



Fall from Height

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1. The incident

On 04 February 2015, in a shipyard on board a vessel, rope access work was in progress. Working space was barricaded with red/white tape, according to the procedures. NDT specialist, technician 1 (Tech 1) was performing work to the top structure (davit) of a lifeboat. He was nearly finished.

The rope access supervisor (Tech 2) for the task was preparing the rigging with beam clamps in order to inspect the next welding spot. To gain proper access to the welding spot and to properly perform a rescue if necessary, walkway grating (see Figure 4, point B) was removed by Tech 2 and Tech 3 and placed out of the way. During this action, Tech 2 had secured himself with a lanyard to the top of the handrail (see Figure 4, point C).

Tech 3 was secured with ropes from the rigging attached to beam clamps (see Figure 3, point A and Figure 4, point D).

Tech 2 was facing point C (Figure 4). Tech 2 asks Tech 3 to hand him a set of ropes for the new rigging. Tech 1 had finished the inspection on top of the lifeboat and was climbing down.

Tech 2 noticed that Tech 1 had his leg near the lifeboat control panel. His intention was to warn Tech 1 to be aware of the control panel. In order to warn Tech 1, Tech 2 turned himself 90 degrees to the right in order to face Tech 1. Now Tech 2 is facing the hole in the grating. At the same time Tech 2 intended to take a different position on the grating, in the direction of Tech 1. Taking a different position, Tech 2, removed with his left hand lanyard from point C (see Figure 4), made a step with his left foot and intended to secure himself to point E (see Figure 4) with the lanyard in his right hand.

While doing these multiple maneuvers, for a split second Tech 2 was unsecured and stepped into the hole of the grating. As a result, Tech 2 fell through the opening in the walkway grating and into the water from 14 meters high. Tech 2 fell with his feet downwards into the water. When coming back to the surface the lifejacket started to inflate.

At the same time, Tech 3 communicated with the Control Room that there was a man overboard. Tech 1 was shouting man overboard. Lifeboat 2 was launched into the water.

Tech 2 was swimming to a pontoon nearby to get out of the water and kept communicating with vessel crew.

The crew inside the lifeboat pulls Tech 2 out of the water and immediately removed all gear and clothes and put him in a thermos-blanket.

The vessel crew handed over Tech 2 to firefighters of the shipyard and was taken to HSE office in order to check any injuries and to warm up. It was reported that Tech 2 suffered no injuries.



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2. Incident analysis by the Operating Member Company (OMC)

Root cause:

- Human error – lack of concentration / attention

Conclusion by OMC

Investigation has led to the fact that all OMCs procedure was followed and that all paperwork and permits were in accordance with procedure from client and site.

Multiple maneuvers were performed in a short time, which led to this human error from a very experienced rope access technician.

In case a lifeline / safety-line was in place, the necessity for unhooking when changing of position was not necessary and highly likely would have prevented this accident.

OMC has already been in contact several times with Tech 2, to check the physical and mental conditions. As far as we can judge, all is well. Tech 2 will not be disciplinary penalized. He is more than willing to support OMC by supporting us in this investigation and in presentations to all involved.

3. Control measures implemented by the OMC

Although procedures were followed, this accident could happen. We have carefully read our procedures and taken in count all the facts, which led to this accident. This resulted in the following point of improvement:

□□□□□ will adjust the toolbox form with an additional line stating what to do with unstable or open surfaces and/or grating.

□□□□□ will adjust the tick box form with an additional line stating; Tensioned line in place? YES or NO

□□□□□ will adjust the RA-OPS (Rope Access procedure) with an additional paragraph explaining the procedure what to do with unstable or open surfaces and/or grating. In detail will be explained that in case of open surfaces, lifelines / safety-lines will be placed along the open surfaces. Lifeline / safety-line will be fastened to proper anchor points. In case a lifeline / safety-line will be in place, the necessity for unhooking yourself when changing of position in case necessary, is limited.

4. Recommendations

A number of fundamental principles failed to be applied essentially being:

1. The technician was not attached whilst working at height;
2. The removal of walk way grating creating the unprotected edge was done without proper planning, protection or notice;
3. The worksite was potentially congested and not planned in an agreed sequence;
4. Communication was inadequate;
5. The fall protection system either personal and/or collective did not fully suit the work scope.

Human error and momentary lapse of concentration appears to be the immediate if not root cause. It is essential that the rope access teams are aware of the hazards associated with the task to be carried out including hazards created by the team itself namely falls from height. A suitable exclusion zone is required to protect not only third parties from the rope access task being carried out but also from the rope access team themselves so that the team are not exposed to the hazard when moving around at height and concentrating on other tasks in hand.

The use of barrier tape to prevent third party access was totally inadequate bearing in mind the removal of walkway grating and creating an exposed edge. This may have contributed to the overall



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approach to the jobsite as with signed & hard barriers in place would have meant access and egress require a more controlled action and a sense of the exposure beyond them considerably higher. There are various ways to control falls from height when working near to exposed areas including but not limited to the following:

- Barricading off the affected area from third party access using signed and hard barriers (in this case barrier tape had been an implemented control measure and was not the immediate cause);
- Implement a Work Restraint system so that it is impossible to reach the affected area;
- The use of a barrier system around an opening as an automatic default action if any grating in a walkway is to be removed;
- Only remove walkway grating when absolutely necessary i.e. when accessing the work area to carry out the task and then installing the walkway grating as soon as the task is complete and technicians have egressed the work area therefore minimizing the exposure time to the hazard;
- If selecting fall arrest as a method of access whilst moving around the affected area then 100% attachment at all times must apply and an appropriate system selected to reflect this.

For further guidance and information on applying a safe system of work please refer to the IRATA International Code of Practice (ICOP) - <https://irata.org/downloads/2055>



Figure 1 - position on the vessel



Figure 2 - Working space barricaded with red/white barrier tape



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Figure 3 - Point A rigging



Figure 4 -:

Point B= Tech 2 & 3 removed grating panel

Point C= Tech 2 secured with lanyard

Point D= Tech 3 secured with ropes to harness

Point E= Tech 2 intended to attach to new point with right hand