted but is to be operated as an aid to navigation only. Under the forthcoming Manila amendments to the STCW Code which are scheduled to enter into force on the 1 January 2012, generic and type specific training will be required even if the ECDIS equipment is to be used as an aid to navigation only.

ISM Code

In addition to the generic training identified under the provisions of IMO model course 1.27 type specific training is required where the equipment used during the generic training course differs from that to be actually used onboard.

This requirement is identified under the provisions of section 6.3 & 6.5 of the ISM Code which requires not only effective training but familiarisation of new equipment and regulations with respect to safety and emergency related duties.

Although this requirement may be viewed as a relatively simple task, the wide range of equipment manufacturers in the market may present a daunting proposition for the ship operator with a diverse fleet

equipped with several models of ECDIS systems operating varying generations of system software.

The position of effective type specific training is further complicated by the various views adopted by different Flag States. An example of this is with reference to Computer Based Training Systems (CBT) which requires Flag State approval on a case by case basis. Additionally a CBT system approved by one Flag State may be rejected by another.

Port State Control

With marine casualty investigators continuing to identify ineffective ECDIS operation and substandard levels of training as a key link in the chain of causation leading to marine incidents, an increased focus on ECDIS has been observed during routine inspections completed by Port State Control officers. The following list highlights key inspection areas which are the subject of particular focus:

- Documentation indicating that the ship's navigation system complies with IMO Performance Standards for ECDIS
- Written procedures on board the vessel for using the ECDIS system
- The master and watch-keeping officers are able to produce appropriate documentation that generic and type-specific ECDIS familiarisation has been undertaken
- The ship is equipped with the latest updates and new editions of ENCs
- The ship is equipped with additional nautical publications, as defined by the national carriage requirements
- There is agreement between sensor data and its presentation on the ECDIS system.

- The ship is equipped with an approved back-up arrangement to ensure safe navigation for the entire voyage, in the event of an ECDIS failure
- The ship is equipped with an appropriate updated collection of paper charts, if the ECDIS system is being used in RCDS mode.

ECDIS acronyms

The use of Acronyms in the Shipping Industry has always been present and part of shipping's fast pace philosophy. However this system of abbreviation does cause great confusion especially between similar acronyms. Examples of these are where care in application and interpretation is needed are:

ECDIS	Electronic Chart Display and Information System
ECS	Electronic Chart System
ENC	Electronic Navigational Chart
RNC	Raster Navigational Chart
RCDS	Raster Chart Display System
IBS	Integrated Bridge System
NACOS	Navigation and Control System

Conclusion

With just a brief introduction into the legislative guidelines relating to ECDIS and its operation it is quite easy to see why this subject is causing so much consternation within the shipping industry.

Continuing our review into ECDIS, the second article (of a series of three) focuses further on the critical change in skill set that is required by the navigational officer when changing from paper to electronic navigation and the requirements of generic and type specific ECDIS training and familiarization.

The STCW 95 Manila amendments relating to ECDIS training will also be discussed with an assessment of possible training needs required to operate ships of the future reviewed as the present technical revolution continues to gain momentum.

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