IMCA Safety Flash 15/08

October 2008

1 Crew Member Injured During ROV Maintenance

A member has reported an injury incident which occurred during a major refit of a vessel-based work-class remotely operated vehicle (ROV) spread. An ROV pilot technician received an injury to the chin which subsequently required a total of six stitches.

The ROV crew was servicing the manipulator and had restrained the compensator spring and removed the bladder assembly. The perspex spring housing showed clear signs of contamination and it was decided to dismantle it further for cleaning purposes. The compensator spring housing was not user serviceable according to the Schilling maintenance manual. In attempting to remove the spring, the stored energy in the spring was instantly released in an uncontrolled manner and in the process the ROV technician sustained an impact injury to the chin.

Following investigation the following conclusions were drawn:

- This was a high potential incident as the consequences of the uncontrolled energy release could have been much worse;
- The instructions and warnings clearly stated in the manual were not followed;
- Components with stored energy (mechanical and/or electrical) should always be treated with respect.

The company has recommended the following actions:

- The removal of the compensator spring on these compensators is not a user serviceable task and units should be returned to the manufacturer's approved agents for servicing;
- Ensure sufficient spares are available on each ROV spread.

Schilling Titan 3 Manipulator: Compensator 101-4470

2 Risk of Electrocution During Routine Work

A member has reported a recent near-miss incident in which a crew member was very nearly electrocuted. The incident occurred onboard a dive support vessel (DSV) following mobilisation, when a sub-contractor's winch was moved between decks. A sub-contractor technician had been tasked with rerouting the winch power cable (440v 3 phase) which had a plug at the winch end and was hard-wired into the vessel supply at the other end.

It proved impractical to reroute this cable as it had been passed through a small 'mousehole' in a sea fastening during mobilisation and the plug was too large to pass through this mousehole. The sub-contractor technicians then attempted to remove the plug in order for the cable to pass through the mousehole. During this process one of the sub-contractor technicians felt a slight shock and realised that the cable was still live. The job was immediately stopped and their supervisor was called. The supervisor immediately asked the project electrician to isolate the supply and make it safe. The individual who received the shock was checked by the medic and had suffered no injuries.

An investigation revealed the following:

- No toolbox talk had been held before the start of the job;
- No permit to work or electrical isolation was in place;
- No risk assessment had been conducted or put in place;
- Established procedures were not followed;
- The sub-contractor personnel did not receive adequate induction when they started the job;
- The sub-contractor personnel involved were in unfamiliar surroundings and were not fully aware of the potential hazards of 440v mains power;
- There was inadequate active supervision.

Plug after disassembly

3 Uncontrolled Ascent of Spool and Diver During a Lifting Bag Operation

A member has reported the uncontrolled ascent of a spool piece and diver during a lifting bag operation.

In low visibility conditions, whilst preparing a pipe spool for re-positioning on the seabed using air lift bags, the spool became positively buoyant and started ascending to surface in an uncontrolled manner.

The diver working at one end of the spool became entangled with the air lift bag inverter line, resulting in him ascending with the spool from 55msw (seabed) to 36msw.

During this ascent, the diver's umbilical was damaged, causing restricted gas flow and severing of his communication and video cables. He reverted to his emergency gas supply and managed to cut the line that had fouled on his bail out bottle, enabling him to immediately return to the seabed.

A second diver, also working on the spool (but still on the seabed), followed the umbilical of the ascending diver and subsequently accompanied him back to the bell (at 47msw). The bell was recovered for the immediate examination of the diver and it was confirmed that no injuries were sustained. The spool was later re-positioned without incident.

The member identified that the lift bags had been inflated without appropriate 'hold back rigging' in place and that there had been a failure to follow company procedures and guidance detailed in IMCA D 016 Rev. 3 – *Underwater air lift bags*.

The member also noted that the dive plan steps had not been as clear as they should have been and that 'installing lift bags complete with hold backs' had been detailed as a single step without a check to confirm that the hold back rigging installation was done prior to inflating the air lift bags.

Members are reminded of guidance document IMCA D 016 Rev. 3 – *Underwater air lift bags* – which addresses the initial and periodic examination, testing, certification and maintenance of underwater type bags (cylindrical totally enclosed, closed and open parachute bags) used to lift submerged objects and also addresses the operational use of open parachute type lift bags and the safety precautions that should be taken during their use.

4 Near Miss Incident Involving a Diver's Umbilical

The UK Association of Diving Contractors (ADC) has issued ADC Safety Alert 3/08 – *Very Near Miss Incident Involving a Divers Umbilical* – a copy of which is attached. Although the incident occurred during a diving operation being carried out in UK territorial waters, the lessons learnt are relevant world-wide to both inshore and offshore diving operations. Members are reminded of guidance note IMCA D 035 – *The selection of vessels of opportunity for diving operations* – which discusses isolations and vessel permit systems.

SAFETY ALERT

ADC Safety Alert 3/08: 27th September 2008

Very Near Miss Incident Involving a Divers Umbilical

The Introduction:

The diving contractor was involved in a salvage operation that was being carried out in UK territorial waters. The diving operation formed part of a larger recovery activity requiring the use of a specialist, Voith propelled salvage vessel fitted with heavy lift marine crane. The surface support team, comprising specialist salvage crew and vessel operators, predominantly of European origin, were working alongside the diving contractor on the salvage vessel.

The Near Miss Incident:

At the start of the salvage operation a heavy down line / working line was required to be positioned to replace the thin temporary line used to mark the wreck, this would then enable a secure line to be secured to a fixed point on the wreck which would be used for the duration of the works. The dive was planned to be carried out during a slack water period and to facilitate this final preparations were completed on deck.

The diving supervisor approached the Master of the Vessel on the bridge to seek permission to commence diving when the tide turned. A Permit to Dive form used by the contractor was presented to the Master for confirmation that all machinery was isolated and that diving was cleared to commence. The Master checked and isolated the controls on the bridge and signed the permit returning it to the diving supervisor.

As soon as the tidal conditions were considered to be suitable the diver entered the water. Soon after commencing his descent along a temporary down line the diver informed the supervisor that he needed slack on his umbilical. Slack was provided, but the diver continued to struggle to overcome the pulling on the umbilical and requested further slack. Over the communications the supervisor proposed terminating the dive to await a change in the tidal condition, believing the tidal flow to be the primary cause of the problem, whilst attempting to respond the diver reported he was in difficulty and soon after communications were lost.

The Outcome:

Unbeknown to the Supervisor or the diver immediately prior to the event, the Voith propulsion unit adjacent to the diver, despite being isolated on the bridge – as confirmed by the signed Dive Permit - was in fact still operating, and the divers umbilical had been progressively drawn into the thrusters and become entangled. Once the supervisor was aware what was occurring he contacted the bridge and the emergency shut down of the engines was completed.

In this instance the very alert diver managed to grab hold of the umbilical leading to surface, switched to bail out supply and cut his own umbilical before making an ascent to

the surface where he was rendered assistance by the support team and recovered safely to the deck.

Observation:

This was a very near miss incident that could have had a very different outcome had it not been for the experience of the diver or the actions taken by the supervisor.

The diving contractor had correctly attempted to implement suitable controls to ensure that diving was safe to proceed by using a well developed Permit to Dive system. Despite these efforts, there appeared to be a significant breakdown in the level of control applied to the operating machinery on the salvage vessel.

During the post incident investigation it was confirmed that whilst the action on the bridge isolated the steering, a separate verbal communication between the bridge and the engine room was required to actually shut down the propulsion system.

Lessons:

The vessel operator has a clear responsibility to ensure that, prior to signing a Permit confirming that the shutdown of machinery has occurred, has actually been achieved.

Diving supervisors whilst able to ask the appropriate questions, may not be technically able to make physical checks, and as a result are reliant on the competence and vigilance of the more experienced vessel crew and most importantly the Master of Chief Engineer of the Vessel.

Whenever possible, the isolations of key operating machinery should result in a physical lock and tag out procedure the master control for which should be held by the supervisor whilst diving is underway.

This is not the first time an incident of this type has occurred. Until such times as the Association, in consultation with other specialist groups, is able to develop and circulate clear recommendations and if appropriate, guidance for Diving Contractors and Ship Operators to adopted in an effort to mitigate or eliminate the potential machinery isolations , a high level of checking should be put in place when Permit to Dive Systems are being used on vessels. In addition a high level of vigilance should be adopted by those tending the divers umbilical.

Roger O'Kane
Secretary.

If you have an incident or accident and have learnt lessons as a result, please advise the ADC Secretary so that the information can be compiled to remove specific reference to persons or organisation and distributed to all other members to mitigate the potential for similar incidents to occur elsewhere.