IMCA Safety Flash 10/18

April 2018

These flashes summarise key safety matters and incidents, allowing wider dissemination of lessons learnt from them. The information below has been provided in good faith by members and should be reviewed individually by recipients, who will determine its relevance to their own operations.

The effectiveness of the IMCA safety flash system depends on receiving reports from members in order to pass on information and avoid repeat incidents. Please consider adding the IMCA secretariat (imca@imca-int.com) to your internal distribution list for safety alerts and/or manually submitting information on specific incidents you consider may be relevant. All information will be anonymised or sanitised, as appropriate.

A number of other organisations issue safety flashes and similar documents which may be of interest to IMCA members. Where these are particularly relevant, these may be summarised or highlighted here. Links to known relevant websites are provided at www.imca-int.com/links Additional links should be submitted to info@imca-int.com

Any actions, lessons learnt, recommendations and suggestions in IMCA safety flashes are generated by the submitting organisation. IMCA safety flashes provide, in good faith, safety information for the benefit of members and do not necessarily constitute IMCA guidance, nor represent the official view of the Association or its members.

1 Incorrectly Selected Oxygen Welding Gas Hose Bursts & Catches Fire

What happened?

The ship's welder opened the Oxygen and Acetylene gas bottle valves in order to do a cutting job on deck. These gas bottles were attached to the vessel's integrated welding gas system. Opening the valve on the Oxygen bottle had the immediate effect of causing an explosion to a short, high pressure hose delivering oxygen from the bottle to the oxygen gas regulator. The end of the hose caught fire and was quickly extinguished by turning off the oxygen bottle. Nobody was injured and the only damage was to the hose that completely separated.

What went wrong?

Investigation found the following:

- The hose had been recently replaced, but the replacement hose was a hydraulic oil service hose with oxygen fittings. The replacement hose was not compliant with the ISO 14113 specification required by the manufacturer, although the pressure rating was suitable;
- The non-compliant hose was supplied from a non-preferred supplier (the required hose length was not available from original supplier);
- The onboard team did not adequately check that the hose was of the correct specification.

What was the cause?

Based on detailed investigation into a similar incident, it was suggested that the cause of the incident was due to adiabatic compression heating within the hose which caused the inner lining to auto-ignite due to residual oil within the hose. Our member notes that there are numerous incidents recorded by industry due to this issue.

What actions were taken? What lessons were learned?

Welding hoses should be compliant with ISO 14113. For oxygen hoses, the material should have an auto-ignition temperature suitable for the service (typically > 400^{o}), and cleaned for oxygen service.

- Do not assume that because a hose is sufficiently pressure rated it is fit for a specific purpose.

- Always ensure correct specification hoses are ordered and received.

IMCA notes that in order to avoid adiabatic compression:

- Use only original equipment and spares when handling/servicing oxygen equipment;
- Work clean – no oil or any other hydrocarbon impurities must contaminate the parts (your hands, tools etc.);
- Open oxygen cylinder top valves slowly.

Members may wish to refer to the following incidents:

- Oxygen and Acetylene hose caught fire
- Proper care of Oxy-Acetylene cutting and welding equipment

2 Edges and Ledges – A Slip on Deck Resulted in Injury

What happened

A crewman slipped on a step grating and twisted his ankle. The incident happened as he stepped through a hatch on his way to a job. Initially he did not feel any pain, so he did not report the incident and continued work. However, as time passed, the pain increased and after three hours he reported the event to the officer on watch (OOW). The OOW contacted the client's medical service, who provided an ambulance and evacuated the injured person from the vessel to the clinic. The injured person was assessed at the clinic in the middle of the night, and the vessel informed the office the next morning. Investigation highlighted the fact that client's medics reported the incident to the company before the vessel.

What went wrong? What were the causes?

- With regard to reporting:
  - the injured person did not follow company procedures and immediately report the incident to the OOW
  - the vessel management did not inform the designated person ashore when the incident occurred – again, not following company procedures;
- With regard to the slip/trip:
  - lack of hazard identification will have been a contributing factor
  - the incident is still under investigation.

What actions were taken? What lessons were learned?

- Discuss the lessons learnt with all crew members, particularly the requirement to report incidents immediately;
- Consider efforts to identify the need to mark steps, especially when there is no colour contrast;
- The company has a permanent "Edges and Ledges" campaign to identify all edges and ledges and mark all hazards.

Members may wish to review the following incidents:

- Slips, trips and falls – raising awareness
- Recent slips, trips and falls involving stairs

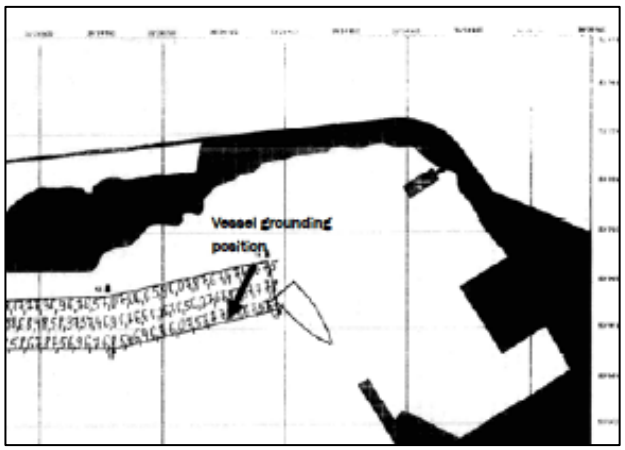
Members may also wish to make further use of the IMCA promotional material on this topic:

- Preventing slips and trips (pocket card)
- Preventing slips, trips and falls (poster)
- Look where you are going (poster)
- Take care on the stairs (poster)

3 Vessel Ran Aground Following Error on Chart

What happened

A vessel ran aground whilst leaving a channel on the approach to a port. The vessel was making around 4.5 knots, and grounded by the stern in the right side of the channel. At the moment of grounding, the echo sounder was indicating a depth of 3.5 metres. Whilst leaving the channel, the vessel caught a small sand hill that had not been charted.



What went wrong? What were the causes?

During the investigation process, the channel navigational chart was carefully checked and errors were found. There were also indications that a buoy had shifted 5m due to the length of the chain anchoring the buoy.

What lessons were learned?

- Closer control of the water depth indication and echo-sounder information was required. Officers need to be more aware of the location and accuracy of the vessel's fitted echo-sounder and its limitations in shallow water;
- Suspected errors in navigational marks should be reported to Port Authorities, and any changes reported should be marked on charts.

What actions were taken?

- Management were to approach the appropriate authorities with the findings from the company investigation and communicate updates to relevant vessels. The responsible authorities were to update the channel navigation chart and consider adjusting the length of the chain on the buoy;
- Ensure that deck officers are fully aware of the importance of constantly monitoring the vessel's draft and echo sounder whilst passing through a channel;
- Passage planning should be from berth to berth. When making any passage plan, it is of absolute necessity to ensure there is safe navigable water throughout the route to be taken. Any areas of concern should be indicated on the chart so that all officers of the watch are aware of any potential issues.

Two tugs were provided to recover the vessel from the grounding. The Captain and Chief Engineer conducted a visual inspection of the hull and several internal compartments to confirm that the vessel's seaworthiness was not affected. A diving inspection was carried out and confirmed that around two square metres of coating were affected, but there was no severe damage to the hull.

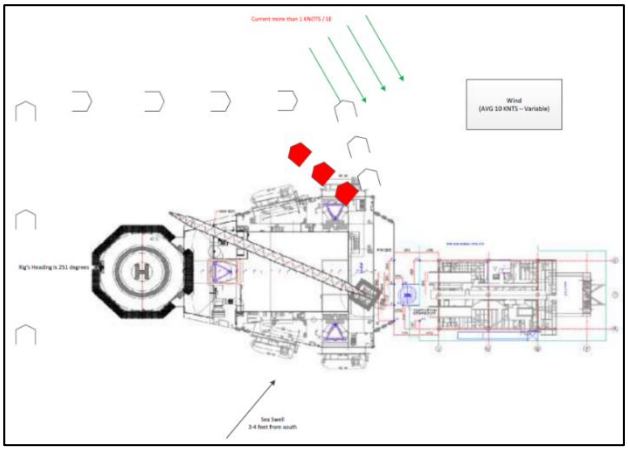
Members may wish to refer to the following incident from the UK Marine Accident Investigation Branch (MAIB):

- Grounding and flooding of ferry – complacency

4 Vessel Made Contact with Rig Legs

What happened?

A vessel came into contact with the legs of a rig – however, there was no damage to the vessel. The incident occurred when the vessel was moving astern down the prevailing current, to approach the starboard side of the rig. Because the cargo was located on the vessel's forward deck, the vessel had to approach within two meters of the rig in order to allow the hook to reach the load. When the vessel reached her offload/snatch position below the crane's hook, the vessel's bow turned slightly to port, which allowed the current to catch the vessel's starboard side. The Master observed the vessel drifting towards the rig's starboard side aft leg and he immediately decided to abort the operation. The vessel was manoeuvred forward with both engines to escape; unfortunately, the port quarter slightly touched the rig's starboard side aft leg.



What went wrong? What were the causes?

The findings noted were as follows:

- The Master permitted the operation to take place on the starboard or weather side of the rig and did not request to have the work done from the rig's port or lee side;
- The effect of wind and current played a vital role in vessel's approach to and hitting the rig's leg;
- The Master's decision to approach was not properly risk assessed – he misjudged the direction and effect of the current during manoeuvring;
- It was not evident that the lifting operation was covered in a specific risk assessment for that particular project;
- The Master had no robust plan for escape manoeuvring and did not plan when to abort manoeuvring.

What actions were taken? What lessons were learned?

- A better understanding was needed of the risks and hazards of manoeuvring against the current;
- A more detailed prior agreement should have been made between the vessel Master and the offshore installation manager (OIM) with regard to cargo and lifting operations;
- Escape routes and plans should be considered before starting any critical manoeuvring;
- The vessel Master – rather than the OIM or the client – has the overriding authority to accept or reject the operation based on judgment about the weather limitations and circumstances.

Members may wish to refer to the following incidents:

- Vessel activities near platforms – two incidents
- Property damage: platform supply vessel collided with legs of jack-up rig

5 Corrosion Cracking of Strain-Hardened Type 304 Stainless Steel Bolts

What happened?

The International Association of Oil & Gas Producers (IOGP) has published Safety Alert #297 relating to the unexpected failure of certain kinds of strain-hardened Type 304 stainless steel bolts, (ASTM A193 B8, Class 2). The failure occurred at an offshore facility during a pneumatic leak test of gas piping exiting a test separator. The bolts that failed were operating at temperatures below 50°C. The failure has been attributed to chloride-induced stress corrosion cracking (CISCC).

The IOGP notes that:

"strain-hardening austenitic stainless-steel nuts and bolts to increase their strength may increase their sensitivity to CISCC and reduce their safe upper temperature limit. Other factors such as aggressive environments (e.g. offshore and coastal facilities and areas exposed to wet deluge testing) and increased stress/strain may also increase susceptibility to CISCC."

What actions were taken? What lessons were learned?

The IOGP's intent in sharing this is to help mitigate the risk of such failures occurring elsewhere in new or existing facilities. The following corrective actions and recommendations were made:

- Consider undertaking a desktop review to identify the number and location of Type 304/304L(B8) stainless steel nuts and bolts exposed to the marine environment;
- Consider conducting a visual survey to confirm the number and location of the nuts and bolts identified through the desktop review;
- Consider developing a prioritized plan to replace the nuts and bolts identified above with suitable nuts and bolts;
- Consider arranging for the disposal of all Type 304/304L nuts and bolts held in storage, both on site and off site.

Members may wish to refer to the following incidents:

- Near miss: corrosion caused crane boom failure during heavy lifting
- Load chain failure owing to corrosion