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

MARS 201051
Loss of anchor at sea

One of our vessels recently lost her starboard anchor when under way. On investigation, it was determined that the spile pin securing the main pin of the 'D' shackle had come free, allowing the main pin to dislodge and causing the anchor to drop into the sea. The loss was detected at a later stage by ship's staff, during their rounds of the forecastle deck.

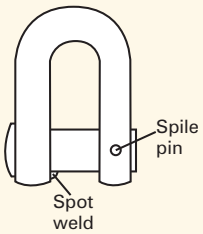
▲ Figure 1: 'D' shackle showing main pin displaced and anchor missing

11.3 Shackle pins

Occasions have arisen when anchors have been lost because the spile pin securing the main pin of the 'D' shackle has come free allowing the main pin to move.

At regular intervals the 'D' and swivel shackles should be inspected to verify that the spile pins are still in position, thereby ensuring the security of the main pain. If a spile pin is missing it must be replaced, certainly before the anchor is used again.

As a preventative measure the main shackle pin is sometimes spot welded to the 'D' as shown in the sketch.



Welding in this fashion permits the 'D' to flex over the main pin without danger of the main pin coming out.

▲ Figure 2: Extract reproduced with permission from OCIMF

Corrective/preventative actions

1. Fleet instructed to inspect anchor connections at the first opportunity and report the findings to the management office;

2. In accordance with recommendations in OCIMF Publication 'Anchoring Systems and Procedures For large Tankers', Chapter 11.3, fleet instructed to spot weld the shackle pin during the next planned, gas free mode, following the company-approved hot work procedures at all times.

MARS 201052
False E/R CO_2 flooding alarm

I was recently tasked with inspecting water ballast tanks located on either side of a ship's engine room. The tank manholes were located on the outboard sides of the machinery space, which formed the inner barrier of the ship's hull.

All the requirements of the ship's tank entry manual were fully implemented; a tank entry permit was issued; and a copy of this was posted outside the tanks which I was to enter.

The chief officer accompanied me. We agreed that I would enter the tanks while he would stand in the engine room with his head through the access manhole, watching my progress. As is my usual practice, I told him that in case of any untoward event, he was not to attempt a rescue operation by himself but rather to raise the alarm. The design of the tanks meant that it was not feasible for me to wear a recovery harness.

I entered the tank and began crawling aft through the lightening holes, away from the access manhole and ladder. Several minutes later, I reached the after end of the tank, and was about to climb to the upper gallery of the tank when the engine room CO_2 alarm began to sound. I abandoned my task and began retracing my path through the lightening holes with my heart pounding, knowing that even when I exited the tank, I would still have to exit the engine room, into which, presumably, CO_2 was now pouring. When I reached the top of the ladder, the chief officer was standing there. He informed me that it was a false alert and that the technicians who were maintaining the CO_2 system had accidentally triggered the CO_2 alarm. When my heart rate had returned to normal, I resumed my tank inspection.

The point of this story is that while the ship's tank entry permit system was good, it had not warned me that the

technicians were working on the CO_2 system, and I had failed to ask whether any such work was in progress. It is important that when we do tank or hold entry, we ask if any other work is in progress.

■ **Editor's note:** It is suggested that besides recording other concurrent shipboard operations, a tank entry/work permit also provides, if appropriate, evidence of the ready availability of:

1. At least two independent accesses to the space to be entered;

2. An escape route marker (brightly coloured ribbon tape or string) leading to nearest exit(s);

3. Radio or other reliable portable means of communication to be used between personnel involved in the operation and control stations;

4. Contingency plans, especially in case of emergencies and the activation of critical alarms.

MARS 201053
Burn injuries from hot sludge

During a voyage, the fourth engineer instructed the oiler to clean the area around no. 2 FO (fuel oil) service tank sounding pipe. The tank was known to contain heated sludge and its sounding pipe was located outside the engine room, on the upper deck. While cleaning the sounding pipe, the plug of the sounding pipe was suddenly blown off due to internal tank pressure. Hot sludge (approx 100ºC) sprayed on to the right side of the oiler's face and his right arm, resulting in severe scald injuries.

Root cause/contributory factors

1. The vent pipe of this tank had been blanked off in the past. This unsafe practice was not known to present ship's staff;

2. The heating coils in the tank were also reported to be leaking, causing a gradual increase in sounding;

3. The mismatch between the remote tank gauge in the engine control room (ECR), which indicated a tank sounding of 3.0 m, and the actual sounding of 7.0 m was not properly investigated;

4. The threads on the plug had become worn out and this had not been rectified by the ship's staff;

5. The injured oiler was not wearing a long-sleeved boiler suit at the time of the incident, which would have offered better protection to his arms;

6. The service tank was inappropriately used to store sludge. The vessel's incinerator was designed to burn sludge, but past and present ship's staff preferred to avoid incineration and found it more convenient to store it in on board.

Corrective/preventative actions

1. A new plug was fabricated and fitted on the sounding pipe. All other sounding pipes and plugs were checked to ensure that the threads were in an efficient state;

2. The blank from the vent was permanently removed and it was verified that all other tank vents were clear;

3. Management arranged for shore disposal of the sludge and permanent repairs to leaks in tank heating coils;

4. The manning agents have been instructed by company not to supply crew members with short-sleeved boiler suits;

5. The incident report will be circulated throughout the fleet and management staff attending ships shall discuss this incident with ship's staff;

6. This incident will be made part of pre-joining briefing for all senior officers.

MARS 201054
Excess crude oil cargo discharged

Recently one of our tankers discharged an excess of nearly 150,000 barrels (bbls) of crude oil cargo. As per the voyage instructions, the vessel was instructed to proceed to an intermediate port and discharge a quantity as close as operationally possible of 1,600,000 bbls of Arabian light crude oil and to reload the same grade/quantity at another loading terminal nearby. The vessel was then ordered to proceed to a port in NW Europe for full discharge.

During the course of the investigation, it was ascertained on arrival at the intermediate port, using the vessel's arrival cargo figures, based on tank gauging and vessel's loading computer calculations, that the onboard quantity (OBQ) was more than the load port figures. The chief officer then decided to alter the loading computer settings in order to match the load port figures. This was carried out without the knowledge of the master or any other shipboard personnel involved in the cargo operations.

In the loading computer, there is an ullage entry program where tank ullage tables, petroleum measurement tables are all interlinked with formulae. When ullages, cargo temperature and API data are fed into the computer, automatic calculation of tank-wise cargo quantities are displayed. During the entire discharge operation at the intermediate port, the loading computer program was in use with the altered settings to obtain the ship's figures on the quantity discharged.

The next day, the terminal informed the vessel that the nominated quantity had been received, and to stop the discharge of cargo. The chief officer forgot that he had altered the settings in the loading computer the previous day and concluded that the vessel had not discharged the nominated quantity yet. Accordingly, the vessel resumed the discharge until the chief officer calculated that the required quantity had been unloaded. Upon completion of gauging and cargo calculations along with the surveyors, the chief officer determined that cargo in excess of the nominated quantity had been discharged. It was only at this time he realised that the changes in the loading computer settings had resulted in a very large discrepancy in the cargo quantity discharged.

Root cause/contributory factors

1. Insufficient understanding by the chief officer of the operational parameters of the loading computer and the subsequent lapse on his part to revert the equipment to its original state;

2. Unethical use or manipulation of equipment settings to meet a desired result;

3. Failure on the chief officer's part to seek advice from the master and keep team members advised of changes made to

key equipment;

4. Failure to recognise the over-reliance on a single system and it's equipment resulting in a gross error;

5. No cross reference checks carried out, such as loading computer against the tank calibration tables;

6. Final stop ullages were based on the volumes from the loading computer only and the tank ullage tables were not referred to at any stage;

7. The hourly rate and quantity discharged during the course of the discharge were read off the loading computer and the ship's tank ullage tables were never consulted;

8. During the course of discharge operations, the discharged quantities were not compared with the terminal at regular intervals, as per common tanker practice.

Corrective/preventative actions

1. The incident analysis report has been circulated among the fleet for information and review. Master and deck officers are reminded to be actively involved in cargo operations.

2. A circular letter has been issued to the fleet detailing the incident and the immediate steps identified to prevent recurrence of the same.

3. The lessons learned from the incident have been included as a revision in the company's tanker operations manual.

4. Further training will be identified and given after shore debriefing of the chief officer.

MARS 201055
Injury to hand

While carrying out routine maintenance of a fire hydrant in the engine room, a crew member decided to use a wheel key spanner to free up the stiff valve. The spanner handle's free end was fitted with an open wire tail as a convenient hanging device when not in use. When the crew member tried to open the wheel with the spanner, his hands slipped along the handle and the wire tail penetrated the gloves, resulting in a gash injury between his ring and middle fingers.

Root cause/contributory factors

1. Hazardous sharp and open wire tail fitted at the free end of the wheel key spanner handle;

2. Improper/insufficient grip between key and valve operating wheel;

3. Working gloves found to have insufficient grip.

Corrective/preventative actions

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

2. A tool box meeting is to be held by those assigning tasks to ensure that personnel involved in the job are aware of the hazards and that proper precautions are exercised;

3. Proper personal protective equipment (PPE) in accordance with the company's PPE matrix must be worn at all times. If gloves are worn out, they must be replaced;

4. Personnel should take care while being involved in any work. Due diligence should be exercised.

5. Wheel keys should be fitted with non-hazardous hanging/securing arrangements.

▲ Figure 3: View of open wire tail fitted on handle's free end for hanging spanner

▲ Figure 4: Injured hand pointing to the open wire tail

■ **Editor's note:** If wire tails are considered necessary for securing tools when not in use, it is suggested that they are bent double to form a closed loop and fitted in such a way that there are no sharp projections

MARS 201056
Finger cut by meat slicer

The ship's messman was involved in preparing cold meat cuts for dinner using the electrical meat slicer fitted in the galley. Unfortunately, his left forefinger came between its body and the slicing disc resulting in a deep cut. After being given first aid, investigations revealed that the messman was not following proper procedures, due to insufficient knowledge, experience and training.

Corrective/preventative actions

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

2. Before allowing any person to operate any equipment on board, proper training is to be given. In this case the chief cook should have trained the messman, who was relatively inexperienced, about the correct procedures to be followed.

3. Operating instructions for galley equipment should be readily available and posted in the vicinity of such equipment.

4. All galley personnel who operate any equipment in the galley should be aware of the emergency stops for the equipment.

5. Personnel to take care while working with any equipment especially where the possibility of cuts/burns etc exist.

MARS 201057

Fire hazard due to hot repairs to containers

■ Edited from the North of England P&I Association Nepia **Signals** no. 75/2009

The side of a laden container had been damaged and was repaired by welding, with the cargo of scrap electrical components on pallets still inside. This caused a smouldering fire to start in the container, which could have resulted in a serious fire on the ship. Members and ships' crew's should be aware of the risk and be on the lookout for potential problems with any container showing signs of recent welding repairs.

▲ Figure 5: Smouldering pallets after emergency destuffing

▲ Figure 6: Heat damage to inner surface of container's side panel

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

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