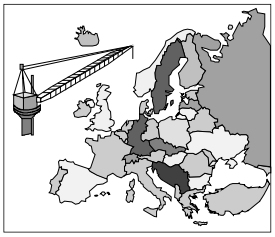
# OMHEC Guidance



# 4. Communication for safe lifting and hoisting operations

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: 2010

Agreed by the following bodies:

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

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

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



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# 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 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 Objective of the Working Group 'Communications'

Communication failures are a common root cause of lifting and hoisting incidents and thus highlight the importance of addressing communications issues at the risk assessment and planning stages and then again at the toolbox talk. Clear communication must be ensured throughout the lifting and hoisting operations and is a prime focus of everyone in the lifting and hoisting team.

At all times there shall be adequate communication between all personnel involved in the lifting and hoisting operation.

The objective of the working group 'Communications' is to provide guidance for systems, protocols and methods of communications in lifting and hoisting operations and raise the level of safety during lifting and hoisting operations offshore.

# 2 BASIC PRINCIPLES FOR GOOD COMMUNICATIONS

The OMHEC working group 'communications' has defined the following basic principles for good communications as imperative in order to raise the safety level during lifting and hoisting operations:

- Radio communications shall be used as primary means of communication;
- Communications shall be continuous, two way and confirmative;
- If radio communication is not available, the lifting and hoisting operation should not start;
- Lifting and hoisting operations should be suspended or ended if radio communication is no longer available;
- There should always be a line of sight between signaller and crane operator;
- Hand signals should be used to support the radio communications and shall be used as back-up in the event of radio equipment failure;
- The signaller shall be clearly identified, preferably by distinctive clothing being brightly coloured and for exclusive use of the signaller.

# 3 GENERAL CONSIDERATIONS ON COMMUNICATION

In order to facilitate good communication, it is important that personnel involved in the lifting and hoisting operations are not distracted. With this in mind, the use of mobile phones or other devices, which are not part of the agreed communications procedure, should be restricted.

## 3.1 Planning Lifting and Hoisting Operations

It is a legal requirement that all operations involving lifting and hoisting equipment shall be planned and appropriately managed based on risk, complexity of the operations and working environment. From the initial stages communications is an important and integral part of the planning.

All lay down, storage and lifting areas should be planned with no blind zones and thus minimizing the need for blind lifts. But in the cases where blind lifts are unavoidable, communications should be given the highest attention during the risk assessment.

The lift plan shall clearly state the communication method to be used.

## 3.2 Toolbox Talk

The toolbox talk is the prime opportunity for all those involved with the lifting and hoisting operations to check the safety issues and ensure that communication is established and agreed upon between all concerned.

The toolbox talk is a vital communications asset. Next to all issues related to the Lift Plan and the safe execution, the following communications issues should be resolved at the toolbox talk:

- The talk should include all personnel involved in the execution of the lifting and hoisting operations;
- Have all affected parties been informed of the lifting activities;
- Do all members of the lifting and hoisting team share a common language;
- Confirmation of the communication method to be used;
- Confirmation that radios and headsets are in good working order;
- Confirmation that relevant personnel agree on and understand all the hand signals to be used, should radio communication fail;
- Radio frequency channel to be used;
- All personnel involved in the lifting and hoisting operations should know how and when to stop the job for safety reasons;
- Personnel should be aware of any other work going around them;
- De-briefing arrangements should be made to identify learning points and improvements.

# 4 PERSONNEL INVOLVED

The signalman's duties must consist exclusively of directing manoeuvres and ensuring the safety of workers in the vicinity.

The crane operator must interrupt the ongoing manoeuvre in order to request new instructions when he is unable to carry out the orders, he has received with the necessary safety guarantees.

# 5 LINE OF SIGHT, POSITION AND VISIBILITY

The signalman must be able to monitor all manoeuvres visually without being endangered thereby (European Council Directive 92/58/EEC on the Minimum Requirements for the Provision of Safety and/or Health Signs at Work, ANNEX IX, Article 2.2).

The operator must be able to recognise the signalman without difficulty.

The signaller shall be clearly identified, preferably by distinctive clothing being brightly coloured and for exclusive use of the signaller (European Council Directive 92/58/EEC on the Minimum Requirements for the Provision of Safety and/or Health Signs at Work, ANNEX IX, Article 2.6).

## 5.1 Blind Lifts

Blind lifts should be avoided as much as reasonably possible (see also the remark in 3.1).

However if blind lifts are unavoidable, communications should be given the highest attention during the risk assessment.

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.

The signaller shall place himself in a position where he has clear visual contact with the appliance operator and can give the stop signal manually in the event of radio equipment failure.

Communication from the signaller to the crane operator should be continuous, two way and confirmative by repeating the command. This is particularly important during 'blind lifts'.

## 5.2 Hoisting of Personnel Using a Suspended Basket

Whenever personnel are being hoisted, 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 at all times between one of the persons being lifted, lifting appliance operator and signaller.

## 5.3 Transfer of Personnel by Personnel Carrier

Radio communication should be established on an agreed radio frequency and maintained during the transfer operation. Radio communication needs to be established between the crane operator and the persons in charge of the vessel/installation both to and from which the transfer is being undertaken.

The crane operator should have a good view of the transfer areas, the personnel to be transferred and the banksman/deck officer at the two transfer locations.

# 6 COMMUNICATION METHODS

## 6.1 Communication Principles

- Radio communications shall be used as the primary means of communication during lifting and hoisting operations;
- Radio communications shall follow an agreed protocol;
- Hand signals can be used in addition to the radio equipment and shall be used as back-up in the event of radio equipment failure.

## 6.2 Advantages of Using Radio Equipment

There are advantages and disadvantages to using radio equipment rather than hand signals as the primary means of communicating between the signaller and the crane operator.

Using radio equipment offer the following advantages over hand signals:

- When using radio equipment, there is two-way communication, giving the crane operator a facility for responding to the signaller and others;
- Radio equipment offers more flexibility in communication than hand signals;
- The crane operator does not need to keep the signaller in sight all of the time and can refer to all controls and instrumentation within the operating cabin so long as voice communication is maintained;
- The signaller might not be in the same line of sight as the load, in order to avoid being too close to it. Radio equipment allows the crane operator to look at what is most important for the operation;
- Whenever lifting and hoisting operations are unexpectedly affected by heavy rain or failing light, radio equipment would be a better means of communicating;
- If agreed in the lift plan, the operations can continue if the line of sight between the crane operator and the signalman is temporarily lost, so long as continual communication is maintained;
- Effective communications during blind lifts are made possible with radio equipment;
- Lifting and hoisting operations where one signaller hands over to another in a different location are easier when radio equipment is being used.

## 6.3 Advantages of Using Hand Signals

The advantages of hand signals over radio equipment are:

- Hand signals rely less on knowledge of the local language (though key personnel do require competency in the same the same language);
- Equipment breakdowns or cross talk from others on the same channel are avoided when hand signals are used;

- There is likely to be less room for ambiguity in hand signals, provided that both parties understand the same signalling protocol;
- Hand signals should avoid problems caused by radio transmission failures, especially when the sender or the person receiving has not realised that there is a failure.

## 6.4 Audible Equipment, Using Codes and Alarms

In some occasions as a method for communication, whistles are blown as a way of giving instructions to the crane operator, sometimes in conjunction with a limited range of hand signals.

This method of communication is likely to lead to ambiguity if the crane operator becomes unsure of the number of whistle blasts heard, either because of other sounds occurring at the same time, or if he was distracted or even if there was a change of wind direction or force.

This method of communicating shall never be accepted.

Also communicating using codes instead of voice or hand signals shall never be accepted: they are not standardised and prone to misinterpretation by the receiver.

## 6.5 Additional Information and the Use of Cameras

The crane operator has several sources of information available about the status of the load. He is therefore in a good position to provide an early warning to the lifting and hoisting team if there is a discrepancy between instructions issued to him and his understanding of the hoisting operation.

Such communication should, whenever possible, be routed primarily to the signaller.

The crane operator might have access to the following instrumentation communicating the state of the hoisting operation:

- Line out meter – this indicates the length of wire rope out and can also give an indication of the weight of the load suspended, provided the meter has been appropriately calibrated;
- Closed circuit camera television trained on the cable drum(s) – this allows the crane operator to see how much line is available and therefore how much flexibility the signaller has in lowering an item;
- Closed circuit camera television on the crane boom.

Cameras and instrumentation can be used as an aid, but only the signaller should be in charge of directing the load.

The use of cameras shall never give reason to replace a member of the lifting and hoisting team.

# 7 RADIO PROCEDURES FOR LIFTING AND HOISTING OPERATIONS

## 7.1 Establish Links and Testing the Radio Equipment

Communications equipment such as radios or headsets should have been issued at the start of the shift and tested at that time. Testing usually takes the form of a call to another person who will provide confirmation that the equipment is working.

By the time the toolbox talk or Last Minute Risk Assessment meeting occurs, all communications equipment should have been tested. At the toolbox talk, the users of the radio equipment should confirm testing.

## 7.2 Selecting Radio Channels and Establishing Links

If possible, identify a channel that will only be used by the team involved in the lifting and hoisting operations. This will help avoid cross talk from other personnel, nearby ships in the vicinity, cranes on other operations, etc. Cross talk can be disruptive to the whole team and will jeopardise safety.

Where there is more than one crane working in the vicinity, ideally, each crane should be allocated a separate radio channel. This is particularly important when working simultaneously with vessels.

### 7.2.1 Cranes Operating on Different Channels

In circumstances where two cranes are operating on different channels for onboard lifting and hoisting operations at the same time, the signallers should make both crane operators aware of the lifts planned and pay attention to the position of the boom tips so as to avoid any contact between cranes when carrying out the lifting and hoisting operations.

If it is not possible to use a unique channel, use of 'call signs' for each crane, winch or lifting team member, will assist in identifying caller and receiver. The call sign should precede any radio communication to avoid confusion.

### 7.2.2 Cranes Operating on Same Channels

If simultaneous lifting and hoisting operations are using the same channel, e.g. during a tandem lifting operation, individual call signs for each crane, winch or lifting team member, will assist in identifying caller and receiver. The call sign should be used and should precede any radio communication to avoid confusion.

## 7.3 Communications Protocol and Good Practice

The following protocol is recommended for radio communication during lifting and hoisting operations:

- Call signs and code words should be set up and adhered to;
- Call signs must be used at all times to establish the authenticity of commands or directions;
- At the end of an instruction or enquiry the transmitting operator should indicate the end of the message by the command 'over';

- The receiving operator should indicate understanding of any dialogue by a confirmative repeat of the command;
- Under no circumstances should the transmitting operator assume understanding without confirmative repeat acknowledgement from the receiving operator;
- If any doubt exists regarding a message, the receiving operator must not acknowledge but should repeat the message as he understands it and ask for confirmation or simply request the transmitting operator to repeat;
- At the close of communication the transmitting operator should indicate the end of the transmission with the command 'over and out'.

Code words shall be short and give clear instructions and must be confirmed during the planning. As an example:

| Code word | Action |
|---|---|
| Start | To indicate the start of a command |
| Stop | To interrupt or stop a movement |
| End | To end the operation |
| Pick up | Start hoisting the load |
| Hoist | Raise the load |
| Lower | Lower the load |
| Boom up | Raise the boom |
| Boom down | Lower the boom |
| Slew right | Slew to the right, from crane operator position |
| Slew left | Slew to the left, from crane operator position |
| Slowly | Slow movements |
| Slack off | Release tension in the wire to release the hook |
| Hook free | Information only to the crane operator |

The above list is not exhaustive as specific types of cranes, such as knuckle boom cranes, need more crane specific instructions. Crane specific instructions must be agreed upon during the planning and fully known to all members of the lifting and hoisting team.

## 7.4 Maintaining Continuous Communication

Communication from the signaller to the crane operator should be continuous. This is particularly important during 'blind lifts'. Should communications cease, the lifting and hoisting operation should stop in a safe way.

Continuous communications are recommended, by giving the initial instruction and then talk to the crane operator repeatedly to reassure him that the line of communication is still active.

Any person using the radio should avoid keeping the transmission button pressed for unnecessarily long periods. The radio might be the only quick way to contact vital lifting and hoisting team members.

Lifting should stop if there is an interruption to communication, for example if a third party breaks into the transmission.

## 7.5 Acknowledgement and Understanding

Good practice indicates that communications should be positively acknowledged. The receiving operator(s) should indicate understanding of the message by repeating or in a slightly different form of words as the instructions received.

Distraction is a risk factor. Accordingly, communication should be clear and limited to what the crane operator has to do.

Discussion or explanation as to why the lifting and hoisting operations are being conducted in a certain way should be held at the risk identification stage, or the toolbox talk, but not when the operations are underway. If there is a need for discussion then stop the operations and deal with the issue.

## 7.6 Care and Safety

Always check that the batteries are fully charged prior to booking out the radio for a shift. Ensure that the radio microphone is not exposed to rain. If a plastic carrying case offering full protection of the radio is not available, a simple precautionary measure such as a small plastic bag or a piece of cling film around the microphone will ensure that it remains in a dry condition.

Do not carry radios in pockets. Always ensure that they are carried in protective holsters attached to the body by either shoulder lanyard or waist belt. Apart from maintaining the integrity of the radio this will ensure that the radio does not become a dropped object if dislodged when working at height or climbing ladders.

# 8 HAND SIGNALS

Radio communications shall be used as primary means of communication during lifting and hoisting operations. Hand signals can be used in addition to the radio equipment and shall be used as back-up in the event of radio equipment failure.

Hand signals must be:

- Precise;
- Simple;
- Expansive;
- Easy to make and understand;
- Clearly distinct from other such signals.

Where both arms are used at the same time, they must be moved symmetrically and for giving one sign only (European Council Directive 92/58/EEC on the Minimum Requirements for the Provision of Safety and/or Health Signs at Work, ANNEX IX, Article 1).

There is a range of different hand signals used to indicate:

- Movement of the load itself, or
- Movement of the crane.

Whatever hand signals are to be used should be displayed, for example inside the crane cabin, around the operational area, mess rooms and so on. It is good practice to have laminated copies of the standardised hand signals to be used available and provide easy access to them.

## 8.1 Using Hand Signals

Personnel using hand signals should ensure that they:

- Know and are fully familiar with the set of hand signals agreed;
- Use the signals correctly;
- Use the signals confidently and clearly;
- Face the crane operator whenever possible when signalling.

There should always be a line of sight between the signaller and the crane operator. Lifting and hoisting operations must cease if visual contact is lost and only recommence when a clear line of vision is re-established. Cease lifting and hoisting operations if inclement weather or darkness impairs the ability to see the signaller and operations cannot continue safely!

## 8.2 OMHEC Recommended Hand Signals

In order to be compliant with hand signals as per European Council Directive 92/58/EEC on the Minimum Requirements for the Provision of Safety and/or Health Signs at Work, OMHEC recommends using the following hand signals for lifting and hoisting operations:









All the above hand signals are related to moving the load.

In addition to these signals, additional signals can be agreed upon to indicate:

- Horizontal or vertical distance;
- Hoist to be used;
- Movements of boom, such as extend or retract.

Due to technical and on-going developments and improvement of cranes, they are being equipped with more and more technical features that will require more and more hand signals for the communications.

For OMHEC this is an additional reason to recommend the use of radio equipment for communications, backed up with the above hand signals for emergencies in case radio equipment fails.

# 9 LEARN AND RECORD

Communication includes feedback from the team involved in the lifting and hoisting after the operations and provision should be made for this in operational procedures. The intention of the de-briefing is to learn and record any faults, possible improvements to current practices and obtain lessons learnt for the benefit of future operations. Such lessons learnt should be communicated to other lifting and hoisting teams.

# 10 DEFINITIONS

| | |
|---|---|
| **Appliance operator** | A competent person who is fully qualified according applicable rules and regulations and has the authorization to use the equipment.<br>A person who operates the crane for the purpose of positioning loads or erecting the crane. |
| **Signaller** | A person responsible for relaying the signal from the slinger to the crane driver. |
| **Slinger** | a person responsible for attaching and detaching the load to and from the crane load-attachment and for the use of the correct lifting gear and equipment in accordance with the planning of the operation for proper positioning of loads |

(Reference: ISO 15513 standard: Cranes – competency requirements for crane drivers (operators), slingers, signallers and assessors.)

# 11 REFERENCES AND FURTHER INFORMATION

- European Council Directive 92/58/EEC
  www.eur-lex.europa.eu
- OGP – *Lifting and hoisting safety recommended practice*
  Lifting & hoisting safety recommended practice | IOGP Publications library
- IMCA M 205/D 046 – *Guidance on operational communications*
  Guidance on operational communications – IMCA (imca-int.com)
- OMHEC Guidance documents
  Guidance documents | omhec
- ISO 15513:2000 Cranes — Competency requirements for crane drivers (operators), slingers, signallers and assessors