Case study for onboard safety meeting
Case study no. 27: ECDIS familiarisation

Please read the below story of an incident. Keep our vessel's procedures in mind while reading to compare with the actions of the crew below as we will discuss the factors which led to the incident occurring.

A vessel was scheduled for a laden voyage from South America to Northern Europe. Before departure, the Master called the Chief Officer to the bridge and instructed him to amend the passage plan to enable the vessel to arrive at the designated pilot station in the English Channel. The paper charts had recently been replaced by a dual ECDIS system – in preparation for the coming IMO ECDIS requirement. However, paper charts were still kept onboard and updated due to the fact that the Master was not very familiar with the new system, even though he had attended a generic course.

The chief officer started to place the different waypoints. The charts used had a scale of 1:100,000. Upon completion, the Chief Officer visually checked each leg of the plan to ensure they were clear of any hazards. In doing so, he noticed that several of the course lines were indicated in RED. The Chief Officer had identified a similar RED indication last time as well; he believed it was because the water depth in the English channel was below 30 metres in several places, but still sufficient for their ship. He accepted the "RED condition" because the vessel had followed the same route for the last 3 years, although previously on paper charts as official chart source. The default settings for safety contours were identified as 30 metres and were used throughout the voyage.

15 days after departing the loading port in South America, the vessel entered the English Channel from the south. The traffic situation was, as always, quite busy with several contacts tracked on the ARPA. Both of the vessel's radars were working with the displays set at the 6 and 12 miles range scales. During the watch, the 2nd officer adjusted one of the waypoints in order to avoid a close quarter. He visually checked the new leg and did not see any unsafe passing distances on the leg. However, he was not aware that the turn point in the previous waypoint was adjusted automatically by the system. He then prepared files for security and safety management audits which were due to take place during the vessel's stay in the UK port of discharge.

Four hours into the 2nd officer's watch, he contacted the Chief Officer who had not arrived on the bridge at the time expected. The Chief Officer, arriving late to attend his watch, rushed through the hand-over procedures. Shortly afterwards, the Master, who was in his cabin, felt a change in the vessel's vibrations. He called the Chief Officer and instructed him to check the depth of water. The Chief Officer looked at the ECDIS display and reported to the Master that there was no cause for concern. The Chief Officer, following the intended course line – on a route that had been ground checked – believed that there were no dangers present at the moment. The vibrations increased and the vessel began to slow down. The Chief Officer realised that something was wrong and put the propeller pitch to zero. He then changed the ECDIS display to 1:50,000 scale and saw that the charted water depth was less than the vessel's draught. He realised that the vessel was aground on a charted sandbank – now visible in the 1:50,000 scale ENC, but not on the 1: 100 000 scale. However the chart was "cluttered" by the wrong settings related to safety contours and depths and did not present the danger very clearly.

Post-incident investigations revealed that, of the officers on board at the time of the grounding, neither the Chief Officer nor the 2nd officer was trained in the operation of the actual ECDIS onboard, but both had used other ECDIS equipment on previous ships and had attended a generic course last year. None of the officers were aware of the significance of the safety contour, the safety depth, and the shallow and deep contours, and did not know how to establish a watch vector ahead of the vessel.

How to improve by lessons learnt

Based on the case and the keywords, you should now perform an onboard risk assessment of the incident and the factors which led to it. Bear in mind our vessel's procedures.

You can also discuss the keywords below in order to determine onboard areas/topics for increased awareness:

- Is our ship (system & charts) and crew (procedures and training) ready and prepared for paperless navigation?
- Onshore staff's responsibility to offer required training (generic & familiarization) and procedures iaw ISM
- Onboard personnel's' ability to address shortcoming of training related to new equipment onboard
- Awareness of system settings such as: Safety Depth, Safety Contour, shallow water contour, deep water contour?
- Importance of knowing systems Default settings? How to change?
- Use of Radar together with ECDIS?
- How can we tell that an ENC is displayed? What to do if it is not displayed?
- Walk through of planned route in briefing; consequence when route is displayed in RED or "warnings/groundings on leg".
- Information available at different scales in ENC (e.g. 1:100,000 vs. approach charts)
- Zones-of-Confidence (chart data quality) and safety margines in planning.

1 What factors contributed to the incident in the above case?

2 Risk Assessment: Could some of the factors identified be present on board your ship? (How frequent could they be present? How severe could it be if they are present?)

3 In the risk transfer zone (yellow and red), what would you suggest as measures to control the risk? Any additional barriers that could be introduced?