LOSS PREVENTION

Gangways

SHIPOWNERS
SECURITY FOR SMALL & SPECIALIST VESSELS
The information and recommendations in this booklet are given in good faith and are meant to highlight best practices, good seamanship and common sense to reduce incidents that result in related claims. However, Members must take into consideration the guidance and regulatory requirements given by Flag states and other governing authorities when formulating policy in line with the contents of this publication.
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The Club regularly deals with a number of claims involving access to vessels. Some have unfortunately resulted in fatalities. A selection of the incidents encountered by the Club have been highlighted in the case studies at the end this booklet (see Appendix).

It is important to note that all vessels that are alongside a quay or double banked with another vessel must provide a safe means of embarkation to enable personnel to access the berth or other vessel as applicable. The MGN 533 (M) states:

‘A gangway should be carried on every ship of 30 metres of more registered length (or overall length, if the ship is not registered). The gangway should be appropriate to the deck layout, size, shape and maximum freeboard of the ship’ and ‘Portable ladders should only be used as a last resort, where no safer means of access is reasonably practicable. Further guidance is in 22.1 Section 2 and Annex 22.2. of the Code of Safe Working Practices for Merchant Seafarers.’

Members should clarify with their local regulations what is individually required. If, for smaller vessels, there are no apparent regulations, then the onus is still on the master to provide a safe means of access. It is noted that some national regulations, such as the Australian Uniform Shipping Laws Code, state that the provision of a gangway as a safe means of access is required no matter what type of vessel or trade it is employed on.

The majority of the Club’s vessels, in view of their size, tend to utilise ladders and gangways due to the fact that accommodation ladders tend to be constructed for larger vessels. It should be noted that gangways should have important information marked on their framework, including manufacturers’ name, safe loading (by numbers and weight), model number and the maximum angle for the gangway to be set at. If a portable ladder is being utilised, this should be used at an angle of between 75 degrees from the horizontal and should extend at least 1m above the final landing place (from the UK’s Code of Safe Working Practices for Merchant Seafarers).
Chapter 1

General gangway assembly and associated equipment

The rigging of any access or gangway (Figure 1) is an important job and must be undertaken by a suitably qualified and experienced person from the vessel. The gangway must not be placed on a bulwark or side rail of the vessel, unless the bulwark or side rail is of sufficient strength to bear the weight of the gangway and persons using it. Relevant equipment must also be available as follows:

**Handrails**
Handrails should adequately fence off the ladder and be kept at a height of at least 1m. If these are made of rope, they must be monitored and kept taut at all times.

**Steps and platforms**
Steps and platforms must be kept clear of oil and debris. If a bottom platform is fitted on the gangway, this must be kept horizontal and have stanchions fitted to enable the safety rope to continue through them.

Figure 1: Typical set up of a gangway

**Illumination**
The access area of the vessel, the total length of the gangway and the quayside is to be kept adequately lit to ensure safe transit.
Lifebuoy
The lifebuoy must be fitted with a separate safety line attached to a quoit or similar device and a self-igniting light. This must be positioned on the vessel at the top of the access point.

Figure 2: Means of access incorrectly rigged

Figure 3: Means of access incorrectly rigged
Safety net
If it is applicable and practicable, a safety net is to be fitted under every part of the access ladder or gangway, extending on both sides and kept taut. The net must not be secured to any fixed point on the quay. Figures 2 and 3 show gangways incorrectly rigged, therefore increasing the risk of incidents. Figure 4 shows a correctly rigged safety net, which should be accompanied by a security point, security notices and the permanent presence of a watchkeeper.

Figure 4: A correctly rigged safety net

Watchkeeper
Even if it is not applicable under local regulations for some vessels to comply with the International Ship and Port Facility Security (ISPS) Code, it is good practice to have a member of the vessel's crew permanently stationed at the gangway for safety purposes. They will be able to assist people transiting the gangway and they can monitor any dangerous practices. The watchkeeper must keep in mind that they are the first point of contact on
the vessel for those boarding. If a vessel is alongside a berth affected by tidal conditions, the situation should be constantly reassessed. In addition, the watchkeeper must have access to the times of high and low waters and be aware of any cargo or ballast operations that may affect the vessel’s trim and list. If a watchkeeper is not present at the gangway and an incident occurs, the vessel’s crew might carry on with their duties, unaware of the situation.

**Bulwark ladder**
A bulwark ladder should be utilised when the top of the gangway or portable ladder rests or is level with the bulwark. It should be securely attached to the vessel to prevent movement and must be equipped with two rigidly secured handrails/stanchions. Figure 5 shows a bulwark ladder in use but, as highlighted, it is incorrectly secured to the vessel by its goose neck vent.

![Figure 5: Bulwark ladder incorrectly secured to the vessel](image)
Fire plan
The fire plan should be placed in the vicinity of the gangway. It should contain information that may be useful in an emergency, such as a cargo stowage plan, stability details, crew list, general arrangement plan and a plan highlighting the location of the vessel’s safety equipment. Mooring lines should be routinely monitored to avoid surging up and/or down the quay.

![Image of fire plan](image)

Figure 6: A typical fire plan located in the vicinity of the vessel’s access

Other considerations
In addition, prevailing circumstances such as weather and events, which may create temporary tripping hazards, must be taken into account and highlighted as necessary.

When assembling a means of access, it is not only the vessel’s equipment, access and procedures that need to be assessed and followed, but also those ashore. It should be ensured, as far as possible, that the end of the ladder being located on the quay is placed in an unobstructed area clear of debris and oil patches and away from impending dangers such as lorries or cranes for cargo work and cargo being loaded/discharged. The running of mooring lines should be in such a manner that they do not pose danger to those transiting the gangway.
Final checks
After the access has been rigged and prior to use, the gangway should be checked to ensure that it is safe to use.
Areas to concentrate on include:

- Cleanliness.
- Faults, including physical damage. All boarding equipment should be maintained and checked at regular intervals designated by a planned maintenance programme. Any faults that are noted on the equipment must be dealt with immediately and recorded in the planning system and reported to shore managers where necessary, in line with the company’s direct reporting system. Aluminium equipment should be particularly checked for corrosion and fractures. Ladders should not be painted in case this conceals defects.
- All moving parts are in good working order and are well-greased.
- Ensure that all associated equipment is available and correctly located.
Figure 8: Gangway in need of maintenance
Double banked vessels

It should be noted that when vessels are double banked, i.e. moored alongside each other, the vessel that is outboard will normally set up the equipment to the other vessel. Although, in cases where the freeboard differs greatly, access should be provided by the vessel with the greater freeboard.

Figure 9: Personnel leaping from one vessel to another as no correct means of access is rigged
Chapter 3

General gangway safety

To assist with safety, signs can be mounted near the gangway to notify the person boarding of any dangers or problems that may occur when transiting to or alighting the vessel or quay. Please see Figure 10 issued by Transport Canada. This highlights the importance of using the designated means of access.

Safety Signs

Working Safely

Never jump. Always use the gangway or ladder when boarding or leaving the vessel.

Figure 10: Safety sign issued by Transport Canada

The Club has also issued a passenger safety card (Figure 11) that highlights the need for using the gangway (www.shipownersclub.com/lossprevention/passenger-safety).

Figure 11: Illustration taken from the passenger safety card issued by the Club
Signage can also highlight connected safety procedures such as:

- Maximum number of persons on the gangway at one time
- The good practice of not carrying too much while on the gangway. This enables the person to leave a hand free to hold on to the handrail. Cumbersome items should be taken on board using a store crane or derrick.

It is preferable for gangways to be fitted with a non-skid surface. Some are constructed using gratings with this in mind but others are not. This can be rectified by applying non-skid paint or by using a grating system that can be added to an existing gangway.

It is extremely important that the maximum allowable number of people using the gangway does not exceed the permitted limits. This is reiterated in Case Study 3 (see appendix) where the excessive amount of persons on the gangway caused a harmonic movement that resulted in the bottom of the gangway shifting clear of the quay, throwing those boarding at the time into the water. This unfortunately resulted in a fatality.

As per Case study 2 (see Appendix) some claims occur when people get their feet caught under the wheels or roller at the end of the gangway as the vessel surges. This can be prevented by fitting a metal plate on to the end of the gangway. This will push the person’s feet away as the vessel surges without restricting the movement of the rollers/wheels.
Chapter 4

Passenger vessel gangway safety

On passenger vessels, it is imperative for the crew to remember that they are the first point of contact for boarding passengers and they give a first impression on how the vessel is managed. Passengers may not be familiar with the vessel and its potential dangers and therefore it is important to have a designated crew member standing by at the boarding area to assist, advise and instruct.

Prior to the commencement of embarking/disembarking operations, it is important for the crew members concerned to assess the boarding area for any hazards for example, roping off unguarded areas around the gangway if needed. Figure 14 highlights an unprotected area between the gangway and vessel’s railings that should be roped off accordingly.

When the passengers are embarking/disembarking, designated crew members for gangway duty should be assertive and patient, taking into account any special requirements for boarding passengers such as those with physical disabilities. The crew member should remain on duty throughout their watch and not leave their position until relieved by a fellow crew member.

The use of mobile phones should be discouraged when on duty as this may distract crew. This can be supported with the development of a company policy covering the use of electronic equipment on board.

Responsibilities of the crew members should be included in the vessel’s working procedures and referred to as necessary.

Figure 12: The area between the gangway and vessel’s railing left unguarded
Summary

It should be noted that Flag states, governing authorities and ports may offer different advice to that given in this publication. However, the issue of ensuring safe access on to a vessel is a combination of good seamanship and common sense and therefore all available measures must be taken to ensure that cases like those highlighted in this booklet do not occur.

Sources of information


4. Transport Canada. Available at: www.tc.gc.ca/eng/menu.htm
Appendix

Case Study 1: difficult step causes passenger injury

This incident involves an injury to an elderly passenger disembarking from a tourist craft operating in north-eastern Australia. The craft itself was of unusual construction, being a semi-submersible vessel designed to allow passengers to view coral reefs through windows in the lower deck below water level.

The incident occurred after the vessel had returned to the dock. The passenger and her husband had not disembarked with the main body of passengers as they had remained on board to search for a lost piece of camera equipment. Having found the missing item, they ascended to the main deck and moved towards the gangway. To do so they had to negotiate a change in level on the upper deck where there was a 27cm step. In doing so, the lady stumbled and fell, breaking her ankle.

Observations
The raised section of the upper deck was covered to within 6cms of the step by a black plastic mat. The lower level and the 6cm strip along the edge of the higher level was painted with white non-skid paint. The result was that the edge of the step was difficult to see. There were no handrails and no warning notices or other visual warnings. Although crew members had been assigned to assist passengers at the gangway close by, none were assigned to help passengers negotiate the change of levels in this area.

Figure 13: Glass-bottom boat, Australia
This accident should never have been allowed to happen. Our investigations revealed that crew members assigned to the gangway had observed passengers stumbling on the step on numerous occasions. If the company had implemented a safety management system, the crew members would have had a means of reporting their observations and appropriate measures could have been taken to minimise the risk to passengers. Those measures could have included painting the edge of the step in high visibility paint of contrasting colour, placing appropriate warning notices in the vicinity, fitting a handrail and stationing crew members to assist frail passengers in negotiating the change in level. Alternatively, it might have been possible to replace the step with a ramp.

Figure 14: Hazardous split-level decking
Case Study 2: Passenger injury on access ramp

This incident arose on board a harbour ferry operating in smooth water. The harbour ferry was fitted with hydraulic ramps designed for passenger embarkation or disembarkation. The ramps had been lowered to enable passengers to board the vessel and having been positioned, the hydraulics were 'locked'. Shortly after passengers started to board, another vessel backed into an adjacent wharf, creating some wash. The combination of that wash and wave actions in the harbour caused the ferry to surge and roll. The movement resulted in the hydraulic ramp fitted to the ferry rising a few inches up off the connecting hydraulic ramp fitted to the jetty. When the vessel rolled back, a passenger’s foot was trapped between the ramps.

Figure 15: Hazardous hydraulic ramps

Observations
Surprisingly, the claimant’s lawyers did not argue that the ramp was unsafe because it did not hinge. Instead they concentrated on the fact that the crew man on duty had been preoccupied with tying up another vessel when the accident occurred and that the ramp was unattended. The plaintiff’s lawyers alleged that, had the crew man been at his place of duty, he could have warned passengers of the danger and prevented them from boarding until it was safe to do so.
There were considerable doubts about whether the presence of a company employee would have had any material effect on the incident. However, our lawyers advised that the simple fact that the Member did not have an employee on the spot overseeing the boarding process would almost certainly have led the courts to the conclusion that our Member had not discharged their duty of care to the passenger. This illustrates the high standards that are expected from the operators of passenger vessels carrying the general public, and the levels of care that vessels are expected to maintain.

Figure 16: Hydraulic ramps locked in position on a jetty
Case study 3: overloaded gangway

As a gang of 16 cleaning contractors boarded a container ship via the vessel’s gangway in single file, the outboard end of the gangway moved off the quay edge and dropped about 1 metre until its weight was taken up by the lowering wires. Of the last three contractors to step onto the gangway, two lost their balance when the gangway dropped, and fell into the water. The third managed to hold onto the safety net. Despite an immediate recovery attempt, one of the contractors, who fell into the water, drowned.

The roller at the bottom of the gangway had not been placed fully on the quay due to the proximity of a shore gantry crane. This resulted in the bottom roller projecting over the water below. As the contractors climbed the gangway, their combined weight was sufficient to cause harmonic motion that moved the bottom roller off the quay.

The gangway then dropped because the lowering wires had been slackened to allow for movement of the vessel during cargo operations. The ship’s duty officer and gangway watchmen were positioned at the top of the gangway, where a sign indicating that the maximum number of persons allowed on the gangway was 10, was cited.

The lesson

- Although a gangway watch has traditionally been kept at the inboard side of the gangway, this is not always the best position. On occasions such as this, where a large shore gang was embarking, the number of contractors using the gangway would have been easier to control from the quay.
- The maximum capacity or loading of any equipment has been determined for everyone’s safety. However, these restrictions cannot work unless they are monitored and enforced.
- Warning signs will not do their job if they cannot be seen. Warnings relevant to safe use of gangways should therefore be sited at both their inboard and outboard ends.
- For a variety of practical reasons, gangways cannot always be rigged or used as designed. However, they can frequently still be safely used in such situations providing the risks involved are carefully considered, and additional precautions, such as the reduction of its maximum loading, and increased vigilance, are implemented.

This case study was kindly provided by the Marine Accident Investigation Branch (MAIB).