



Mariners' Alerting and Reporting Scheme

MARS Report No. [REDACTED] 239 September 2012

MARS 201242

Serious hand injury during use of deck scaler

Official report: Edited from IMCA Safety Flash 02-11

➔ A ship's crew member sustained a serious hand injury while using an air driven deck scaler during maintenance operations. The crew member was wiping clean the base of the scaler with the air motor running, when his glove became entangled in the moving drive belt, trapping his fingers. He sustained crush injuries to the tips of two fingers, and was medevaced for treatment and subsequent surgery. Fortunately, no amputation resulted.

Result of investigation

- 1 The deck scaling machine had no 'dead man' control i.e. automatic stoppage when the start control is not deliberately held in the 'on' or 'run' position;
- 2 The crew member inadvertently placed his hand near the gap between the belt guard and the body of the scaler, bypassing the safety barrier;
- 3 The crew member violated existing company procedures for the use of this pneumatic device which clearly required the disconnection of the air line before carrying out any trouble-shooting or maintenance.

Corrective/preventative actions

- 1 All power-driven deck scalers of this type were temporarily withdrawn from service pending effective implementation of appropriate control measures. These included 'hard' barriers such as more effective guards and a dead man switch, and 'soft' barriers such as risk assessment and understanding of proper operating procedures;
- 2 A 'hazard hunt' exercise was conducted whereby other equipment onboard was identified as posing a similar injury hazard i.e. drilling machines, lathes, bench grinders, etc. and appropriate control measures were stipulated to appropriately manage the risks;
- 3 The incident was communicated to the manufacturer of the deck scaler, highlighting the lack of a 'dead man' switch on the device, and a swift and positive response was received.



View of deck pneumatic deck scaler



View of gap in guard through which the crew member's fingers got trapped in moving drive belt

MARS 201243

Inappropriate use of disc grinder caused injury

Official report: Edited from IMCA Safety Flash 05-11

➔ A crewman was injured whilst using a power tool in an incorrect manner. He had been instructed by the C/E to clean paint and corrosion off the stud threads of a manhole cover in preparation for a tank entry. He was instructed to perform this task using either a hand-held wire brush or an angle grinder fitted with a wire wheel. However, presumably because of excessive corrosion on the fasteners, he unilaterally decided to fit a 5mm cutting disk on the angle grinder instead of the wire wheel, and then proceeded to cut off the nuts of the studs securing the manhole cover. Suddenly, the grinding disk rotating at high speed jammed between two adjacent studs. The disk shattered. The detached piece was flung at great velocity and inflicted a bruise on the crewman's left shoulder after cutting through his coveralls.

Result of investigation

- 1 Existing company procedures and C/E's clear instructions were not followed;
- 2 Risk assessments were not conducted;
- 3 The crewman had received no training in this specific task and consequently demonstrated a lack of safety awareness that put himself, his colleagues and the vessel at risk.

Lessons learnt

- 1 Complacency in the use of power tools must be guarded against;
- 2 All persons involved in a task, from deck officers down to supervisors and ratings, must have a clear understanding of the nature of the task and safe work procedures;
- 3 All crew must understand the purpose and requirement for risk assessments for all routine and non-routine tasks;
- 4 All crew members must remember the importance of accepting personal responsibility for safety and that they all are empowered to stop work until safety concerns have been adequately resolved;
- 5 Shipboard training and familiarisation should include specific training on particular tasks and equipment.



View of opened manhole cover from inside tank after all stud nuts had been cut off



View of broken rotary cutting disk – the missing segment which was flung at high speed could easily have caused very severe injury to the crewman or other personnel in the vicinity

MARS 201244

Reduction of crane's SWL in grab mode

→ The Safe Working Load (SWL) of an item of ship's lifting gear is the safe maximum weight that can be lifted with the load suspended directly from the hook in the standard configuration or in other specified rigging variation(s). Ship's crews must reduce this figure appropriately when using supplementary equipment (i.e. beam, spreader, slings, grab etc.). in the case of beams, spreaders or slings, whose weight may be known or can be estimated with reasonable accuracy, this is a simple reduction. However, for bucket grabs connected to the crane for handling bulk cargoes, in the absence of specific data from the makers, it is prudent to make a substantial reduction in the SWL.

This de-rating or downgrading is due to the fact that when a grab digs deep into the bulk cargo, which is often of high density, and is hoisted from within the bulk material, frictional resistance and the weight of added entrained cargo may impose unknown and excessive loads on the system and components.

Grabs are often provided with removable spill or kick plates to adjust the maximum cargo volume lifted depending on the density of the cargo so that the lowered SWL is not exceeded.

Shore management and the ship's command must ensure that all crewmembers assigned cargo work responsibilities are fully aware of grab design, limitations, operations and maintenance procedures.

MARS 201245

Fall injury during crane maintenance

→ Planned maintenance of the provision crane was in progress on a tanker which was anchored in slight sea conditions. Before commencing the work, the Bosun and the two assigned crew held a toolbox meeting. A working aloft permit was issued prior to commencing the task and the assigned team donned proper PPE. They raised the electro-hydraulic crane jib from its stowing crutch (located on the funnel casing), and, with its jib fully extended, slewed it forward to fully span over the bridge deck. For access, they rigged a portable 6-metre aluminium ladder from the bridge deck to reach the jib girder.

With the top section of the ladder secured to the crane jib, the A/B ascended to the top rung of the ladder and attempted to pass the fall restraining line of his safety harness around the crane jib. Due to the large dimensions of this section of the jib girder, the A/B had to lean out from his precarious perch to grab the free end hook of the line. Suddenly, the ladder became unstable, and the A/B lost his balance.



Unsafe method used: The top of the 6-metre long portable aluminium ladder is lashed to the crane jib

With no restraining line attached to the crane, he fell off the ladder and landed heavily on the deck. The Bosun and the second A/B attended to the injured person immediately, who was unconscious for a few minutes. He continued to breathe, and after regaining consciousness, his responses were normal and he could move all limbs except his right arm. Apart from concussion, and suspected fracture of right elbow, there appeared to be no other internal or external injuries. The emergency team removed the casualty to the ship's hospital, where it was noticed that his blood pressure was low and he was showing signs of dizziness and body tremors. On radio medical advice, a launch was arranged to transfer the casualty to a shore hospital and an accident report was sent to the designated person (DPA) in the shore management office.

Results of investigation

- 1 A proper risk assessment was not conducted due to perceived lack of time;
- 2 During the toolbox meeting, the Bosun explained the precautions to the assisting crewmembers;
- 3 It was considered that there was sufficient number of crew assigned for the job and they had all donned proper PPE;
- 4 The work team was sufficiently rested before starting the work;
- 5 It was established that working on the crane jib from a portable ladder was patently unsafe and a safer access to the jib was available by slewing the jib over the adjacent compass (monkey island or flying bridge) deck;
- 6 It was determined that if the other A/B had positioned himself on the crane jib girder by climbing on to it from the crane pedestal, he could have safely secured the casualty's lifeline.



Post-maintenance photo showing the crane raised from stowage crutch and slewed over the bridge deck, permitting safe and efficient access from portable scaffolding



Slewing the crane over the compass deck permits safer access to the jib

Root cause/contributory factors

- 1 Substandard acts
 - a. Incorrect use of equipment;
 - b. Failure to secure;
 - c. Improper position of task.
- 2 Substandard conditions
 - a. Inadequate guards or barriers;
 - b. Hull and structure condition.
- 3 Personal factors
 - a. Restricted range of body movement;
 - b. Poor judgement;
 - c. Lack of coaching.
- 4 Job factors
 - a. Inadequate work planning or programming;
 - b. Inadequate instructions, orientation or training;
 - c. Inadequate or improper controls;
 - d. Inadequate assessment of needs and risks;
 - e. Inadequate standards and specifications;
 - f. Inadequate monitoring of compliance;
 - g. Inadequate conduct that is not condoned, intentional or unintentional.

Control action needs

- a. Work performance observations;
- b. Work permits systems (although working aloft check list was completed, risk assessment had not been performed);
- c. Enforcement of standards;
- d. Health and hazard control.

Corrective/preventative actions

- 1 A fleet alert sent to all vessels on the incident requiring Masters to confirm full discussion and understanding of incident among all on board;
- 2 SMS amended to include new checklist to rectify procedural lapses exposed by this incident;
- 3 A visual training programme was distributed throughout the company and fleet highlighting safe working procedures for crane maintenance;
- 4 New officers and those on leave will be briefed on this case at the earliest opportunity;
- 5 The knowledge, understanding and proper implementation of these actions will be verified during internal audits and superintendent visits.

Lessons learnt

- 1 This accident again shows the importance of Planned Maintenance System (PMS) toolbox meetings. PMS toolbox meetings must be held with all crew related to each task. Risks and precautions shall be discussed and understood well by all team members;
- 2 Pre-task procedures for tasks subject to working aloft / overside shall be carried out with more attention and care. PPE should be donned correctly all the time. In addition to this safety of all other equipment related to tasks shall be maintained and tasks shall be monitored at all times.

Editor's note: Maintenance work on lifting gear requires a stable and secure platform, particularly if the work is to be performed at heights exceeding 2 metres above the deck. Senior officers on board and shore management teams must consider equipping the vessels under their care with a reasonable quantity of scaffolding materials of suitable design and strength for greater safety and efficiency.

MARS 201246

Burn injury to engine cadet

➔ A bulk carrier was at an anchorage port, loading coal. A trainee engine cadet was instructed by a senior engineer to clean the top of the waste oil tank, the contents of which was being maintained at about 70°C. The top of the tank was fitted with four hinged flap lids, one of them being held open by means of a stopper rod. Whilst carrying out the assigned task, the cadet unknowingly placed his foot in way of the opening and his left leg stumbled into the tank and plunged into the hot oil, scalding his leg below the knee. After being given first aid on board, the injured person was transferred to a shore hospital and later repatriated home. The senior officer who assigned the task to the trainee cadet declared in his statement that it was the practice on board to leave one lid of the waste oil tank always open and that he had warned the cadet about this and that the oil inside was hot.

Root causes/contributory factors

- 1 Unsafe work practices
 - a. No risk assessment conducted when the job was planned, in violation of Company SMS;
 - b. There was no justification for the established practice of keeping one flap lid open on the waste oil tank;
 - c. An inexperienced cadet was assigned a hazardous task, without adequate briefing / supervision by senior officer;
- 2 High temperature of tank contents and no warning notices displayed at site;
- 3 Inadequate lighting at location.

Corrective/preventative actions

- 1 Fleet circular issued with instructions for this incident to be discussed at the next onboard safety meeting;
- 2 Company's SMS procedures for the planning and execution of routine/ non-routine jobs on board suitably revised to prevent recurrence of this incident – tank openings to be kept closed at all times;
- 3 The company will review the contents of in-house Safety Officer Course to include notes on work planning, delegation and supervision;
- 4 Crews instructed to:
 - a. conduct and record a risk assessment before commencing any task;
 - b. Carefully identify all hazards in the work area and implement appropriate control measures;
 - c. Use the Daily Work Record Book to plan/ assign the daily work to crew;



View of waste oil tank with one lid kept open

- d. Be vigilant to new hazards at all times;
- e. Ensure that trainees are only assigned tasks under direct supervision of a senior crewmember.

MARS 201247

Failure to Anticipate Currents

As a fairly experienced Chief Mate onboard a handy size product tanker I was standing the 04:00 - 08:00 watch as we steamed Eastward along the South coast of a large island chain, expecting to make arrival at the pilot station at 09:00.

The morning watch was uneventful and in fact quite delightful as we were facing the sunrise in this tropical location. We were monitoring our position on a regular basis as we ran about three miles from land and about two miles parallel to a hazardous reef. During the first few hours of the watch the ship tracked well with no sign of set or drift.

At 07:00 the Master arrived on the bridge and we chatted casually over coffee, discussing details of our arrival and port call. As we chatted and enjoyed the sunrise our ship continued its pace along the coast in autopilot.

For a half hour, as I chatted to the Master and the AB prepared the bridge for the next watch, I failed to plot regular positions as the visibility was fine, I could see the coast, and had no reason to suspect that the ship might drift off course. At about 07:30 the Master took the

watch so that I could have breakfast and prepare the deck for arrival. The change of conn was very casual.

Once I had left the bridge, the Master looked out and through the crystal clear water saw that we were in perilously shallow water. He immediately came hard right bringing the vessel again into safe water.

We were not using parallel indexing, did not have the echo sounder alarm set, were not using ECDIS – and were not paying due attention to risks.

As we were sailing along the island chain, we failed to realise that as we were traversing a gap between the islands, a strong current was flowing that induced sudden and strong set and drift. Such a natural phenomenon should always be anticipated by navigators, not only while standing watch, but also during passage planning.

FEEDBACK/CORRECTION TO

MARS 201229

The International Marine Pilots Association (IMPA) has pointed out that combination ladders for pilot transfer must comply with Section 2.1.5 of IMO Resolution A.1045(27), which requires, among other things, that retrieval / recovery / tripping lines should be attached at or above the lowest spreader and lead forward. The latest version of the IMPA pilot ladder poster was featured in Seaways (August 2012) and can be downloaded from http://www.impahq.org/downloads/final_impa_pladder_poster.pdf

MARS: You can make a difference.

You can save a life, prevent injury and contribute to a more effective shipping community.

Everyone makes mistakes or has – or sees – near misses. By contributing reports to MARS, you can help others learn from your experiences. Reports concerning navigation, cargo, engineering, ISM management, mooring, leadership, design, training or any other aspect of operations are welcome, as are alerts and reports even when there has been no incident. The freely accessible database (<http://www.nautinst.org/mars/>) is fully searchable and can be used by the entire shipping community as a very effective risk assessment, loss prevention and work planning tool and also as a training aid.

Reports will be carefully edited to preserve confidentiality or will remain unpublished if this is not possible.

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