



Mariners' Alerting and Reporting Scheme

MARS Report No. 316 February 2019

MARS 201908

Grinding accident – check your RPMs

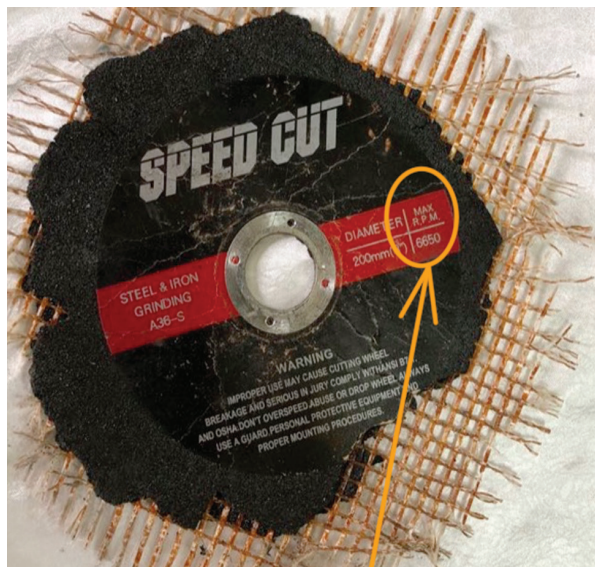
→ A loaded tanker was at anchor awaiting berthing instructions. During the course of the day, routine work was planned in the engine room. One job involved cutting and grinding a dismantled galvanised 1in pipe in the workshop. A toolbox meeting was held and the angle grinders were prepared, one for cutting and one for grinding.

Once the pipe was cut, the fitter positioned the pipe in a vice to grind the cut end. Shortly after he began to work the grinding disc shattered into fragments. Although the guard was fitted, some of the fragments hit the fitter's left hand, which was protected only by a thin glove. He sustained a deep open cut.

First aid was applied immediately and the victim was later sent ashore for treatment.

The company investigation found, among other things:

- The grinding disc was designed for a maximum of 6,650rpm, but the grinder was designed to rotate at 8,500rpm, nearly 22% faster than the permitted speed of the grinding disc.
- Before starting the job, information on the angle grinder's design speed and the manufacturer's instructions were not checked to verify correct use of the equipment.
- Although the grinder's protection guard was in place, it was not at the correct angle to afford proper protection.



The disc was meant to be used at a maximum of 6,650rpm

Lessons learned

- Angle grinders should be marked with their design specifications to help crew check them easily against the discs in use.
- The RPM rating of the disc or blade must be equal to or higher than that of the angle grinder.
- Guards should be adjusted to deflect flying particles away from operator. The guard between the operator and the wheel should be at an angle of 180°.

- Hand protection is essential when grinding. Only robust leather gloves are acceptable.
- Cutting wheels or discs should not be used for grinding jobs, nor should grinding wheels be used for cutting jobs.
- Wheels should be used solely for the specific material and purpose for which they are designed, and always according to the manufacturer's recommendations.
- The British Abrasives Federation recommends using abrasive discs that comply with standard EN 12413:2007+A1. The standard stipulates that discs must be marked with a date of expiry that is no more than three years after the date of manufacture.
- Wheels worn small through use should be discarded and never used on smaller machines.

■ **Editor's note:** Grinding presents several risks of severe injury to the hands, body and eyes. Some past MARS reports of grinder injuries include 201772, 201725, 201624, 201243, 200882, 200831.

MARS 201909

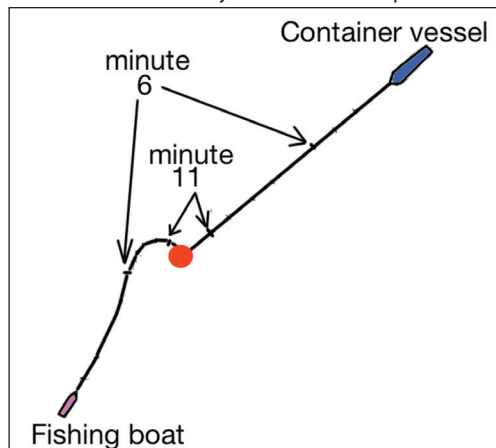
Collision sinks fishing boat

As edited from JTSB (Japan) report MA2014-8

→ A container ship was underway on the open sea in darkness and during a rain storm, on a course of 228° and at a speed of almost 17kt. The helmsman and OOW were each at a radar but were engrossed in a social conversation with each other. The helmsman sighted the port sidelight of another vessel at a distance of about 0.6nm on the starboard bow and reported the sighting to the OOW. About one minute later, after changing the range of his radar from 12nm to 6nm, the OOW saw the vessel in question and thought it was crossing ahead on the starboard bow – the distance was now about 0.3nm. The OOW ordered 15° to starboard and blew the ship's horn, then gave the order for hard to starboard.

The other vessel, a fishing boat proceeding at about 8kt, changed course to starboard at the last minute because the OOW on that vessel believed a port-to-port passing was required.

Notwithstanding these actions, the container ship collided with the fishing boat. The crew of the fishing boat abandoned into a lifeboat and were later recovered by the container ship. The fishing boat later sank.



Lessons learned

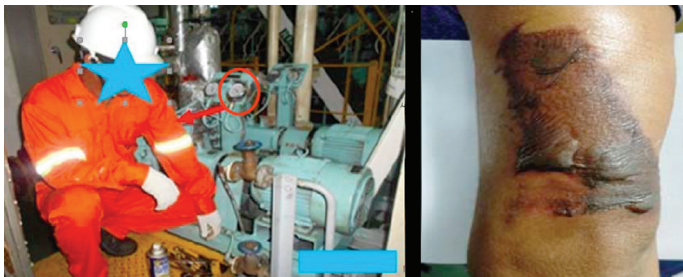
- Lookout, lookout, lookout. Had a proper lookout been kept on each vessel this collision could easily have been avoided.
- A good lookout is always necessary but extra concentration and vigilance is needed in darkness and in reduced visibility such as during a rainstorm.
- VDR data confirms that the container ship's radar was showing the fishing vessel's echo fully 14 minutes before the collision. The bridge team were preoccupied with their conversation, which probably helps explain why they only saw the fishing vessel at the last minute.
- The OOW on the fishing vessel had seen the container ship but he did not adopt a proper systemic methodology for tracking it. At the last minute he acted on assumptions that contributed to the collision.

MARS 201910

Complacency serves up a steam burn

➔ An engine rating and an engineer were tasked with renewing the discharge pressure gauge on a circulating pump. After isolating the steam lines and releasing the line pressure, the gauge was changed and the associated connections were reinstalled. The steam line was then partially opened to check the operation of the pressure gauge. The pressure gauge was found to be operating satisfactorily at low pressure. As everything appeared to be in order, the steam line was then opened fully.

As the rating was securing the tools near the work site, the steam inlet pipe to the pressure gauge gave way and hot water and steam splashed over the victim's left arm. He sustained second degree steam burns on his left hand and was sent to a shore hospital for further medical attention.



Among other things, the company investigation found:

- The engineer in charge did not check the tightness of the fitting (ferrule with pressure gauge) prior to opening the steam valves.
- The newly renewed pressure gauge and its associated components were not tested for a sufficient time at normal working pressure.

Lessons learned

- Testing of newly renewed pressure components should be carried out at working pressure and for a sufficient time interval to assure the integrity of the job.
- The area near the components should be cleared of personnel during the test.

MARS 201911

Finger squeezed

➔ Preparations for the gas freeing of a cargo tank were taking place on a tanker. The pumpman was opening the aft butterworth pocket of the tank, assisted by a deck cadet. The pumpman initially used a manual spanner to open up the nuts, but these were very seized and the attempt was unsuccessful. It was decided that a pneumatic impact

wrench would be used to un-torque the nuts, while the manual spanner was to be used to hold the nut at the bottom.

When the impact wrench was started, the locking spanner holding the nut at the bottom slipped from the pumpman's grip and his finger was caught between the butterworth pocket body and the spanner's closed head. The victim sustained an injury to his right-hand index finger.



Lessons learned

- There are no spare parts for the human body. Even seemingly routine tasks need to be evaluated beforehand and care taken in their execution.
- When using impact wrenches, and power tools in general, it should be understood that the amount of energy generated is high and the tool will not stop immediately when de-energised.
- The job should be thoroughly discussed and understood by all involved, including the limitations of the equipment and the space constraints.

MARS 201912

Poor BRM + low situational awareness = a bad day

As edited from official TAIC (New Zealand) report MO-2017-201

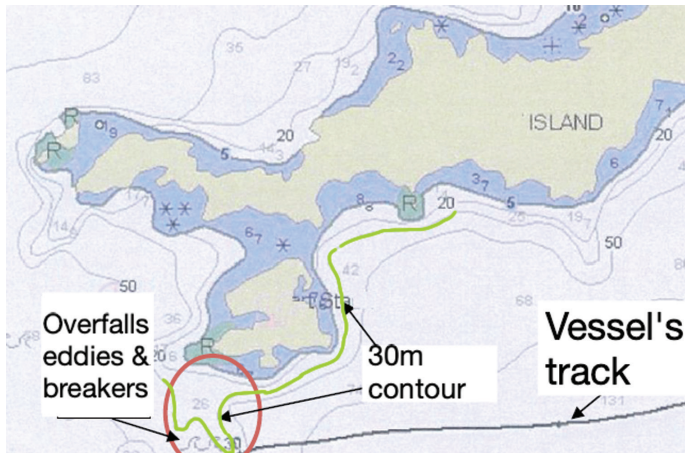
➔ An excursion passenger vessel arrived off an island where the passengers spent the morning making shoreline excursions in rigid-hulled inflatable boats, observing the wildlife. The weather became unsuitable for small-boat excursions in the afternoon, so the boats were taken back on board.

An OOW was assisting the Master on the bridge and primarily using the vessel's ECDIS to position the vessel and gain situational awareness. However, the Master and the navigation officer had come to no agreement about a plan, nor had they expressed to each other their expectations. As a result, and despite the Master wanting to avoid an area identified with overfalls and eddies, no effort was made to establish a no-go zone. Additionally, the ECDIS shallow contour setting was at 6m, which would have rounded up to 10m on the ENC in use at the time of the accident. With this configuration, the shallow contour did not show, as it was effectively the same as the safety depth.

While the Master was focused on manoeuvring the ship to facilitate the safe recovery of the rigid-hulled inflatable boats and communicating with the operation taking place at the ship's stern, the ship drifted very near the island and it struck an uncharted rock. The rock pierced the hull in an empty void tank, which flooded with water. The damaged compartment had little effect on the ship's stability, and the ship was able to continue to another island before returning to port for temporary repairs. Nobody was injured.

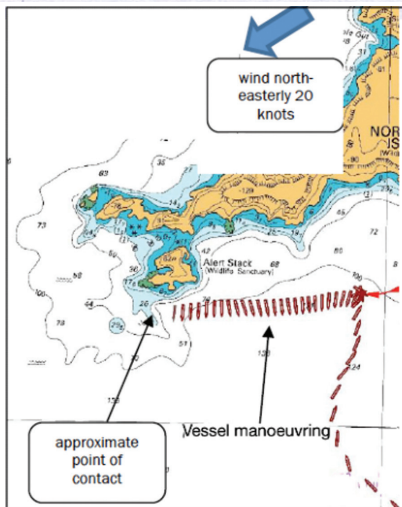
Some of the findings of the official report were:

- The standard of bridge resource management on board the vessel did not meet good industry practice.
- The electronic chart display and information system was the primary means of navigation on board the vessel, yet the operating crew were not fully familiar with the capabilities and the limitations of the equipment and were not making best use of it.



Lessons learned

- Undoubtedly, some rocks and shoals remain uncharted. Coming close to shore in areas where hydrographic information is sparse can be a risky proposition.
- If the shallow contour parameter had been set to 30m, the ECDIS would have displayed a warning or alarmed when the vessel was predicted to cross the 30m contour, thus giving better situational awareness.
- Every part of a ship's voyage must be planned, and all members of the bridge team must be fully familiar with the plan and agree to it. This is a cornerstone of effective bridge resource management.
- Good bridge resource management relies on a culture where challenge is welcomed and responded to, regardless of rank, personality or nationality.



MARS 201913

Cool heads prevent hot ending

As edited from official Bahamas Maritime report of 7 July 2018

➔ A passenger vessel was proceeding at a speed of about 12kt using only the starboard main engine. The port main engine had been stopped because the vessel could make the required speed without it being on line. Early in the morning a main engine booster pump low-pressure alarm sounded on the engine monitoring system, followed quickly by the starboard main engine fuel oil low-pressure alarm.

A summary investigation revealed that there was a large fuel leak on the aft end of the inboard cylinder bank of the starboard main engine. Very quickly smoke was observed in the vicinity of the starboard main engine. The engine room fire alarm was activated and the fire was reported to the bridge. The engine was immediately stopped using the emergency stop.

The fire team assembled, passengers were roused and a mayday message was sent. Boundary cooling was initiated and the temperatures of the bulkheads were evaluated. Although all four sprinkler system supply pumps were running and the manifold pressure was at working pressure the manifolds for the release zones were showing zero-bar pressure, which meant that none of the sprinklers for the zones had been activated. The release solenoid valves were then operated

manually. After a period of time, bulkhead temperatures had decreased considerably and it was soon observed that the fire was extinguished.

An investigation was started and it was found that the top bolt of the fuel inlet pipe was missing from one of the fuel pumps. It is highly probable that the bolt worked loose because of the vibration of the engine, which may have been a result of the bolt being incorrectly torqued in the first instance. Fuel had then made contact with a hot surface and ignited.



Some of the damage incurred

Lessons learned

- Fixed fire suppression systems work well... when they work. In this case, the zone sprinklers had to be manually activated, which gave more time for the fire to grow. Boundary cooling and cool heads will always work.

MARS 201914

Emergency slowdown override to the rescue

➔ The vessel was inbound and the Master/Pilot exchange had just been completed. Suddenly, the auto emergency slowdown alarm for the main engine sounded and the RPMs began dropping. As the vessel was in the channel and there was traffic nearby the emergency slowdown override was activated and vessel was steered clear off all traffic. Then, in consultation with the pilot, the main engine telegraph was brought to Stop.

Crew already stationed at the bow were asked to lower the starboard anchor to water level for immediate use. The bridge was then informed that the automatic slowdown was caused by a crack in the main engine unit number two cylinder jacket cover, which had caused a loss of pressure in the cooling water system. The vessel was maintained in safe waters on the bank of the channel using the bow thruster and helm. Tugs were called for additional safety. The propulsion was restored by isolating the number two unit and the vessel brought to berth.



Lessons learned

- The investigation found that one of the four screws that secured the jacket had not been tightened correctly. This in turn had affected the gap between the cooling jacket and the screw head, causing the cooling jacket to crack.
- Irrespective of the actual cause of the failure, the bridge team reacted with aplomb by overriding the automatic slowdown for the time needed to place the ship in a secure position, avoiding any further damage.

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