# IMCA Safety Flash 01/02

January 2002

These flashes summarise key safety matters and incidents, allowing wider dissemination of lessons learned 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 webmaster@imca-int.com

## 1 Aluminium Fresh Water Tanks – Near Collapse due to Serious Corrosion

During an owner's annual inspection, serious corrosion attacks were found in integrated aluminium fresh water tanks, which required extensive repair.

Brackets and stiffeners were found partly corroded through, as shown in figures 1 and 2. The corroded areas in the fresh water tank had to be partly renewed and repaired to an acceptable standard.

*Figure 1: Transverse bulkheads and deckhead*

*Figure 2: Bottom plating*

### Probable Cause

The process for cleaning the fresh water tanks was considered to have been a major factor in the corrosion process. The fresh water tanks were sterilised annually, which exposed the tanks to a solution of hypochlorite for 12-24 hours. In addition, the shore-supplied water was frequently chlorinated, which meant that the tanks were frequently exposed to chlorides.

Even small amounts of hypochlorite can be very dangerous for aluminium, irrespective of the Al-alloy chemical composition, resulting in the development of serious pitting. Once pitting corrosion has started, it may continue to develop for a certain period if the tank is not properly washed with water after the application of hypochlorite. The filling and emptying of the tank is not sufficient to remove all the corrosion products. The reason for the corrosion attack is considered to be that the thin aluminium film on the surface is depolarised and locally broken down, in connection with the formation of chlorine released from the hypochlorite.

### Lessons to be Learned

- Hypochlorite or other chloride-containing chemicals should not be used for sterilisation of aluminium fresh water tanks if the tanks have not been fully coated;
- In the case of uncoated aluminium fresh water tanks, other means of sterilisation than chloride-containing chemicals is needed, e.g. by using ultra-violet light;
- If hypochlorite is used in coated tanks, it is essential that the tanks are thoroughly cleaned after the process. This is to minimised the change of corrosion occurring in the event of the coating breaking down.

## 2 Lacerated Wound and Fracture of the Knee

We have been notified of the following incident in the drilling sector.

An assistant driller and others were trying to lift the balancing frame to 'Guide line' with the aid of a tugger winch, so that it could be lowered to the well head. Because the frame winch wasn't in a proper balance position, the assistant driller tried to adjust the sling for lifting. When he had just finished shackling the frame to the winch sling, the balancing frame fell backward onto his right knee. The photos allow a better understanding of the accident.

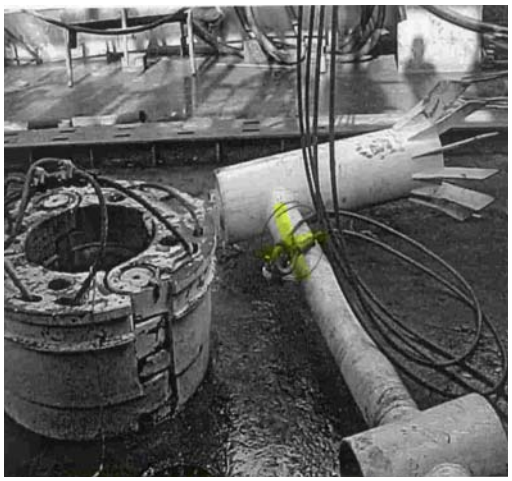

*Figure 3*

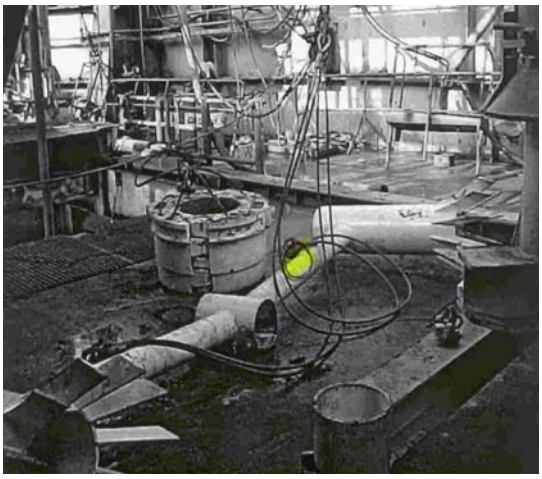

*Figure 4:*

The injured person had not observed that there was no tension on the sling that he shackled to the frame before carrying out the adjustment on the sling. He probably failed to signal to the winch operator to pick up and tension the sling.

The assistant driller suffered a lacerated wound on the lateral side of his right leg and a fracture of the knee.

The company involved has noted the following corrective actions:

- Riggers on board to be properly trained;
- Activity to be planned with proper toolbox meetings and job safety analysis, as this helps avoid this kind of incident occurring in the future;
- Improve communication between operator involved in the operation.

## 3 Dangers of Battery Charging

A member has reported the following incident which occurred on one of its vessels during normal operations. One cell of a battery used on the engine popped out, causing a small amount of acid to spill out. Nobody was in the vicinity when this incident occurred, nobody was injured and no other damage took place.

On investigation, it was noticed that the electrolyte level in the battery was much lower than the minimum level indicated on the body of the battery, leading to a higher concentration of acid inside the battery cell. Due to the automatic continuous charging of this battery, the acid was electrolysed, forming hydrogen gas, which tried to escape and popped the battery cap.

The member pointed out the following dangers:

- Sulphuric acid is highly corrosive. It can cause severe injury to any person who is handling it unless adequate precautions are taken. Acid fumes, if inhaled, can cause severe health problems;
- Hydrogen gas is highly flammable. When escaping out of the battery, if the gas had come into contact with a spark, it would have ignited and caused tremendous damage, particularly in a space with other flammables close by.

The company involved has reminded its employees of its in-house guidelines on storing and charging batteries and has arranged for the following notice to be posted near battery usage/charging areas.

> *Charging of batteries causes the emission of flammable hydrogen gas. Incorrect connecting and disconnecting of battery leads may cause sparking which could explosively ignite any accumulated hydrogen. Thus battery charging, connecting and disconnecting should be considered as hazardous and adequate protective measures taken.*

*All battery charging shall be performed in a dedicated area, and all sources of ignition (i.e. smoking, naked flames and the use of any electrical or hand tools which might cause sparking) shall be prohibited within a radius of 3m from the battery charging facility.*

*All battery chargers shall be fitted with a 3-core power cable, three prong plug, and be properly earthed with a property attached ground.*

*Adequate ventilation shall be provided to ensure the rapid dispersion of any flammable hydrogen gas.*

*Eye protection (impact resistant chemical goggles) shall be worn at all times in the battery charging facility.*

*The charger power supply shall be disconnected prior to connecting or disconnecting batteries.*

*All battery cell covers or plugs shall be removed during charging, and not replaced until all 'bubbling' has stopped.*

*Electrolyte level shall be checked and if required topped up both before and after charging batteries.*

*Separate racks or shelving shall be provided for charged batteries and batteries waiting recharging. These shelves shall be a minimum of 1 meter from the charging bench. All shelves shall be open wooden shelving or purpose manufactured plastic racks, to prevent the accumulation of hydrogen gas.*

*The following equipment shall be available in the charging/storage area:*

- *Dry powder fire extinguisher;*
- *Water source for washing away spilled electrolyte;*
- *Neutraliser for spilled acid (i.e. baking soda);*
- *Eyewash station;*
- *Drainage facilities.*

## 4 Drugs Tampering

A member has reported that drugs kept on board were found to have been tampered with. The drug was either morphine or pethidine and was kept in a plastic ampoule. Someone used a small needle, inserted into the top cap of the ampoule (below the imprinted 'twist arrow'). After either all or some of the drug had been removed, any shortfall was replaced with a clear liquid – the levels of tampered and non-tampered were the same. The hole was then covered with what looked like clear modellers glue.


Members may need to re-consider their own security arrangements. Wherever drugs are kept on board vessels or installations, security is paramount. Apart from serious concern over drugs going astray, the dangers of this sort of tampering are evident. It highlights that, at an inventory check, personnel need to give the ampoules more than just a cursory glance. Despite whatever security is in place, this incident underlines the extreme importance of carefully checking any medical supplies before use, especially drugs.

## 5 Ikaros MOB MkII Smoke/light units (Model 345105)

Safety Notice 13/01 brought attention to the need for safety pins being correctly fitted and manufacturer's instructions being exactly followed before transport or inspection of MOB smoke/light units.

By way of further information it is understood that a MkIII unit (model345205) was on sale from November 2001 which we understand is the result of re-designing intended to prevent recurrence of the explosion which occurred on the MkII. The MkII's are still likely to be in use on vessels and installations until about October 2005 however.

As it seems that it would be unlikely to be evident to personnel which model is in use, the Safety Flash thus remains as stated, that is that manufacturer's instructions are exactly followed and that the safety pin is correctly fitted.

Manufacturers underline that it is vitally important that the signal is not detached from its bracket, for inspection or maintenance, until after the transport pin has been re-inserted.

They also state that users should keep the mounting and operation instruction leaflet, as well as the safety pin, on board the ship at all times for future use.