

# International Jack Up Barge Operators Association Ltd



## IJUBOA Best Practice Guidance Note for Jack-up Barges 001 – Access and Egress

This Sheet Must be Completed at Each Revision Once Approved for Issue

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<b>Review Period:</b>		24 Months (or on legislation or internal process change)			
<b>Rev:</b>	<b>Date:</b>	<b>Description:</b>	<b>Prep:</b>	<b>Chk:</b>	<b>Appr:</b>
C1	20220203	Issued for Use	MWS	RK	NOF

## Revision History

Rev	Date	Description
A0	20210922	Issued for Review and Comment
A1	20211004	Incorporating Comments from RK (Fugro) ahead of meeting 20211007
A2	20211011	Incorporating comments and suggestions from meeting on 20211007
A3	20211027	The addition of PPE matrix (sect 7.1) and hierarchy of methods (sect 12.1)
A4	20211105	Incorporating comments and suggestions from meeting on 20211104
A5	20211116	Title change and feedback from NOF / SW 20211116
A6	20211125	Following meeting of forum on hierarchy chart close out 20211125
C0	20211213	Implementing IMCA comments – Issued for use
C1	20220203	Incorporating comments from the Workboat Association

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## Preface - Legal Notice

*IJUBOA seeks to improve industry practice and the performance of its members through collaborative association. It is, however, imperative that members understand that there are legal limitations applicable to collaborative activities within industrial sectors. Members must read that notice and will be taken to have agreed to comply with it by their continuing membership. In addition, members must note that IJUBOA in making suggestions and even recommendations as to the conduct of activities, best industry practice or how operations should be managed, administered or undertaken it is doing so as an unremunerated service to members (and only to members) and cannot accordingly accept any responsibility in respect thereof. Members, and any other user of this website or IJUBOA materials, acknowledge this and agree that IJUBOA shall have no liability for any losses, costs or damage suffered or incurred in consequence thereof.*

## 1.0 Executive Summary

The offshore, nearshore, estuary and inland waterway environments produce many different scenarios for access and egress onto jack-up barges.

The aim of this guidance note is to explore best practices within these different environments with a view to ascertaining the safest possible access and egress method to/from a jack-up barge in addition to:

- Methods of crew transfer from land to jack-up barge access system;
- Competencies required for the use of these systems;
- Analysing the various environments where these systems can be employed;
- Maintenance of access/egress systems;
- Emergency extraction and insertion of personnel from/to the jack-up barge.

It is hoped that this guidance note shall provide clarity for all IJUBOA member companies and raise the bar with regards to the safety of all individuals when transferring from land to asset. Further, this document will place the various methods of access and egress into an approved hierarchy based on the safest being the most desirable, through to the undesirable which should only be used in emergency situations.

## 2.0 Objective

To provide guidance to all IJUBOA member companies on the type of access and egress to jack-up barge systems they can utilise in their operational environments to ensure the utmost safety of their employees, their Clients personnel and anyone else that has a requirement to board their jack-up barges.

## 3.0 Operational Planning for Jack Up Barge Locations and Environment

All IJUBOA member Companies operate in very different environments for numerous different industries and Clients. The assets which each Company operate are within a broad spectrum of size, leg lengths and capabilities. With this level of diversity across the jack-up barge owners cohort comes a requirement to understand all the different types of working environments and conditions that are encountered to be able to effectively plan for and implement the safest and most effective methods of access and egress possible.

It should be noted that all jack up barge operator companies should select the most suitable asset and access and egress system for the specific environment in which they operate.

Before selection of an access/egress system and method of crew transfer it is highly advised that all methods should be thoroughly risk assessed specifically to site, jack-up barge, crew transfer vessel, environmental conditions expected (and those that are not) and crew capabilities before going firm on methods to be utilised for the duration of a project or scope of works. The risk assessment method used shall be in accordance with member company policy and procedures.

## 3.1 Inland Waterways

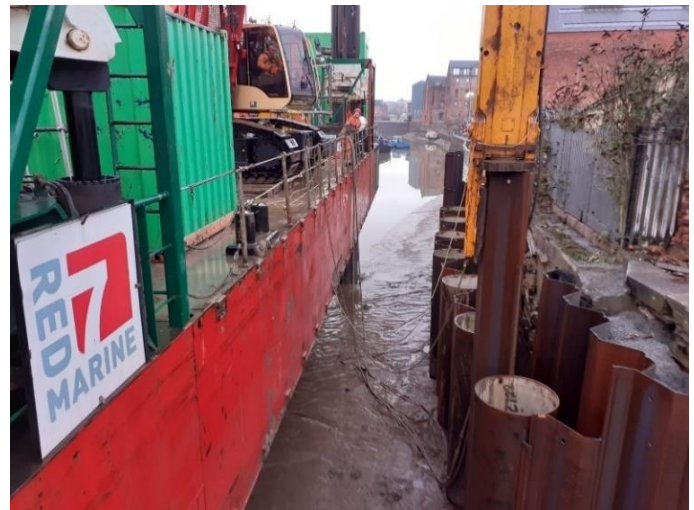
Typically, any river, stream, lake or reservoir that is non-tidal with a fixed water level. These locations will have varying ground conditions but generally lend themselves to smaller modular jack-up barges.



*Inland Waterways.*

## 3.2 Tidal Rivers and Estuaries

A tidal estuary is defined as a semi-enclosed coastal body of water which has a free connection with the open sea and often meets with rivers and streams. A tidal river is influenced by tides and encompasses upriver locations towards the sea. Both of these environments are susceptible to influences from high tides, swell, fast currents, waves and tidal bores. Ground conditions of these environments vary greatly to each other based on their geographical location. There may be tidal window restrictions for transfer to jack-up barge due to shallow water, or even no water on low tides.



*Tidal Rivers.*



## 3.3 Nearshore and Coastal

Nearshore is defined as where waves steepen and break, then reform in their passage to the beach where they break up for the last time and surge up to the foreshore. Depths and ground conditions will vary deeply. These areas will be exposed to waves, swell, currents and tidal ranges of varying depths and times.

Jack-Up barges are usually deployed to coastal areas of operations for close to shore works such as cable laying, flood defences, jetties, piers and outfall scopes of work (and associated site investigation). These environments will experience high tides, swell, crashing waves and strong under currents. There is also the possibility that depending on how close to shore the asset is tidal windows will need to be observed for transfer to the asset due to shallow or no water at low tide. Ground conditions in these locations will mainly be sand, rock or shingle but underlying conditions below this need to be taken into account and confirmed by survey.

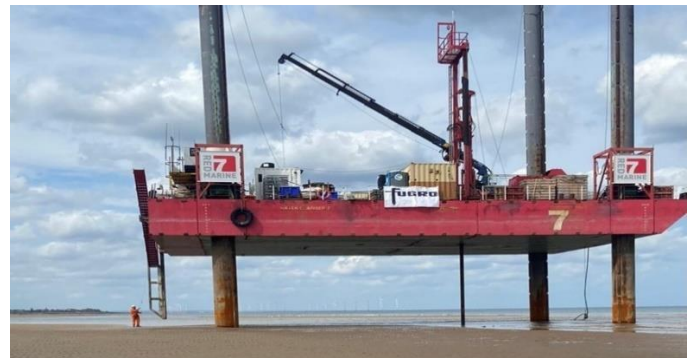


*A Nearshore/Coastal Location.*

## 3.4 Standing on Dry Land (Tidal)

As para's 3.2 and 3.3 allude to, in tidal areas of operations there is a possibility where the jack-up barge will be standing in water too shallow for a CTV\* (crew transfer vessel) to access the asset, or even on dry land. Ground information should be confirmed before making decisions on transferring by foot or vehicle.

*\*For the avoidance of doubt; a CTV (Crew Transfer Vessel) refers to a certified commercial vessel intended for crew transfer operations, a RHIB (although used for crew transfer) refers to a Rigid Hull Inflatable Boat*

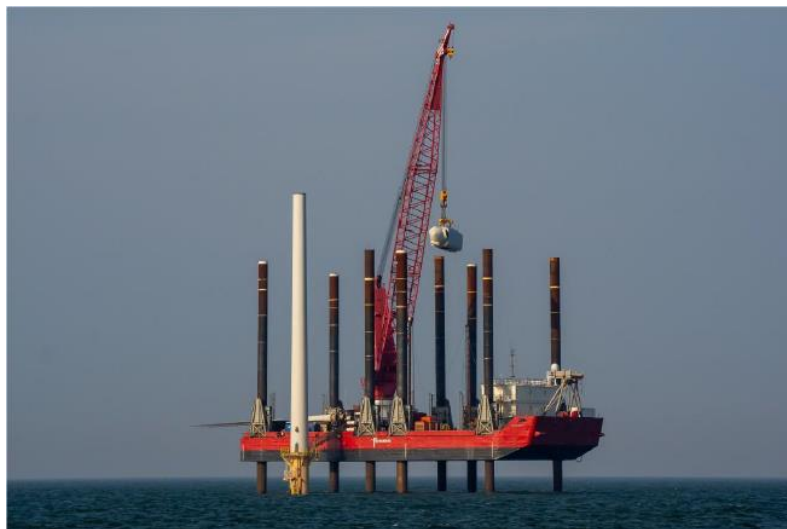


*Standing on beach at low tide.*

## 3.5 Offshore

Offshore is defined as further out to sea than nearshore and coastal locations. Depths and ground conditions will vary deeply. These areas will be exposed to swell, currents and tidal ranges of varying depths and times. This location lends themselves predominantly to the oil and gas and renewables industries.

Due to the potentially harsh environmental conditions offshore, transfer to jack-up barges is not always possible due to weather parameters. An option on the bigger assets is live aboard accommodation, thus mitigating the risk associated with lengthy, regular crew transfers.



*Typical Offshore Locations.*

## 4.0 Methods of Accessing CTV

Before a jack-up barge can be accessed, a transfer from shore/land is required (unless asset is close enough to incorporate a gangway type system). The CTV can take many shapes, sizes and forms but in all cases it is essential that a safe method of access onto the CTV for all transferees is possible. All methods are to be thoroughly risk assessed on a case by case basis before selection is confirmed.

### 4.1 From Quayside

There are various methods that can be employed to access and egress from the CTV, however it is imperative to select an area of quayside suitable to utilise the following methods:

#### 4.1.1 Jetties or Walkways

Jetties or walkways from a quayside are the preferable method as this incorporates a walk to work system of access.

#### 4.1.2 Bespoke Incline Systems

An inclined access system that is bolted to the quayside could be utilised. This method could either be pinned or hinged and suspended by a davit and hoist, or permanently fixed to the quayside if it was long enough to encompass the tidal ranges in the location.

#### 4.1.3 Pontoon Systems

Spudded or anchored pontoon systems could be incorporated in conjunction with a gangway or suspended pinned and hinged incline ladder. The latter would rise and fall with the tide so transferees' step from the pontoon system directly onto the CTV.

#### 4.1.4 Rigid Ladders from Quayside

Access onto and off of a CTV from a quayside is usually with the use of rigid ladders down the side of the quay edge onto the boat where the transferees' step into the boat, unless there are davits with inertia reels attached at these points there is a risk of a fall depending on the height from the quay to the boat. This method is the least preferable and should only be utilised when there is no other option, or in the event of emergency situations.





*Bespoke Incline System.*



*Rigid Ladder From Quayside.*



*Jetty.*



*Pontoon System.*

## 4.2 From Beach or Foreshore

Where it is possible for transferees to access a CTV from the beach or foreshore, firstly the ground should be deemed safe to walk on (sinking mud, quicksand or dangerous rocky areas excluded). If safe access to these areas is possible the following methods are feasible;

- CTV that is able ground its bow on the beach or foreshore. The use of a pilot ladder from boat to ground may be utilised to climb aboard if required;
- Tractor or other plant with a purpose built CTV (RHIB) trailer that is able to reverse into the water so the CTV (RIB) can mount the trailer and then be pulled onto dry land to allow transferees to step onboard. Trailer is then reversed back into the water and the CTV (RHIB) reverses out of trailer and on to asset.



*Excavator and trailer extracting Rib from water.*



*Crew onboard and leaving trailer back out to position.*

## 4.3 From Shallow Water

Shallow draft boats can be used in conjunction with floating systems (as per 4.1.3). The following are also possibilities:

- Gangways from land out to a floating system;
- Plastic jet float walkways (handrails to be utilised) out to water deep enough for a CTV to come alongside.



*Plastic jet float walkway in use across shallow/dried out area.*



*Shallow draft boat.*

## 4.4 From Floating Assets (Barge, Pontoon, Modular Floats)

Secured floating assets (anchored or spudded) can be utilised as a boat mooring or access platform for CTV transfer. These floating assets can be accessed by the transferees by stepping onto them via a walkway or inclined system (as per 4.1.4, or can be accessed via a gangway from quayside or via smaller transfer vessel to allow transfer onto a larger vessel if necessary – for example; a smaller vessel is required due to shallow water at point of transfer from land.



*Pontoon CTV Transfer Locations.*

## 4.5 CTV to CTV Transfer

There are occasions where there is a requirement to use a smaller CTV from shore to get out to a waiting larger CTV to take transferees out to a jack-up barge further out to sea. This is usually because of differing weather parameters, depth of water close to shore or weather conditions being acceptable for smaller vessel nearshore, but not further out. These types of CTV transfer require extreme caution and highly competent skippers. This method is a last resort and is not recommended practice.

## 4.6 From Jack-up Barge to CTV

Depending on the type of jack-up barge access system utilised will be a factor that determines the type of CTV used for transfer. When egressing from the asset, the CTV needs to be steady within its operating parameters with sufficient step on area (non-slip with handrails – if size of CTV/RHIB allows) to allow the safe and efficient transfer of the crew from the jack-up barges ladder access system onto the deck of the CTV. The CTV crew are to assist those coming on board the vessel until they are unclipped and safely aboard (*unclipped refers to the use of harness attached to inertia reel for ladder vertical ascent/descents*). This assistance should continue until the last person is on the CTV. The methods of transfer from the CTV to land are as per para's 4.1 – 4.5 but in reverse.

## 5.0 CTV Selection

The selection of crew transfer vessel is dependent on these factors and should be taken into serious consideration before selecting a CTV\* to transfer crew to and from the jack-up barge:

- Location of jack up barge and environment in which it is operating;
- Weather and environmental conditions for time of operations and parameters of CTV;
- Number of people to be transferred to site;
- Location and environment of land transfer point, the transit route and distance compared against the CTV parameters.
- Maximum transfer time or distance in place (Company policy or site specific)
- Jack-up barge access system parameters – eg: push test loading of ladder system. Including bow fender measurements (referred to in Section 6.5). Consider that boat landing designs should conform to relevant industry class code. Certification to be sighted for boat landings CTV (larger classified) or RHIB.

Once the above have all been ascertained, this information should be used to select a crew transfer vessel that will meet suitability for all the above criteria.

For offshore wind industry works, all CTVs should comply with the G+ small boats guidance. The Safe management of small service vessels used in the offshore wind industry and G+ offshore wind Farm transfer - good practice guideline.

**Whatever access system and CTV is used they need to be compatible with each other.**

*\*For the avoidance of doubt; a CTV (Crew Transfer Vessel) refers to a certified commercial vessel intended for crew transfer operations, a RHIB (although used for crew transfer) refers to a Rigid Hull Inflatable Boat*

## 6.0 Choosing the Appropriate Method of Access and Egress to the Jack-up Barge

There are various, different methods and systems for access and egress to/from a jack-up barge. There is no one size fits all and the location of the barge, the scope of works it is undertaking and size of the asset will all determine which is the best system to use. A key point to consider are limitations of the equipment being used on board vessels. For example, associated weather limits.

Below are the main options of access available and regularly employed types of system. For all methods referred to below should be selected on their suitability for the environment and vessels, but further access and egress should be treated as a standalone operation with a thorough risk assessment method statement being carried out prior to selection. All systems are to be thoroughly risk assessed on a case-by-case basis before selection is confirmed.



## 6.1 Walk to Work Systems

Walk to work (W2W) systems are primarily used for direct transfer from a vessel to fixed offshore units, offshore floating units or vessel to vessel. They are larger than a CTV they deploy a mechanically/hydraulically operated gangway from the deck of the vessel onto the platform, structure or vessel that it is intended to walk to.

They can also be used to access a larger Jack-up barge in an offshore location. The jack-up barge should be pre-loaded in a fixed position and her stability calculations taking into account for weight and load of the gangway deployed from the walk to work vessel. Environmental operating parameters should also be confirmed in relation to size of W2W vessel and jack-up barge.

Once the walk to work vessel has deployed its gangway the transferees simply walk across to the intended destination. Further information on these systems is available within IMCA document [IMCA M 254 – Guidelines for Walk to Work Operations]



*A Service Operation Vessel (SOV) utilising a walk to work system to access another asset (bottom left).*

## 6.2 Gangways

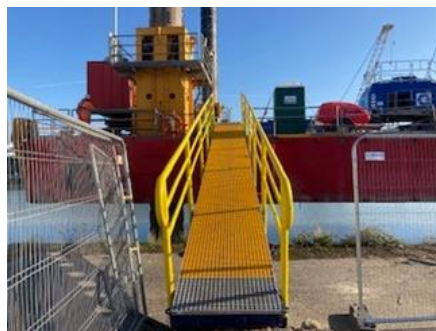
Where possible gangways should be utilised as a safe, workable system (*not to be confused with the dedicated walk to work vessels used to access offshore oil, gas and substation platforms and wind turbine*). These should be utilised for all jack-up barge locations that are close enough to land or quayside. They should have sufficient non slip surfaces and handrails to both sides for the full length to allow three points of contact for the access/egress on and off the asset.

These can also be used from jack up barge to jack up barge on multi asset sites of operations. For longer scopes of work temporary piles can be driven into the riverbed to allow for multiple gangways to be installed over a longer distance to the jack-up barge and negate the need for crew transfer via boat. Distances from quayside to asset will need to be defined on a project by project basis dependant on environment that site of operations is located.

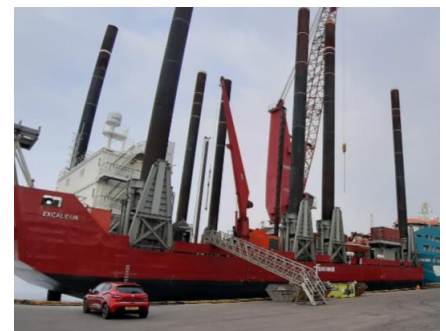
Should be the first method employed on inland waterways and other locations that allow their use due to distance from land or quayside.



*Barge to barge access via gangway.*



*Land to barge access via gangway.*



*Quayside to barge access via gangway.*

## 6.3 Full Ladder System (Staircase/Ships Ladder)

On larger jack up barges there may be a fixed staircase system in place. These can be utilised suspended along the hull of the jack-up barge so a crew transfer vessel can come alongside or push up to for crew transfer. The use of pontoons can also be incorporated for CTV transfers. Alternatively, when location allows, the ladder system can be positioned onto the quayside for a walk to work system. These methods of access are usually limited to larger jack-up barges and appropriate class approval should be sought by Owner/Operator.



*Full ladder systems (above: left – staircase to quayside | right – staircase to pontoon).*



*Staircase system (above) installed to hull of jack-up barge – CTV can push on to this system.*

## 6.4 Level Transfers

Where the CTV pushes up to the hull of the jack up barge (when lowered to water surface) and transferees' step across onto an access platform. This is another walk to work system. Only when environmental conditions allow. The disadvantages of this method of transfer are that the barge needs to jack down for transfer, then jack up to working height again, and the same in reverse at the end of shift/shift changeover. This method is counter-productive to working patterns due to the amount of time it takes to jack the barge down and up again for each crew transfer.



*Level transfer from CTV to jack-up barge*



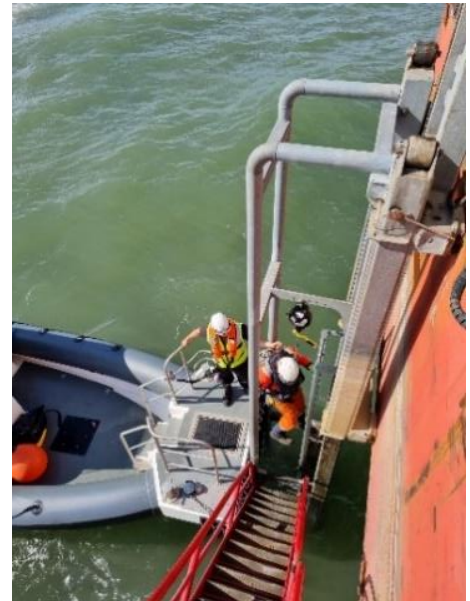
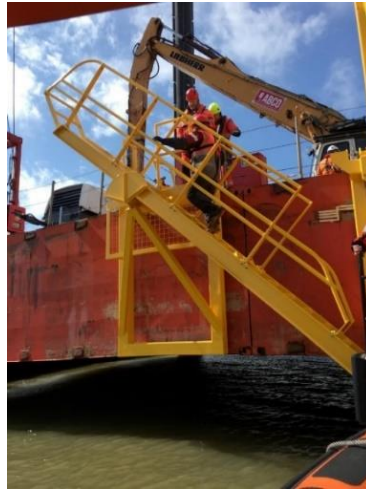
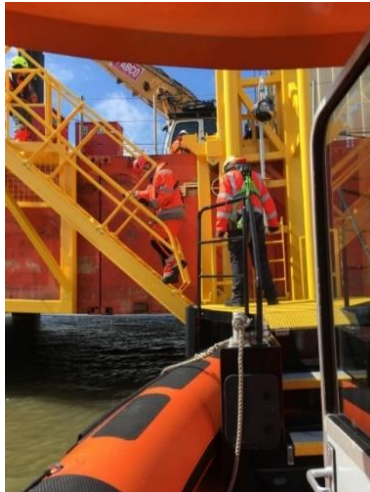
## 6.5 Mechanically Operated Inclined Ramp Systems

This system is a hybrid vertical climb (minimal) and walk to work system *(not to be confused with the dedicated walk to work vessels used to access offshore oil, gas and windfarm substation platforms)*. It is mechanically operated and allows the ladder to be raised and lowered (either by an internal hydraulic system or onboard plant) to suit tidal ranges and depending on the elevation of the jack-up barge allows for transferees to step onto the vertical ladder element for one or two rungs until they are on the inclined ramp 'walk to work' element of it.

Inertia reel and harness should still be utilised for vertical climb element depending on height from step on to ramp. The vertical climb element is dictated by the water depths, in shallower water the ladder must be raised so the base of the system is clear from the bottom and any obstructions.

The Barge Master as the first person aboard, will need to operate the ladder system mechanically to raise or lower the ladder from deck before crew can access the ladder. Barge Master (depending on position of ladder at transfer) may need to utilise harness with twin 'y' lanyard and hooks\* to get onto incline ramp – or use the secondary concertina ladder if the primary system is above water level. Alternatively, more advanced systems allow the installation of a remote control to start up the power packs which is accessible from the CTV (or RIB). For these, the Barge Master will still be the first on, then secure the ladder with double retaining/locking pins before the rest of the crew access the jack-up barge.

*\*If specific industry regulations allow the use of these.*



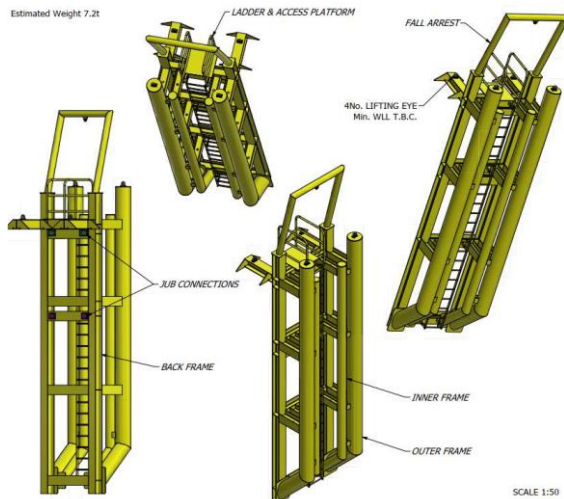
*Inclined ladder / ramp system.*

## 6.6 Push-on CTV Ladders

The push-on CTV ladder system\* incorporates a vertical climb but is a more robust method of access and egress, as in a CTV is able to push up to the system.

These are usually bespoke items designed and fabricated to suit the size of barge with calculations provided during design to ascertain what size CTV can push up to it's structure. In accordance with offshore wind G+ regulations, the ladder should be no more than 500mm – 650mm from the point of step off on the CTV. This system requires the use of an inertia reel – also referred to in offshore wind as a self-retracting line (SRL) (rescue winch crank handle type) and harness as fall arrest with Barge Master utilising twin 'y' lanyards and hooks as first up and last down. This method is not preferred because it involves a vertical climb, and as such should be risk assessed on a case by case basis.

*\*Within the offshore wind industry this system may be referred to as CTV boat landing*



*Push on CTV ladder system (right – inertia reel and grating in place at top of ladder)*



*CTV push on ladder systems deployed*



## 6.7 Basket Transfers (Personnel Transfer Baskets and Man Riding Cages)

The use of transfer baskets and man riding cages can be utilised when there is a crane on the deck of a Jack-up barge. The basket or cage is lowered onto the deck of a suitable CTV (or quayside) and transferees climb into a caged area and are secured in place. The crane then lifts the basket up onto the deck of the barge where the transferees are able to step out and onto the vessel. Weather parameters of the crane and basket/cage should be considered before transfer on both of these methods.

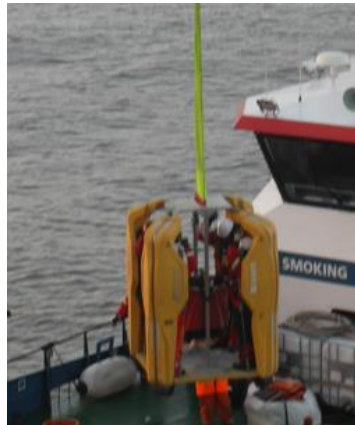
### 6.7.1 Personnel Transfer Baskets

These types are typically used in a sea-based environment. Baskets and associated lifting accessories should be certified for their safe use, and the crane and operator certified for man-riding duties. Personnel transfer baskets should be rigid in structure and safely contain personnel within it. The base of the basket should be cushioned to protect from impact. The below images show three examples of transfer baskets. Left and centre are both recommended methods because the crew are contained within a rigid arrangement, however the photo on the right (Billy Pugh) should be avoided due to it being non-rigid, and persons standing externally and not secured within, it is highly unlikely that this method would be approved by any HSE rep. Further details on these methods of transfer can be found within IMCA document [IMCA HSSE 025, IMCA LR 012, IMCA M 202 – Guidance on the Transfer of Personnel to and from Offshore Vessels and Structures].

The basket methods of transfer are currently being discouraged in the offshore environment. All basket and cage methods of transfer are to be risk assessed to take into account vessel, sea state and wind speeds – risk of impact (floating vessels on swell). This system is suited to larger CTV vessels with deck space to accommodate a basket safely.



Offshore personnel basket ✓



Wave 4 personnel transfer carrier ✓



Billy Pugh transfer basket ✗

### 6.7.2 Man Riding Cages

Man riding cages are typically used in locations near to quayside or dry land. The same principles apply with regards to man riding duties certification on the crane and operator. Man riding cages are made from steel, and entry is usually via a lockable gate. The transferees step into the cage, shut the gate and are lifted from land to jack-up barge and vice versa. Man riding cages are also used as a workspace for inaccessible areas. Man riding cages should not be used to transfer onto floating assets at any time due to their rigid steel structure, and the risk of impact injuries to those inside them. This method is not preferred method and should be risk assessed.



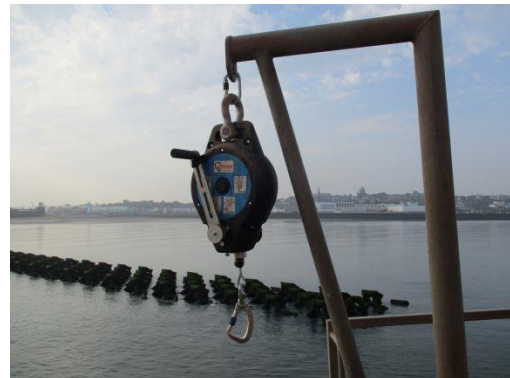
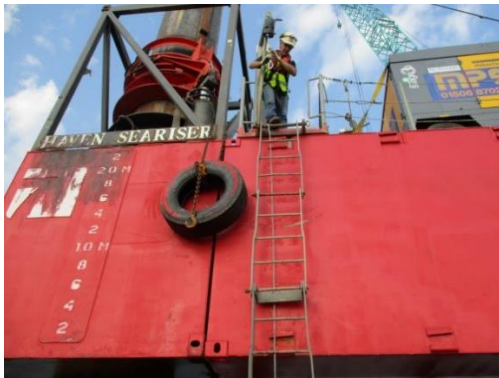
Man riding cages in use.

## 6.8 Concertina Ladder

The concertina ladder is a basic but simple to use method of access, it is recommended that this method is only used if there are no other options available and/or suitable. It is attached to the jack-up barge via a small gated access platform and is made up of a number of 1 metre length hinged steel sections. The hinged sections allow a CTV vessel to push up gently to it with no risk of bending the ladders or pulling them from the mountings on the hull/tanks of the barge. Transferees should be competent in the climbing of a flexible ladder system and in all cases an inertia reel with harnesses should be employed as a safe fall arrest system. The first person up, and last person down should be the Barge Master and during their ascent and descent harness and twin 'y' lanyard and hooks should be utilised as fall arrest system. This is because they will need to pass the inertia line down on access and secure the line in its housing before egress.

Should also be used as a secondary emergency method of access and egress should one of the higher spec primary systems become damaged or inoperable, or in the event of an emergency where primary systems cannot be approached (fire, collapse of crane etc).

This method should be risk assessed prior to use based on the ability of crew expected to use it, further; climbers should be assessed into categories of those that are experienced, competent or require training. It is recommended that training is delivered on this system to those that require it in a safe location such as the port of mobilisation. Those not capable of climbing this system after training should not use it and an alternative method (or personnel) should be utilised.

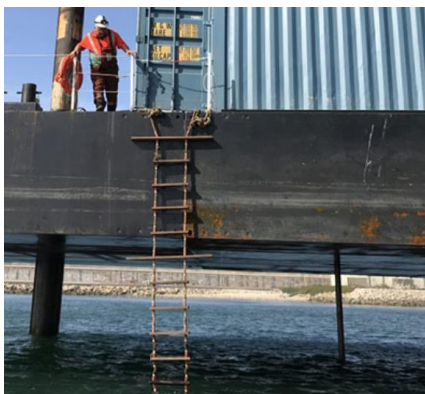


Left - Concertina ladder system | right – crank retrieval inertia reel in use.

## 6.9 Rope Ladders and Scramble Nets

These methods are the lesser of all access systems and require highly experienced personnel to utilise only. They are highly unstable and susceptible to getting caught on the CTV in poor conditions. It is recommended that an inertia reel (with rescue winch crank handle) attached to the transferees' harness is employed at all times. These methods are to be avoided at all costs, and **only used in the event of an emergency** if primary and secondary systems have failed or if thrown over the side to retrieve persons that have fallen aboard (if there are no other means). These methods of transfer should be avoided and used only in an emergency scenario.

The advantage of these systems in the event of an emergency is that they can be quickly deployed so the Barge Master can ascertain the safest area from which to deploy them and egress the asset.



Rope ladder.



Scramble net.



## 6.10 Luggage Transfer onto Jack-up Barge

Luggage or equipment should be transferred separately. An exception to this may be when using a walk to work system or gangway with an equipment transfer solution designed for simultaneous personnel and equipment transfers. Source [IMCA HSSE 025, IMCA LR 012, IMCA M 202 – Rev 2.1 – Guidance on the Transfer of Personnel to and from Offshore Vessels and Structure].

Offshore practice states that transferees only carry themselves and no personal equipment whilst using an access/egress system. Personal and other equipment is usually lifted on board with a crane or winch/hoist afterwards ensuring load is secure and no persons are directly below load as it is being lifted.

For inland waterway locations small personal items in a small daysack could be carried, but hands must be free with no obstructions to prevent access to safety systems in place such as handrails or ladder rungs/braces with three points of contact. This must be a last resort, with all items required being loaded onto the jack-up barge whilst in port or mobilisation location.

## 7.0 PPE Requirements

PPE requirements for personnel transfer depend on the differing circumstances and conditions. Appropriate PPE should be available and used when personnel are taking part in transfers offshore. Suitable high visibility clothing, lifejackets, immersion suits, (transfer/transit/floatation suits), location devices and other equipment may be identified in the risk assessment process as being necessary for safety procedures. The key factors to be considered are:

- Survival times post water entry;
- Water and ambient temperature;
- Time for recovery, whether by own assets or regional search and rescue assets.

In selecting the type of life jacket to be used, the possibility of a person being unconscious after falling into the water should be considered – for example, as when falling from height. This may lead to the requirement of auto-inflating life jackets, although such life jackets should not be used during helicopter transfer. Local and national regulations should be consulted regarding the type and performance specification of lifejackets.

Personnel joining or leaving a vessel or offshore structure at crew change may not have access to appropriate PPE before the start of the transfer. In this case, sufficient and suitable PPE should be provided by the transferring vessel.

Immersion suits/transfer suits should be available for use if assessed as necessary by the activity risk assessment. Immersion suits can provide protection from four dangers present in water immersion: cold shock response, cold incapacitation leading to drowning, hypothermia and post recovery shock (circum-rescue collapse). Source [IMCA HSSE 025, IMCA LR 012, IMCA M 202 – Rev 2.1 – Guidance on the Transfer of Personnel to and from Offshore Vessels and Structure].



## 7.1 PPE Matrix

The below table is a recommended guide to which items of PPE should be worn for each listed activity.

Transfer Activity:	PPE:					
	Life Jacket	Immersion Suit	Safety Harness	Hi-Vis	Hard Hat	Gloves
Accessing CTV or RHIB from quayside (jetties, walkways, incline systems, pontoon systems):	✓	✓*		✓	✓	✓
Accessing CTV or RHIB from quayside (rigid ladders from quayside):	✓	✓*	✓**	✓	✓	✓
Accessing CTV or RHIB from beach or foreshore:	✓	✓*		✓	✓	✓
CTV (or RHIB) to CTV transfer:	✓	✓*		✓	✓	✓
During CTV (or RHIB) transfer journey period: (if enclosed CTV there may not be a requirement to wear PPE until point of access):	✓	✓*		✓	✓	✓
Transfer to/from jack-up barge from/to quayside via man riding cage:	✓			✓	✓	✓
Transfer to/from jack-up barge from/to CTV (or RHIB) via: -Walk to work vessel -Gangway -Full ladder system (staircase) -Level transfer -Personal transfer baskets	✓	✓*		✓	✓	✓
Transfer to/from jack-up barge from/to CTV (or RHIB) via: -Mechanically operated inclined ramp -Push-on CTV ladder (boat landing) -Concertina ladder -Rope ladders and scramble nets	✓	✓*	✓**	✓	✓	✓

Transfer PPE Guidelines Matrix

In addition to the above PPE requirements guide, inland waterway, coastal and nearshore site-specific risk assessments should be taken into consideration for items such as hard hats, safety glasses, gloves, boots, coveralls and fall arrest harnesses.

\*Site/industry specific regulations and environmental conditions will apply – depending on size of CTV/RHIB these may need to be donned prior to leaving shore/quayside.

\*\*For all vertical climbs greater than 1m (recommended)

## 8.0 Working at Height (Vertical Climbs of Ladders)

There is no defined height in measurement stated anywhere which defines what is classed as working at height. It is suggested that for any vertical climb that is less than 2 metre with a step over to a walk to work system from a CTV fall arrest may not be required, but this is dependent on weather and sea/river state.

For vertical climbs of a vertical ladder, British Standards Institute recommend any vertical ladder over 3 Metres requires a fall arrest system in place (on dry land). Given the nature of the marine and inland waterway environment it is advised that the distance of any climb greater than 1 Metre should require the use of a fall arrest system. This fall arrest system should be attached to the transferee whilst on the CTV/RHIB, before stepping onto the ladder. If transferee was to fall whilst stepping over they would be attached to the line, and therefore a swift recovery would be possible\*.

*\*Site/environment specific risk assessments should be created and adhered to in all cases.*

In instances where the first climber on the jack-up barge does not have access to an inertia reel until onboard then twin lanyards and hooks should be used. The point of the climb during which they attach hooks to ladder shall depend on the length of the lanyards (and limit of any fall restraint mechanism within the arrangement) once this length has been ascertained the first climber should only clip on when they are above this limit of fall restraint.

For smaller CTV's (and RHIB's), it is advisable to firstly step out of the boat and onto the ladder due to sea state influence, and then clip on. This is the exception rather than the rule.

As a general rule it is strongly advised that if transferring to a vessel or offshore structure and there is a risk of falling during transfer then a fall arrest inertia reel with rescue crank type system needs to be fitted and all personal should have received appropriate training. A relevant work at height (WAH) course will actually detail how to use the fall arrest safely and how to wear, and use the equipment safely. It also underpins the need NOT to free climb if the risk of falling exists.

If the transfer is a step over arrangement either quayside to vessel or vessel to vessel and there is no risk of falling the requirement for working at height is not required. There may be some vessels where it just is not practical to install a fall arrest system – in these cases it is recommended that the vessel choice is to be revisited.

## 9.0 Competence Assurance of Key Personnel

All personnel that are required to use any of the access systems alluded to in para's 6.1 – 6.7 should be fully competent in their use and aware of all hazards associated with them. There are limited training courses available for these systems.

Risk assessment method statements (RAMS) should be created by the owners of the above systems and communicated to all persons expected to use them in their role. Regular toolbox talks should be delivered by the Barge Master to the crew to remind them of safety precautions to be employed during access and egress.

As best practice, member companies are encouraged to conduct practice transfers during the mob / prior to work starting. For personnel that haven't been included in this practice transfer training they should "buddy up" with an experienced person on their first transfers.

*\*Industry specific guidance documents should be referred to for further information on competence assurance (IMCA, G+ etc).*

### 9.1 CTV Skipper and Crew

The crew and skipper of the CTV are to be fully certified for their roles, and also have a demonstrated track record of competence in the transferring of crew. They should be well-versed on a safe system of work, training on transfer systems and site-specific items utilised during transfer prior to transfer. Further CTV operator experience and competence could include membership or affiliation to the workboat association.

### 9.2 Barge Master

Fully competent in the installation, operation and basic maintenance and checks of the access system on their barge and able to communicate the safe use of it to transferees.

## 9.3 Crew / Marine Operatives

Inducted and competent in the use of jack-up barge primary and secondary access and egress systems in addition to this fully conversant with fall arrest and restraint items they will be expected to wear and use.

## 10.0 Maintenance of Jack-up Barge Access Systems

IJUBOA member Companies may or may not have experienced marine fitters within their teams. Either way companies are responsible to encompass maintenance and inspection events within their planned preventative maintenance schedules for each asset.

For fabrication and installation of access and egress systems these should be designed to recognised codes such as DNVGL-OS-D101 [offshore standards - Marine and machinery systems and equipment].

There should be a form of quality control in the shape of an ITP (inspection test plan) or similar which would ultimately be signed off by designer/fabricator prior to release to ensure correct grades of steel, NDT and coating specs have been adhered to.

Depending on the type of access and egress system utilised; in addition to maintenance events there may be a requirement for routine inspections in accordance with LOLER (Lifting Operations and Lifting Equipment Regulations 1998) or PUWER (Provision and Use of Work Equipment Regulations 1998) as a legal requirement.

## 11.0 Emergency Preparedness

The following measures are to be in place to form a level of emergency preparedness to enable all persons onboard the jack-up barge to be able to react and respond accordingly to any emergency or incident that may occur. Each specific project should have their own ERP (emergency response plan) taking the below points into consideration.

### 11.1 Fire Awareness

All assets should hold firefighting equipment and / or fire suppression units to control a fire for long enough to enable all crew to egress the jack-up safely and quickly in the event of an emergency. The types and quantities of fire fighting equipment shall depend on the type of barge, the cargo and Owner/Charterer policies.

#### 11.1.1 Further considerations for fire-fighting when the jack-up barge is in an area that dries out.

Further advice and guidance for emergency response planning can be sought from the local emergency services such as the fire brigade and coastguard. These services can prove to be particularly useful if the working environment doesn't lend itself to easy access, egress and evacuation in the event of a fire.

### 11.2 Man-riding basket

If man riding baskets transfers are utilised, there should be an emergency response plan in place to recover personnel should the crane, lifting accessories or basket fail.

The crane, lifting accessories and basket should be within thorough examination certification period and all personnel competent or qualified in the process of basket transfers. The crane and operator should also both be certified for man riding duties.

If there is no workable emergency response plan, or suitable assets to execute the rescue plan then this method of transfer should not be utilised.

### 11.3 Shallow Gas

Any rescue method used needs to be carefully considered as shallow gas can create an explosive atmosphere. If emergency egress is required, methods that can be deployed manually, such as rope ladders, should be used. They should be positioned down wind of the source of the gas.

Consideration should also be given to rescue craft as, as Hydrogen Sulphide (H<sub>2</sub>S) is heavier than air, it is likely to settle on the surface of the water around the JUB meaning powered rescue craft may not be suitable. It may be better to remain onboard the JUB (downwind) or use a life raft if evacuation is required.

## 11.4 Alternative to Primary Methods of Access and Egress

As stated in section 6.0, there should always be an alternative method of access and egress to the primary method employed.

### 11.4.1 Secondary Jack-up Access and Egress System

For all systems this should be the concertina ladder system which is to be used as a last resort and in emergency situations.

### 11.4.2 Helicopter Insertion or Extraction

There may be occasion where a casualty or a compassionate case needs to depart the barge very quickly. Equally there may be instances where a person or persons need to access the barge in an emergency – such as a paramedic or doctor if this is the quickest method to treat an emergency casualty or casualties eg: from a neighbouring platform or ship. A helicopter is a feasible method where a CTV would take too long or conditions do not allow. Helicopter insertion or extraction may be the only option if the working site location dries out at certain times.

### 11.4.3 Lifting or lowering RHIB up to/from the barge;

There may be an occasion to raise or lower a RHIB onto the deck of a barge with crew aboard (emergency access or egress. In these situations the following should be accounted for:

- Man riding for the crane and tested lifting equipment, including the point on the RHIB;
- Weather limits agreed and specified;
- Wearing of life jackets;
- Use tag lines to control any swing;
- Always 2 persons as the coxswain cannot connect the hook and position the boat. Coxswain kills the engines before lift commences, or when egressing starts the engines before disconnecting the hook.

## 11.5 Emergency Drills

Emergency drills should take place regularly on board a jack-up barge to ensure all crew are prepared should an emergency or incident occur. These drills should include rescue at height from ladder system, and man overboard which are relevant to crew transfer, access and egress operations. A best practice is to familiarise the crew of a jack-up barge with emergency response measures by conducting drills prior to mobilising the asset. These drills would be in the relative safety of the mobilisation port in a controlled environment, and act as a good opportunity for learning.

## 11.6 Emergency Provisions

Emergency provisions should be aboard jack-up barges in case crew transfer is not possible due to weather conditions, CTV breakdown etc. These provisions should include the following items as a minimum:

- Adequate sleeping bags and warm clothing suited to the environment of operations;
- Emergency fuel for generators operating welfare;
- Emergency water supplies (not to be used during normal circumstances);
- Emergency food rations (processed foods with long shelf life, and high energy foods).

There should be sufficient quantities of each item to sustain the whole crew for a few days in the event of them having to weather a storm on board the jack-up barge for a few days. These measures should only apply to liveaboard assets only, but it is a best practice for shift working assets to have provisions in place also. It should be noted that crew transfers should always be planned in advance based on the weather conditions ahead. If there is not a sufficient weather window to access and egress the asset, then operations should cease until such time a window is apparent.

## 12.0 Summary and Conclusion

This document provides guidance on the various types of locations that jack-up barges operate in, as well as the methods of transfer personnel to their operational location. It has outlined the different types of methods and systems employed to get the crew onto the asset and touched upon the requirement for emergency preparedness and control measures. Because each organisation and industry within IJUBOA cover such a broad spectrum of operational parameters, locations, marine assets and constraints it is apparent that one size does not fit all when it comes to access and egress methods and systems and each project or job should be analysed fully before selecting such methods and systems.

The hierarchy chart at sect 12.1 places all available methods of access and egress into a hierarchy of 'best practice' through to 'not recommended' across the 3 fundamental environments that jack-up barges operate.

IJUBOA will turn this subject into a 1 day course on access and egress **following IMCA review of this document**. In addition, the subject of access and egress will be included in the IJUBOA managers course for IJUBOA members wanting to gain a greater understanding of this diverse, broad subject.

It is intended that operator companies will communicate this document to their Client base to raise awareness of industry best practices and demonstrate that the safest methods of access and egress are paramount, always.



## 12.1 Hierarchy Chart

The hierarchy chart below illustrates the various environments and access and systems available. They are broken down for each environment into the following categories:

- **Best Practice ✓** \*Should be first choice every time, poses very little or no risk and minimal PPE requirements. Should still be covered in site/industry specific RAMS. *Please note: Best Practice is A best practice, and not necessarily THE best practice*
- **Satisfactory +** \*Method is fit for purpose but will usually carry an element of risk and a requirement for PPE. Should be risk assessed in specific scenario before use. All persons should be trained and competent in their use.
- **Not Recommended ▲** \* Should only be used as a primary method of transfer where there is no other reasonably practicable options, or in emergency situations only. Should be heavily risk assessed in specific scenario before use. All persons should be trained and competent in their use.
- **Not used -** \*Not applicable for environment.

Method of Access/Egress:	Environment:			
	Inland Waterways	Tidal Rivers and Estuaries (including ports and harbours)	Nearshore	Offshore
Walk to work vessels (heave/motion compensated gangways) (sect 6.1):	Not used -	Not used -	Not used -	Best Practice ✓
Gangways (sect 6.2):	Best Practice ✓	Best Practice ✓*	Not used -	Not used -
Full ladders (staircases) (Sect 6.3):	Not used -	Best Practice ✓	Best Practice ✓	Satisfactory +
Level Transfers (sect 6.4):	Satisfactory +	Satisfactory +	Satisfactory +	Not Recommended ▲
Mech operated incline ramp systems sect 6.5):	Best Practice ✓	Best Practice ✓	Best Practice ✓	Satisfactory +
Push on CTV Ladder (boat-landing) (sect 6.6):	Best Practice ✓	Best Practice ✓	Best Practice ✓	Best Practice ✓
Offshore personnel baskets (sect 6.7.1): (more acceptance on live aboard)	Not used -	Not used -	Satisfactory +	Not Recommended ▲
Man-riding cages (sect 6.7.2):	Satisfactory +	Satisfactory +	Not used -	Not used -
Concertina ladders (sect 6.8):	Satisfactory +	Not Recommended ▲	Not Recommended ▲	Not used -
Rope ladders (sect 6.9):	Not Recommended ▲	Not Recommended ▲	Not Recommended ▲	Not used -
Scramble nets (sect 6.9):	Not Recommended ▲	Not Recommended ▲	Not Recommended ▲	Not used -

\*Within quayside proximity or following temporary pile installation for extended length gangway/walkway to asset.

## Bibliography (for industry specific information)\*

The listed documents and publications are recommended for further and specific information on all of the topics covered within this best practice guidance.

- MCA – Code of Safe Working Practices for Merchant Seafarers.
- IMCA – IMCA M 254 – Guidelines for Walk to Work Operations.
- IMCA – IMCA HSSE 025, IMCA LR 012, IMCA M 202 – Guidance on the Transfer of Personnel to and from Offshore Vessels and Structures.
- IMCA – IMCA M 167 – Guidance on the eCMID System.
- IMCA – IMCA HSSE 037, IMCA M 226 – Security Measures and Emergency Response Guidance.
- IMCA LR 006, SEL 019, D060, M187 – Guidelines for Lifting Operations.
- DNVGL-OS-D101 - Offshore Standards - Marine and Machinery Systems and Equipment.
- G+ Global Offshore Wind Health and Safety Organisation – Good Practice Guideline; Working at Height in the Offshore Wind Industry.
- G+ Global Offshore Wind Health and Safety Organisation - Good Practice Guidelines; G+ Offshore Wind Farm Transfer.
- G+ Global Offshore Wind Health and Safety Organisation – Good Practice Guideline; The Safe Management of Small Service Vessels Used in the Offshore Wind Industry.
- G+ Global Offshore Wind Health and Safety Organisation – G+ Integrated Offshore Emergency Response (G+ IOER).
- G+ Global Offshore Wind Health and Safety Organisation – G+ Working at Height Good Practice Guide.
- The Workboat Association Good Practice Guide - Crew Transfer Vessels.

\*Please note that the most current revision or editions of the above documents should be used at all times because they will hold the most current information.