

## IMCA Safety Flash 16/14

October 2014

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: Engine Room Flooding

A member has reported an incident in which the engine room of a seagoing vessel was flooded to a level of two metres above tank top (to just below the engine room floor plating). Had the flooding incident lasted a few minutes longer, serious machinery damage could have been the result. The incident occurred during ballasting operations, when the configuration of pumping from and to ballast tanks was altered. During this process the cover plate of the sea strainer was blown off. This resulted in seawater ingress into the engine room. Engine room personnel instructed the bridge officer in charge of ballasting to stop ballasting operations (without mentioning reasons). As per company procedure, the overboard suction valve and overboard discharge valve were opened to 'de-energize' the pumping system. This worsened the situation since a direct connection between open water and engine room was created. This was noticed by engine room personnel immediately and the bridge officer was instructed to close overboard valves. There was no damage and no injuries.



Figures: showing flooding (left) and cover plate of sea strainer (right)

Our member's investigation revealed the following:

- ◆ **Root cause:** malfunctioning of one of the actuators of the valves in the ballast pipelines caused the valve to close in 1.5 – 2 seconds (normally 15 – 20 seconds). This created a pressure shock in the ballast system. Subsequently, this pressure shock caused the cover plate of the sea strainer to blow off;
- ◆ The actuator of the valve which was closing in 1.5 – 2 seconds was replaced by vessel crew in early 2014 without verification of the opening/closing time of the valve;
- ◆ **Root cause:** communication between engine room personnel and bridge personnel was not sufficiently detailed; this resulted in incorrect actions being taken which caused a worsening of the situation;
- ◆ **Root cause:** ballasting procedure of manufacturer was not followed. The recommended procedure described that pump(s) should be stopped before operating valves in the ballast lines. This was not followed.

Our member learnt the following lessons:

- ◆ Introduced vessel-specific procedures for ballasting and added this instruction to the official document list of vessel;
- ◆ Following the hierarchy of control, the company recognised it could not eliminate nor substitute the ballast process on board. Therefore, it focused on the following engineering controls by:
  - improving visual presentation for valve operations on the bridge to emphasize valve position and open lines in the ballast system

- introduction of interlock system to eliminate simultaneous operations of valve(s) and pump(s).

Members may wish to refer to the following similar incidents (key words: *engine, room, and flood*):

- ◆ IMCA SF 11/05 – Incident 3: *Engine room flooding*;
- ◆ IMCA SF 12/13 – Incident 2: *LTI: Crewman injured during opening of tanks*.

## 2 Dropped Object Incident

A member has reported an incident in which an object of 100kg fell 2m onto a scaffold platform. The incident occurred in port during the removal of a 55t tensioning mechanism from a horizontal lay system (HLS) on board a vessel. The tensioner was pre-rigged with primary rigging to the main crane and auxiliary rigging to the upper side of the horizontal lay system. The strain was taken on the rigging to allow the unbolting of the tensioner from the HLS. Once the bolt removal was complete the deck foreman instructed the crane driver to take more load on the crane. When the crane took more load on the primary rigging the rigging came into contact with the product guide bars and pushed a guide bar off the horizontal lay system. The guide bar weighed 100kg and fell 2m onto a scaffold platform on the HLS. There were no injuries.

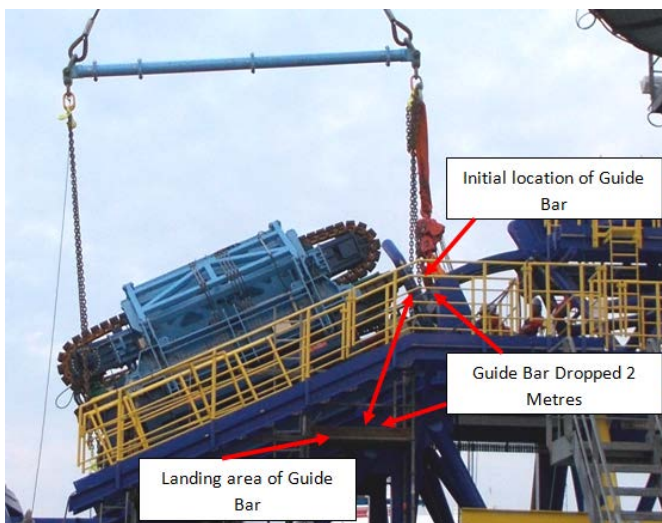


Figure 1: taken after the guide bar had been pushed off the horizontal lay system



Figure 2: guide bar

Our member was made a number of modifications to the design of the horizontal lay system, in order to prevent recurrence:

- ◆ Limit the requirement for auxiliary rigging to install or remove a tensioner;
- ◆ Fit end stops onto the guide bar slide guides to stop them being pushed off the HLS.

Our member noted that all future lift plans or procedures with respect to the HLS should ensure that the guide bars are removed before installation/removal of a tensioner, or securely lashed together to ensure they do not come into contact with any rigging.

Members may wish to refer to the following similar incidents (key words: *dropped object*):

- ◆ IMCA SF 08/11 – Incident 2: *Recent near miss incidents involving potential dropped objects*;
- ◆ IMCA SF 06/13 – Incident 4: *Near miss: dropped objects during lifting operations*.

## 3 Near Miss: Failure of Diving Helmet Communications Module

A member has reported an incident where the communications module on a Kirby Morgan KM 37 diver's helmet failed at the interface between the threaded section and the main module. The incident occurred during a dive to 12 msw. The diver was able to reduce the loss of air from his helmet by placing his hand over the partial opening and return to the surface in a controlled manner. The module did not fall out of the aperture in the helmet. There were no injuries.



Figure: showing broken helmet communications module

Our member's investigation revealed the following:

- ◆ The module had never been removed from the helmet;
- ◆ The helmet had been in storage for several years since purchase with minimal use;
- ◆ Water temperature was less than 2°C; Depth: 12 msw;
- ◆ No tool marks were found on the securing nut to suggest over tightening.

The failed module was sent to the supplier for inspection and analysis. The supplier inspected the part and performed in-house testing of off the shelf inventory overstressing at worst case levels. It was reported the parts withstood extreme stress tests at elevated and sub-freezing temperatures and passed all inspection criteria. The supplier found that failure of the module appeared to be an isolated case and referred the member to Kirby Morgan Bulletin #1 of 2009.

The following actions were taken:

- ◆ Supplier would include, in checklists, that the module should be regularly loosened and retightened during checks, by hand;
- ◆ Inspection of all such communications modules - none found with potential failure indications, even in older helmets in more frequent use;
- ◆ A recommended inspection/check process was initiated.

#### **4 Near Miss: Incident Involving Dry Bulk Pressure System**

The Marine Safety Forum has published the following safety flash regarding a near miss or potential incident involving control of work whilst carrying out live tests on a pressurised dry bulk cargo systems on board a vessel; this resulted in a 'Stop the Job' intervention. Whilst there were no injuries or damage caused, given that pressure vessels were involved, the potential was high.

It was found that the root cause was lack of adequate control of work, and that lack of communication between the engine room and bridge staff was a contributory factor.

The safety flash can be downloaded from [www.marinesafetyforum.org/upload-files//safetyalerts/msf-safety-flash-I4.35.pdf](http://www.marinesafetyforum.org/upload-files//safetyalerts/msf-safety-flash-I4.35.pdf).

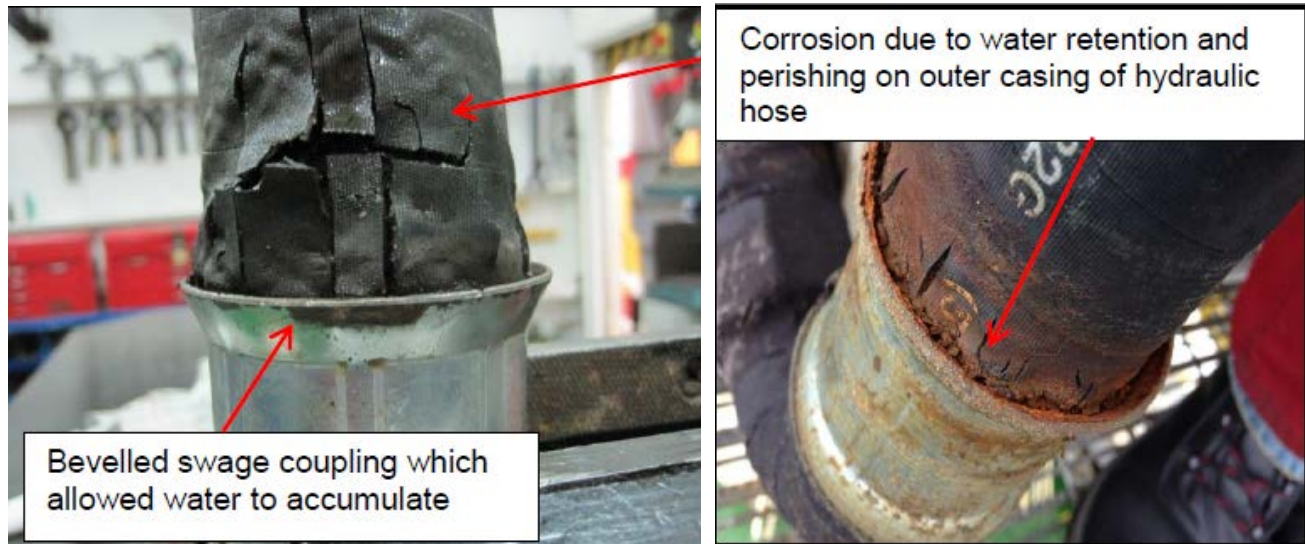
Members may wish to refer to the following similar incidents (key words: *dry, bulk, pressure*):

- ◆ **IMCA SF 09/12** – Incident 2: *Near miss: cement tank hatch failure*;
- ◆ **IMCA SF 01/04** – Incident 3: *Near-miss during connector pressure tests*.

## 5 Ruptured Hydraulic Hoses

A member has reported an incident involving the rupturing of a pair of hydraulic hoses on a vessel crane. The incident occurred during a port call when the mid-ship crane was being used to move packaging from the main reel area to the deck. A hydraulic hose ruptured and oil was spilt to the main deck below. The majority of the hydraulic oil (20 litres) landed on the deck but approximately 500 ml of oil went into the sea.

An 'all stop' was initiated and the spill on deck was immediately cleared up using a Ship Oil Pollution Emergency Plan (SOPEP) kit. The following day another hose ruptured in a similar location and all oil was contained on deck. The relevant authorities were notified.



Figures: showing damaged hoses (upper red arrow on left image indicates ruptured area)

Our members' investigation revealed the following:

- ◆ The ruptured hoses were badly corroded;
- ◆ The design or assembly of the hydraulic fittings had allowed water to accumulate around the neck of the fittings;
- ◆ The collection of water had eroded parts of the hoses resulting in the ruptures;
- ◆ Other hoses onboard were found to be in a similar state;
- ◆ The inspection of the vessel crane hydraulic hoses was conducted by vessel crew and a third-party contractor. The most recent inspection had taken place four months previous to the incidents occurring. It was found the crew and the third party inspection team had not removed the 'denso' tape wrapped around the hose fittings, thus the corrosion was not visible;
- ◆ It was apparent that the corrosion on the hoses had occurred over a long period of time and this should have been spotted by the inspection by vessel crew and contractor, and noted in their report.

Our member immediately replaced the badly corroded hoses and undertook an investigation to ascertain why the contractor and crew had not identified the corrosion during the previous inspection. It was found the 'denso' tape was not removed from hose fittings during these inspections and as a result the corrosion was not visible. Removal of 'denso' tape from hose fittings is now required for all future inspections.

Members may wish to refer to the following similar incidents (key words: *hydraulic, hose, rupture*):

- ◆ [IMCA SF 05/05](#) – Incident 2: *Pollution caused by burst hydraulic hose*;
- ◆ [IMCA SF 11/14](#) – Incident 5: *Hydraulic hose failure caused collapse of heavy haulage trailer*.

## 6 Injured Party Struck by Tugger Wire Assembly

The Marine Safety Forum has published the following safety flash regarding an incident in which someone was struck by a tugger wire assembly, requiring subsequent hospitalisation. The incident occurred when a vessel was deploying a 15 Te anchor during a pre-lay operation. The rigging assembly parted and both tugger wires recoiled around the cargo barrier. The injured person was struck on the head and suffered head injuries.

The root causes of the incident lay in failure to properly identify and assess the risks of the particular task.

The safety flash can be downloaded from [www.marinesafetyforum.org/upload-files//safetyalerts/msf-safety-flash-I4.34.pdf](http://www.marinesafetyforum.org/upload-files//safetyalerts/msf-safety-flash-I4.34.pdf).