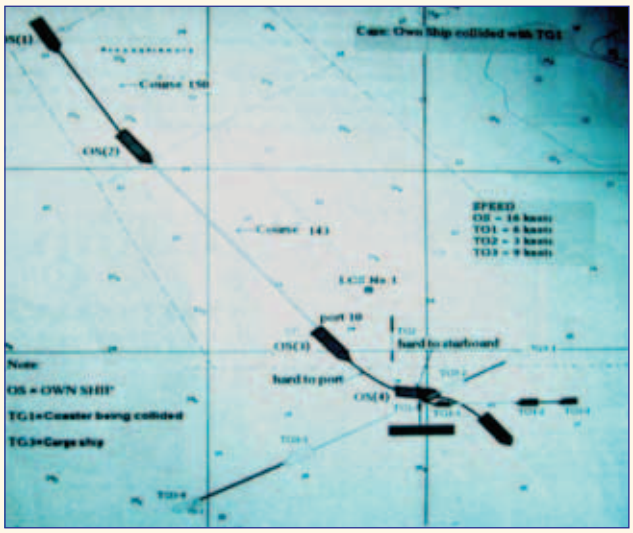
The Nautical Institute
Mariners' Alerting and Reporting Scheme
MARS Report No 213 July 2010

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

MARS 201036
Collision off port

Own ship, a large container vessel (OS), about 300m LOA, was recently involved in a multiple crossing situation with three other target ships (TG1, TG2 and TG3) during an early morning departure from an Asian port. Figure 1 shows how events led to a collision with a small coaster (TG1). TG2 was also a small coaster, while TG3 was a cargo ship.



▲ Figure 1: Reconstruction of collision incident

Events

1. OS(1), TG1-1, TG3-1, TG2 mark the positions at the same time when TG1 was acquired on our ARPA, bearing 132°(T) range about 3 nm.

2. Two minutes later, own ship was in position OS(2), and the other vessels were in positions TG1-2, TG2 and TG3-2 respectively.

3. Seven minutes later, when own ship was in position OS(3), port rudder was applied to alter course to port (presumably a navigational course alteration: Editor). About a minute later, the masthead lights and both red and green lights of TG1 were suddenly seen almost right ahead from our bridge and rudder was put hard-to-port. When TG1 disappeared under our bow (within ahead blind distance), our OOW, assuming that our rapidly swinging bow had swung sufficiently to port to clear TG1, and in order to swing our stern away from the coaster, put the rudder hard-to-starboard. TG1 was subsequently seen astern of own ship, and it was presumed by our bridge team that there had been no contact between the two vessels as no sound was heard and no impact or vibration had been felt. Only when tank soundings the following day revealed loss of fuel oil from no.2 starboard fuel oil tank, collision with TG1 and hull damage was confirmed.

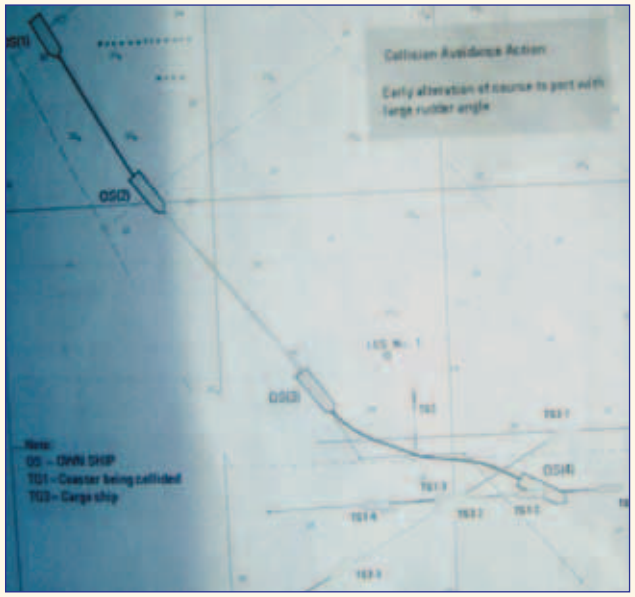
Figures 2, 3 and 4 show the projected results obtained from a ship manoeuvring simulator under each captioned manoeuvre.

Figure 2 shows that if own ship had put the rudder hard-to-port instead of port 10° at position OS(3), TG1 would have passed clear close ahead of own ship.

Figure 3 shows that if own ship had reverted to a heading to 150° at position OS(3), it would have been possible for own ship to cross close ahead of TG1.

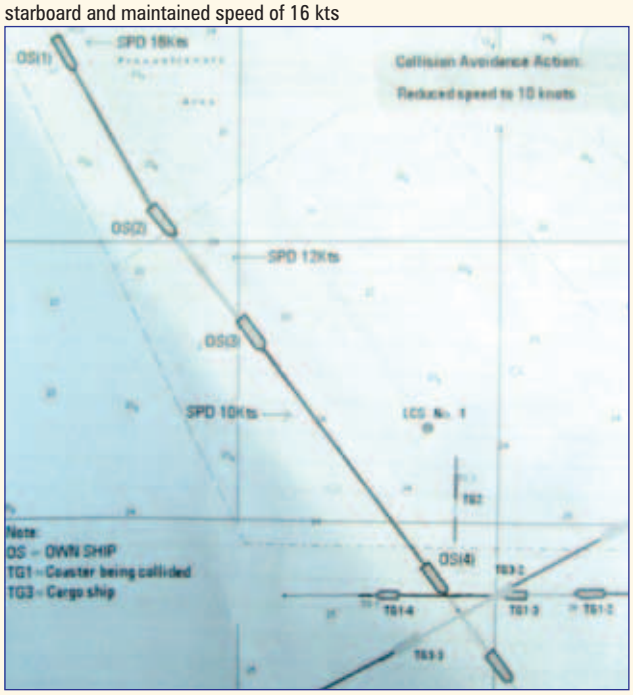
Figure 4 shows that if own ship had reduced speed rapidly from 16 knots to 10 kts, it would have avoided close quarters situation with all three of the other vessels.

■ **Editor's note:** Primarily, this incident was the result of serious violations of Colregs by both TG1 and the reporting vessel. However, it is encouraging to note that the reporter has illustrated the alternate safer manoeuvres as conducted on a simulator (assuming that the three other vessels continued to maintain their courses and speeds). Apart from illustrating the common hazards of navigating in port approaches, this collision incident also conveys:



▲ Figure 2: Hypothetical result on simulator if own ship had turned to port earlier with initial large rudder angle and maintained speed of 16 kts

▲ Figure 3: Hypothetical result on simulator if own ship had turned to starboard and maintained speed of 16 kts



▲ Figure 4: Hypothetical result on simulator if own ship had broadly maintained her heading of 143°(T) and reduced speed to 10 kts, safely clearing all three crossing vessels

1. The passage plan must carefully appraise expected traffic conditions in port approaches and an appropriate bridge team management system and a safe speed for every leg must be specified beforehand by the master;

2. The effectiveness of slowing down in resolving developing close-quarters situations is shown clearly in the last simulated manoeuvre;

3. On very large vessels, the bridge team may not feel the impact of green seas or contact with small vessels or objects;

4. Even in the case of a presumed narrowly avoided collision, the emergency alarm must be activated immediately and own and other vessel's damage must be assessed, assistance offered and the incident reported promptly to appropriate authorities;

5. In the approaches to many major ports around the world, coastal vessels and local craft may not comply with Colregs.

MARS 201037

Stowaways behind false panel in container

As the master of a container feeder vessel on the North African trade, my crew and I are ever vigilant against stowaways who make desperate attempts to enter the European Union illegally. Accordingly, at all African ports, our onboard procedures ensure that my highly reliable and competent crew open, inspect and seal every empty container on the quay before being loaded. Hence I was particularly shocked and embarrassed when, in an African port, some policemen suddenly boarded my vessel, claiming that 10 persons had stowed away on my vessel in an empty container which had been loaded the previous day. Soon, the suspect container was discharged ashore, the ship's seal cut, the doors opened, and 10 stowaways were discovered and taken into custody. It was then observed that a false rear panel (identical to the original one) was built inside the container, about one foot away from the actual rear panel, and the stowaways who concealed themselves within the gap remained undetected during the internal inspection by the ship's crew. Once the container had been stowed on board, the stowaways dismantled the panel and settled down inside the unit. However by the next day, with the vessel still alongside, the air inside got very stuffy and fearing suffocation, the stowaways called the local police on their mobile phones, giving them the container number and asked to be rescued.

▲ Figure 5: View of false end panel (stowaways were disembarked at the port before sailing)

▲ Figure 6: Closer view of the false end panel, showing the space that hid 10 stowaways during inspection on shore by ship's crew

It is a matter of concern that stowaways in this region are getting increasingly innovative in defeating the security measures being followed by terminals and ships, among which container vessels are especially vulnerable.

Corrective/preventative actions

1. The incident was reported to the company security officer (CSO).

2. As an additional security measure, it was decided to verify every empty container's interior dimensions during the pre-loading searching process. This can be achieved by two simple methods – through a laser distance measuring device or by confirming the internal dimensions with a tape or rope, with the lengths and widths of standard marine freight containers suitably marked.

MARS 201038
Oil leak from fuel pump return line

The vessel was en route and operating in UMS mode. The duty engineer entered the engine room at 06:50 to man the engine room and discovered fuel oil spraying around the main engine top, middle and lower platforms, as well as around the flywheel area. Under the influence of the main engine turbo-charger air intake and the engine room ventilation blowers, the oil mist was being carried right across the machinery space, increasing the fire hazard. The main engine was immediately stopped and the ship's engineers began the job of tracing the source of the leak.

It was soon established that the leak originated from a failed joint at a pipeline flange on a fuel pump oil return line. It was also observed that the joint (which had been opened during a recent drydocking) and the fuel pump inlet pipe bosses were not covered with approved splash prevention screening, as required under Solas. This was apparently due to an oversight in the case of the flange and due to the awkward shapes of the castings on the fuel pump body. All fuel oil inlet and return pipes were checked and it was found that some of the bolts required about half a turn of the nuts to obtain proper tightness.

Root cause/contributory factors

1. Lack of standards: insufficient data on engine vibrations, lack of recommended tightening torque on fuel oil piping connection fasteners;

2. Although the vessel had been in operation for less than six months since the last dry-docking, it was evident that excessive vibrations caused some flange connections to become loose;

3. Inadequate application of splash-prevention screening at key locations.

Corrective/preventative actions

Procedures initiated in the fleet for:

1. Better monitoring of the assembly process during building as well as during the post-drydock commissioning trials;

2. Regular checks to be carried out on flanges and tightness of bolts and providing data on recommended torque settings for fasteners on pressurised oil systems;

3. Investigating the possibility of installing some form of spray guard/deflector around fuel pumps to deflect any leakages away from hot surfaces;

4. Use of spray deflection measures around the flanges. These used with the deflectors would enhance the level of protection provided;

5. Investigating the possibility of fitting some kind of oil mist detection system around the top of the main engine or utilise the oil mist detection capabilities of some CCTV systems to raise alarms;

6. Incorporating nut locking arrangements such as locking tab washers or drilled bolt head and locking wire arrangements.

MARS 201039
Chemical splashed into eyes

A crew member was transferring liquid chemicals from storage containers without wearing the correct personal protective equipment (PPE). During the transfer, some drops of the chemicals splashed into the crew member's eyes, resulting in temporary itching and discomfort.

What went wrong

1. The crew member did not carry out a risk assessment before the operation was commenced;

2. No toolbox meeting was carried out before carrying out this job;

3. The crew member did not use the correct PPE for the job as he was not aware of the danger involved with chemicals and the PPE required to be worn.

▲ Figure 7: Example of a well-laid out chemical storage area on board ship, showing PPE, placards and safety data sheets. Besides providing portable eye wash kits, it may be prudent to also provide an emergency shower and eye wash basin in the vicinity that can be operated by a temporarily blinded person: Editor

What went right

Quick and correct first aid response. The eyes were immediately flushed with an eye-wash solution that was readily available at the location, preventing serious injury or damage to the crew member's eyes.

Root cause analysis

Lack of compliance – the crew member did not follow the company's personal protective equipment matrix which highlights the correct PPE that is required at all times, and particularly for operations involving chemicals.

Corrective/preventative actions

1. All personnel are to be made aware of the company PPE matrix; this is to be posted in strategic areas around the vessel as a constant reminder and reference tool;

2. Proper toolbox meetings to be held before beginning any work so that personnel are aware of the scope of the job and the correct procedures to be followed;

3. Correct PPE is to be kept in designated work areas and maintained in good condition. This includes safety goggles, chemical apron and face shield. Eye-wash solution to be readily available at location;

4. Personnel to be reminded of the dangers that are involved in handling/using chemicals;

5. The company generic risk assessment on handling and use of chemicals is to be discussed with all as a part of the toolbox meeting.

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