IMCA Safety Flash 17/08

December 2008

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 Accidental Shutdown of Main Engines

A member has reported an incident in which a vessel's main engines were inadvertently shut down. During transit, the vessel was rolling considerably and as a result the door of a nearby cabinet swung loose. A member of the marine crew moved to close the door; as he did so the vessel rolled and he was accidentally pressed against the emergency shutdown buttons. The two central buttons controlling the fuel pumps were accidentally activated (see photographs below), causing loss of power to both fuel pumps. The vessel was without main engines for 35 minutes. The generators were unaffected and a thruster was started to provide headway.

It was discovered that the Perspex cover in place to prevent accidental activation was so flexible that it bent in sufficiently to press against and thus activate the emergency stop buttons when the crew member accidentally pressed against it.

Emergency power switches

The following lessons were drawn:

- It should not be possible to accidentally activate critical items such as emergency shut down controls;
- Protective covers and other barriers to prevent accidental activation must be fit for purpose;
- At least two separate actions should be required to activate the shut down;
- Emergency controls should located in such a way as to be quickly accessible when required but so that accidental activation is not possible.

The following action was implemented immediately to prevent recurrence of this potentially very serious incident:

- The Perspex guard was temporarily strengthened and steps were put in place to fabricate and install a permanent guard at the next port call.

2 Fatality – Struck by Falling Object During Lifting Operation

An incident has been reported in which a shipyard worker was struck and killed by a falling object whilst working in a ballast tank. The incident occurred during the dry docking of a vessel and occurred during lifting operations. A piece of steelwork fell from its rigging to the bottom of the ballast tank and hit the worker, causing fatal injuries.

Six large heavy plates, weighing approximately 100kg each, were being lifted by one team from the quay into the bottom of a ballast tank onboard the vessel.

Following a break period the lifting operation continued, although there was now other work taking place simultaneously at the bottom of the ballast tank. The first lift following the break was of a long angle plate sized 2000 x 300 x 90mm. This was initially rigged with a nylon flat webbing sling, choked around the plate.

At this point a safety officer stopped the job, noting that, in order to make the job safe, a padeye lifting point should be welded to the plate. The rigger went to see his supervisor in order to get a padeye welded on the angle iron, and the safety officer went to the permit to work office to request that the permit for this lift be put on stand-by until the padeye was welded in place.

For unexplained reasons, the lift nonetheless continued without the padeye. Workers in the bottom of the ballast tank were asked to move away as a lifting operation would shortly be in progress but not all of them did so. As the angle plate was lowered into the ballast tank, it or its web strop rigging got stuck on an obstruction, such that the plate slipped within the choked sling and then fell free. The plate fell to the bottom of the ballast tank and struck a worker who had not moved away, causing fatal injuries.

Beam being lowered into ballast space (re-enactment)

Detail of webbing strop getting caught

Following investigation of this wholly avoidable incident the following causes were identified and actions were put in place to prevent recurrence:

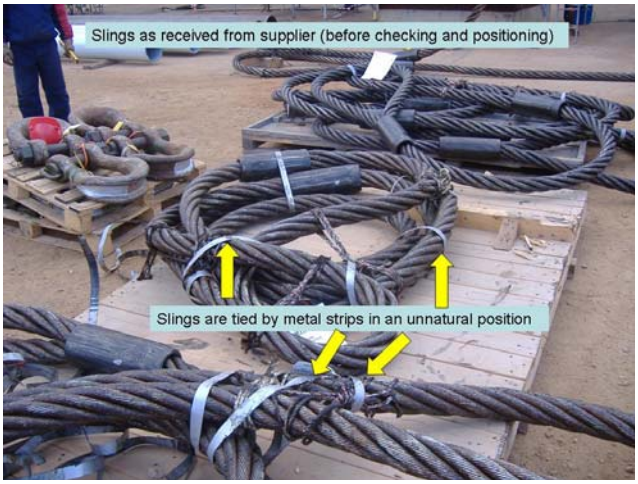
- Bad rigging practices; specific rigging rules were not followed – a nylon flat webbing sling was used to rig the angle plate rather than a safe welded padeye welded as required by the safety officer;
- Lack of communication between sub-contractors and poor management of simultaneous operations;
- Instructions from safety officer were not followed;
- There was no proper control of the lifting operation:
  - the area under lift was not controlled
  - proper communications (radios) were not employed
  - a rigging supervisor was not involved;
- Insufficient personnel were involved in the operation, which involved lifting via a narrow opening, through two different levels down inside a ballast tank, with poor visibility, a load not vertical and no rigger at the landing area to receive the load.

3 Stored Energy – Injury Sustained Whilst Removing Metal Straps

A member has reported an incident in which a crane operator suffered a lost time injury. A team comprising three crane operators, acting as riggers and under the supervision of a foreman, was preparing heavy wire-rope slings for rigging on the spreader bar for a lifting operation. The slings (six in all) were coiled on one large pallet as received from the supplier and had been secured for transportation using metal 'Band-It' style straps (see photograph on left below).

The task consisted of unpacking the lifting equipment and checking and positioning all the slings temporarily on the ground. An auxiliary rope for the safe retaining of the slings whilst unpacking them was available on site but this was not used. In order to carry out the job it was necessary to cut and take off the metal straps used by the supplier for transportation/ storage of the grommets.

Five slings were unpacked and positioned by the team without any difficulties. During the unpacking and positioning of the sixth sling, as one of the two retaining metal straps was cut, the second strap became over-tensioned and gave way. The sling acted as a spring and moved violently outwards, striking the crew member on the helmet and ankle. Following first aid the crew member was taken to hospital for further examination. The crew member was unable to return to work for 20 days.



Slings are received from supplier

Sling after stored energy was released

The following factors were identified as contributory to the incident:

- High levels of stored energy resulting from extreme compression while coiling/packaging to optimise transportation on one pallet;
- Inadequate pallet, not large enough to handle this kind of package;
- Lack of communication on the part of the supplier of the relevant hazards (stored energy/slings under tension) and inadequate instructions for safe removal of the metal wraps;
- General lack of communication between supplier and user about residual risks related to handling packages of this kind;
- Team did not use available equipment to contain the sling under tension whilst cutting the wraps;
- Risk was not appropriately assessed before the start of the job; no relevant job safety analysis took place.

The following actions were suggested:

- Improve communications between supplier, client and user so that hazards of such packages were fully understood and risks appropriately controlled;
- Supplier of slings to send relevant information and instructions for the safe unpacking of its products;
- Develop procedures for safe unpacking of metal slings;
- Make full use of existing safe systems of work;
- Perform risk assessment and job safety analysis before starting the job.

Members' attention is also drawn to section 2.1 of IMCA M 194 – *Guidance on wire rope integrity management for vessels in the offshore industry* – which highlights the hazard posed by stored energy in wire ropes.

4 Failure of Webbing Strop During Lifting Operations

A member has reported an incident in which a webbing strop failed during a lifting operation onboard a vessel. The rigging crew found it necessary to reposition the mattress lifting frame which had been landed incorrectly. The lift was being carried out to reposition the lifting frame at one end, in order to square it up, as the forward section was not sitting correctly on the mats.

The weight of the handling frame and rigging was 9.2Te. A webbing strop with a safe working load (SWL) of 3.6Te was selected. The sling was then basket-rigged to give a SWL of 5.8Te, attached to the main lift rigging of the handling frame and then on to the crane whip line block.

With all personnel clear of the load, the rigging foreman instructed the crane operator to commence the lift. As the weight of the lift was taken on the crane the rigging parted, causing the frame to land back in place. No one was injured. The crane computer showed a peak load of 9Te.

Mattress lifting frame

Example of worn lifting strop

Following investigation, these conclusions were drawn:

- The sling was incorrect for carrying out this lift. It was not only an insufficient SWL but was also worn and in a generally degraded condition. There were no ID marks or colour codings on the sling;
- The sling was not subject to inspection prior to use and as such the wear and lack of ID was not observed;
- The intention had been only to lift up one end of the frame. However, with no adequate lift planning in place, the sling was connected to the central lifting point;
- An assumption was made that this sling would be of a sufficient SWL when basket-rigged to lift one end only.

The following actions were recommended:

- The need for an appropriate lifting plan for every lift, however small or routine, should be reiterated;
- All vessels should check their items of lifting equipment and rigging to ensure that they have appropriate and readable ID markings which are part of a vessel's itemised rigging, are free from defects and are included in regular planned inspection;
- Personnel should ensure they are familiar with the relevant lifting operation procedures including documentation and lift planning;
- Members should ensure that relevant information on lifting – including pocket safety cards, posters and procedures – is available at worksites and vessels;
- Use of generic lifting plans should be scrutinised to ensure their suitability.

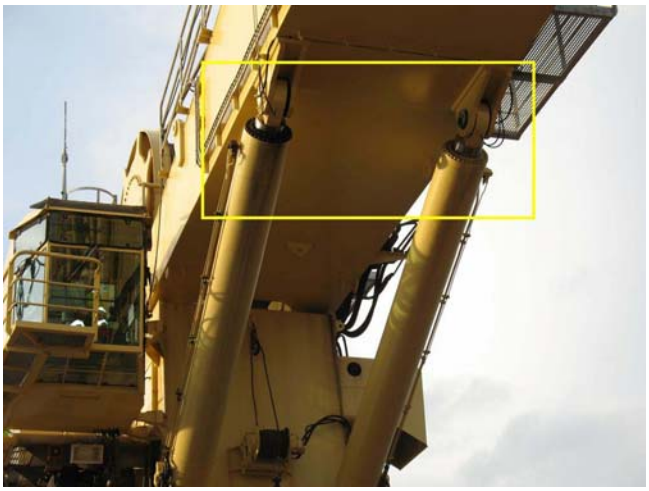
Members' attention is also drawn to IMCA SEL 019 – *Guidelines for lifting operations.*

5 Uncontrolled Movement of Crane Jib During Inspection

A member has reported an incidence of uncontrolled movement of a crane jib during inspection operations. The crane boom/knuckle had been lowered to deck to enable access to the main hoist sheave for inspection and maintenance purposes. The crane was powered down and the operator was not in the cab. During the inspection there was an uncontrolled movement of the knuckle section along the deck of approximately 30cm towards the crane pedestal.

The hydraulic cylinders in the main boom were not fully closed when the crane was stowed in this position; therefore the weight of the jib was able to overcome the friction on deck and thus caused the movement of the knuckle head across the deck. At the time of the movement the inspector had been positioned close to the equipment in order to gain access on either side for a complete overview.

Main boom cylinders not fully closed

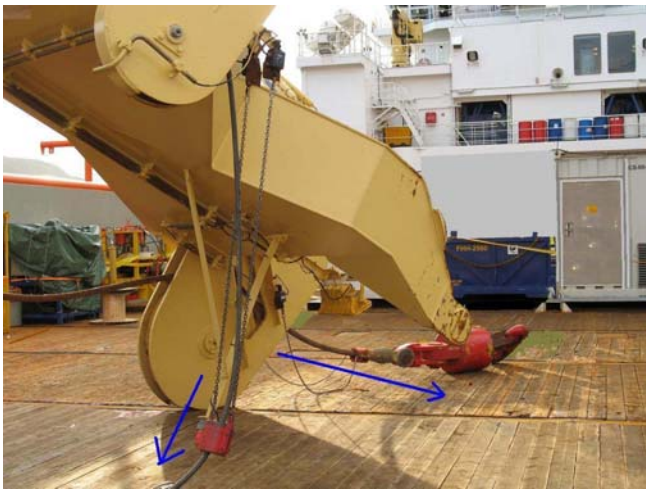


Main boom cylinders FULLY closed

A number of key lessons were drawn from this near-miss:

- Conduct such inspections and routine maintenance with the crane stowed in dedicated parking position i.e. crane crutch;
- Ensure that the main boom cylinders are fully closed to avoid uncontrolled movement of crane jib;
- Follow approved procedures and always fully brief third party personnel during a toolbox talk prior to commencing the operation;
- Follow and adhere to the permit to work system, review and risk-assess specific tasks;
- Ensure that a complete and thorough shift handover is conducted at all times and strive to identify any hazards while the job is in progress;
- Barrier off work-site and ensure all personnel are aware of the potential hazards.

Deck area where uncontrolled movement of the knuckle occurred



Showing correct angles and position of crane during the inspection operation

Showing correct boom position

6 Failure of Lifting Padeye

A member has reported a near miss in which a member of an ROV team spotted that one padeye on the tether management system winch was at an unusual angle. After closer inspection by the ROV pilot technician it became clear that the padeye had peeled away from the box section of the winch.

Following investigation it was concluded that this was likely to have happened during a recent mobilisation and had gone unnoticed for some weeks. The shift supervisor was informed, who brought the matter up in the daily meeting the next morning.

The cause of the incident is thought to be incorrect design. The 30mm thick padeye is welded directly to the top of a box section made from 5mm thick steel. The load on the padeye goes directly into the unreinforced top surface of the box section. Under repeated loading the padeye had peeled back the top surface of the box section as shown in the photograph.

The following conclusions were drawn:

- When hiring such equipment it can be taken for granted that the equipment has been designed correctly particularly when the equipment is certified. This incident shows that certification is no guarantee that equipment is correctly designed or has been handled correctly;
- Personnel involved in lifting operations must always check the condition of the lifting lugs/padeyes and slings prior to and immediately after use. In this case the damaged padeye was not noticed until some days after the damage was caused;
- All equipment subject to lifting must be treated with caution, particularly equipment that is repeatedly mobilised;
- During lifting operations always be prepared for the possibility that the load could drop or an object could fall off. The safety rule stating that personnel are not to go under the load, not to lift the load over the top of personnel and to keep a safe distance at all times should be reinforced.