IMCA Safety Flash 08/10

December 2010

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.

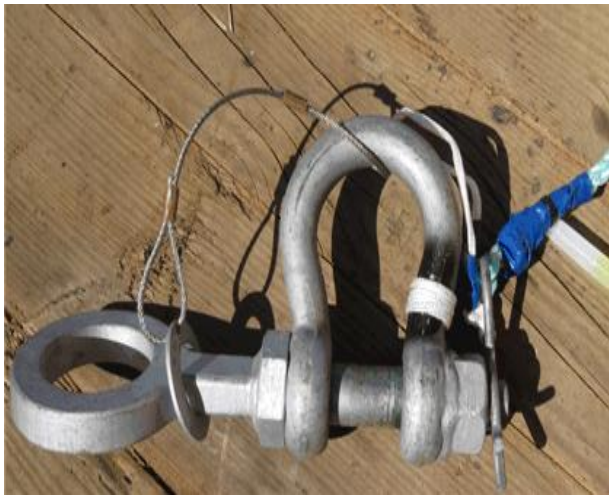
A number of other organisations issue safety flashes and similar documents which may be of interest to IMCA members. Where these are particularly relevant, these may be summarised or highlighted here. Links to known relevant websites are provided at www.imca-int.com/links Additional links should be submitted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

1 Welding of Shackles

A member has reported that in spite of clear work instructions and procedures to the contrary, shackles and hooks at the worksite were being regularly modified by welding. Rigging suppliers or individual worksites were carrying out welding modifications (mainly to shackles) after delivery from the manufacturer. This practice invalidates the manufacturer's certificate and is potentially hazardous.

The welding of shackles (after delivery from manufacturer) has the effect of adversely altering the material properties and increases the risk of failure by various brittle modes. In addition to this increased risk, the nature of the failure is unpredictable, is not time dependant and cannot be prevented by inspection.

Our member recommends that all shackles and hooks that have been modified by welding should be removed from service. Equipment suppliers should be instructed not to modify or issue modified shackles or hooks for use on any worksite.



Example of shackle with welded modification performed by supplier

Example of shackle with welded modification performed at worksite

2 Lacerated Chin Caused by Flying Wedge

An incident has been bought to the attention of IMCA, in which a worker received a laceration to the chin. A worker was removing a steel wedge from the frame of a crane track during disassembly. The wedge dislodged when struck by a sledge hammer and ricocheted against the frame before striking the worker. The worker was taken to an offsite facility for treatment where he received stitches. He was able to return to work without restrictions.

Investigation revealed the following:

- The wedge was in a bind when it was struck;
- The injured person was *'in line of fire'* for the rebound of the wedge after it was struck by the sledge hammer;
- The injured person was not wearing a face shield whilst removing the wedge;

- Established procedures did not adequately recognise or cover the hazards for the task being performed.

The following lessons were noted:

- The use of wedges for this process should be eliminated and the appropriate alternative tools used for pin alignment and removal;
- Appropriate personal protective equipment (PPE) including face shields should be used for required wedge hammering, impacting and banding operations;
- More detailed work plans were developed down to the task level, including specific PPE for each task, appropriate tools and body positioning.

Showing worksite and position of wedge

3 Failure to Calibrate MRU Led to Near Miss

A member has reported an incident in which a vessel crane made an uncontrolled payout of approximately 27 metres of winch wire. During crane operations to relocate an anode skid the winch began paying out for no apparent reason. The payout occurred when changeover was taking place between auto-tension and active heave modes. This should have allowed the crane to lift the skid in a controlled manner. There were no injuries or damage to assets, but the incident was classified as a high potential near miss.

Our member's investigation established that the motion reference unit (MRU) housed within the crane had not been calibrated since it was installed in 2008. This had led to incorrect readings from the crane computer system. The calibration had been omitted owing to a changeover in companies responsible for the MRU and a lapse in the onboard planned maintenance system.

The MRU was landed for calibration and it was noted that there was a relatively high offset on the heave signal from the MRU. The decision was then taken to change out the MRU for a calibrated spare.

Following this incident our member decided to carry out a gap analysis of the planned maintenance system of the crane and all other major components in safety critical equipment onboard the vessel against the possibility of similar lapses.

4 Diver Safety – Nitrox Generator Use

The Australian National Offshore Petroleum Safety Authority (NOPSA) has published the attached safety alert (NOPSA safety alert 44).

This information can also be found at http://www.nopsa.gov.au/alert/Alert44.pdf.

NOPSA

NATIONAL OFFSHORE PETROLEUM SAFETY AUTHORITY

SAFETY ALERT 44

Diver Safety – Nitrox Generator Use

What happened?

It has come to NOPSA's attention that Nitrox generators are being used, or are being considered for use, in diving activities in connection with offshore petroleum operations. This type of equipment is able to produce high pressure gas mixes used in diving containing up to 40% oxygen content.

The system involves a low pressure phase in which air is depleted of nitrogen prior to high pressure pressurisation and storage. Related offshore industry guidance suggests that components and processes used in this type of system may only be fit for gas mixes up to a maximum 25% oxygen content.

The technology involved with this type of equipment has been in use within the recreational diving industry for some time. However, it may not be appropriate for use in the offshore petroleum environment unless the associated risks are properly managed. There has been at least one explosion involving this type of equipment in Australia. (http://www.deir.qld.gov.au/workplace/publications/alerts/nitrox/index.htm)

What could go wrong?

The fundamental concern is the high volatility of the produced gas and the potential for an explosion within the system. For this reason, the offshore diving industry internationally has adopted a precautionary approach by treating such gas mixtures as pure oxygen in regard to system component compatibility, associated working practices and cleanliness.

Key Lessons:

Prior to using such equipment NOPSA strongly recommends that hazards arising from the production, use and storage of enriched oxygen gas mixes are fully understood and that appropriate measures are put in place to ensure that the associated risks are reduced to as low as reasonably practicable.

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

- All components upstream of the nitrogen generator are fit for oxygen service in accordance with industry best practice;
- Associated processes and procedures are appropriate for oxygen systems; and
- The produced gas is subject to periodic and appropriate analysis to determine its fitness for use as a breathable gas for diving.

Contact

For further information email alerts@nopsa.gov.au and quote Alert 44.

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5 Right Hand Hit by Flying Wedge

A member has reported an incident in which a member of the crew was injured when a steel wedge came loose and hit him on the right hand. The injured person was working in a winch room replacing the band brakes of a winch and had completed similar work on two other winches without any problems.

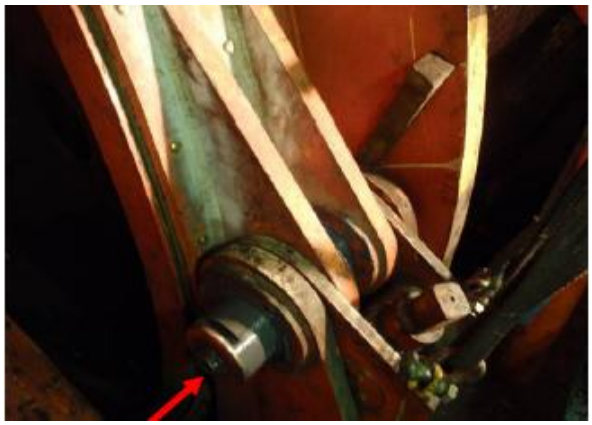
During the insertion of the brake belt pin with the help of a hydraulic jack, a steel wedge (weight 2.4 kilograms) was used to hold the foundation plate in the right position. Just before the pin was fully inserted in the pad eye/hinge-point, the wedge came loose with a lot of energy, and hit the injured person who was not wearing gloves, against his right hand. The injured person received the necessary medical treatment (four stitches) and was subsequently able to continue work under restricted conditions.

Our member's investigation revealed the following:

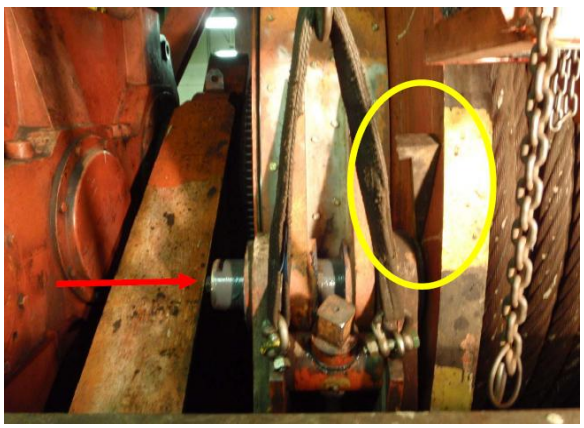
- There were two direct causes of the incident:
  - the injured person's position with respect to the job he was doing
  - the improper position of equipment used – the steel wedge;
- The root cause of the incident was considered to be **inadequate experience/supervision** (the injured person had less than three months' experience on this vessel);
- A significant contributing factor was that the injured person was not using available PPE (gloves) and was performing the task in a tight/cramped working area.

Our member made the following corrective actions:

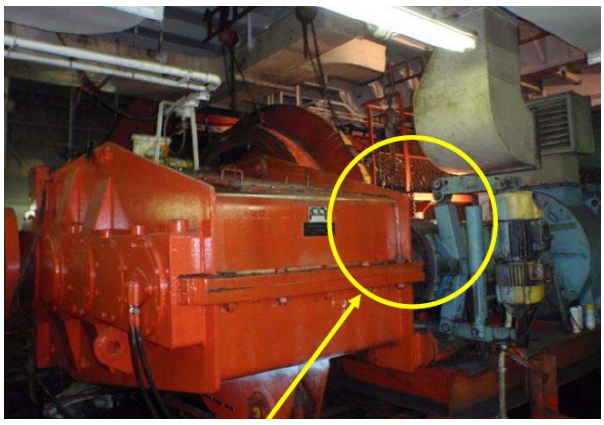
- Time out for safety: work was stopped and incident discussed with personnel involved;
- Further emphasis was given to the importance of safe position with respect to unexpected flying objects;
- Further guidance and job instructions were given to relative newcomers;
- Shared lessons were discussed at shift briefings.



Installation of brake pin using hydraulic jack (red arrow)



The wedge which came loose (yellow circle)



Overview of worksite and position of injured person (injured person NOT shown)

6 Subsea Oxy-arc Cutting – Risk of Explosion

The International Association of Oil & Gas producers (OGP) has published the attached safety flash (OGP safety alert number 227), entitled *Subsea oxyarc cutting – risk of explosion.* The information can also be found at http://info.ogp.org.uk/safety.

The safety flash recommends that double isolations that perform a complete break in both poles of the circuit should be used between the surface generator and the diver to form a more effective and dependable isolation.

Members are reminded that subsea oxy-arc cutting operations are addressed in IMCA D 003 - *Oxy-arc cutting operations underwater* and IMCA D 022 - *The diving supervisor's manual* (chapter 12, section 15).

Guidance contained within the diving supervisor's manual includes that *the knife switch should be mounted in such a way that it cannot fall or be knocked into the on position. Ideally it should be a double pole switch enclosed in a protective wood or plastic box with only the handle showing.*

Members are also reminded that both IMCA D 003 and IMCA D 022 are currently under review.

OGP Safety Zone

OGP Safety Alert

SUBSEA OXYARC CUTTING - RISK OF EXPLOSION

Country: ---

Location: *OFFSHORE : Specialist vessel eg diving, construction, survey*

Incident Date: --- *Time:* ---

Type of Activity: *Diving, Subsea, ROV*

Type of Injury: *Explosions or Burns*

Function: *Exploration*

Subsea Oxyarc cutting utilises an energising current supplied by a welding generator. There is a potential for leakage current to be present in the circuit if industry standard single pole isolation is used. This increases the potential for hydrogen gas to be produced as a product of electrolysis, these can become trapped in pockets inside the oxyarc torch and burning rod subsea. Hydrogen pockets introduce a risk of explosion when mixed with the oxygen.

What Went Wrong?:

Common Industry practice is to use a single pole isolation as a break in the circuit and this can result in leakage current still flowing through the Oxyarc torch and Rod while the diver believes it fully isolated.

Corrective Actions and Recommendations:

Double Isolations that perform a complete break in both poles of the circuit should be used between the surface generator and the diver. These will form a more effective and dependable isolation.

safety alert number: 227
OGP Safety Alerts http://info.ogp.org.uk/safety/

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