IMCA Safety Flash 12/15

August 2015

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 Near Miss (HIPO): Engine Started and Running whilst Crew Member Working on Shaft Generator

A member has reported an incident in which an engine and shaft generator started running whilst a crew member was working on it. The incident occurred during planned monthly maintenance on carbon brushes on a propeller shaft located inside the pedestal underneath the generator. Whilst the crew member was performing his task, the duty engineer received an order from the bridge to start the port side main engine. The crew member was located inside the pedestal underneath the generator when the propeller shaft was clutched in and started rotating. He managed to escape from the area and reported the incident to engine control room (ECR) personnel.

There were no injuries, but this was a high potential incident with the possibility of a fatality or of life threatening injuries resulting in permanent disability.

An investigation revealed the following:

- The isolation ('lock out/tag out') system was not sufficient for this work on the generators. The port side main engine was in standby mode and there was no isolation to the system before starting the routine maintenance on the shaft;
- There was inadequate supervision. The crew member started the job unsupervised, and there was only limited confirmation from the crew member that he understood what the job entailed;
- There was incomplete understanding of how to approach a task of this sort safely, in terms of toolbox talks, permits to work and 'stop work authority';
- There was an unplanned change which was not properly managed. It had not been planned to turn the vessel when the electrician reviewed this planned or required maintenance work, and then when the decision was taken to turn the vessel, the electrician was not informed;
- There was a lack of communication during several phases of operation:
  - engine control room (ECR) personnel and bridge personnel were not informed about maintenance on the generator
  - the electrician was not informed of a planned turning of the vessel when preparing these tasks
  - vessel personnel did not report the incident in timely manner – the onshore organisation was not informed until 24 hours after the incident;
- There was insufficient knowledge of permit to work (PTW), isolations and barriers, and risk assessment requirements;
- There was a serious lack of compliance with existing company procedures:
  - the pre-job conversation between supervisor and crew member was not in compliance with company requirements and procedures
  - this was the third time the crew member had performed this task, and there was no PTW or isolation certificate completed on this occasion
  - the opposite shift had also performed this task and had not used a PTW either, although there was a signboard in the ECR stating that work on equipment was in progress.

The following causes were identified:

- **Immediate** causes:
  - bridge and ECR not informed regarding on-going work on shaft generator
  - port main engine in standby mode after unmanned engine room test;

- **Underlying** causes:
  - PTW and isolation certificate not issued
  - risk assessment not followed
  - failure to inform ECR on planned maintenance
  - lack of robust communication routines;
- **Root** causes:
  - lack of safety awareness
  - lack of management control.

The following lessons were learnt:

- The necessity for a PTW and isolation of equipment should have been identified. This would have ensured proper isolation of equipment, ensured that bridge and ECR personnel were informed of on-going work, and ensured the crew member could complete the task with all safety precautions/barriers in place;
- All employees have the authority and obligation to stop any task or operation where there are concerns or questions regarding the control of safety, health and environment;
- Improved incident reporting routines should be established to ensure that shore management is notified accordingly and to ensure that there is an appropriate 'safety time out' following incidents.

The following actions were taken immediately:

- Time out for safety held to discuss the incident, with focus on PTW, awareness and communication;
- Planned maintenance procedures updated with requirements for PTW and isolation of shaft generator;
- Sign made and posted on generator informing of lock tag requirements;
- Fleet-wide communication and discussion of incident.

The following further recommendations were made:

- Improvements should be made to toolbox talks and risk assessment for 'routine' jobs, particularly with reference to isolations and barriers;
- Better pre-shift meetings in engine department should ensure good planning and identification of simultaneous activities;
- 'Stop work authority' and behaviour based safety programmes should be reinforced.

Members may wish to refer to the following similar incidents (search words: *spinning, rotating*)

- IMCA SF 01/13 Incident 3 *First Aid Injury: Contact with Spinning Spooler Arm*;
- IMCA SF 03/14 Incident 3 *Entanglement in Moving or Rotating Machinery.*

2 Finger/Hand Injuries

The International Association of Drilling Contractors (IADC) has published two recent safety flashes regarding finger and hand injuries, which will be of interest to IMCA members.

Incident 1 – finger severed

A crewman was in the process of unlocking a blow-out preventer (BOP) ram. The employee decided to place his finger into a sight opening slot to make sure the locking screw was completely out. Another member of the crew engaged the ram control valve whilst the first person's finger was still in the slot resulting in his left index finger being severed.

Causes:

- There was no isolation, lock out or tag out to prevent this from happening;
- There was no apparent understanding or communication between the injured person and the operator of the ram control valve.

Corrective action: A temporary guard was manufactured and placed over the BOP ram shaft bonnet to prevent crew placing their fingers into the shaft compartment.

See www.iadc.org/wp-content/uploads/2015/04/SA-15-02.pdf

Incident 2 – Finger pinch injury leads to LTI

A crewman was requested to assist on a cargo handling operation from the main deck. The task was to connect the crane hook to the slings of a pup joint bundle. The bundle was to be sent over to a platform with the use of the crane. When the crewman, who was working on his own, signalled to the crane operator to pick up the load, movement of the rig allowed the bundle of pup joints to sway in his direction and he pinched his right hand between two joints, fracturing two fingers in the process.

Causes:

- Standing too close to the load as it was hoisting;
- Using a team member who was not originally part of the task;
- Failure to use taglines and/or push poles to control the load;
- Failure to follow the correct rigging and lifting techniques by using only one man for the job;
- Failing to think about the risks involved;
- Not utilising the stop work authority.

Corrective actions:

- No job is so important that we cannot take the time to do it safely;
- Job hazard analysis for the task should have been completed and discussed with all crew involved;
- Crew should stand clear of load while hoisted and using proper taglines and handling tools;
- Supervisors need to understand and manage situational changes;
- Use safety interventions such as Step back 5 x 5 and the stop work authority when required;
- Time to be taken to have correct amount of people to do the job at all times.

See www.iadc.org/wp-content/uploads/2015/06/SA-15-04.pdf

Members should be aware that IMCA publishes a series of pocket safety prompt cards, including *Watch your hands* – see www.imca-int.com/media/102527/imcaspc08.pdf

3 Collision between Crew Boat and Anchored Barge

A member has reported an incident in which there was a collision between a crew boat and an anchored barge. The incident occurred following bunkering, when a crew boat departed the bunkering barge to return to the in-field flotel. The Master got the vessel underway and planned to follow the regular route back – this was approximately two nautical miles distance and the vessel had already completed the same passage three times during the course of the evening. The vessel was running at reduced speed due to the prevailing poor weather conditions.

On approaching the flotel, it was noted that a survey vessel was operating in the vicinity. Having worked in the vicinity of the survey vessel for some time, the Master was aware of the minimum clearance distance required, and decided to alter course to starboard to maximise passing distance with the survey vessel.

The Master made the necessary alteration to provide the survey vessel with sufficient sea room; however this deviation took it away from the route followed on the three previous occasions. Unknown to the Master, a barge had been anchored in the vicinity of the flotel whilst the crew boat was out of the field, and the crew boat only returned to the field during the hours of darkness. The barge's new anchor position had not been properly communicated within the field and, based on subsequent witness statements, the barge was also reported as being unlit at the time of the incident.

Shortly after altering course, to give the survey vessel sufficient sea room, the crew boat collided with the barge. All three crew members were thrown out of their seats and suffered serious impact injuries; one suffered a broken shoulder and dislocated arm, one suffered multiple cuts and severe bruising, however, the third crew member suffered serious injuries to his face and neck, requiring immediate medical evacuation ashore for intensive medical care. The crew boat had no passengers on board at the time.

The investigation remains ongoing. However, the following information can be shared:

- Following anchoring operations (approximately five hours before), the barge's lighting system was reported as working. However immediately after the incident the Masters of the involved vessel and the first vessel on scene afterwards both stated the lighting system was not operational. This was corroborated by personnel from the flotel;
- No communications or navigation warnings had been issued by field supervisors following the barge's movement into the area. The anchoring operation was conducted whilst the crew boat was in another part of the field and, by the time she returned in the evening, it was too dark to have visually sighted the barge;
- Whilst the vessel radar was operating correctly and in use at the time, the adverse weather conditions may have reduced its effectiveness and detection range;
- The crew boat may have been travelling at a speed not appropriate to the prevailing circumstances and conditions, although there were no in-field speed restrictions in place at the time.

Whilst noting that the key causal factors and lessons learnt are still being investigated, some of the key lessons learnt were:

- There should be full compliance with all requirements of the Collision Regulations (COLREGs) at all times and in all conditions;
- Changes should be properly managed, planned, controlled and communicated through a management of change process.

Members may wish to refer to the following similar incident (search word: *collision*):

- IMCA SF 06/14 Incident 2 *Near Miss: Strong Sun Glare Contributes to Heavy Impact on Boat Landing*

4 Confined Space Entry Fatalities

The Nautical Institute has published a safety bulletin regarding the death of five persons in a confined space entry incident. The incident occurred when a pontoon was beached at an isolated location for repairs. At one point the person in charge of the pontoon entered a compartment approximately five metres deep; there were no checks on the air quality of that compartment before entry. Within a very short time after entering this tank he became unconscious and fell, face down, onto the plates below. One of the two co-workers that had remained outside attempted a rescue and was also rendered unconscious after entering the tank. A third worker then entered the tank and also succumbed.

Seeing the commotion and wanting to help, a man on the beach also entered the space to carry out a rescue and he too became unconscious. In short succession two others entered the tank but also succumbed. After more than an hour a successful rescue attempt was made and all bodies were removed. Resuscitation was attempted at length but of the six who entered the compartment, there was only one survivor.

The bulletin is published here: www.nautinst.org/en/forums/mars/mars-2015.cfm/201533

This tragic incident serves a timely reminder on the dangers of uncontrolled entry into confined spaces.

Members may wish to review fatal confined space entry incidents as follows:

- IMCA SF 09/07 Incident 4 *Confined space fatality*
- IMCA SF 06/11 Incident 2 *Confined Space – Multiple Fatalities*
- IMCA SF 07/12 Incident 4 *Confined space entry fatality*
- IMCA SF 19/14 Incident 2 *Confined space entry fatality*

Members should be aware that IMCA has a safety DVD entitled *Working in confined spaces*. Hard copies can be ordered, and the video can be downloaded or viewed here.

IMCA also has a safety pocket card on confined space entry, www.imca-int.com/media/102536/imcaspc09.pdf.

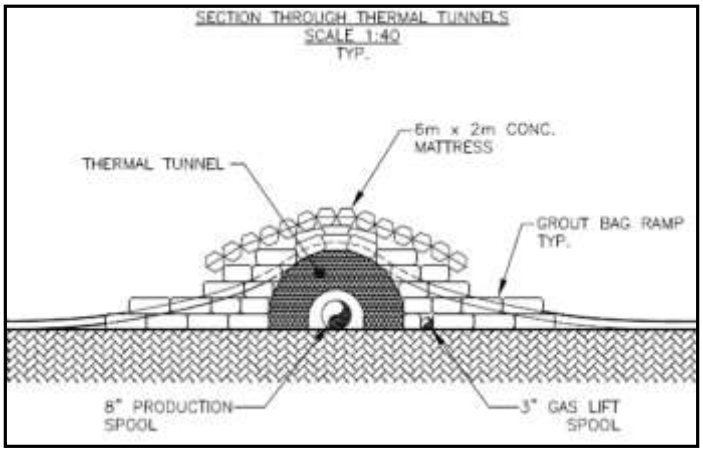
5 Thermal Tunnel Buoyancy when Deployed Subsea

A member has reported an incident in which buoyancy problems were encountered with equipment being deployed subsea. During light subsea construction operations conducted from a DSV, there was a requirement to deploy two 'thermal tunnels' as a barrier between an existing pipeline and a new umbilical being laid. When the thermal tunnel was deployed it became obvious to the crew that despite it weighing 515kg in air it would not penetrate the splash zone. The thermal tunnel was too buoyant and would not sink.

After investigation it was discovered that the manufacturer's buoyancy calculations were incorrect; these were checked by the on-board engineering team. These thermal tunnels are manufactured for subsea use without appropriate quality checks being carried out by the manufacturer.

Our member learnt that this could have been prevented had there been a sea water wet trial performed by the manufacturer before delivery to the client, or if there had been independent verification of the mass, volume, and displacement, and of the buoyancy calculations. This finding was passed back to the manufacturer. Our member noted that for all items deployed subsea the upward force or buoyancy should be independently verified by an engineer.

Thermal tunnel with additional weights



Section through thermal tunnel on seabed

The following actions were taken:

- Consulted with manufacturer to ensure that these findings were passed back appropriately;
- Generated a management of change process and applied a temporary solution, whereby additional weight was added to the thermal tunnel to assist with the installation. The thermal tunnel was successfully installed in position and covered with a concrete mattress;
- Ensured that all future deployments of thermal tunnels would have manufacturers' certification of wet test, or independent validation of mass detailing suitability for subsea use.

It was noted that a remaining risk was that if the concrete mattress was subsequently removed and the weight fixings in the meantime had perished, the buoyancy issue would be realised again. This is an unknown but should be taken into consideration in future. Members using thermal tunnels may wish to review their procedures to mitigate the risk of tunnels floating to the surface, as this is a potential hazard to both divers and vessels.