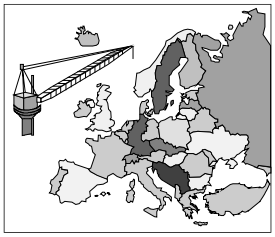
OMHEC Guidance



3. Training standard of crane operator, rigger and banksman offshore

Offshore crane permanently mounted on an offshore installation in the North Sea area intended for deck work and for materials handling to and from supply vessels.

* certification obligatory by law

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: 2008

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.

obligations in respect of their operations. Users remain solely responsible for the safe, lawful and proper conduct of their operations.

Revision	Reason	Date
Rev. 1	Reformatting	22 October 2013
Rev. 2	Updated standard references	27 March 2019
Rev. 3	Updated standard references	29 October 2021

Contents

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 Safety Elements

1.3.1 Design

Quality of design is essential. It is imperative that those responsible for the design of offshore lifting equipment, such as cranes, take into account the intended operational aspects of the equipment and also the environment in which it is to be used.

Organisations and people involved with the design of equipment must also have at their disposal all the design expertise necessary to result in the production of safe lifting equipment. This includes, for example, static and dynamic design calculations as well as consideration of human elements and, where applicable, ergonomic factors.

The designer should take into account requirements for ease of maintenance, examination and inspection during use.

Risk assessment should be used during design to avoid, or at least alleviate, failures due to known identified failure modes. Such failure mode analysis should also take into account factors that may be present during possible unintended use of equipment.

1.3.2 Manufacturing

All manufacturers of lifting equipment should have a recognised, effective quality assurance system in place and organisations that purchase, rent or lease equipment from such manufacturers should, as far as reasonably practicable, check that the manufacturer has incorporated systems that will verify the attainment of such quality.

All functions, including safety systems, should, as far as reasonably practicable, be verified for correct operation at the manufacturer's premises before the manufacturer releases the equipment.

1.3.3 Operation

All personnel involved with lifting operations should have the necessary training, skills and experience of such operations. A competent person or entity should regularly assess such skills utilising industry-recognised codes of practice.

The equipment itself should only be operated within the limits specified by the manufacturer or supplier.

1.3.4 Maintenance

Maintenance and inspection should be carried out in accordance with a plan prepared from background information supplied by the manufacturer, the user of the equipment and relevant to the environment prevailing at the worksite. See OMHEC G02 – *Maintenance for lifting equipment and lifting appliances* – for further information.

1.3.5 Verification in Use

A competent person or entity should verify that the equipment is ready for use before it is put into operation.

Whenever the equipment has been modified or subjected to a major repair, a competent person or entity should verify that the equipment is safe to use and that it will be operated in accordance with the relevant regulations and applied standards.

The users of the equipment should satisfy themselves that the competent person or entity has the necessary qualifications and experience and that sound quality principles are adhered to.

2 REFERENCES

- EN 45013:1989 Certification of a person/Competence certification
- EN 13852-1:2013 Cranes – Offshore cranes – Part1: General purpose offshore cranes
- EN 13852-2:2004 Cranes – Offshore cranes – Part 2: Floating cranes
- EN 13852-3:2021 Cranes. Offshore cranes Light offshore crane
- EN 12077-2:2008 Cranes safety – Requirements for health and safety – Part 2: Limiting and indicating devices
- EN 13586:2020 Cranes – Access; Cranes
- ISO 9926-1:1990 Cranes –Training of drivers – Part1: General
- ISO 9928-1:2015 Cranes – Crane operating manual – Part1: General
- ISO 15513:2000 Cranes – Competency requirements for Crane Operators, Slingers, signallers and assessors
- ISO 23853:2018 Cranes - Training of slingers and signallers
- ISO 12480-1:1997 Cranes – Safe Use – Part1: General
- HSG 221 Technical guidance on the safe use of lifting equipment offshore – HSE January 2007
- BSI British Standard safe use of cranes/part 11 Offshore Crane 7121-11-1998
- CITB NVQ Level 2 (offshore)
- OPITO Standards of Competence 2 and 5/2000 for offshore Crane Operators (2002)
- NORSOK R-003:2017 NORSOK Standard Lifting Equipment Operation
- Certification Schedule Inspection and Testing Offshore Crane/The Netherlands Continent
- The Netherlands ARBO law and regulations version 01-07-2018 (special chapter 7)
- (State Supervision of Mines: Mining regulations SV 48 Certificate of Expertise Crane Operator requirements 1990)
- International Maritime Dangerous Goods Act (IMDG Code) IMO IF 200 E

3 DEFINITIONS

Accreditation *ISO 15513*	Involves the provision of a statement of competency, an award or some other credit arrangement by a training authority, a vocational educational institution, or an accreditation body Process of granting official formal recognition to assessors and other successful candidates of competency
Accreditation body *ISO 15513*	Organisation which oversees the assessment of candidates to prescribed competency/training standards
Assessor *ISO 15513*	Person who makes judgements on the skills and knowledge of a crane operator, slinger and/or signaller (both can also function as a banksman)
Assessment *ISO 15513*	Process of judging competency against prescribed standards of performance
Banksman	Competent person positioned so that he has an unrestricted view of the load and the crane operator, to give load-manoeuvring instructions to the crane driver via hand signals or radio The banksman may be given responsibility for directing movements of the crane and load instead of the signaller, provided that only one person has the responsibility at any one time Note: See also Signaller and Slinger
Boom	A steel lattice or steel box section structure that forms a lifting mast
Cargo	Any liquid, solid or gaseous matter transported for example in an (offshore) container; also for example, bundled pipes, tubulars, baskets (incl. crew-baskets)
Cargo handling equipment *OMHEC-Training sub cie*	A generic term covering equipment to be used as 'load carrier'
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
Colour code	A method of marking equipment (normally with plastic tie-wraps or paint) to give a visual indication of its certification/inspection status. This 'coded' colour is changed normally in a period of six months (but it could also be in a period of twelve months)
Dangerous goods *NORSOK R-003,*	Goods classified, and labelled, according to the International Maritime Dangerous Goods Code as hazardous to personnel/equipment
Examination *NORSOK R-003,*	Function test of all safety devices, such as limiting and indicating equipment, brakes, clutches etc., in order to verify that they operate within the tolerance requirements Note: An examination is more than an inspection
Identification number	A unique number given to an item of lifting equipment or registration purposes and to facilitate traceability

Inspection *NORSOK R-003*	Visual inspection of lifting equipment for defects and check of operating controls, limit switches and indicators Note: Does not normally require disassembly
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 *TCVT-Nl-WG-2-01E*	A generic term covering equipment that is located between the load and the crane hook in order to hoist the load
Lifting operation	A task concerned with the lifting and lowering of a load. It includes the selection attachment and use of suitable lifting equipment
Lifting point – uncertified	An uncertified lifting point is a point of suspension or a structure that has not been tested or certified
Lifting point –certified	A certified lifting point is a certified and marked point of suspension that has been tested to the applicable marked WLL
Offshore crane *NORSOK R-003,* *TCVT-Nl-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 container *NORSOK R-003,*	A transportation unit designed for the safe handling of cargo, which shall be transported via sea, to and from offshore installations and supply vessels. An offshore container is designed for more than one trip
Offshore installation	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)
Pulley (or sheave)	A grooved wheel over which a rope passes. Pulleys are usually shaft mounted and free to rotate in response to movement of the rope
Rated capacity indicator (RCI)	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 the lifting equipment is certified to withstand under normal use Note 1: For lifting gear with several legs, SWL is marked for a working angle of 30° Note 2: SWL is normally used by ILO and shall apply to all floating and other mobile installations and ships that are not covered by EU regulations
Signaller *ISO 15513:*	Person responsible for relaying a crane movement signal to the crane operator Note: See also Banksman and Slinger
Slinger *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 Note: See also Banksman and Signaller
Toolbox meeting/ Toolbox talk	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
Training	A programme drawn up to teach a person the necessary skills and knowledge to fulfil a function/job

Training Standard Offshore North Sea	The required training (skills and knowledge) that personnel involved in North Sea offshore crane operations must meet, specific to the functions of the crane operator, banksman and slinger It should be considered as the common standard of training within the participating countries; Denmark, the Netherlands, Norway and UK
Working load limit (WLL)	The maximum load that a sling or a lifting component is certified to withstand under normal use and in a given configuration

4 SCOPE

OMHEC's aim is to standardise on the training, competency and assessment requirements for all personnel involved with handling and lifting operations in the North Sea Sector.

This standard outlines the required training of personnel involved in operation of offshore cranes and it should be considered as a standard for training within the participating countries; Denmark, the Netherlands, Norway and the UK.

5 TRAINING GUIDANCE

This training standard prepared by OMHEC is based on a description of the functions of each category of personnel involved in offshore lifting operations. The categories are:

- Slinger;
- Signaller;
- Crane Operator;
- Rigger.

For the purposes of this guidance, the function of the banksman is a combination of the functions of the signaller and the slinger together.

A common set of requirements should apply for personnel working on offshore installations and applicable (supply) vessels.

The training standard has been prepared and structured such that it:

- defines the functions of each category personnel;
- defines the necessary skills to fulfil said functions;
- defines the required training to achieve said skills.

What is the purpose of this training standard?

1. To stimulate the culture of **safe lifting operations**;
2. To provide a level playing field for the acceptance of the 'Certificate of Expertise' by each of the participating countries DK-NO-NL-UK, i.e. 'working across the borders';
3. To ensure that personnel will have an agreed standard of qualification relating to crane operator and banksman (combination of signaller and slinger) and rigger.

5.1 Introduction

Cranes are used extensively offshore, mainly to transfer cargo between supply vessels and the installation, but also to assist with various installation operations. However, the use of cranes during these operations is not without risk and these risks generally relate to exposure of equipment to ever-changing weather conditions and the variety of lifting operations encountered.

For the purposes of this guidance, the operating cycle of a lifting operation is defined as that which includes all of the activities required from preparing a load for lifting to when the load is raised and concluding when the crane is ready to pick up the next load, or the final end of the lifting operation(s).

In order to prevent accidents and damage, as well as near misses, it is important that an assessment is made of the risks involved in a lifting operation, or in maintenance activity on lifting machinery and equipment. Before beginning any lifting tasks, the personnel involved in the lifting or maintenance operation (crane operator/banksman and rigger) should carry out a risk assessment. This should include an allowance for the environmental conditions prevailing at the time during which the operation will be carried out.

The operational condition of the crane is determined by a number of factors but mainly by the type, regularity and quality of the maintenance carried out.

Laws, regulations and guidance have been introduced by governments and industry bodies in an attempt to reduce these risks.

The objective of this Training Guidance section is to define the training elements that are necessary for personnel involved in lifting operations. Special emphasis has been placed on the offshore crane operators' elements as they must have the necessary professional skills and competency to carry out their work safely and efficiently.

This section also gives an indication of the basic training skills required by training staff at the recognised training establishments. Also given is a description of the (basic) training elements divided into the theoretical and practical items and the programme of the training course required up to the time that the trainees receive their Certificate of Expertise.

A description and profile of the functions based on the steps to be taken in an operating cycle are given in the following sections and tables:

- Section 6 gives a description of the functions involved in a lifting operation;
- Section 7 gives a profile of the functions and indicates the main tasks involved;
- Section 8 shows the training elements, indicating the skills and knowledge required to fulfil the function;
- Section 9 indicates theoretical and practical training issues and teaching aims;
- A cross 'X' is used to indicate applicability;
- Annex A provides additional requirements for a rigger training programme.

The duration of the training course and the training method depends on the profile of the target group. For example, as a general guide, the target group to which the programme for the Crane Operator Offshore is developed consists of persons who:

- have some knowledge of lifting equipment and are familiar with working at offshore installations;
- have a valid offshore medical certificate;
- have an intermediate (technical) vocational education level in practice and principles.

5.2 Entrance Requirements for Personnel

Crane operator, banksman (signaller and slinger) and rigger:

1. Relevant experience offshore;
2. Practical knowledge of slinging and rigging offshore;
3. Medical certificate for the offshore industry (according to national requirements);
4. Crane Operator, Banksman, Rigger certificate of expertise.

6 DESCRIPTION OF THE FUNCTIONS INVOLVED IN LIFTING OPERATIONS

		Banksman		
	Crane Operator	Signaller	Slinger	Rigger
1. Perform planning of lifting operation	X			X
Define responsibilities and conditions	X			X
Consider need for permit to work system	X			X
Check the manifest – documents - certifications (logbook/handover)	X			
Be responsible for and perform daily maintenance of the crane	X			
Consideration of pre-job/toolbox-meeting	X			X
Perform necessary calculations				X
Prepare operation, plan and communicate work instructions	X	X	X	X
Select appropriate lifting equipment	X	X	X	X
Choose load chart	X			
2. The implementation of regulations and standards	X	X	X	X
Ensure that all relevant requirements are implemented	X	X	X	X
3. Co-ordinate lifting operation with all personnel involved	X	X	X	X
Set up communication: (see 5)	X	X	X	
Execute responsibility for the functions stated for banksman (slinger and signaller)	X	X	X	
Execute responsibility for the functions stated for rigger				X
Set up rigging configuration, lift and landing areas and lift path	X	X	X	X
Ensure that overall safety of the working environment is achieved	X	X	X	X
Ensure all aspects are under control and load is safely ready for lifting	X	X	X	X
Keep an overview of the lifting and landing area	X	X	X	X
4. General and safety checks of crane, lifting equipment and load	X	X	X	X
Start-up checks and checking of safety functions of the crane	X			
Visual checks (including reading of the logbook/handover)	X			
Check lifting equipment	X	X	X	X
Check security of the load	X	X	X	X
5. Communication procedures	X	X	X	X
Confirm reliable communication, e.g. between all relevant parties, e.g. supply vessel, banksman, radio room; confirm emergency/back-up procedures	X	X	X	X
Communications with SIMOPS	X	X	X	
Use of hand signals	X	X	X	X
Use of radio equipment	X	X	X	X
Confirmation and communication that the load is ready to lift	X	X	X	X
Communicate details of load path to all relevant parties	X	X	X	X
6. Assessment of risks/hazards	X	X	X	X
Check environmental conditions and decide 'go' or 'no go' to lifting, especially weather conditions	X			X
Keep abreast of all procedures and safety regulations pertaining to the areas of responsibility	X			X
Ensure that sufficient number of persons are involved in the lifting operations	X	X	X	X
Evaluate environmental conditions and influence of dynamic loads	X			X
Know hazards and know how to handle them	X	X	X	X
Control load behaviour	X	X	X	X

		Banksman		
	Crane Operator	Signaller	Slinger	Rigger
7. Know and assess distribution of forces	X	X	X	X
Calculate composition of forces	X		X	X
Recognise limits of their capabilities and know when to refer to a qualified lifting engineer	X			X
8. Lifting operations at the offshore location; deck work and load-unload a supply vessel	X	X	X	X
Preparation of the lifting plan and communication of work instructions (lift plan, method statement)	X	X	X	X
Correct treatment and handling of dangerous goods	X	X	X	X
Correct lifting operations procedures, e.g. for containers, tubular etc.	X	X	X	X
Correct handling while bunkering (water, fuel) and transfer of bulk material	X	X	X	X
Special lifting operations: personnel lifting operations; tandem lifts; blind lifts, etc.	X	X	X	X
Correct use of lifting equipment	X	X	X	X
9. Observing safety measures when working with and at the offshore crane	X	X	X	X
Controlling of critical emergency situations	X	X	X	X
Emergency procedures by evacuation of personnel	X	X	X	
Reporting incidents	X	X	X	X
Emergency shut down procedures	X	X	X	X
Correct interpretation of safety procedures	X	X	X	X
10. Parking the crane (boom spec) according to company/manufacturer procedures	X	X		X

7 PROFILE OF THE FUNCTIONS

Notes:

- ♦ TBI =To Be Involved

Please be advised that the bullets '♦' should be understood to mean 'for example but not limited to' in the text and tables.

			Banksman		
		Crane Operator	Signaller	Slinger	Rigger
7.1	**Main-Tasks for the Functions Involved in Lifting**				
1.	Plan lifting operations	X	TBI	TBI	X
2.	Implement regulations and standards	X	X	X	X
3.	Co-ordinate lifting operation with all personnel involved	X	X	X	X
4.	General and safety checks of crane, lifting equipment and load	X	TBI	TBI	TBI
5.	Carry out the communication-procedures	X	X	X	X
6.	Assessment of risks/hazards	X	X	X	X
7.	Know and assess distribution of forces	X	X	X	X
8.	Lifting operations at the offshore location; deck work and load-unload a supplier	X	TBI	TBI	X
9.	Safety measures when working with the offshore crane	X	X	X	X
10.	Parking the crane according to the company procedures	X	TBI	TBI	TBI
7.2	**Skills and Knowledge to Fulfil the Function**				
1.	**Perform planning of lifting operations**	X	TBI	TBI	X
1.1	Experience with the offshore cranes, the various kinds and construction	X	X	X	
1.2	Know safety aspects and accident potentials related to operation with offshore cranes	X	X	X	X
1.3	Know the influences on the operations lifting and lowering with offshore cranes (general)	X			X
1.4	Be able to use and understand an offshore crane 'load chart'	X			
1.5	Be able to carry out daily maintenance of a offshore crane	X			
1.6	Know the steps to be taken before putting the offshore crane into use (method-steps)	X			
1.7	Know the different types of pre-job and 'toolbox meeting' methods	X	X	X	X
1.8	Be able to select the correct lifting equipment for the job	X		X	X
1.9	Be aware of other activities on the platform	X	X	X	X
1.10	Estimate the mass of the load to be hoisted	X	TBI	X	X
1.11	If at any point there is a question regarding WLL, a lifting engineer should be consulted prior to proceeding	X			X
2.	**The implementation of regulations and standards**	X	X	X	
2.1	Know relevant authorities that set out regulations for accident prevention	X	X	X	X
2.2	Know rules regarding certification of the crane and involvement of the enterprise of competence in all phases of use	X			
2.3	Know the relevant documentation regarding certification and safe use of cranes	X			
3.	**Co-ordinate lifting operation with all personnel involved**	X	X	X	X
3.1	Know the rules and regulations that apply to the operation	X	X	X	X
3.2	Know different types of radio equipment (and their limitations) and how to use correctly and safely	X	X	X	X
3.3	Explain safety aspects regarding use of offshore cranes and how to protect people against accidents	X	X	X	X

			Banksman		
		Crane Operator	Signaller	Slinger	Rigger
4.	**General and safety checks of crane, lifting equipment and load (checklists)**	X	TBI	TBI	X
4.1	Know the main parts of the offshore crane	X			
4.2	Know how to carry out the daily checks report	X			
4.3	Know how to maintain and inspect lifting equipment: ♦ Storage, cleaning, inspection of lifting equipment and completion of relevant documentation ♦ Maintenance and inspection of lifting equipment ♦ Chain and chain assemblies ♦ Colour coding of lifting/handling gear ♦ Estimate the dimensions of the load to be hoisted	X	X	X	X
4.4	Necessary knowledge of main parts offshore crane/maintenance programme and how to: ♦ Check the diesel engine ♦ Check the electrical installation ♦ Check the hydraulic system ♦ Check the RCI, and safety devices , e.g. travel limit switches ♦ Check the upper works (A-frame, rope sheaves, etc) of the offshore crane ♦ Understand the instrument panel in the crane cabin ♦ Adjust the crane chair correctly ♦ Perform visual checks on wire ropes; winches; hoists ♦ Perform visual checks on sheaves drums and pulley blocks for wire ropes	X			
4.5	The steps to be taken before putting the offshore crane into use	X			
4.6	Know how to maintain and inspect load carrying equipment: ♦ Tanks ♦ Transfer equipment/personnel baskets	X	X	X	X
5.	**To instruct and to handle the communication procedures**	X	X	X	X
5.1	Know how to perform hand signals to the required standard	X	X	X	X
5.2	Understand, comply with and perform the standardized hand signals	X	X	X	X
5.3	Correct use of crane operation instructions with the aid of radio equipment	X	X	X	X
5.4	When using radio equipment give clear and correct instructions	X	X	X	X
5.5	Communication procedure related to 'Special Lifts'	X	X	X	X
6.	**Assessment of risks/hazards**	X	X	X	X
6.1	Know and understand the influences of the dynamic forces	X	X	X	X
6.2	Know and understand operational limitations regarding the supply vessel, the crane, the installation and the various types of loads	X	X	X	X
6.3	Know correct treatment and handling of dangerous goods	X	X	X	X
7.	**Know and assess distribution of forces**	X	X	X	X
7.1	Know the influence of dynamics on the load and the crane	X	X	X	X
7.2	Know the composition of forces and select the equipment	X	X	X	X
8.	**Lifting operations; deck work and load-unload a supply vessel**	X	TBI	TBI	X
8.1	Read and interpret data found in tables *(crane tables/sling tables)*	X	X	X	X
8.2	Know the function of the RCI (overload safety device)	X			X
8.3	Understand the cranes safety functions and limitations/disabilities	X			X
8.4	Hoisting slings ♦ Special lifting equipment ♦ Choose the appropriate lifting equipment and use it correctly	X	X	X	X
8.5	Be able to carry out (safe) loading and unloading of the supply vessel: ♦ Mooring rope handling; ♦ Containers; ♦ Bundled pipes; ♦ Scaffolding materials; ♦ Materials that carry specific risks	X	X	X	X
8.6	Know and be able to carry out relevant parts of correct bunkering procedures	X	X	X	

			Banksman		
		Crane Operator	Signaller	Slinger	Rigger
8.7	Hook on the loads safely and move them in accordance with the regulations.	X	X	X	X
8.8	Perform single and multiple hoisting movements in accordance with the regulations. Special lifting operations: assembly lifting: ♦ Personnel lifts ♦ Tandem lifts ♦ Blind lifts	X	X	X	X
9.	**Handle safety measures when working with and at the offshore crane**	X	X	X	X
9.1	Explain safety aspects regarding use of offshore cranes and how to protect people and materials against accidents	X	X	X	X
9.2	Know and be able to carry out correct reaction in 'near miss situations' and when technical problems appears	X	X	X	X
9.3	Reporting 'near miss' situations and completing follow up reports, according to national standard	X	X	X	X
9.4	Know and be able to carry out emergency shutdown procedures	X	X	X	X
10.	**Parking the crane according to the company procedures**	X	TBI	TBI	TBI
10.1	Be able to park the crane in a correct and safe manner accordance to the procedures	X	TBI	TBI	TBI

8 TRAINING ELEMENTS

8.1 Training Issues, Including Teaching Aims Theoretical and Practical

8.1.1 Explanation

- TBI = To Be Involved
- The cognitive teaching aims (teaching aims in the field of knowledge and recognition) are indicated in the table below by the letters T (Theoretical) and P (Practical)

Theory:

- The level on which the subject is taught is graded numerically from 1 to 4:
  1. basic recognition
  2. basic understanding
  3. knowledge required for each job description
  4. understanding of the theory of the relevant operation

Practical:

- The hands-on, practical teaching aims (teaching aims in the field of skill, capability) are graded 1 to 4 on a scale of 'important' (1) to 'most important' (4) and/or how many times he/she has to do the same handling/action;
- The individual should have sufficient skill and competence to put the theoretical elements listed above into practice.

NB: It is therefore possible to put two grades, one for 'Theory' and one for 'Practical,' into the columns of the 'Training Elements' table above, where both 'T' and 'P' designations occur, but the single grading given is a general indication.

* T=Theoretical and P=Practical/1-4 is the importance

			Banksman			
Skills and knowledge for the function <> training issues		Crane Operator	Signaller	Slinger	Rigger	Theory Practice
1.	**Perform planning of lifting operations**	X	TBI	TBI	X	
1.1	Know the relevant types of offshore cranes and their construction	3	1	1	1	T
1.2	Know safety aspects and reason for accident related to operation with offshore cranes	3	3	3	3	T
1.3	Know the influences on the operations when lifting and lowering with offshore cranes (general)	3	2	2	3	T
1.4	Know and be able to use the 'load chart' for an offshore crane	3				T, P
1.5	Be able to carry out daily maintenance of an offshore crane	3				P
1.6	The steps to be taken before putting the offshore crane into use (method-steps)	4				T, P
1.7	Know the different kinds of pre-job and 'toolbox' procedures	3	1	1	3	T
1.8	Be able to select the correct lifting equipment for the job	4	3	3	4	T, P
1.9	Know the limit of lifting operations in relation to with other activities on the platform	3	2	2	3	T
1.10	Assess the mass of the load to be hoisted	3	2	2	4	T

* T=Theoretical and P=Practical/1-4 is the importance

Skills and knowledge for the function <> training issues		Crane Operator	Banksman			Theory Practice
			Signaller	Slinger	Rigger	
2.	**The implementation of regulations and standards**	X	X	X	X	
2.1	Know the authorities that issue and control regulations for relevant accident prevention	2	1	1	2	T
2.2	Know rules regarding certification of the crane and involvement of the enterprise of competence in all phases of use	3				T
2.3	Know the necessary documentation regarding certification and safe use of cranes	4				T
3.	**Co-ordinate lifting operation with all personnel involved**	X	X	X	X	
3.1	Know the rules and regulations that apply to the lifting operation	4	3	3	4	T
3.2	Know different types of radio equipment (and their limitations) and how to use correctly and safely	4	3	3	3	T, P
3.3	Be able to explain the safety aspects regarding use of offshore cranes and how to protect personnel against accidents	4	3	3	3	T
4.	**General and safety checks of crane, lifting equipment and load (checklists)**	X	TBI	TBI	X	
4.1	Know the main parts of the offshore crane	2	2	2		T
4.2.	Know how to use the daily checks report	3	2	2		T
4.3	Know how to maintain and inspect lifting equipment ♦ Storing, treatment and registration of lifting equipment ♦ Maintenance and inspection of lifting equipment ♦ Chain and chain assemblies ♦ Colour coding of lifting/handling gear ♦ Estimate the measurements of the load to be hoisted	3	3	3	4	T, P
4.4	Have necessary knowledge of main parts of the offshore crane/ maintenance programme and how to : ♦ Check the diesel engine ♦ Check the electrical installation ♦ Check the hydraulic system ♦ Check the RCI - safety devices ♦ Check the upper works (A-frame, rope sheaves, etc) of the offshore crane ♦ Read and operate the instrument panel in the crane cabin ♦ Adjust the chair correctly ♦ Perform visual checks on wire ropes; winches; hoists ♦ Perform visual checks on sheaves drums and pulley blocks for wire ropes	3				T, P
4.5	Know the steps to be taken before putting the offshore crane into use	3				T, P
4.6	Know how to maintain and inspect load carrying equipment ♦ Tanks ♦ Transfer equipment/personnel basket	3	3	2	3	T
5.	**To instruct and to handle the communication procedures**	X	X	X	X	
5.1	Know how to perform hand signals to the required standard	3	4	4	3	T
5.2	Understand, comply with and perform the standardized hand signals	4	4	4	3	T,P
5.3	Correct use of crane operation instructions with the aid of radio equipment	4	4	3	3	T,P
5.4	When using radio equipment give clear and correct instructions	4	4	3	3	T,P
5.5	Communication procedure related to subject Special Lifts	4	4	3	3	T,P
6.	**Assessment of risks/hazards**	X	X	X	X	
6.1	Know and be able to describe the effects of the dynamic forces	3	2	2	3	T
6.2	Know and understand operational limitations regarding the supply vessel, the crane, the installation and various types of load	3	3	3	3	T,P
6.3	Know correct treatment and handling of Dangerous Goods	3	3	3	3	T,P

* T=Theoretical and P=Practical/1-4 is the importance

Skills and knowledge for the function <> training issues		Crane Operator	Banksman			Theory Practice
			Signaller	Slinger	Rigger	
7.	**Know and assess distribution of forces**	X	X	X	X	
7.1	Know the effects of dynamics on the load and the crane	3	2	2	3	T
7.2	Know the composition of forces and select the equipment	3	2	2	3	T
8.	**Lifting operations at the offshore location; deck work and load-unload a supplier**	X	TBI	TBI	X	
8.1	Read and interpret data found in tables (crane tables/sling tables)	3			4	T, P
8.2	Know the function of RCI (overload safety devices)	3			3	T
8.3	Understanding of the cranes safety functions and limitations/disabilities	3			2	T
8.4	Hoisting slings ♦ Special lifting equipment ♦ Choose the appropriate lifting equipment and use them correctly	3	3	3	4	T, P
8.5	Be able to carry out (safe) loading and unloading of the supply vessel, mooring-rope-handling; containers; bundled pipes; scaffolding materials; materials that carry specific risks; re-reeving of crane from single fall to multiple falls and reverse	3	3	3	4	T, P
8.6	Know and be able to carry out relevant parts of correct bunkering procedures	3	2	2	3	T, P
8.7	Be able to hook on loads safely and move them in accordance with the regulations. ♦ Re-reeving of crane from single fall to multiple falls and reverse	3	3	3	4	T, P
8.8	Be able to perform single and multiple hoisting movements in accordance with the regulations. ♦ Special lifting operations; ♦ Assembly lifting ♦ Personnel lifts ♦ Tandem lifts ♦ Blind lifts	3	3	3	4	P
9.	**Handle safety measures when working with and on the offshore crane**	X	X	X	X	
9.1	Explain safety aspects regarding use of offshore cranes and how to protect personnel and material against accidents	3	2	2	3	T, P
9.2	Know and be able to carry out correct reaction in 'near miss situations' and when technical problems appears	4	3	3	3	T, P
9.3	Reporting 'near miss' situations and how to compile the follow up reports to national standard	3	2	2	2	T, P
9.4	Know and be able to carry out emergency shutdown procedures	3	2	2	2	T, P
10.	**Parking the crane according to the company procedures**	X	TBI	TBI	TBI	
10.1	Be able to park the crane in a correct and safe manner accordance to the procedures	3	3	2	3	P
10.2	Be responsible for safe storage of loose lifting equipment and accessories				4	P

8.2 Assessment/Examination

Both the assessment and the (final) examination, consist of a theoretical and a practical part.

The assessment technique shall include direct observation, practical tasks, written and oral questions, simulation and a combination of all the techniques.

The (final) examination will require the candidate to achieve the practical and theoretical attainment targets (minimum 75%) in order to gain the definitive Expertise of Competence. The (final) examination shall include practical tasks and written/oral questions (open and multiple-choice).

8.3 Instructor/Assessor

The qualifications and experience of the instructor and/or assessor should be as follows:

i. Should be familiar with the relevant legal regulations, specific regulations, standards and codes of practice relating to offshore cranes and lifting equipment.

ii. Have a thorough knowledge of the relevant assessment documents, methods, procedures and assessment requirements.

iii. Have appropriate technical knowledge of the activities that are to be assessed.

iv. Have industry experience in the use and operation of the relevant equipment

v. Have an overall degree of understanding sufficient to carry out a reliable and proper assessment relating to the skills and competence of the candidates involved with the programme.

vi. Have the appropriate qualifications and experience.

vii. Be able to communicate effectively both in writing and orally in the required languages.

viii. Be free from any conflicting interest so that they can make impartial and non-discriminatory decisions.

ix. Hold a recognised national assessor's award and be a discipline expert in the areas being assessed, have extensive experience and be actively involved in lifting operations offshore.

The instructor and the assessor should not be the same person on the training course.

The instructor must be a certified offshore crane operator who possesses the necessary teaching skills, experience and qualifications.

8.4 Programme

8.4.1 Basic Training Course

The programme will be designed to give the delegate maximum opportunity to practice the skills required from a member of an offshore crew; the exercises should be designed to test the skills and knowledge and understanding of the candidate.

When necessary delegates should receive further training or coaching in areas where it is felt that deficiencies or lack of understanding exist. To maximise the efficient use of time and ensure effective learning there should be an integration of the three phases of explanation i.e. (i) theoretical and practical separate, (ii) in combination, and (iii) a demonstration and practical exercises.

On the last day of the basic training course candidates will take their practical and theoretical assessment. Candidates who pass this assessment will receive a temporary Certificate of Expertise.

Note: At the end of the programme the training provider should identify to the candidate and his employer areas requiring further development and training. Also, time should be allowed after the training course and assessment for comment and feedback from the candidate.

8.4.2 On the Job Training Offshore Location

After finishing the basic training course at the training location, the course will be continued at the offshore location. The continuation of this training will take place under the supervision of an experienced Certified Crane Operator Offshore. The crane operator will provide the candidate with the necessary knowledge and skills over this training period at the offshore location.

The temporary Certificate of Expertise entitles the candidate to work on a crane under supervision. This practical period of working on a crane has to be officially recorded by the Offshore Installation Manager on the temporary Certificate of Expertise.

A log book can be used.

When the attainment targets of the training curriculum are obtained, the candidate can be nominated for the final examination and fulfil the requirements of the final test (practical examination). This will be organised on the offshore crane on the offshore location. One of the most important parts of this examination will be to load and unload a supply vessel.

8.4.3 Refresher

A refresher training programme will be required, and this should be based on the following elements:

i. The first refresher training course should take place in the period between the basic training course and the final examination;

ii. The second refresher training course should take place 2-3 years after the candidate has finished their training and gained the Certificate of Expertise.

The expected duration would be a minimum of two days for each of the above refresher programmes.

Contents of the programme are based on repeating the elementary parts (theoretical and practical) of the training curriculum, with the use and illustration of realistic practical cases.

The objective of the refresher training is to:

1. Involve the candidate in an emergency response training exercise;
2. Update the candidate on new developments: technical aspects, safety devices, regulations etc;
3. Support the training on the job period for the candidate and his supervisor;
4. Point out areas for improvement to the candidate.

8.4.4 Re-assessment

A re-assessment training programme should be based on the following elements:

Note: Re-assessment is based on 9.2.

i. Confirmation that the required competence is being maintained. The Certificate of Expertise is valid for a particular period and re-assessment should be carried out one year before the expiry date. The period of validity should not exceed ten years if the holder of the certificate is in regular, active duty during that period.

ii. Where the assessment indicates 'not yet competent' in an area or section of the assessment (practical and theoretical), the candidate may be reassessed for that area or section only after additional training in that area or section has been given.

iii. A full re-assessment training programme will be required where the candidate has not had practical operating experience on an offshore crane for a period of more than two years.

8.4.5 Simulator Training

Where simulator training is carried out candidates would be expected to attend courses based along the following lines:

Introductory course

Objectives for this course are to give training and insight for personnel such as line managers, who have responsibility for crane and lifting operations. It would also give banksmen a better understanding of how the crane and vessel's cargo behave and make them more familiar with the crane operator's function and problems during lifting operations. Personnel that are applying for a crane certificate would also find this level of course beneficial.

Retraining course

The retraining courses are aimed at experienced crane operators. The contents are based on the issues of communication procedures, pre-job communication with all personnel involved in the lifting operation (supply vessel, banksman etc.) and 'safe job analysis' when for example lifting under marginal conditions. Scenario training with critical simulated situations is also part of this course. Candidates should have a retraining course at periods not exceeding three years.

Simultaneous training with supply vessel and crane

Simultaneous training between platform personnel and the crew of the supply vessel. Special lifting operations and various critical situations. The most important objective of this training course level is to establish better contact, communication and co-operation between all personnel involved with offshore lifting operations.

9 FACILITIES

9.1 Classroom

- Sufficient capacity for the number of persons in the training group;
- Quiet office-type environment;
- Heating/(when necessary air conditioning) facilities, a blackboard and/or flip-chart; TV and video recorder; power beam and laptop or sheets and overhead projector;
- Demonstration facilities e.g. working models of cranes, examples of some types of lifting equipment such as shackles, slings, pipe clamps etc.;
- Basic demonstration aids to help understand the principles of hydraulic, pneumatic and electrical crane schematics. Prime mover (diesel and electric drive) examples may include working models.

9.2 Practical Training

- Offshore crane and wave/supplier simulator;
- Crane simulator (course level dependent on offshore position and candidate competence);
- Loose gear lifting equipment, use of slings, tag lines;
- Pipe bundles; single pipes; handling tubulars;
- Cargo handling equipment, offshore type containers;
- Practical exercises based on the training elements of 8.1, including schedule and study guidance.

9.3 Theoretical Training

- Syllabus based on theoretical training elements of 8.1, including schedule and study guidance;
- Guidance for the instructor/trainer;
- Appendices: Hand signals Offshore North Sea; National and industry standards; relevant legislation, etc.

9.4 Safety Standards

- Safe systems of work (permits, procedures, company specific procedures, toolbox meeting, lifting plans);
- Risk assessment and control measures.

9.5 Documentation

- Equipment pre-use inspection, including certification of equipment;
- Crane book;
- Crane operations manual;

- Maintenance reports, maintenance and inspection manuals;
- Logbook: registration hours;
- (Temporary) Certificate of Expertise.

9.6 Equipment

- Equipment training – see also 9.2 and 9.3;
- Equipment safety – first aid.

Annex A

ADDITIONAL REQUIREMENTS FOR A RIGGER TRAINING PROGRAMME

Foreword

The rigger training programme is designed to give documented knowledge and skills to persons with the responsibility to move differing loads in varying situations with different types of lifting equipment.

The rigger training programme gives only the minimum knowledge and skills which are necessary to meet the requirements for health and safety.

The correct use of working equipment including both manually and power driven hoists, beam clamps and other lifting gear ensures the safety of personnel using the lifting equipment.

Incorrect use of the equipment can lead to serious personnel risk and material damage. A positive safety attitude is therefore most important during training.

CHAPTER 1 – GENERAL – RIGGER TRAINING PROGRAMME

Duration

32 Hours (lesson hour = 45 min.)

Training Purpose

The intention of this training programme is to give good practical basic training in how to use rigging equipment in a safe manner.

The training should give the pupils a good understanding of the principle of the construction of rigging equipment, its mode of operation and maintenance to avoid incidents and accidents during rigging operations.

Rigging Operations

Use of rigging and lifting equipment in combination, such as with transportable manual or power driven hoists, winches and lifting gear; to move a load horizontally, vertically or at other angles.

The rigger training shall cover the theoretical and practical training required to result in a trainee being able to perform safe rigging operations independently.

To complete the training the candidate must pass a practical examination.

Lesson and Timetable

- Theory 4 hours
- Practice 24 hours
- Evaluation 4 hours
- Total 32 hours

Competence Requirements – Rigger Training School

Competence Requirements of the Rigger Training Instructors

The Rigger Training Instructor shall have sufficient experience of rigging operations and in appropriate pedagogic skills. Instructors shall also fulfil national regulatory requirements.

An example of fulfilling such requirements would be completion of an instructor training course for different types of cranes.

CHAPTER 2 – OBJECTIVES

Main Goal

The Training Objective is that the rigger gains sufficient competence and know-how to avoid incidents and accidents during rigging operations.

Sub Goals

The trained rigger shall:

1. Demonstrate knowledge of different types of incidents and accidents which illustrate the need for defining personnel responsibility in the lift team;
2. Demonstrate knowledge of the potential results of the wrong use of rigging equipment;
3. Demonstrate knowledge of how root causes of incidents can be identified and eliminated;
4. Be able to describe the construction and function of different types of rigging equipment;
5. Know the importance of proper maintenance of rigging equipment;
6. Explain how different types of rigging equipment are used and connected safely and correctly and how to identify what loads are appropriate;
7. Demonstrate knowledge of the necessity for safe rigging procedures for the avoidance of accidents to all those in the lifting team and any other personnel;
8. Be able to explain which procedures are necessary when using rigging equipment and after its use;
9. Be able to demonstrate overload protection measures on hand driven lever and chain hoists;
10. Give an account of the rules concerning control of rigging equipment, how it should be done and which documentation should be available before the equipment is used;
11. Know the legislation, national regulations and standards applicable to the design and use of the rigging equipment;
12. Be able to demonstrate correct use of fall arresting and personal safety equipment used with rigging equipment;
13. Be able to select appropriate personnel for a rigging operation;
14. Be able to demonstrate correct use of safety barriers during a rigging operation;
15. Know the difference between primary and secondary structures;
16. Know the required competence of the person to be consulted when there is any doubt regarding the strength/quality of suspension bars.

CHAPTER 3 – SUBJECT CONTENTS

Theory/Practice Rigger Training Programme – 32 hours

Lesson	Subject	Hours	Remarks
1	Theory	4	Contents: ♦ User attest [a document of conformity issued by a competent person stating that the product is safe in use and has been thoroughly examined] ♦ Relevant Legislation/Regulation ♦ Primary and secondary structures ♦ Suspension points ♦ Rigging in different structures and scaffolding structure ♦ Use of lifting tools during rigging operation, for example: beam suspension clamps, lever and chain hoists, shackles, fibre slings, wire and chain slings and load cells ♦ Use of fall arresting devices
2	Practice	24	Rigger training: ♦ Planning of rigger operation identifying appropriate beam construction and dimension ♦ Correct use and placing of suspension clamps ♦ Different ways of slinging, for example, pumps, engines long tubes ♦ Shortening techniques using fibre and chain slings ♦ Use of shackles in rigging operations ♦ Correct use of lever and chain hoists ♦ Carry out easy and complex rigging operations ♦ Safety risk analyses of own and other persons involved in rigging operations ♦ Use of safety barriers ♦ Toolbox talks ♦ Training in use of user attest [a document of conformity issued by a competent person stating that the product is safe in use and has been thoroughly examined] ♦ Correct use of personal fall arresting equipment during a rigging operation, such as different harnesses, fall arresting block and line with fall preventer ♦ Correct use of load cells
3	Evaluation	4	Evaluation: Pass test demonstrating an independent rigging operation including use of user attest certificate [see above] and the choice of correct rigging equipment. The test is passed if: ♦ Use of lifting equipment ♦ The rigging operation ♦ Safety during rig operation ♦ Gives a minimum score of 2 points for each subject on a scale of 1-6

CHAPTER 4 – WORKING METHODS

It is of most importance that the training is carried through with realistic exercises and that the element of safety is given priority during training.

The theoretical part of the training shall be in close relation to the practical training based on the students understanding of safe use of working equipment during rigging operations.

The students shall carry out the training in groups with current guidance from the instructor.

CHAPTER 5 – ASSESSMENT EVALUATION

The practical training is completed with a practical test to ensure that each student has sufficient competence and knowledge to demonstrate:

- Planning and carrying out of an appointed rigging operation;
- Correct use of different types of lifting equipment at a fixed rigging operation;
- Correct use of personal safety protection equipment;
- Correct way of securing a working area.

The score is defined as: Passed/Not passed.

The final test shall be planned and carried through by the training school.

The content shall cover the subjects in the training programme.

The training shall be documented by the training school.

CHAPTER 6 – EDUCATIONAL MATERIAL

Type of equipment	Description of equipment and material
Instruction/Instruction place	Theory: ♦ Classroom must have a blackboard, flip-chart, overhead projector and a screen ♦ Classroom must have adequate sitting and writing places for the students and have a satisfactory indoor environment Practice: ♦ Training place for practical rigger training might be a training module with dimensions (l x w x h) (5x6x5) m. The module must have at least 2 floors (3 floors inclusive the roof) with different type of steel beams, walls and floors structured from gratings ♦ Training module must have access to a crane to lift training objects in and out of the walls and floors
Educational material	Access to different types: ♦ Hand operated hoists (chain and lever hoists) with different capacities and chain lengths ♦ Beam clamps ♦ Shackles, fibre slings, wire slings, and chain slings ♦ Roller crowbar, rollers and steel tubes ♦ Valves, pumps, winches, engines and tubes. Component weight depending on the strength of the training module ♦ Load cell ♦ Fall arresting devices ♦ Personal protection equipment ♦ Safety barrier equipment
Instructor material	♦ Teaching plan ♦ Lesson plan ♦ Training plan ♦ Training exercises ♦ Instruction handbooks and lifting gear certificates
Student material	Adequate education, instruction and training books and material for the programme

CHAPTER 7 – EQUIPMENT

Minimum Equipment Needed for Rigger Training in Training Module: Hoist, Lifting Gear and Personal Protection Equipment
Hoist 1. 4 pcs. Lever hoist with different chain length. WLL depending on objects lifted 2. 6 pcs. One fall chain hoist with and without overload protection with different chain length. WLL depending on objects lifted 3. 2 pcs. Two fall chain hoists of different chain lengths. WLL depending on objects lifted
Lifting Gear 1. 8 pcs. of Suspension beam clamps. WLL depending on objects lifted and beam capacity 2. 8 pcs. of Suspension screw clamps. WLL depending on objects lifted and beam capacity 3. 18 pcs. of shackles. WLL 3,25t, 4,75t and 6,5t 4. 6 pcs of steel wire rope. WLL depending on objects lifted 5. 20 pcs. of fibre round slings in different lengths and WLL 6. 8 pcs. of fibre flat slings in different lengths and WLL 7. 3 pcs. of 2-part chain slings with hooks and snare hooks on chain legs. WLL depending on objects lifted 8. 1 load cell
Fall Arresting Equipment 1. 4 pcs. harness 2. 4 pcs. fall arresting blocks 3. Safety barrier material 4. Personal protection equipment. (protective shoes, helmet, boiler suit, masks and safety glasses 5. First aid equipment, eye rinsing water bottle