The Nautical Institute
Mariners' Alerting and Reporting Scheme
MARS Report No 214 August 2010

Providing learning through confidential reports – an international cooperative scheme for improving safety

MARS 201040
Servicing the ship's safety equipment

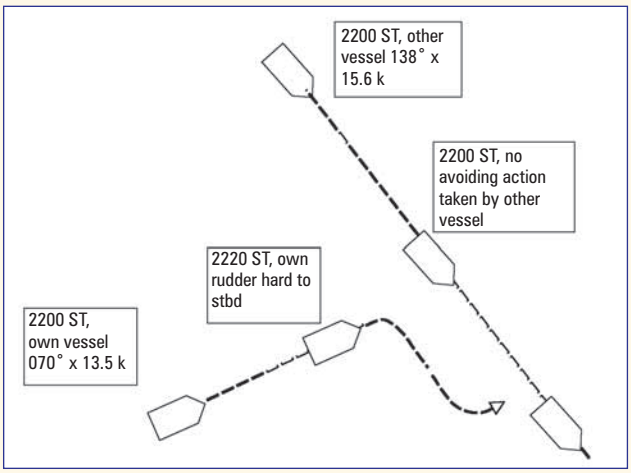
During my long career both at sea and ashore, I have observed an unsafe practice when the ship's safety equipment is landed ashore for servicing in port. Typically, fire extinguishers, breathing apparatus (BA) sets and emergency escape breathing apparatus (EEBDs) are taken ashore by service contractors for periods ranging from a few hours to a few days. During this time, the vessel does not comply with Solas in the number and distribution of such safety equipment, which could be a serious impediment in case of emergencies.

While some operators/contractors make arrangements for placing temporary replacements on board, the master would be well advised to check in advance with the service contractor and shore management about this before arriving at the designated port where the servicing is being arranged. Furthermore, it is likely that such temporary replacements, although type-approved, will be of a different design or capacity. If so, the ship's crew must be given appropriate training in their use to ensure full operational readiness.

It is suggested that vessel operators consider providing a reasonable surplus of safety equipment on board so that shore servicing can be undertaken in port without compromising on regulations and/or creating undue logistical problems.

MARS 201041
Colregs violation in crossing situation

On a clear night at about 22:00 hrs, own vessel sighted another vessel, crossing from our port bow. Compass bearing showed no appreciable change and CPA showed that the other vessel would pass across our bow at a distance of less than two cables. As we approached, our radio and light signals were not acknowledged and we stood on for a considerable time, expecting the give-way vessel to take appropriate action under Rule 15 (Crossing situation). By 22:20, the distance between the two vessels had become less than 1.5 nm, and reducing rapidly. Accordingly, under Rule 17 (Action by stand-on vessel), we turned hard to starboard, paralleling the other vessel's course. Once the other vessel had drawn sufficiently clear, we turned slowly to port and crossed its wake and resumed our original course.



▲ Figure 1: Colregs violation

MARS 201042
Head injury due to dislodged lifting spreader

Work was being carried out on the 15ppm oily water separator (OWS). An existing lifting arrangement, meant primarily for work in the main engine crankcase, was used for the job. It consisted of a chain block shackled to a lug on a portable pipe 'spreader', each end of which was designed to sit in a support made out of half-pipe sections welded on two adjacent overhead beams. To reach the OWS, the hook chain was led sideways for a considerable distance, passing under and around a girder and other obstructions. When the chain block was tightened, the hook chain snagged on an obstruction and the large sideways force caused the spreader to move up and out from its semi-circular supports. The spreader and chain block fell on to the bottom plates violently, inflicting a head injury on a crew member.

Root cause/contributory factors

1. Lack of planning – failure to properly assess the operation before commencing the task;

2. Person in charge unable to have a full view of work site;

3. Chain block lifting chain snagged on some obstruction(s) creating large sideways force;

4. Crew members not wearing head protection due to limited headroom.

▲ Figure 2: View of unsafe arrangement of chain block showing hook chain leading sideways to OWS

▲ Figure 3: Close up view of portable pipe 'spreader' with lugs. Note that the end supports have no securing arrangements to prevent the inadvertent dislocation of the portable spreader

■ **Editor's note:** In any lifting operation, the applied force must be as close to the vertical as possible. In this incident, it appears that a suitable lug was not available directly above the OWS. For such situations, it is suggested that each vessel to be provided with a number of certified portable beam clamps of assorted capacities. Before such a clamp is to be used on board, the responsible person shall ensure its proper rigging and be fully conversant with its limitations.

◀ Figure 4: Typical portable beam clamp with integral lifting lug

MARS 201043
Collision with motor yacht

A product tanker had just sailed from port and was increasing to full sea speed. At 18:32 hrs, in clear visibility and good weather, the vessel was steering 031º T at a speed of 16 knots. At 18:40, the AB on lookout reported a red light on the starboard bow. The third officer determined the visual bearing to be 072º T and estimated the target to be about five nm away, but could not see it on the radar. The visual bearing was checked a few minutes later and was found to be 074º T but the target was still not detected on the radar. No further visual bearings were taken. The third officer's evaluation was that he would pass ahead of the other vessel. He also presumed that the other vessel was either a small pleasure craft or a fishing vessel and would keep clear of own vessel on its own accord.

At 19:00, in anticipation of a manoeuvre to avoid collision, the third officer placed the duty AB on manual steering. At some stage between 19:00 and 19:15 the third officer observed that the distance to the other vessel appeared to be rapidly decreasing. The Aldis lamp was directed at the other vessel but no response was obtained. Finally, at 19:15, hard port rudder was ordered, and a few seconds later, the vessels (other vessel identified as a motor yacht) collided. A glancing contact was made between the yacht's port bow and the starboard quarter of the tanker. All available evidence suggests that no avoiding actions were taken by the yacht and no lookout was being maintained by her prior to the collision. A playback of the tanker's VDR data showed that the target was being displayed intermittently on her radar.

Root cause/contributory factors

1. Failure to observe Colregs, particularly Rules 5 (Lookout), 7 (Risk of collision) and 8 (Action to avoid collision);

2. No action taken to avoid a close quarter situation;

3. Action to avoid collision insufficient and not taken in good time;

4. Improper setting of radar controls that caused over-suppression of target echoes;

5. Inadequate monitoring of the radar and failure to check for targets along the heading line or change the display to a more appropriate range when closing with the yacht;

6. No use was made of the whistle to attract the attention of the other vessel;

7. The master was not called by the OOW who was in doubt about a developing close quarter situation and efficiency of critical equipment (radar);

8. An incorrect assumption was made that smaller vessels would keep clear of larger vessels.

Recommendations

1. All vessels in the fleet to discuss the above incident at their next safety meeting;

2. All bridge watch keepers must at all times comply with Colregs, and demonstrate a clear understanding of Rules 5, 7 and 8;

3. OOW must use all available equipment and controls and must not hesitate to use the whistle when needed;

4. OOW must not hesitate to call the master;

5. Prior to taking over watch, OOW must ensure that the radar has been properly setup and is performing as per requirements;

6. Increased frequency of internal and external audits of navigation operations and systems on all vessels;

7. OOW must avoid making assumptions on scanty information.

MARS 201044

Damage to engine crankshaft and connecting rod

The vessel was en route to a loading port, when the chief engineer commenced routine maintenance of no. 1 auxiliary engine, as per the maintenance programme. On opening the crankcase, a crack was found in no. 1 unit cylinder liner, from where jacket cooling water was found to be leaking into the crankcase. This liner was replaced by a spare one. Additionally, all the main bearings were found to be worn out excessively and these were also renewed from ship's spares. No. 5 unit crankpin bearing was found to be damaged and the ship's staff renewed this as well. However, no systematic investigation was made to ascertain the reasons for these serious defects. Ovality measurements for connecting rods or readings of the crankpins were not checked at this stage for any of the units, especially no. 5, the one with the severely damaged bearing.

The engine was assembled and tested but had to be stopped immediately when loud knocking sounds were heard from the crankcase. On re-inspection, the newly fitted no. 5 crankpin bearing was found to have seized and the crankpin was deeply scored. Instead of conducting a proper investigation to determine the causes for the repeated failure of this bearing, the chief engineer attempted to 'repair' the crankpin by means of emery tape and files, which only caused more damage.

At this stage, the chief engineer informed the office about the breakdown and repair work in progress. The office immediately instructed him to measure and report on the ovality of all connecting rod ends. These were all found to be beyond acceptable limits, thus all connecting rods were found unusable. As no. 5 crankpin was seriously damaged, the crankshaft was found beyond use and had to be scrapped.

As a result of the ship's staff's not observing the maker's maintenance instructions and poor engineering practice, the company incurred an unplanned expenditure of nearly US$ 100,000.

MARS 201045

Submarine gas pipeline damaged by anchor

Official report: Australian Transport Safety Bureau Report no. 260-MO-2008-012: www.atsb.gov.au/publications/investigation reports/2008/mair/260-mo-2008-012.aspx

A container vessel arrived in a port and anchored in the designated waiting area under pilotage. When the pilot disembarked, the wind speed was observed to be 35 kts, gusting to 48 kts. A submarine gas pipeline lay 0.6 nm downwind.

■ Summary of significant events (see position plots in chart on pp 20):

12:00: Sea pilot boarded at designated outer pilot station.

14:28: The ship's starboard anchor was let go on a heading of 108º with a 35-knot gale blowing from 200º. (The heading was chosen to create a lee for the sea pilot to disembark safely, and the drift rate increased substantially under this beam wind situation until the ship became wind-rode at about 14:55. Evidence suggests that the ship was never 'brought up' to five shackles and was continuously dragging anchor and drifting in a NE'ly direction.)

14:36: Sea pilot disembarked.

15:01: Master concluded anchor not holding and requested permission from harbour control to move vessel. He was instructed to maintain position and await pilot.

15:27: Harbour control gave permission to move vessel. Master used ahead engine power to relieve stress on the anchor and commenced shortening cable.

15:48: Starboard anchor windlass disabled with two shackles still out.

15:49: Ship's starboard anchor presumed to have snagged the pipeline.

16:03: Sea pilot re-boarded the vessel.

16:11: On pilot's advice, decision made to slip the anchor cable from deck.

16:20: On pilot's advice, new decision made to attempt to dredge the anchor clear by using engine.

16:21: Submarine gas pipeline ruptured.

16:27: Vessel manoeuvred clear and anchor no longer fouling the ruptured pipeline.

16:34: Emergency shutdown valves of gas pipeline operated.

20:11: Permission received from pipeline operator to use gas cutting equipment subject to safe gas detector readings.

21:00: Decision made to gas-cut the cable at hawse pipe.

21:53: Starboard anchor cable successfully cut at hawse pipe lip and anchor with about 2 shackles of chain abandoned.

00:48: Vessel anchored in southern part of outer anchorage using 8 shackles on port anchor.

■ **Among the findings arising from the investigation were:**

1. The rupture was the result of attempting to dredge the anchor instead of slipping it;

2. The anchor had also been let go too close to the pipeline in the poor weather conditions;

3. Deficiencies in the port's risk management with respect to the pipeline and anchorage boundaries and its shipping control procedures;

4. Deficiencies in the ship's safety management system with respect to passage planning, the master's authority, crew familiarisation and the working language;

5. Deficiencies in the pilotage company's procedures for anchoring and mobile telephone use;

6. Windlass failure at a critical time due to excessive loading in the system

■ **Important guidance to mariners on fouled submarine pipelines**

1. Australian Notice to Mariners 26 advises that in the event of any vessel fouling a pipeline, the anchor or gear should be slipped and abandoned without attempting to get it clear. Any excessive force applied to a pipeline could result in a rupture and, in the case of a gas pipeline, the consequential sudden release of gas at high pressure – somewhat like an explosion – could cause serious damage or loss of the vessel. There would be an accompanying severe and immediate fire hazard.

2. The *Mariner's Handbook* notes that if it is suspected that a ship has fouled a gas pipeline with its gear or anchors, excessive weight should not be placed on the gear as it could damage the pipeline and the ship 'could face an immediate hazard by loss of buoyancy due to gas aerated water or fire/explosion'. Given the high risk and because many pipelines were laid before accurate GPS receivers became commonplace, it would be prudent to be cautious rather than completely rely on the accuracy of their charted locations. In essence, the only appropriate course of action if a ship has, or is suspected to have, snagged its anchor on a gas pipeline is to avoid placing weight on the anchor cable and to slip the cable as soon as possible. Had this been done in this case, the gas pipeline probably would not have ruptured.

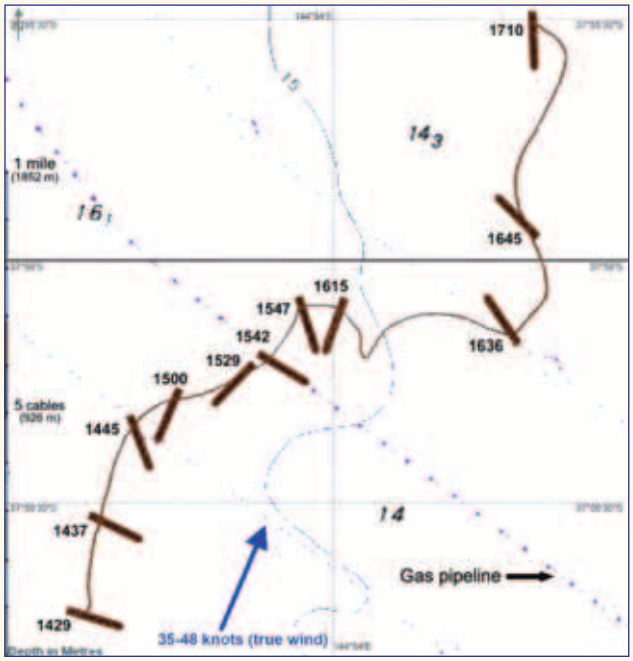


Figure 5: Plot of vessel's positions

Editor's correction: Apologies. Report 201028 Facial injury caused by gangway winch handle in May 2010 MARS was repeated in June's edition as 201031.

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