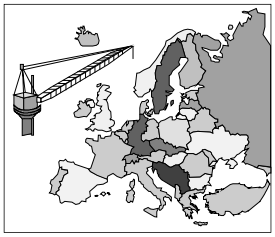
OMHEC Guidance



5. Lifting of personnel offshore: Transfer between installation and vessel

This document has been developed and issued by the Offshore Mechanical Handling Equipment Committee (OMHEC).

Members: Denmark, the Netherlands, Norway and the United Kingdom.

Approved by OMHEC: October 2013

Agreed by the following bodies:

The authorities of the countries operating in the North Sea area:

- DK – Working Environment Authority
- NL – State Supervision of Mines
- NO – Petroleum Safety Authority
- UK – Health & Safety Executive

Developed with the assistance of representatives of the offshore industry of the countries operating in the North Sea area.

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Rev. 1	Reformatting	03 October 2018
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1 INTRODUCTION

1.1 OMHEC

The Offshore Mechanical Handling Equipment Committee (OMHEC) comprises members from the United Kingdom, Norway, Denmark and the Netherlands, all of whom are involved with the safety of lifting and hoisting equipment and lifting and hoisting operations offshore.

OMHEC is also adviser for the North Sea Offshore Authorities Forum (NSOAF) in matters related to lifting and hoisting offshore, formally stated in an agreement between the two parties and signed in the spring of 2006.

Members represent regulatory authorities, such as from the Danish Energy Agency, the Netherlands State Supervision of Mines, the Petroleum Safety Authority Norway and the UK Health and Safety Executive. OMHEC also includes e.g. industry organisations, independent verifications bodies, classification societies and other relevant organisations.

OMHEC wishes to express its concern with respect to the safety aspects of lifting and hoisting equipment and lifting and hoisting operations offshore.

The potential dangers that arise from the use of lifting and hoisting equipment necessitate the highest standards of safety being applied.

1.2 OMHEC Objectives

OMHEC shall contribute to improved safety in offshore mechanical handling, lifting and hoisting operations and be an arena for work, which will achieve good harmonised practices for these operations. In this respect the exchange of knowledge and understanding of causation and practical prevention of accidents and incidents plays an important part in the committee's work.

OMHEC has, and will continue to, establish work groups comprising across the board representation from all of the participating countries in order to develop documents that will constitute advisory guidance and good practice relating to lifting and hoisting equipment and their operation.

OMHEC shall also be a centre for information exchange and discussions related to legislative policy, guidance and procedures and other issues associated with offshore lifting and hoisting equipment and their operations on fixed as well as mobile offshore units.

OMHEC shall give advice to the North Sea Offshore Authorities Forum (NSOAF) on issues related to safety in lifting and hoisting equipment and their operations, both on their request, as well as being an independent organisation on its own.

The regulatory authorities mentioned above will accept OMHEC's guidance as being good industry practice.

1.3 Objectives and Scope

Transfer of personnel between installations and vessels in the North Sea offshore industry by means of cranes and various lifting devices has for many years been a debated topic. After the Icelandic Volcano Eyjafjallajökull eruptions of April 2010 and the subsequent discontinued helicopter traffic

and, as a consequence, some delays to offshore operations, an increasing number of requests was made to regulators for clarification around the transport of personnel in the offshore environment, in particular, transfer by crane. This in turn prompted the updating of various North Sea guidance notes.

This guidance document aims to provide guidance to the offshore industry to a position where workers can be safety transported to and from fixed or mobile offshore installations should helicopter flights be unavailable.

This document shall describe the following:

- General provisions/justification;
- Risk assessment;
- Requirements for the lifting appliance;
- Requirements for the carrier (where applicable);
- Procedural controls;
- Training and competence.

2 JUSTIFICATION FOR PERSONNEL TRANSFER

The movement of personnel using lifting equipment can be a hazardous operation. Although the following guidelines describe minimum considerations and good practice during the lifting of personnel, as with all risk control measures, the first objective should be to eliminate the need for the operation to be conducted in this manner.

The transfer of personnel should be authorised by the Offshore Installation Manager (OIM). The OIM's decision should be guided by the duty holder's policy document for personnel transfer that should describe the circumstances when personnel transfer is justified. The policy should consider all suitable alternatives. Personnel transfer should be avoided unless it is deemed that no suitable, less hazardous, alternatives are available.

Once it is decided that the lifting of personnel is the most suitable method, further justification and risk assessment should be required to demonstrate that risks are as low as is reasonably practicable. This would normally require a permit to work (PTW) before proceeding. In order for the installation manager to approve such a PTW, they should require justification, in the form of a suitable written risk assessment identifying the hazards, risk and appropriate control measures.

3 RISK ASSESSMENT

As a minimum, risk assessments should cover the following situations together with any other type of hazard that may be present during a particular transfer:

- Persons inadvertently falling from the carrier;
- Lack of lateral impact protection for personnel;
- Severe vertical impact on landing carriers;
- Lack of dropped object protection;
- Immersion or being placed in the sea;
- Hazards faced by personnel during access to and egress from the carrier;
- The availability of sufficient clear space both at the embarkation and the landing locations;
- Vessel loss of station/collision;
- Environmental hazards such as sea state, wind speed and direction, visibility, fog/mist etc;
- Crane malfunction (carrier stuck);
- Simultaneous operations in the lifting and landing areas;
- The wishes of the persons being transferred;
- Verify that a 'test run' of the personnel lift/transfer operation has been conducted before the actual manned lifting/transfer is carried out.

Duty holders should refer to a specific lift plan and the associated risk assessment, and this should be reviewed immediately prior to every personnel transfer activity to assess local conditions at the time (e.g. weather/environmental/simultaneous operations, etc.).

The risk assessment should also account for personal factors including ergonomic requirements, inexperience of users and relevant medical conditions, e.g. anxiety. The risk assessment should also identify any specific personnel protective equipment (PPE) requirements.

Where transfer is over the sea, effective arrangements should be in place to secure a good prospect of recovery. Consideration should be given to launching a fast recue craft (FRC), a man overboard boat (MOB) or the assistance of a stand-by vessel prior to personnel transfer.

Additional to the initial risk assessment, continual assessment should be in place to identify and manage any change effectively.

The procedures required to achieve safe crane transfer are similar in principle to those used for helicopter transfer:

- The transfer is planned and risk assessed;
- Recovery arrangements are planned;
- Lifting equipment is suitable for the purpose;
- Lifting equipment is maintained to a high standard;
- Lifting equipment carries valid 'fit for purpose' documentation;
- The lifting operation shall be carried out by competent personnel;

- Passengers are guided during access and egress by competent staff;
- The passengers are briefed of the risks and emergency procedures;
- Suitable PPE is provided;
- Anyone involved in the operation, including passengers, should have the right to call a stop and the team should reassess the situation.

4 CRANE REQUIREMENTS

Cranes should be suitable for lifting persons, marked accordingly and carry valid documentation to confirm this.

4.1 Legal Requirements for the Design of Offshore Cranes

Cranes installed on fixed offshore installations after 1989 are required to satisfy the requirements of the European Machinery Directive[1].

The European Machinery Directive requires suppliers of machinery to:

- demonstrate that they have complied with the Essential Health and Safety Requirements (EHSRs) of the European Machinery Directive described in Annex 1;
- compile a technical file in accordance with Annex VII;
- carry out procedures to assess conformance (Article 12);
- draw up a Declaration of Conformity; and
- affix CE marking.

One method of demonstrating such compliance with the EHSRs is that the design is in accordance with the relevant harmonised European standard[2] at the time of construction or purchase. This will provide a presumption of conformity with the EHSRs.

It is also possible for manufacturers to demonstrate compliance with the EHSRs of the European Machinery Directive within their technical file.

The European Machinery Directive excludes 'seagoing vessels, mobile offshore units and machinery installed on such vessels/units'.

4.2 Cranes Constructed in Accordance with EN 13852-1

EN13852-1 includes relevant sections detailing requirements for lifting of persons. Users of cranes manufactured to this standard should confirm from the documentation supplied with the crane whether the intended use includes lifting of persons. If it does then no further action is required. If the crane is not intended for personnel lifting then users should have a choice: either continue not to lift persons or upgrade in accordance with the relevant sections of the standard[3].

[1] European Machinery Directive 2006/42/EC
[2] EN 13852-1 – *Cranes – Offshore cranes – Part 1 General-purpose offshore cranes*
[3] All deck cranes sited in Norwegian waters are subject to National legislation

4.3 Cranes Not Constructed in Accordance with EN 13852-1

Many of the offshore installations in the North Sea are mature and duty holders have replaced some of their cranes with new ones that conform to EN 13852-1. However, there remain a sizable number of cranes that were designed to the standards relevant at the time of their construction. It is recognised that it will not be possible to upgrade all of these cranes to be suitable for lifting of persons and these units will either have to be replaced or not used for lifting of persons. However, many of these older cranes may be suitable candidates for upgrade. When deciding whether to upgrade or replace cranes duty holders should be guided by their policy and strategy for managing the ageing and life extension of their assets.

The options are:

1. Replace the crane with one that complies with EN 13852-1;
2. Do not use the crane for personnel lifting;
3. Undertake a gap analysis against the relevant sections in the applicable revision of EN 13852-1:
   - 3.1 Upgrade the crane to close all the identified gaps
   - 3.2 Have an independent competent person verify and attest to the suitability of the upgrades and compliance with the relevant sections in the applicable revision of EN 13852-1.

Note: Reference *Guidelines for implementation of EN 13852-1 on existing offshore cranes on mobile offshore units Rev. 1, 28.11.2007*, which is issued by the Norwegian Shipowners' Association.

4.4 Crane Maintenance

The crane should be maintained in an efficient state, be in good condition and have valid certification.

Single line components in the critical load path (e.g. hoists, brakes, ropes and hook, etc.) should be identified using a structured engineering approach such as a failure modes effects and criticality analysis (FMECA). The maintenance and inspection of these single line components must have been reviewed and assessed as suitable.

Cranes used for the lifting of persons should be fitted with two independent braking systems on the hoist and boom system that could be used for the lifting of personnel. A normal working braking system for crane operations and an additional secondary braking system with independent load path should be activated when personnel are lifted. The inspection and maintenance activities should include measures to enable the individual integrity of these braking systems to be verified independently of each other.

Cranes should not be used for lifting persons if there is any outstanding safety critical maintenance on these single line components.

5 PERSONNEL CARRIER REQUIREMENTS

Due to the risk of personal injury, personnel carriers should be suitable for lifting persons, be of a type approved design, certified and intended for offshore personnel transfer over water.

A competent person should ensure that the carrier satisfies the relevant EHSRs of the European Machinery Directive and shall be Conformité Européenne (CE) marked.

The personnel carrier and its associated lifting accessories must be maintained in good condition and have valid certification.

6 PROCEDURAL CONTROLS

The duty holder's procedure for personnel transfer must take cognisance of the user instructions provided with the carrier.

Before transfers are conducted, both the Offshore Installation Manager and the Captain of the vessel, shall agree on the controls in place, and shall approve the transfer of personnel between the installation and vessel.

Offshore Installation Managers and Captains should ensure themselves that all transfers of people by carrier are carried out to written procedures and that they are supervised by a competent person.

Transfers should only take place in good visibility with good lighting, and only when weather conditions permit a safe transfer.

A specific lift plan should be in place for the transfer operation.

A checklist should be used to ensure that the requirements of the plan are addressed and that the below considerations are addressed:

- The risk assessment has been completed;
- A positive locking device shall be used between the crane hook and the personnel transfer carrier;
- Consideration should be given to undertaking a trial lift prior to lifting persons;
- Operations involving the lifting of personnel over the sea, an approved life vest and survival suit should be worn as a minimum;
- Rescue and recovery arrangements are in place;
- An FRC, MOB or stand-by vessel shall be on standby;
- The crane operator should have sight of the carrier at all times during the lift – i.e. reliance on closed circuit television (CCTV) is not acceptable;
- Clear lift off and landing areas approximately twice the footprint area of the carrier being used should be identified both on the vessel and the offshore facility. These areas should be clear of all obstructions;
- Access to the landing areas from the adjacent safe haven should be clear of all obstructions or slip hazards;
- Radio contact and communication procedures should be established and maintained on a dedicated secure channel between the crane operator, signallers and vessel throughout the entire operation;
- Raising or lowering the personnel carrier near the propellers of a vessel should be avoided. If this is not possible, the master of the vessel should terminate all propulsion; if required;
- Where carriers are designed to lift a stretcher, the injured person should be accompanied by at least one other non-injured person during the transfer operation;
- Pick-up and lay-down areas for the personnel transfer carrier are prepared to ensure adequate room to carry out a safe operation;
- Raising and lowering of the carrier shall insofar as possible take place over the open sea;
- The crane operator, the vessel master, and the signaller and slingers at both pick-up zone and landing zone should be fully conversant with the transfer procedure and its associated hazards.

Prior to transfer, all passengers should be briefed on the safe use of the transfer device, the transfer procedure, the risks involved and emergency procedures in the event of an incident.

This should include:

- A pre-task talk involving all relevant personnel. This discussion should clearly outline the requirements of the risk assessment, the step by step procedure, and it should also identify who is the person in charge of the operation and what each person's role is; especially in an emergency.
- Passengers should be provided with suitable PPE, for example; an approved life jacket and immersion suit for transfers over the sea.

7 WALK TO WORK (W2W) REQUIREMENTS

7.1 Principle of safety integration

The designer shall aim to eliminate any risk throughout the design lifetime of the equipment, including the phases of transport, assembly, dismantling and removal.
In selecting the most appropriate methods, the manufacturer shall apply the following principles of safety integration in the order given:

1. Eliminate and reduce risks as far as possible by implementation of inherently safe design measures
2. Safeguarding and complementary protection measures in relation to risks that cannot be eliminated
3. Inform the users of the residual risks due to any shortcomings of the protection measures adopted, etc.

The basic terminology, methodology and technical principles are given in EN ISO 12100.
Safeguarding and complementary protective measures shall be used to reduce or eliminate risks that cannot be avoided or sufficiently limited by inherently safe design measures. Reference is made to EN ISO 12100, clause 6.3.

All hazards, hazardous situations and events shall be systematically identified. The phases shall include, but not be limited to

- construction,
- assembly,
- FAT,
- transport,
- installation,
- commissioning,
- use and foreseeable misuse,
- maintenance and testing,
- repair,
- dismantling and removal.

Relevant certification standard DNVGL DNVGL-ST-0358 Certification of offshore gangways for personnel transfer

7.2 W2W Maintenance

The W2W should be maintained in an efficient state, be in good condition and have valid certification. Critical areas subject to regular inspection or inspection after overload testing shall be accessible for inspection with the required inspection methods.

The maintenance shall be planned with the following priority:

1. Safety
2. Reliability
3. Availability

A maintenance programme shall be provided for W2W equipment and shall include all important maintenance tasks highlighted and recommended in the risk assessment.
Inspection to be carried out in accordance's with OMHEC G01

8 TRAINING AND COMPETENCE

All crane operators must be fully certified for the lifting equipment in use. No trainees are to operate equipment in personnel transfers unless under the direct supervision of appropriately trained personnel.

It is recommended that all operators of lifting equipment shall have at least one year's experience as operator of equivalent lifting appliances, prior to being involved in personnel lifting operations.

Crane operators should be trained in transferring people by carrier and have experience in the operation of the crane and the use of the loose lifting equipment being used.

Persons who have not been involved in this kind of operation before must be accompanied by someone who is familiar with the operation and be appropriately supervised.

All persons involved in the lifting operation should also be trained in the rescue arrangements should persons enter the water or should the crane malfunction leaving the carrier suspended.

W2W operators must have as a minimum offshore crane certificate in accordance with OMHEC G03 and an equipment certified training on the individual types of W2W operations system carried out on the basement of training instructions from the producer of the W2W system.

9 TERMS, DEFINITIONS AND ABBREVIATIONS

Boom	A steel lattice or steel box section structure that forms a lifting mast
Check *NORSOK R-003,*	A visual and functional assessment (not a specific test and without dismantling) of the condition of the crane, lifting equipment, etc, to confirm that the 'equipment' is safe to operate/use
Competent person *NORSOK R-003* *ISO 15513:*	A person who has sufficient theoretical knowledge, practical experience and the required qualities for the task in hand Is able to perform the activities within an occupation or function to the standard expected in the task
Examination *NORSOK R-003,*	Verification that the crane can safely continue in service including a functional test of all safety devices, i.e. limiting, indicating equipment, brakes, clutches, etc. to verify that they operate within the required tolerances. An examination is more than an inspection
Identification number	A unique number given to an item of lifting equipment for registration purposes and to facilitate trace ability
Inspection	Inspection of the lifting equipment for defects and checking the operation of the controls, limiting and indicating devices without loading the lifting equipment. This is much more than a casual glance but does not normally require any part of the lifting equipment to be dismantled
Lifting gear *NORSOK R-003,*	Items of lifting equipment which do not form parts of the permanent arrangement of lifting appliance, e.g. chain, blocks, slings, shackles, eyebolts, etc.
Lifting equipment	A generic term covering lifting appliances and accessories
Lifting operation	A task concerned with the lifting and lowering of a load. It includes the selection attachment and use of suitable lifting equipment
Offshore crane *NORSOK R-003,* *TCVT-NI-WG-2-01E*	Usually refers to a slewing crane that is permanently installed on an offshore installation and primarily intended for transporting materials to and from supply vessels
Offshore installation *OMHEC statement 07-1999*	An installation on or above the continental shelf for the purpose of exploring for, or producing, minerals The installation can be either fixed or mobile (including FPSOs and FSUs)
Personnel carrier	A device suspended from a crane used to transport persons from one location to another
RCI	Rated capacity indicator – a visual safety device fitted to cranes to indicate to the crane operator that he is operating within the rated capacity of the crane
Safe working load (SWL) *NORSOK R-003,*	The maximum load (as certified by an independent competent person) which an item of lifting equipment may raise, lower or suspend under particular service conditions
Signaller (Banksman or Dogman) *ISO 15513:*	Person responsible for relaying a crane movement signal to the Crane Operator. Another word for Signaller can be Banksman or Dogman

Slinger (Load handler) *ISO 15513:*	Person responsible for attaching and detaching the load to and from the crane load-lifting attachment. Also responsible for correct selection and use of lifting gear and equipment in accordance with the operating lift plan. Another word for Slinger is Load handler
Work basket	A basket suspended from a lifting appliance, such as a crane, to permit persons to work at height from within the basket
Toolbox meeting	A (short) discussion held between all members of a lifting operation prior to commencement of work in order to agree on all aspects of the work and the sequential steps to be taken to complete the work. The agreed procedure, hazards and control methods are to be recorded on a TRIC/TRIM card (or similar)
Rated capacity	The maximum load which an item of lifting equipment is designed to raise, lower or suspend

10 REFERENCES

- EN 13852-1:2013 Cranes – Offshore cranes – Part 1: general purpose offshore cranes
- EN 13852-2:2004 Cranes – Offshore cranes – Part 2: Floating Cranes (2001)
- EN 13852-3:2021 Cranes. Offshore cranes – Part 3:Light offshore crane
- EN 12077-2:2008 Cranes safety – Requirements for health and safety – Part 2: Limiting and indicating devices
- EN ISO 12100:2010 Safety of machinery -General principles for design – Risk assessment and risk reduction
- ISO 12480-1:1997 Cranes – Safe Use – Part1: General
- ISO 9927-1:2013 Cranes — Inspections — Part 1: General
- HSG 221 Technical guidance on the safe use of lifting equipment offshore – HSE January 2007
- IMCA M 187 – *Guidelines for lifting operations*
- IMCA M 202 – *Guidance on the transfer of personnel to and from offshore vessels*
- OGP Lifting and Hoisting Safety Recommended Practice
- BS 7121-11:1998 Code of practice for safe use of cranes. Offshore Crane
- NORSOK R-003:2017 NORSOK Standard Lifting Equipment Operation
- DNVGL-ST-0358 Certification of offshore gangways for personnel transfer
- The Netherlands ARBO law and regulations version 01-01-2003 (special chapter 7) (State Supervision of Mines: Mining regulations SV 48 Certificate of Expertise Crane Operator requirements 1990)