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Investing in solutions for safety

I am pleased to be writing this Focus piece to you from Karachi in Pakistan, where I have been supporting the busy branch in an event exploring issues of Continuous Professional Development. The event itself was widely supported by branch members, the Pakistan Navy, local mariners and students from the National Centre for Maritime Policy Research at the Bahria University who hosted the event.

My thanks to all involved in the occasion and support in arranging my visits to key stakeholders in the city to discuss ways in which we can collaborate and grow the activities of the branch and enhance the interaction between civilian and military mariners. Other major seminars have been held by Branches recently in Chandrigah, organised by the India North West Branch, and in Sri Lanka. There is great energy in the region and I look forward to the continuation of the strong contribution the NI makes locally to national issues of importance.

On my way here, the Dubai branch hosted me at their meeting in the Dubai International Seafarers Centre. This was a very successful evening, with a presentation that explored changes to the tax regulations in the Emirate, the country and the region. The evening was well attended and was another way in which the NI exerts a positive influence on the professional development of its members and local community.

One of the key themes drawn to my attention, especially by the younger participants, was concern about the race towards automation, autonomy and the reduction in the requirement for skilled mariners in control of ships. We have a great deal of work to do as an Institute and as an industry in ensuring technical developments are of real benefit to mariners and provide them with better tools for making decisions.

On the subject of Malta, the branch and colleagues here at HQ have been busy establishing an interesting, and I hope challenging, programme for you on 23 and 24 May (see page 13 for more details). We will be hearing how technology is driving major change in our industry and the impact this is having on skills, training and professionalism. I am delighted to announce there will be Ministerial representation from the Government of Malta as well as representatives from a number of flag registries.

Those of you with an interest in the offshore sector will be aware that we have made significant investment in the administration of the DPO scheme, the establishment of defined professional development programmes for the sector and the delivery of a global on-line assessment regime. This has resulted in fairer assessments, easier administration and a database of information that provides good feedback on the questions participants find difficult and areas of weakness in their learning.

I am delighted that our investment in a high quality solution has been recognised by our shortlisting for an ‘E-Assessments award’ to be made next month. As finalists our contribution to excellence in assessments, especially in the export sector, is tribute to our global presence. I thank those in The Nautical Institute and from other organisations that helped in its development and implementation. We will share the evening with our suppliers TestReach at an event in London.

The Nautical Institute was strongly represented at the commemoration of the 70th Anniversary of the founding of the International Maritime Organization in London this month. The ceremony was attended by Her Majesty Queen Elizabeth II who unveiled a plaque and cut a cake. Her support for this occasion highlights the importance of the IMO and its location in London. I will soon be meeting with the Secretary-General to discuss ways in which NGOs like The Nautical Institute can contribute even further to matters relating to seafarer welfare and maritime safety.
Editor’s introduction

Several of the MARS reports in this issue are related to falls. Working at height has inherently more risk of negative consequences than not working at height. This work should always be approached with increased vigilance and proper safety equipment such as fall protection should always be used. Working at height should be included in your vessel’s Permit to Work programme.

MARS 201821

Four-metre fall from embarkation ladder

A chemical tanker had arrived at the terminal. While in port, it was planned to launch and manoeuvre the rescue boat as part of a series of emergency exercises. The drill began with crew rigging the embarkation ladder from the rescue boat stowage deck. The rescue boat was lowered without personnel. The crew then used the ladder to climb down to the boat and unlock the hook.

After executing some manoeuvres on the water, the boat crew returned to the retrieval hook and made the connection. Three crew successfully climbed back up the embarkation ladder. As the fourth crew member was climbing, he suddenly felt exhausted and fell back into the water from a height of some 4 metres, hitting his back on the rescue boat. He was quickly recovered and first aid was administered.

The victim was later taken to hospital ashore. He was declared unfit for sea service due to a back injury and was subsequently repatriated.

The company investigation revealed that the embarkation ladder does not rest firmly against the ship’s side when rigged at the boat station, due to the flare of the stern. Climbing up a hanging ladder is very difficult and requires much strength and stamina.

Lessons learned

When using a boarding ladder or pilot ladder, ensure it is properly installed and that it is resting against the ship’s hull.

MARS 201822

Seven-metre fall into water


A bulk carrier was in the final stages of loading a cargo of iron ore. In order to read the outboard side draught marks, a rope ladder was rigged over the side adjacent to the marks. The deck officer on duty – of a large build and overweight – donned a non-inflatable lifevest before descending the ladder. As he neared the bottom of the ladder, about 7 metres below the ship’s deck, he called out to the rating on deck saying he was having difficulty.

The rating saw the officer struggling to hold on to the ladder and then falling into the water. The rating threw a nearby life buoy to the officer, and it landed a few metres away from him. The officer struggled to reach the lifebuoy. However, because of the sea and swell (1.4m sea on a 0.4m swell) and possibly his own physical fitness levels, he was unable to get to it.

After raising the alarm, the rating then climbed down the ladder and entered the water in an attempt to save the officer. The rating had difficulty breathing and swimming in the rough, cold sea water. He was unable to reach the officer so he returned to the ladder.

Other crew mustered for the rescue. The accommodation ladder and pilot ladder were lowered to the water to assist in rescue. Crew were able to drag the victim on to the ladder’s lower platform and immediately began cardio pulmonary resuscitation (CPR) while the accommodation ladder was being raised to deck level with the men on its lower platform. Soon, shore paramedics arrived and CPR was continued, but the victim was later declared dead.

An investigation later found that the victim had gone over the side without fall protection on a ladder that was installed upside down.

Lessons learned

- In many cases, little attention is paid to planning apparently straightforward tasks, such as using a rope ladder. This can lead to important considerations not being taken into account, including the experience and physical ability of persons undertaking the task, not to mention the actual installation of the ladder.
- A 7-metre descent (presumably then followed by an ascent) on a rope ladder is a feat that should be attempted only by those who are physically fit.
- A good rule of thumb is that fall protection should be used in cases where a crew member is at risk of falling 2.4 metres or more.
- In this case, the lifejacket worn was well intentioned but had little effect, because sea conditions were not safe.
Eight-metre fall is deadly

Edited from official report MO-2016-205, New Zealand Transport Accident Investigation Commission

Steveves stopped cargo operations on a vessel, stating that the vessel’s cranes were not in good order. A cargo gear survey was scheduled with the classification society. During the two-day delay waiting for the survey, the crew took the opportunity to carry out rust removal and painting on the cranes.

Shortly afterwards, the port facility’s health and safety (H&S) team learned that the crew on the vessel were working on cranes at height without full fall-protection equipment. After the H&S team intervened, work on the cranes was stopped. Later that day an H&S officer witnessed the crew again working at height on the cranes without fall protection. The H&S officer informed the Master that under no circumstances should the crew work without proper personal protective equipment.

With the survey completed, and the cranes ostensibly returned to a safe condition, cargo operations resumed. However, the stevedores were unhappy with the condition of the hoisting wires on numbers two and four cranes. The following day the crew fitted a new hoisting wire on to number four crane, using the only spare wire on board.

Once the cargo operations were finished the vessel departed port. While at sea the deck crew assembled on deck to change the wire on number two crane using the old wire from number four crane. The wire was lowered to the deck where the end was cut off neatly so that it could be connected to the new wire with a cable sock. However, as they were bringing the replacement wire through the rigging it got snagged at the connection with the cable sock.

In order to free the cable, the bosun put on his safety harness and climbed up the ladder. Once aloft he secured his safety harness lanyard around a luffing wire and walked along the jib to reach the point where the cable sock had snagged. When he came to the cross-beam, he could not reach the snag with his lanyard still secured around the luffing wire. He unhooked the lanyard to relocate it to a lower wire so that he could reach the cable sock.

At some point while moving the lanyard between the luffing wires, the bosun lost his balance and fell 8 metres on to number two hatch cover. The bosun was unconscious and bleeding. First aid was administered and a paramedic arrived soon after by helicopter, but the bosun was confirmed dead.

It is likely that the bosun had either removed the locking collar on his safety harness lanyard in preparation for removing the hook from the upper luffing wire, or had clipped on to the lower luffing wire but had yet to engage the locking collar. Any sideways force on the gate as the shock-load came on to the lanyard could have caused the gate to burst out and disconnect the harness from the anchor point.

The hooks on the harnesses were of mild steel with manually lockable gates. The hooks were not stamped with any identification, safe working load or indication that they met the recommended standard for connectors used in personal fall-protection systems. They were not of a type suitable for looping around an attachment point and back on to the lanyard.

Lessons learned

- Working at height is a risky activity and all crew should use suitable safety harnesses that are fit for the intended tasks.
- Never replace a worn wire with another worn wire.
- Attaching a safety harness by passing it through or around the securing point and back on to the lanyard is a dangerous practice that can result in inadvertent release unless the lanyard and hook are designed for that purpose.
- Dual lanyards are the accepted norm to enable safe transfers between securing points; one is always connected while the other is transferred.
- As per the International Safety Equipment Association’s Personal Fall Protection Equipment Guide (extract below), there are many ways to connect a fall protection attachment incorrectly.

Examples of IMPROPER connections

A. Do not attach two or more snap hooks or carabiners to a single D-ring.
B. Do not load a carabiner or snap hook at the gate.
C. Ensure that connections are compatible and secure.
D. Do not attach two snap hooks or carabiners together.
E. Do not be back on a lanyard unless specifically designed to do so by the manufacturer.
F. Ensure that the snap hook is closed and locked.

Editor’s note: Several events in this sequence indicate a less-than-adequate safety culture and poor safety leadership. Accidents like this one just don’t happen, but are ‘created’ by these preconditions.

14-metre fall proves fatal

As edited from Transport Malta official report 15-2017

A tanker was in port for repairs and drydocking. In preparation for extensive hot work during the repairs, some deck crew were assigned to clean cargo tank number two port. In the morning, a toolbox meeting was held for the ship’s senior management – but not the men intended to do the actual cleaning work.

The crew member assigned the cleaning duty entered the tank in the afternoon. After a few hours he came out for a break. Before re-entering the tank, he asked another crew member to give him a hand in mopping out the tank. The second agreed and, as it

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was now raining, the two crew hastened their pace to get to the entrance to the tank and inside. The two entered the tank, but as the second descended he saw the first fall over the guardrail of the tank access ladder. The victim had fallen about 14m. The alarm was raised, a rescue team mustered and shore-side medical help called. Unfortunately, a little while later the victim was pronounced dead.

Lessons learned
- As with the previous report, the safety leadership and safety culture on this ship appear to have been weak. Not only did the workers involved in the task not attend the toolbox meeting but the report suggests that enclosed space entry procedures were non-existent.
- In his haste to get out of the rain, the crew member did not pay sufficient attention to his safety. Rushing a task rarely gives good results.
- It is not always obvious that a task involving a descent is actually work at height.

MARS 201825
Free freon close call
Edited from UK P&I Club Loss Prevention Notice, 31 Jan 2018

During a third-party survey on a bulk carrier, the surveyor needed to test the emergency fire pump. This was located in a recessed well, approximately 3 metres deep in the steering gear compartment, and accessed by an inclined stairway. The surveyor and chief engineer descended into the fire pump well in order to test the local start function of the pump.

As soon as they descended the ladder the chief engineer sensed something was wrong and ordered they return up. By the time both men reached the steering compartment deck they were experiencing symptoms of dizziness. Other crew took them outside into fresh air and they soon recovered.

Investigation of the incident revealed that maintenance had recently been carried out on refrigeration machinery also located in the steering flat. During this work, freon refrigerant gas from the plant had probably been released and, being heavier than air, had migrated into the pump well, displacing breathable air.

Lessons learned
- Refrigerant gas should be contained. In the event of accidental release, the immediate area and adjacent spaces must be checked and thoroughly ventilated.
- Where refrigeration machinery or other systems that contain special gases are present in a confined space, a risk assessment should be carried out to determine whether the space is to be treated as an ‘enclosed space’ requiring pre-entry precautions and atmosphere tests.

MARS 201826
Incinerator flashback

A crew member was incinerating garbage in the incinerator room. A smell of paint thinner came from one garbage bag. Despite this, he threw the bag into the incinerator without confirming what was inside. As the crew member was poking the bag in, a flashback occurred from the open incinerator door, as shown in the still pictures taken from the video. He suffered serious burn injuries on his arm, neck, back and right leg.

Lessons learned
- Incinerator duties are inherently risky. The MARS database lists many such accidents that have caused serious injuries.
- Procedures for incineration should be robust and they should be followed to the letter. They should include garbage management procedures upstream of the actual incineration phase to avoid dangerous waste being put into the incinerator.
- Thought must be given to ensuring dangerous waste does not make its way into the incineration garbage stream, and that it can be easily detected if it does. Use of transparent garbage bags for incineration would make it easier to detect potentially hazardous contents.

MARS 201827
Fixed CO₂ extinguishing system not shipshape
As edited from USCG Marine Safety Alert 13-17

During a US Coast Guard inspection on board a container ship some serious deficiencies were found with the fixed CO₂ extinguishing system. Some of the bottles had become loose and then gradually rotated, as seen in photos A and B. The rotation put undue stresses on the hoses. The ‘four bottle deep’ manifold system on the ship was considered atypical and may have contributed to an inability to maintain tightness.

Significant cracking of the CO₂ discharge hoses was also found. This condition, known as ozone cracking, occurs over time when ozone in the atmosphere interacts with the polymers found in rubber products, especially where the rubber is under tension.

Lessons learned
- CO₂ bottles should be clamped tightly in place with wooden brackets, as displayed in the photo below. Wooden spacers in between the rows of bottles can also be used to ensure that all the bottles are properly secured.
- When installing bottles, it is important to consider hose and actuator positioning. Stress on each hose needs to be minimised. Securing devices must be inspected for effectiveness.
- During monthly periodic inspections of fixed CO₂ systems, vessel crew should check for bottle rotation, loose bottles and excessive stress on discharge hoses. All appropriate safety precautions should be completed before any action is taken to re-secure or reposition CO₂ cylinders.
- Cracked hoses should be replaced.
- Crew should be familiar with IMO circular MSC.1/Circ.1318, Guidelines for the maintenance and inspections of fixed carbon dioxide fire-extinguishing systems.

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