The Nautical Institute
Marine Accident Reporting Scheme
MARS Report No 199 May 2009

MARS 200927

Heavy weather damage

A fully laden VLCC in our fleet suffered heavy weather damage to lifesaving, firefighting and safety equipment as well as deck fittings when she encountered heavy seas as a result of an intense Atlantic depression. At the time of the incident, the vessel was passing Ile d'Ouessant (Ushant), France, en route for discharge at Rotterdam.

Wind speeds of more than 60 knots, and sea/swell conditions in excess of 10 metres, caused the vessel to roll heavily and take on large quantities of 'green water'. The force of this water washing over the decks resulted in the loss of fittings and equipment, including the forward liferaft, fire hose boxes and immersion suits. The water also had the effect of lifting the port manifold drip-tray and distorting the safety walkway railings and shelters.

Root cause

Lack of planning – with the predicted adverse weather, additional lashings could have been applied and equipment temporarily relocated to avoid loss. These days masters have accurate forecasts and can make informed decisions at an early stage to avoid the worst of the expected weather conditions, or time their arrival to avoid conditions where a storm force wind blows against the current or tidal stream.

What went right

1. The master reduced speed as the conditions worsened, minimising the slamming effect of the heavy seas and ensuring no structural damage was experienced.

2. A soon as it was safe to do so, the master promptly inspected the tanker's decks and reported the damage to the company. This ensured that management could instruct the purchasing department to replace the lost items and the fleet team could make the necessary arrangements for additional support during the discharge and the various inspections and surveys by class.

Lessons learned

1. Daily monitoring of weather forecasts, careful assessment of predicted conditions and the early adjustment of course and speed to avoid heavy weather conditions.

2. Early notification of expected heavy weather to those responsible for ensuring that all openings and deck fittings / equipment are secure, or temporarily relocated to avoid loss.

3. Securing arrangements inspected for deterioration or weak points and either replaced or doubled up to improve their effectiveness.

4. Although there is no evidence to suggest that commercial pressure to maintain ETA contributed to this incident, safety must always take precedence over commercial decisions. Berthing times can be easily re-scheduled, but accidents can have a long-lasting impact on individuals and companies.

MARS 200928

ECDIS and AIS problems

I recently piloted out a medium-sized, one-year-old product tanker from a top operator. The ship had no paper charts and was fitted with an integrated bridge system (IBS) with two interchangeable radar / electronic chart display information system (Ecdis) displays on the bridge with a third, separate unit, used for passage planning.

Prior to departure, the Captain explained that they had been experiencing problems with the displays. While alongside, a service engineer had changed a circuit board but, because of the terminal's radar policy, they had been unable to test the repair.

One unit was set up as a radar and the other as the ECDIS and although both the displays seemed to be functioning correctly, the Captain indicated that there was still a problem. I understood this to be that he was unable to bring the Ecdis overlay on to the radar display screen. Apparently several service engineers had checked the systems but were seemingly unable to resolve the difficulty.

With good visibility, I navigated the ship mainly by eye but when I looked at the ECDIS unit, I was concerned to note that the position being displayed was well over 100 m out, showing the vessel proceeding down the wrong side of the channel (see photographs). The Captain checked the back-up ECDIS unit and discovered that it, too, was displaying the same error. After about 30 minutes the position error suddenly disappeared and the chart subsequently displayed the correct position; however it is of concern that no alarms had indicated any GPS input problems during the period of the position error.

During the passage, an AIS alarm sounded and although we were still transmitting an AIS signal, we were not receiving any AIS data on any of the screens. With no back-up AIS system, this meant that there was no AIS information available to the bridge team. The Mate re-booted the systems but only a few targets were displayed while, later on, the AIS was again lost from the displays and could not be restored.

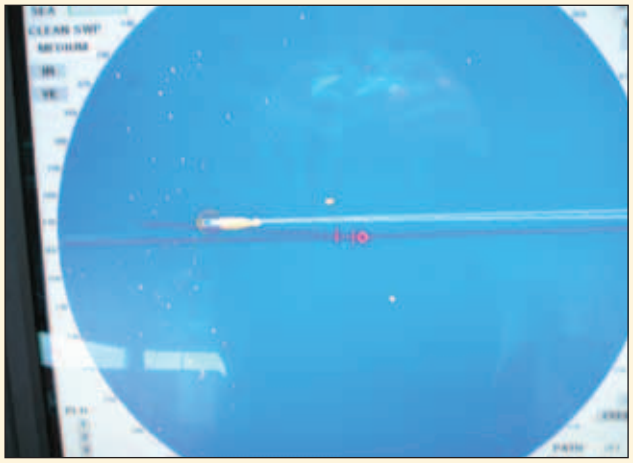
The Captain explained that even when the AIS overlay was working, he found it very frustrating that it only displayed the call signs rather than the names of vessels. Having to interrogate each target and note the ships' names manually posed an especially serious problem in busy areas: a practice that he considered dangerously distracting to the bridge team.

In seeking to change it, he had been told by a service engineer that it was an IMO requirement that only the call sign could be displayed in order to avoid cluttering up the screen.

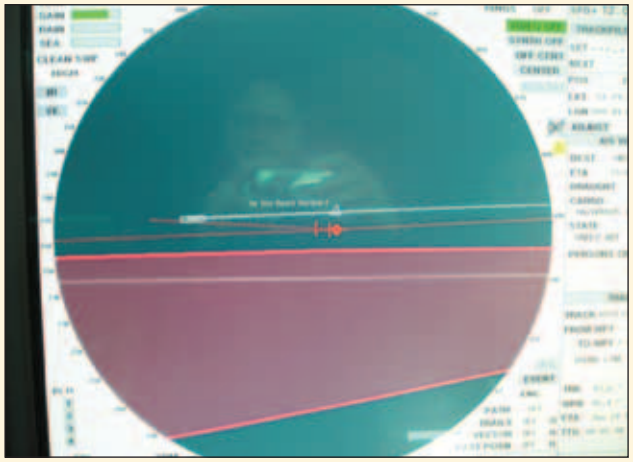
I advised him that all the ECDIS systems that I had seen were capable of displaying the full name on the screen, rather than just the call sign. On learning this, the Captain felt seriously let down by the manufacturer's support service.

While discussing the topic of AIS, he advised me that he had encountered another problem at two specific locations involving the Europlatform off Holland and the N Kish light off Dublin in which when vessels passed them, their AIS IDs changed to the ID of the mark and subsequently their data displayed as Europlatform / N Kish. Another master subsequently confirmed observing this phenomenon.

▲ 1. View from bridge showing Sea Reach no. 2 buoy on the port bow



▲ 2. Radar picture showing correct positional information



▲ 3. Ecdis wrongly showing vessel's position out of the channel with buoy bearing right ahead

Overall, this Captain was not impressed with ECDIS, even when it was working correctly. In particular, he found route planning cumbersome because, in contrast to a paper passage planning or routeing chart which could be laid out to provide an overview of the passage to be undertaken, trying to plan a route on a 17" monitor involved constant jumping between ranges, then having to zoom in and carefully re-check the proposed passage on the larger scale. I therefore left the vessel with a Captain extremely disillusioned with his integrated, 'state-of-the-art' bridge. His views on the concept of e-Navigation are probably best left unrecorded.

MARS 200929
Communication breakdown

Overheard on VHF Channel 16/68 on a coastal passage: vessel makes VHF contact with the marine rescue coordination centre (MRCC) to report a medical emergency. It is established that one crew member is lapsing into a diabetic coma and the master is seeking medical advice on suitable treatments.

MRCC: 'Please let me have your telephone number so we can call you direct.'

Vessel: 'We can't give you the number because only the radio officer knows how to work the satellite telephone and he is the one who is sick.'

■ **Editor's note:** The company's safety management system (SMS) must provide written procedures for all possible emergencies and checklists must be arranged in a logical sequence and be complete in all respects. The ship's staff, for their part, must take the initiative in ensuring work stations throughout the vessel have easy access to essential information. The ship's particulars and communication identities must be prominently displayed at these locations. Emergency drills must be conducted realistically, including the enacting and recording of mock communication drills.

As shown in this case, lives may well depend on the level of shipboard organisation and preparedness.

MARS 200930
ECDIS-assisted grounding

Official report: Abridged from MAIB Report 21/2008

Recently a loaded dry cargo ship ran aground on Haisborough Sand off the east coast of England. The vessel quickly refloated without assistance and continued on passage to Grimsby, River Humber, where she arrived the following morning. There were no injuries or damage to the vessel, and there was no pollution.

The ship grounded 29 minutes after the OOW had adjusted course to follow an amended passage plan shown on the vessel's Ecdis. The route was hastily revised to ensure arrival at high water. This route took the vessel across Haisborough Sand, where the charted depth of water was considerably less than the vessel's draught.

Root cause/contributory factors

1. The deck officers had not been trained in the use of ECDIS and no procedures on the system's use were included in the

▲ Original planned route shown in black, revised route shown in red

vessel's SMS. They were, therefore, ignorant of many of the system requirements and features, operating the system in a very basic and inherently dangerous manner.

2. The route across Haisborough Sand was not adequately checked for navigational hazards, either when planned or when being monitored.

3. In-built safeguards in the ECDIS which are intended to prevent accidents of this nature were not utilised and system warnings were not acted upon.

4. The safety contour alarm did not sound as the vessel approached the shallow because a watch vector had not been set.

5. It is also highly likely that the configuration of the display was not optimised to clearly show the shallows over Haisborough Sand. At a scale of 1:100000 and with a safety contour of 30 m selected, the shallows over the bank were not readily apparent.

6. The OOW placed undue reliance on the ECDIS: it is possible that the grounding could have been avoided had he remained vigilant and continuously monitored the vessel's position in relation to navigational hazards.

Some of the pertinent deficiencies recorded by Port State Control at the destination port were:

1. The planned route took the vessel with a draught of 5.9 m across Haisborough Sand where the charted depth was less than 2 m.

2. The ship's navigating officers were not properly trained in the use of Ecdis.

3. The incident was not reported to the vessel's DPA for 23 hours.

4. The chart support certificate had expired.

Similar recent grounding accidents recorded by MAIB:

■ **1.** A cross-Channel ferry grounded after the helm was put the wrong way as the vessel approached a port entrance. This mistake was not noticed by the bridge team and, although an ECDIS was in use, no warning was given to indicate that the vessel was approaching shallow water because the watch vector, or predicted movement warning area, had not been correctly enabled.

■ **2.** A ro-ro ferry ran aground after the safety contour in her ECDIS was set at 30 m. This caused the chart display to be shaded blue, which severely impeded the bridge team's ability to see that the vessel was outside the navigable channel.

■ **3.** A ro-ro passenger ferry hit a submerged wreck near Dover and severely damaged her propellers. Although the vessel's primary means of navigation was paper charts, her deck officers relied on the vessel's ECS, despite not having been trained in its use. The wreck was not shown on the ECS display due to the settings applied to the system at the time.

■ **4.** Contributory factors to the grounding of a container ship in UK waters included lack of training in the use of the vessel's electronic chart system. This resulted in the use of inappropriate settings with regard to depth contours, and chart and depth alarms.

Foreseeing that ECDIS will replace paper charts as the primary planning and monitoring media on board most vessels over the next 10 years. MAIB has included the following in its recommendations:

1. A review of the content of the IMO model course syllabus for ECDIS.

2. As there can be significant differences between ECDIS models in terms of menus, terminology and equipment interface, shipowners must ensure that all bridge watchkeeping officers are familiar with navigation systems in use and they should use both generic and model specific training to meet this obligation.

3. Ships' crews are reminded of the need to ensure that all recorded information including VDR and ECDIS and other electronic data is preserved following an accident or incident.

The full pdf report is available and downloadable from www.maib.gov.uk/cms_resources-CFL_Performer.pdf

MARS 200931
Drop in cooling water pressure

Our offshore supply vessel was holding station close to a drilling rig, with two hoses connected, delivering bulk barite and fuel. The rig was engaged in exploratory drilling in very shallow water, in depths of about seven m. The rig also had a mud mat under water (a substructure that can be lowered for positioning/stabilising the rig on the sea bed in shallow depths) whose extremities was marked by a line of brightly coloured hanging markers.

A moderate, 3.0 m swell was running and we had previously discharged some non-essential ballast in order to maintain our maximum draft at 3.5 m. As a routine precaution, the Chief Engineer changed to the high sea suction before the final approach from seaward.

After about three hours, as the transfer was complete, the CE telephoned the bridge, warning that there was a sudden drop in cooling water pressure: engine jacket temperatures were shooting up and automatic main engine slow-down or shut-down trips would operate suddenly. He advised the bridge to activate the emergency release of all cargo hoses and to move the vessel clear of the rig before propulsion, steering and electrical systems failed.

In the event, both deliveries had been completed and the crew on deck had already disconnected one hose, while the last hose was being drained. This was released within a few seconds and the vessel was moved quickly away from the rig into deeper water without incident, where sea water pressure improved to acceptable levels.

Root cause/contributory factors

1. Shallow water location, and due to moderate rolling, inadequate head of sea water in high sea suction, possibly occasionally drawing air;

2. Discharge of nearly 200 tonnes of bulk cargo from vessel caused further reduction in draught and sea water head in high sea suction;

3. At the subsequent cleaning of the sea suction filters, considerable fouling by seaweed was observed.

4. Inadequate risk assessment and work planning, position of high sea suction and changes to draughts not adequately considered.

Corrective actions

1. Near-miss report sent to company.

2. Basic stability spreadsheet on ship's computer augmented with more interpolated data from stability booklet, to obtain intermediate draughts during loading and discharge operations.

3. The incident was discussed in the safety committee meeting: a permanent warning to be included in the master's handover notes, highlighting the hazards when working in this shallow water location.

MARS 200932
Colregs violation

Our container ship was on a course of 070ºT, speed 13.5 knots, in clear visibility. Three vessels were in the vicinity and one vessel was observed by radar /ARPA and Ecdis as crossing target from our port bow, heading 138T with speed 15.5 knots, distance 17 nm, CPA 0.5 nm. This vessel was identified and verified by AIS and also displayed on the Ecdis.

The OOW called her on VHF Channel 16 when both vessels were about 8.5 nm apart but there was no response. When the OOW received a response to his second call at a distance of about 7.0 nm, and asked the other vessel about her intentions to resolve the developing close-quarter situation, their OOW informed us that he intended to alter course more to port side and pass us ahead with a closest point of approach (CPA) of not less than 1.5 nm. In view of this illogical manoeuvre in open, unrestricted waters, my OOW called me and I immediately went to the bridge and took the con.

I then reminded the other vessel's master that under the Colregs, it was his duty to keep clear as give-way vessel. He replied that he was unable to alter his course to starboard as this would take the vessel away from the planned track and consequently his ETA at destination (a nearby port) would be delayed. He suggested that my vessel should alter course to port in order to pass around his stern.

Given the rapidly developing close-quarter situation, I decided to turn my vessel 360 degrees to starboard to avoid collision. Soon afterwards, we received a call from the other vessel: the master said he had changed his mind and would now alter course to starboard and pass around our stern. We were instructed to maintain our course. However having already begun our turn, we advised the other vessel to keep her course and speed – she agreed and confirmed.