The Nautical Institute
Marine Accident Reporting Scheme
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MARS 200825
Collision and sinking of small craft

Official report: source: IMO Sub-Committee on Flag State Implementation – 11th Session

An eight-metre pleasure craft was struck by a passing bulk carrier while anchored for the night in a shipping lane off the north east coast of Australia, with all hands on board asleep. Fortunately, there were no casualties. The collision went unnoticed by the OOW and the lookout on the bulk carrier.

Root cause/contributory factors

The available evidence indicates that a proper radar and visual lookout was maintained on the bulk carrier. There could be several possible reasons for the pleasure craft not being observed on the bulk carrier:

1. The pleasure craft presented a poor radar target;

2. The anchor light on the pleasure craft was too weak and did not comply with Colregs;

3. Reflection of moonlight from the water prevented the pleasure craft hull from being seen from the bulk carrier bridge;

4. The pleasure craft anchored in a shipping lane at night without posting a lookout.

Lessons learnt

1. Numerous collisions occur between large ships and small craft every year, resulting from the lack of a proper lookout on one or both vessels. All watchkeepers need to be aware that a small craft may not readily be sighted by radar or visually from the navigating bridge of large ships.

2. The importance of proper lookout on all vessels, large and small, (whether under way or not), cannot be overemphasised.

3. Smaller vessels should consider warning larger ships of any developing collision risk by using all available means, including light signals, sound signals and radio communication.

4. All ships including small craft, must avoid anchoring in a known shipping lane.

MARS 200826
Steering failure causes collision and pollution

Official report: source: IMO Sub-Committee on Flag State Implementation – 11th Session

A sudden steering system failure on an oil tanker led to a collision with a passing bulk carrier. This resulted in serious damage to both vessels and spillage of 2,700 tonnes of fuel oil from the tanker.

Root cause/contributory factors

The cause of the sudden steering failure could not be established; however the following contributory factors were noted:

1. Small passing distance (0.5 miles) between the two vessels precluded effective avoidance action from being taken on both vessels;

2. Both vessels unnecessarily reduced their passing distance by choosing the deep-water route even though they could have safely navigated outside it.

Lessons learnt

1. Vessels should avoid using any deep-water route when their draft permits them to safely navigate outside it. (In many locations, a vessel wrongly using a deep-water route may be prosecuted by the coastal state).

2. The OOW should remain at heightened alert when passing another vessel at close range and should be vigilant for equipment failure and unexpected response from own or other vessel, including interaction between vessels passing each other at close distances.

MARS 200827
Podded propulsion failure

In view of the recent two-part feature on podded propulsion (*Seaways* December 2007 and January 2008), this report is of particular import and relevance.

Official report: Edited from MAIB report, 2007; /www.maib.gov.uk

A product tanker was making the final approach to come alongside a jetty when suddenly, and without warning, control of the vessel's podded propulsion system was lost . This resulted in the vessel making multiple contacts with the jetty's infrastructure, resulting in material damage to both the jetty and the vessel before control was regained.

At the time of the accident, the master and a pilot were on the bridge, but no tugs had been engaged due to the excellent, slow-speed manoeuvring capabilities of the ship's podded propulsion systems and an effective bow thruster unit. As the vessel approached the jetty, the master transferred the conning position from the centre to the port control console in preparation for berthing the vessel port side alongside.

When the vessel was about 100 metres off the jetty, at a speed of 1.2 knots, the control lever inexplicably moved on its own to approximately 70 per cent of full power. The pod had been angled to thrust the vessel's stern away from the jetty and as the tanker suddenly increased speed, her bow swung rapidly to port. The master attempted to pull the control lever back to zero but the power remained at 70 per cent and the vessel rammed the concrete apron of the jetty, shortly after which the flare of the bow made contact with the steel gantry support of the jetty's oil loading arms.

While he was unable to control the pod's power, the master still had control of its direction. He rotated the unit to move the vessel's head to starboard and also operated the bow thruster to push the vessel's bow off the jetty. This brought the vessel parallel with the jetty, but with the pod's power still at 70 per cent. The master attempted to regain control by transferring control back to the central console and selecting the push button power control function but this was not successful. The master then ordered the vessel's anchor to be let go and rotated the pod to astern mode to reduce the vessel's headway.

Shortly after this, and for no apparent reason, the power returned to zero. However, while the master was still evaluating the situation, the pod's power again increased to 70 per cent and the vessel accelerated astern towards the jetty. The master was again unable to regain control. The pilot warned the personnel on the jetty to vacate the area, shortly after which the vessel's port quarter made heavy contact with the first of the mooring dolphins. She then continued astern, making contact with the second dolphin. This resulted in material damage to both the vessel and the mooring dolphins.

By transferring pod control to the engine room and back to the wheelhouse, the master was able to regain control of the pod and stabilise his vessel until tug assistance arrived and the vessel was moved to a nearby jetty.

When the vessel's primary propulsion control system failed, the master was not alerted to the failure. He also did not obtain any warning before the pod began to change power on its own...

Root cause/contributory factors

1. Innovative and untested technology was designed and fitted, for which no dedicated technical standards existed at the time;

2. The company depended heavily on the manufacturers for all aspects of product support;

3. Lack of in-house maintenance procedures;

4. Inadequate knowledge of the system by ship's officers and shore staff;

5. Weak SMS and onboard system documentation, which reduced resilience to defects and emergencies;

6. Previous incidents of control system failure on this vessel and her sister vessel had not been investigated in detail and no corrective action had been taken.

Corrective actions

1. To provide training to the vessel's deck and engineering staff on the operation and maintenance of the pod propulsion system;

2. To put in place a service and maintenance regime for the company's pod propulsion fitted vessels;

3. To improve onboard documentation;

4. To cooperate with the manufacturers and classification society to complete a failure modes effect analysis (FMEA), and to retrospectively assess the ship's pod propulsion system against the current criteria for podded vessels.

■ **Editor's note:** Mariners must activate the 'Emergency Stop' immediately when it is clear that loss of control over machinery or equipment is leading the vessel into danger.

MARS 200828
Unsafe tanker berth

Our medium-sized tanker recently called at a well-known oil terminal, where we were to berth starboard side to a finger pier. Approaching the berth, I noticed that there appeared to be only three small fenders on the foremost part, and the remaining length of the concrete wall had no protection at all (see pictures). Moreover, the ship being longer than the pier, there would be a 30-40 m overhang forward, with no suitable bollards for the forward breastlines or headlines, which would, at best, lead astern. I considered it an unsafe berth and after verbally protesting to the pilot and the port authorities, I refused to berth there.

However, the local regulations required that the vessel be cleared inwards, for which my ship had to tie up temporarily at this berth. We put out the few small rope fenders that we had and went alongside – during our short stay, I managed to photograph the berth. After obtaining inward clearance, we unberthed and anchored in the waiting area. Both my owners and time-charterers fully supported my decision not to conduct operations at this unsafe berth.

The following day, I was offered an alternative berth across the dock, which I was assured, was adequate in all respects. We berthed without incident and commenced cargo operations.

During our stay, another tanker came for loading at the berth that we had rejected earlier. We observed that the incoming vessel, too, had deployed some small rope fenders and proceeded to berth and conduct cargo operations.

It sometimes appears that a 'safety culture' is intended to be enforced only on ships and not on shore facilities. I may read aloud from the International Safety Guide for Oil Tankers and Terminals (ISGOTT) to ship's staff every day as a part of safety training but too often, life, property, security and the environment are put at risk because terminals ignore regulations and best practice.

■ **Editor's note:** While not a factor in this report, readers should also be aware that in certain countries, it is common for the terminal or the port authorities to slap an exorbitant damage claim on a vessel after she has carefully tied up at an obviously poorly fendered and previously damaged berth. In one such port, the authorities were seen to carry multiple photocopies of the partly-filled claim notice, leaving the date and the vessel name sections deliberately blank for convenience. Needless to say, the claim would be served on every berthing vessel only to be ceremoniously destroyed after the officials had extorted sufficient 'presents' from the master.

If obliged to berth under such circumstances, masters, especially those on tankers, should take all seamanlike precautions and additionally preserve photographs and other evidence, note protest and inform owners, charterers and the local P&I correspondent.

MARS 200829
Fuel tank overflow

On one of our vessels, the third engineer used the diesel oil (DO) transfer pump to fill up the emergency fire pump diesel oil header tank. Simultaneously, the deck crew was taking fresh water from a shore connection through tank filling pipes located on the poop deck. The small, 100-litre DO tank was fitted with only a small open vent pipe on the poop deck and had neither an overflow nor return line, nor a spill-retaining, save-all tray. The fresh water tanks and the DO header tank overflowed within a few seconds of each other, and although all deck scuppers in the vicinity had been plugged, the oil spread quickly and was carried overboard by the running water.

Corrective action

All ships in the company were instructed to blank off the line to similar small-capacity tanks, if connected to the DO transfer piping system.

■ **Editor's note:** It is fairly unusual to have a direct connection between a DO transfer pump and a small-capacity tank, such as the one mentioned in this report. Given its volume, the header tank should have been filled only manually, preferably using a hand pump or by siphoning with a small diameter hose, and not by a remotely-located power-operated pump.

Although unlikely with diesel oil under normal conditions, there is a vapour ignition risk especially when manually transferring lower flash point liquids like kerosene and thinners. Static charge can accumulate within the fluid and, during transfer, an incendive spark can occur between the receiving container and the portable container / hose. This must be eliminated by earthing all the components just before the transfer commences.

This incident could have easily been avoided if a proper risk assessment and a 'tool-box' meeting had been conducted.

Past incidents also indicate that risks increase substantially if more than one operation is being conducted on board and there is inadequate planning and coordination between personnel.

MARS 200830
Damage to electro-hydraulic cranes in cold weather

One of our vessels recently called at a high-latitude port in severe winter conditions. In preparation for loading cargo with a shore loader, all the ship's crane jibs were raised and swung clear of the hatchways. Due to the extreme cold (temperatures were as low as -20ºC), the cranes' electro-hydraulic systems were kept running idle for the duration of the short port stay. After completion of the loading, and while attempting to park the cranes back on the jib rests, it was observed that the jibs could not be lowered. Upon further investigation, it was found that the driving shaft of the main hydraulic pump on the cranes had sheared off at the linkage, thus completely immobilising the cranes. As an emergency measure, the jibs were housed by operating the brake release mechanism manually.

Root cause/contributory factors

Despite having taken the precaution of leaving the electro-hydraulic power pack running continuously, it is suspected that the failure to move the crane controls at frequent intervals resulted in inadequate oil circulation and caused the 'idle' system oil to become very viscous. Subsequent operation of the controls resulted in sudden overloading of the hydraulic motor and sheared the drive shaft linkage.

Lessons learnt

1. In extreme cold weather, hydraulic machinery should be frequently moved in all directions.

2. Before arrival in extreme cold conditions, hydraulic systems should be carefully inspected, system oil confirmed to be at optimum levels, and condition and oil filter elements renewed or cleaned.

3. Space and system oil heaters, if fitted, must be in operation. Where absent, and if safety permits, the installation of temporary heaters may also be considered.

MARS 200831

Crew injured by disc grinder

The chief engineer assigned a routine maintenance task, involving the use of a portable powered disc grinder to an experienced fitter. During the operation, the grinding disk shattered, resulting in multiple injuries to the fitter's hand. He was given first aid and transferred ashore for further medical treatment.

Root cause/contributory factors

1. Failure to implement company's procedures for using power tools;
2. Inadequate procedures / instructions;
3. Inadequate checks of power tool and accessories before use;
4. Improper handling of materials;
5. Inadequate personal protective equipment (PPE).

Lessons learnt

1. Operations involving power tools are inherently risky. A responsible officer must carry out a proper risk assessment and issue clear safety instructions to the personnel entrusted with the task.

2. At every opportunity, the crew must be trained in the safe and proper operation of equipment and controls.

■ **Editor's note:** On some ships, there may be more than one type of powered disc grinder. If the rated speeds of the grinders are different, and the lower RPM disc is inadvertently used on the higher RPM grinder, there is great danger of disc shattering and causing injury / damage. On-board procedures must ensure that such a mix-up of discs does not occur.

MARS 200832

Grounding and near loss of tug

I was chief officer on a 35,000 dwt tanker proceeding to berth under pilotage. During our passage up a narrow channel section, the ship suddenly blacked out. Port wheel had just been ordered prior to the event, and with the rudder stuck at this angle and the residual headway, the ship rapidly veered out of the channel and ran aground before any contingency action could be taken.

She was pulled off by tugs after half a day and we continued up the channel, accompanied by a tug in case we had further problems. In order to save fuel, the tug was towed by the ship while lying alongside on a line.

Once loaded, we left the berth and the same tug was there to accompany us back down the channel. The tug was again held alongside on a single line forward. The ship left the berth and gradually went up to full manoeuvring speed. Soon, cries of distress came from the tug and looking down from the bridge wing, we saw that our bow wave was swamping the tug and water was pouring down into her engine room and accommodation through the open doors. The captain stopped the ship while I rushed down with an AB and cut the tug free. Fortunately, the tug pumped herself out and we continued on our way.

What we hadn't taken into account was that our underwater volume was a lot greater when loaded than in ballast, and our bow wave was correspondingly larger. One of us, the pilot, our captain, myself or even the tug skipper should have realised this; but none of us did.

■ **Editor's note:** It must be remembered that a complex pattern of high and low pressure zones develop in the water near the hull of a moving ship. These can attain significant values with increase in the draft and speed through the water: they can endanger tugs and even larger passing vessels when making full speed. If required to tow an idle escort tug, it may be safer to have it secured on the vessel's stern, sufficiently clear of the propeller wash. In any case, reliable communications must be maintained between tugs and the ship's bridge at all times.

MARS: You can make a difference.

Can you save a life, prevent injury, or contribute to a more effective shipping community? Everyone makes mistakes or has near misses but by contributing reports about these events to MARS, you can help others learn from your experiences. Reports concerning navigation, cargo, engineering, ISM management, mooring, leadership, ship design, training or any other aspect of operations are always welcome.

MARS is strictly confidential and can help so many – please contribute.

Editor: Captain Shridhar Nivas MNI
Email: mars@nautinst.org or MARS, c/o The Nautical Institute,
202 Lambeth Road, London SE1 7LQ

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