

IMCA Safety Flash 25/20

August 2020

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 Emergency Lithium battery failed catastrophically in a diving bell

What happened?

During regular planned maintenance, a 24V DC emergency Lithium battery pack in a diving bell activated and failed catastrophically causing an explosion and small fire. There were no injuries; the bell was unoccupied at the time. The incident occurred when a check valve on each of the Bell Emergency Battery Pack Pods was changed out for a more widely available type.

Applicable Life Saving Rule:



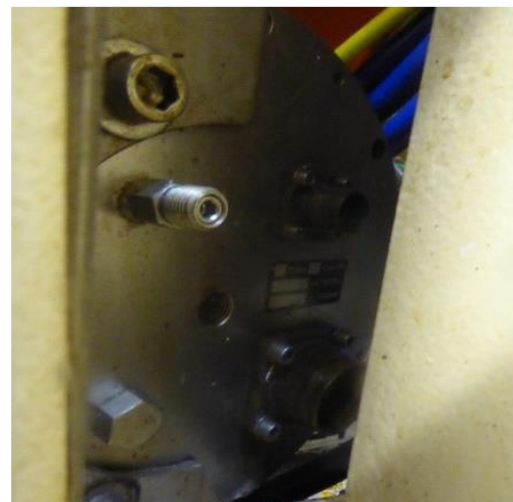
Bypassing Safety Controls



Stored Energy



Battery pack (silver cylinder) located within the Bell Frame



Check valve location on the battery pack

Crucially, the original valves were only threaded on one side with a male thread whereas the replacement type had the same male thread at each end. A second thread on the new valve was not required as it does not connect to anything. This identical second thread introduced the potential for the new valves to be fitted in the wrong orientation.

After launch, the starboard bell status alarm for the 24V DC emergency battery pack activated. Initial visual inspection indicated no obvious fault. Upon recovery to the bell hanger the battery pack failed catastrophically, a loud noise was heard, and smoke and flames were emitted from the battery pack.

The battery pack pod had flooded through an incorrectly fitted check valve, causing the failure of the pod and subsequent fire.

Findings

- ◆ There had been no Management of Change (MoC) process conducted and there had been no technical consideration of any new potential risks;
- ◆ Valves with identical connection points can easily be fitted in the wrong orientation;
- ◆ The crew were unaware of the immediate required action to extinguish the resulting fire.

Actions

- ◆ Review of similar Emergency Battery Pack pods to review the check valves fitted to ensure they cannot be fitted incorrectly. Check valves with male/male threads to be removed;
- ◆ Ensure that a thorough and appropriately technical Management of Change (MoC) process is carried out when changing out dive related components and equipment;
- ◆ Personnel involved should ensure that they have a thorough understanding of the most appropriate immediate actions in the event of a Lithium type battery fire.

2 Fire in welding fumes extraction system

What happened?

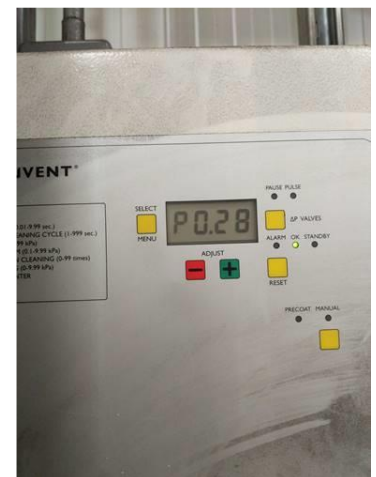
In a shore-based workshop facility, the filters inside a welding fume extraction unit ignited whilst in operation.

On investigating an initial smell of burning, smoke was seen escaping from the welding fume extraction system at the rear of the workshop. Smoke ingress into the workshop activated the smoke alarm and the workshop was safely evacuated. The system was shut down and initial attempts using portable CO₂ extinguishers at the base of the unit was unsuccessful, as the fire progressed upwards through the filter banks. On arrival the emergency services extinguished the fire through direct water application and cooling.

What were the causes? What went wrong?

Following initial investigation and discussions with the supplier it was found that the filters were blocked which allowed metal particles to build up, oxidize on the filter surfaces, heat up and eventually lead to a fire.

- ◆ The unit was well within its annual inspection period and nothing related to filter replacement was highlighted at the previous inspection;
- ◆ The supplier advised that blocked filters are indicated by a reading of 2.0 or above on the unit's display (2000 Pascals). As an example, the display from an operational unit is shown here. This indicates 0.28 (280 Pascals) showing it is nearly new and well within the limit.



Action

Where similar systems are used, check the display for high or excessive pressure readings as outlined in the manufacturer's instructions and ensure that this check is included in regular operational and maintenance checks.

Members may wish to refer to

- ◆ [Fire In Incinerator Exhaust Gas Manifold](#)
- ◆ [Incorrect Information In User Manual For Fixed Fire-Fighting System](#)
- ◆ [Serious Failure Of Co₂ Fire-Fighting System \(USCG\)](#)
- ◆ [Near Miss: Potential Fire – Overheating Of Oil In Deep Frying Pan](#)

3 High potential near miss: Nitrogen hose failure during transfer of gas

What happened?

As nitrogen gas was being transferred from the pipelay tower accumulators to storage bottles located within the pipelay HPU room, the pipelay supervisor noticed a sudden drop in pressure. He immediately went to the door of the HPU room to assess the situation. He could hear the sound of a high pressure gas release within the room, and decided not to go in. He ran to the nearest emergency stop button located on the main deck to stop the system.

What were the causes?

The hose had been in place since 2010 and there was substantial degradation along its full length. The hose was not identified on a hose register and therefore not subject to any planned maintenance or inspection regime.



What went wrong?

It was later identified that a supply hose had detached from its ferrule and approximately 165,000 litres of pure nitrogen was released into the room. Consequently this reduced the oxygen levels in the room to approximately 17.4% (normal oxygen content in the atmosphere is 20.8%).



Actions

- All pressurised hoses should be correctly secured and coupled using properly rated hose whip check restraints.
- All hoses and fittings should be visually inspected prior to use and should be examined regularly in service for wear and should be changed out as necessary or as part of a planned maintenance schedule

Our member also:

- Ensured adequate 'Restricted Access' signage is posted at all entrances to the nitrogen storage area;
- Ensured suitable low oxygen detection alarms are installed within the immediate area.

Members may wish to refer to

- ♦ [IMCA D 065 *Guidance on the use of whip checks \(hose restraints\)*](#)
- ♦ [Damaged High Pressure Content Gauge Hoses On Bail-Outs](#)
- ♦ [Proper Care Of Oxy-Acetylene Cutting And Welding Equipment](#)
- ♦ [Potential Engine Room Flooding: Maintenance And Equipment Failure Issues On A Laid-Up Vessel](#)

4 Electrical shock from containerised portable office

What happened?

Whilst tidying a mobile office (freight) container, an employee sustained a mild electric shock by inadvertently touching an exposed live electrical cable which was obscured by

Applicable
Life Saving
Rule:



Stored
Energy

several boxes below a desk. The cable had been left in position following the removal of a piece of fixed equipment whilst the container was in storage (out of use).

What were the causes? What went wrong?

- ◆ Checks on the container, pre and post mobilisation, did not identify the potential risk;
- ◆ No formal verification of the condition and safety of the electrical installation in the container had been carried out prior to energising.

Lessons

Some of these lessons and actions may be a regulatory requirement in some locations.

- ◆ The condition and safety of any electrical equipment should be established before and after mobilisation, but particularly – as in this case – electrical equipment that is wholly within other installations such as freight containers;
- ◆ Accurate inspection records and wiring diagrams should be maintained, and defective equipment and redundant wiring removed or labelled as such;
- ◆ To ensure the safety of the installation, testing and inspection protocols should be in place coupled together with an approval process which includes the appropriate test and inspection results / records.



Actions

Our member:

- ◆ Isolated and inspected the container electrical installation and the termination of exposed electrical cables;
- ◆ Reviewed and assessed mobile container electrical installations elsewhere in its operation;
- ◆ Developed and implemented formal work instructions for the fit out and/or modification of mobile offshore containers including the electrical installation.

Members may wish to refer to

- ◆ [Near miss: Exposed Live Electrical Cable](#)
- ◆ [Near miss: Live Electrical Cable](#)
- ◆ [Crewman Received 440V Electric Shock](#)

5 Unsafe Use of Hand grinder with damaged disc

What happened?

Grinding machine was observed as used with damaged grinding disc. Broken disc projectile could potentially cause serious injuries. Many other workers have been injured when angle grinders have kicked back, causing cuts and lacerations.

What were the causes? What went wrong?

- ◆ Lack of awareness of hazards associated with use of damaged grinding discs.
- ◆ The task specific risk assessment did not cover the associated risks and relevant control measures, such as monitoring of wheel condition by user;

Applicable
Life Saving
Rule:



Bypassing
Safety



Line of Fire



- ◆ There was a violation of company SMS requirements relating to the use of electrical tools and equipment;
- ◆ Lessons learned from previous similar incidents were not followed, not embedded.

Actions

- ◆ Conduct inspection and check condition of all grinders & discs on vessel;
- ◆ Ensure damaged discs are thrown out and not re-used;
- ◆ Refresher training presentation on abrasive wheels safety for crew.

Members may wish to refer to

- ◆ IMCA “Be prepared to work safely” short video [watch your hands](#)
- ◆ IMCA safety poster [Hand safety](#)
- ◆ [Portable Grinders – Hand Safety](#)
- ◆ [Grinding Disc With Defects](#)
- ◆ [Grinding Using A Cutting Disc](#)
- ◆ [Fatality: Grinder Incident \(2005\)](#)