



Transfer of Personnel by Crane between Vessels

(First edition 2018)



Issued by the

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First Edition 2018

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Glossary

The following are agreed definitions for terms used within this paper:

Best practice OCIMF views this as a method of working or procedure to aspire to as part of continuous improvement.

Body mechanics The use of appropriate body movement, particularly to reduce the risk of injury, when engaging in an activity.

Certified crane A crane that has been designed, built and maintained to the appropriate rules of an IACS member for transferring personnel.

Derrick Typically a pivoted mast that is supported by wires to raise or lower loads. Lifting equipment aboard a vessel comprising of a vertical post and an inclined boom. The boom is raised or lowered with winch driven wires, and the boom is slewed with ropes. Typically the cargo is raised and lowered from a single wire which terminates at a hook.

Guidance Provision of advice or information by OCIMF.

Height of the hook The distance from the bottom of the hook to the top of the nearest obstruction. Within this information paper the height of the hook commonly refers to the distance from the bottom of the hook to the top of the vessel rail.

Hoist Lifting or lowering a load, typically by mechanical methods.

Lee The side of the vessel that is sheltered from the wind.

Luffing Raising or lowering the boom of a crane.

Parallel mid-body The parallel section of the vessel between the fore and aft sections that has no curvature.

Personnel Transfer Basket (PTB) In this paper, PTB is used as a generic term to describe the piece of equipment in which personnel are transferred and includes collapsible basket and rigid capsule types.

Planned Maintenance System (PMS) A paper-based or software-based system that allows ship owners or operators to carry out maintenance at intervals according to requirements by manufacturer's, Classification Society's and owner's experiences. The maintenance intervals are often determined by a calendar time or an hourly basis.

Recommendations OCIMF supports and endorses a particular method of working or procedure.

Safety Management System (SMS) A formal, documented system required by the ISM Code, compliance with which should ensure that all operations and activities on board a ship are carried out in a safe manner.

Slew A crane's angular rotation within a horizontal plane.

Stinger or pennant A single leg sling with a master link on one end and a hook on another. The sling can come in a variety of lengths.

Swell The wave motion caused by a meteorological disturbance which persists after the disturbance has passed. Multiple swells from different directions are often present. These secondary and tertiary swells are not as noticeable and can be partially obscured by sea waves.

Tag line A line that is secured to an object being lifted to aid stabilisation and control during a transfer.

Vessel, active Vessel whose crane will be used for personnel transfer.

Vessel, passive Vessel whose crane will not be used. The passive vessel could be a ship, a launch or a support vessel.

Abbreviations

COLREGs	International Regulations for Preventing Collisions at Sea
PFD	Personal Flotation Device
PLB	Personal Locator Beacon
PMS	Planned Maintenance System
PPE	Personal Protective Equipment
PTB	Personnel Transfer Basket
SMS	Safety Management System
STS	Ship to Ship
SWL	Safe Working Load

Bibliography

Code for Lifting Appliances in a Marine Environment (Lloyd's Register)

Code of Safe Working Practices for Merchant Seafarers (Maritime and Coastguard Agency)

Competence Assurance Guidelines for Mooring, Loading and Lightering Masters (OCIMF)

Guidance on the Transfer of Personnel to and from Offshore Vessels and Structures, IMCA M202 (IMCA)

Guide for Certification of Lifting Appliances (American Bureau of Shipping)

Lifting Appliances. Standard for Certification DNV GL 2.22 (DNV GL)

Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) (Health and Safety Executive (UK))

Marine Transfer of Personnel (Step Change in Safety)

Risks of Marine Transfer of Personnel Offshore (DNV GL)

Ship to Ship Transfer Guide for Petroleum, Chemicals and Liquefied Gases (OCIMF, CDI, ICS and SIGTTO)

Small Vessels in Commercial Use for Sport or Pleasure, Workboats and Pilot Boats – Alternative Construction Standards, Marine Guidance Note MGN 280 (M) (Maritime and Coastguard Agency)

Specification for Offshore Pedestal Mounted Cranes. PI Spec 2C 2C-1 (American Petroleum Institute)

Standard Safety: Personnel Transfer Using Ship's Crane (The Standard Club)

1 Introduction

Personnel have been transferred by crane between offshore vessels and offshore platforms for many years and there are well established guidelines and regulations for this activity, including the requirement to have cranes certified for personnel transfer. A similar level of guidance and regulation has not been available for transfers of personnel between vessels even though incidents have occurred.

A number of options are available for transferring personnel between vessels. One option is to transfer personnel using the vessel's onboard crane. This information paper is intended to help vessel operators and owners, Masters, officers, Marine Superintendents and Mooring Masters evaluate the risks associated with the transfer of personnel by a vessel's onboard crane. The paper contains recommendations on equipment and good operating practices that will enhance the overall safety of personnel transfer operations. It is not a set of rules and if more stringent international, national or local regulations apply they must always take precedence.

The use of an onboard crane for the transfer of personnel has inherent risks. This paper highlights those risks and provides guidance that should be used in the risk assessment process to determine the method of transfer. Cranes can be used to transfer personnel between two vessels of similar size, e.g. Ship to Ship (STS) transfers, but also between vessels of different sizes, e.g. between a large tanker and a smaller vessel. Crane transfers are typically completed using a Personnel Transfer Basket (PTB). In this paper, the term PTB is used to describe the piece of equipment in which personnel are transferred and includes collapsible basket and rigid capsule types.

It is recommended that the transfer of personnel between vessels should be kept to an absolute minimum. If a transfer is being considered, the means of transfer should be evaluated by risk assessment, bearing in mind the residual risks may still be unacceptable and the decision not to transfer should always be considered as an option.

Because personnel transfer by crane between vessels has become commonplace, OCIMF recommends the following:

- All new tankers, irrespective of current intended trade/operations, should be fitted with equipment that is certified for the transfer of personnel.
- Operators of existing tankers should consider upgrading and certifying equipment at the next opportunity.

At the time of publication, OCIMF is aware that some Classification Societies are considering additional requirements for the certification of cranes for personnel transfers. Vessel owners and operators should consult their classification society to confirm the latest requirements.

2 Hazard identification and risk assessment

The risk assessment should consider the prevailing circumstances and conditions and should compare the risks associated with any other available means of transfer.

The three typical methods of transferring personnel between vessels are:

- Using a pilot ladder.
- Using an accommodation ladder (with or without a pilot ladder).
- Using a vessel's crane and a PTB.

There are other ways to transfer personnel between vessels, e.g. by helicopter or heave-compensated gangways, which are addressed in other publications. In this section, transfers using a pilot ladder, transfers using an accommodation ladder and transfers using a crane will be compared.

These methods of transfer involve personnel over-the-side or personnel at heights, or both.

The modes of failure are similar and include:

- Catastrophic equipment failure (PTB, crane, pilot ladder or accommodation ladder).
- Exceeding equipment limitations.
- Inadequate inspection, testing, maintenance or repair.
- Inadequate training, planning, preparation or communication.
- Vessel interference with the transfer equipment.
- Poor condition of personnel being transferred, e.g. fatigue, illness, injury, anxiety, poor physical condition.

All involve the potential of injury or death as a result of:

- Impact.
- Drowning.
- Pinching.
- Crushing.
- Exposure.
- Falling from height.

Appendix A lists risks and consequences specific to transferring personnel using a pilot ladder, an accommodation ladder or a crane. It may be used as guidance when comparing methods of transfer and preparing a risk assessment for personnel transfer operations.

3 Equipment

Derricks should not be used for personnel transfers.

3.1 Crane

OCIMF recommends the following:

- All new tankers, irrespective of current intended trade/operations, should be fitted with equipment that is certified for the transfer of personnel.
- Operators of existing tankers should consider upgrading and certifying equipment at the next opportunity.

Cranes that are intended to be used to transfer personnel should meet the following requirements as a minimum. Flag State and/or Classification Society requirements will also need to be followed.

- Cranes should be located within the parallel mid-body of the vessel. Cranes on the stern, such as stores cranes, should not be used for personnel transfers because of the risks associated with manoeuvring a vessel under any overhang.
- The Safe Working Load (SWL) of the crane should be reduced to 50% of the normal SWL when transferring personnel.
- Cranes should be marked with SWL capacity.
- The safety factor of the wire should be at least 10:1.
- All brakes should be automatically activated when:
 - Controls are in neutral position.
 - The emergency stop has been activated.
 - There is a power failure.
- Brakes should be fitted with a manual override.
- Crane hooks should be fitted with a positive locking (safety) latch.
- Freefall or non-powered lowering should not be used when transferring personnel.
- Safety limit devices for upper and lower limits of hoisting and luffing should be fitted and operational.
- The crane and all its components should be maintained in accordance with the vessel's Safety Management System (SMS) and manufacturer's recommendations.

The following additional requirements should be complied with where possible:

- Winches should have two independent braking systems, each capable of holding the rated SWLs.
- Cranes designed for the lifting of personnel should have emergency means for the recovery of the lifted personnel from any position.

3.2 Personnel Transfer Basket

PTBs should be certified and meet Flag State and Classification Society requirements.

The PTB should be clearly marked with the SWL or capacity.

The following features are recommended for PTBs:

- The SWL should be based on appropriate testing and application of safety factors, which should be documented.
- Associated hooks/slings/shackles shall have equivalent testing/certification and markings.
- The empty weight of the PTB should be clearly stated.
- All PTBs should float and rigid capsule types should be self-righting.
- A crane hook pennant that is long enough to keep the crane block well clear of the personnel being transferred should be used, but not too long to prevent the PTB from being lifted safely over the rail.

It is recommended that two tag lines are secured to each PTB. Tag lines should be appropriate for the specific operation, should never be wrapped around or secured to a strong point, and should:

- Have a diameter between 16mm and 19mm (5/8" – 3/4").
- Be secured at opposing ends of the base ring of the PTB or at the lowest point reasonably accessible. This ensures best control of the PTB, particularly when the crane is slewed.
- Be long enough to reach the water at the lightship draught of the active vessel with sufficient handling allowance.
- Have ends that are seized. Knots or back-splices should not be used as they may get snagged, causing the PTB to tip.

A policy should be in place requiring the inspection, maintenance and replacement of PTBs at specified intervals which should, as a minimum, conform to any published guidance by the manufacturer (see section 4).

The personnel transfer procedure should follow the policy and should include the method of maintenance and storage, together with instruction to inspect the PTB shortly before the transfer begins to confirm it is safe to use (see section 7).

4 Maintenance, inspection and testing of equipment

A rigorous maintenance and inspection programme should be in place for personnel transfer equipment in accordance with the Classification Society requirements, the manufacturer's recommendation and the vessel's SMS.

4.1 Documentation

Documentation showing that equipment has been properly tested, inspected and maintained should be available. This documentation could include:

- Valid certificates for the cranes, PTBs and accessories.
- A record of any outstanding or pending operational or maintenance issues.
- A record of any issues that have been resolved.
- Past maintenance and service records.
- Recommendations from manufacturers of required maintenance intervals and equipment to be checked.

4.2 Inspection

A structured inspection programme should be in place in accordance with, as a minimum, the manufacturer's recommendations.

All inspections should be completed before the transfer, in accordance with the guidance in section 3.

4.3 Testing

The scope and frequency of tests should be in accordance with, as a minimum, the manufacturer's recommendations and, where applicable, with the certifying authority.

All tests should be carried out before the transfer, in accordance with the guidance in section 7.

5 Training

All personnel involved in the transfer operation should be sufficiently trained and able to provide evidence of their competence. Guidelines for assessing the competency levels of personnel are provided in appendix C.

5.1 Key personnel

Key personnel are the crane operator, signaller and responsible person. They should be provided with:

- Theoretical training that includes company specific policies and procedures for crane operations and the transfer of personnel by crane. This training may be computer-based, by video or using other training technologies.
- Practical training. This should familiarise crew with the specific equipment aboard their vessel.

It is recommended that key personnel involved in transfer by crane operations can demonstrate competence in operating a crane. This competence should cover:

- The safe use of cranes for transferring personnel.
- The correct use and limitations of lifting equipment.
- Best practices for operating cranes.
- Pre-operational checks and shutdown procedures.
- Effective planning of lifting operations.
- Operation of the crane in a safe and controlled manner, with regards to the safety of personnel.
- Use of the manual hydraulic pump for slewing and lowering of the crane, if fitted.
- Contingency planning requirements.
- Signalling and terminology used during a personnel transfer operation.

5.2 Assisting crew

Assisting crew should be provided with training to ensure they are familiar with:

- The safe use of cranes for the purpose of transferring personnel.
- Procedures for transferring personnel by crane.
- Best practices for transferring personnel by crane.
- Signalling and terminology used during a personnel transfer operation.
- Contingency procedures in the event of an emergency.

5.3 Personnel being transferred

Personnel being transferred should be familiarised with the personnel transfer by crane procedure. They should understand:

- The method of transfer.
- Safe body mechanics.
- How to use the PTB in accordance with the manufacturer's instructions.
- How to embark and disembark safely.
- What to do in the event of a crane failure.

6 Company policies and procedures

Clear leadership aimed at encouraging safe and efficient operations is fundamental to ensure the successful transfer of personnel by crane. The vessel operator's SMS should demonstrate senior management's commitment to the highest level of safety and provide a structured framework of policies related to this method of transfer.

6.1 Policies

When writing policies, companies should take into account the type of operation its vessels are likely to undertake, as well as their area of operation. This will ensure that policies are appropriate for the company's activities.

Companies should consider including the following in a policy document:

- A statement confirming the vessel Master's overriding authority and their responsibility to make decisions based on the safety of the intended operation. The use of the crane for the transfer of personnel may only be authorised by the Master of the active vessel.
- A requirement for a personnel transfer by crane plan to be in place.

6.2 Personnel transfer by crane plan

A template personnel transfer by crane plan is included in appendix B as an example. Companies developing transfer by crane plans should consider including the following items:

- A risk assessment that should be conducted before each transfer or group of transfers. This exercise should include all personnel involved in a transfer operation, including personnel being transferred. The risk assessment should include confirmation that the transfer of personnel by crane is the safest method of transfer available and explain the reason for the transfer.
- An assessment of weather conditions, taking into account visibility, wind, seas, swell and vessel movement plus agreed limitations to stop the transfer.
- A permit to work for transfer by crane.
- Confirmation that equipment to be used has been inspected and tested by a responsible person.
- A compatibility analysis that confirms the crane has sufficient outreach length to vertically lower or raise the PTB to or from the deck of the passive vessel without interference or obstruction.
- Confirmation that all personnel performing the transfer are competent to do so, are familiar with the specific equipment and have received appropriate training.
- Confirmation that personnel being transferred have been given instruction, are familiar with and agree to the transfer operation.
- Additional precautions required to conduct transfer operations after dark or in poor visibility.
- A requirement for appropriate Personal Protective Equipment (PPE) for the conditions to be worn by the personnel being transferred.
- Confirmation that a contingency plan is in place.

8 Transfer of Personnel by Crane between Vessels

As a minimum, the following information from the vessel's Masters should be included in the personnel transfer by crane plan during transfer preparations:

- Name of the passive and active vessel.
- Date and location of transfer.
- Aspects of the two vessels during the transfer (bow to stern or bow to bow).
- Whether the transfer will be done at anchor or with both vessels underway. If underway, what the best heading is to provide a suitable lee.
- Provisions for conducting a test transfer (also known as a dummy transfer).
- The number of people to be transferred in total.
- The number of transfers.

7 Procedures

Vessels should have specific procedures for the transfer of personnel by crane which should be understood and followed by the crews involved on both vessels.

7.1 Roles and responsibilities

Two vessels are involved in transfer by crane operations. The active vessel is the vessel whose crane is used for the transfer. The passive vessel is the vessel whose crane will not be used. The passive vessel could be a ship, a launch or a support vessel.

The decision to transfer personnel by crane should be a decision made jointly by:

- The active vessel's Master.
- The passive vessel's Master.
- The personnel being transferred.

The responsible person on both vessels and the personnel being transferred have the authority to stop the transfer if conditions are unsafe or if they become unsafe at any point during the transfer or if the planned limitations are exceeded.

7.2 Personnel transfer by crane plan

A company procedure for the transfer of personnel by crane should be available on board both vessels (see section 6 and appendix B). It is the responsibility of the respective vessel Masters to ensure procedures are followed.

The Masters of both vessels and the personnel being transferred should agree on the personnel transfer by crane plan for the specific operation.

The personnel transfer by crane plan is an interactive document that the Masters of the active and passive vessel can complete leading up to the transfer. Some parts may be completed well in advance of the transfer and others may need to be completed just before the transfer begins. A record should be made when and how both Masters and personnel to be transferred are in agreement. The following sections give a suggested order for completing the personnel transfer by crane plan.

7.3 Advance preparations

Advanced planning and preparations are necessary so that both vessels and the equipment to be used can be assessed for capability and suitability to provide a safe and efficient transfer operation.

7.3.1 Crane

The maintenance of the crane and all of its components should be up to date in accordance with the vessel's Planned Maintenance System (PMS) and manufacturer's recommendations.

7.3.1.1 Maximum height of the hook

The maximum height of the hook above the main deck railing should be determined and noted in the vessel's list of particulars.

7.3.1.2 Height of the Personnel Transfer Basket

It is necessary to know the height of the PTB and the lifting sling. The lifting sling in many cases comprises a steel wire load line and an elastic tensioner. Having this information ready in advance will expedite completion of the personnel transfer by crane plan. Further guidance regarding PTB preparations is available in section 3.

To determine the clearance of the PTB over the main deck railing:

$$\text{Available clearance} = \text{Maximum height of the hook} - (\text{height of basket} + \text{height of sling})$$

(see figure 7.1)

If the available clearance is not sufficient, the transfer by crane should not take place. If transferring to another large vessel then the height over the passive vessel's handrail at maximum outreach also needs to be established.

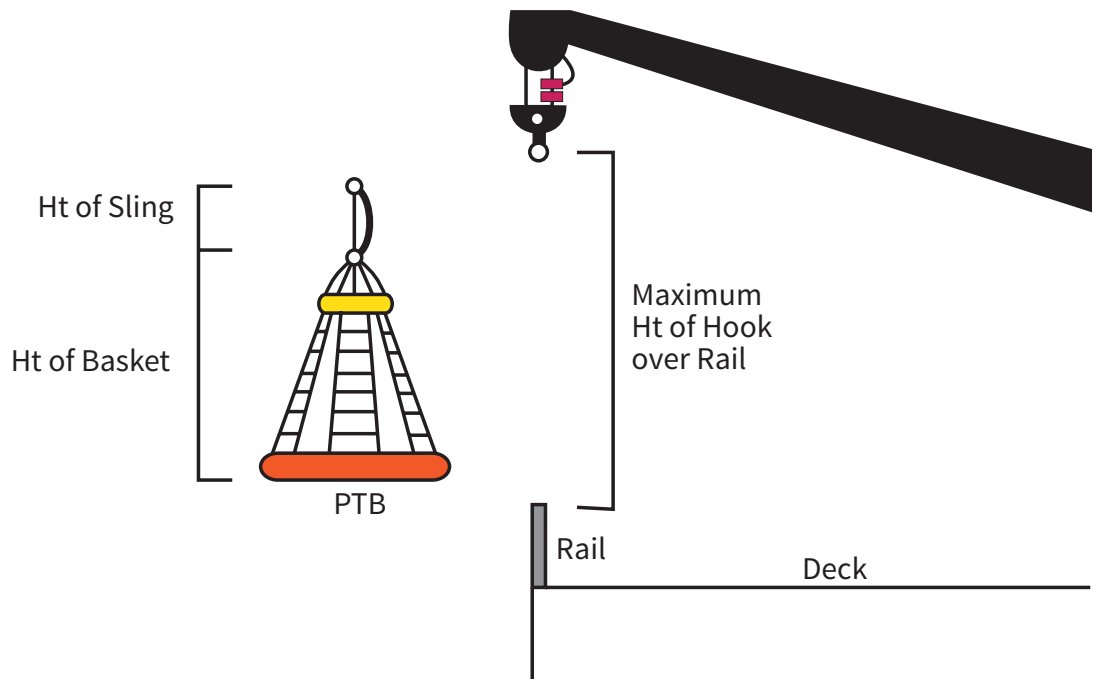


Figure 7.1: Compatibility of crane and PTB with vessel. The height of the PTB with its lifting sling should be less than the distance between the railing and the height of the hook, so that the basket will safely clear the rail.

7.3.2 Landing/lifting area

Permanently marking a suitable landing/lifting area should be considered if:

- The vessel is expected to conduct frequent crane transfer operations.
- The PTB is owned by the vessel.
- The vessel conducts transfers in the same area using PTBs with known lifting sling lengths.

Considerations for selecting suitable lifting and landing areas are described in section 7.4.3.

7.4 Immediate preparations

A series of inspections and tests of equipment should take place before the vessel arrives at the location of the transfer. If multiple personnel transfers are expected over a prolonged period of time, tests and inspections should be carried out periodically. Tests and inspections should cover the following areas.

7.4.1 Crane

The crane and any lifting equipment should be inspected by competent shipboard personnel. The inspection should verify that the maintenance programme for all equipment that will be used in the transfer is up to date. The condition of wires and end fittings should be confirmed as good. An operational test of the crane and all of its components should be conducted at the same time as the inspection.

Tests may include:

- Topping lift to maximum and minimum extent.
- Runner to maximum height.
- Limit switch function.
- Slewing function, by slewing the crane clockwise and anti-clockwise.
- Secondary brake.
- Mechanical brake for cylinders.
- Emergency means of recovery.

Inspections may include:

- Hydraulic systems, including oil levels, hoses and fittings.
- Hoist wire, by lowering the hook to the water and visually checking the wire condition.
- Blocks, sheaves and hook, including the operation of the safety latch.

7.4.2 Personnel Transfer Basket

The PTB should be inspected in accordance with the manufacturer's recommendations. A routine maintenance and inspection programme should extend the life of the equipment. Any retirement recommendations made by manufacturers should be adhered to.

7.4.3 Landing/lifting area

A suitable landing and lifting area should be selected which will facilitate the safe embarkation/disembarkation of personnel taking into account the:

- Size of the PTB and space required for crew members assisting the PTB as it is lowered or raised.
- Presence of obstructions, including above-deck-framing, piping, tank vents, machinery and structures, including personnel walkways, catwalks and ladders.
- Presence of overhead obstructions which might interfere with the crane's range of motion.
- Maximum and minimum crane reach limits.
- Line of sight of the crane operator and signaller.
- Presence and direction of lighting that might disturb the crane operator's vision.
- Protection from waves resulting in seawater on deck.

When selecting a landing/lifting area, it is also important to consider the number of individual crane movements and select an area that keeps movements to a minimum. For example, selecting a landing/lifting area further away from the crane pedestal may eliminate the need to top the boom to safely board personnel. A landing/lifting area along the arc of the maximum swing radius can be advantageous, as long as the available topping height is sufficient.

If a support vessel is used, the crane should be slewed away from that vessel's wheelhouse. It may be necessary to identify a secondary landing/lifting area located on the opposite end of the manifold.

The landing/lifting area should be inspected and cleared of any obstructions.

One or more lifebuoys should be stationed at the railing close to the landing/lifting area on both vessels.

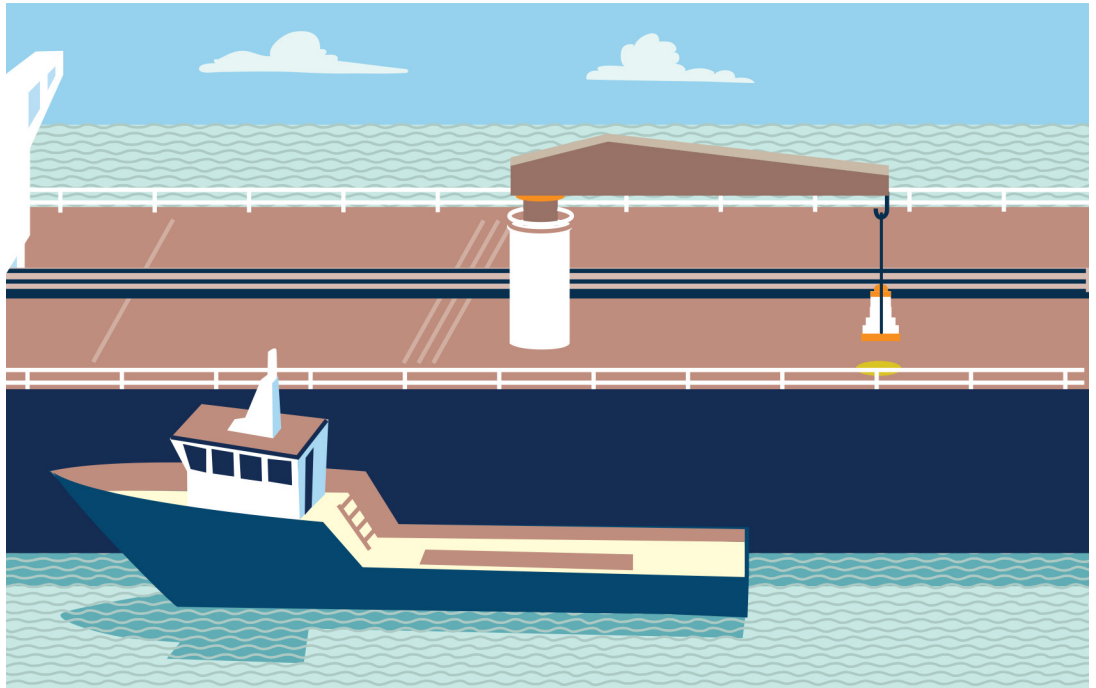


Figure 7.2: Personnel transfer by crane, bow to stern. The landing/lifting area in this situation should be forward of the manifold. This avoids interference with the support vessel's wheelhouse and masts.

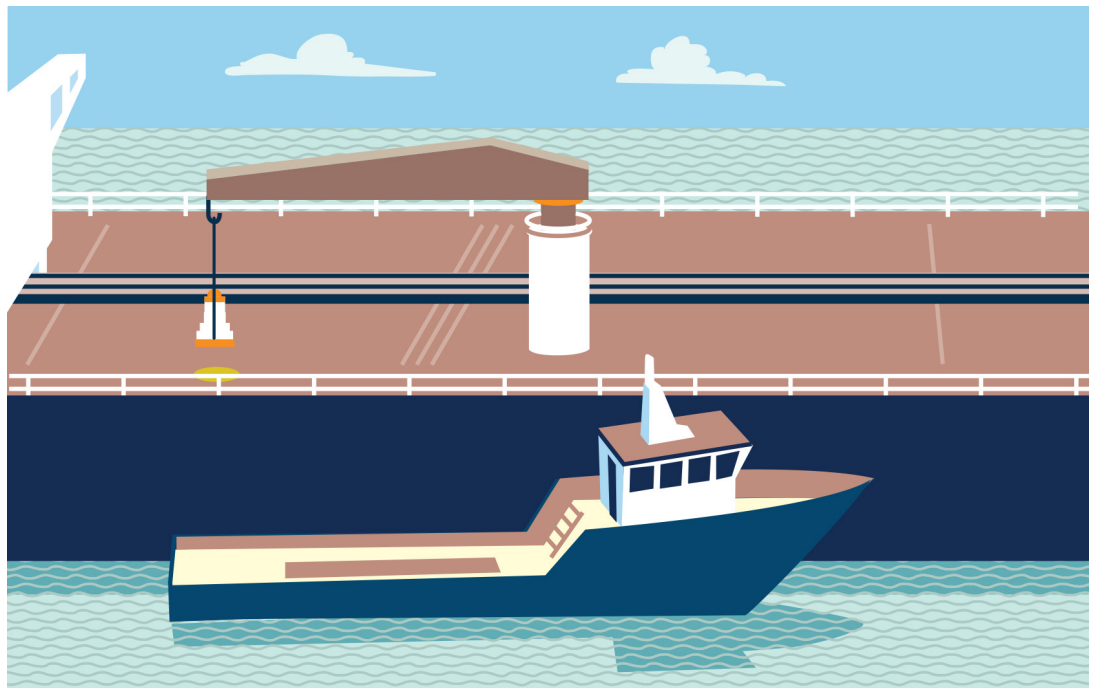


Figure 7.3: Personnel transfer by crane, bow to bow. The landing/lifting area in this situation should be aft of the manifold. This avoids interference with the support vessel's wheelhouse and masts.

7.4.4 Environmental conditions

The environmental conditions should be assessed and both vessel Masters and the personnel being transferred should agree that the current weather conditions are safe for transfers by crane. The limiting conditions should be established by the risk assessments and will depend on the capabilities of the passive vessel, the size of the vessels, the relative freeboards, the conditions of load, the limitations of the crane and the movement and manoeuvrability of the vessels. If conditions are unsafe, personnel transfer operations should be postponed until conditions improve.

7.5 Personnel transfer operations

7.5.1 The transfer by crane team

On the active vessel, the transfer by crane team should include a responsible person, the crane operator, the signaller and at least two crew members to tend tag lines and provide assistance.

On the passive vessel, the team should include a responsible person and at least two crew members to provide assistance.

Anyone not directly involved in the operation should stay well clear of the area.

All members of the team should be competent in transfer by crane operations (see appendix C). The crane operator should be trained and competent as required in the vessel's SMS.

The signaller should wear a distinguishing, high visibility vest for easy identification and should be at a location with direct line of sight to the crane operator. The signaller should use agreed crane signals and should be the only person to signal to the crane operator. The only exception is in the event of an emergency. In an emergency, any member of the team can raise the emergency stop signal.

Communications should be established and maintained between:

- The active and passive vessels' wheelhouses.
- Each vessel's wheelhouse and responsible person.
- The responsible person, the signaller and the crane operator.

7.5.2 Personnel transfer by crane plan

The Masters of both vessels should work through the personnel transfer by crane plan and confirm all inspections and tests have taken place.

They should decide together:

- The aspects of the two vessels during the transfer (bow to bow, or bow to stern).
- The best heading to provide a suitable lee.

7.5.3 Toolbox talk

The Masters should make sure that all members of the personnel transfer by crane team and any personnel to be transferred fully understand the personnel transfer by crane plan. A toolbox talk should be conducted and a permit to work should be issued before the transfer can begin.

7.5.4 Test transfer

A test transfer should be made to ensure that the transfer of personnel can be safely conducted under the prevailing conditions. The test transfer should be carried out according to the personnel transfer by crane plan. The plan should be adjusted to reflect the results of the test transfer. The actual personnel transfer should only take place once all parties understand the risks and are comfortable with the risk barriers in place. It is common practice to transfer luggage during the test transfer as it is not recommended to transfer these items at the same time as personnel.

Luggage should be loaded into the PTB in such a way that items cannot fall out. Larger pieces should be loaded along the inside perimeter of the PTB to form a wall to prevent smaller items from slipping through the PTB openings. Lashing luggage to the PTB is not recommended as it may put personnel at risk. For example, if the vessel surges in the swell, the PTB may rise off the deck, which may injure personnel removing knots or lashings. If there is a concern that items may fall from the PTB, an alternative means of delivering luggage and personal effects should be considered.

7.5.5 The personnel transfer

The number of people and/or total weight riding in a PTB should not exceed the manufacturer's recommendations.

Personnel to be transferred should:

- Confirm they are willing to take part in a transfer by crane.
- Be physically able to make the transfer.
- Be competent and familiar with safe riding practices.
- Secure any loose items, or any items that may fall out of pockets during the transfer.
- Wear appropriate PPE, which includes:
 - A properly fitted Personal Flotation Device (PFD) with reflective tape, a whistle and a light. The PFD should be suitable for transfer by crane, taking into consideration the height above sea level. Entering water from heights while wearing a PFD may be dangerous and personnel should be briefed on the safest means of entering water with the chosen PFD. In some areas an immersion suit may be more appropriate, but the reduced mobility should be taken into account.
 - A safety helmet.
 - Safety shoes.
 - Clothing to suit the prevailing conditions.

In periods of reduced visibility or at night a personal strobe light should be attached to the personnel being transferred. If the strobe is manually activated it should be switched on before the transfer. This strobe should not be attached in a way that interferes with the individual's vision. The use of a Personal Locator Beacon (PLB) attached to the PFD should be considered.

During the lift, personnel being transferred should:

- Be evenly distributed around the PTB diameter when two or more people are being transferred.
- Grasp the PTB with both hands at all times or follow the PTB manufacturer's instructions.
- Resist the urge to give crane signals.
- Keep knees bent during lifting and landing to absorb any sudden impacts.
- Be prepared to move clear of the PTB when it is close to the deck, for example on a support vessel that may suddenly rise on a wave.

Any personnel who have not previously taken part in a personnel transfer by crane should ride with an escort, who can guide them through the entire process.

Personnel should never stand under a load, because even with careful planning objects may fall out of a hoisted PTB.

The crane operator should avoid raising the PTB to excessive heights. The PTB should be lifted only high enough to clear obstacles.

Care should be taken to prevent tag lines from falling into the water or dropping onto personnel below.

15 Transfer of Personnel by Crane between Vessels

Crew members working on the deck of a vessel that is considerably lower than the other should look out for falling tag lines. Personnel lowering tag lines down to the other vessel should warn the receiving crew and make sure they have visual contact with the crew below before lowering the lines.

Tag lines should never be wrapped around a railing or strong point.

Adequate lighting should be available for the landing and lifting areas. Lights should not interfere with the signaller's or the crane operator's vision.

If the vessel is underway, transfers by crane can be considered work that restricts the vessel's ability to manoeuvre as described in the International Regulations for Preventing Collisions at Sea (COLREGs). The Master should consider displaying lights and day shapes appropriate for a vessel restricted in its ability to manoeuvre.

8 Contingency and emergency planning

Contingency planning for all types of personnel transfer (PTB, accommodation ladder and pilot ladder) should be driven by the risk assessment produced for the personnel transfer operation. The contingency plan should ensure the following before the operation begins:

- Personnel being transferred should be dressed appropriately with PFDs, together with survival suits where environmental conditions require it.
- Personnel being transferred should be equipped with strobe lights in conditions with reduced visibility or at night to aid recovery in case a person falls into the water.
- Rescue boats for personnel transfer recovery should:
 - Be fully prepared for immediate deployment.
 - Be manned by personnel appropriately trained and qualified in their operation.
 - Have good manoeuvrability and station keeping capabilities.
 - Be of a design appropriate to personnel recovery operations.
 - Be compliant with Flag State small craft regulations or other internationally recognised appropriate standard, e.g. MGN280(m).
- An emergency response team, including suitably trained medical support members, should be designated.
- Lifebuoys, boat hooks and/or heaving lines should be available for immediate use.
- Ways to evacuate any seriously injured personnel to a shore-based medical facility should be considered.

Appendix A Personnel transfer hazards table

This appendix includes two tables that list risks and hazards (but not the levels of risks applicable for each) that may be present when transferring personnel using a crane and PTB, a pilot ladder or an accommodation ladder. It may be used as guidance when preparing a risk assessment for personnel transfer operations. This is not an exhaustive list, but shows the nature and scope of the issues that could be taken into consideration.

Component	Risk	Hazard	Applicability		
			Crane and PTB	Pilot Ladder	Accom. Ladder
Lifting equipment	Failure of critical components due to inadequate inspection, maintenance or exceeding equipment limitations (such as dynamic loading, or continued use of a defective/damaged PTB/ladder)	Injury or fatality due to impact, fall from height or drowning	X	X	X
	Power failure results in inability to recover PTB	Injury due to prolonged exposure to the weather if personnel stuck in the PTB	X		
	Brake failure results in uncontrolled drop	Injury or fatality due to impact, falling from height or drowning	X		X
	Failure of hoisting winch or luffing rams during critical stage of the operation	Injury or fatality due to impact, falling from height or drowning	X		
Environmental conditions	Excessive vessel motion	Injury or fatality due to crushing, pinching, impact, fall from height or drowning	X	X	X
	Excessive winds lead to instability	Injury or fatality due to impact, falling from height or drowning	X	X	
	Poor visibility or inadequate lighting (inability to see the other vessel or the personnel being transferred)	Injury or fatality due to impact, falling from height or drowning	X	X	X
	Severe cold weather conditions such as ice or snow (restriction of personnel movements due to additional protective clothing)	Injury or fatality due to impact, crushing, pinching, falling from height, hypothermia or drowning	X	X	X

Component	Risk	Hazard	Applicability		
			Crane and PTB	Pilot Ladder	Accom. Ladder
Human error	Loss of lee during the transfer results in excessive vessel motion	Injury or fatality due to impact, crushing, pinching, falling from height or drowning	X	X	X
	Failure to properly secure vehicle (PTB slips from hook, fouled tag lines or ladder improperly secured)	Injury or fatality due to impact, crushing, pinching, falling from height or drowning	X	X	X
	Loss of control due to inadequate training, poor planning or failure to follow procedures	Injury or fatality due to impact, crushing, pinching, falling from height or drowning	X	X	X
	Miscommunication results in loss of control	Injury or fatality due to impact, crushing, pinching, fall from height or drowning	X	X	X
	Loss of control due to fatigue	Injury or fatality due to impact, crushing, pinching, falling from height or drowning	X	X	X
	Loss of control due to distractions during simultaneous operations	Injury or fatality due to impact, crushing, pinching, falling from height or drowning	X	X	X
	Loss of control due to complacency	Injury or fatality due to impact, crushing, pinching, falling from height or drowning	X	X	X

Component	Risk	Hazard	Applicability		
			Crane and PTB	Pilot Ladder	Accom. Ladder
Human error (personnel being transferred)	Failure to maintain points of contact with the vehicle, i.e. letting go of the vehicle due to vertigo, contact with structure or icy conditions	Injury or fatality due to impact, crushing, pinching, falling from height or drowning	X	X	X
	Loss of control due to lack of experience, inadequate training, or failure to follow safe techniques or the transfer plan	Injury or fatality due to impact, crushing, pinching, falling from height or drowning	X	X	X
	Loss of control due to fatigue, distraction, complacency or miscommunication	Injury or fatality due to impact, crushing, pinching, falling from height or drowning	X	X	X
Inadequate planning	Exceeding equipment limitations, i.e. crane reach/height, ladder too long or short, inadequate landing/lifting area	Injury or fatality due to impact, crushing, pinching, falling from height or drowning	X	X	X
	Simultaneous operations in the vicinity of the landing/lifting area	Injury or fatality due to impact, crushing, pinching or falling from height	X	X	X
	Obstructions in the landing/lifting area	Injury or fatality due to impact, crushing, pinching, falling from height or drowning	X	X	X
	Liquids discharged overboard, e.g. ballast water, create turbulence in the water, causing loss of control of smaller vessels engaged in the personnel transfer	Injury or fatality due to impact, crushing, pinching, falling from height or drowning	X	X	X

A1.1 Comparative risks

Crane and PTB	Pilot Ladder	Accommodation Ladder
Poor maintenance of crane leads to catastrophic failure of the boom, runner or brakes	Poor deck maintenance leads to catastrophic failure of pad-eyes securing the ladder	Poor maintenance of the accommodation ladder leads to catastrophic failure of the walkway, lifting gear, winch brakes or slew controls
Poor maintenance of the PTB leads to catastrophic failure (base ring, structural ropes, top ring, lifting ring)	Poor maintenance of the pilot ladder leads to catastrophic failure (rungs, ropes, shackles)	Poor maintenance of the accommodation ladder or pilot ladder leads to catastrophic failure (steps, railing, slewing platform, lifting wires, sheaves, winch brakes, controls)
Poor embarkation/disembarkation due to inadequate training, fatigue, miscommunication, departure from procedures, complacency or distractions	Poor embarkation/disembarkation due to inadequate training, fatigue, miscommunication, departure from procedures, complacency or distractions	Poor embarkation/disembarkation due to inadequate training, fatigue, miscommunication, departure from procedures, complacency or distractions
Poor riding techniques due to inadequate training, fatigue, miscommunication, departure from procedures, complacency or distractions	Poor climbing techniques due to inadequate training, fatigue, miscommunication, departure from procedures, complacency or distractions	Poor climbing techniques due to inadequate training, fatigue, miscommunication, departure from procedures, complacency or distractions
Unsuitable personnel being transferred (sick, injured, unfit, nervous, fatigued or suffers vertigo)	Unsuitable personnel being transferred (sick, injured, unfit, nervous, fatigued or suffers vertigo)	Unsuitable personnel being transferred (sick, injured, unfit, nervous, fatigued or suffers vertigo)
Injury due to vessel heaving up and impacting the PTB base ring	Injury due to vessel heaving up, impacting and injuring the person climbing the pilot ladder	Injury due to vessel heaving up, impacting and injuring the person climbing the accommodation ladder
PTB or tag lines become fouled on the active or passive vessel	Pilot ladder becomes fouled on the small vessel	Accommodation ladder becomes fouled on the small vessel
The PTB is landed on a rail and tips over	Person loses balance	Person loses balance
Improperly secured PTB slips from the hook and falls	Vessel surges pulling pilot ladder down If pilot ladder fouls on vessel, the ladder may be pulled unintentionally	Vessel surges pulling accommodation ladder down If accommodation ladder fouls on vessel, the accommodation ladder may be pulled unintentionally
Person is unable to hang on to the PTB and falls	Person is unable to hang on to the pilot ladder and falls	Person is unable to hang on to the accommodation ladder and falls
Departure from safe practices/procedures: vessel excursion outside of maximum crane outreach	Departure from safe practices/procedures: pilot ladder deployed without gangway where freeboard exceeds nine metres	Departure from safe practices/procedures: accommodation ladder deployed in seas/swell without pilot ladder

Crane and PTB	Pilot Ladder	Accommodation Ladder
The crane may not be designed and certified for personnel transfers		
Personnel riding in a PTB can maintain four points of contact throughout the transfer	Climbing a ladder requires alternating between three and four points of contact	
Only one transfer is required when PTB is used between two ships.	A pilot ladder or accommodation ladder transfer is required to board the launch and then a second pilot ladder or accommodation ladder transfer is required to go from launch to ship	A pilot ladder or accommodation ladder transfer is required to board the launch and then a second pilot ladder or accommodation ladder transfer is required to go from launch to ship
It is difficult to inspect the entire crane, all of its components and wires	It is easier to inspect a pilot ladder, and deck fittings	It is easier to inspect an accommodation ladder and deck fittings
There are a greater number of moving parts with a PTB transfer compared with a pilot ladder or accommodation ladder transfer		
	Personnel make an additional transfer from pilot ladder to accommodation ladder in cases where the freeboard is greater than nine metres	Personnel make an additional transfer from pilot ladder to accommodation ladder in cases where the freeboard is greater than nine metres
Multiple personnel can be transferred together using PTB, this reduces the amount of time the support vessel is required to remain alongside, but it also increases the severity of an accident	Transfer of one person at a time limits the consequences of an incident	Transfer of one person at a time limits the consequences of an incident

Appendix B Personnel transfer by crane plan

The following template can be used to develop a plan for the transfer of personnel between two vessels at sea. The content of this plan includes items described in section 6 as well as the items contained in the *Ship to Ship Transfer Guide for Petroleum, Chemicals and Liquefied Gases*, appendix F *Example checklist for personnel transfers by crane*.

The first section is a comparative risk assessment which addresses the environmental conditions and the characteristics of the two vessels. This section is used so all parties can agree on the best method for transferring personnel.

The second section is a permit to work focusing on the inspection and functionality of the crane and the PTB.

The third section is a compatibility analysis of the vessels and the PTB.

The final section is the actual transfer plan template.

Some sections are to be completed by the responsible person on the active vessel and some sections by the responsible person on the passive vessel. Before the transfer, the two responsible persons should contact each other via VHF radio (or other mutually acceptable means of communication) to discuss their completed sections and complete the plan. The Masters on both vessels and the personnel being transferred should jointly agree on the personnel transfer by crane plan.

If it is impractical for all parties to sign the personnel transfer by crane plan in advance of the operation, the contents of the plan should be communicated and each responsible person should sign their own copy of the plan to confirm they have reviewed, understand, implemented and agree on relevant sections.

Personnel transfer by crane plan

- Blue fields** to be completed by the active vessel (the vessel operating the crane)
- Grey fields** to be completed by the passive vessel
- Yellow fields** to be completed by the vessel providing the Personnel Transfer Basket (PTB)
- White fields** to be agreed between both vessels before the transfer – this can be done over VHF

Name of active vessel	Name of passive vessel
Date of transfer	Location of transfer

Risk assessment

Environmental Conditions

Winds	Direction <input type="text"/> ° True	Speed <input type="text"/> kn	Seas	Direction <input type="text"/> ° True	Height <input type="text"/> M
Swell	Direction <input type="text"/> ° True	Height <input type="text"/> M	2nd Swell	Direction <input type="text"/> ° True	Height <input type="text"/> M
	Swell period <input type="text"/> sec.			Swell period <input type="text"/> sec.	

Visibility

Day ☐ Night ☐ Restricted visibility ☐ Other

Taking into account environmental conditions and the vessel characteristics is it safest to transfer

Via crane ☐ Via pilot ladder ☐ Via accommodation ladder ☐ Await safer conditions ☐

Confirm there is sufficient sea room to complete the personnel transfer ☐

The passive vessel is better designed and equipped for transfer by: Crane ☐ Pilot ladder ☐ Accommodation ladder ☐



Taking into account environmental conditions and the vessel characteristics is it safest to transfer

At anchor ☐ Underway but stopped ☐ Underway making way ☐

Taking into account environmental conditions and available sea room the active ship will provide a lee

Optimal heading to best provide a lee: ° True to ° True

Taking into account environmental conditions and the vessel characteristics is it safest to transfer

Bow to bow  ☐ Bow to stern  ☐

Permit to Work for transfer by crane

Crane **Derricks should not be used for personnel transfers**

For the personnel transfer the crane will be rated T This is equal to or less than 50% of the crane's SWL.

Date of last crane inspection by class

Wire replaced

End-for-end

Date of last shipboard inspection

The following items were checked

Hoist wire ☐

Blocks ☐

Sheaves ☐

Drums ☐

Wire terminations ☐

Hydraulics ☐

Hook ☐

Swivel ☐

All in good order?

Hook fitted with a safety latch? ☐

Additional slings removed? ☐

Ship staff last tested the operation of the crane on

The following were tested and functioning properly:

Topping lift to maximum and minimum extent ☐

Runner lifted to maximum height ☐

Limit switch functioning properly ☐

Crane slewed 90° clockwise & anti-clockwise ☐

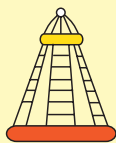
Brakes functioning properly ☐

Fall arrestor functioning properly (if fitted) ☐

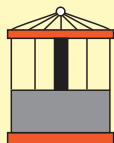
ADVISORY Dirty or excessively lubricated wires cannot be inspected effectively. Spot cleaning at random intervals should be performed for a proper inspection to take place.

Personnel Transfer Basket (PTB)

Type of PTB



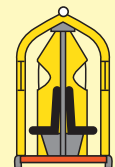
Collapsible ☐



Rigid ☐



Canopy ☐



Capsule ☐

PTB supplied by

Active vessel ☐

Passive vessel ☐

Date of manufacture

Certificate date

PTB last certified on (if applicable)

Last shipboard inspection

The following were inspected:

Base ring ☐

Lift sling ☐

Tensioner ☐

Netting ☐

Top ring ☐

Lift ring ☐

Tag lines ☐

All in good order? ☐

Comments

Compatibility analysis

Number of personnel being transferred

Capacity of PTB

SWL

or

of people

Number of transfers

Confirm the active vessel's freeboard is greater than the passive vessel's freeboard

☐

Height of basket

+

 M

Height of the lifting sling

 M

Overall PTB height

 M

Max. height of hook

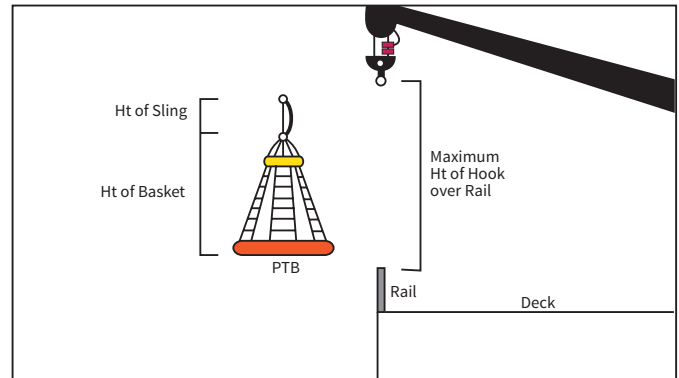
 M

Overall PTB height

−

 M

Available clearance

 M


Will the PTB safely clear the rail?

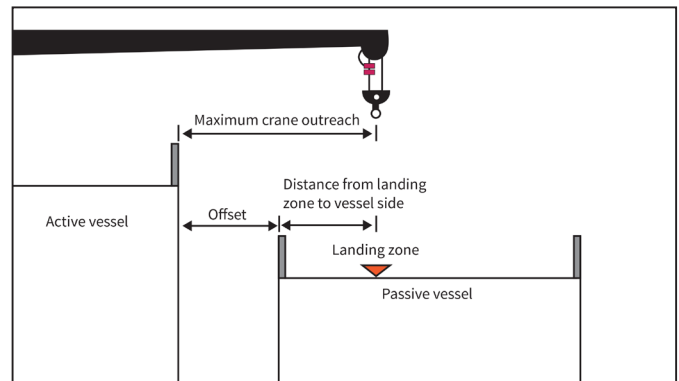
Yes ☐

No ☐

Is there sufficient crane outreach so the PTB can be landed or lifted safely without having to pull the PTB out of vertical alignment with the crane hook?

Yes ☐

No ☐



Are there any obstructions on the deck of the active vessel?

Yes ☐

No ☐

Please describe

Are there any obstructions on the deck of the passive vessel?

Yes ☐

No ☐

Please describe

Transfer by crane plan

Radio communications have been established and the following plan has been agreed

The active vessel will be underway <input type="checkbox"/> at anchor <input type="checkbox"/>	on heading <input type="checkbox"/> ° True	and speed <input type="checkbox"/> kn
The port <input type="checkbox"/> stbd <input type="checkbox"/> mid ship's crane shall be used to transfer	# of people <input type="checkbox"/>	# of transfers <input type="checkbox"/>
The passive vessel will approach bow-bow <input type="checkbox"/> bow-stern <input type="checkbox"/> alongside the active vessel		
A test load will be conducted to test the plan. Luggage will <input type="checkbox"/> will not <input type="checkbox"/> be transferred during this test		
On the active vessel the responsible person will be (title) <input type="text"/>	The signaller will be (title) <input type="text"/>	
On the passive vessel the responsible person will be (title) <input type="text"/>	The signaller will be (title) <input type="text"/>	
Number of personnel attending on the active vessel # <input type="text"/>	Number of personnel attending on the passive vessel # <input type="text"/>	
Personnel being transferred will wear the following Personal Protective Equipment (PPE): Personal Flotation Device <input type="checkbox"/> Safety shoes <input type="checkbox"/> Hard hats <input type="checkbox"/> Strobe light <input type="checkbox"/> Other (specify) <input type="text"/>		
In an emergency the following life saving equipment is available: Life rings <input type="checkbox"/> Smoke signalling buoy <input type="checkbox"/> Rapid rescue craft <input type="checkbox"/> Additional lighting <input type="checkbox"/> Other (specify) <input type="text"/>		
Permits to work have been completed Active vessel <input type="checkbox"/> Passive vessel <input type="checkbox"/>		
All personnel with responsibilities described above have been found competent. They have been briefed, understand and agree to this transfer plan. Active vessel <input type="checkbox"/> Personnel being transferred <input type="checkbox"/> Passive vessel <input type="checkbox"/>		
It is understood and agreed that both vessels and the personnel being transferred have authority to stop the transfer if conditions are unsafe or if they have become unsafe. <input type="checkbox"/>		
The contents of this transfer plan have been exchanged between responsible persons on each vessel and with personnel being transferred. All parties have agreed to this plan. _____ signature _____ rank _____ time (zone description) _____ date		

Appendix C Competence assurance guidelines for crew involved in personnel transfers by crane

These guidelines provide recommendations that will help companies develop and implement a competency assessment system for:

- Personnel being transferred.
- Signallers.
- Crane operators.
- Responsible persons.

The guidelines cover:

- Competencies.
- Knowledge requirements.
- Methods for assessing competence.

This section is modelled on OCIMF's *Competence Assurance Guidelines for Mooring, Loading and Lightering Masters*.

Element 1.0	Personnel Being Transferred
Competency Requirements	
<p>A competent person should:</p> <ul style="list-style-type: none"> • Understand safe embarking, riding and disembarking techniques. • Be able to participate in the development of a personnel transfer plan. • Understand personnel transfer procedures. • Understand the risks involved. 	
Recommended Knowledge Requirements	
<p>Knowledge requirements for a competent person may include:</p> <ul style="list-style-type: none"> • Safe embarking techniques: <ul style="list-style-type: none"> - How to embark safely. - When to embark and when not to embark. - Where to embark. - Body mechanics when embarking. • Safe riding techniques: <ul style="list-style-type: none"> - Method of securing arms. - Foot placement. - Body mechanics during initial ascent and landing. - Use of safety belts as appropriate (for capsules). • Safe disembarking techniques: <ul style="list-style-type: none"> - How to disembark the PTB. - When and when not to disembark. - Where to disembark. - Body mechanics when disembarking. • Their role in the personnel transfer plan. • Planned route, taking into account: <ul style="list-style-type: none"> - Obstructions on the passive vessel. - Obstructions on the active vessel. - Outreach of the crane. • Who the responsible person is on the active and passive vessels. • Minimum PPE appropriate for the transfer. 	
Key Criteria for Evaluating Competence	
<p>A competent person will demonstrate:</p> <ul style="list-style-type: none"> • Understanding of how to embark, ride and disembark a PTB. • Understanding of the personnel transfer plan. 	
Methods for Assessing Competence	
<ul style="list-style-type: none"> • Written or oral test. • Observation and/or questioning. • Observation during simulation. 	

Element 2.0**Crane Signaller****Competency Requirements**

- A competent person should:
- Understand agreed crane signals.
- Understand characteristics and limitations of the crane and the PTB.
- Understand and be able to execute the personnel transfer plan.
- Understand personnel transfer procedures.

Recommended Knowledge Requirements

- Knowledge requirements for a competent person may include:
- Agreed crane signals.
- Characteristics of the crane:
 - Boom length and safe working load.
 - Maximum outreach (from the vessel's side).
 - Hauling, lowering and topping rate.
 - Effects of roll.
- Safe crane operating procedures:
 - Crane movements kept to the lowest number reasonably possible.
 - Load swing while slewing.
 - Limit switches and safety devices.
- Their role in the personnel transfer plan.
- The planned route taking into account:
 - Obstructions on the passive vessel.
 - Obstructions on the active vessel.
 - Outreach of the crane.
- Who the responsible person is on the active and passive vessels.

Key Criteria for Evaluating Competence

- A competent person will demonstrate:
- Knowledge of crane signals.
- Understanding of the characteristics and limitations of the crane and PTB.
- Understanding of the personnel transfer plan.
- Proficiency in safely directing the crane.

Methods for Assessing Competence

- Written or oral test.
- Observation and evaluation.

Element 3.0**Crane Operator****Competency Requirements**

- A competent person should:
- Understand agreed crane signals.
- Understand characteristics and limitations of the crane.
- Understand and be able to execute the personnel transfer plan.
- Understand personnel transfer procedures and how these differ from other crane operations.

Recommended Knowledge Requirements

- Knowledge requirements for a competent person may include:
- Agreed crane signals.
- Characteristics of the crane:
 - Boom length and safe working load.
 - Maximum outreach (from the vessel's side).
 - Hauling, lowering and topping rate.
 - Effects of roll.
- Safe crane operating procedures for transferring personnel:
 - Smooth movements of the crane.
 - Minimise load swing while slewing.
 - Limit switches and safety devices.
- Their role in the personnel transfer plan.
- The planned route taking into account:
 - Obstructions on the passive vessel.
 - Obstructions on the active vessel.
 - Outreach of the crane.
- Who the responsible person is on the active and passive vessels.

Key Criteria for Evaluating Competence

- A competent person will demonstrate:
- Knowledge of crane signals.
- Understanding of the characteristics and limitations of the crane.
- Understanding of the personnel transfer plan.
- Proficiency in safe and smooth crane operation for transferring personnel.

Methods for Assessing Competence

- Written or oral test.
- Observation and/or questioning.

Element 4.0**Responsible Person****Competency Requirements**

A competent person should:

Understand safe embarking, riding and disembarking techniques.

- Be able to participate in the development of a personnel transfer plan.
- Understand and be able to execute the personnel transfer plan.
- Be able to conduct a basic inspection of the PTB.
- Understand agreed crane signals.
- Understand characteristics and limitations of the crane.
- Understand personnel transfer procedures and how these differ from other crane operations.
- Understand the personnel transfer risk assessment and be familiar with contingency and emergency plans.

Recommended Knowledge Requirements

Knowledge requirements for a competent person may include:

- Safe embarking techniques:
 - How to embark safely.
 - When to embark and when not to embark.
 - Where to embark.
 - Body mechanics during embarking.
- Safe riding techniques:
 - Method of securing arms.
 - Foot placement.
 - Body mechanics during initial ascent and landing.
- Safe disembarking techniques:
 - How to disembark the PTB.
 - When to disembark and when not to disembark.
 - Where to disembark.
 - Body mechanics when disembarking.
- Stowing and securing luggage.
- PPE appropriate for the transfer.
- How to conduct a basic inspection of the PTB.
 - Occupancy and/or SWL.
 - Positive locking (safety) latch (on the crane).
 - Number and size of tag lines.
 - Condition of the PTB and the attached lifting sling (load line and tensioner).
- Agreed crane signals.
- Characteristics of the crane:
 - How to calculate the safe clearance of the PTB over the side ship rail.
 - Boom length and SWL.
 - Maximum outreach (from the vessel's side).
 - Hauling, lowering and topping rate.
 - Effects of roll.

Recommended Knowledge Requirements continued

- Safe crane operating procedures:
 - Smooth movements of the crane.
 - Minimise load swing while slewing.
 - Limit switches and safety devices.
- Their role in the personnel transfer plan.
- The planned route taking into account:
 - Obstructions on the passive vessel.
 - Obstructions on the active vessel.
 - Outreach of the crane.
- Who the responsible person is on the active and passive vessels.
- Contingency and emergency plans.

Key Criteria for Evaluating Competence

A competent person will demonstrate:

- Understanding of how to embark, rise and disembark a PTB .
- A basic pre-boarding inspection.
- Proficiency in the safe and successful execution of a personnel transfer plan.
- Knowledge of crane signals.
- Understanding of the characteristics and limitations of the crane.
- Understanding of contingency and emergency plans.

Methods for Assessing Competence

- Written or oral test.
- Observation and/or questioning.



A voice for safety

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