

# Confidence in ECDIS

A survey of ECDIS users looks at whether training and familiarisation are fit for purpose



**Captain Harry Gale FNI**  
Technical Manager, The Nautical Institute

It is now five years since mandatory carriage of ECDIS began to be phased in. From July 2017, carriage of ECDIS became mandatory for existing cargo ships greater than 20,000gt. From July 2018, existing cargo vessels greater than 10,000gt will become the final type to be mandated to carry ECDIS. It seems appropriate at this time for The Nautical Institute to canvas its members to get feedback on their confidence in navigating with ECDIS so far.

Over 200 people took part in the survey, of which 55% were Masters, 25% Chief/First officers and 20% navigating officers and cadets. Only 12% of those surveyed were under 30 years old.

The survey showed that generic training courses improve the confidence of those using ECDIS equipment. Before undertaking generic training, 50% of respondents felt they were confident or very confident in using ECDIS. After generic training this rose to 82% being confident or very confident.

## Generic course

The generic ECDIS course based on IMO Model Course 1.27 should be a structured course of 40 hours, of which 29 hours are allocated to practice and lectures; eight hours to independent ECDIS navigation and three hours to evaluation. Worryingly, 50% of those surveyed said their course had lasted less than 36 hours, with 7% saying their course comprised 24 hours or less.

On completion of the course, 29% were issued a certificate without any assessment. The other 71% were issued a certificate after a formal assessment. Some courses included daily practical exercises and mid-course theory exams, with final theory and practical exams. Other participants experienced continual assessment during the course with final written and practical exams. Nevertheless there were some comments that the course was a waste of time and money – little generic information given, IMO model course 1.27 not followed at all, easy questions, and questions based only on one type of ECDIS, which the author had not seen since. One person indicated his company had requested the generic course be conducted on one type of ECDIS they had implemented throughout the fleet and so this also acted as type specific familiarisation throughout the course.

On completion of the generic course, 71% then subsequently sailed on vessels with flag-approved ECDIS, and where the policy was for ECDIS to be used as primary means of navigation.

## Familiarisation

54% of those surveyed said that they preferred familiarisation using manufacturer supplied type specific materials, but 16% used on-board handover from other officers and equipment manuals to familiarise themselves.

IMO has published consolidated ECDIS Guidance for good practice in circular MSC.1/Circ.1503. This includes the following on familiarisation:

- Masters and officers certificated under chapter II of the STCW Convention serving on board ships fitted with ECDIS are to be familiarised (in accordance with STCW regulation I/14) with the ship's equipment including ECDIS;
  - STCW Convention regulation I/14, paragraph 1.5, as well as sections 6.3 and 6.5 of the International Safety Management (ISM) Code, require companies to ensure seafarers are provided with familiarisation training. A ship safety management system should include familiarisation with the ECDIS equipment fitted, including its backup arrangements, sensors and related peripherals. ECDIS manufacturers are encouraged to provide training resources including type-specific materials. These resources may form part of the ECDIS familiarisation training;
  - STCW Convention regulation I/14, paragraph 1.4, requires companies to maintain evidence of the training and ensure that it is readily accessible;
  - Companies should also maintain evidence of the familiarisation training in compliance with STCW Convention regulation I/14, paragraph 1.5;
- Administrations should inform their Port State Control Officers of the requirements for ECDIS training as detailed above. In particular, Australia has drawn attention to this requirement in their Marine Notice No 7/2017.

## Navigation Audits

In the survey, 54% said their company conducted regular third party navigation audits, with 78% saying that this improved their confidence in ECDIS. The 22% who did not feel their confidence was improved cited a lack of in-depth knowledge on the part of the auditors and Port State Control (PSC) Officers.

Asked what they would expect to have to demonstrate to third parties (auditors and PSC officers) to show competence and confidence in ECDIS, the majority of those surveyed said passage planning, alarm management, setting safety contours and safety depths, and chart updates were the main items. Some highlighted the list contained in The Nautical Institute led industry familiarisation guidelines ([www.nautinst.org/ECDIS](http://www.nautinst.org/ECDIS)) as examples of what should be demonstrated to show competence.

## Competency

Asked how they viewed the competence of their fellow officers, 70% thought they were very competent or competent. However, 30% thought their fellow officers were less than competent or not competent at all.

One remarked that most officers are not very competent in using ECDIS when they first arrive on board, but competence gradually increases after familiarisation and use. Another noted that most officers have general familiarisation with the approved ECDIS system on

board, but there are many navigating officers who still do not seem to understand that ECDIS is mandatory navigation equipment, and as such, requires proper training and system understanding. Often these officers are not aware of the limitations of ECDIS.

One Master said that competence has only improved through ongoing shipboard supervision and instruction. 'It is my firm opinion that neither generic nor type specific training prepared officers for a safe navigational use of the equipment.'

Most young junior officers are very competent and pick up ECDIS quicker as they are used to the digital world, while the older captains and chief officers are sometimes reluctant to learn anything about computers.

Another respondent said that fellow officers know the basics but are not fully familiar with the programmes. Trickle-down training means learning all the mistakes as well as all the good things and as always, the competence depends more on the attitude of the officer.

One officer noted that on-board familiarisation is useful, and quarterly navigational audit by the Captain is very important to double check officers' competence. Usually officers were competent if they had undergone a manufacturer approved training course with practical exercises before they joined the vessel.

Generic training alone is not enough and there has to be on-board training with a certified external trainer on dedicated ECDIS equipment. If the only familiarisation available to users consists of a company internal worksheet to be completed on board, then they usually do not really understand the system.

### ECDIS failure

Finally, those taking the survey were asked how many different types of ECDIS they had sailed with over the last three years. 15% had sailed with three or more types. Worryingly, 10% had experienced five or more failures of their ECDIS equipment during that time. The main failures were:

- Operator error in some form or other;
- Failures due to computer crashing, (ECDIS is, after all, a computer);
- Overloading of chart data slowing ECDIS down.

A few had experienced ECDIS being attacked by cyber virus.

Electronic systems can fail for many reasons. Professional navigators must take all reasonable effort to ensure that they do not do so, train and drill for the possibility that they might, and have a recovery plan for the worst case. Ships are vulnerable to cyber threats, both intentional and unintentional. An unintentional incident could include a crew member unknowingly bringing a virus onboard via a USB memory stick that they keep their navigation notes on. Awareness and good procedures can dramatically reduce the risk. This is often referred to as good 'cyber hygiene'. Issue No 12 of *The Navigator* ([www.nautinst.org/TheNavigator](http://www.nautinst.org/TheNavigator)) was dedicated to Cyber Security and should be read by all navigators.

The results of this survey show that, after five years, confidence in the use of ECDIS is generally good and increasing, although there are some caveats on the quality of training received. 📍

**INTEGRATED BRIDGE SYSTEMS VOL 2**  
**ECDIS and POSITIONING**  
Dr Andy Norris

**40% OFF**  
~~£55~~  
**£33**  
[www.nautinst.org](http://www.nautinst.org)

The Nautical Institute  
**BOOK OF THE MONTH:**  
ECDIS and Positioning

*"Mariners need guidance and support in using ECDIS safely and effectively. This book is a must read for all users of ECDIS, especially with more ships being mandated to carry ECDIS from July."*

*Captain Harry Gale FNI, Technical Manager, The Nautical Institute*

Order from: [pubs.admin@nautinst.org](mailto:pubs.admin@nautinst.org) by the end of July