

This issue focuses on safe access to vessels, including:

- safe rigging of access equipment
- managing the risks for personal safety while rigging
- maintenance and inspection of access equipment.

Marine order 12 provides further details on safe access to vessels in port.



Safe vessel access

Safe vessel access is essential for the safety of everyone involved in embarking and disembarking a vessel, including the crew who rig them.

Vessel operators and crew have a duty of care to ensure accommodation ladders and gangways are rigged safely. Under SOLAS (II-1/3-9), equipment used for vessel access should be included as part of the vessel's maintenance system and regularly inspected for faults and points of failure. Evidence shows that failure to focus on safe vessel access significantly increases the risks of injury, with potentially fatal consequences.

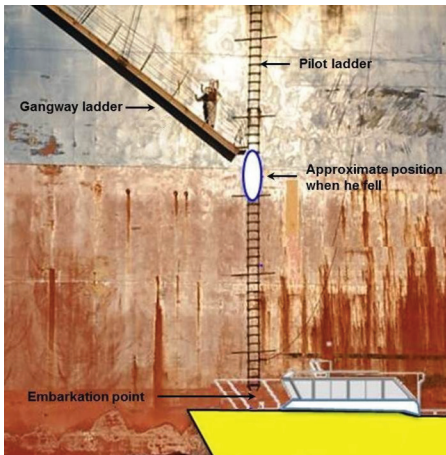
The type of vessel access should be selected based on the experience and physical abilities of the people expected to board the vessel as per ISO 5488:2015 and MSC.1/Circ. 1331. Their capability must be assessed prior to them embarking or disembarking, particularly when using a combination pilot ladder and accommodation ladder. People using these ladders must also be confident in using the equipment safely.

Case study one

While anchored at a transshipment point, an iron ore carrier had rigged a combination ladder for vessel access¹.

A person commenced climbing the pilot ladder while the crew were still adjusting its length. The person fell seven metres onto the foredeck of the pilot launch and died.

While the investigation found that the pilot ladder was correctly rigged, it was suspected that the deceased person was inexperienced with using pilot ladders, and may have become exhausted before reaching the top-causing him to lose his grip and fall. The vessel's safety management system provided no guidance for ensuring safe access or consideration of the person's level of experience in boarding via this method.



Case study one - A diagram of the fall from the pilot ladder

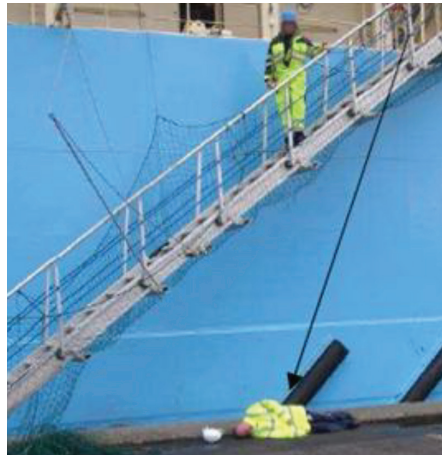
Case study two

An offshore marine vessel departing port was stowing the gangway when the lifting wire became stuck on the handrail.

Two crew members entered the gangway to free the wire and while doing so, the handrail to the shore-side handrail suddenly fell. One of the crew lost his balance falling off the gangway to the pier five metres below—fracturing his thighbone and kneecap. He was not wearing a safety harness and fall arrest system device.

According to the accident report, the vessel departing earlier than planned resulted in rushed crew members feeling stressed and in a hurry to complete the work. The report also indicated that the crew normally employed a safety harness and fall arrest device while working on the gangway, but did not do so on this occasion due to work stress and the jammed lifting wire.

This incident was a result of known problems with the gangway not being fixed. Issues with the lifting wire occurred frequently and were also common in other offshore vessels within the company's fleet. These problems remaining unaddressed are a sign of a systemic failure in implementing the safety management system across the fleet.



Case study 2 - Re-enactment of fall



Stanchion eye where the lifting wire got caught

Incident and inspection data

Between January 2017 and May 2019, we issued 76 improvement notices. Of these, 28 involved unsafe access.

During the same period, 62 safe access accidents and incidents were reported with 38 due to defects.

These statistics indicate safe access is a significant safety issue. Defects in the equipment, particularly gangways and accommodation ladders being the major cause.

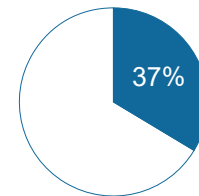


Figure 1:
Improvement notices issued between Jan 2017–May 2019 for unsafe access

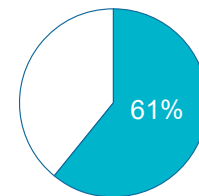


Figure 2:
Incidents due to defects between Jan 2017–May 2019



Factors influencing safe vessel access

Safety outcomes may be affected by—time and resource pressures, poor equipment design and maintenance, and inadequate risk assessments.

A review of incident and compliance data highlights the following factors in influencing safe vessel access.

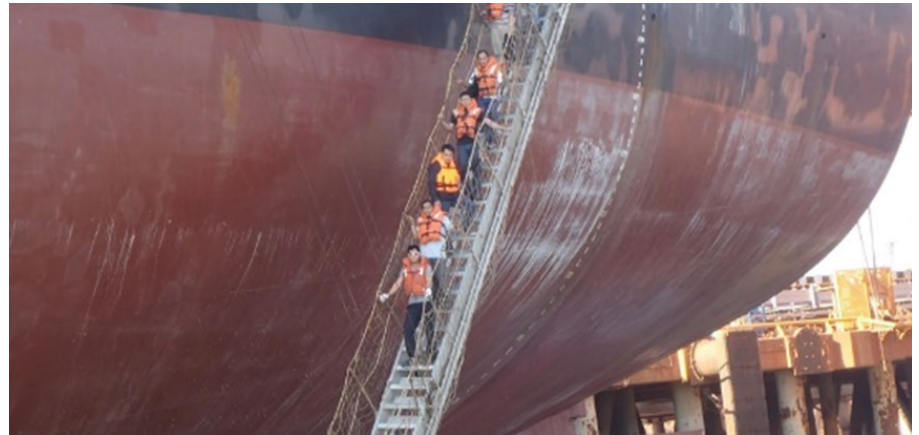
Safe rigging

The requirements for safely rigging vessel access equipment are set out in MSC. 1/ Circ.1331 and SOLAS regulation II-1/3-93. In Australia, these standards are codified in Marine Order 12 section 24 and include:

- Gangways should not be used at an angle of inclination greater than 30 degrees from the horizontal.
- Ship accommodation ladders should not be used at angles greater than 55 degrees from the horizontal, unless designed and constructed for use at angles greater than these, and marked as such.
- Adequate lighting, lifebuoys and a mounted safety net sufficient to prevent falls must also be provided.
- Accommodation ladders and gangways shall be positioned well forward of propeller and avoid the lower part of the ladder and gangway overhanging off steep ship sides.
- The picture below shows a poorly selected access method and an unsafe rigging accommodation ladder.
- The ladder is rigged at more than 55 degrees from the horizontal.
- It is suspended over the sea.
- There are more people on the ladder than the load rating of the gangway.

There is a high risk of a person losing their footing and causing others to fall with them.

Rigging gangways and accommodation ladders can often be seen as secondary activities of lesser importance than core operational priorities. In a time-



Unsafely rigged accommodation ladder. Source: AMSA Marine notice 13/2014 presentation

pressured environment with competing demands, not enough time is given to ensure that rigging and retrieval is done properly, and is safe.

Equipment design

Poor equipment design may also affect safe access. Crew are more likely to develop shortcuts or workarounds if the equipment they are using is incompatible with the realities of the task at hand.

These things should be addressed in the design of the vessel and port facilities.

Maintenance and inspection

Effective maintenance plays a critical role in ensuring safe vessel access. With 61 per cent of reported safe access incidents due to defects, regular inspections and maintenance of access equipment needs to be incorporated into the vessel's planned maintenance system, and recorded.

This should involve regular inspection of welds, distortion, cracks and corrosion. Other suggested areas of focus include:

- moving parts should move freely and are greased appropriately

- regularly inspecting the underside of gangways and accommodation ladders
- careful attention given to the hoist wire, including the dates for renewal of wires used to support vessel access, as per SOLAS II-1/3-9)
- check the accommodation ladder and gangway each time after they are rigged.



A corroded wire rope on an accommodation ladder, having parted. Source: AMSA Marine notice 13/2014 presentation



Managing risks of rigging access equipment

Rigging or adjusting gangways and accommodation ladders involves a heightened level of risk of falling from height, persons falling overboard, and entanglement.

Unsafe rigging practices and cutting corners may also become 'acceptable' practice, particularly if no incidents have occurred and, or supervisors or operators do not address these poor work practices. In this situation, crew are more likely to perceive the risks as low and continue to operate unsafely.

The picture (right) shows a crew member securing a fallen defective accommodation ladder via a pilot ladder without wearing appropriate personal protective equipment, such as a lifejacket or fall-arrest device. The cargo vessel is underway and the risk of the crew member being injured or falling in the water close to a propeller are high.

The consequences when vessel access systems fail are high and potentially fatal. It is important to conduct a risk assessment of the rigging, adjusting and derigging of access equipment, including the selection of appropriate equipment and secondary means of support – refer to Marine Notice 13/2017. These mitigation measures

should be included in the vessel's safety management system.

When a vessel is alongside at a berth, the provision of safe access is a joint responsibility between the vessel and the port providing the berth.

Wharf arrangements should be considered when assessing the risks. Often, it is poor wharf design that prevents the gangway from being landed and this has a significant impact on the safety of access arrangements.

Communication is important in identifying obstacles to safe access. Items such as water/fuel manifolds, bollards and electrical installations on the wharf side are common, and should be taken into account when allocating berths to ships. Coordination between shore-side labour, the pilot and ship's crew can help to mitigate these issues by positioning the vessel alongside to clear the obstacles before the ship is made fast. Identifying, documenting and managing the risks will ensure effective risk controls, such as safe work procedures, regular inspection and maintenance of equipment, appropriate training, induction and supervision of crew can be implemented effectively.



References

- ¹ Australian Transport Safety Bureau /ATSB 2014 Fall from the pilot ladder on the bulk carrier Atlantic Princess, 2013. *300-MO-2013-007 Final*, 9 May 2014.
- ² Danish Maritime Accident Investigation Board /DMAIB 2011 Maersk Lancer, Accident to seafarer. *Case 2010012662*. Issued 06 September 2011.
- ³ International Maritime Organization 2009 MSC.1/ Circ. 1331 - Guidelines for the construction, installation, maintenance and inspection/ survey of means of embarking and disembarkation.
- ⁴ Marine order 12 (Construction - subdivision and stability, machinery and electrical installations) 2016.
- ⁵ Schröder-Hinrichs, J-U, Hollnagel, E & Baldauf, M 2012, 'From Titanic to Costa Concordia—a century of lessons not learned', *The international Journal for professionals in maritime administration, industry and education*, vol. 11, no. 2, pp. 151-167.

Key messages

- Ensure the safety of crew assigned to the rigging of access equipment.
- Allow time for safe rigging of access equipment, particularly in time-pressured situations.
- Assess risks as part of the vessel's safety management system and implement agreed safety practices.
- Include equipment used for vessel access in the vessel's planned maintenance system, focusing on key failure points such as welds, cracks, wires and moving parts.
- Ensure people using the access equipment are capable and experienced to do so.
- Select access equipment based on the capabilities of the people using the vessel access.