

IMCA Safety Flash 06/20

February 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 Electric Shock Resulting in Burn

What happened?

An ROV technician received an electric shock to his left arm beneath the elbow, resulting in a burn. ROV personnel were working in the technical workshop completing a non-electrical related task, bleeding air on top of the HP filter housing from the main hydraulic circuit, when the technician received the shock. The ROV single phase power was energized, but the area of the ROV (Phase 3) that was being worked on was isolated, de-energized and locked out.



What went wrong?

Investigation established that a water drain tube had been used as a conduit for an electrical cable, both the drain and electrical cable had been cut in half, but it was unclear whether or not the cut happened during demobilization, transit, or during the skid and ROV segregation in the technical workshop. The cut cable exposed live electrical wires. Once the cut wires were isolated, personnel were able to identify that they were connected to a separate transformer, and thus the wires were found to be live even after isolating and locking out the area of work.

The system had been recently demobilized from a project. The routing of the electrical cable through the water drain was a modification to the system that had not been documented, communicated or handed over to workshop personnel after the ROV was demobilized. The electrical cable, which had been cut, exposed the bare wires rather than being disconnected and removed.

What actions were taken?

- ◆ All electrical cables should be properly disconnected and/or removed, not cut, when demobilizing equipment;
- ◆ ROV system modifications should be noted within drawings and ROV system paperwork. Major system modifications should follow a formal management of change (MoC) process, which is the responsibility of the supervisor on site;
- ◆ There should be a documented handover between the offshore supervisor and technical workshop supervisor, and this should include details of any system modifications and instructions for disconnection and removal (if not already completed).

Members may wish to refer to:

- ◆ [First Aid Injury: Electric Shock](#)
- ◆ [Electric Shock Near Miss](#)
- ◆ [Near Miss: Exposed Live Electrical Cable](#)
- ◆ [Near Miss: 220v Cable not isolated during work](#)

2 Short Circuit on 440v AC Bus Bars – Arc Flash

What happened?

A crewman was doing electrical work on a 440v power distribution panel (PDP), when a loose earth bonding cable made contact with a live 440v bus bar causing a short circuit and an arc flash. Whilst the crewman was using cable ties to fix loose cables within the panel, he observed a loose earth bonding cable in poor condition. He made up a new earth cable from 6mm wire, and whilst he was attempting to re-connect the earth bonding cable, the loose trailing end of the earth bonding cable came into contact with the 440Vac bus bar. A short circuit between the 440Vac and the Earth bonding cable was observed resulting in an arc flash.



At the time there were no injuries nor damage to equipment. The crewman reported the incident to his line manager, reporting that he felt shaken by the incident and felt his heart racing. He was sent to his cabin to rest.

Subsequent to the incident, the crewman reported experiencing blistering on his hands and attended a walk-in medical centre where he was diagnosed with partial thickness burns to his face. He was assigned light duties for two weeks.

What went wrong?

- ◆ Crew deliberately ignored safety protocols to expedite what was considered an easy and straightforward task:
 - one job was started (supervising the installation of a welding cable) but then changed to another job. The injured person did not discuss this work with his supervisor, nor carry out a risk assessment, TBT or raise a PTW for the work
 - there had been a generic toolbox talk (TBT) completed but work on the PDP was not mentioned;
- ◆ This incident was not reported in a correct or timely way, denying the injured person access to immediate medical attention which may have mitigated his injuries.

What lessons were learned?

- ◆ There was inadequate supervision with regards to compliance with electrical safety control measures;
- ◆ The risk of unauthorised access to the power distribution panel (PDP) had not been properly assessed;
- ◆ The panel had inadequate insulation of terminals which remained live when panel was opened, this may have been broken off or removed over time.

What actions were taken?

- ◆ Access to electrical cabinets should be restricted;
- ◆ Electrical safety audit conducted on-board vessel;
- ◆ Risk assessment to be re-written to include mitigations to identified hazards;
- ◆ Further incident reporting and investigation training to be delivered to vessel crew.

Members may wish to refer to:

- ◆ [Electric Arc Incident](#)
- ◆ [Rodent Caused Short Circuiting Of 440v Bus Bar](#)
- ◆ [Near miss: Inadequate Insulation Of 690v Bus Bars](#)

3 Two Electrical Incidents – UK HSE

Here are two recent prosecutions brought by the UK Health and Safety Executive, both relating to inappropriate working arrangements with live power.

Incident 1

Two self-employed workers received serious burns to their hands whilst using a drill to attach a pre-fabricated cowling to a cable tray. The incident occurred when one of the fixings went into a live electrical cable, striking one of the phases and causing an explosion. See [here](#) for the full press release.

Investigation by the Health and Safety Executive (HSE) found that the company's risk assessments and method statements did not consider the risk of drilling into cable trays containing live cables, isolating the electricians to complete work, or other methods of fixing which did not involve drilling.

The company was fined £20,160 and ordered to pay costs of £1,178 for failing to protect its self-employed workers from the risk of a cable strike explosion or electrocution whilst carrying out repairs



The HSE inspector noted: *“This incident demonstrated the importance of the role of those preparing the job. The company overlooked the 415V 3 phase cabling they were drilling in towards. A cable strike, even at this voltage, can cause a major explosion. This incident has left two men with long-lasting burn injuries and they are now unable to work for a long time.”*

Incident 2

A member of the public received an electric shock when helping with the delivery of a freight container. A crane driver made contact with an 11kV overhead power line with the crane arm of the vehicle he was using to deliver a storage container. This resulted in a person who was assisting, suffering an electric shock. The full press release can be found [here](#).

Investigation by the Health and Safety Executive (HSE) found that the crane driver – a partner in the firm - had failed to carry out an assessment of the area and consider the risks present to determine an appropriate method of delivering the container.

The HSE inspector noted: *“Risks from delivering and lifting near overhead power lines are well known. This injury could have been easily avoided if a proper assessment of the area was carried out considering the risks present.”*

The partner in the firm was sentenced to 12 months in prison suspended for 18 months and 240 hours of unpaid work, and was also ordered to pay compensation to the injured person of £4,000, plus costs of £8,000.

Members may wish to refer to:

- ◆ [Crewman Received 415v Electric Shock](#)
- ◆ [Near Miss: Exposed Live Electrical Cable](#)
- ◆ [Company fined after worker killed by overhead power line strike \(UK HSE\)](#)

4 UK HSE: Fatal Injury Following Catastrophic Failure of Pressure Test Equipment

What happened?

A 64-year-old worker was fatally wounded by shrapnel ejected from testing equipment. He was leak testing eight 1500 litre cylinders, by applying compressed air inside to create pressure. Whilst in the process of venting the air through the test manifold, it catastrophically failed and fatally injured the worker. See the full press release [here](#).

What was the cause?

UK HSE investigation by found that prior to installing the fittings, 1.5 litres of a mineral oil-based corrosion inhibitor had been placed into each of the cylinders. The incident occurred because the inhibitor contaminated the leak test manifold during venting of cylinders and was subjected to enough pressure inside the manifold to ignite and cause the test equipment to fail.

The company was fined £700,000 with full costs of £169,498.82. The HSE inspector noted: *“This was a tragic and wholly avoidable incident, caused by the **failure of the company to identify any additional risks that arise when work processes are adapted.**”* [IMCA bold for emphasis]

Members may wish to refer to:

- ◆ [Unplanned Stored Pressure Release: Worker Struck By Gas Cylinder](#)
- ◆ [Stored Pressure Release Near-Miss: Small Part Expelled From Hydraulic Winch](#)
- ◆ [Fatality: Stored Pressure Release](#)

5 Plastic Cover on Smoke Detector

What happened?

During an inspection of vessel accommodation by shore management, it was observed that a plastic cover was obstructing a smoke detector. During construction work in the area the cover was used to prevent activation but was not removed when the work was finished.

What were the causes?

- ◆ Lack of risk perception – smoke detectors are designed to warn individuals that something is on fire. A plastic cover will prevent it from working;
- ◆ Stop Work Policy was not applied – crew must have seen it but did nothing about it! No-one challenged this unsafe practice;
- ◆ Inspections were not conducted – this illustrates the importance of periodic inspection of fire protection systems to ensure that they are maintained in serviceable condition.



What actions were taken

- ◆ Our member arranged a “Time Out for Safety” with all vessels’ crew to emphasize the hazards associated with blocking and covering of smoke detectors;
- ◆ Further fire inspection on-board the vessel to check the condition of the other smoke detectors.

Members may wish to refer to:

- ◆ [Be Alarmed By All Alarms](#) – USCG safety alert regarding the possible consequences of failing to take proper actions when faced with alarm signals from equipment.