IMCA Safety Flash 15/09

October 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 Trapped Diver Umbilical Incident Resulting in Diver Fatality

A member has reported an incident where a trapped diver umbilical resulted in his death. During the surface supplied diver operation, the diver was deployed to the bottom (56m) to locate fixing points for davits which required him to travel along the pipeline and for the barge to be moved into position.

During the diving operation the barge moved astern. It is thought that this movement caused the diver's umbilical to become snagged on an object on the seabed cutting off his gas supply. On the diver's umbilical there were two 'D' rings – one at 39m (~130') and one at 50m (165'). The 50m 'D' ring was attached to the bell lift wire controlling the maximum excursion of the diver; it was the 39m 'D' ring that became snagged on the seabed. The diver went on to bail out, reported that his umbilical was fouled and made his way back to the wet bell where he appeared to have been attempting to put the bell pneumo tube into his helmet when he was found by the standby diver who had been deployed from the surface. Both video and audio communications were lost soon after the diver reported his umbilical was fouled. Soon after the standby diver arrived at the wet bell attempts were made to recover it and the divers to the surface. As the wet bell was being recovered, since the diver's umbilical was fouled on the seabed, he was dragged out of the wet bell. This occurred twice before the standby diver freed the trapped umbilical and eventually the diver was recovered to the surface but was pronounced dead by the doctor on board the vessel.

Following the investigation of the incident, a number of actions were put in place by the company:

- Controlled barge movements while divers are on excursion umbilical and travelling along a pipeline;
- All divers to be tended in-water, i.e. two divers in the water with one diver tending from the wet bell;
- All divers to be briefed on all emergency dive operational procedures and re-familiarised with the wet bell emergency equipment;
- Thorough briefing to all divers on the emergency recovery procedures to recover a stricken diver; ensuring that always his umbilical is cleared of any fouling which may have occurred during the dive and recover all the umbilical slack back to the surface prior to the wet bell ascending;
- Use of a pre-dive survey by a remotely operated vehicle (ROV) to be carried out to check debris in the work location involving divers travelling up pipelines;
- Ensure that both video/communications for all divers involved in a dive are connected and working as part of the pre-dive checks;
- Ensure divers deploy their excursion umbilical in a safe manner from the bell, ensuring that it is clear of the counterweight or any foreign objects which may be in the area of the bell footprint where the deployed umbilical would lie.

Members' attention is also drawn to the following IMCA guidelines:

- IMCA D 014 Rev. 1 – *IMCA International Code of Practice for Offshore Diving* – which sets out good practice guidance on all aspects of a diving operation including work planning, risk management including vessel movements and emergency and contingency plans.
- IMCA D 030 Rev. 1 – *Surface supplied mixed gas diving operations* – which sets out that a properly equipped wet bell (providing a gas bubble in the wet bell dome) is required for this type of operation; aspects which should be considered in the risk assessment including umbilical management and the recovery of an injured diver; that the dives for depths between 50m and 75m the bottom time should limited to a maximum of 30 minutes; that for dives greater than 50m the standby diver should be located in and tend the diver from the wet bell.
- IMCA D 037 – *DESIGN for surface supplied mixed gas diving systems* – which sets out the equipment requirements for this type of diving operation.

2 Lost Time Injury: Gangway Deployment

A member has reported an incident in which a person suffered a broken leg during gangway deployment. Prior to arrival at the quayside, a vessel's double sectioned gangway (see Figure 1) was lowered and extended, in readiness for use, in accordance with onboard procedures.

Approaching the quayside, the bridge was informed that berthing plans for the vessel had changed. The change of berth required the use of a different gangway and the bosun was instructed to recover the now partly deployed gangway. The bosun and an able seaman (AB) started work on this task but failed to follow established procedures.

The recovery procedure required the gangway to be initially lowered to allow tension to come off the lifting wires and at the same time allow the securing pins to be removed for stowing, before then raising the gangway back up to the stowed position.

However, the bosun and the AB started to remove the securing pins without first lowering the gangway to take the tension off the lifting wires. The AB removed the inboard pin as this was not under tension and therefore easily removed by hand. The outboard pin was stiff because of the tension on the lifting wires. A crowbar was used to exert pressure on the lower section of the gangway, to allow the outboard pin to be removed. During this process, both the bosun and the AB were standing within the steps of the gangway, as shown in Figure 2.

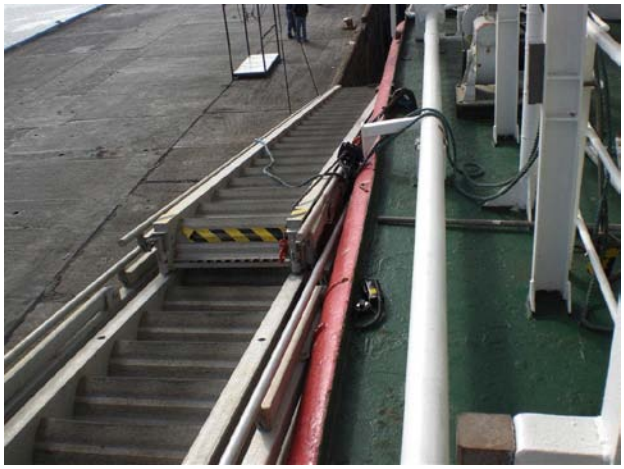

Figure 1 – Double (upper and lower) sectioned gangway

Figure 2 – Area of entrapment

The expectation was that the pressure applied by the crowbar to the lower section of the gangway would loosen the outboard pin, which could then be removed by hand. Instead, the outboard pin, with the pressure released, jumped out. Because there was still tension on the lifting wires at the lower end of the gangway, the lower extension section of the gangway slid quickly upwards, trapping both the bosun and the AB by the legs.

Urgent assistance was requested and both men were subsequently released by using a lever hoist to relieve the pressure. During subsequent medical attention it was discovered that one of the workers had a serious fracture of the leg. He was taken to hospital ashore.

This extremely serious incident could have been avoided entirely by following the correct procedures.

3 Helicopter Task Group Update: Briefing on S-92 Helicopter Fleet

The Helicopter Task Group has published the attached briefing concerning Sikorsky S-92 helicopters.

4 Importance of Inspecting Fall Protection Equipment

IMCA has been made aware of a number of examples of fall protection equipment failing owing to poor or sub-standard equipment:

- Safety Alert 09-17 – *Near Miss – New Fall Protection Equipment Failure* – published by the International Association of Drilling Contractors (IADC) (attached), notes that a new 'pass-through tie-off adapter' was only hot-glued and did not have the required stitching.
- Whilst teaching a fall protection class an instructor found a new piece of fall protection equipment that was not properly sewn. This equipment was brand new, still in the bag and made by a reliable manufacturer. One of the lanyards was improperly sewn and the webbing could be pulled apart by hand.

Improperly sewn fall protection equipment

- In another similar instance, it was discovered that the rivet from the secondary lock on the snap hook of a lanyard had become damaged and allowed the secondary lock to come free from the hook. The hook was not involved in a fall event.

Members are encouraged to re-emphasise to their personnel the importance of thorough inspection of all fall protection equipment before and after use.

Helicopter Task Group update

Briefing on S-92 helicopter fleet

13 October 2009

Last week Sikorsky, the manufacturer of the S-92 helicopter, issued a letter to all helicopter operators concerning some occurrences of cracking which had been detected in one of the four feet which mount the S-92 Main Gearbox (MGB) to the aircraft.

The helicopter operators and the task group have now understandably received a number of questions from passengers concerning this matter. In the Q&A briefing below, we will provide as much information as possible on the current situation with the S-92 fleet.

1. Is there a link between the S-92 accident in Newfoundland and the cracking now detected in the S-92 gearbox feet?

No, there is no link between the Newfoundland accident and the cracking now detected in the gearbox feet.

2. Are these cracks in the same area of the gearbox as was modified following the accident in Canada?

No. The earlier modification replaced titanium studs on the Oil Filter Housing with steel items; that modification is not connected to this issue.

3. Will the winter weather have any impact on the reliability of the S-92 and is any additional maintenance required?

No. The aircraft's flight manual sets out the conditions in which the S-92 can fly. Helicopter operators always operate within these criteria. The manufacturer's maintenance procedures are already designed to cater for differences in the climate that the helicopter may encounter in a particular role.

4. Is vibration causing the issue with the MGB feet and do other helicopter types have the same problem?

Sikorsky does not believe that vibration felt in the cabin is a contributor in any way to the loads on the transmission feet. They have conducted actual flight tests with instrumentation (strain gauges) on the feet and know that the loads in the foot are primarily the result of the lifting and torque loads of the main rotor.

5. How did Sikorsky decide upon a 10 hour inspection regime?

Sikorsky develops inspections of this type by testing and analysing the structure and determining the amount of time it would take for a crack to occur and grow. They then apply very conservative reductions to set the inspection interval so that it is effective at finding a problem with plenty of margin and would even account should it be missed during any particular inspection. This process was used by Sikorsky to determine the 10-hour interval specified in the Service Bulletin. In addition, Sikorsky showed during certification that the attachment of the gearbox to the airframe is secure for a period of time even if one of the 4 feet is completely severed from the gearbox.

6. If a bolt fails, could it collide with the main or tail rotor?

A small number of bolts have been found broken over the last few years and this is the reason that they are now replaced every 500 hours for good measure. To Sikorsky's knowledge in all of these cases the bolt head stayed in place in its hole. One reason is that the bolt is caulked after installation to prevent water ingress, and this caulking would hold any broken piece in place. In addition, the area in which the bolts are located is enclosed from the outside environment under the crowling areas and so contact with the main blades or the tail rotor would effectively be impossible.

7. How are the cracks detected?

The gearbox feet are inspected every 10 flight hours in accordance with ASB92-63-020. Cracks are first identified visually and then confirmed through Non-Destructive Testing (NDT). This technique reveals flaws and defects in a material or device without damaging or destroying the test sample.

8. Does the 10 hours inspection include an NDT check?

The 10-hour check includes the use of NDT procedures if a crack is believed to exist through visual inspection.

9. Would reducing the number of take offs and landings help to prevent the cracking?

Sikorsky is conducting a thorough technical investigation now and as soon as they have reached conclusions that information will be made available; at this time there is no Sikorsky-recommended restriction on the number of take offs or landings that can be conducted on a particular flight. This is based on their analysis and testing.

10. Would reducing the payload help to prevent the cracking?

Sikorsky is conducting a thorough technical investigation now and as soon as they have reached conclusions that information will be made available; at this time there is no payload restriction in place.

The inspection procedures introduced through Sikorsky's Alert Service Bulletin, and in place with all helicopter operators, will identify and anomalies in the unlikely event that they appear.

11. The S-92 door vibrates in flight. Could this be contributing to the cracks?

Sikorsky is conducting a thorough technical investigation now and as soon as they have reached conclusions that information will be made available; it is very unlikely that any vibration in the door assembly is a contributory factor to this phenomena. See also the response to question 4.

12. Could the relative inexperience of the flight crews with the S-92 be a contributing factor?

No, not at all. The crews are all fully qualified to operate the aircraft and their continuous training regime ensures that standards are monitored at very regular intervals. In addition, the aircraft has a system called HUMS (Health Utilisation & Monitoring System) which monitors a wide range of aircraft parameters and warns if the aircraft is operated outside of design limitations.

13. Are the S-92s in Norway and other regions experiencing similar problems and do they fly similar flight patterns?

Yes, and the update letter recently issued by Sikorsky went to all operators world-wide.

14. Can safety reps be invited to see the actual failed equipment/ components and can they have pictures or presentation of what the failure looks like?

Sikorsky will provide photographs of the broken foot from their Materials Laboratory some time next week.

15. Could pilots and engineers come offshore to reassure the population? Where can passengers get further information?

All helicopter operators will work closely with their clients' aviation departments to ensure that the fullest information is available for briefing passengers travelling offshore in whatever form that has to take. Passengers that have concerns which could not be answered by this briefing should contact their employer's aviation / logistics department in the first instance. If questions remain after this, passengers can send an e-mail directly to the Helicopter Task Group which will seek to provide an answer as soon as possible. helitaskgroup@oilandgasuk.co.uk

If you would like to find out more about any of the issues outlined above, please contact the helicopter task group on helitaskgroup@oilandgasuk.co.uk

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Email info@oilandgasuk.co.uk **Website** http://www.oilandgasuk.co.uk

Safety Alert

From the International Association of Drilling Contractors

ALERT 09 – 17

NEAR MISS—NEW FALL PROTECTION EQUIPMENT FAILURE

WHAT HAPPENED:

A derrickman was working in the derrick and was using a **NEW** "Pass through Tie-Off Adapter" for his fall protection anchor point. The tie-off adapter in this case was a 3" web sling, 2 feet long. The adapter is wrapped around a beam or other secure tie-off point and one end passes through the other "choking" the anchor point. The lanyard is then attached to a full body harness d-ring.

The derrickman had tied-off and then leaned out to perform his work. The tie-off adapter "broke", however, the derrickman was able to catch hold of the pipe to keep from falling out of the derrick.

WHAT CAUSED IT:

Inspection of the tie-off adapter revealed that the D-ring end of the sling had not been fully assembled. The webbing material end had been folded around the D-ring and hot glued, but had not been stitched. Follow-up inspections revealed that four out of the five tie-off adapters the company had purchased were defective.

Several opportunities were missed to catch this mistake:

1) The manufacturer failed to catch the defect during its quality control inspections;
2) The supplier receiving the slings from the manufacturer also failed to inspect them before selling them;
3) The receiving agent didn't inspect upon receiving them;
4) The Safety Advisor distributed the defective slings to the rig without inspecting them;
5) The Rig Manager stored the slings in his office until needed and failed to inspect them before use;
6) The Derrickman, which was the last chance to catch the error, began using the fall protection equipment without first inspecting it.
7) Inspections did not happen because personnel involved accepted that new equipment was in good condition without defects.

CORRECTIVE ACTIONS: To address this incident, this company did the following:

The company emphasized to all rig personnel that they must be the final check of all safety equipment. The extra minute or two you spend inspecting equipment before using it (new or used), may save you or a co-worker from serious harm.

The Corrective Actions stated in this alert are one company's attempts to address the incident, and do not necessarily reflect the position of IADC or the IADC HSE Committee.

Issued June 2008