Safety Flash

32/21 – November 2021

IMCA Safety Flashes summarise key safety matters and incidents, allowing lessons to be more easily learnt for the benefit of all. The effectiveness of the IMCA Safety Flash system depends on Members sharing information and so avoiding repeat incidents. Please consider adding safetyreports@imca-int.com to your internal distribution list for safety alerts or manually submitting information on incidents you consider may be relevant. All information is anonymised or sanitised, as appropriate.

1 USCG: Unexpected heavy weather dangers

The United States Coast Guard (USCG) has released Safety Alert 07-21 relating to the unexpected danger posed by weather at sea.

The USCG notes: *"Unexpected heavy weather events and rapid changes in weather have contributed to multiple notable and deadly marine casualties over the past several years. These casualties involved a wide range of vessels, including sailboats, passenger vessels, offshore vessels and recreational boats. While different size vessels normally operate in diverse geographical areas and different types of vessels may need to implement unique safeguards, there is a common theme – if you are not ready for heavy weather or rapid changes in weather, you and your vessel may suffer devastating consequences.*

The capsized lift boat SEACOR POWER

Heavy weather events or rapid changes in weather can be even more severe if you do not know about the approaching conditions. Operating on the water may provide a clear view of approaching weather, but it is not always indicative of the severity of a storm.

Although modern day forecasting has improved, and mariners and recreational boaters have the ability to receive updates and warnings through a wide variety of means, weather related maritime disasters continue to occur. This introduction of modern day technology into weather forecasting also increases the complexity in determining if the forecast applies to the geographical area where the vessel is actually operating."

To prepare for heavy weather events or rapid changes in weather, the Coast Guard recommends that all vessel owners, operators and mariners:

- Ensure that your vessel is equipped with at least two different and reliable methods to obtain information about changing weather conditions;
- Maintain a proper lookout at all times to recognize changing environmental conditions;
- Ensure that one or more individuals on the vessel have the designated responsibility to check weather on a regular basis and share updates with others onboard.
- Understand your vessel's operating limitations and key factors, e.g., vessel loading, down flooding points, profile and sail area, with respect to weather conditions;
- Prepare for heavy weather events ahead of time;
- Create an atmosphere of open communication onboard, so everyone feels comfortable discussing weather conditions and any related concerns.
- If weather conditions start to deteriorate, take quick and decisive action to alter course or to abort an operation to protect human life. Build in a safety buffer that allocates time for storm preparation and evasion operations.

Members may wish to refer to:

- NTSB: The sinking of the *El Faro* – an illustrated digest
- Serious incidents involving the weather

2 Dropped object: dislodged flex-joint laydown tool component

Applicable Life Saving Rule(s)

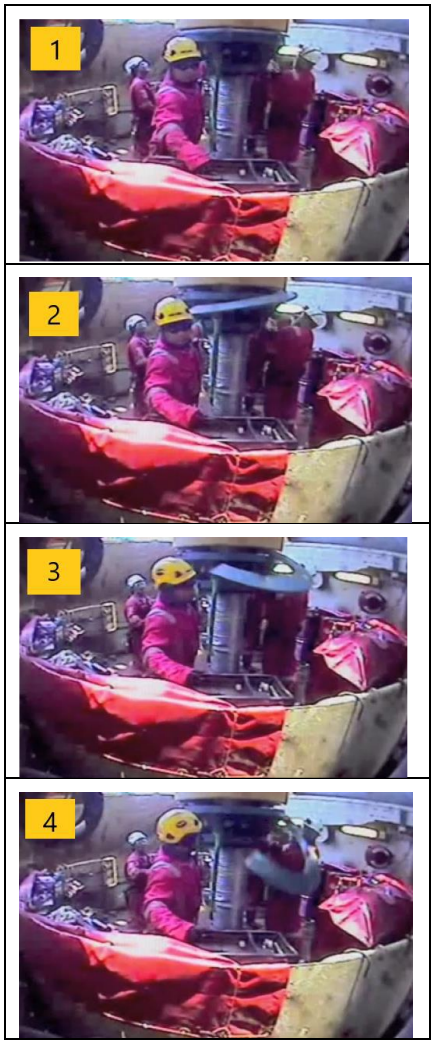
Bypassing Safety Controls

Line of Fire

What happened?

During removal of the anti-rotation/laydown tool from a Flex-Joint, a load-ring half plate, weighing 85kg, was inadvertently dislodged and dropped about 1.8m to deck.

Crew on a J-Lay Tower were removing the anti-rotation device/laydown. The tower was tilted to 5 degrees at the time of the incident. A team of riggers and technicians proceeded to remove the half plates, which form part of the laydown tool. After the load ring securing plate was removed and the final jacking bolt had been loosened, one load ring element slid out of the assembly and dropped down onto deck.



There were two persons closed to the dropped half ring. No onpe was injured during the incident.

What went wrong?

- Procedures not followed:
  - The removal of the load ring plates did not follow the approved procedure. The task plan included the manufacturer's procedure which described the correct way to do it, which required eye bolts and rigging to remove the section of the laydown tool using a crane;
  - The task of removing the load ring half plates manually/by hand was deemed to be faster and required less steps than the approved procedure;
  - The risk associated with the removal of the heavy load rings by hand instead of using a crane was not assessed.

Actions

- **Follow the instructions; keep to the procedures!!**
- Any planned changes to the task plan or procedure should require a Management of Change process to be conducted to assess the risks from the change, apply the appropriate controls and gain authorization to proceed;
- If unsure of the correct method to execute a task, or the associated risks, personnel should always speak to their supervisor before attempting the task – don't be afraid to **STOP THE JOB**.

Members may wish to refer to:

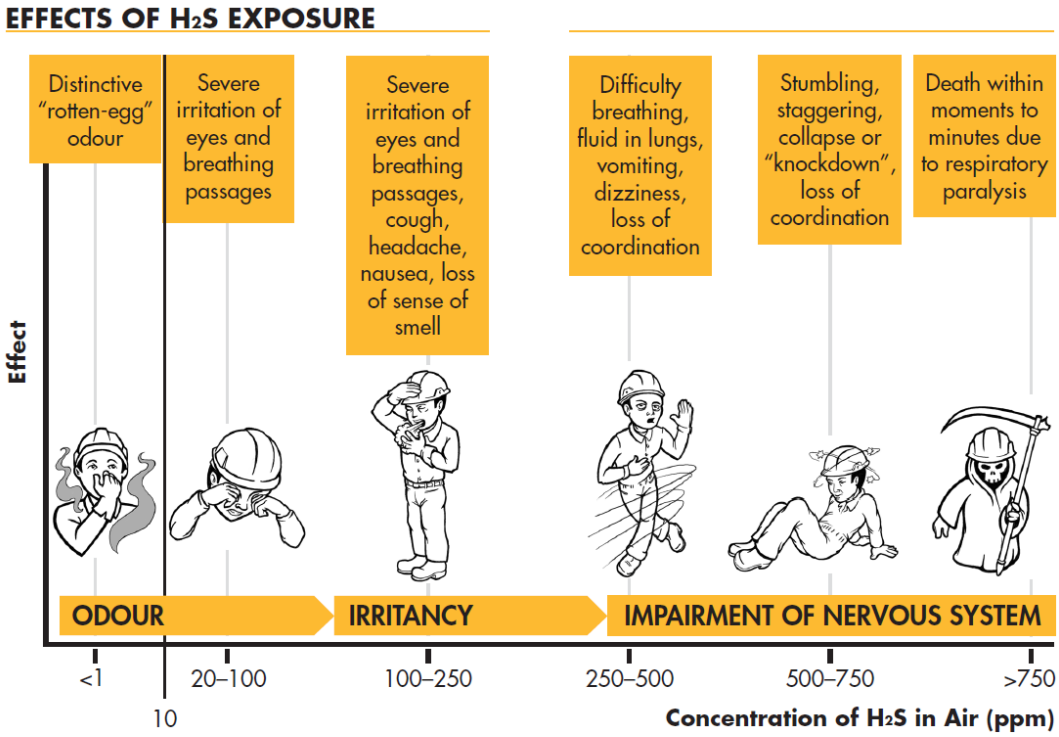
- Rope under tension parted on deck ["*did not follow the company approved rigging arrangement*"]
- High potential near miss dropped object ["*task plan was not properly followed on site before conducting the operation*"]
- Dropped wooden block in conductor support frame ["*Procedures had not been updated to include"* changes in practice; "*Management of change (MoC) was not implemented/followed"*]

3 H_2S detected in a bilge tank

What happened

During routine transfer of bilge water from engine room bilge wells to the bilge water tank, the crew noticed the smell of "rotten eggs" from the bilge tank vent. Immediately the transfer was stopped. During measuring the vent pipe with the Dräger multi-gas meter it was confirmed 453 ppm of H_2S (Hydrogen Sulphide) was detected.

Preventive actions were taken to ensure the gasses did not enter the accommodation. The quick response of the vessel crew prevented a serious accident.



(image: https://open.alberta.ca/publications/ch026-h2s-hydrogen-sulphide)

The immediate hazard was of a dangerous or even lethal atmosphere (High H2S concentration). Seawater in (bilge) tanks, especially in the engine room, mixed with various residues and biodegradable detergents are a perfect place for the development of dangerous levels of H_2S. Failure to recognize the dangers could have resulted in explosion, intoxication or even loss of life.

What went wrong?

- Technical
  - Bilge tank had not been dealt with or emptied for a longer period – it had not filled up;
  - Regular inspection of the tank was not easily possible;
  - Several corners of the tank had built up (stone) residue, which was not easily removed.
- Organizational
  - Lack of knowledge: during the communication with external parties it was found that some parties were uncertain how to handle the removal of the sludge from the tank without contaminating the atmosphere of the surrounding ER spaces;
  - The on-location specialist was occupied and not able to assist immediately;
  - There was not a suitable berth available for tank cleaning;
  - The required vacuum and ventilation equipment were not available and there was a delay of some days before the final removal of sludge and tank cleaning.

Actions taken

- Stopped the transfer ("Stop the Job");
- Measured the H_2S concentration;
- Informed emergency response team and client;
- Connected flexible hose to vent pipe to route gasses away from the accommodation;
- Requested assistance from local agencies on removal of the bilge residue and tank cleaning;
- Constant monitoring by measuring device with crew in full respiratory protection;
- Removal of Bilge water and cleaning of the tank by a specialized company;
- Gas free certificate issued.

Lessons learned

- Review of vessel machinery cleaning practice;
  - Clean machinery spaces with detergents when the ship is in port, preferably using fresh water
  - Check if use of bio-degradable detergents are necessary or possibility for replacement additives and cleaning agents

Members may wish to refer to:

- H2S, the killer – booklet from the government of Alberta *[other similar information from other governments is available]*
- H_2S leak umbilical laying

4 Use of damaged electrical equipment by dock workers

Applicable Life Saving Rule(s)

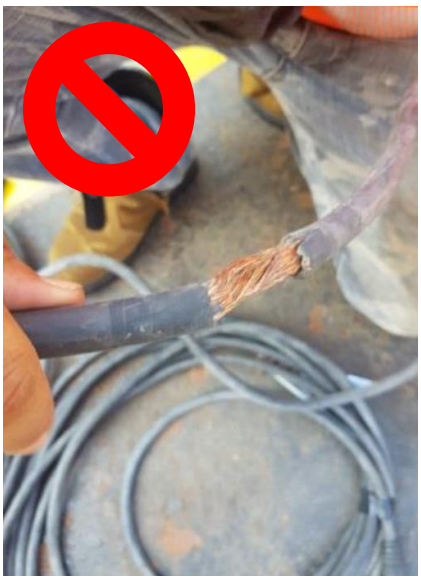
Bypassing Safety Controls

Hot Work

What happened

Third-party crew working on a vessel being demobilised were observed using damaged electrical equipment. Third-party welders were preparing to weld the anchor sea-fastening onto the main deck aft. Vessel crew noticed that the electric cable of the welding machine was connected to the electric cord extension without a plug, and the cable cover was damaged.

The job was immediately stopped. The vessel ETO repaired the damaged wiring and installed an appropriate plug – illustrated in the third photograph on the right below.



What went wrong

Our member notes that the third-party workers did not bring the proper tools for the job, nor did they carry out visual inspection of electrical equipment.

IMCA notes that this incident occurred on a vessel in a port in an area of recent strong growth and emerging markets. In addition to the electrical safety issues, there may be lessons to learn about control of sub-contractors and third-party crew particularly at very busy times such as port calls and mobilisations.

The crew of the vessel are to be commended for noticing the matter and for exercising their **STOP WORK AUTHORITY**.

Members may wish to refer to:

- Electrician suffered flash burn to hand [one lesson: *"The required level of supervision of shipyard personnel and contractors was underestimated in the planning phase of the dry docking leading to insufficient crew being allocated and/or available to supervise critical activities*"]
- UK HSE: Poorly maintained electrical installation caused fatality
- Damaged Electrical Cable
- Shipyard worker receives electrical shock

5 Vessel ran aground causing major hull damage

What happened

A vessel left port and started a transit. During the first part of the voyage, the vessel was overtaking another vessel and the decision was made to pass the other vessel on their port side, between the vessel and shallow waters. A safety depth contour on the ECDIS (Electronic Chart Display and Information System) was set to 10 meters.

When the vessel passed the safety depth contour, she ran aground, resulting in major hull damage and damage to the propulsion system. There was a leak of hydraulic oil which was limited to approx. 40 litres. The vessel re-floated herself and returned immediately to port. The vessel had to be dry-docked as a result of the damage.

There could have been much more serious consequences, including becoming completely stuck aground and requiring assistance to get off; water ingress and serious flooding; worse pollution and emission to the environment, and still more damage to vessel propulsion equipment.

What went wrong?

- The settings on the ECDIS were such that critical information was not being displayed;
- The vessel's passage plan was not approved in advance and used a route unvalidated in the ECDIS;
- The officer on watch opted to pass the vessel ahead on their port side.

Root causes identified

- The route was not validated in the ECDIS system nor verified before departure;
- Information that could and should have been displayed in ECDIS – that is, "All Dangers" - was not selected;
- The bridge crew did not properly understand safety depth contours and the implications for the vessel of crossing them.

Actions

Apart from going into dry dock for costly repairs, our member took the following actions:

- Ensured that correct and appropriate ECDIS settings are part of voyage plan checklists;
- Updated bridge personnel training on ECDIS
- Ensured deeper and fuller understanding of "safety depth contours" and the implications for vessels.

Members may wish to refer to:

- MAIB: Grounding of general cargo vessel *Kaami*
- Vessel ran aground following error on chart

An **Electronic Chart Display and Information System (ECDIS)** is a computer-based navigation system that complies with IMO regulations and can be used as an alternative to paper navigation charts. Integrating a variety of real-time information, it is an automated decision aid capable of continuously determining a vessel's position in relation to land, charted objects, navigation aids and unseen hazards.

https://www.martek-marine.com/blog/what-is-ecdis/