

Safe use of lifting equipment

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Foreword

The NORSOK standards are developed by the Norwegian petroleum industry to ensure adequate safety, value adding and cost effectiveness for petroleum industry developments and operations. Furthermore, NORSOK standards are, as far as possible, intended to replace oil company specifications and serve as references in the authorities' regulations.

The NORSOK standards are normally based on recognised international standards, adding the provisions deemed necessary to fill the broad needs of the Norwegian petroleum industry. Where relevant, NORSOK standards will be used to provide the Norwegian industry input to the international standardisation process. Subject to development and publication of international standards, the relevant NORSOK standard will be withdrawn.

The NORSOK standards are developed according to the consensus principle generally applicable for most standards work and according to established procedures defined in NORSOK A-001.

The NORSOK standards are prepared and published with support by The Norwegian Oil Industry Association (OLF) and Federation of Norwegian Manufacturing Industries (TBL).

NORSOK standards are administered and published by Standards Norway.

Annexes A, B, C, D, E, F, G, H, I and K are normative. Annex J is informative.

Introduction

The intention of this NORSOK standard is to provide requirements and guidelines for the safe use of lifting equipment.

This NORSOK standard shall help to establish, maintain and further develop an acceptable level of safety for personnel, the environment and material assets in the planning and execution of lifting operations.

During the preparation of this NORSOK standard, consideration was given to Norwegian regulations, European and international standards, OLF and NR guidelines, and the operator companies and shipowners' internal specifications and procedures relating to the safe use of lifting equipment.

Amendments made to Rev. 1, October 1997 are so extensive that it was not appropriate to mark them.

This NORSOK standard shall, based on input from the users, be revised on an annual basis by a revision group. Improvement proposals shall be coordinated by the individual company before being sent to the revision group.

In order to assist learning and experience exchange, the improvement proposals and the revision group's processing of these shall be made available.

Standard Norge is secretariat for the revision group.

1 Scope

This NORSOK standard embraces the safe use of lifting equipment used in connection with lifting operations in the petroleum activities. It does not include the use of lifts and fall protection equipment.

NOTE Examples of lifting equipment covered by this NORSOK standard can be found in Annex J.

2 Normative and informative references

The following standards include regulations and guidelines which, through references in this text, comprise the regulations and guidelines in this NORSOK standard. The latest versions of the references shall be used unless otherwise agreed. Other recognised standards can be used provided that it can be proven that they satisfy or exceed the requirements and guidelines in the standards referred to below.

2.1 Normative references

DNV Certification Note CN 2.7-1, DNV Certification Note CN 2.7-2, EFIBCA Standard 005, DAT Regulation no. 608, order no. 555, FOR 1986-01-13 no. 31	Offshore Containers Offshore Service Containers Single trip Use of work equipment (see NOTE below) The Norwegian Maritime Directorate: Regulations for deck cranes etc. on mobile installations (see NOTE below)
FOR 1978-01-17 nr. 04	The Norwegian Maritime Directorate: Regulations for loading and unloading appliances on ships (see NOTE below)
IMDG code, DAT Regulation no. 820, order no. 522, DAT Regulation no. 1139,	Regulations for machinery (see NOTE below) Regulations for classification, marking etc. of dangerous chemicals (see NOTE below) Guidelines for the approval of offshore containers handled in open seas
MSC/Circ. 860,	Lifting Equipment Temporary equipment
NORSOK R-CR-002, NORSOK Z-015, NS-EN 365,	Personal protective equipment against falls from a height – General requirements for instructions for use, maintenance, periodic examination, repair, marking and packaging.
NS-EN 813,	Personal protective equipment for prevention of falls from a height – Sit harnesses
NS-EN 12079,	Offshore containers –Design, construction, testing, inspection and marking
NS-EN 45004,	General criteria for the operation of various types of bodies performing inspection
OLF/NR 061,	Guidelines for safety in the interaction between the installation, supply base and offshore service vessel (see NOTE below)
OLF/NR 078,	Recommended guidelines for the use of riding belt (see NOTE below)
OLF/NR 081,	Implementation of NPD's requirement set forth in the Facilities regulations Section 55 and the Activities regulations Section 80, with regards to remote operated pipe handling
FOR 1998-12-29 no. 1455	The Norwegian Maritime Directorate: Regulations for equipment on ships (see NOTE below)

NOTE Unauthorised translation of title.

2.2 Informative references

DNV - Rules for planning and execution of marine operations.

3 Terms, definitions and abbreviations

The following terms, definitions and abbreviations apply for this NORSOK standard.

3.1 Terms and definitions

3.1.1

blind lifts

lifting operation whereby the lifting appliance operator does not have a direct view of the load or landing area

NOTE Use of closed circuit television monitoring the work area is not considered to be direct view.

3.1.2

should

verbal form used to indicate that among several possibilities one is recommended as particularly suitable without mentioning or excluding others, or that a certain course of action is preferred but not necessarily required

NOTE The term 'should' means that other solutions can be chosen than the one recommended in the standard. It shall be documented that the alternative solution provides an equivalent level of safety.

3.1.3

documented training

training whereby it can be documented that the person who will use the lifting equipment has received practical and theoretical training that provides knowledge about its structure, operation, applications, limitations and scope of use, as well as maintenance and inspection in accordance with the requirements set for safe use and operation stipulated in regulations and instructions for use

3.1.4

simple lifting appliances

lifting appliances (overhead cranes, winches, chain hoists, monorail cranes, etc.) where use is not considered to involve a hazard to life, health and/or material assets

3.1.5

dangerous goods

load that is classified and marked in accordance with the IMDG code

3.1.6

fixed attachment point for lifting appliance

pad eyes, winch and mobile crane foundations, lifting beams and beams for temporary attachment of beam clamps

3.1.7

pre-use and post-use check

visual and functional assessment (not test) of the lifting equipment's technical condition before and after use (without disassembly)

3.1.8

suspended work platform

mechanically operated work platform that can move freely

NOTE For example, suspended on rope.

3.1.9

installation

facility, plant and other equipment for petroleum activities (however, not ships that transport petroleum in bulk)

NOTE In this NORSOK standard, supply and standby boats are included in the definition of an installation. Examples of installations include fixed installations, floating production, storage and offshore loading (FPSO) vessels, rigs, barges, crane barges, service vessels etc.

3.1.10**inspection**

visual control of lifting equipment for defects, and check of operating controls, limit switches and indicators

NOTE Normally does not require disassembly.

3.1.11**snatch block**

lifting equipment consisting of at least one sheave in a frame with an attachment point for rope, wire sling or chain that can be attached to a fixed point or to a movable point on the load.

3.1.12**can**

verbal form used for statements of possibility and capability, whether material, physical or incidental

3.1.13**elevating work platform**

mechanically operated work platform that moves vertically in guides

3.1.14**controller**

person in enterprise of competence who has sufficient theoretical knowledge, practical experience and understanding to carry out control of lifting equipment in a satisfactory manner

3.1.15**crane**

lifting appliance whereby the load can be moved horizontally in one or more directions, in addition to the vertical movement

3.1.16**critical lifting operations**

operations requiring a work permit and special safety measures in order to address the interface with adjacent activities

NOTE These operations include, but are not limited to

- lift over critical areas, process equipment and well equipment,
- personnel transport with the lifting appliance, unless management on board has established other approval arrangements,
- coordinated lift whereby the weight exceeds the maximum lifting capacity of one of the lifting appliances,
- overload testing of the lifting appliance with SWL over 10 tonnes,
- lift of special loads such as structures, mobile cranes etc,
- heavy lifts that are not considered routine operations,
- subsea operations using the offshore crane.

3.1.17**load carrier**

all types of container, baskets, tanks, skids and frames that are used to transport load

3.1.18**lifting and stacking truck**

forklift truck and similar mobile motorised work equipment for combined lifting, moving and stacking

3.1.19**lifting components**

parts of the structure of, or used as part of a lifting gear, such as hooks, shackles, rings, eye bolts, etc.

3.1.20**lifting operation**

all administrative and operational activities before, during and after a load is moved and until the lifting equipment is ready for a new load

3.1.21**lifting appliance**

combined unit that is used to lift loads, with or without horizontal movement

NOTE Examples of lifting appliances are shown in Annex J.

3.1.22**lifting gear**

components or equipment used between the lifting appliance and the load or on the load to grip it, but which is not an integrated part of the lifting appliance

NOTE Examples of lifting gear are shown in Annex J.

3.1.23**lifting equipment**

common term for lifting gear, lifting appliances and lifting components, used together or individually

3.1.24**man overboard boat****MOB**

boat for speedy rescue of personnel in the sea

3.1.25**material handling plan**

plan for moving load on the installation to ensure a safe and efficient operation

NOTE The material handling plan takes into account, among other things

- the need for type and number of lifting and transport equipment,
- the need for loading and unloading areas,
- preparing for the use of lifting and stacking trucks, trolleys etc.,
- access to areas and workplaces for operation and maintenance.

3.1.26**nominal capacity (R_0 or R_n)**

the actual hook load that the crane is designed to lift in a given operating condition

NOTE 1 For example, boom configuration, number of lines, off lead, side lead, heel, trim, radius, wave height, etc.

NOTE 2 Nominal capacity R_0 is equivalent to SWL as defined in ILO conventions. Nominal capacity for an offshore crane is stated in the crane's load chart for different significant wave heights.

3.1.27**offshore container**

transportable unit for repeated transport of load or equipment, a unit that can be handled in open sea to/from installations and vessels

NOTE 1 The unit includes equipment for lifting, handling, filling, emptying, cooling and heating etc.

NOTE 2 There are two categories of offshore container:

1. Offshore freight container
 - a. Freight container for dangerous goods.
 - b. Freight container for non-hazardous load that is not covered by the IMDG code.
2. Offshore service container

Service container produced and equipped for special use, mainly for temporary installation.

3.1.28**offshore crane**

slewing crane for general use mounted on an installation and which is used to handle loads to and from supply boats, barges or semi-submersible installations

3.1.29**offshore installation manager**

overall manager on the installation

NOTE On a vessel this will be the captain.

3.1.30**rigger**

person who assembles, controls and issues tags for temporarily assembled lifting appliance

3.1.31**competent control**

control carried out by an enterprise of competence in order to verify that lifting equipment satisfies relevant requirements and is designed, embedded, installed, set up, tested, documented and maintained in such a way that use of the lifting equipment is fully justified

NOTE There are four types of competent control:

- initial control;
- - periodic control;
- - extraordinary control;
- - safety evaluation.

3.1.32**competent person**

person approved by The Norwegian Maritime Directorate to certify and perform competent control on installations that are subject to The Norwegian Maritime Directorate's regulations

3.1.33**enterprise of competence**

entity in the operator companies' organisation, or in other companies or institutions, that together have sufficient theoretical knowledge and practical experience to understand calculations for lifting equipment, its design and function, and to carry out necessary examinations and tests in order to issue certificates

3.1.34**certificate**

form based on ILO's recommendation, issued by the enterprise of competence/competent person, confirming that the lifting equipment meets statutory requirements and is designed, embedded, installed, set up, tested, documented and maintained in such a way that use of the lifting equipment is fully justified. The certificate shall state the statutory requirements on which it is based

NOTE 1 The scope of the control for certification purposes will vary, depending on whether EU regulations or maritime regulations apply.

NOTE 2 EU regulations

Here, the certificate is based on the manufacturer's declaration of conformity and CE marking in accordance with DAT Regulation no. 820, order no. 522. Reference is made to chapter IX of DAT Regulation no. 608, order no. 555, for a description of the scope of the control.

NOTE 3 Maritime regulations

Here, the certificate can be based on, for example, FOR 1986-01-13 no. 31, or FOR 1978-01-17 no. 04. Similarly, the classification regulations or the declaration of conformity and control tagging in accordance with FOR 1998-12-29 no. 1455 can form the basis where this applies.

NOTE 4 Previously, the term 'Certificate of Use' was used instead of 'Certificate'. Previously issued Certificates of Use will remain valid documentation that use of the lifting equipment is fully justified.

3.1.35**certified safety training**

training provided by certified training enterprise in accordance with the requirements in section 49 and section 50 of DAT Regulation no. 608, order no. 555

3.1.36**significant wave height**

average height of the highest third of prevailing waves, typically measured over a period of three hours.

NOTE As a rule of thumb, significant wave height is about half the maximum wave height.

3.1.37**safe working load****SWL**

maximum load the lifting equipment is certified to withstand under normal use

NOTE SWL is normally used by ILO and shall apply on all floating and other mobile installations and ships that are not covered by EU regulations.

3.1.38**shall**

verbal form used to indicate requirements strictly to be followed in order to conform to the standard and from which no deviation is permitted, unless accepted by all involved parties

NOTE This verbal form is used in connection with requirements that shall be fulfilled in order to comply with this NORSOK standard. If other solutions are necessary, this shall be treated as a nonconformance and dealt with as a deviation according to company requirements. The alternative solution, together with any compensating measures, shall provide an equivalent level of safety.

3.1.39**working load limit****WLL**

maximum load that a sling or a lifting component is certified to withstand under normal use and in a given configuration

3.1.40**test**

specific operation of lifting equipment, with or without a defined load, in order to determine whether the lifting equipment is suitable for use

3.1.41**test load**

specified load that the lifting equipment shall withstand within the manufacturer's specified limits without resulting in permanent deformation or other defects, and thereby confirming that the design, materials and manufacture comply with specification and statutory requirements

3.1.42**heavy lift**

load that is handled with the offshore crane's main block

3.1.43**examination**

function test of all safety devices, i.e. limiting and indicating equipment, brakes, clutches etc. in order to verify that they operate within the tolerance requirements

NOTE An examination is more comprehensive than an inspection.

3.2 Abbreviations

BOP	blow out preventer
CE	Conformité Européen (CE marking confirming compliance with the basic requirements in EU directives)
CETOP	European Oil Hydraulic and Pneumatic Committee
DAT	Labour Inspection Directorate
DNV	Det Norske Veritas
EFIBCA	European Flexible Intermediate Bulk Container Association
HAZOP	hazard and operability study
IMDG	International Maritime Dangerous Goods
ILO	International Labour Organisation
KOSAR	Kompetansesenteret for arbeidsutstyr AS

MOB	man overboard boat
MSC	The Maritime Safety Committee
NR	Norwegian Shipowners' Association
OLF	Norwegian Oil Industry Association
OMHEC	Offshore Mechanical Handling Equipment Committee
SJA	safe job analysis
SWL	safe working load
WLL	working load limit
UHF	ultra high frequency
VHF	very high frequency

4 Safe use of lifting equipment

This clause describes the individual lift and how the persons involved shall carry it out. This description applies to all types of lifting equipment used. Subsequent sections state additional requirements that apply for different types of lifting equipment.

4.1 Overall requirements

All use, maintenance, storage, checks, inspection and examination of lifting equipment shall comply with the manufacturer's instructions for use, and the requirements in this NORSOK standard with annexes, see NS-EN 365. The lifting equipment shall not be modified for purposes other than those stated without the consent of the manufacturer and enterprise of competence.

Lifting equipment shall only be used by personnel who have and can document competence as described in Annex B.

Responsibilities of the company and personnel who are involved in lifting operations are described in Annex A.

4.2 Management

The operational responsible person shall manage all of the activities with lifting appliances within his area of responsibility.

Lifting appliance operator is in charge of the individual lifting operation.

When considered to be safer, a person other than the lifting appliance operator can be designated to be in charge of the lifting operation.

If a signaller is involved in the lifting operation, he shall be responsible for directing the load.

4.3 Risk assessment

All personnel involved shall assess the need for a pre-job talk, SJA or use of other risk analysis methods as described in Annex I.

If, during the execution of a lifting operation, there is a change in operational conditions or in the assumptions on which the risk mapping was based, the operation shall cease and the need for a new risk assessment and implementation of any corrective safety measures shall be considered.

4.4 Planning

Each lifting operation shall be planned in order to ensure safe execution and that all predictable risks are taken into consideration. The planning shall be carried out by personnel who have the relevant competence.

For repeated or routine operations, such planning is only necessary the first time, provided that an operating procedure is in place or documented in another way. Periodic revisions shall be carried out to ensure that no critical factors have changed.

The planning of lifting operations shall, as a minimum, ensure that

- all personnel involved are familiar with the task, i.e. what is to be lifted, weight of the load, what lifting equipment to use, the travel path, and the roles of the persons involved in the lifting operation,
- competent and sufficient personnel are present at all phases of the lifting operation,

- the travel path is clarified and any obstacles are removed before lifting commences,
- barriers are in place to prevent personnel from walking or standing under suspended load,
- method of communication is clarified,
- the lifting operation can be executed safely in relation to simultaneous operations,
- lifting appliances and lifting gear are suitable and will be used in accordance with the manufacturer's instructions for use,
- the landing area can accommodate the load in terms of size and weight,
- use of tag line is considered,
- personnel involved have sufficient competence and knowledge of the regulations and standards that govern the operation that is to be executed,
- work permit is obtained for critical lifting operations,
- enterprise of competence is involved in tandem lifts where the weight can exceed the lifting capacity of one of the lifting appliances.

For subsea lifting operations, a recognised standard shall be applied, such as "DNV - Rules for planning and execution of marine operations", in addition to this NORSOK standard.

4.5 Limitations

The lifting appliance operator shall map and take into consideration limitations that can affect the lifting operation, including the capacity of the lifting equipment, weather conditions, movements, landing areas, blind zones and other limitations as a result of the travel path.

4.6 User check

User of lifting equipment shall check the lifting equipment and make sure that it is in a safe condition before and after use.

The pre-use and post-use checks should include the following:

- visual check of the lifting equipment;
- function test of the equipment in accordance with the manufacturer's recommendations;
- function test of the emergency stop device;
- report any faults or defects to the technical responsible person.

Daily check routines of the lifting equipment can cover this user check requirement.

Lifting appliances shall not be used if safety systems or parts of safety systems are not functioning or have been isolated.

4.7 Communication

At all times there shall be adequate communication between all personnel who are involved in the lifting operation. Radio equipment appropriate for the relevant lifting operation shall be used.

Radio check shall be carried out prior to the start of the lifting operation. When directing the load, instructions shall be clear and unambiguous.

The lifting appliance operator can repeat the signaller's instructions (confirmatory communication) to avoid any misunderstandings during lifting operations.

When directing the crane in blind zones, transporting personnel and other lifting operations where radio communication is of prime importance, confirmatory communication shall be used.

In order to help the lifting appliance operator, the desired crane movement can be stated in metres.

Where appropriate, a communication method can be chosen whereby the signaller gives a continuous signal to continue the movement. The lifting appliance operator shall stop immediately if he does not receive the signal.

The method of communication to be used shall be agreed as part of the pre-job talk or SJA.

Unnecessary use of radios shall be avoided.

All unnecessary noise or activity that can distract the lifting appliance operator shall be avoided.

Unless otherwise agreed, communication shall be in Norwegian. All personnel who are involved shall be competent in the language chosen.

When directing the crane, the following instructions shall be used:

Instruction (Norwegian)	Instruction (English)	Action
Hiv	Pick up	lift the load
Lår	Lower	lower the load
Topp bom	Boom up	raise the boom
Legg bom	Boom down	lower the boom
Sving høyre	Slew right	slew to the right (from crane operator's position)
Sving venstre	Slew left	slew to the left (from crane operator's position)
Stans	Stop	stop the movement immediately
Pent/fint/rolig	Gently/slowly	slow movement
Slakk av	Slack off	release tension in the wire so that the hook can be release
Fri krok	Hook free	lift up released hook

If visual signals are used, the hand signals shown in Annex F shall be used.

When using personnel winch, the communication requirements in OLF/NR 078 shall be followed.

Lifting appliance operator shall at all times be fully attentive to the operation.

4.8 Safe execution

4.8.1 Fundamental safety requirements

The load and any load carrier shall be properly secured and prepared before the lifting operation commences.

For transport of bulk loose material, a load carrier shall be used that is designed such that material cannot fall out during loading or unloading operations. Liquid products shall be transported in sealed load carriers.

For internal transport, load carriers should be used where practical.

Relevant areas shall be barriered off before the lifting operation commences.

On installations with significant movement, loads shall be secured against unintentional displacement or overturning. Procedures describing when and how this shall be carried out shall be available on each installation, see Annex C.

Loads shall not be transported over personnel.

Personnel shall not walk under suspended load.

All personnel who are involved in the lifting operation shall ensure that they have an unrestricted escape route in all phases of the operation.

Loads shall be attached to the lifting appliance and handled in such a way that the load remains stable throughout the entire lifting operation.

The lifting operation shall cease immediately if safety is jeopardised, when instructions are unclear, or in the event of loss of communication.

Lifting appliance operator shall only obey instructions from the designated signaller, but shall obey the emergency stop signal at all times, regardless of who gives this signal.

Lifting appliance operator shall not leave the operator's cabin or station with load hanging on the hook.

If a lifting appliance is used to hang off a snatch block or similar, the lifting appliance shall be secured against unintentional use.

If a block and tackle/chain hoist is used between the hook on the lifting appliance and the load in order to manoeuvre the load in connection with assembly or disassembly work, care shall be taken to ensure that the block and tackle/chain hoist does not become load bearing when the lifting appliance is in motion.

If the assumptions on which the planning and risk assessment were based change during the operation, the operation shall cease and the need for a new risk assessment and initiation of any corrective safety measures shall be considered.

4.8.2 Signaller and slinger

All participants in a lifting operation shall, at all times, know who is the signaller.

Participants in lifting operations and their roles can be made known through the wearing of special clothing, such as a reflective vest, hardhat or similar.

The signaller and slinger shall stand in a safe area at all times when the crane and/or lifting wire is moving. The slinger can manually guide the empty hook to and from the load or load carrier.

If the lifting appliance operator has a good visual overview of the area, the slinger can, with clearance from the lifting appliance operator, handle/manoeuvre the load when it is under control and below shoulder height.

If the lifting appliance operator has a good visual overview of the area, the signaller can carry out the slinger's duties, see Annex A. In such circumstances, the signaller can, with clearance from the lifting appliance operator, handle/manoeuvre the load when it is under control and below shoulder height, and manually guide the empty hook to and from the load or load carrier.

4.8.3 Blind lifts

In connection with blind lifts, there shall always be at least two persons (signaller and slinger) who have visual contact with the load and each other, and have radio contact with the lifting appliance operator. Any closed circuit television that monitors the work area is considered to be an aid, and not a replacement for either of these persons.

If load has to be pushed or pulled into position manually, a signaller shall be present by the load or as close to the load such that he can direct the lifting appliance safely and thereby address the safety of other involved persons.

Where possible, the signaller should place himself in a position where he can give the stop signal manually in the event of radio failure.

4.8.4 Lifting operations through hatches and in shafts

For lifting operations through hatches and in shafts, the requirements for blind lifts apply, see 4.8.3.

Lifting through several levels shall be covered by local procedures, possibly through an SJA. In particular, the risk of the load or load carrier snagging on hatch frames should be assessed.

For crane operations in shafts, the lifting appliance operator shall ensure that the lifting appliance brake function is active and that any function for automatic overload protection is disconnected during the operation.

4.8.5 Use of tag line

Lifting appliance operator shall assess and approve the use of tag line.

Tag lines should not be used for lifting operations to and from vessels. If, however, it is necessary to use tag lines, this shall be agreed between the vessel and lifting appliance operator, and particular care and attention shall be exercised.

The end of the rope shall be secured against fraying, but knots shall not be used at the free end of the rope.

For internal movement of load, tag line can be used.

Tag line should be used to keep control of a load, not to gain control over a load.

If several tag lines are necessary, personnel who are not deck operators can be involved in the operation. SJA shall then be carried out, and the personnel shall have undergone the necessary training related to the use of tag lines.

4.8.6 Transport of scaffolding material and boards

Where practically possible, scaffolding material and boards should be transported in dedicated load carriers. For lifting operations to and from vessels, scaffolding material and boards shall always be transported in a dedicated load carrier.

When moving scaffolding material and boards whereby load carrier cannot be used, nylon ratchet straps shall be used to prevent slipping. The slings shall be wrapped round twice and choked around the load. The slings should be choked in the same direction.

4.8.7 Radioactive sources, trace elements and explosives

Radioactive sources, trace elements and explosives shall be placed and handled in accordance with the material safety data sheets, marking on the load carrier and local procedures.

When radioactive sources, trace elements or explosives are sent ashore from the installation, the vessel and supply base shall be notified.

Receiving of containers for radioactive sources, trace elements or explosives shall be dealt with by the designated person on the installation.

4.9 Completion and evaluation

Any undesirable incidents taking place during the lifting operation shall be reported.

After the operation is completed, the persons involved shall assess whether experience transfer or improvements to operational procedures are necessary.

After the lifting operation is completed, any barriers shall be removed and the area tidied.

5 Additional requirements for the lifting of personnel

Moving personnel with the aid of lifting appliance involves a high risk. Such operations are only permitted when other transport or method is not possible or appropriate.

The intention of the requirements below is to reduce the use of this type of personnel transport to a minimum, and to ensure that management on the installations are familiar with and follow up lifting of personnel.

5.1 General requirements

An ongoing assessment shall take place to determine whether routine work can be carried out more safely through establishing permanent access or by identifying other methods of performing the work tasks. This assessment shall be implemented in consultation with the safety delegate service and the operational responsible person.

All lifting of personnel with lifting appliance can be logged in order to maintain an overview of the scope of the lift and type of work operations.

All lifting of personnel with lifting appliance shall be voluntarily.

The offshore installation manager shall, directly or through delegating, approve all personnel transport with lifting appliance.

The lifting appliance operator shall have at least one year's experience as operator of equivalent lifting appliances.

Lifting equipment shall be approved for the lifting of personnel. In this connection, 'approved' means the following:

- For lifting equipment put into operation after 14.1.98: Type approved by Notified Body for personnel transport. This applies for lifting equipment that comes under the scope of DAT Regulation no. 820, order no. 522.
- For lifting equipment put into operation before 14.1.98 and lifting equipment that does not come under the scope of DAT Regulation no. 820, order no. 522: Safety in connection with personnel transport shall be reviewed and found acceptable by the company. In this respect, an overall assessment of operational and technical conditions shall form the basis. The assessment shall be documented.

The review shall be performed based on technological developments. This means that relevant requirements in DAT Regulation no. 820, order no. 522, annex 1, and relevant safety standards related to these regulations shall be taken into consideration.

For mobile installations that are registered in a national ship's register, and that follow a maritime operating concept, relevant technical requirements in the Norwegian Maritime Directorate's regulations which, according to the company's assessment provide the same level of safety as DAT Regulation no. 820, order no. 522, can form the basis.

Secure locking device shall be used between the crane hook and the lifting gear. This can be done through locking the safety latch or by using safety wire.

During operations involving the lifting of personnel over the sea, life vest or survival suit shall be worn. MOB shall be on standby in accordance with requirements that apply for work over the sea.

Lifting appliance operator shall assess whether the operational conditions (weather, visibility, movements) permit a safe execution of the operation.

In connection with blind lifts, the lifting appliance operator shall have eye contact with the signaller, who in turn shall have eye contact with the personnel who are being lifted.

Radio contact shall be established and maintained between one of the persons being lifted, lifting appliance operator and signaller.

A checklist shall be used to ensure that the requirements to lifting of personnel are addressed.

5.2 Use of work basket

When transporting people with lifting appliances and work basket,

- the lifting appliance's maximum allowable load shall be at least twice the weight of the work basket with maximum load,
- fall protection equipment shall be used,
- tools shall be secured against fall,
- the area below the work basket shall be barriered off.

Before using work basket, a SJA shall be carried out.

In connection with welding work from the work basket, measures shall be taken to ensure that there is no current leakage through the lifting appliance in order to prevent damage to crane components.

5.3 Transfer of personnel between installation and vessel

Offshore installation manager and captain shall approve the transfer of personnel between the installation and vessel. Transfer shall be logged.

For this type of transfer, the following applies:

- transfer shall take place in good visibility with good lighting, and only when weather conditions permit a safe transfer;

- a pre-job talk involving relevant personnel shall be carried out;
- lifting appliance operator shall be in charge of the transfer;
- before the operation commences, the pick-up and lay-down areas for the personnel transfer basket shall be prepared to ensure adequate room to carry out a safe operation;
- duty navigator and lifting appliance operator shall maintain radio contact with each other throughout the entire operation;
- raising and lowering of the basket shall insofar as possible take place over the open sea;
- MOB shall be on standby;
- the personnel transfer basket shall be able to function as a temporary life raft for the number of people it is designed for.

MOB should not be used to transfer personnel between the installation and the vessel.

The traditional personnel net basket should not be used, but replaced with equipment for personnel transport that satisfied the requirements in DAT Regulation no. 820, order no. 522.

When using the traditional personnel net basket:

- the net basket shall be maintained in good condition. It shall be tested every six months with a test load twice the maximum load. The result of the test shall be logged,
- the net basket shall be stored together with life vests in a storage area where it cannot be damaged by equipment or chemicals,
- measures shall be taken to ensure that the crane hook does not injure anyone using the personnel net basket by using an appropriate pennant line,
- personnel who have not been transferred by personnel net basket previously shall be accompanied by a person who is very familiar with its use,
- personnel shall stand on the ring on the outside of ropes on the net basket, with both hands free to secure a firm grip on the ropes.

5.4 Handling of man overboard boat (MOB) with offshore crane

When using the offshore crane to handle the MOB, the crane, boat and pennant line shall be approved for such use. The approval shall refer to the relevant crane and the additional dynamic load applied by the crane and pennant line on the boat.

An operating procedure shall be prepared for handling the MOB with the offshore crane. The procedure shall include, among other things, descriptions of normal travel path, placing personnel in the boat, and how the personnel shall be evacuated in the event of crane stoppage.

An elasticised pennant line or other suitable damping element should be used between the MOB hook and crane.

During exercises, the MOB shall only be launched in wind speeds below 13 m/s (25 knots) (at 10 m level) and significant wave height below 2.5 m or allowable movements for the installation. Each installation shall define limit values for maximum allowable movements.

5.5 Handling of man overboard boat (MOB) with davit

An operating procedure shall be prepared for use of davit. The procedure shall include, among other things, how to place personnel in the boat, and how the personnel shall be evacuated in the event of davit failure.

During exercises, the MOB shall only be launched in wind speeds below 13 m/s (25 knots) (at 10 m level) and significant wave height below 2.5 m or allowable movements for the installation. Each installation shall define limit values for maximum allowable movements.

5.6 Use of personnel winch and riding belt

For use of personnel winch, OLF/NR 078 should be used, in addition to relevant requirements in this NORSOK standard.

Split pin shall be used on shackle nut between riding belt and winch wire. It shall not be possible for the split pin to fall out during use. Other types of pin shall not be used.