IMCA Safety Flash 01/10

February 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 Diver Fouled on Descending Load

A member has reported that, during the work on a floating production storage and offloading unit (FPSO), a diver's umbilical became fouled on a flexible riser.

The riser had been disconnected from the underside of the FPSO by an air diver working at 40fsw. The diver had rigged up a tirfor for a lateral pull to aid separation of the riser which was secured to the support vessel crane and winch with 10T webbing slings.

When the lateral pull was applied, the flexible riser dropped, parting the slings resulting in an uncontrolled descent to the seabed at -100msw.

At this point, the diver's umbilical was fouled on the crane wire resulting in the diver being dragged down to -70fsw before he could clear himself and return to the dive basket for recovery to the surface.

The company found the root causes to be the following:

- The riser was substantially heavier than expected and detailed by the client;
- Webbing slings were used as opposed to wire rope slings.

The company has introduced the following measures from lessons learnt:

- Umbilical management is critical for all diving operations. Excess and unwanted umbilical slack should be taken up at all times by the diver tender. The diving supervisor, diver and tenders should be alert and proactive in this respect;
- Webbing slings should not be used underwater particularly when contact with sharp edges is possible;
- Attention to detail when calculating weights underwater to include marine growth and dynamic loading should identify the need for proper and suitable rigging;
- The diver is to remain well clear and if possible return to surface when such activities are planned.

Members are reminded of the need for a robust risk assessment system and diving project plan to be in place before diving operations should commence.

2 Diver Falls into Bell Maintenance Pit

A member has reported that as part of bell maintenance activities, a diver and dive supervisor removed grating from the bell maintenance access pit and positioned it against the moonpool handrail in the bell handling area. After the grating was removed the dive supervisor proceeded into dive control, at which point the diver moved the grating further and overstepped backward into the pit, falling 1m.

The diver sustained a minor laceration to his lower lip and injuries to his ribs on the left hand side of his body, resulting in a lost work day case for the company.

After investigation, the company has reported the following direct and root causes:

- The direct cause of the injuries was the 1m fall into the maintenance pit;
- The root causes included:
  - inadequate design/engineering of the bell maintenance pit, including depth of the pit itself;

- risk assessment tools used did not include key hazards associated with the steps being undertaken as part of the overall maintenance work on the bell, including safe access into/out of and around the maintenance pit.

- Basic safety training modules (specifically risk assessment and manual handling) had not been completed within the first week onboard (as per procedure) and could have acted as a refresher for any training previously done on this, before being involved in risk assessing manual handling activities onboard.

The following corrective and preventative measures have been put in place by the company:

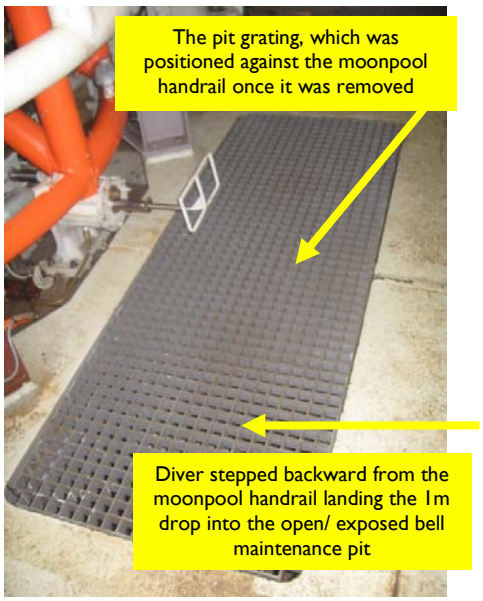
- Review of the existing task based risk assessment (TBRA) and creation of a TBRA specific to bell maintenance, including working in and around the bell maintenance access pit;
- False floor installed into maintenance pit to reduce the depth as required;
- Audit and review of employees onboard to ensure minimum safety training modules and requirements have been completed as per procedure.

More detailed one day risk assessment training courses are to be provided to employees on/offshore, above and beyond the risk assessment module contained in the working safely program.

Key lessons highlighted by the company:

- There was no requirement to move the pit grating further after it was placed against the moonpool handrail, in order to continue with the bell maintenance work;
- The bell maintenance pit did not have to be 1m deep in order to be fit for the purpose for carrying out bell maintenance activities;
- Manual handling and falls into the open pit, were not included in the risk assessment tools used, so may not have been recognised and discussed at the time;
- The definition of 'hazard' seemed misunderstood, as 'damage to equipment' and 'injury to personnel' were noted as hazards in the toolbox talk carried out, prior to the task commencing. Hazard understanding and recognition is a vital part of the risk assessment process and those unrecognised, can in turn be uncontrolled and may increase the risk of accidents;
- The toolbox talk carried out before bell maintenance commenced, had not highlighted the fact that the generic TBRA being used, was out of review date, and not specific to the bell maintenance tasks being undertaken.

Tighter control is needed onboard to ensure minimum safety training requirements are undertaken/ commenced as per company procedures.



Bell maintenance pit located in the bell handling area of the vessel

3 Bail-Out Whip Failures

A member has reported a number of failures of bail-out high pressure (HP) contents whips, at the area of the swage fitting.

The exact cause of the failures had not been identified by the member company, however ongoing testing and investigation into recent hose failures by the manufacturer had identified hose damage due to bending or crimping.

The company issued a notice to its dive sites to quarantine all hoses from the same manufacture batch code and is to replace all similar contents gauge whips with an alternative design as soon as practicable.

During the transition period and following the manufacturer's recommendations, the following measures have been implemented by the company:

- Do not use either the whip or connection to lift or support bail out bottles;
- Ensure that the contents gauge hoses are not subjected to excessive bending with a proposed bend radius limit of 35mm suggested;
- Ensure that a bend restrictor is in place and firmly secured;
- Prior to use, visually inspect hoses before and after each dive. Look for any signs of kinking, flattening or change of hose diameter. Replace any hoses that show signs of being bent, kinked or damaged;
- Ensure that nothing is tied to or that any loading is imparted onto the hose end fitting;
- Where damaged or potentially damaged hose whips are identified they should be quarantined. All damaged and/or burst whips should be returned to a competent person ashore for investigation.

Whilst it is understood that the above relates to a particular make of HP whip, the advice and inspection regime suggested is relevant to all whips and hoses.

4 Fatality on the Diving Support Vessel Wellservicer

Attached is a safety flyer issued by the UK Marine Accident Investigation Branch. The accident was subject to an MAIB investigation and the report is available on the MAIB website (www.maib.gov.uk). It is suggested that the flyer should be read in conjunction with the report to fully understand the key learnings to prevent similar incidents occurring in the future.

MAIB

MARINE ACCIDENT INVESTIGATION BRANCH

FLYER TO THE SHIPPING INDUSTRY

Fatality on the diving support vessel *Wellservicer*

A crew member suffered fatal injuries while carrying out modification work on the diving bell recovery system of the diving support vessel *Wellservicer.*

The modifications were part of an upgrade to enable recovery of the bell in the event of the main bell winch system failure. This involved the installation of a new winch arrangement for the bell's cursor[1].

The new winch had been operational for several days, but had not been fully commissioned. Before the accident, the new winch was used to raise the 4 tonne cursor to allow riggers to work on top of the bell. The winch system was designed such that the brake was automatically applied when the winch control was placed in the neutral position and when hydraulic power was removed.

Once the cursor was in position the brake of the new winch was applied to lock it in position. Several riggers then worked on top of the bell for a period of time.

Part of the modification required the removal of buoyancy blocks from the top of the diving bell. A rigger climbed on top of the bell to do this, but the blocks were very cumbersome and it became apparent that the cursor would have to be raised further to enable the blocks to be removed. Power was applied to the new winch and an operator went to a control position sited above the cursor and diving bell from where he began to raise the cursor. From the control position, the operator was unable to see the top of the diving bell and he was directed by a rigger using hand signals from a visible part of the deck below. Once the cursor was at a suitable height, lifting was stopped, power to the winch was switched off and work on top of the bell set to continue. A few seconds later the winch rendered and the cursor fell, trapping the rigger between the diving bell and the cursor.

Despite his colleagues' best efforts and rapid evacuation to hospital, the rigger died from his injuries.

The cause of the winch failure was attributed to a faulty pilot valve in the cursor's winch control system, which prevented the winch brakes from applying once hydraulic power was removed.

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[1] Cursor: An arrangement in the shape of an inverted bowl, which guides the diving bell into the ship from below, whereupon the two mate, enabling the diving bell to become integral with the ship and her movements.

Safety Issues

- The installation team failed to apply the most basic of safety principles while working under the suspended load. Regardless of whether the winch had been commissioned and declared fully functional, the cursor should have been supported by additional means, before anyone went underneath it.
- It is extremely inadvisable to place any confidence in the safe operation of machinery that has not been fully commissioned and which therefore has not been properly tested.
- The design of the hydraulic circuit for the new cursor winch meant that the two brakes fitted to the winch did not operate independently, as they were required to do, since a single, defective, pilot valve was common to both brake circuits.
- At the time of the accident, the design of the winch's hydraulic system had not been approved by the vessel's operators or the classification society tasked with approving the whole system. Had such approval been sought for the hydraulic system it is highly probable that the anomaly in the brake circuit design, as highlighted above, would have been identified. Formal approval of systems and their component elements is an essential safety barrier which should never be circumvented before equipment is used.
- *Wellservicer*'s operators had numerous management procedures and safety tools in place to ensure safe working. These were either not applied or were applied ineffectively, to the extent that no-one recognised the risk posed by the suspended cursor. Safety management systems and procedures are useless if their purpose is not understood and applied with diligence by all stakeholders.
- Lines of responsibility between the vessel and shore-based staff became confused. As a result, overall management of the modification project lacked direction and control. Responsibilities should be clearly defined, and understood; it is better to ask too many questions than to carry on with a potentially hazardous task in blind faith that other people are doing what is expected of them.

This accident was subject to MAIB investigation, the report of which can be found on the MAIB's website at:

www.maib.gov.uk

A copy of the flyer and / or the report will be sent, on request, free of charge.

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