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 COBRA bailout system – guidance note

JFD have issued a COBRA guidance note relating to concerns regarding the suitability of the 2L composite cylinders contained within the set. This note highlights to users, those reported concerns and the follow-on investigation that has been undertaken to demonstrate suitability of the composite cylinders for the application in COBRA.

What happened

Users have reported blistering and flaking of the lacquer on the cylinder exterior, and premature, excessive corrosion on the exposed aluminium at the cylinder neck, as seen in these images:

Flaking External Lacquer

Excessive Corrosion at Cylinder Neck

Actions taken

- Blistering and flaking
  - JFD has investigated and worked closely with the cylinder manufacturer (Worthington Industries) who have categorically stated that flaking of the lacquer is a known but trivial characteristic of composite cylinders. The typical cause is due to air, which is trapped in the composite matrix during manufacture, being forced out during cylinder charging. It is thought that use in a hyperbaric environment can cause this issue to re-

occur due to helium migrating under the lacquer over a period of time and then expanding when the set is removed from the dive system.

  - The manufacturer has explicitly stated that the voids are too small to allow any water ingress at diving pressures.
  - The manufacturer has also explicitly stated that these cylinders are suitable for the duty experienced by a COBRA set (surface, dry hyperbaric helium environment, diving, reasonably fast decompression out of system).

- Premature, excessive corrosion
  - JFD carried out an evaluation of the cylinders in question which were certainly corroded beyond what was acceptable for the time in service and, in fact, subsequently failed inspection at an IDEST facility. JFD has contacted the manufacturer to investigate the possibility of a problem with this particular batch of cylinders. To date, the manufacturer has not responded with any information. Your ongoing understanding and support in this matter is much appreciated.
  - Some COBRA sets have been in service for much longer periods without reported feedback of excessive corrosion, with the original cylinders still fitted, and others have had replacement cylinders after varying periods of time.
  - JFD advises users to check the external condition of the COBRA cylinders every time the COBRA set is removed from the dive system for maintenance, recharging or any other reason. If the cylinder condition is deemed questionable, a replacement should be fitted and the cylinder inspected by an IDEST facility before re-use.
  - Additionally, JFD are currently investigating the possibility of supplying a different brand of composite cylinder which has a stainless steel liner. This should eliminate all corrosion issues.

For further information please contact Graeme Clark (Head of Commercial Products) Email: g.clark@jfdglobal.com Telephone: + 44 (0)7770553198

2 Acetylene quad fire on quayside

What happened

A member reports an acetylene gas quad fire which occurred on the quayside. No injuries occurred during the event. The incident occurred during a project vessel demobilisation when sub-contracted welders were being employed to remove sea-fastenings. Both the oxygen and acetylene gases were supplied via 2 x 16 cylinder gas quads sited on the quayside. The vessel was berthed starboard side to, and gas hoses were run from the quads over the bulwark and onto the main deck.

Acetylene quad burning

Acetylene quad fire (almost) extinguished

At 16:10 the firewatcher noticed fire coming from the top of the acetylene cylinders and informed the vessel bridge. The marine crew immediately contacted the local fire bridge and mustered all the crew into the galley. The local fire brigade arrived and applied water for approx. 10 minutes before pulling back to a safe distance of 300 meters allowing the acetylene quad to steadily burn.

At 19:00 the emergency services took the decision to use police marksmen to puncture the cylinders by shooting at them to aid the release of gas. 12 shots were fired resulting in 6 of the cylinders being punctured.

At 20:15, on recommendation from the emergency services, all non-essential personnel were evacuated via the Port lifeboat and transferred to a rescue boat and then taken ashore to a safe location for the night. The acetylene quad was allowed to burn off through the night and following further cooling with water the quad was lowered into the sea to bring it to ambient temperature. The quad is currently available for further investigation.

What were the causes?

This incident is currently under investigation – no causes are discerned at present.

The local fire brigade employed a 300 meter exclusion zone; it should be noted that the vessel was unable to move away from the quayside due to a safety exclusion zone. The situation was managed by emergency services working closely with the vessel Master.

However the following preliminary and positive findings were identified – **what went right**.

- The firewatchers monitoring the work on deck raised the alarm quickly;
- The marine crew acted swiftly and decisively contacting the fire brigade and mustering all crew into the galley;
- There was good separation between the oxygen and acetylene quads;
- Both oxygen and acetylene quads were situated approx. three meters away from the vessel.

Actions

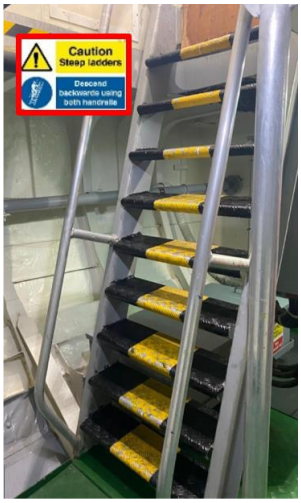
- Ensure thorough pre-use inspections are performed on all oxygen/acetylene equipment;
- Ensure there is an appropriate storage area for gas quads on the quayside;
- Check carefully, your emergency response procedures for gas cylinder and gas quad fires.

Members may wish to refer to:

- Ruptured acetylene hose: Fire
- Oxygen and Acetylene hose caught fire
- Near-miss: Hot work in no-weld zone

3 Descending Stairs Safely

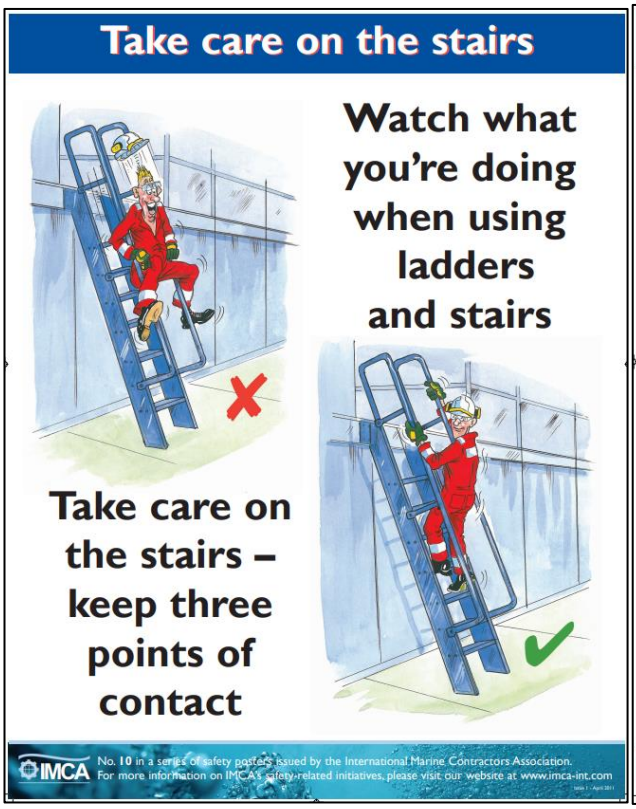
On one of our members' vessels, an observation was raised relating to the hazards associated with steep stairs. The subject is worthy of a timely reminder for us all. There are diverse international standards and references for stairs. For example, the United States' OSHA (Occupational Safety and Health Administration) defines that all ship stairs (or ship ladders) *"between 60 and 90 degrees, be device-facing, so any ships ladder that is angled 60 degrees or steeper must be descended backing down".*

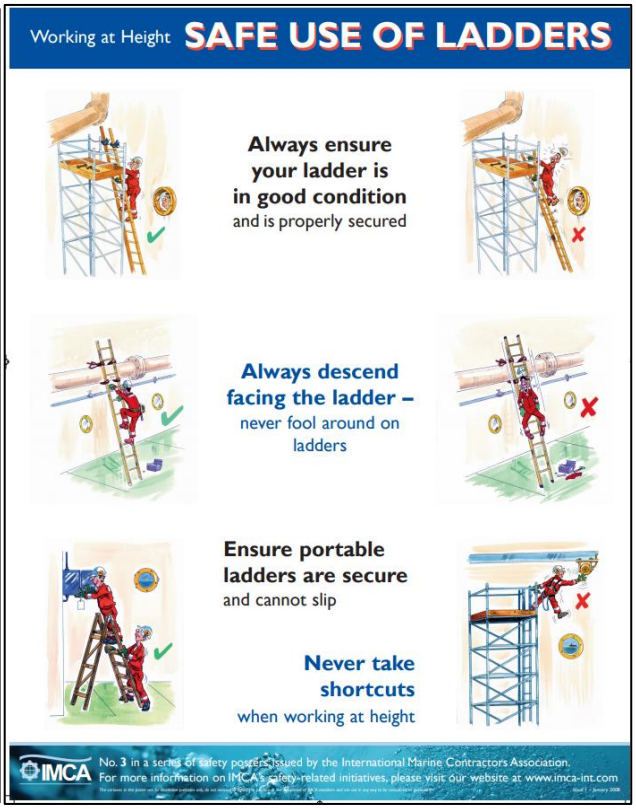


Our member then developed local guidance including:

- General cleaning and surface requirements for stairs;
- The correct use of the handrails;
- Attention to correct PPE – use of safety footwear;
- Adequate technique – "Trailing hand" for typical descent; and "Descending backwards" (face-in) for steep stairs.

Members may wish to revisit or re-use the IMCA posters on safe use of stairs and ladders:



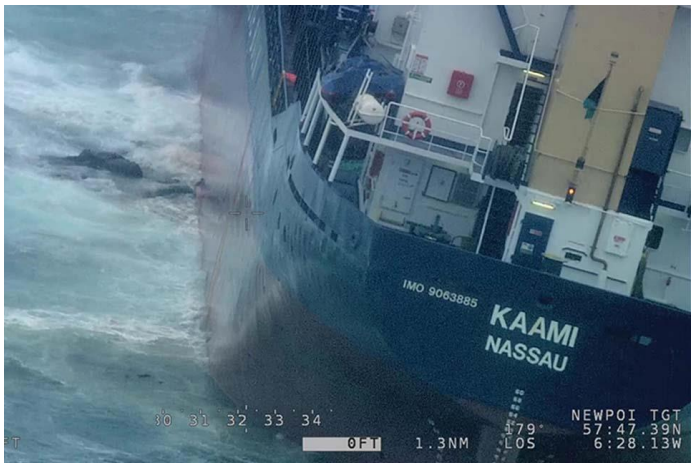


Members should also review the following incidents relating to stairs and ladders:

- Lost Time Injury (LTI): Fall on Staircase
- Lost time injury – person slipped on the stairs and broke his arm
- Injury after crewman fell downstairs on external stairway
- 'Routine' task, non-routine result: A fall from a crane ladder leads to an LTI
- Recent slips, trips and falls involving stairs
- Trip and fall down hotel stairs causing serious wrist injury

4 MAIB: Grounding of general cargo vessel *Kaami*

The UK Marine Accident Investigation Branch (MAIB) has published Accident Investigation Report 7/2021 into the running aground of a cargo vessel in March 2020.



What happened

The general cargo vessel *Kaami* ran aground on a shoal in the Little Minch, on the west coast of Scotland. The crew were safely evacuated and the vessel was later refloated by salvors. There were no injuries or pollution but the vessel was declared a constructive total loss and was later scrapped.

What went wrong?

The MAIB investigation found that the crew's voyage planning procedures and passage monitoring **did not identify the grounding hazard** presented by the shoal, even after verbal warning from a local fishing boat. (IMCA emphasis).

More specifically:

- Training was not adequate: mandatory generic and type-specific training for the electronic chart display and information (ECDIS) system were not successful in providing the crew with the skills and knowledge necessary to use the vessel's ECDIS safely;
- Although the vessel was crewed in accordance with Flag State requirements, the on-board operation did not allow adequate opportunity for the chief officer to plan the voyage and for his plan to be checked and verified by a second member of the bridge team – as was required by the vessel's safety management system;
- The safety management system did not provide adequate safeguards for voyage planning and ECDIS use, and the vessel operator's internal auditing program did not identify shortfalls in voyage planning and ECDIS use.

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/

Lessons learned

Following the accident, actions have been taken by the ship's managers as well as the UK Maritime and Coastguard Agency (MCA). The recommendations to the ship's managers were:

- To review the number of watchkeepers on its vessels with the aim of minimising the hazards associated with fatigue;
- To improve the guidance given in its safety management systems on the effective use of ECDIS and of bridge lookouts and,
- To enhance company ability to conduct internal navigation audits.

Members may wish to refer to:

- Windfarm Support Vessel *Njord Forseti* hit wind turbine tower – Jersey Maritime Administration
- Collision whilst drifting
- Listing, flooding and grounding of vehicle carrier *Hoegh Osaka*

5 Fault in high voltage equipment

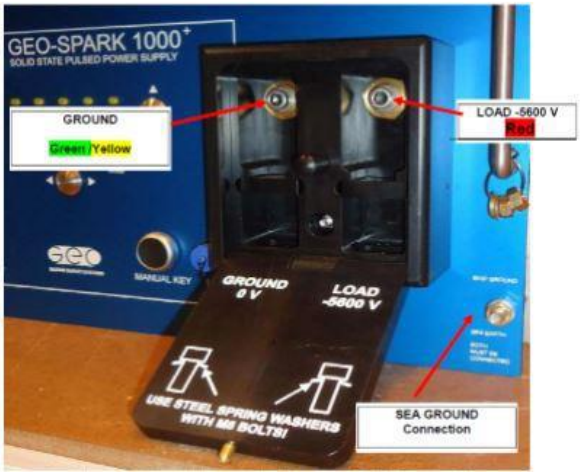
What happened

Applicable Life Saving Rule(s)

Bypassing Safety Controls

A serious fault was discovered in high voltage (-5600 V) equipment; the fault caused sparks to be observed across the high voltage terminals. Portable seismic survey "sparker" equipment was mobilised on a vessel. During initial tests of equipment, a spark was observed on the -5600 V High voltage terminals.

The issue was not reported to the bridge, nor was a near miss or incident report submitted. There was a delay of four weeks between when the incident happened and when it was officially reported.



What were the causes?

Preliminary investigation revealed that:

- This issue presents if the terminals are loose. They were tightened but the issue persisted;
- The incorrect washer type was used on the high voltage terminals. The manufacturer recommends conical spring washers. Standard split spring washers were used instead on the terminals. Also, a specific brass flat washer is recommended by manufacturer;
- After servicing by the manufacturer and feeding back the details of the fault observed, the manufacturer confirmed the bolts on the high voltage terminals were not threaded all the way to base of bolt. As a result, if incorrect thickness washers were being used this would not allow the terminals to be fully tightened;
- Three days had been planned for training. Owing to delays caused by poor weather only three hours was available for training – there was *perceived* pressure to get the job done in a rushed way.

Recommendations

- Ensure crew working with high voltage systems are trained and competent to work on the respective type of system;
- Ensure crew are familiar with risk assessments and safe systems of work for the type of equipment they are working with;
- When a safety issue presents on a high voltage system "STOP WORK", isolate the power and report it to the appropriate authority;
- Report and investigate in a timely way: the delay in reporting this incident led to issues during the investigation. Crew could not remember the detail due to extended period of time. Immediate investigation post-incident is extremely important to ensure accurate information can be collated on what happened from all witnesses.

Members may wish to refer to:

- *Are you prepared to work safely?* Short video on *electrical hazards*
- Short circuit on 440v AC bus bars - arc flash [incident also not reported in a correct or timely way]
- IMCA HSSE 016 *Guidance on the investigation and reporting of incidents*
- IMCA HSSE 031 M 217 *Offshore vessel high voltage safety*
- IMCA R 005 *Guidance on safety procedures for isolation of ROV high voltage equipment (above 1 kV)*
- IMCA C 010 *High voltage training: A syllabus for training offshore workers involved with high voltage equipment*