

Guidance on the Transfer of Personnel to and from Offshore Vessels



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Note: Photographs are for illustrative purposes only and may not represent current good practice.

I Glossary of Terms

A number of specialised terms are used in this document. It is assumed that readers are familiar with most of them. However, a number of them, although in use for many years, could be misunderstood. These terms are defined below to ensure that readers understand what is meant by them in this document.

FRB	Fast rescue boat
ISPS Code	International Ship & Port Security Code
MODU	Mobile offshore drilling unit
OIM	Offshore installation manager
SIMOPS	Simultaneous operations
SOLAS	Safety of Life at Sea
Crew boat	A vessel of less than 500 gross tonnage, generally used for personnel transfer
Small boat	A craft that is likely to be stowed on a larger vessel, platform or other offshore structure, usually less than 10m in length. Such craft are likely to be launched and recovered using a davit arrangement
Surfer	This is typically a crew boat fitted with a purpose built arrangement intended to dock with a suitable fitting on the receiving vessel or installation to aid the safe transfer of personnel

2 Executive Summary

One of the activities specific to offshore operations is the transfer of personnel between vessels and other offshore structures. Such transfers can include movements of personnel at crew change and shift change from vessel to vessel and also between vessels, offshore structures, barges and crew boats as well as to and from the quayside. This document is intended to provide guidance for the offshore industry on the safe transfer of personnel at sea. It covers risk assessment, training and competence, responsibility, equipment and communications, and focuses on the main methods of personnel transfer between vessels, offshore structures and the quayside. The primary methods of personnel transfer covered are:

- ◆ Small boat or launch;
- ◆ Larger crew boat or support vessel;
- ◆ Personnel transfer basket;
- ◆ Gangways, bridge or accommodation ladders, including motion-compensated hydraulic gangways;
- ◆ Mating 'surfer' structures allowing personnel to transfer safely.

For each case, the document covers the main safety issues and gives some information about the specialist equipment that may be involved, such as 'surfers', as well as special duties or responsibilities of personnel involved, particularly with regard to communications.

Personnel transfer by helicopter is a separate subject adequately addressed elsewhere and is not covered in this document.

3 General Issues

Personnel being transferred should be briefed prior to the transfer and should be familiar with the method of transfer and the equipment being used. Personnel involved in a transfer should be physically able to make the transfer, should understand the intended activity and should have agreed to the transfer method being proposed. Where available personal protective equipment (PPE), including a safety helmet, should be worn. Personnel joining or leaving a vessel or offshore structure at crew change may not be wearing appropriate PPE – such as safety boots, for example. A risk assessment, including these factors and consideration of the length of time personnel have been travelling and their tiredness, should be conducted prior to the transfer.

Where appropriate, an approved inflatable life jacket, fitted with light and whistle, should also be worn. In selecting the type of life jacket to be used the possibility of a fall from height should be taken into account.

In medical evacuation cases, specific risk assessments and methods would be required.

All luggage should be transferred as a separate operation. Personnel should not carry luggage during the transfer.

3.1 Risk Assessment

All personnel transfers at sea, irrespective of the method, should be treated as a stand-alone operation, and a formal risk assessment should be carried out beforehand. Should conditions change at the time of the transfer, the impact of these changes should be considered and appropriate management of change procedures implemented as necessary. If there are any concerns regarding the safety of the operation, the transfer should be prevented.

If the transfer is not considered to be part of normal operations, or if specifically required as part of an operating procedure, then it should be covered by a valid permit to work (PTW) or crew transfer permit, and recorded as such. Account should also be taken of any international or local regulations, codes of safe working practice, or company or client requirements governing transfer of personnel at sea.

Risk assessment of personnel transfer at sea should include (but not be limited to) the following issues:

- ◆ Necessity of the transfer and alternatives available;
- ◆ Frequency of transfers and numbers of personnel involved;
- ◆ Environmental conditions:
 - wind speed and direction
 - sea state including swell height and direction
 - current or tide speed and direction
 - visibility
 - rain, snow and ice;
- ◆ Vessel movement (pitch, roll and heave);
- ◆ Action of the water upsurging between vessels or structures in close proximity;
- ◆ Lighting in all areas of the transfer operation;
- ◆ Slip/trip hazards;
- ◆ Station-keeping ability of the vessel(s) involved;
- ◆ Seaworthiness of all vessels, crew boats or small boats employed;
- ◆ Condition of all equipment used in personnel transfer, including certification where appropriate;
- ◆ Operability and constraints of lifting equipment;
- ◆ Condition and availability of life saving equipment;
- ◆ Communications;
- ◆ Any simultaneous operations (SIMOPS) or other relevant activities in the area;

- ◆ Training and competence of all personnel involved in assisting with and making the transfer;
- ◆ During personnel transfer, the potential for man overboard is always present. Consideration should be given to the recovery of personnel from the water;
- ◆ Consideration should be given to actions required in the event of injury to personnel during transfer.

Those involved in any personnel transfer activity should be briefed with regards to:

- ◆ Safety aspects of the transfer;
- ◆ Company or client requirements and procedures and any regulatory requirements;
- ◆ Potential emergency situations;
- ◆ Operational requirements for the personnel being transferred.

3.2 Training and Competence

Whatever method of transfer is employed all personnel involved in the transfer, whether making the transfer or assisting with it, should be competent to do so and should have received appropriate training. This is particularly the case for crane operators and personnel involved in lifting, for the coxswains and crews of small boats and for the crew of larger vessels or 'crew boats' involved in personnel transfer.

3.3 Responsibility

The duties of personnel supervising or otherwise involved in personnel transfer should be clearly defined. The people likely to be involved are:

- ◆ Master(s) of the vessel(s) involved in the transfer;
- ◆ Offshore installation manager (OIM) of the offshore structure/mobile offshore drilling unit (MODU)/barge;
- ◆ Coxswains and crew of boats including FRB crew;
- ◆ Crane operators;
- ◆ Banksmen and/or deck crew at each end of the personnel transfer operation;
- ◆ Personnel being transferred.

The responsibility for the safety of personnel during the transfer lies with the respective Masters or OIMs of the vessels or offshore structures involved. There should be full co-operation between the respective Masters or OIMs. They should consider and evaluate, with appropriate input from other relevant personnel, whether or not the transfer can safely take place. The responsibility and final authority to determine if the transfer should or should not take place remains with the Master of the vessel from or to which the personnel are being transferred.

3.4 Communications

Radio and visual communications between the personnel involved should be established prior to transfer operations. Communications should be maintained during operations and should be tested and verified at regular intervals throughout the transfer operation. All participants involved in the transfer should be briefed prior to the transfer to ensure that the procedures to be followed are understood. IMCA guidance on operational communications is being revised into a single publication, but can currently be found in IMCA M 175 and IMCA M 193.

4 Types of Personnel Transfer

The main methods of transferring personnel between vessels, offshore structures and the quayside considered in this document are:

- ◆ Small boat or launch;
- ◆ Larger crew boat or support vessel;
- ◆ Personnel transfer basket;
- ◆ Gangways, bridge or accommodation ladders, including motion-compensated hydraulic gangways;
- ◆ Mating 'surfer' structures allowing personnel to transfer safely.

There may be some overlap between some of the techniques covered; for example, persons transferring by small boat or crew boat may additionally need to make use of ladders or gangways.

4.1 Vessel to Vessel Transfer Using a Small Boat

For the purposes of this document a small boat is any craft of a type likely to be stowed on a larger vessel, platform, barge or offshore structure, and most often launched and recovered from some form of davit. Typically such craft are less than 10m in length. Vessel to vessel transfer using a small boat should only be undertaken when alternative means for the transfer are impracticable or less safe. Such transfers can be particularly challenging, particularly for inexperienced personnel. A person should be available in the small boat and on the vessel or offshore structure to assist those being transferred.

Weather and sea state should be assessed by the Masters of the vessels involved so as to determine if it is suitable for the use of a small boat and to allow close approach and safe transfer even when making a lee. An FRB and crew should be standing by and available for launching from one of the vessels.

Vessel to vessel transfer should be planned to avoid transfer during the hours of darkness. If transfer of specific personnel becomes unavoidable at night, this should be dealt with in a specific and dedicated risk assessment and the operation only undertaken when it is considered safe to do so.

4.1.1 Equipment

The small boat used should be outfitted for the number of persons to be transferred and should comply with applicable regulations for the area of operation. Persons being transferred should use an approved inflatable life jacket and, for colder climates, an appropriate survival suit should be worn.

The coxswain of the small boat employed for the transfer should ensure that:

- ◆ The small boat is sound and fully operational;
- ◆ Emergency equipment (water, radio, flares, torch, man overboard equipment, etc.) is available onboard;
- ◆ Lifebelt and heaving line are available for use from either station at the transfer point.

4.2 Crew Boat Transfer

Personnel transfer can also be accomplished using larger vessels, sometimes referred to as 'crew boats'. For the purposes of this document a 'crew boat' may be defined as a vessel of less than 500 gross tonnage, generally used for personnel transfer. Such vessels are not required to have either an international safety management or an international ship security certificate, although it would be good practice to follow the principles outlined within those two codes.

Readers may refer to the IMCA document IMCA S 004/IMCA M 189 – *Marine inspection checklist for small workboats*. This document defines a number of categories for such craft, ranging from smaller craft generally safe for use within three miles of land and not more than three miles' radius from either the point of departure to sea or the seaward boundary of protected waters, through to larger

vessels that can range up to 150 miles from a safe harbour or shelter of any kind affording safe entry and protection from the weather.

The seaworthiness, size and type of the crew boat to be used in the personnel transfer should be carefully considered, as should the length of the voyage and the means of transfer from the crew boat to the destination vessel. Crew boats used should be appropriate to the area of operations, for example the prevailing sea and weather conditions. It may be appropriate to obtain documentary confirmation of the competence of the personnel handling the crew boat, as well as the condition of the vessel being used, before going ahead with a crew boat transfer.

4.2.1 Embarkation/Disembarkation

The means of embarking and disembarking personnel to and from the crew boat at either end of the transit is very important. This should be conducted in as safe a manner as possible, as it can prove to be the most hazardous part of the operation.

In practice, personnel transfer by crew boat may also include transfer by small boat, basket, gangway, surfer or accommodation ladder. Participants involved in the transfer should be briefed on the procedures and on the life saving and emergency equipment available.

When the crew boat comes alongside a vessel or offshore structure, relative movement should be taken into consideration, as should the relative heights of the decks between which personnel transfer is made. Assistance should be available at either end of the personnel transfer and there should be an experienced person present to supervise the moment of transfer and maintain communications with the bridge. Personnel should only step across with the ability to freely use both hands and some form of hand rail or support should be provided. Where necessary there should be access in or through bulwarks using movable gates, such that personnel need not climb over rails or bulwarks during transfer.

The relative position of fenders on vessels and units should be taken into account, together with any likely action of the water surging up between the crew boat and the vessel or structure when in close proximity.

4.2.1.1 Surfers

Specially designed attachments to crew boats, larger vessels and offshore structures, often referred to as 'surfers', are sometimes used. These may take the form of a purpose built device on the bow of a crew boat ('male' section), designed to fit into a receptacle frame or structure on a larger vessel or offshore structure ('female' section). The crew boat or smaller vessel approaches and docks with the 'surfer' receptacle allowing personnel to step safely across.



Figure 1 – Personnel transfer from a crew boat to a larger vessel using a 'surfer' (photo: Saipem)

4.2.1.2 Swing Ropes

The use of swing ropes is largely prohibited and is not recommended in this guidance. However their use is permitted in a few areas. If regulations and relevant company and client procedures allow their use for personnel transfer, great care

should be taken and at least the safety aspects highlighted in the guidance in this document should apply, particularly with reference to the safety of equipment, the familiarity of personnel with the equipment and method of transfer and their fitness and ability to use it and the need for appropriate planning, control and supervision of transfer.

4.2.2 Equipment

The crew boat used for the transfer should be in seaworthy condition. The following areas in particular should be considered:

- ◆ Hull including watertight doors and openings;
- ◆ Bridge;
- ◆ Main deck;
- ◆ Fenders;
- ◆ Painter;
- ◆ Heaving lines;
- ◆ Life buoys;
- ◆ Boat hooks;
- ◆ Tow line;
- ◆ Machinery spaces including sound insulation;
- ◆ Specific personnel transfer equipment and facilities;
- ◆ Electrical equipment;
- ◆ Appropriate firefighting equipment.

There should be appropriate materials and equipment on board, including radar, up-to-date charts for the area in which the crew boat is operating, radio, navigation, safety and emergency equipment, to ensure the safety of the personnel in transit.

4.2.3 Passenger Accommodation and Safety Equipment

Crew boats should have sufficient life jackets and life rafts for all personnel onboard. A safety briefing should be provided before the start of the voyage. It should include alarm signals, muster stations, location of life jackets and life rafts, firefighting equipment, escape routes in the event of emergencies, location of emergency equipment such as flares etc., location of toilet and other comfort facilities and the approximate length of the voyage. Escape routes should also be clearly signed.

Crew boats should have sheltered seating areas with comfortable seating appropriate to the duration of transit, sufficient potable water available for the number of personnel in transit and appropriate toilet facilities. Crew boats engaged in longer voyages should have further relevant facilities available which could include a galley to prepare meals for personnel in transit, an appropriate supply of fresh water, a mess room and appropriate sleeping areas. Where this is necessary the crew boat should have sufficient personnel and stores to prepare meals for personnel in transit. Appropriate care should be taken to minimise seasickness and fatigue amongst personnel in transit.

Luggage should be stored in a sheltered area and separate arrangements should be made for the safe transfer of luggage to and from the crew boat at either end of the journey.

4.3 Personnel Transfer Basket

IMCA document IMCA SEL 019/IMCA M187 – *Guidelines for lifting operations* – contains useful guidance for lifting operations.

Subject to local regulations, company and client procedures, basket transfers by personnel basket to or from vessels or offshore structures can be undertaken using a number of different devices. The three main devices used today are:

- ◆ Billy Pugh – the oldest personnel transfer basket design, in which personnel are transferred whilst holding onto the outside of the lifted structure.



Figure 2 – Personnel transfer using a 'Billy Pugh' (photo: Saipem)

- ◆ Esvagt – a rigid framed construction with buoyancy ring and fenders, in which personnel stand inside the basket.



Figure 3 – Personnel transfer using an 'Esvagt' device (photo: Saipem)

- ◆ Personnel transfer capsule – a rigid framed device with buoyancy panels, in which personnel sit strapped in bucket seats.



Figure 4 – Personnel transfer using a personnel transfer capsule (photo: Saipem)

In some situations, basket transfer may be the only feasible means of transferring personnel at sea, for example, when there is a significant height difference between respective decks. All basket transfers should be considered a high-risk operation at all times and they should only be undertaken when

transfer is essential and cannot be undertaken by other means. It would not be appropriate to use personnel baskets for routine crew changes in open waters when other more appropriate methods of transfer are available.

Personnel baskets should be visually checked before use to ensure all parts are in safe working order. Formal inspection and replacement of this lifting equipment should follow local legislation and company and client requirements. Tag lines should be used.

The following additional factors should be taken into consideration:

- ◆ The necessity of the transfer and alternatives available;
- ◆ The suitability of the vessel(s) to maintain station;
- ◆ The likely route of the basket during transfer and any differences in freeboard between the vessels or offshore structures involved;
- ◆ Any wind speed, vessel movement or other operating limitations of the crane to be used.

It should be ensured that:

- ◆ The crane operator is competent for man-riding operations;
- ◆ The crane is fully operational and validated for man-riding operations;
- ◆ The transfer basket is visually inspected before starting the transfer;
- ◆ Communications between banksmen, crane and vessel are in place and working;
- ◆ Environmental and vessel motion conditions are suitable;
- ◆ Relevant crane operator and banksmen have good visibility of the pick-up, transfer and landing area.

4.3.1 Equipment

The crane used in the transfer operation should be adequate and suitable for lifting persons and should be certified for man-riding, that is for use in carrying personnel, under any relevant legislation, company and client requirements. Freefall or non-powered lowering should not be used during personnel basket transfer operations. The transfer basket should be correctly rigged onto the crane prior to transfer and the crane hook pennant should be of sufficient length to keep the hook well clear of the personnel being transferred. The certification, security and integrity of the entire lifting system, including wire ropes, rigging, shackles, safety slings and hooks, should be checked as appropriate for man-riding.

Tag lines are often attached to the underside of the basket to enable control of the swing when raising and lowering the basket. Consideration should be given to the length/position of the tag lines to guard against the possibility of the tag lines becoming snagged.

The personnel basket should be checked before use and should be in good condition at the time of use. The basket should be marked with its safe working load. It should be appropriately certified with a current certificate of test and/or inspection. The basket must not be operated beyond its safe working load.

Procedures should be available setting out methods of maintenance and storage together with instructions related to inspection before use.

4.4 Gangway, Bridge and Accommodation Ladder Transfer

Gangways and accommodation ladders are the primary means by which personnel transfer between a vessel and the quayside, and occasionally from one vessel or offshore structure to another. There is a wide variation in types of gangway. Gangways and accommodation ladders should be constructed of appropriate material, be of appropriate width and should be fitted with non-slip walkways and handrails. Equipment should be regularly inspected and maintained, including a visual check to ensure it is clean and free of slip/trip/fall hazards. Appropriate certification of the gangway or accommodation ladder may be required. Where there is the possibility of personnel falling from the gangway or

accommodation ladder, an appropriate safety net should be used. Where required, a life buoy fitted with a line and water activated light should be available.

Gangways and accommodation ladders should be adequately lit along their full length. Their approaches and egress routes should be kept free of obstructions and trip hazards and should provide direct and safe access to the deck at each end. Gangways and ladders should not be used at angles of inclination which render their use unsafe. All gangways and personnel using them should be monitored and controlled. The fittings, such as stanchions and handrails, should be monitored and adjusted as required.

4.4.1 Bridges

Some larger vessels (for example heavy-lift crane vessels, pipelay barges, accommodation vessels or MODUs) have long (around 50m) bridges to effect transfer of personnel. These can be fixed at one end and slide on rollers at the other end to allow for relative movement. Such equipment can also be hydraulically controlled and can be lifted into place and supported by a crane or else have its own dedicated support mechanism. They may be fitted with alarm systems activated by a certain amount of movement. The bridges and the personnel crossing them should be closely monitored and controlled.

4.4.2 Hydraulic Gangways

These are purpose-designed gangways mounted on a vessel which connect to another vessel/offshore structure to allow personnel to pass safely across. They are fitted with hydraulic heave compensation which adjusts the gangway length and/or horizontal/vertical angles to compensate for the vessel relative movement. Such equipment may also be fitted with a 'traffic light' system to prevent movement of personnel onto the gangway if any automatic adjustments are taking place.



Figure 5 – Personnel transfer using a purpose-designed hydraulic gangway (photo: Mermaid Offshore)

Other factors to take into account when considering the use of gangways, bridges and accommodation ladders include:

- ◆ The angle at which the gangway or accommodation ladder is installed;
- ◆ The height difference between access points on vessels and any movement resulting from tidal changes;
- ◆ The requirements of the ISPS Code particularly with reference to gangway watches when in port.

4.4.3 Pilot Transfer

SOLAS Chapter V Regulation 23 – Pilot transfer arrangements – covers pilot transfer operations and should be referred to for further guidance. Brief guidance on the use of pilot ladders is

also published by the International Maritime Pilots Association (IMPA). This is available for download from the IMPA website (www.impahq.org/downloads/rigging%20of%20ladders.pdf).

Pilot ladders, for use by pilots boarding or leaving a vessel, are purpose-made ladders fitted with wide spread rungs at a particular spacing and rigged together with manropes. Pilots are competent with their use and it should not be assumed that other personnel would be proficient in climbing or descending a pilot ladder, or fit to do so.

5 Further Information

Further information can be found in the following documents:

- ◆ IMCA SEL 019 – *Guidelines for lifting operations*;
- ◆ IMCA SEL 020/M 193 – *Guidance on operational communications: Part 2 – Lifting operations*;
- ◆ IMCA SEL 36/04 – *Personnel transfer by basket*;
- ◆ IMCA SEL 08/01 – *Guidelines on transfer of personnel by basket on the UK continental shelf*;
- ◆ IMCA S 004/M 189 – *Marine inspection checklist for small workboats*;
- ◆ SOLAS Chapter V Regulation 23 – *Pilot transfer arrangements*;
- ◆ IMPA Shipping industry guidance on the rigging of ladders for pilot trans

