MARS – Lessons Learned

MARS Report No 366 April 2023

MARS 202316

When is a supervisor not a supervisor?

➔ Routine maintenance on a fuel oil pump for the auxiliary boiler was scheduled while the vessel was at anchor. A toolbox meeting was held to discuss the work and the risks and the appropriate permits to work were checked, including cold work and pressure pipeline work permits. The Second Engineer was to be the work supervisor.

The maintenance work began after lunch. The Second Engineer was dismantling the pump's filter cover, while also acting as the work supervisor. The pump had been isolated by closing the inlet and outlet valves – but the vent cock fitted on the system had not been opened, so the system was still under pressure.

As the pump's filter cover came loose, hot fuel and gases under pressure escaped from the pump. The Second Engineer and three other engine crew who were involved with the work suffered burns on their faces, neck and hands from the hot oil, even though they were wearing PPE (safety hats, gloves and eye protection). After the accident the outlet and inlet valves to the pump were checked and found to be closing efficiently. There were no signs of leakages into the system.

The four injured crew were given first aid on the vessel, and two of them were subsequently transferred to the local hospital for further treatment and examination. After 11 days of hospitalisation and medical treatment both crew were fit to travel and were safely repatriated.

Lessons learned

- Checking the boxes of a 'permit to work' form is not going to protect you from the known hazards. Working according to the precautions on the permit will protect you.
- A supervisor who is taking part in the work itself (instead of acting only as a supervisor) is less likely to be able to control the work and assess the risks.

MARS 202317

Pilot ladder crimp glitch

➔ During a regular crew inspection of lifesaving and other equipment it was found that both pilot ladders had sustained damage on the side and on the top part of the manilla side ropes. The ladders had been in service for only six months, and were stowed on the pilot ladder reel. The damage is believed to have been caused by the mechanical crimping which is used in place of rope seizing to secure the steps when the ladders are rolled onto the ladder reel. Similar ladders which had been stowed on deck were not reported damaged.

The company investigation found that in addition to causing undue wear/chafing of manila ropes, the use of crimps to secure the steps may cause twisting in the side ropes. This in turn can inhibit grip.

Lessons learned

- It is of paramount importance to have a thorough and frequent pilot ladder inspection regime in place – a person's life depends on it!

MARS 202318

Towline pennant failure destroys tug wheelhouse window

As edited from MAIB (UK) report 15/2022

➔ Three tugs were assigned to assist an ultra-large container ship to its berth at a terminal. Tug A, which was allocated the role of stern tug, was a five-year old vessel that had been very recently delivered to the harbour fleet. A delivery crew from the previous operator were working with the vessel's future crew to provide familiarisation following the handover.

Once underway for the berthing operation, but before meeting the vessel to be towed, the tug's delivery Master handed over the helm to the tug operator's Master. Under the supervision of the delivery Master, the tug operator's Master began manoeuvring evolutions to gain an appreciation of the tug's capabilities. This included mooring alongside the berth on both port and starboard sides.

With these manoeuvres complete, the tug headed to the inbound container ship. At 11:46, the tug met the container vessel and was manoeuvred into position to assume its role as stern tug. The tug's starboard forward towline was passed across to the container ship's

aft mooring deck. With its towline slack and its winch brake applied at maximum holding capacity, the tug held station astern of the container ship as it proceeded towards the berth.

At about 12:25, the container vessel entered the turning basin adjacent to its berth at a SOG of 3.7 kts. Tug B was at the container ship's bow and tug C was on its port quarter. As the ship began to turn to port, the pilot requested tug A to provide 50% stern thrust to slow the ship. Shortly afterwards, the pilot requested that tug A increase the stern thrust to 100%. As the load on the towline increased, tug A's winch brake slipped and a few metres of the towline were released. With full astern power being maintained, the line quickly became taut and the winch brake slipped a second time, releasing another several metres of towline.

After the winch had slipped for the second time, the towline pennant parted close to the container vessel's deck and snapped back towards tug A. Part of the line struck the starboard forward wheelhouse window, shattering it completely. It also struck the centre forward window, fracturing the inner pane.

Five crew in the wheelhouse of tug A were struck by flying glass fragments and suffered multiple minor facial, arm and upper body lacerations, including both Masters. All of the crew were wearing some form of eyewear, which prevented any eye injuries. The rest of the wheelhouse was riddled with glass fragments. Two of the inner panes of the aft-facing windows were also cracked but did not break.

Shattered wheelhouse window

Glass fragments embedded into chair

The mate from the delivery crew took control of the tug while the delivery Master went below to clean blood from his face. When the delivery Master returned to the wheelhouse, he resumed control, and shortly afterwards agreed with the container vessel's pilot that tug A would swap places with tug C. After repositioning the tugs, the container vessel safely berthed and the tugs were released.

All five injured crew were taken to a shore hospital to have fragments of glass removed from their faces and arms.

The official investigation found, among other things, that:

- The towline pennant was not fit for purpose due to reduced residual strength from the shock loading and wear sustained under its previous ownership. Without a detailed inspection by the manufacturer or a load test, it would have been impossible to determine the extent of the damage to the load-bearing core of the pennant and the consequent reduction in strength.
- The starboard winch brake slipped at only about half its intended holding capacity, inducing a high shock load on the towline and pennant. This malfunction was due to less than adequate maintenance.
- The tug's 'toughened' glass wheelhouse windows were unable to withstand the high energy impact load of a towline snapping back. There is currently no suitable glass standard for tug wheelhouse windows that provides a measurable level of crew safety against the hazard of a recoiling towline.
- More severe injuries to the crew in the wheelhouse were only prevented because they were wearing glasses or sunglasses.

Lessons learned

- Tugs and their associated equipment are constantly dealing with high loads which in turn produce high potential energy. Impeccable maintenance and testing of equipment should be undertaken to ensure risks are as low as reasonably practicable.
- 'Toughened' glass windows for tug wheelhouses present higher risks for injury to crew than glass that is both toughened and laminated. Laminated safety glass has been a standard for automobile front windows for many decades.

MARS 202319

Inert Gas Generator malfunction gives rise to increased inspection

➔ A tanker was berthed and discharging cargo when carbon shoot particles were observed on the sea side of the vessel. It was quickly identified that the shoot particles were coming from the overboard discharge of the Inert Gas Generator (IGG) scrubber. The discharging operation was interrupted to further investigate the cause and rectify the issue.

There were no overdue maintenance, inspection or defect jobs related to IGG and associated equipment. The vessel's engineers found that the inert gas sampling lines to the IGG oxygen analyzer were partially clogged due to carbon deposits.

The planned maintenance system (PMS) did not include any requirement for periodic inspection of the sampling pipes of the oxygen analyser. Although the likelihood of the lines becoming clogged is considered low, the company's PMS was updated to provide for periodic checks and cleaning of inert gas sampling pipes for the oxygen analyser.

Also, the frequency of scrubber tower inspection/cleaning was changed from 12 to six months in vessels with inert gas generators as this could provide an early indication of systems component clogging.

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Lessons learned

- Often, complex systems depend on a variety of small but important components that must all function correctly in their own right for the system to operate properly. Make sure these components are included in your PMS.
- Every incident gives lessons learned, and in this case the company took positive action gleaned from their investigation. Does your company do the same?

MARS 202320

Give way vessel doesn't give way

➔ A tanker loaded with condensate oil was underway in darkness and good visibility at about 10 knots. It was sailing in a coastal area with many fishing vessels in the vicinity. The OOW was assessing the various radar targets for collision avoidance. A target was plotted on their starboard side, bearing 022 degrees and at about 5.5nm, and the OOW and lookout discussed the fact that the bow crossing distance was near zero. Shortly after this conversation, a nearby fishing boat, also on their starboard side and on a near collision course, attempted to contact the tanker. The OOW on the tanker can be heard to comment to the lookout,

'Oh, he's talking to another one. You know, never answer these calls. Because if you don't answer, it is not ok to action. But if you answer, he seems ... he confirms with you about his action. So he takes action, whatever he said in the radio and you don't understand. But if you don't answer, he shall be forced to take action to make himself clear, understand?'

When the fishing vessel was about 2nm away, the OOW on the tanker asked the lookout to signal the fishing boat with the ALDIS lamp. In the following minutes the OOW saw the fishing boat altering course to port to pass astern of their vessel. Now, he turned his attention to the other target, a bulk carrier on their starboard side making about 13 knots, and asked the lookout to signal it with the ALDIS lamp, five flashes to attract attention. At this time the OOW can be heard to remark to the lookout *'We should take action. But what action can I take in this situation? Starboard side is full.'*

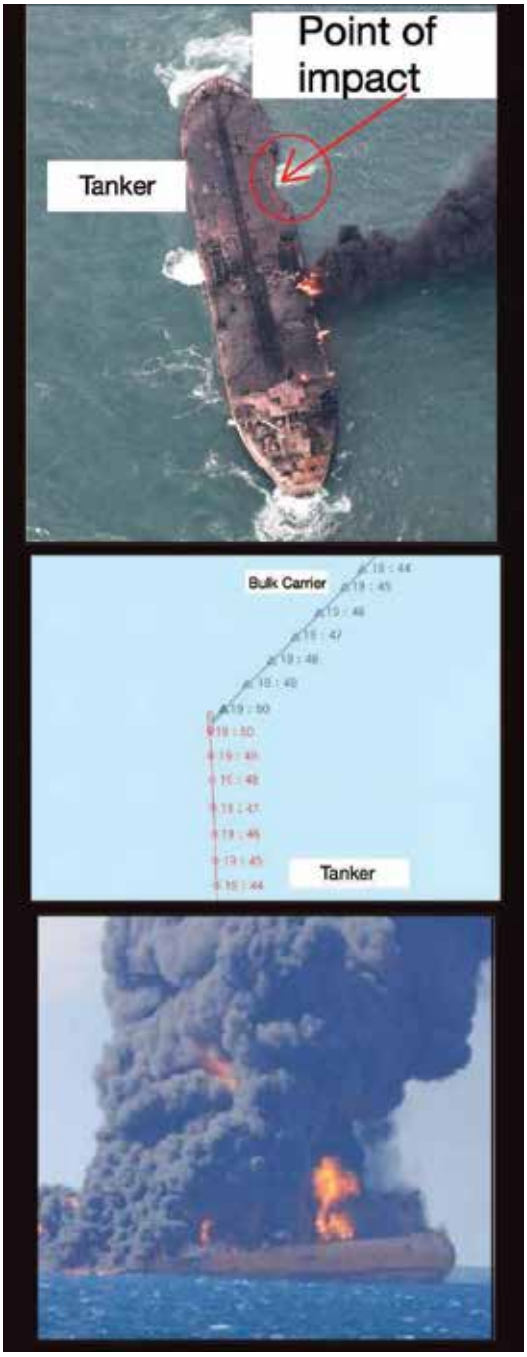
About this time, there was a change of watch on the bulk carrier. The new OOW saw the tanker on AIS but assumed it was a fishing vessel. Apparently, the tanker did not present a radar target and it appears the bridge team on the bulker did not visually sight it.

As the distance between the two vessels decreased, the OOW of the tanker called the Master to inform him of the dangerous situation. At the last minute the OOW on the tanker ordered hard starboard helm just as the Master entered the bridge. The helm action was too late to avoid collision and the bulk carrier's bow hit the tanker's starboard side. The resulting damage caused leakage of the condensate oil cargo which quickly caught fire and caused various explosions. Within minutes the vessel, including the bridge, was engulfed in flames.

All 32 crew on board the tanker were declared deceased or missing and the hulk eventually sank. The bulk carrier sustained extensive structural damage to the bow and burn damage to other areas. The crew abandoned ship and were rescued by a fishing vessel.

The official investigation found, among other things that;

- Neither vessel's OOW complied with the collision regulations. The tanker, as the give way vessel, should have taken early and substantial action to avoid collision. The bulk carrier, as the stand on vessel, should have taken action when it became apparent that without their action a collision was inevitable.
- Although the OOW of the bulk carrier had noticed the tanker on AIS, he assumed it was a fishing vessel and he did not confirm with a visual sighting.



Lessons learned

- Early and substantial action was required by the tanker as the give way vessel. The OOW seems to have thought that a course alteration (to starboard) was the only option and, as his starboard side had other vessels present, he did nothing. Had he reduced speed in good order this would have allowed both the fishing vessel and the bulk carrier to pass ahead.
- Given a vessel on your starboard side with a zero CPA, do not assume that just because it is a fishing vessel it will alter course to avoid your vessel. Fishing vessels have the same rights and obligations as large cargo vessels.
- Using an ALDIS lamp to attract the attention of an oncoming vessel may be part of the solution during a close quarters situation. But, as a give way vessel, using the ALDIS lamp to warn other vessels of your presence, instead of taking the required action as required by the collision regulations, would appear to fly in the face of those rules.

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