

# Shaping Shipping for People

## Working at Heights

Welcome from Allan Schwartz, General Manager of Ship Safety Division



Welcome to the first issue of *Shaping Shipping for People*. This bi-annual bulletin will identify trends in maritime incidents and aims to raise safety awareness in the industry. It will also provide advice and recommendations on important safety issues to seafarers, ship owners, operators and industry groups. Safety trends will be examined in relation to human factors research and relevant incident investigations. The information presented should help readers identify ways to improve safety on board their own ship or in their company. This issue focuses on height safety in Australian waters. I trust you find this bulletin informative and useful.

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## Working at heights – defined

When considering the types of tasks that involve working at heights at sea, images of tall masts and deep cargo holds often spring to mind. However, numerous tasks at sea involve working at heights. Falls can occur anywhere on a ship, such as, ladders, gangways, over the side and stairs in machinery spaces. When adding slippery surfaces and ship motion to the equation, the potential for accidents is high. Every year, AMSA receives dozens of notifications regarding falls from height at sea, for example:

- Two crew members on a bulk carrier were seriously injured after falling eight metres in the cargo hold when the scaffolding they were on fell over.
- A crew member on a passenger ship was killed when he fell 24 metres when cleaning windows from a catwalk outside the bridge.
- A crew member on a container ship died after falling four metres when stowing a cargo crane hook.
- Two crew members were untangling fishing lines from the accommodation ladder of a bulk carrier, when one of them lost balance and fell overboard. The crew member was out of sight within minutes and could not be rescued.

This issue provides an overview of falls from height statistics and a discussion of how safety culture can reduce accidents in this area.

## Learning from incidents – example

On 2 February 2011, during cargo hold cleaning, the boatswain on board the bulk carrier *Hanjin Sydney* fell about 25 metres from a cargo hold hatch coaming to the tank top below. He died instantly as a result of the fall.

This tragic incident exemplifies safety culture issues, in this case resulting in a fatality while working at height [1]. Safety factors relevant to this incident included a failure to report faulty equipment at the accident site; the assumption that risks were understood and that risk assessments and work permits for the task were not necessary; a failure to use a harness or a ladder in order to save time and a personal acceptance by the victim of the risk which he had warned others about. This death was preventable had these aspects been managed better. It is important that we all learn from such incidents and implement processes that will help prevent similar accidents in the future.



Figure 1: View from the inside of bulk carrier cargo hold of similar size to *Hanjin Sydney* (source: ATSB)

## Falls from height data 2008 to 2013

Between 2008 and 2013, 122 falls from height in the maritime industry were reported to AMSA and the Australian Transport and Safety Bureau (ATSB) (Figure 2). Eight of these were serious enough to warrant an ATSB safety investigation. These falls from height were generally the result of a complex set of circumstances, often involving a number of contributory safety factors.

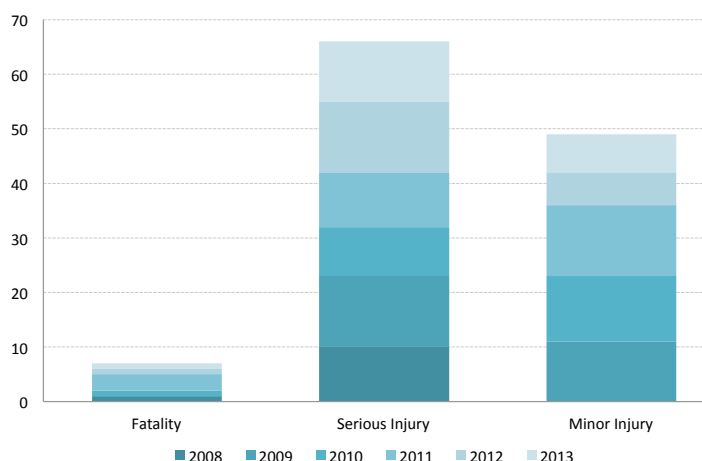


Figure 2: Number of fatalities and injuries due to falls from height 2008-13 (source: AMSA)

Safety factors identified from the falls from height data have been classified and include individual factors, environmental aspects, issues with design and equipment (such as maintenance), shortfalls in risk control measures and policies and procedures (Figure 3). In most cases, there was more than one safety factor type associated with each fall from height incident.

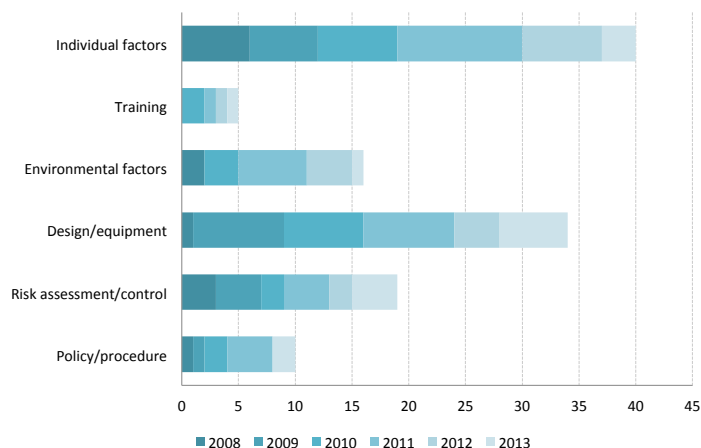


Figure 3: Number of safety factors identified in falls from height incidents 2008-13 (source: AMSA and ATSB)

To some extent, the larger number of individual factors identified and reported by industry (highlighted in Figure 3) suggests that the broader organisational and safety culture issues are often not considered during on board investigations. Most incident reports take an individualistic approach to causality, usually placing the responsibility on the last person involved in the chain of events. In reality, incidents are generally the result of a complex combination of factors which create conditions within which the final action, mistake or error can occur.

## Falls from height – an alarming situation

Falls from height are one of the major categories of serious injuries and fatalities for Australian seafarers. Data suggests that the maritime industry has a higher percentage of fall injuries and fatalities than shore based industries. Alarmingly, Safe Work Australia (SWA) data (Figure 4) shows that the incident rate (serious claims per 1000 employees) in the maritime industry is possibly as bad and sometimes worse than the construction industry, which is considered a ‘high risk’ industry in this area because it suffers the greatest proportion of land based falls from height injuries and fatalities.

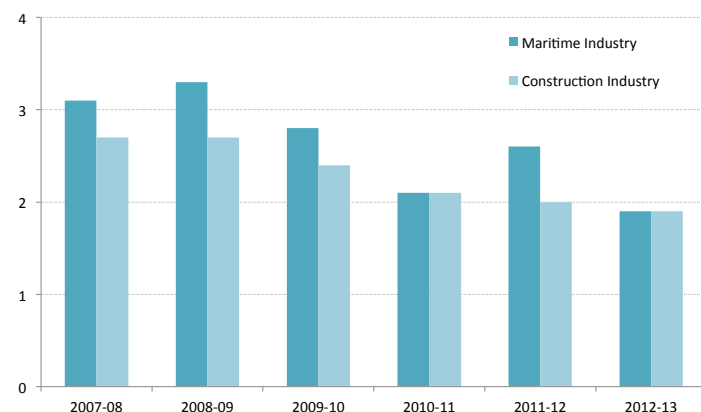


Figure 4: Incident rate (serious claims per 1000 employees) for Water Freight Transport, Water Passenger Transport and Water Support Services (source: SWA)

This situation is not only of concern to those directly involved, but is also costly to the Australian maritime industry, with falls from height compensation claims for the period 2012-13 amounting to almost two million dollars (Figure 5).

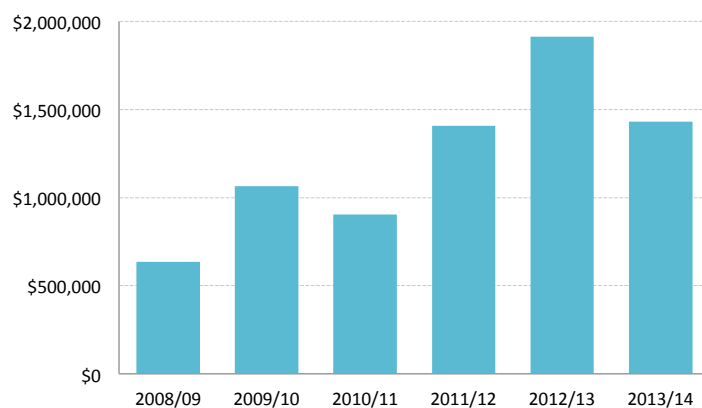


Figure 5: Compensation paid for falls from height for ships under the Seafarers Act for financial years 2009-14 (source: Seacare)

## The broader safety issues related to working at heights

Examining height safety is particularly important for the maritime industry because of the inherent risks of working aloft at sea, including slippery surfaces, extreme heights and ship motion. As any seafarer will know, there are various tasks on a ship that require working at height, which makes controlling and managing the associated risks crucial.

The primary control measures currently in place are the ship's Safety Management System (SMS), permit to work processes and seafarer training.

The Australian Maritime College (AMC) has carried out a study on height safety with groups of seafarers [2]. This study shows that safety procedures and training alone are not enough to control and manage fall risks at sea. The study identified that procedures are not always followed and short cuts are sometimes taken, suggesting broader issues need to be considered in height safety practice. Accordingly, making improvements in these areas will likely reduce risks associated with falls from height in the maritime industry. Figure 6 (page 4) provides an overview of some of the broader aspects which should be considered when assessing the risks associated with working at heights. Most of these were also identified in the AMC study [2].



Figure 6: Perceptions of deficiencies in height safety practice with some identified in the AMC study [2]

## Safety culture – staying within the safety boundary

Safety culture is the encompassing critical safety aspect as highlighted in Figure 6. One might think that we would have a good handle on ‘safety culture’ by now, bearing in mind that it is such a well-used phrase. Safety culture broadly refers to the shared perceptions of safety policies, procedures, behaviours and practices of seafarers and the organisation in which they work. It is now well known that safety culture is a significant determinant of safety outcomes and is a leading indicator of accidents and injuries. Importantly, merely having a safety procedure does not create a safety culture. In the AMC study, seafarers identified that safety culture depends on the attitude of the ship’s officers and that when superiors are strict about safety the crew ‘fall into line’ [2].

A good safety culture cannot be established without clear leadership and a prioritisation of safety. Effective leaders promote safety culture, communicate clearly on safety standards and hazard identification, and motivate the shipboard team to make safety a priority. Conversely, leaders who devalue safety and let safety violations slide, promote a poor safety culture. Examples of poor safety culture include allowing risk-taking behaviour to continue unchecked and placing too much responsibility on individuals for their own safety.

## Ensuring a learning loop

The most useful way of addressing problems with height safety in the maritime industry is to address aspects of the SMS. It was evident in the AMC study that SMSs need to improve in capturing deficiencies through organisational factors such as safety culture, supervision, leadership and enforcement of procedures. Although further research is required, it is clear that addressing safety culture first and foremost is critical to reducing the risks of falls from heights.

## Looking ahead - safety culture study

AMSA considers safety culture to be crucial in managing safety at sea and hence is funding a three-year (2013-16) research study, in collaboration with two of Australia’s leading universities, to assess the determinants of safety culture in the maritime industry.

Comparatively little research into safety culture has been carried out in the maritime industry. Therefore, there are a number of unresolved issues that hinder improvements in safety, noting that safety culture is considered to be an important determinant of safety behaviour, accidents and injuries in the workplace. Hence, a systematic assessment is needed to investigate the influence of safety culture on safety behaviour in the maritime industry. This work will assist in the formulation of effective and evidence-based recommendations for the improvement of training programmes, work design, procedures, policies and regulations, and the assessment of safety behaviour.

## Take-away message

It is possible to reduce the number of falls from height at sea by addressing the broader issues in height safety practices. Success of a safety culture depends on cooperation and commitment from all involved and this commitment to safety must come from the top. Leaders can start by ensuring all work at height is adequately supervised, training is provided, workload and fatigue are managed effectively and policies clearly prioritise safety above time pressures. Seafarers can contribute by following procedures, always using safety equipment, reporting defects, not taking undue risks because it takes less effort and remembering that even work that is done frequently can be dangerous. Small changes, such as these, would have been sufficient to prevent some of the accident examples given in this bulletin. This illustrates the importance of taking the practical lessons learnt seriously.

## References

1. Australian Transport and Safety Bureau (ATSB) (2011), *Crew member fatality following a fall on board the bulk carrier Hanjin Sydney at sea 2 February 2011*, Canberra [www.atsb.gov.au](http://www.atsb.gov.au).
2. Boyle, A. and Brooks, B. (2012) *Height Safety within the Australian Shipping Industry: Perceptions and Practice*, Australian Maritime College, Launceston.

## Useful resources

- Australian Transport Safety Bureau (ATSB) – *Marine Safety Investigations and Reports*. [www.atsb.gov.au/marine.aspx](http://www.atsb.gov.au/marine.aspx)
- Comcare (April 2014) *Slips, Trips and Falls*. [www.comcare.gov.au/preventing/hazards/physical\\_hazards/slips,\\_trips\\_and\\_falls](http://www.comcare.gov.au/preventing/hazards/physical_hazards/slips,_trips_and_falls)
- Alert! Papers, various issues [www.he-alert.org](http://www.he-alert.org)
- Safe Work Australia (SWA) (October 2013) *Work-Related Injuries and Fatalities Involving a Fall from Height*, Australia. [www.safeworkaustralia.gov.au/sites/swa/about/publications/pages/work-related-injuries-fatalities-involving-fall-from-height-australia](http://www.safeworkaustralia.gov.au/sites/swa/about/publications/pages/work-related-injuries-fatalities-involving-fall-from-height-australia)