

The user need for High Density ENC's

IHO ENC WG7

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SMART
Center for Simulator Maritime Training
Part of the Carnival Corporation & plc Group

89 cruise ships

700 destinations worldwide

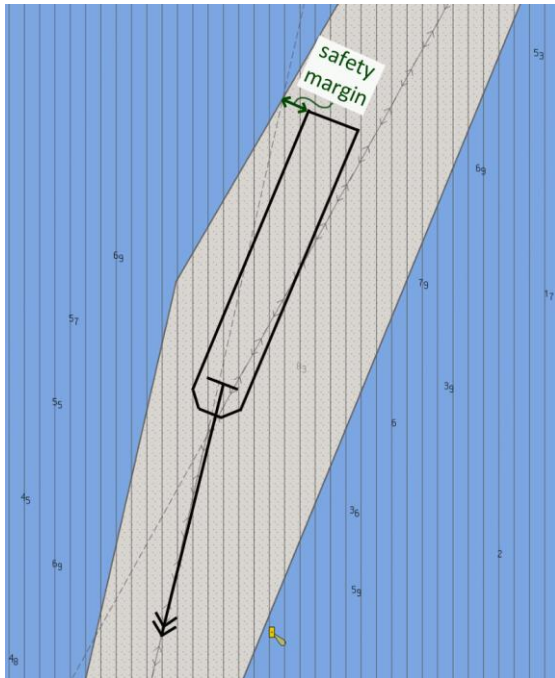
12 bridge simulators

20 port studies per year from 2017 to 2019



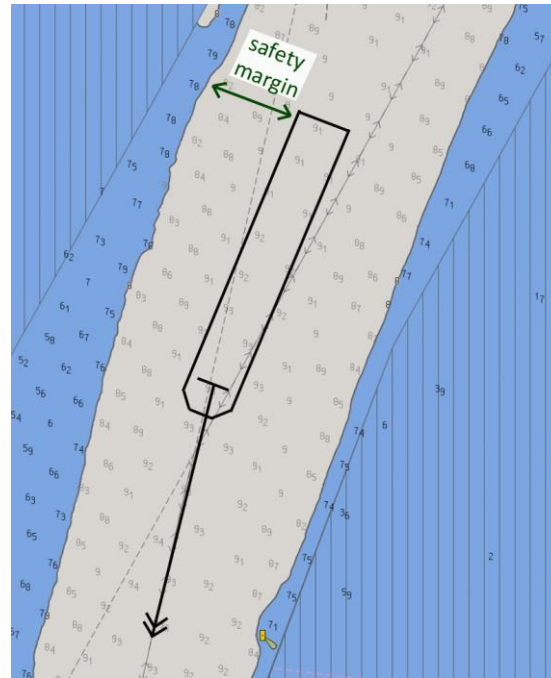
2010

Simulation study with
standard Harbour ENC
Port of Cairns (Australia)



2016

Simulation study with
first HD ENC prototype
Port of Cairns (Australia)



2017

Cairns Post

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COMING OUR WAY: Making maiden voyages to Cairns are the Pacific Princess (pictured) and the Magellan. PICTURE: SUPPLIED

TRAVEL

Record cruise ship visits to Cairns in 2017

In a simulator-based port study carried out in 2010, the lack of enhanced bathymetric content for the same turn became one of the key factors in deciding that a certain class of cruise ship could not enter the port with an adequate safety margin. The decision was reconsidered as a result of the 2016 study. **This proves both the safety case and the commercial relevance of HD ENCs.**



Why are HD ENC's so important for the conduct of vessels in confined waters?

- They give the possibility to visualise safety margins with higher resolution than a standard harbour ENC
- At the same time, they provide more detailed information on deep soundings and deep areas within navigable areas, which is important to anticipate the effects of hull-seabed interactions. This is not possible by looking only at harbour ENC's dredged areas that usually cover most of the confined waters with maintained depth values.

By exceeding the mere equivalence to paper charts HD ENC's unlock the full potential of ECDIS and high accuracy navigation sensors in confined waters



Why is it so important that official HD ENC's become available to both ECDIS and Portable Pilot Unit users?

Because the risk of ever decreasing safety margins to conduct vessels in confined waters requires the ship's crew to be on the same page with the marine pilot, especially when safety margins are narrow.

Sharing mental models is in fact the essence of Bridge Resource Management (BRM), whose ultimate aim is the prevention of accidents caused by intentions and/or actions not challenged in due time or not challenged at all.

HD ENC's support one of BRM's essential components: a detailed passage plan that is agreed between the ship's crew and the pilot.



Conclusions

- HD ENC's can enhance safety of navigation as well as optimize port calls
- Simulations have proven to be effective to foster mutual understanding of the HD ENC concept among all stakeholders involved (Shipping companies, Port Authorities, Harbour Masters, Pilots, Mariners and Hydrographic Offices)
- HD ENC's can be created and maintained in S-57 format, with now modifications to ECDIS software on board
- The narrow safety margins of today cannot wait for the standards of tomorrow

