# IMCA Safety Flash 05/11

June 2011

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.

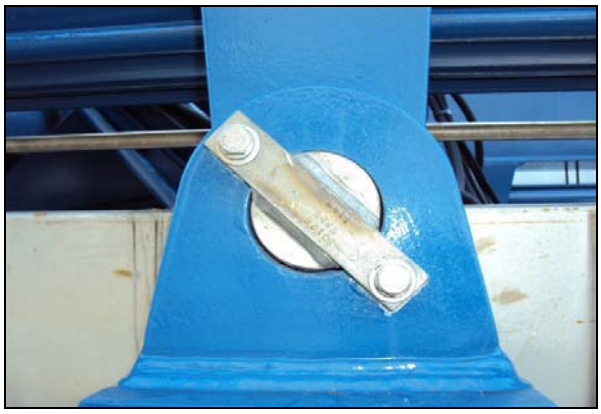
A number of other organisations issue safety flashes and similar documents which may be of interest to IMCA members. Where these are particularly relevant, these may be summarised or highlighted here. Links to known relevant websites are provided at www.imca-int.com/links Additional links should be submitted to webmaster@imca-int.com

## 1 Near Miss: Security of Equipment in Transit

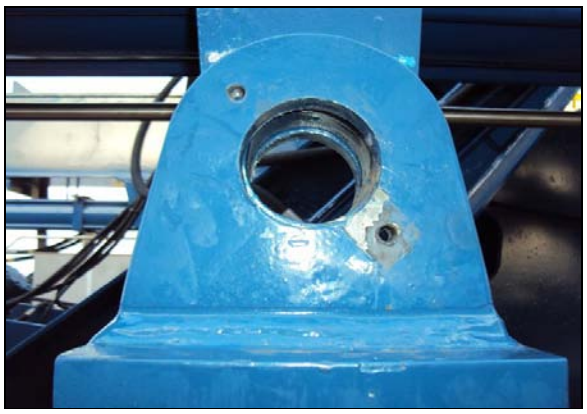
A member has reported an incident in which an ROV launch and recovery system (LARS) arrived offshore with parts missing. The LARS arrived onboard the vessel without the pin connecting the left side (standing on the LARS looking outboard) transport post to the A-frame.

Following investigation, it was learnt that the A-Frame lift post pin was in place when the new LARS system left the supplier, but was not in place when it arrived at our member's storage facility. The missing pin was identified during routine inspection after the unit had been lifted and transported (twice), lifted and installed aboard the vessel. For the pin to have been lost during transportation represents a high potential near miss for any vehicle (and passengers) who could have been struck by the pin falling from the moving transport vehicle.

Our member, in co-operation with the supplier, took immediate steps to ensure prevention of future incidents. Additionally, our member is in the process of designing a lift post pin that will include a retaining pin. In the meantime, members are encouraged to conduct a careful inspection of all A-Frame lift post pins and verify that they are secure before equipment is lifted and transported.



*Lift post pin installed.*



*Lift post pin missing*

*Example of other lift post pin locking configuration*

*Example of future locking pin design with retaining pin*

## 2 Improper Use of Tools: Bruising

A member has reported an incident in which a crewman was injured whilst using a power tool in an incorrect manner. A crewman on night shift was required by the chief engineer to clean paint and corrosion off of the nuts on man-hole covers, so that the covers could be removed for inspection. He was instructed to perform this task using either a hand-held wire brush or a 4 inch angle grinder fitted with a wire wheel. These instructions were verbally acknowledged by the crewman, who had been employed on the vessel for nearly a year. Nonetheless he decided to use a 5mm grinding disk on the angle grinder instead of the wire wheel, and then proceeded to cut the threads off the bolts on the man-hole cover. As the grinding disk was being used in an incorrect manner, the disk jammed causing the grinder to deflect into his shoulder, cutting his boiler suit and causing bruising and a minor abrasion.

*Inspection hatch being prepared*

*Broken grinding disk after inappropriate use*

An investigation noted the following:

- Existing company procedures and clear instructions were not followed;
- Risk assessments had not been completed;
- The individual involved in the operation demonstrated a lack of safety awareness that put himself, his colleagues and the vessel at risk;
- The individual involved in the operation had received no training in this specific task.

The following lessons were learnt from the incident:

- Complacency with regard to the use of power tools must be guarded against;
- All persons involved in a task, from deck officers and supervisors to deck crew, should have a clear understanding of the nature of the task and their duties with regard to the task;
- All crew should have a deeper understanding of the requirement for risk assessment for all routine and non-routine tasks;
- All crew members should be reminded of the importance of accepting personal responsibility for safety and that they all are empowered to stop work until safe operations are restored;
- Shipboard training and familiarisation should include specific training in particular tasks and equipment.

## 3 Lack of Safety Awareness: Crush Injury during Lifting Operations

A member has reported an incident in which a crewman suffered minor crush injuries when his hand was caught between two objects during lifting operations. The incident occurred when some oil drums were being positioned on the deck using the crane, with the assistance of two deck crew. One was handling the tag line while the other was acting as the lift supervisor and was equipped with a radio to communicate with the crane operator. While manoeuvring the drums between a deck cargo of containers, the two deck crew attempted to man-handle the drums 1.5 meters horizontally without slewing the crane jib. The acting lift supervisor was pushing on the drum while the other pulled on the tag line. The acting lift supervisor radioed the crane operator and asked him to hoist a little; he was unaware at the time that the hoist wire was snagged on the container; this caused the drum to pinch the acting lift supervisor's hand between the drum and container. He sustained a minor crush injury and was sent ashore for x-rays.



*Showing area where oil drums were being moved*

The member's investigation noted the following:

- Existing company procedures were not followed;
- Risk assessments had not been completed;
- The individuals involved in the operation demonstrated a lack of safety awareness that put themselves, their colleagues and their vessel at risk;
- The individuals involved in the operation had received no training in this specific task.

The following lessons were learnt from the incident:

- Complacency with regard to any lifting operation, however small, must be guarded against;
- All persons involved in a task, from deck officers and supervisors to deck crew, should have a clear understanding of the nature of the task and their duties with regard to the task;
- All crew should have a deeper understanding of the requirement for risk assessment for all routine and non-routine tasks;
- All crew members should be reminded of the importance of accepting personal responsibility for safety and that they all are empowered to stop work until safe operations are restored;
- Shipboard training and familiarisation should include specific training in particular tasks and equipment.

## 4 Anchor Handling Incident

A member has reported an incident in which a buoy was damaged during anchor handling operations. The incident occurred when recovering a buoy to deck; a lasso designed to catch a buoy cut through the buoy and damaged it beyond repair. The incident occurred because the lasso was not deployed in a procedural and safe manner.

Our member's procedures state that the lasso should be thrown over the buoy and when tensioned, it should 'choke' onto the wire or chain underneath the buoy. If this procedure is not successful the buoy should be placed back in the water and the capture tried again until successful.

Our member highlighted this as an example of how not following procedures can have a significant cost.

*Buoy catcher lasso was not completely over the buoy*

*Buoy is destroyed when lasso cuts through it*

## 5 Diver Safety – High Pressure Water Jetting Operations

The Australian National Offshore Petroleum Safety Authority (NOPSA) has recently published Safety Alert 46 (attached) regarding diver safety during high pressure water jetting operations. The alert highlights an incident where a diver sustained a serious injury when the retro diffuser tube became detached from the gun allowing the full force of the retro jet to penetrate the diver's arm.

This information can also be found at http://www.nopsa.gov.au/alert/Alert46.pdf

NOPSA Safety Alert 46

### Diver Safety – High Pressure Water Jetting Operations

**What happened?**

A saturation diver undertaking High Pressure (HP) Water Jetting Operations sustained a serious injury when the retro diffuser tube became detached from the gun allowing the full force of the retro jet to penetrate the diver's arm.

This accident serves as a reminder of the risks to divers involved with using this type of equipment and in particular those risks posed by the retro jet of underwater jetting guns.

**What could go wrong?**

HP water jetting equipment has been in use in the offshore petroleum and diving industries for many years and a number of related incidents have occurred. Many of these were caused by the forward lance, however NOPSA is aware of at least two other incidents in which divers operating this type of equipment have sustained injuries from the retro jet.

Whilst there are a number of types and designs of HP water jetting guns for underwater use, they all employ a retro diffuser tube to balance the force of the forward jet. Additionally, some guns utilise a shroud which is positioned over the venturi inlet holes to reduce the likelihood of items being drawn into the venturi water flow.

As this type of equipment requires the retro jet to be necessarily positioned close to the body of the diver operating the gun, the retro diffuser tube is designed to protect the diver from the retro jet and dissipate the energy by allowing surrounding seawater to enter through machined holes in the retro diffuser tube. The retro diffuser tube should be designed such that the exit wash from the tube is no longer of a velocity that can cause harm to the diver or equipment (umbilicals for example).

Underwater HP water jetting guns are subjected to a number of dynamic forces which act on safety critical components including the retro tube. The retro diffuser tube is the only control barrier protecting the diver operating the gun from the retro jet, therefore great care is required to ensure this barrier is appropriately designed, tested and is functioning correctly.

Injuries caused by HP water jets are typically serious with high risk of infection due to injection of debris and other water borne contaminants. This is a particular consideration for divers in saturation who will have to complete lengthy decompression before they have full access to medical intervention.

# Diver Safety – High Pressure Water Jetting Operations

## Key Lessons:

Prior to using HP water jetting equipment NOPSA strongly recommends thorough checks are carried out by competent persons to ensure that the associated risks are reduced to a level that is as low as reasonably practicable.

Whilst not a complete list, those considering use of such equipment should ensure that:

- The manufacturer's operating instructions and recommendations are detailed within documentation that is held on site with the equipment;
- The equipment is assembled and used in accordance with the manufacturer's operating instructions and recommendations;
- The design of equipment used is appropriate for the intended use and has been rigorously tested and proven before use;
- All components, including the retro diffuser tube and venturi shroud (if fitted) are correctly assembled and secured in accordance with manufacturer's instructions;
- The equipment is inspected, tested and maintained in accordance with the manufacturer's instructions, supplemented with regular inspections to check for signs of:
  - physical damage and wear; and
  - erosion, especially on the inner wall of retro tube and around the venturi holes. (Grit and other debris resulting from the activity can be entrained into the retro tube via the venturi holes, giving rise to erosion potential).

Operators of facilities are reminded that they have a duty to take all reasonably practicable steps to provide and maintain equipment that is safe and without risk to health.

Diving contractors are similarly reminded that they have the responsibility to take all necessary steps to provide and maintain equipment that reduces risks to the safety and health of divers to as low as reasonably practicable.

## Contact

For further information email alerts@nopsa.gov.au and quote Alert 46.

## 6 Failure of Fall Wire – Fatality

The UK Marine Accident Investigation Branch (MAIB) has published Safety Bulletin 1/11 (attached) regarding an overweight rescue boat causing the failure of a fall wire and subsequent fatality.

The incident is summarised here:

During a routine drill conducted in sheltered waters, the fall wire attached to a rescue boat parted. The incident occurred at the point when the rescue boat had been hoisted to its stowed position. The rescue boat and its four crew fell nearly 29 metres into the water below. One of the boat's crew died and two were hospitalised.

Further information can be found at www.maib.gov.uk/cms_resources/SB1-11.pdf.

**MAIB SAFETY BULLETIN 1/2011**

Overweight rescue boat identified during the investigation
into the failure of a fall wire with the loss of one life
on the car carrier *Tombarra*

MAIB

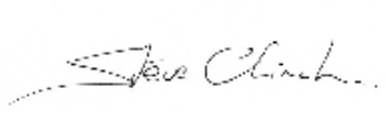
Marine Accident Investigation Branch
Mountbatten House
Grosvenor Square
Southampton
SO15 2JU

MAIB
MARINE ACCIDENT INVESTIGATION BRANCH

# MAIB SAFETY BULLETIN 1/2011

This document, containing safety lessons, has been produced for marine safety purposes only, on the basis of information available to date.

*The Merchant Shipping (Accident Reporting and Investigation) Regulations 2005* provide for the Chief Inspector of Marine Accidents to make recommendations at any time during the course of an investigation if, in his opinion, it is necessary or desirable to do so.



**Steve Clinch**
**Chief Inspector of Marine Accidents**

NOTE

This bulletin is not written with litigation in mind and, pursuant to Regulation 13(9) of the Merchant Shipping (Accident Reporting and Investigation) Regulations 2005, shall not be admissible in any judicial proceedings whose purpose, or one of whose purposes, is to apportion liability or blame.

**This bulletin is also available on our website: www.maib.gov.uk**
**Press Enquiries: 020 7944 6433/3387; Out of hours: 020 7944 4292**
**Public Enquiries: 0300 330 3000**

## BACKGROUND

At approximately 1550 (UTC) on 7 February 2011, the fall wire attached to the rescue boat of the UK registered car carrier *Tombarra* parted during a routine drill which was being conducted in the sheltered waters of the Royal Portbury Docks, Bristol, UK. The accident occurred at the point when the rescue boat had been hoisted to its stowed position. The rescue boat and its four crew fell nearly 29m into the water below. One of the boat's crew died and two were hospitalised.

The rescue boat, a Watercraft WHFRB 6.50 had a certified weight of 980kg, but was 1450kg when weighed after the accident **(Figure 1)**. Subsequently, several rescue boats of the same model carried on board *Tombarra*'s sister vessels were also inspected and weighed, and they too were found to be significantly heavier than when supplied.

In all cases, in an unladen state, the boats' weights were close to or exceeded the safe working load (SWL) of their davits. With crew, fuel and equipment on board, the SWLs of the davits were exceeded.

However, the weight of *Tombarra*'s rescue boat by itself should not have resulted in the failure of its fall wire due to the safety margins in place. Investigation into the failure of the wire remains ongoing and it is anticipated that a further safety bulletin will be published shortly.

Figure 1


Weighing of the rescue boat

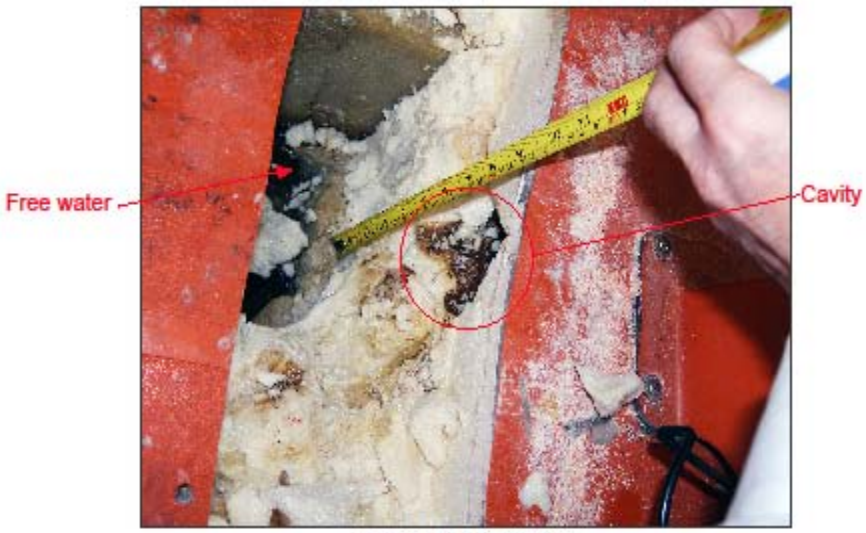
## INITIAL FINDINGS

The rescue boat was manufactured by Watercraft Hellas SA and delivered to *Tombarra* in 2006. The Watercraft WHFRB 6.50 was certified to meet the requirements of SOLAS, the Life Saving Appliance (LSA) Code and the Marine Equipment Directive (MED).

The WHFRB 6.50 was constructed with an inner and outer hull. The void below deck was divided into 16 compartments, 15 of which were filled with rigid polyurethane foam to provide a watertight, buoyant volume.

Investigation has identified that 14 of the 15 foam-filled compartments in *Tombarra*'s rescue boat had been penetrated by water. In addition, the foam in the lower sections of the hull contained cavities and there were voids between the foam and the hull. In these areas the foam appeared to be of varying consistency and colour **(Figures 2 & 3)**.

Figure 2




Below deck inspection

Figure 3

Foam sample from cavity

Although the boat was fitted with a drain plug on the transom, the internal compartments were not interconnected. The removal of the plug therefore allowed the water to drain only from the aftermost compartment. The water in the remaining compartments was trapped and had to be drained by separately drilling into each compartment through the hull **(Figure 4)**.

Figure 4

Water draining from foam-filled compartments

Investigation into how water entered the buoyancy compartments of the boats inspected has identified a number of different types of penetrations in their hulls and decks. Investigation into the properties of the foam used is ongoing.

## SAFETY ISSUES

Water ingress and retention within the foam-filled internal compartments of the Watercraft WHFRB 6.50 is a serious cause for concern. It is apparent that, without warning, it can result in a boat's weight increasing considerably over time, with the following consequences:

- the SWL of the davit and fall could be exceeded
- the rescue boat's performance and manoeuvrability could be adversely affected in relation to:
  - the ability to self-right (or be righted) after capsize
  - the ability to tow survival craft, and
- safety of the 5-yearly dynamic test where the boat is included in the test weight could be compromised.

In view of the widespread use of foam-filled compartments in the construction of many rescue boats and fast rescue craft, it is possible that the problems of water ingress and retention might not be limited to just this particular model of boat.

## ACTION TAKEN

Norsafe Watercraft Hellas SA has issued a product awareness notice to its customers while it continues to investigate the cause of the water ingress, water retention and the condition of the foam. The notice advises owners of Watercraft WHFRB 6.50 to arrange for their boats to be weighed, seeking assistance from the manufacturer if required. The notice also provides practical advice on how to conduct inspections of this type of boat.

The Maritime and Coastguard Agency (MCA) has given temporary dispensation to Wilhelmsen Lines Car Carriers to suspend launching drills for the Watercraft WHFRB 6.50 rescue boats provided on board its vessels. However, should a Watercraft WHFRB 6.50 have to be used, dispensation has also been given for the crew to embark and disembark when the rescue boat is in the water, rather than from its embarkation point on deck.

## RECOMMENDATIONS

**S116/2011** Owners of ships using rescue boats or fast rescue craft built with integral polyurethane foam-filled compartments should:

- In the case of Watercraft WHFRB 6.50, follow the advice issued by the manufacturer, or urgently contact the manufacturer if a product awareness notice has not been received.
- Be alert to the possibility of boats being heavier than designed and arrange for the boats to be weighed, or boat manufacturers contacted for advice, where doubt exists.
- Inspect boats' hulls and exposed decks for possible holes, cracks, or fittings through which water could penetrate.
- Ensure that drain plugs fitted to the hull are regularly opened.
- Monitor boat performance for unusual characteristics that could be attributed to an increase in weight, eg that it does not feel 'heavy' or 'sluggish' when manoeuvring.

Owners, operators or manufacturers identifying ships' boats heavier than certificated are requested to inform the MAIB by email (maib@dft.gsi.gov.uk) using the title "Boat Weight", and include the name of the vessel, the boat manufacturer and model, and the date of supply. This information is for internal use only and will be treated in the strictest confidence.

**Issued April 2011**