IMCA Safety Flash 07/09

June 2009

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 Fatal Electrocution

IMCA has learnt of a fatal incident in which a person was electrocuted. A rig sub-contractor suffered fatal injuries from electrical shock whilst performing a welding operation. A lamp used to illuminate the worksite was found to be a potential source of electrical shock as the lamp's electrical cord was found to have been damaged. The damage may have been caused by a pinching action of the cord between the loose mounting bracket of the light and the light housing which was observed to be in contact with the victim's body.

Damaged electrical cord

Further investigation revealed the following:

- A ground fault circuit interrupter (GFCI) was not utilised and the circuit breaker did not trip when the incident occurred;
- The lamp used was designed for permanent exterior mounting and had been modified for use as an interior portable illumination source;
- Sub-contractor personnel had not been effectively supervised;
- An effective pre-job (pre-start) safety discussion had not taken place;
- The approved job safety analysis (JSA) overlooked the potential for electric shock hazards and for cord damage and did not address the actual work that was performed;
- Confined space entry was not considered or included in permits;
- The hot work permit review process was not effective.

The following lessons were learnt:

- When using portable electric tools in potentially damp areas, a GFCI (fixed or portable) should be utilised to protect personnel from potential electrical shock;
- All tools and equipment should only be used for their intended and manufacturer's recommended purpose; any change to a tool or equipment's intended purpose should be thoroughly reviewed and approved through an effective management of change (MoC) process;
- An effective pre-start meeting should be held with the personnel performing the work to ensure that all hazards have been identified, proper tools are being utilised and the job scope is well defined and understood. The supervisor in charge of the worksite should be responsible for having this meeting. A field review of the work site should be part of this meeting;
- JSAs should be specific to the job being performed. JSAs should focus on the steps taken to accomplish the task rather than generalised statements that cover a wide range of activities. JSAs should focus on hazard identification and mitigations for each hazard;
- Established procedures for issuing and approving general work permits, hot work permits, and confined space entry permits should be rigorously followed to ensure necessary steps have been taken to minimise risk of injury, including a survey of the work site by the person in charge.

2 Electric Shock Near-Miss

A member has reported an incident in which an employee sustained an electrical shock whilst re-routing a work class remotely operated vehicle (ROV) tether. The ROV and tether management system (TMS) have separate electrical supplies and separate electrical circuits. At no point in the operation was power ever supplied to the ROV through the soft tether either deliberately or accidentally.

The ROV electrical power was isolated and locked off in order to allow ROV personnel to remove the tether from the vehicle. The TMS power supply was not locked off, in order to allow spooling to take place. Prior to removing the tether from the ROV, technicians used the correct test equipment and earthing equipment to ensure that there was no electrical power at the topside power distribution junction box and at the subsea ROV junction box.

During the rerouting operation the TMS single phase power was energised to pay out the tether. At this point an ROV technician received an electric shock to his wrist between his glove and coverall. On investigation it was found that, with the TMS single phase power energised, 360V AC was seen on the vehicle end of the ROV umbilical instrument conductors. When the TMS single phase was switched off it was then noticed the 360V AC had dropped to zero volts. All of the wiring was as per specification, no wires were crossed.

No injury was sustained and no medical treatment was required.

High voltage (HV) junction box with earthing equipment attached

Following investigation, the following points were noted:

- A toolbox talk was carried out where the operation and safety aspects were discussed;
- The immediate cause of the electric shock was the ROV technician coming into contact with a conductor at the end of the ROV tether;
- This conductor, whilst isolated from a direct power source, was identified as having an induced voltage present. The voltage was induced in the main lift umbilical on the deck winch;

- One of the functions of the earthing equipment was to tie conductors to earth and eliminate any induced voltage that may be present. On this occasion, two of the clips of the earthing equipment had become dislodged. The 'crocodile' clip arrangement was found not to be a secure method of attaching such a safety critical device;
- Some of the persons involved with this earthing equipment had not fully understood the criticality of the equipment, particularly in the case of high voltage (3000V) and a long umbilical (3300m). Nevertheless, this equipment was correctly used and all appropriate procedures were followed;
- Personnel needed to be more aware of induced voltages and their potential to be fatal. The umbilical manufacturer confirmed that the induced voltage found in this tether was potentially fatal rather than superficial as some of the persons involved had thought.

The company has made the follow recommendations and corrective actions:

- Improve design of earthing equipment in such a way as to remove the possibility of inadvertent disconnection;
- Follow up with the manufacturer to include start up, induced voltage and isolation in training course material;
- Ensure all personnel working on work class ROV systems have completed HV training courses;

Ensure signage is posted at all high voltage junction boxes warning of HV dangers and necessity to use appropriate earthing equipment.

3 Lifeboat D-Ring Failure

Members' attention is drawn to the attached document from the Marine Safety Forum regarding the failure of a lifeboat D-ring.

4 Worker Fatally Injured During Pipelay Operations

Members' attention is drawn to the following safety flash from the US Department of the Interior MMS (Minerals Management Service for the Gulf Coast Offshore continental shelf), regarding a fatal incident during pipelaying operations.

Marine Safety Forum – Safety Flash 09/12

Issued: 28th April 2009

Subject: Lifeboat D-Ring Failure

Summary:
A recent incident in offshore operations highlighted some actions related to lifeboat/Fast Rescue Craft (FRC) maintenance that should be taken immediately. During the incident, the lifeboat fall D-ring failed while load testing the lifeboat and wire fall assembly. It was found that the failed D-ring was non-OEM (Original Equipment Manufacturer) and was of welded construction rather than the forged construction originally supplied by the OEM.

The immediate actions resulting from this incident are to:

1) Only use OEM equipment on new and existing lifeboat/FRC and lifeboat/FRC fall assemblies, except when changes have been subject to the appropriate MOC and approved by the relevant Marine Authority; and

2) Conduct all load testing, maintenance and inspection of lifeboat/FRC and lifeboat/FRC fall assemblies using detailed procedures that have been subject to a risk assessment and approved by the relevant Marine Authority.

Safety Alert

MMS U.S. Department of the Interior
Minerals Management Service
Gulf of Mexico OCS Region

Safety Alert No. 280
May 13, 2009

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Worker Fatally Struck by Moving Pipe During Pipelay Operations

A bevel machine operator was fatally injured on a pipelay barge when he was struck by moving pipe during pipelay operations. An MMS investigation revealed that the conveyor system had become inadvertently energized and advanced pipe toward the ready rack where the bevel machine operator was working. The moving pipe on the conveyor system struck the bevel machine operator in the back and pinned him between it and the end of a stationary pipe joint on the ready rack.

The MMS investigation identified the following causes of the accident:

1) Inadequate hazard analyses and failure to adequately implement hazards analyses recommendations. The recommended physical barriers such as guards or handrails in the pinch point area were not installed prior to the accident. In addition, although close-circuit television cameras were installed as recommended, they were not working on the day of the accident.

2) Failure to adequately implement and adhere to recommendations of the job safety analysis (JSA). The JSA recommended that personnel avoid working in pinch points areas and specifically to stand to the side of the pipe while grinding. The JSA also indicated that personnel should not walk in pinch point areas, although the victim's hand tools were stored such that he was required to pass through the pinch point to retrieve them from storage.

Other contributing causes to the accident included:

1. The inadequacy of the JSA's. Job tasks were often vague rather than specific. The JSA also did not include important steps in the task sequence, and did not address the tasks of specific job functions individually or the methods they would use to communicate and coordinate their tasks.

2. Inadequate supervision. The investigation found that it was routine for personnel to walk in and work in pinch point areas near the conveyor system. MMS could find no evidence that supervisors, who routinely monitored the area, requested or required the crew to cease this practice.

3. Lack of a detailed written job description and formal training for bevel machine operators. The tasks specific to moving and hand grinding pipe were not included in the bevel machine operators' job description. There was also no specific training for the bevel machine operators' other than on-the-job-training.

4. Failure of the bevel machine operator to attend safety meetings. There was no evidence that the bevel machine operator attended any of the safety meetings.

5. Possible inadequate inspection/maintenance of the conveyor system control panel switches. There was no conclusive evidence that proves the condition of a conveyor switch was a contributing factor to the accident. Third party analysis of the control panel switches after the accident found that a conveyor switch was prone to sticking and had damaged internal components. This indicated possible lack of inspection and maintenance of the switch.

Based on the investigation findings, MMS makes the following recommends to Lessees, Operators, and their contractors during pipelay operations:

- Safety barriers should be installed and maintained on pipe lay vessel conveyor systems to limit access to pinch point areas.
- Warning signs should be posted to alert personnel of pinch point areas.
- Supervisory observations should be conducted more frequently in order to monitor work habits of all personnel in all areas, particularly around pipe conveyor systems.
- Lessees should review the company's safety meeting policies with contract personnel and express the importance of conducting safety meetings. The Lessees should also emphasize that documentation of all meetings and those personnel in attendance is required.
- Contractors should consider installing CCTV cameras in conveyor system areas to allow for additional supervision of operations.
- Contractors should provide detailed written job descriptions and implement formal training for specific job duties and responsibilities rather than generalized job descriptions that cover several positions.
- Inspection and maintenance guidelines should be provided for all safety equipment in place, and this equipment should be inspected for proper operation prior to the commencement of a project. Any inoperable equipment should be repaired, replaced, and tested immediately. Proper documentation of safety equipment inspection, maintenance, repairs, and test results should be maintained.