

E-charts we can all grasp

Admit it: have you ever had to ask a younger colleague to demonstrate ECDIS? Regulators and safety authorities hope the new standards for electronic charts will make life a little easier for navigators, an industry meeting heard last month. **ANDREW LININGTON** reports...

New measures which seek to minimise the number of 'ECDIS-assisted' collisions and groundings take effect at the end of August with the implementation of improved performance, display and standards for electronic chart display and information systems.

A one-day conference last month, organised by the eMaritime group, brought seafarers, owners, operators, and regulators together with manufacturers to discuss the ECDIS 4.0 package and the ways in which it might help to improve navigational safety and the working lives of mariners.

The new standards have been described as a step change from the original ECDIS performance standards — first published in 1998 — and it is hoped they will improve ease of operation and functionality, enhance cybersecurity, and lead to better integration with voyage data recorders, bridge alert management and bridge navigation watch alarm systems.

Tom Mellor, from the UK Hydrographic Office, said one of the core objectives of the new standards is to end 'alarm fatigue' on the bridge. Developed by the International Hydrographic Organisation, the standards also aim to improve the use of symbols on ENC's and to deliver easier access to information about lights, beacons, buoys and landmarks through a 'hover-over' function. Another change is the introduction of information on screens such as the names of fairways and anchorage areas.

ECDIS 4.0 has also been developed to address 'anomalies' in the display of information on different systems — which, in the most serious cases, have meant that navigators were unable to see stranded wrecks, a small atoll and similar obstructions. A new ENC test dataset will enable more features to be tested, Mr Mellor explained, and this should ensure that anomalies are identified more easily.

'You can have up to date data and ENC's, but if you are not updating your presentation library you won't get all the updated information,' he pointed out.

In seeking to address 'alarm fatigue', the IHO went back to basics and examined what features the performance standards were wanting to alarm navigators about. ECDIS 4.0 will deliver much more consistency between systems, he promised, and seafarers will also have more control over when an alarm sounds.

ECDIS Ltd MD Mark Broster

said he hoped the new standards would improve levels of understanding about ECDIS — because the results of ship inspections show that barely half of seafarers presently understand it properly, even though it is now 30 years since it was invented. When asked to demonstrate key features of the system, masters will often call a junior officer or a cadet to the bridge, he pointed out.

ECDIS 4.0 has been designed with 'digital natives' — those who have grown up using technology such as the internet and mobile devices — in mind, Mr Broster added. His company is studying the way in which 'digital immigrants' — older seafarers — will work with the new system and how long it will take them to access information from it.

However, he cautioned, there are some shortcomings with the new system — displays still won't highlight areas of low reliability of chart data, for instance.

And even though the International Maritime Organisation has already extended the ECDIS 4.0 compliance deadline by a year, 16 of the 39 manufacturers had failed to confirm compliance with less than two months to go before IHO Presentation Library edition 3.4 is no longer valid.

ECDIS cyber-security is also increasingly worrying, Mr Broster said. Attacks are more and more frequent and with so many ship systems and sensors now interconnected, the industry faces a potentially huge problem.

Richard North, technical manager with the UK Marine Accident Investigation Branch, highlighted the lessons learned from several major ECDIS-assisted accidents — often with the recurring factor of audible alarms being switched off (in the case of the grounding of the ferry *Commodore Clipper*, with management approval). Other common themes including incorrectly set safety contours or incorrect scales, problems with symbology, and cross-track distance alarms not being set, he added.

The MAIB had noted that setting bespoke safety contours could be complex and time-consuming, Mr North said, and it was also difficult to conduct a satisfactory safe route check without zooming out so much that safety guard zones are shrunk to minimum size.

'We haven't really answered the question of why seafarers do what they do,' said MAIB principal investigator Tony Brown. 'OOWs and navigators are not stupid.



ECDIS Ltd MD Mark Broster is concerned by evidence about patchy knowledge of electronic chart systems among masters and officers

ECDIS was brought in, but where was the human-centred design in the equipment and the user experience in the system?'

He said the MAIB is scoping a study that will seek to address these questions by working with owners and manufacturers to look at the way ECDIS systems are

being developed and used and how (or what) user feedback is incorporated into performance standards.

'We will be asking seafarers what makes life difficult for them using the system. We can then find out why it is not being used in the way that manufacturers and regu-

lators expect it to be used,' he added. 'There is a real gulf out there and unless we can identify why it exists we are in danger of being behind before we even start.'

Mr Brown said the MAIB is also asking fundamental questions about the capability of ECDIS. 'Is it good enough for the job, can it get

a big ship into Southampton Water if you plan it properly?' The answer is probably not, he added, as not all systems can take tidal streams into account.

'Quite where we stand with the SOLAS requirement for berth-to-berth planning is an interesting question.'

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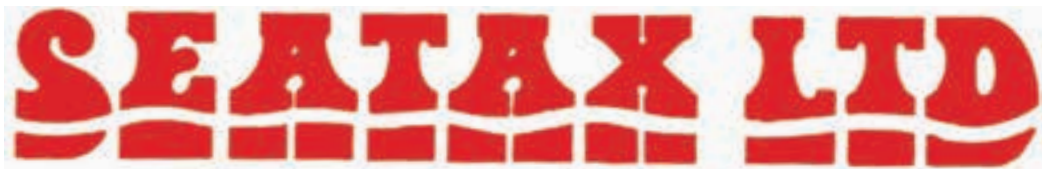
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