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Published April 2008

Gangways

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Introduction

The Club has recently dealt with a number of claims involving the access to vessels; some of which have unfortunately resulted in fatalities. A selection of the incidents encountered by the Club have been highlighted in the case studies within this booklet (see appendix).

It is important to note that all vessels which are alongside a quay or double banked with another vessel must provide a safe means of access to enable personnel to access the berth or other vessel as applicable. The United Kingdom's Merchant Shipping (Means of Access) Regulations 1988 No 1637 states *"In every ship of 30 metres or more in registered length (or, in the case of an unregistered ship, of 30 metres or more overall length) the employer shall ensure that there is carried on the ship a gangway which is appropriate to the deck layout, size, shape and maximum freeboard of the ship and which complies with the specifications contained in section 2 of the Code"* and *"a portable ladder is used for the purpose of access to the ship only where no safer means of access is reasonably practicable"*. Members should clarify with their local regulations what is individually required e.g. 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 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 e.g. Australian Uniform Shipping Laws Code.

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 60 to 75 degrees (from the United Kingdom's Codes of Safe Working Practices for Seamen) from the horizontal and should extend at least 1m above the final landing place.

General Gangway Assembly and Associated Equipment

The setting up of an access or gangway (see 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:

- 1 Handrails – These should adequately fence off the ladder and be kept at 1m in height. If these are made of rope they must be monitored and kept taut at all times.
- 2 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: A typical set up of a gangway

- 3 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.
- 4 Lifebuoy – This 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.



Figures 2 and 3: Means of access incorrectly rigged

- 5 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 gangway, with access ladder, security point, security notices and the permanent presence of a watch keeper.



Figure 4: A correctly rigged gangway

6 Watchman – Even if it is not applicable under local regulations for some vessels to comply with the ISPS Code, it must be borne in mind that 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 persons transiting the gangway as required and to monitor any dangerous practices. The watchman must keep in mind that he is the first point of contact on the vessel for the boarding person. If a vessel is alongside a berth affected by tidal conditions, constant reassessment of the situation should be carried out. In addition the watchman must have access to the times of high and low waters and be aware of any cargo operations which may affect the vessel's trim. If a watchman is not present at the gangway and an incident occurs, the vessel's crew may carry on with their duties unaware of the situation.

7 Bulwark Ladder – These 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 2 rigidly secured handrails / stanchions. Figure 5 shows a bulwark ladder in use but as highlighted is incorrectly secured to the vessel by using its goose neck vent.



Figure 5: Gangway incorrectly secured to the vessel

8 Fire Plan – This is placed in the vicinity of the gangway and contains information that may be useful in an emergency e.g. cargo stowage plan, stability details, crew list, General Arrangement plan and a plan highlighting the location of vessel's safety equipment etc ...

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



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

When assembling an 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 is away from impending dangers such as lorries / cranes for cargo work and cargo being loaded / discharged.



Figure 7: A gangway rigged taking into account the shore side hazards e.g. mooring bollards and crane track

After the access has been rigged and prior to use, the gangway should be checked to ensure that it is safe to utilise.

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 which are noted on the equipment must be dealt with immediately and in a fully approved manner. Aluminium equipment should be particularly checked for corrosion and ladders should not be painted in case this conceals defects
- All moving parts are in good working order and are well greased
- 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 which 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: A crew member leaping from one vessel to another as no correct means of access is rigged



Figure 10: Incorrect access between two vessels



Figure 11: Correctly rigged gangway between double banked vessels

General Gangway Safety

To assist with safety, signs can be erected to notify the person boarding the gangway of any dangers or problems that may occur when transiting or alighting onto the vessel or quay. Please see Figure 12 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 12: Safety sign issued by Transport Canada

The Club has also issued a passenger safety card (Figure 13) which highlights the need for using the gangway.



Figure 13: 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 whilst on the gangway. This enables the person to leave a hand free to hold onto the handrail.

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. Ways in which this can be rectified is by applying non-skid paint or by using a system which can be added to an existing gangway.

When the gangway is in use 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 which resulted in the bottom of the gangway shifting clear of the quay, throwing the men 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 onto 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.

Passenger Vessel Gangway Safety

On passenger vessels, it is imperative for their 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 the importance of a designated crew member standing by at the boarding area to assist, advise and instruct is essential.

Prior to the commencement of embarking / disembarking operations it is important for the crew members concerned to assess the boarding area for any potential problems e.g. the requirement to rope off unguarded areas around gangway as shown in Figure 14 (this highlights an unprotected area existing 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 of the boarding personnel e.g. passengers with physical disabilities. They should remain on duty throughout their watch and not proceed to leave their position until relieved by a fellow crew member.

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



Figure 14: The area between the gangway and vessel's railing left unguarded

Summary

It should be noted that flag states, governing authorities and ports may differ to the advice given in this publication, but the issue of ensuring safe access onto 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 reoccur.

Sources of Information

- 1 The United Kingdom's Codes of Safe Working Practices for Seamen
- 2 The United Kingdom's MAIB case reports
- 3 The United Kingdom's Merchant Shipping (Means of Access) Regulation 1988, Statutory Instrument 1988 No. 1637
- 4 Transport Canada

Appendix

Case Study 1

This incident involves an injury to an elderly lady passenger disembarking from a tourist craft operating in north eastern Australia. The craft itself was of unusual construction, being a semi-submersible vessel which was 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, severely 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 detect visually. 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 assist passengers who negotiated the step.

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 a means of reporting their observations and appropriate measures could then 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.

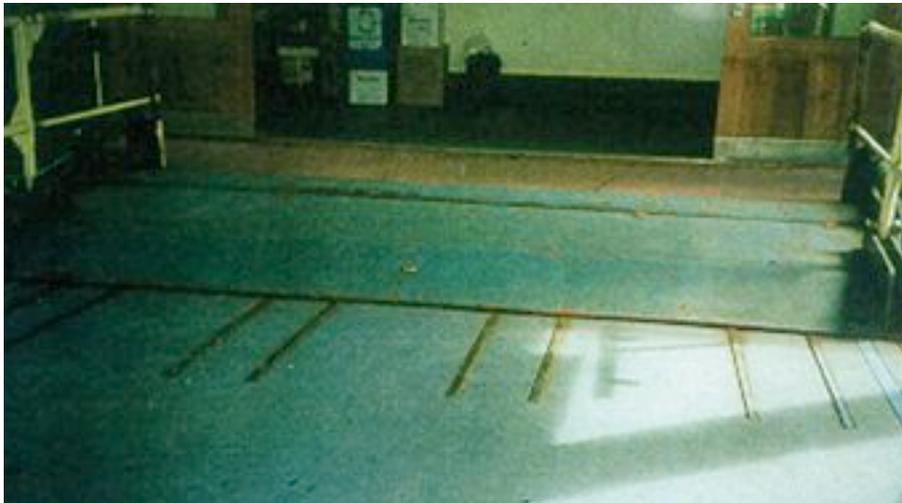


Case Study 2

This incident arose on board a harbour ferry operating in smooth water. The harbour ferry was fitted with hydraulic ramps designed for the embarkation or disembarkation of passengers. The ramps had been lowered to enable passengers to board the vessel and having been positioned 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.

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 wharfhand on duty had been



preoccupied with tying up another vessel when the accident occurred and that the ramp was unattended. Plaintiff's lawyers alleged that had the crewman 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.

While there were considerable doubts about whether the presence of a company employee would have had any material effect on the incident, 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 which they are expected to maintain.



Case Study 3

A total of 16 shore contractors arrived at the ship and started to embark via the ship's gangway. When the parties were on the gangway, a harmonic movement caused the bottom of the gangway to shift clear of the quay. The gangway then dropped until held by its own wires, which had been left slack to allow for movement during cargo operations. This sudden movement caused 3 of the contractors to be thrown from the gangway; one managed to hold on to the safety net, but the other two went into the water. One of the men in the water swam to safety, the other drowned.

Investigation into the accident by the ship and company identified the following contributory factors:

- the gangway was not fully rested on the quay (10cm only) because of the limited area between the quay edge and a gantry crane being used for cargo operations;
- the distance between the ship and the quay was excessive (2.4m) due to the fendering arrangements in place;
- the number of persons using the gangway simultaneously (16) exceeded the maximum allowed (10) causing a harmonic motion;
- the sign indicating the maximum number of persons was placed at the top of the gangway; and the designated watchman was not proactive in controlling the use of the gangway.

Corrective actions identified by the company included:

- ensuring that a sign is placed at the base of gangways detailing the maximum persons allowed; limiting the maximum number of persons using a gangway to three when it is not possible to place the gangway firmly on the quay and it is being supported by its hoisting wires only;
- extra vigilance and proactive management of gangways by watchmen, and where necessary their positioning at the top or bottom of the gangway to effect maximum control over shore gangs embarking or disembarking.

This Case Study was kindly provided by the Maritime Accident Investigation Bureau (MAIB)

Notes

Notes