

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](mailto: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](http://www.imca-int.com/links). Additional links should be submitted to [webmaster@imca-int.com](mailto:webmaster@imca-int.com)

## I Near Miss: Burnt Out Electrical Socket

A member has reported an incident in which an electrical socket caught fire. A member of the vessel crew was woken from sleep in his cabin by a popping sound. Shortly thereafter, he smelled burning. He immediately got up and saw smoke coming from a 6 way multi-socket plugged into the mains. The crew member's mobile phone and cabin television were plugged into the 6 way multi-socket. He immediately extinguished the smouldering socket and reported the incident. There were no injuries.

An examination of the socket showed that one of the surge capacitors had blown with enough heat to burn the socket. An identical socket, which had been purchased at the same time as the one involved in the incident, seemed to be working fine. However, it was taken out of service to assist in preventing any risk of possible recurrence. It was ascertained that the 6 way multi-socket had been purchased by a member of the vessel crew from a shop in the last port visited by the vessel.



*The inside of the 6 way socket extension, showing the damage caused inside the unit*

### Direct and Root Causes

The direct cause of the incident was failed/defective portable electrical equipment – an oversurge of electrical current into the 6 way multi-socket caused the internal components, and external casing, to overheat and start smouldering.

The root cause was failure to follow procedures – specific procedures in place to control electrical equipment onboard the vessel were not complied with. The aim of this procedure was to ensure that all vessel electrical equipment, crew personal electrical equipment and third party project equipment is presented to the vessel electrician, prior to use on the vessel, to verify and test that it is safe and fit for purpose.

All crew and contractors are informed of this procedure during vessel induction, and portable appliance testing (PAT) equipment is available. The member of crew who purchased the 6 way multi-socket did not follow the procedure and did not present the multi-way socket to the vessel electrician. No check was made to ensure that the socket was safe for use with the vessel electrical supply. Had the socket been presented to the electrician, it would have been established that it was not suitable/compatible with the mains electrical set-up on the vessel and should not have been used.

## Corrective/Preventative Actions

- ◆ A thorough electrical inspection of the cabin involved in the incident was carried out and it was found to be safe. The inspection showed that the cabin television had already been PAT tested, with testing label clearly visible and in date;
- ◆ A thorough sweep was undertaken onboard the vessel and all unsuitable multi-way sockets were removed.

## Lessons Learnt

- ◆ Vessel procedures exist to ensure the safety and well-being of all persons onboard and should be complied with in order to prevent the potential for accidents/incidents;
- ◆ Although electrical items may be new and safe for use, this does not necessarily mean that they are safe to use onboard a vessel; they may possibly only be suitable for domestic/home use;
- ◆ All electrical items should be presented to the vessel electrician so that any doubt over condition or suitability for use can be addressed;
- ◆ Consideration of long-term plans to rewire vessels to remove 2-pin sockets and install 3-pin UK switched sockets throughout.

## 2 Water Ingress to Bow Thruster Space

A member has reported an incident in which flooding occurred in the bow thruster space of a vessel, resulting in damage to the bow thruster. The vessel's crew were emptying a fresh water tank using the bow thruster room direct bilge eductor system via the fire main. The bilge alarm was activated, acknowledged and accepted by the duty engineer who was about to complete his watch and was preparing for the handover. The status of the bilge alarm was verbally passed to the next duty engineer, but owing to distraction the engineer forgot about the alarm and the bilges were allowed to fill up. The flooding was discovered after 36 hours when the water reached the floor plate level. As a result of the flooding, parts essential to the bow thruster were damaged beyond repair and scheduled sea trials had to be postponed.

The impact of this incident was significant in terms of breaching basic watch-keeping routines and damage to equipment. Our member's subsequent investigation identified a number of key issues and lessons learnt.

### Key Issues

- ◆ Failure of basic watch-keeping practices;
- ◆ Lack of understanding of Chief Engineer's Standing Orders;
- ◆ Lack of routine inspection and cleaning of bilge suction valves and filters;
- ◆ Absence of an approved bilge system drawing;
- ◆ System integrity not inspected prior to use and followed up during operation.

### Lessons Learnt

- ◆ Chief Engineer's Standing Orders should contain clear instructions regarding watch-keeping routines, especially with reference to acknowledgement of alarms and subsequent actions by the duty engineer;
- ◆ All alarms should be investigated immediately and acted on accordingly by the duty engineer. Bilge high levels should not be left in the alarm condition. These must be investigated and pumped out completely and the cause verified and rectified;
- ◆ A complete set of instructions for the use of the bilge system should be available to watch-keepers and engine room staff;
- ◆ Watch-keepers and engine room staff should be familiar with the operation of the bilge system;
- ◆ Bilge suction filters and the condition of SDNR (screw down non-return) valves should be checked at regular intervals to make sure there is no debris between the seating faces;
- ◆ Bilge system drawings should be verified against the existing system, and if any amendments are necessary these should be made by the company drawing office approved by the Classification Society;
- ◆ Bilge system drawings should be included in vessel familiarisation for joining engineering staff.

### 3 Diver Injury During Air Cylinder Recharging

A member has reported a blown-out pillar valve resulting in injury to a diver working on deck.

The diver had been assigned to recharge a number of bale-out cylinders using compressed air, considered by the member to be part of routine operations. The recharging was performed in a dedicated open deck area. In this instance, the recharging of this particular air cylinder was being carried out for the first time onboard, as the cylinders had been delivered to the worksite empty due to safety consideration during transportation.

After hearing a loud noise, members of the dive team immediately proceeded to the recharging station where the injured diver, who had been working alone, was found laying down on the deck bleeding around his right eye. The cylinder pillar valve was found to be disconnected from the air cylinder.

The injured diver was found to be unconscious but regained consciousness after having been moved to a safe location.

Medical treatment procedures were initiated, resulting in the injured diver being given first aid on-site and subsequent medevac to shore.



The incident investigation carried out by the member company found that the diver had sustained a head injury due to the accidental disconnection of the air cylinder's pillar valve, coupled with the filling hose of the air compressor contacting the diver's head.

The investigation showed the root cause of the incident to be an incorrect coupling between the pillar valve and the air cylinder in that the pillar valve had an external metric thread of M25x2 whilst the cylinder had a Whitworth imperial thread of 1 inch (25.4 mm). The two threads are technically incompatible and did not provide a correct connection between the pillar valve and the air cylinder.



The investigation further found that the assembly procedure had not complied with EN 250-2000 and EN 144-1; a company requirement where only metric threads are to be used.

The member stopped all activities, checked all air cylinder threads and pillar valve threads for compatibility, ensured their appointed subcontractor had developed working procedures and instructions for marking and checking pillar valves and air cylinders, and ensured that a QHSE (quality, health, safety & environment) audit of the subcontractor had been performed onboard and at their premises onshore.

The member company further stipulated that a dedicated JSA/HAZID was to be developed for each critical operation.

**Members are reminded of safety flash IMCA 12/09 covering a similar incident.**

## 4 Near Miss: Crane Wire Grease and Headache Ball

A member has reported an incident in which a crane load fell 1-2 metres as a result of a riding turn. During a project mobilisation in the hours of darkness, a small tool basket (<30kg) was being lifted from the quayside to the deck of the vessel. Despite the poor lighting conditions, the crane driver noticed a riding turn on the whipline winch. He informed all personnel in the vicinity to stand clear and having confirmed they had done so, he manoeuvred the jib and the basket fell about 1-2m. He then raised the load and slewed round to the stern of the vessel. The riding turn was remedied with the assistance of the bosun and the crane returned to normal service. There was no damage to equipment and no injuries.

This incident was not reported to any supervisory personnel until later in the shift when another unrelated incident occurred. This crane incident came to light in the subsequent discussions and further investigation of this incident took place. It was noted that the whipline had been greased recently and the viscosity of the grease was such that the wire became sticky when passing through the cheek plates on the jib. Further investigation revealed that the headache ball system had been changed from that used originally. A non-locking hook arrangement weighing 302kg was replaced with a locking one weighing 20kg. The combination of the light load, light headache ball arrangement and adhesive grease caused the riding turn on the winch drum.

The following conclusions were drawn:

- ◆ The action of the crane driver and bosun had successfully rectified the riding turn, but the riding turn was only a symptom of a deeper problem;
- ◆ The cause of the riding turn was not fully established at the time and could have easily occurred again, possibly with more serious consequences;
- ◆ The headache ball change-out was conducted without use of management of change procedures, and the reason for the change was not established or recorded;
- ◆ Because the incident was not reported when it occurred, there was no opportunity to:
  - identify root causes;
  - apply appropriate corrective actions;
  - communicate the lessons learnt to personnel on the same vessel and throughout the fleet.

### Lessons Learnt

- ◆ A heavier temporary arrangement was installed later in the shift and a permanent arrangement was ordered for later installation;
- ◆ Personnel should be encouraged to report seemingly benign events to supervisory and management personnel who can then judge whether or not further action is required;
- ◆ Personnel should be encouraged to enquire further when the unexpected happens – simply asking the “why” question could have revealed a number of relevant facts which can then be acted upon;
- ◆ Our member required personnel to manage change effectively, particularly when conducting work for which an existing plan is not proving effective or when making substantial changes to equipment and systems.

## 5 Oxy-Arc Umbilical Handling Winch – Fire on Deck

A member has reported an incident where the triple drum umbilical handling winch for subsea oxy-arc cutting equipment caught fire.

The on deck fire alarm was raised 21 minutes after the equipment had first been made ‘hot’ and cutting had commenced by the divers.

All personnel responded to the alarm correctly, the fire was extinguished using local fire extinguishers, the divers were recovered in a controlled and safe manner to the system and the vessel exited the 500 metre zone to ensure the area was safe and to allow a preliminary investigation to take place.

The preliminary investigation showed that the amperage on the welding machine was set at 803 amps. This was in excess of the normal value of 150-250 amps recommended for oxy- arc cutting.

This high amperage caused the insulation around the welding unit connection at the triple drum interior connection plate to breakdown/melt, causing a short and giving rise to an ignition source.

In order for the fire to have reached such intensity in the short time, the initial investigation found that the oxygen supply hose inside the drum had ruptured and fuelled the fire.



The welding unit was rated to 800 amps which is in excess of the requirement for oxy-arc burning and exceeding the 500 amps rating of the welding cable and connectors - information which onboard personnel were potentially unaware of.

The member raised a company safety alert highlighting the fact that the welding machines were capable of delivering up to 800 amps, and new signage was placed on the machines prohibiting use by non-authorized personnel. Lower current welding machines will be procured to replace the over specified units.

Members are reminded of the importance of ensuring plant and equipment compatibility and of working within the operational parameters set by equipment manufacturers and suppliers.