



Lifting & hoisting safety recommended practice

Report No. 376
April 2006



**International
Association
of Oil & Gas
Producers**



Publications

Global experience

The International Association of Oil & Gas Producers has access to a wealth of technical knowledge and experience with its members operating around the world in many different terrains. We collate and distil this valuable knowledge for the industry to use as guidelines for good practice by individual members.

Consistent high quality database and guidelines

Our overall aim is to ensure a consistent approach to training, management and best practice throughout the world.

The oil and gas exploration and production industry recognises the need to develop consistent databases and records in certain fields. The OGP's members are encouraged to use the guidelines as a starting point for their operations or to supplement their own policies and regulations which may apply locally.

Internationally recognised source of industry information

Many of our guidelines have been recognised and used by international authorities and safety and environmental bodies. Requests come from governments and non-government organisations around the world as well as from non-member companies.

Disclaimer

Whilst every effort has been made to ensure the accuracy of the information contained in this publication, neither the OGP nor any of its members past present or future warrants its accuracy or will, regardless of its or their negligence, assume liability for any foreseeable or unforeseeable use made thereof, which liability is hereby excluded. Consequently, such use is at the recipient's own risk on the basis that any use by the recipient constitutes agreement to the terms of this disclaimer. The recipient is obliged to inform any subsequent recipient of such terms.

Copyright notice

The contents of these pages are ©The International Association of Oil & Gas Producers 2006. All rights are reserved.

Lifting & hoisting safety recommended practice

Report No: 376

April 2006

Acknowledgements

This recommended practice was produced by the OGP Lifting and Hoisting Task Force.

Task Force members:

Adams, Richie	BROA	
Bowitz, Carsten	OLF	
Brasic, Mike	BP	Chairman
Burns, Kenny	MI-SWACO	
Dyngeland, Stein Ove	Statoil	
Lawrie, Graeme	Schlumberger	
MacFarlane, Jim	HSE	
Mekelburg, Thomas	ExxonMobil	
Morrien, Antoin	Shell	
Parkinson, Chris	Shell	
Smith, Don	OGP	
Spackman, Alan	IADC	
Thompson, Peter	BP	
Vogelaar, Jaap	Total	
Wiggs, Philip	IMCA	

Table of contents

Introduction	1
OGP lifting and hoisting safety recommended practice	2
Planning	3
Control	4
Competence	6
Equipment	7
Inspection, maintenance and certification	8
Load integrity and stability	9
Lifting of personnel	10
Management system	11
Glossary	13
Reference and good practice documents	14
Appendix 1: Example of lift categorisation scheme	17
Appendix 2: Example lift plan	19
Appendix 3: Human factors	20
Appendix 4: Ten questions/the golden rule	22
Appendix 5: Example responsibilities and competence table	23
Appendix 6: Example training matrix	24
Appendix 7: Example equipment registry	26
Appendix 8: Example of recommended safety devices	27
Appendix 9: Sample design, test, certification & inspection matrix	28
Appendix 10: Example colour coding system	30
Appendix 11: Example pre-use inspection checklist	31
Appendix 12: Example pre-use inspections for man-riding and work platform operations	33

Essential Principles for Lifting & Hoisting Operations

Planning

- A lift plan is required for every lift. If the lift deviates from the plan, make safe and stop the job.
- Hazard identification and risk assessment are an integral part of planning a lift.
- An assessment of the lift and determination of the lift method, equipment and number of people required are critical to planning of the lift.

Control

- One person in the lift team shall be designated as the person in charge of the lifting operation (referred to as PIC).
- The PIC shall review the lift plan and ensure that the required controls are in place and the lift is carried out following the plan.
- The PIC ensures that the lift team has tested and understood visual or radio communications prior to the lift.
- All personnel involved in the lifting operation shall have their individual responsibilities clearly allocated.
- All people shall be kept clear of overhead loads and areas of potential impact.
- Manual load handling shall not be used to stop a swinging load and shall only be performed below shoulder height.

Competence

- All persons involved in planning/performing lifting and maintaining lifting equipment shall be trained and competent for their role.
- Refresher training and periodic assessment is necessary to assure competence.

Equipment

- Equipment shall be fit for its intended purpose and operating conditions and shall be designed to a recognized standard.
- Equipment shall be fitted with appropriate safety devices.
- Any safety devices installed on lifting equipment shall be operational and not over-ridden.

Inspection, maintenance and certification

- Equipment integrity shall be maintained, supported by an equipment register.
- Lifting devices and equipment shall undergo detailed/thorough examination by a *competent person* at least every 12 months, and at least every 6 months for equipment used to lift people.
- All lifting devices and equipment shall be visually examined before use.

Load integrity and stability

- Load shall not exceed *dynamic and/or static capacities* of the lifting equipment
- The integrity and stability of loads shall be verified before lifting,

Lifting of personnel

- Lifting of personnel shall be avoided unless the risk has been demonstrated as being as low as is reasonably practicable.
- Lifting of personnel shall be according to a specific personnel lift plan for that lift.
- Lifted personnel shall be properly secured with lanyards unless written procedures and risk assessment require otherwise.

Management system

- Lifting operations will be conducted in accordance with a documented Management System.

Introduction

Background

Lifting and hoisting operations are one of the major causes of fatalities and serious incidents in global Exploration and Production (E&P) activities. Every type of lift has a set of risks that need to be managed if the lift is to be undertaken in a safe and efficient manner.

Despite the vast number of regulations, standards and guidelines that apply to lifting, incidents continue to occur. To give the E&P industry a clear focus on this issue, the International Association of Oil & Gas Producers (OGP) Safety Committee Task Force on Lifting and Hoisting has developed this Recommended Practice (RP) document. This RP is based on current experience and best practice for preventing fatalities and serious incidents.

It is the E&P industry's expectation that all companies conducting lifting activities have a management system that includes specific procedures based on a full assessment of the risks and control measures required.

Purpose

The intent of this document is to bring about a significant reduction in lifting incidents among OGP member companies by highlighting the essential principles of safe lifting and encouraging their strict application to lifting and hoisting operations.

This RP describes lifting and hoisting safety elements to be incorporated into a management system that is consistent with the OGP *Guidelines for the development and application of a health, safety and environmental management systems* (OGP report 210). In addition, the references listed provide further guidelines for lifting and hoisting safety and good practice. These references can be found on the OGP website: <http://info.ogp.org.uk/LiftingandHoisting/>.

Scope

It is recommended that this guidance be applied to all mechanical lifting and hoisting activities in the E&P industry, except:

- Drilling crown block, travelling block and top drive operations;
- Goods and personnel elevators;
- Ship anchor handling, marine towing, and routine ship operations not directly associated with E&P activities (eg, ship maintenance);
- Earthmoving equipment and operations;
- Tree cutting & associated movement of lumber;
- Helicopter lifting operations;
- Fall protection and rope access equipment;
- Manual handling.

OGP lifting and hoisting safety recommended practice

This document may recommend practices supplemental to the requirements of local legislation. However, nothing herein is intended to replace, amend, supersede or otherwise depart from such requirements. In the event of any conflict or contradiction between the provisions of this document and local legislation, applicable laws shall prevail.

Description

This document sets out at a management level OGP's recommended practice (RP) for mechanical lifting and hoisting. The RP is not intended to be a comprehensive and technical set of lifting procedures.

The RP considers the eight key areas that control lifting and hoisting safety. For each area, essential principles are listed first, followed by a more detailed explanation.

Additional information in the form of appendices and a list of references include various documents that have been recommended to the Task Force as being examples of good practice for particular aspects of lifting and hoisting. These documents are written in the context of the relevant companies management systems, hence OGP and the OGP Lifting and Hoisting Task Force are not responsible for the documents, and the contributing company accepts no responsibility for the use of the documents outside their original intended context. The documents are intended as guides for organisations to implement the RP and to develop a management system where none exists or to refine existing practices.

Application

This guidance applies to all mechanical lifting and hoisting activities in exploration, drilling, production, logistics, operations, maintenance, construction, decommissioning and abandonment in both the onshore and offshore environment, except those specifically exempted in the Scope.

This RP has been developed to be sufficiently generic and adaptable to different companies worldwide to gain the acceptance of their workforces. It is applicable to all parts of the E&P industry, including operators, contractors and subcontractors.

Certain specialist operations will require more rigorous controls due to the inherent hazards associated with the task. Examples of specialist operations are subsea lifts, lifting over live plant, lifts close to equipment capacity and environmentally sensitive lifts.

Terminology

The term *lifting* is used throughout this document to describe all types of *lifting and hoisting*.

Planning

- A lift plan is required for every lift. If the lift deviates from the plan, make safe and stop the job.
- Hazard identification and risk assessment are an integral part of planning a lift.
- An assessment of the lift and determination of the lift method, equipment and number of people required are critical to planning of the lift.

Lift categorisation

To ensure that suitable controls are applied, lifting operations shall be categorised according to the level of risk and complexity. See Appendix 1 for an example of a lift categorisation scheme.

Lift plans

All lifting operations shall have a lift plan supported by an analysis of the hazards and risks. Lift plans may be separate documents or can be part of other documents. The detail required is related to the risk and complexity of the lift. Frequent or routine tasks may only require a generic lift plan supported by an onsite risk assessment and team briefing whereas other lifts may need significant engineering design effort. Generic lift plans may be appropriate for a series of similar or routine lifts within specified limits but shall be formally reviewed and re-issued periodically.

The lift plan shall clearly address, but not be limited to, the following:

- The type and number of personnel required, their specific roles and competences, and how they will be briefed;
- The nature and weight of the load and lifting points;
- Pick up and set down points and constraints such as space and stacking;
- Equipment required and certification checks;
- Step-by-step instructions;
- Communication methods to be used;
- Emergency and rescue plans;
- Restrictions on the lift such as weather, light, sea state, etc.;
- Access and egress for slinging and un-slinging the load;
- Simultaneous, conflicting or nearby operations or work;
- Whether Permit to Work procedures are applicable;
- Load integrity check;
- Load charts for generic lift plans and for heavy or complex lifts;
- An assessment of whether tag lines should be used, their hazards and limitations.

An example lift plan is included as Appendix 2.

Approval of lift plans

All lift plans shall be reviewed and approved by a *competent person*. The rigour of review shall be determined by the category of lift, which may require a qualified specialist engineer.

Changes to lift plans

Any change to a plan shall be approved as if it were a new plan.

Control

- One person in the lift team shall be designated as the person in charge of the lifting operation (referred to as PIC).
- The PIC shall review the lift plan and ensure that the required controls are in place and the lift is carried out following the plan.
- The PIC ensures that the lift team has tested and understood visual or radio communications prior to the lift.
- All personnel involved in the lifting operation shall have their individual responsibilities clearly allocated.
- All people shall be kept clear of overhead loads and areas of potential impact.
- Manual load handling shall not be used to stop a swinging load and shall only be performed below shoulder height.

Person in Charge (PIC)

The PIC has operational control of the lift. The PIC:

- Is designated as being in charge of coordinating, controlling and executing the lift;
- Reviews the lift plan and ensures that the required controls are in place;
- Ensures that the *lifting equipment* is inspected and appropriate for use;
- Checks that load integrity and stability is satisfactory;
- Ensures that people involved are competent for performing their task, aware of the task and procedures to be followed, and aware of their responsibilities;
- Briefs people involved in or affected by the lift;
- Ensures the lift is carried out following the plan. Suspends the lift if changes or conditions (*eg, wind*) occur that would cause a deviation from the plan;
- Monitors the performance of all involved personnel to ensure that adequate standards of performance are maintained;
- Manages any special issues such as language barriers and new/inexperienced staff;
- Checks that there is no deviation from standards for routine lifts;
- Shall allow for concurrent or simultaneous operations that may affect or be affected by the lift, *eg, helicopter operations, ballast control, other cranes.*

Legal Accountability

The PIC is not necessarily the same as the person with legal accountability.

Conducting the lifting operation

The PIC shall ensure that lifting operations are conducted in strict accordance with the approved lift plan. Any variation from the agreed lift plan shall result in the job being made safe, stopped and reassessed to ensure continued safe operation.

The following are critical practices in conducting the lifting operation:

- The *lifting appliance* operator shall obey an emergency stop signal at all times, no matter who gives it.
- The load to be lifted shall be confirmed as within the rated capacity of the lifting equipment and attached by means of suitable *lifting accessories*.
- The operator of the lifting appliance shall not leave the operating controls while the load is suspended.
- Personnel shall not undertake more than one task at a time, *eg* the signaller shall not handle loads and signal at the same time.
- All personnel and third parties shall be kept out of any area where they might be struck or crushed by a load or lifting equipment if it swings, shifts or falls. No one shall stand or work directly below a load. Physical barriers may be required for this.

- Operators shall never move a load directly over people.
- Personnel shall have an escape route in case of an unexpected movement of the load or equipment.

Human factors

Human factors are critical in safe lifting. People can make mistakes and may break rules. This shall be addressed in planning and controlling lifting operations. Important human factors in lifting are culture/working environment, people, facilities/equipment and management system. Appendix 3 provides a more detailed discussion on the management of human factors in lifting. Use of a checklist such as one presented in Appendix 4 may prevent most errors.

Communication

Before starting lifting operations the person in charge will hold a *pre-job meeting* to explain the lift plan to everybody in the lift team, confirm their understanding of the plan and the hazards involved. Particular attention needs to be placed on proving the effectiveness of communications for *blind lifts*.

When lifting operations need to be controlled by signals, a designated signal person (signaller) shall be assigned. Signals between the lifting appliance operator and the signaller (sometimes referred to as Banksman or Flagman) shall be discernable – audibly or visually – at all times. When using radio communication, continuous verbal instruction shall be used. The operator shall stop whenever there is no clearly understood signal.

The PIC and the designated signal person shall be made known to the lift team and to personnel in the proximity to the lift. The signaller shall be clearly identified, preferably by distinctive clothing. The agreed signalling systems shall be clearly displayed on-site and available to all those involved in lifting operations.

In order to facilitate good communication, it is important that personnel involved in the lifting operation are not distracted. With this in mind, the use of mobile phones or other devices unrelated to the lift should be restricted.

Roles and responsibilities

Site Manager:

- Has overall responsibility for the site and for applying safety management systems;
- Authorises or designates a PIC who has the required competence and will be positioned on site to control the lift safely;
- Authorises or designates lifting equipment operators.

Signaller:

Where required, is designated by the PIC;

- Is the sole signaller at any given time;
- Has direct line of sight of the load;
- Adheres to a clear process, including confirmation of handover by PIC and operator, if a handover to another signaller is required;
- Does not handle rigging duties simultaneously.

Lifting Appliance Operator:

- Shall have authorization to use the equipment;
- Is responsible for *pre-use inspection* of the lifting appliance;
- Is responsible for using the equipment properly.

All involved personnel

- Shall understand their role and be competent to do it.
- Shall inform the PIC if conditions change or if there are safety concerns during the lift.

Slinger/Load Handler

- Works under the direction of the PIC to (un)sling and handle loads.

Competence

- All persons involved in planning/performing lifting and maintaining lifting equipment shall be trained and competent for their role.
- Refresher training and periodic assessment is necessary to assure competence.

The management system shall define the standards required for critical roles and the process for assuring the competence of those involved in planning and executing lifting operations. Generally, to be regarded as competent a person shall have received the necessary training and subsequently demonstrated their ability to perform at the required level in the field. An example of basic competence requirements is given in Appendix 5. The system shall allow the PIC to easily confirm personnel competence. To facilitate this, records of competence shall be available on site, and if practicable on the person.

Periodic assessment (preferably every two years, but normally not longer than four years) and refresher training shall be conducted as necessary to ensure the required level of performance is maintained.

Equipment specific training will be necessary for certain operations. An example training matrix has been included as Appendix 6.

Additional considerations are:

- Formal certification shall always comply with legislative and management system requirements;
- When technical authorities or advisors are used, their roles shall be defined in the management system and they shall have the required level of competence and access to specialist advice;
- Companies should consider the relevance and benefits of simulator training for crane operators.

Equipment

- Equipment shall be fit for its intended purpose and operating conditions and shall be designed to a recognized standard.
- Equipment shall be fitted with appropriate safety devices.
- Any safety devices installed on lifting equipment shall be operational and not over-ridden.

Lifting equipment comprises lifting appliances (equipment performing the lifting), lifting accessories (devices that connect the load to the lifting appliance) and *lifted equipment* (eg, containers, baskets, etc). All shall be marked with the *safe working load* (SWL) or *working load limit* (WLL) and identification number. An equipment register, including maintenance records and evidence of certification shall be available onsite. A sample equipment register format is included as Appendix 7.

Equipment minimum standards

To ensure that equipment is fit for purpose, local controlling documentation shall specify design, certification, storage, maintenance and inspection criteria in accordance with a recognized industry standard and/or manufacturer's recommendations. The manufacturer or an approved body shall issue a certificate or a letter of conformance to the appropriate standards. An example of minimum safety device requirements is provided in Appendix 8.

Procurement (services and equipment)

The manufacturer or service provider shall supply all lifting equipment with documentation that defines the permissible operating conditions, design criteria, documentation of testing, maintenance and operation manuals, and examination/inspection requirements. Pre-used equipment shall also be supplied with operations and maintenance history, including records of any incidents, overload, damage, major repairs, modifications or limitations arising from previous use. In addition, critical powered lifting appliances such as cranes, shall be supplied with Failure Mode Analysis and criticality information.

Clients and service providers shall ensure that there is a clear mutual understanding of the scope of the services required, which may range from equipment supply to a comprehensive design and execution of lifts.

All lifting accessories and lifted equipment shall be designed, manufactured, inspected, tested and certified in accordance with applicable international standards and industry accepted codes of practice. Engineered lifting accessories (eg, spreader bars) shall be designed, manufactured, and tested in compliance with the intent of the relevant industry standards. Any lifted equipment not certified to an acceptable code shall be structurally verified by a qualified engineer and load tested. Appendix 9 is an example design, test, certification and inspection matrix.

Ergonomics shall be considered in the design of lifting equipment to ensure ease of operation and to reduce or eliminate potential human factor problems with human/machine interfaces. Special consideration shall be given to minimise noise and vibration, address temperature extremes, encourage good control layout and optimise lines of sight and aid communication.

Specific equipment issues

- The appropriate load-radius chart for the lifting appliance configuration in use shall be visible to the operator.
- ISO shipping containers are not designed for and therefore not suitable for offshore crane dynamic lifts.
- All engineered lifting points shall be certified.
- Suspension points for sheaves in winch systems shall be rated to withstand the maximum credible winch pull.
- Hook selection shall minimise the possibility of fouling.

Inspection, maintenance and certification

- Equipment integrity shall be maintained, supported by an equipment register.
- Lifting devices and equipment shall undergo detailed/thorough examination by a *competent person* at least every 12 months, and at least every 6 months for equipment used to lift people.
- All lifting devices and equipment shall be visually examined before use.

The maintenance schedule shall be based on manufacturer's recommendations, operating experience, applicable standards and failure modes. The schedule shall integrate preventative and predictive maintenance techniques. Maintenance schedules shall consider the effects of ageing and equipment utilization. Safety critical components and systems shall be identified and arrangements made to ensure they are adequately maintained. Where third parties provide their own lifting equipment, the Site Manager shall ensure that there is an auditable system that ensures the control, integrity and suitability of the equipment.

To ensure the integrity of lifting equipment, it shall be subject to a detailed/thorough examination by a qualified inspector who has sufficient detailed knowledge of its design, operation and failure modes to recognise significant defects. The scope, methods and standards of that examination, and acceptance/rejection criteria shall be specified for all equipment (refer to Appendix 9 for example), taking into account the following:

- Legal requirements;
- Manufacturer's recommendations;
- Operating conditions (including infrequently used and mothballed equipment);
- Utilisation and age of the equipment;
- Degree of risk;
- Results of previous inspections.

This examination will normally require some dismantling of the equipment to expose the critical working parts. Frequency of examination shall not be longer than 12 months (6 months for equipment used in personnel lifting), or more often if required by legislation. Colour coding can be a useful aide in controlling this. Where possible, colour coding should be standardised across operator and contractors in the same operational area. For an example colour coding scheme, see Appendix 10.

Testing of lifting equipment will be dependent on the type and configuration of the equipment and whether the equipment is temporarily or permanently installed. On installation, equipment shall undergo a comprehensive test to prove its integrity. This may involve proof or overload testing under controlled supervised conditions.

Equipment that has been involved in any of the following shall be thoroughly examined:

- An incident (lifting incident or environmental *eg*, hurricane);
- Overload;
- Subject to modification or major repair to components in the load path or other safety critical components;
- Changes in condition of use including periods out of service, *etc*

Users of lifting equipment shall carry out a pre-use inspection of the equipment to ensure it is suitable for the task, has not been damaged and is correctly installed. The pre-use inspection of powered lifting appliances shall be in accordance with manufacturer and company requirements. Examples of pre-use inspection checklists are provided in Appendix 11.

Local controlling documents shall address maintenance, inspection and certification criteria in accordance with a recognised standard and/or manufacturers' recommendations. Older equipment may have to be de-rated to ensure adequate safety factors are maintained.

Load integrity and stability

- Load shall not exceed *dynamic and/or static capacities* of the lifting equipment
- The integrity and stability of loads shall be verified before lifting,

Equipment operators and users shall know the safe lifting capacity of the equipment and understand the effects of changes in configuration on the capacity. They shall be provided with all the necessary information in an easily understandable form at the place where they are operating the equipment.

The safe working load of the lifting system shall be assessed, taking into account the configuration of the equipment and operating environment. For example, changes in sling angles/sheave arrangements will change capacity. Any lifting appliance operating on a slope will have a different capacity from operation on level ground. The dynamic effects of liquids and shifting or uneven loads shall be considered.

The load shall possess sufficient integrity to withstand the forces applied during lifting. The method of rigging the load shall ensure that it remains stable and cannot tip, slip, swing or fall unintentionally. Stability shall be confirmed before lifting, if necessary by trial lift. The quality, design and labelling of packaging shall be specified at the procurement stage to ensure the load integrity and stability. Cargo in containers shall be secured such that it does not shift during lifting. Wheeled equipment requires direct restraint.

Stacking shall only be carried out if a risk assessment of stacking operations has been performed and documented. Equipment shall only be stacked if it is designed for this purpose or uses an approved stacking system. Stacked containers shall be slung so that the crane hook can be attached/detached while the load handler is standing at floor level, or by other safe means.

Lifting of personnel

- Lifting of personnel shall be avoided unless the risk has been demonstrated as being as low as is reasonably practicable.
- Lifting of personnel shall be according to a specific personnel lift plan for that lift.
- Lifted personnel shall be properly secured with lanyards unless written procedures and risk assessment require otherwise.

General requirements

The equipment used for lifting personnel for work and for personnel transfer shall be specifically designed, approved/certified and clearly marked as suitable for personnel lifting. Any equipment not so marked shall not be used for personnel lifting. Lifting accessories and lifted equipment used for lifting people shall not be used for any other purpose. The factor of safety required for lifting people shall be higher than for lifting normal loads, typically this is double for personnel lifting activities.

Environmental and other limits for personnel lifts shall be set out in the lift plan with clarity on where they differ from limits for other lifting. In case of any changes in job scope or conditions, the job shall be made safe and stopped, risks re-assessed and a pre-job meeting executed before the job is restarted. Examples of such changes include operating/weather conditions, day or night operations, deck congestion or changes in personnel or equipment involved.

Equipment for lifting people shall be fitted with two distinct mechanisms for preventing the load from falling, one of which shall be *self-acting/fail safe*. Any *free-fall capability* shall be positively locked out.

Personnel lifts shall only be conducted where there is line of sight (full visibility) between the equipment operator and signaller, and between the signaller and the person being lifted.

A rescue plan shall be prepared for all personnel lifts as part of the lift plan. All equipment required to implement the rescue plan shall be readily available prior to and during the lift. Rescue plans shall be practised at regular intervals. Note that rescue operations can introduce their own hazards; therefore the planning and execution of rescue exercises requires particular care and attention including additional risk assessments.

All personnel involved including those being lifted shall have received the necessary specific training.

A test lift without personnel shall be carried out where there is confined access, potential for snagging or other hazard.

Lifting personnel for work activities, excluding personnel transfer

Lifting of personnel shall be avoided unless it is the least risk option. All personnel lifts shall be classed as non-routine lifts and be subject to stringent planning and controls, risk assessment and written authorization by the Site Manager. Before the lift, the PIC shall sign to confirm all involved personnel have been trained and understand the lift plan and the risks involved. See Appendix 12 for an example checklist. For drilling man-riding operations, only dedicated man-riding winches shall be used, and the IADC, Step Change, or equivalent guidelines shall be followed.

Personnel transfer by lifting

Personnel transfer by lifting shall not be permitted in hours of darkness unless specifically approved by the Site Manager and supported by thorough risk assessment and assessment of alternatives. Pick up/set down areas shall be of an adequate size and free from hazards affecting access and egress from the carrier.

Management system

- Lifting operations will be conducted in accordance with a documented Management System.

This section uses the structure of OGP *Guidelines for the development and application of health, safety and environmental management systems* (OGP report 210). However, the company's management system would normally be appropriate.

Leadership, commitment, and accountability

Senior and line management shall visibly demonstrate their commitment to managing lifting operations by:

- Personally conducting site visits and intervening if not fully satisfied with the conduct of lifting operations;
- Allocating the necessary resources to lifting and hoisting and related issues;
- Communicating clearly that lifting and hoisting safety standards are an important company requirement;
- Providing appropriate training and assessment for all personnel involved in lifting and hoisting operations;
- Encouraging safety promotions and employee and contractor suggestions for measures to improve safety performance, and commends safe practice;
- Setting plans and targets and measuring safety performance of all personnel involved in lifting operations against established standards;
- Defining accountability, responsibility, and authority for lifting operations to nominated individual managers and down through the lift team.

Policy and strategic objectives

Local lifting and hoisting procedures compatible with the corporate HSE policy shall be defined. These shall be in appropriate local languages and in an easy-to-use format.

The lifting and hoisting objectives shall aim to:

- Reduce the number of incidents, especially serious incidents, every year to a minimum, with a target of zero;
- Establish lifting and hoisting personnel selection, testing and training programs;
- Establish and support safe lifting and hoisting working procedures and practices;
- Ensure that the company will employ only lifting and hoisting assets, facilities and equipment that conform to acceptable procedures and standards and are maintained in a safe, secure and operational condition.

Organisation, resources and documentation

A management structure for lifting and hoisting shall be in place. This management structure:

- Shall clearly identify those people who have an active responsibility for lifting and hoisting management and state what those responsibilities are.
- Shall ensure that (sub-)contractors have management systems that control lifting and hoisting to an agreed standard consistent with this RP. Joint reviews at regular intervals shall occur to ensure that objectives are achieved.
- Shall maintain procedures to ensure that its employees, its contractors, partners and others are aware of the requirements for managing lifting and hoisting.
- Shall ensure that communication is designed to bridge difficulties related to language and cultural understanding.

Management shall ensure that adequate resources are made available to ensure safe lifting and hoisting.

Records shall be kept to demonstrate auditable and effective control of lifting and hoisting operations and equipment.

Evaluation and risk management of lifting and hoisting

Procedures shall be systematically implemented to identify, record and mitigate potential hazards and their consequences throughout the total life cycle where lifting and hoisting is involved. These shall demonstrate that:

- All foreseeable hazards associated with lifting and hoisting have been identified;
- The likelihood and consequences of an incident have been assessed;
- Controls to mitigate significant risks are in place;
- Emergency response measures to mitigate incidents are in place;
- There is a defined hierarchy of control.

Planning

All aspects of lifting and hoisting operations, equipment selection and use shall be planned to comply with the requirements of this RP. The plans shall especially address the introduction of any new or unusual techniques, types of lift or of environment. As part of emergency response arrangements, procedures shall be in place to identify, reduce the risk and consequence of, respond to and manage all foreseeable lifting and hoisting emergencies.

Deviations from this RP shall follow a formal deviation or management of change process.

Implementation and monitoring

There shall be written procedures for all lifting and hoisting activities. An active and reactive monitoring system shall be in place to ensure that the management system is effective, and that procedures are followed.

- Active monitoring provides information on the extent to which lifting and hoisting safety requirements are being complied with, and objectives and performance criteria are being met, e.g., monitoring of safety critical maintenance and reporting backlogs or of compliance to procedures.
- Reactive monitoring provides information from incidents that have occurred (including near misses, asset/environmental damage, investigations and safety statistics) and provides insight into the means to prevent similar incidents in the future.

Audit and review

A program of planned and systematic audits of lifting and hoisting operations together with management reviews of performance and competence shall be established and maintained based on the degree of risk and the results of previous audit findings. Audit protocols shall be established that ensure that adequate resources, personnel requirements and methodologies are in place for the audit, together with procedures for reporting audit findings and tracking the implementation status of audit recommendations.

Management review

Senior management shall carry out a documented review of the lifting and hoisting safety aspects of their management system at appropriate intervals to ensure its continuing suitability and effectiveness for the ongoing operations.

Glossary

Blind lift

A lift where at any point in time during the lifting operation the crane operator cannot directly see the load.

Capacity (dynamic and static)

Structural capacity is the rated capacity based on strength of materials as well as efficiency of hoisting devices; winches, cylinders, *etc.*

Static capacity is the rated capacity of the equipment based on the safety factors and safe design of its components

Dynamic capacity is the rated capacity of the equipment with deductions, depending on the amount of applied forces, from the structural capacity. It allows for dynamic loading introduced into the machine or its components due to accelerating or decelerating forces, the effects of vessel movements, *etc.* Thus applies to all loads lifted from or to a stationary vessel to a moving or floating vessel or from a floating vessel to another floating vessel or structure.

Cranes mounted on fixed structures have a formula for deductions for all water lifts, which shall be available to the operator and lift designer.

Certification

Certification is an approved and legally compliant method of checking and providing written evidence that a piece of equipment has been examined and meets required standards.

Wire rope certifications prove that the materials are as stated and have been tested to meet the standards indicated.

Competence

In a broad sense, a competent person is an individual who, by way of training and/or experience, is knowledgeable of applicable standards, is capable of identifying workplace hazards relating to the specific operation, is designated by the employer, and has authority to take appropriate actions.

Free fall capability

A means of releasing the hoist brake completely to lower the load or hooks with gravity and inertia allowing the load or hook to descend. It is uncontrolled lowering as apposed to controlled load lowering where the operator uses the machine gearing or hydraulic means of control.

Lift plan

The *lift plan* details of how the lifting operations shall be undertaken, the *lifting equipment* and *lifting accessories* to be used, how the equipment and *lifting accessories* shall be rigged up and the control measures in place to manage the risks.

Lifted equipment

Any device that is used to suspend the load, *eg.* containers, tanks, skips, skids, drum racks, pipe racks, frames, gas cylinder racks, pallets, flexible industrial bulk containers ('big bags'), tree cages, cargo nets, and cargo baskets.

Lifting accessory

Any device that is used or designed to be used directly or indirectly to connect a load to a *lifting appliance* and does not form part of the load *eg.* slings, hooks and fittings, swivels, hoist rings, turnbuckles, sheave blocks, wedge sockets, lifting harnesses, shackles, eye-bolts, rigging screws, wedge sockets, plate clamps, and spreader beams, drill pipe and casing elevators.

Lifting appliance

Any mechanical device capable of raising or lowering a load, *eg.* cranes, jacks, mobile aerial platforms, pad eyes, forklift trucks, powered hoists, manual hoists, lever hoists, beam trolleys, beam clamps, sheave blocks, winches, runway beams, mono-rail hoist.

Lifting equipment

Lifting equipment comprises of *lifting appliances* (equipment performing the lifting), *lifting accessories* (devices that connect the load to the lifting appliance), and *lifted equipment*.

Man-riding

The action of lifting or lowering a person directly attached to the line from a hoist or winch. Normally associated with drill rig operations

Man-riding winch/hoist

A man-riding winch/hoist is a winch/hoist that is dedicated to man-riding (*ie* is not used for other purposes), and has dual braking capability. The hoisting motion releases the brake but is applied as soon as the lever is returned to neutral or released. This action is automatic, and does not require the hoist operator's input.

Pre-job meeting

Pre-job meeting, also known as 'toolbox talk' and 'tailgate meeting', is required to be carried out for all work with significant safety exposure. The pre-job meeting must be done at the work site. It is the final check in the hazard assessment process and the start of the implementation of the work. The *pre-job meeting* shall cover the work plan, the hazards, the controls, roles & responsibilities, and any recovery measures to be taken if the controls are not completely effective.

Pre-use inspection

A visual check and, where necessary, a function check of the *lifting equipment* by a competent person before each use. In determining the suitability and scope of the inspection, reference shall be made to information such as manufacturer's instructions and relevant industry standards.

Safe Working Load (SWL)

The maximum load (as determined by a competent person) that an item of *lifting equipment* may raise, lower or suspend **under particular service conditions**, *eg.* the SWL can be lower than, but can never exceed, the WLL.

Normally SWL = WLL unless the *lifting equipment* has been de-rated.

Self-acting/fail safe

An automatic braking system that applies the hoist brake at any time the control lever is returned to neutral. The self acting braking system will apply a spring applied braking system to prevent uncontrolled movement of the hoist rope or drum.

Working Load Limit (WLL)

The maximum load, determined by the manufacturer, that an item of *lifting equipment* is designed to raise, lower or suspend. Some standards and documents refer to WLL as the 'maximum SWL'.

Reference and good practice documents

Documents below that do not have a website listed are available from the OGP *Lifting and hoisting* web site: <http://info.ogp.org.uk/LiftingandHoisting/>.

Useful websites

- International Association of Oil & Gas Producers (OGP): <http://www.ogp.org.uk/>
- American Petroleum Institute (API): <http://api-ep.api.org>
- Step Change for Safety: <http://step.steel-sci.org/>
- IADC Crane Training Resource Guide: <http://www.iadc.org/committees/training/cranes/resources.htm>
- NSL – North Sea Lifting: <http://www.nsl-aberdeen.com/>
- UK Statutory Instrument: <http://www.legislation.hmso.gov.uk>
- British Standards: <http://www.bconline.techindex.co.uk>
- Maritime and Coastguard Agency: <http://www.mcagency.org.uk/>
- Step Change Standard Lifting and Crane Operating Procedures Group: <http://www.oil-gas-safety.org.uk>
- Health and Safety Executive: <http://www.hse.gov.uk>
- Chamber of Shipping: <http://www.british-shipping.org/>
- United Kingdom Offshore Operators Association: <http://www.oil-gas-safety.org.uk/>
- Lifting equipment engineers association: <http://www.leea.co.uk>
- North Sea Lifting Ltd: <http://www.nsl-aberdeen.com>
- Cross-industry Safety Alert Database SADIE: <http://www.csid.steel-sci.org/>

General

Given below are general reference documents which provide an overview of lifting and hoisting best practice in the industry.

- Step Change Lifting and Mechanical Handling Guidelines
- Shell EP 2005-0264 Managing Logistics HSE – Lifting & Hoisting
- BP Golden Rules of Lifting
- BP Crane Lifting and Slings Safe Operating Procedure
- BP Practical Guide to Loler
- Norsok Standard R-003 Safe Use of Lifting Equipment
- Sparrows Standing Instruction SI01 Offshore Crane Operations
- Statoil WR0235–Safe Use of Lifting and Transporting Equipment
- International Regulators Forum (IRF) Generic Report on Offshore Lifting and Mechanical Handling Issues

Planning

- IMCA M187 - Guidelines for Lifting Operations
- Shell EP2005-0264-G01 Guideline Planning and Execution of Lifting
- BP Guidance on the categorization/planning/risk assessment and implementation of lifting operations
- BP Categorization/planning/risk assessment and implementation of lifting operations poster

Control

- OGP Human Factors document
- Hearts & Minds: <http://www.energyinst.org.uk/heartsandminds/>
- HS(G)48 – Reducing Error and Influencing Behaviour – ISBN0717624528
- AS 2550.1-2002 : Cranes, hoists and winches – Safe use – General requirements. Available from Australian Standards Online: <http://www.saiglobal.com>

Competence

- IMCA Competence Assurance & Assessment: Guidance Document and Competence Tables
- OMHEC Standard – Competence and skills requirements for Enterprise of Competence of Offshore Cranes
- OMHEC Training Standard – Certificate of Expertise Requirements for skills and competence for Crane Operators and Banksmen Offshore.

Equipment

- API Spec 2C Offshore Cranes: <http://api-ep.api.org>
- Norsok R-002-CR Common Requirements – Lifting Equipment
- Norsok R-002-CR Equipment Data Sheets
- Statoil Offshore Cranes – Additional Requirements to NS-EN-13852-1
- BP Guidance on Lifting Equipment Supply, Control and Operations
- IMCA Guidance on the Management of Life Cycle maintenance of non-man-riding wire ropes
- IMCA Guidance on underwater air lift bags
- BS EN 13852-1:2004 Cranes. Offshore cranes. Part 1. General purpose offshore cranes – available from BSI Online: <http://www.bsi-global.com>
- The Crosby Catalogue – Lifting Accessories: <http://www.thecrosbygroup.com>
- Bridon – Wire Rope Specialists: <http://www.bridonltd.com/dox/cranes/index.html>
- Australian Standards (all Australian standards below are available from Australian Standards Online, <http://www.saiglobal.com>):
 - AS 1418.1-2002 Cranes, hoists and winches – General requirements
 - AS 2550.5-2002 Cranes, hoists and winches – Safe use – Mobile cranes
 - AS 4991-2004 Lifting devices
 - AS 1418.5-2002 Cranes, hoists and winches – Mobile cranes
 - AS 1418.8-2002 Cranes, hoists and winches – Special purpose appliances
- BS 5760-5:1991 Reliability of systems, equipment and components. Guide to failure modes, effects and criticality analysis (FMEA and FMECA)
- Appendix 9 of this document provides additional references.

Inspection, maintenance and certification

- API Recommended Practice 2D – Operation and Maintenance of Offshore Cranes
- BP Colour Coding Procedure for Portable, Fixed and Circulating Lifting Equipment
- Appendix 9 provides additional references.

Load integrity and stability

- UKOOA Guidelines for the safe Packing and Handling of Cargo to and from Offshore Locations : Issue No. 2 – November 2002
- IADC Guidelines for Packaging and Transportation for U.S. Offshore Operations
- Step Change Guidance on Design and Handling of Cargo Baskets
- Step Change Guidance to Handling Tubulars

Lifting of personnel

- IADC Health, safety and Environmental Reference Guide, Section 19 – Personal Lifting, Section 20 – Fall Protection – available for purchase at : <http://iadc.org/cgi-local/product.php3?ID=HSEGuide>
- IMCA Guidelines on Procedures for Transfer of Personnel by Basket on the UK Continental Shelf
- Step Change Best Practice Guide to Manriding Safety
- Maersk Personnel Transfer and Man Riding Procedures
- Schlumberger Checklist For Man Riding Operations
- Shell Procedure EP2005-0264-SP-01 Personnel Lifting
- Shell Personnel Basket Transfer Checklist
- AS 1418.10(Int)-2004 – Cranes, hoists and winches – Elevating work platforms. Available from Australian Standards Online: <http://www.saiglobal.com>
- AS 2550.10-1994 Cranes – Safe use – Elevating work platforms. Available from Australian Standards Online: <http://www.saiglobal.com>

Management system

- OGP Guidelines on developing a health, safety and environmental management system
- IADC Safety Alerts: <http://www.iadc.org/alerts.htm>

Appendix I: Example of lift categorisation scheme

As an aid to identifying risks and suitable controls, lifting operations shall be categorised to reflect increasing risk and increasing level of control required. Categorisation schemes for routine and non-routine lifts are given below:

Routine lifts

This classification covers:

- Routine crane operations;
- Repetitive lifting operations using the same equipment (drilling activities); and
- Routine lifting operations with loose lifting equipment.

A generic risk assessment and lift plan may be used for routine lifts. However, classifying a lifting operation as 'routine' does not automatically make it a 'safe' lifting operation – most incidents associated with lifting occur during routine operations. The risk assessments and lift plans shall always be reviewed during the toolbox talk for continued applicability. The control requirements for each category of lift can be summarised as shown in the following table.

Category of lift	Documentation/controls	Competent personnel
Routine crane operations <ul style="list-style-type: none"> • Within the normal operating parameters of the crane • Lifting over non-sensitive areas • Suitable environmental conditions • Familiar, competent Crane Operators • Load has known and evaluated weight, shape and centre of gravity • Standard rigging arrangements 	<ul style="list-style-type: none"> • Risk Assessment (generic) • Lift Plan (generic) • Job Safety Analysis • Toolbox Talk • Safety Checklist • 10 questions for a safe lift 	<ul style="list-style-type: none"> • Crane Operator • Banksman (Flagman, Signaller) and / or Slinger (rigger) • Drilling Crew
<ul style="list-style-type: none"> • Routine repetitive lifting operations using the same equipment (eg, drilling or construction crews) • Load has pre-determined weight, shape and centre of gravity • Single function or series of functions repeated manually or automatically • Order of function repeated • Same equipment • Same operators 	<ul style="list-style-type: none"> • Risk Assessment (generic) • Lift Plan (generic) • Job Safety Analysis • Toolbox Talk • Safety Checklist • 10 questions for a safe lift 	<ul style="list-style-type: none"> • Drilling Crew • Construction Crew
Routine Lifting Operations with Loose Lifting Equipment <ul style="list-style-type: none"> • Equipment used at the same location • Same equipment • Stable, known environment • Familiar, competent equipment operators • Load has known and evaluated weight, shape and centre of gravity • Standard rigging arrangements 	<ul style="list-style-type: none"> • Risk Assessment (generic) • Lift Plan (prepared by competent rigger) • Job Safety Analysis • Work Permit • Safety Checklist • Toolbox Talk • 10 questions for a safe lift 	<ul style="list-style-type: none"> • Maintenance technicians • Drilling Crew

Non-routine lifts

Non-routine lifting operations can be sub-divided to reflect increasing risk:

- Simple lifting operations using loose lifting equipment;
- Complex/Critical lifting operations requiring a lift plan with engineering input;
- Heavy lifts requiring a lift plan with engineering input.

The control requirements for each category of lift can be summarised as shown in the following table.

Category of lift	Documentation/controls	Competent personnel
<p>Non-routine – simple</p> <ul style="list-style-type: none"> • Equipment specifically installed by a competent operator • Load has known and evaluated weight • Centre of gravity below the lifting point • Use of a certified lifting point directly above the load • Ample headroom • Out with sensitive, difficult or restricted areas • Single lifting appliance • Unlikely to be affected by changing environmental conditions • Experienced and competent Lifting Appliance operator • Standard rigging arrangements • Suitable lay-down area available 	<ul style="list-style-type: none"> • Risk Assessment • Lift Plan (prepared by competent rigger) • Job Safety Analysis • Work Permit • Safety Checklist • Toolbox Talk • 10 questions for a safe lift 	<ul style="list-style-type: none"> • Maintenance technicians • Riggers
<p>Non-routine – complicated</p> <ul style="list-style-type: none"> • Continuation of a lifting operation with different equipment (due to malfunction, inadequacy or unsuitability) • Use of two or more Lifting Appliances, including tallying pipe using winch and crane (tandem lift) • Within sensitive, difficult or restricted areas • Lifts from one offshore vessel to another 	<ul style="list-style-type: none"> • Risk Assessment • Specific lift plan • Job Safety Analysis • Toolbox Talk • Safety Checklist • 10 questions for a safe lift 	<ul style="list-style-type: none"> • Crane operator • Banksman (Flagman, Signaller) • Slinger (Rigger) • Rigger
<p>Non-routine – complex/critical</p> <ul style="list-style-type: none"> • Continuation of a lifting operation with different people; for example, shift changeover • Lifting of personnel, including rig floor man-riding operations • Over or in sensitive areas – active or energised hydrocarbon-containing equipment, near overhead electrical power lines • Tandem lift with two cranes • Lifting with a helicopter • Transferring the load from one lifting appliance to another • In environmental conditions likely to affect equipment performance • Operator under training • Load with unknown/difficult to estimate weight and/or centre of gravity • Load is special and/or expensive whose loss would have a serious impact on production operations • Mobile crane on untested/uneven ground, on moving location, on offshore installation, vessel, barge or mobile • Non-standard rigging arrangements • Load lowered into or lifted from a confined space 	<ul style="list-style-type: none"> • Formal work pack with method statement • Lift Plan (prepared and reviewed by a qualified engineer) • Risk Assessment • Job Safety Analysis • Work Permit • Safety Checklist • Toolbox Talk • 10 questions for a safe lift 	<ul style="list-style-type: none"> • Crane operator • Banksman (Flagman, Signaller) • Slinger (Rigger) • Rigger
<p>Non-routine – heavy lift</p> <ul style="list-style-type: none"> • Weight of load in excess of 90% of the rated capacity of the lifting appliance 	<ul style="list-style-type: none"> • Lift Plan prepared/reviewed by a qualified engineer • Risk assessment • Job Safety Analysis • Work Permit • Safety checklist • Maintenance strategy requirements for additional inspection prior to heavy lift • Toolbox Talk • 10 questions for a safe lift 	<ul style="list-style-type: none"> • Crane Operator • Banksman (Flagman, Signaller) • Slinger (Rigger) • Rigger

Appendix 2: Example lift plan

Lifting operation plan

Page 1 of 1

Location: _____ Area: _____
 Permit Number: _____ Risk Assessment Number: _____
 Generic Lifting Plan No: _____ Method Statement Number: _____

Is diagram/sketch of lifting operation enclosed? YES / NO (delete as appropriate)

Description of lifting operation:

Lift Category: _____ Routine: _____ Non-Routine: _____

Weight of load: _____ ACTUAL / ASSESSED (delete as appropriate)

Lifting equipment & accessories to be used (specify type ,SWL and colour code)

All lifting operations require the following to be considered but this list is not exhaustive.

- | | |
|--|---|
| <input type="checkbox"/> Cultural, communication and language difficulties | <input type="checkbox"/> Access and emergency escape routes |
| <input type="checkbox"/> Environmental conditions including weather and permissible limits | <input type="checkbox"/> Suitability and condition of <i>lifting equipment</i> to be used |
| <input type="checkbox"/> Weight, size, shape and centre of gravity of load | <input type="checkbox"/> Experience, competence and training of personnel |
| <input type="checkbox"/> Lighting in the pick-up and lay-down areas; | <input type="checkbox"/> Initial and final load positions and how it will get there |
| <input type="checkbox"/> Availability of approved lifting points on load | <input type="checkbox"/> Number of personnel required for task |
| <input type="checkbox"/> Proximity hazards, obstructions, path of load | <input type="checkbox"/> Lifting over live equipment |
| <input type="checkbox"/> Method of slinging/attaching/detaching the load | <input type="checkbox"/> <i>Pre-use inspection</i> of equipment by operator |
| <input type="checkbox"/> Working under suspended loads | <input type="checkbox"/> Number and duration of lift(s) |
| <input type="checkbox"/> Overturning/load integrity/need for tag lines | <input type="checkbox"/> Visibility of the load |
| | <input type="checkbox"/> Conflicting tasks in area |

Task Details (Step By Step)

Method(s) of communication to be used Radio Verbal Hand signals

Steps taken to eliminate danger to personnel involved and others (including barriers where appropriate):

Debrief and learning points:

Prepared by:

Name: _____ Signature: _____ Date: _____

Reviewed by:

Name: _____ Signature: _____ Date: _____

Approved by:

Name: _____ Signature: _____ Date: _____

Appendix 3: Human factors

Root Cause Analysis regarding of lifting and hoisting operations within the E&P sector, indicates that as much as at least 80 % of incidents are related to human errors. These can, for example, be incomplete organizing of the operation, incorrect operation with regards to equipment and procedures, incorrect or incomplete maintenance or incomplete securing of the area where the lifting operation takes place.

A management focus on how to improve employees' working environment, behaviour and attitude can have a significant impact on the safety result in lifting operations, and, subsequently on the operational costs. The most significant human factors in lifting and hoisting operations are found in the main groups:

- Culture/working environment;
- People;
- Facilities/equipment;
- Management system.

Culture/working environment

Characteristics of a good safety culture for lifting are:

- Respect for workmates, standards and rules;
- Compliance with legislation, standards and procedures;
- Commitment to encourage good practice and behaviour and doing the right thing instinctively;
- Intolerance of inferior practice and willingness to intervene to ensure safety.

The requisite competence and level of supervision of a lifting operation varies according to its complexity and to the competence and experience of the operators. The fact that a job is supervised shall not be an excuse for the operators involved to have inadequate competence, a poor attitude to safety or lack of knowledge to of procedures and plans. An improvement in attitude can be influenced by the good example of supervisors and managers (culture) and by regular retraining and increase in competence.

Repetitive simple lifts may lead to an increase in risk, due to a reduction of operator awareness or risk perception when the same operation is done over and over again. To prevent this, when these operations are carried out, the management shall consider changing out the operator more frequently or accepting more breaks in operations.

It should also be recognized that if people are not fit for the job, due to psychological factors or physical conditions (especially fatigue), they shall be excluded or given other work in this period.

To avoid misunderstandings between participants in lifting operations, language and signals shall be clearly agreed on before the lifting operation starts. Positive confirmation of understanding rather than just a nod or "yes" shall be sought, particularly for inexperienced workers and those in developing countries, as they may have little awareness of the risks or a culture of accepting risk without complaining.

Contractors and itinerate employees who are involved with lifting equipment and lifting operations shall also be subject to, and contributors to, the safety culture and working environment.

People

It cannot be assumed, so must be assured, that all people involved are aware of how the lifting operation is to be performed, the risks involved and that the operation is performed according to local rules, regulations and procedures.

This can be achieved if the people involved understand why plans and procedures are as they are and consequently realize that this is the safe way to do the operation. Involved personnel should feel ownership of the plans and recommended practice that are in use. One way to make the operators feel ownership and acceptance of procedures is to involve the most experienced operators in developing them, and giving all the operators the chance of commenting the details. In most cases it is members of the lifting team that are injured when accidents happen. The most experienced operators can later be used in teaching their colleagues the right way of doing the operations, in safety meetings, in courses or by simulator training.

Simulator training gives the operators the opportunity to train in performing lifting operations according to local practice and also how to handle emergency situations, in a controlled environment.

The recommended practice and procedures can be made available to the operators at available computers, as pocket cards, booklets or posters, *eg*, the Golden Rule of lifting and Ten Questions for a safe lift (Appendix 4).

Facilities/equipment

The areas around the lifting equipment and where the load is handled shall be free of obstacles and easy to access and escape from for the lifting team and marked or roped-off to prevent entry of other personnel. It shall be arranged in a way that minimises the risk that personnel can be under a load or get crushed or hurt in any way by the equipment or the load. Safety is improved by giving the crane operator the best possible view of the area where the load is handled.

Equipment shall be designed in a way that does not give the operators any health or fatigue problems. This means that the following elements shall be considered:

- Ergonomics (operators comfort, view, joy sticks, *etc*);
- Noise and vibration protection;
- Weather protection (wind, temperature, rain, snow *etc*);
- Easy access and escape.

The equipment shall be designed so that it is not easy for an operator to accidentally create a dangerous situation or unintended movement of the equipment or load. For example, buttons for emergency release shall be protected against unintended activation.

Management system

Workers' behaviour is influenced by the environment in which they work. The most important influence in application of a management system is that management shows visible commitment to safety taking precedence in lifting and hoisting activities.

The management shall ensure that there is a safe working system for lifting and hoisting operations at the plant. This can be achieved if the following are in place:

- Certified, maintained, and controlled lifting equipment, suitable for the actual operation;
- The load is suitable for lifting;
- Suitable lifting procedures/standards/"best practice"/policy and/or regulations are available and known to the participants;
- Lifting plans and risk assessment are available and known to the participants;
- Enough personnel with the right competence and a safe attitude to the lifting operation are given enough time to perform the operation in a safe manner.
- Each person involved knows their responsibility and it is recognized that each person can and will stop the operation if the risks deviates from the risk assessment.
- A system for recording incidents/accidents and improving the lifting operations is available.

For further reference see the OGP Human Factors website: <http://info.ogp.org.uk/hf>.

Appendix 4: Ten questions/the golden rule

Ten questions for a safe lift

1. Is everyone aware of and do they fully understand the lifting and hoisting procedures applicable to the lift?
2. Has everyone attended the toolbox talk?
3. Has a pre-use inspection of the lifting equipment been carried out and are the lifting accessories tagged or marked with:
 - Safe working load?
 - A unique identification number?
 - A valid certification date?
4. Are all safety devices working?
5. Does everyone know the person-in-charge of the lift?
6. Is everyone competent and aware of his or her tasks?
7. Is there a current lift plan and JSA and does everybody understand the job and precautions?
8. Does everyone know the environmental limits (eg maximum permissible wind speed) for the lift?
9. Is the lift area controlled and is everyone clear if the load falls or swings?
10. Are signalling methods and communication agreed and clear to you?

The Golden Rule of lifting

Lifts utilizing cranes, hoists, or other mechanical lifting devices will not commence unless:

- An assessment of the lift has been completed and the lift method and equipment have been determined by a competent person(s);
- Operators of powered lifting devices are trained and certified for that equipment;
- Rigging of the load is carried out by a competent person(s);
- Lifting devices and equipment have been certified for use within the last 12 months (at a minimum);
- Load does not exceed dynamic and/or static capacities of the lifting equipment;
- Any safety devices installed on lifting equipment are operational.;
- All lifting devices and equipment have been visually examined before each lift by a competent person(s).

Appendix 5: Example responsibilities and competence table

Below is an example responsibilities table including basic competencies:

Role	General Competence Requirements	
All Roles	<p>A designated individual that conforms to a minimum physical condition, level of competence, and has a documented trail issued by an accepted and recognized authority, satisfying legal and EP Company requirements and demonstrating the aforementioned and is deemed qualified to perform safe lifting/rigging operations.</p> <p>Qualified personnel must have successfully attended a specific training course that meets the requirement of national standards and must be trained on the specific <i>lifting equipment</i> type.</p> <p>Where the national standard qualification and competence/skill requirements are inadequate one of the accepted codes shall be used to develop the EP Company lifting and hoisting competence requirements.</p>	
Role	Responsibilities/tasks	Qualification/competence/skills
Crane operator – overhead cranes	<ul style="list-style-type: none"> To be responsible for the crane operations under his/her control; To perform crane inspections with the exception of the initial, quarterly and annual inspections; To duly complete all required crane operation logs, <i>pre-use inspection</i> procedures and checks. 	Personnel shall be re-certified at intervals not greater than every five (5) years.
Crane operator – mobile cranes		Personnel shall be re-certified at intervals not greater than every five (5) years.
Crane operator – offshore pedestal cranes		Personnel shall be re-certified at intervals not greater than every four (4) years.
Powered industrial truck (forklifts) operator	<ul style="list-style-type: none"> Perform a pre-operational check to demonstrate operational readiness of the truck; Ensure the equipment is within inspection and testing intervals by examination of the periodic re-certification tags and/or documentation; Adhere to all tags on the controls; Drive at speeds appropriate for the existing conditions (space, load, lighting, surface conditions, etc) and at or below posted limits; Ensure other personnel are not in the swing radius prior to performing turning manoeuvres. 	<p>A designated individual that conforms to a minimum physical condition, level of competence, and has a documented trail issued by an accepted and recognized authority, satisfying legal requirements and demonstrating the aforementioned and is deemed qualified to perform safe forklift operations.</p> <p>Personnel shall be re-certified at intervals not greater than five (5) years.</p> <p>The training syllabus for Powered Industrial Truck Operators must comprise a major element of practical instruction / examination in addition to the written examination.</p>
Banksman (Flagman, Signaller)	<p>A designated individual who:</p> <ul style="list-style-type: none"> Coordinates the lifting movements and maintains radio- and/or visual communication with Crane Operator and persons close to the load; Participates in <i>JSA</i>/risk assessment for the lift; Should not get involved as Rigger when also performing the role of a Banksman. 	<p>Has successfully completed training programme(s) that are appropriate to the lifts they are involved with that incorporates familiarisation with rigging hardware, slings, communication (including hand signals and radio) and safety issues associated with rigging and lifting loads, and planning of lifting operations.</p>
Slinger/Rigger (cranes)	<p>A designated individual who:</p> <ul style="list-style-type: none"> Shall inspect the rigging; May contribute to selecting rigging to suit the load; Connects/disconnects the load and participates in <i>JSA</i>/risk assessment for the lift. 	
Rigger (portable lifting equipment)	<p>A designated individual who for portable <i>lifting equipment</i>:</p> <ul style="list-style-type: none"> Inspects the rigging, selects rigging to suit the load, installs the equipment; Connects/disconnects the load and participates in <i>JSA</i>/risk assessment for the lift. 	
Mobile Aerial Platform Operator	<p>A designated individual who drives and operates aerial platforms (eg, cherry pickers, scissor platforms):</p> <ul style="list-style-type: none"> To duly complete all required operation logs, pre-use inspection procedures and checks; Performs a pre-operational check to demonstrate operational readiness; Assesses the stability of the ground and environmental conditions are within operating procedures; and tests the communication system; Verifies that the lifted personnel wear the required PPE for the lift. 	<p>Has successfully completed training programme(s) that</p> <ul style="list-style-type: none"> Are appropriate to the lifts involved Incorporate(s) familiarisation with equipment and: <ul style="list-style-type: none"> Mobile aerial platform safety; Working at heights; Fall protection; Pre-operational checks; Operating requirements.
Person-in-Charge (PIC) of the Lift	<p>Appointed by the Site Manager as the designated individual who is responsible:</p> <ul style="list-style-type: none"> For coordination and control of the lifting operation, including ensuring that involved people are competent for performing their task, aware of the task, aware of the procedures to be followed, and aware of their responsibilities; Ensuring that the <i>lifting equipment</i> is inspected and appropriate for use; That the <i>JSA</i> is followed and the <i>toolbox talk</i> is held prior to the lift. 	Skilled in the application of the legal and EP Company requirements relevant to the planning and execution of lifts they are involved with.
Lifting Equipment Maintainer	<p>A designated individual who is responsible for performing maintenance of <i>lifting equipment</i> to ensure its technical integrity in accordance with legal and EP Company maintenance requirements.</p>	<p>Maintenance of <i>lifting equipment</i> shall be carried out by suitable qualified and competent personnel with adequate knowledge in the following areas:</p> <ul style="list-style-type: none"> Awareness of the relevant standards and regulations and site specific requirements and procedures; Maintenance requirements on all types of <i>lifting equipment</i> to be maintained; Inspection frequency requirements; Detailed inspection requirements for all <i>lifting equipment</i>; Discard criteria and disposal processes for failed equipment.

Appendix 6: Example training matrix

Country	The Netherlands									United Kingdom					
Organisation/training institute/standard	NOEFA/ARBO 7.18.3/ OMHEC	Appr. Institute	Appr. Institute	Appr. Institute	Appr. Institute	NOEFA 1.9A/B or Appr. Institute	VVT	Location	Location	Nat Standards/Sparrows STAGE 12/A1	Nat standards/sparrows STAGE 1-2-3/A1	External examination	Tailor made course	Tailor made course	External examination
Course duration (days)	5+40h	1 Yr	1	2	2	3/2	1/2	1/2	1/2	5	5+150h	NA	1	1	NA
Validation of certificate	4	5	NA	NA	NA	NA	NA	NA	NA			NA	NA		NA
Refreshment (onshore)/Assessment(offshore)/entry	3	2	3	3	3	3	5	3	3	2	2	NA	NA	2	1
Written examination or assessment	Y	Y	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	Y	Y
Training	Certification of competence for offshore crane operators	Certification of competence for onshore crane operators	Certification of competence for aerial platform operator	Certification of competence for fork lift operator	Certification of competence for earth mover operator	Certification of competence for bankmans/rigger	Local Law and regulation course	NAM RIGMOVE MOVIE	EBB VIDEO safe L&H operations	Certification of competence for offshore crane operators L2	Certification of competence for offshore crane operators L3	SVO Level 2 Tailored Award – Crane Operation	Loler awareness course	In-situ training – overhead crane	NVO Discipline Assessor D32/33 or A1
Job position															

Offshore

Local lifting Focal Point	●								●						
Offshore Rigging supervisor															
Offshore pedestal crane operator	●								●	●	●	●	●		
Banksman/Slinger						●			●						
Rigger															
Overhead crane operator	●					●			●				●	●	

Onshore

Onshore Support Team Leaders							●	●							●
Onshore Lolere focal points							●								●
Crane operator		●				●	●	●							
Banksman/Rigger						●		●							
Mobile Aerial Platform operator			●					●							
Forklift truck operator				●				●							
Earth mover operator (incl. Lifting capacity)					●			●							

General

Overhead crane operator		●						●						●	
-------------------------	--	---	--	--	--	--	--	---	--	--	--	--	--	---	--

Proven records of competence, examination and assessment shall be recorded and shown upon request

													Norway																				
													External examination	External examination	Independent party	Independent party	COGENT Approved institute	Cogent Approved Institute	External examination	Tailor made course	Tailor made course	CTIB	CTIB	OPITO	OPITO	G5 Fagplan F2689	Appr. Institute/G1 F2685 or F2686	One of the following: G1, G4, G5, G8, G20	Certificate requirement	Appr. Institute	App.Institute/G4. F2693	Modul 0.3.2.	Norsok standard R:003
NVO Discipline Verifier D34 or V1	EC(ITB (level3) NVO Constructing Capital Plant steel survey	Lifting gear examiners course	LOLER Planning & Risk Assessment Standard	COGENT/OPITO approved rigger assessment standard	OPITO Deck operations Slings & banksman standard	OPITO (Level 2) SVO Offshore Deck Operations	In-situ training – aerial platform operator	In-situ training – Forklift operator	Certification of competence for Offshore crane operators	Certification of competence for earth mover operator	NVO Level2 offshore deck operations	NVO level3 in lifting and positioning	Certification of competence for offshore crane operators	Certification of competence for onshore crane operators	Certification of competence for aerial platform operator	Certification of competence for Fork lift operator	Certification of competence for earth mover operator	Certification of competence for gantry – overhead crane operator	Certification of competence for banksman/rigger	Local Law and regulation course													
NA	NA	2	1	2	3	NA	1	2	5	5			10	5	5	3	3	5	8	1													
NA	NA	NA	NA	NA	NA	NA	NA	NA					NA	?	NA	NA	?	NA	NA	NA													
1	2	NA	NA	NA	2	NA	NA	1	4	4			3	?	NA	NA	?	3	3	3													
Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			Y	Y	Y	Y	Y	Y	Y	Y													
			●																				●										
			●																				●										
			●										●										●										
					●	●													●	●			●										
																							●										
●																							●										
	●					●																	●										
	●	●	●						●														●										
																							●										
				●																			●										
																							●										
									●														●										
																							●										
																							●										
																							●										
																							●										
																							●										

Appendix 7: Example equipment registry

The following are excerpts from sample equipment registry forms including certification and sign-off:

Air Winch

Name and Address of Installation Owner

OGP Oil, Bahamas

Name or Designation of Offshore Installation

Platform Perfect Alpha

Serial No	Description	SWL	Location	Manufacturer	Defects	Defective
035940A	AIR WINCH	395 LB	DRILL FLOOR	XXX		<input type="checkbox"/>
035843B	AIR WINCH	2 TON	DRILL DERRICK	XXX		<input type="checkbox"/>

Wire Rope Slings

Serial No	Description	SWL	Location	Manufacturer	Date first used	Comments	Defective
239857	115, SIZE: 2 1/2", REACH: 60'	302 TON	JOB BOX	XXX	4/22/05	NOT INSTALLED	<input type="checkbox"/>
259482	115, SIZE: 5/8", REACH: 200'	22.7 TON	JOB BOX	XXX	4/22/05	NOT INSTALLED	<input type="checkbox"/>

Padeyes

Serial No	Description	SWL	Location	Tested To	Test Date	Comments	Defective
C284-07	H-5 3/4", W-3/4", L-3 1/2", E-2", T-3/4"	2 TON	C284 – P-TANK PORT	2 TON	1/21/05	DSME TESTED	<input type="checkbox"/>
C284-12	H-5 3/4", W-3/4", L-3 1/2", E-2", T-3/4"	2 TON	C284-TOP P - TANK PORT	2.5 TON	1/21/05	DSME TESTED	<input type="checkbox"/>

Miscellaneous

Serial No	Description	SWL	Location	Manufacturer	Comments	Defective
39482	KWR-PALLET-20R	5000LB	RIG	XXX	DSME TESTED	<input type="checkbox"/>
397584	PALLET LIFTING ASSEMBLY	5000LB	JOB BOX	XXX	NOT INSTALLED	<input type="checkbox"/>

Registry of Defective Items

Location	Serial No	Description	SWL	Comments
BOP CONTROL ROOM LOWER DECK D-1201	7947394	MONORAIL	4000LB	NO HAND SIGNAL CHART
DRILL FLOOR	L-943029	MONORAIL	10000LB	HOIST HITS STRUCTURE

Certification (at end of each form)

I hereby certify that on 07/10/2003 the above items were thoroughly examined as far as accessible, and the above particulars are correct.

Name of person(s) carrying out the inspection and on the behalf of the company: _____

Signature(s): _____

Appendix 8: Example of recommended safety devices

Man-riding winches

This section describes the features and settings for winches that are to be used for man riding. These winches shall have the following features and settings:

- A second independent brake shall be provided for use if the automatic brake fails. This brake should be manual unless the second automatic brake is completely independent of the automatic braking system;
- Devices shall be incorporated in the winch system to prevent the carrier from over-riding and over speeding;
- Maximum pull limiting feature. The limit shall be set to the value determined during the risk assessment for the job;
- The winch shall be capable of lowering in a controlled manner in the event of sudden loss of power or primary control;
- The winch shall have adequate capacity to handle the loads required, which should include but not be limited to:
 - Weight of passengers;
 - Tare weight of the carrier;
 - Rope weight and frictional effects.

The design factor for the winch and the wire rope, taking into account the sum of these weights shall not be less than 8:1;

- The design of the winch should be supported by an FMEA (Failure Modes and Effects Analysis);
- The winch shall be equipped with a guard over the drum that provides protection to the Winch Operator, *eg*, in the event of rope breakage, but does not inhibit the operator from monitoring the spooling action of the rope on the drum;
- Wire rope used in man-riding winches shall be of the non-rotating type;
- The ratio (D/d) between sheave diameter (D) and the wire rope diameter (d) shall not be less than 22.

Appendix 9:

Sample design, test, certification & inspection matrix

	Equipment type	Codes and standards		
		Manufacturing standards	Operations standards	Other standards
Lifting equipment	Offshore Pedestal Cranes	API 2C (DEP3792.10.30) BS EN 13852-1 (DEP 3792.10.31) Lloyds Code for Lifting Appliances in a Marine Environment	API RP2D BS 7121 part 2&11	AS1418 SAA Crane Code PECPR (NZ), OSH Approved codes of practice for cranes (NZ)
	Offshore Temporary Cranes		API RP2D	
	Tower Cranes	ASME B30.3 and B30. 4, BS2799	ASME B30.3 & 4, BS7121 parts 2 & 5	Canada CSA Z248-04 Russia GOST 13556 Australia AS 2550
	Overhead, Gantry and Stacker Cranes	ASME B30.2 B30.17 & B30.18, BS466	ASME B30.2, B30.17 & B30.18	Canada CSA B167-96 Russia GOST 22045 & 27584
	Overhead Hoists Underhung (chain blocks, air hoists)	ASME B30.16	ASME B30.16	
	Manual Lever Hoists (comealongs)	ASME B30.21, BS4898	ASME B30.21, BS4898	
	Wire Ropes Hoists (Tirfors)			
	Drum Hoist (Personnel)	ANSI A10.4 ASME B30.23	ANSI A10.4 ASME B30.23	
	Based Monted Drum Hoists	ASME B30.7	ASME B30.7	
	Mobile Cranes & Derricks (including Floating cranes and derricks)	ASME 30.5, 30.6, 30.8, BS1757	ASME 30.5, 30.6, 30.8 BS7121 Parts 2&3	Canada Z150-98-CAN/CSA Russia GOST 27551/2 Australia AS2550
	Jacks	ASME B30.1, BS EN 1494	ASME B30.1	
	Fabricated Padeyes	BS 2573		Shell Exxpo EM/039, SEPCo Schedules Z & ZZ
	Mobile work platforms personnel lifting systems	ASME B30.23, ANSI A92.2/3/5/6, BS 7171 BS EN 280	SME B30.23, ANSI A92.2/3/5/6	Russian GOST 2688 Canada CSA B354.1.2/4 & Z271-98
	Hooks	API 2C, ASME B30.10, BS EN 1677	API 2C, ASME B30.10, BS EN 1677	Russian GOST 2105/6619
	Beam Trolleys			
	Beam Clamps			
Sheave Blocks	API 2C		Australia As 2089	
Powered Industrial trucks (forklifts etc)	ASME B56.1, 56.6 BS EN 1175	ASME B56.1, 56.6 BS 4430 Part 2	Russian GOST R 51354, ISO 3691, Australia SAI AS 2359 1-12	
Lifting accessories	Shackles	RR-C-271-D, BS 3551, BS 6994, BS EN 13889	BS 3551, BS 6994, BS EN 13889	Russian GOST 765 ISO 2415 Australia AS 2741
	Eyebolts	ASME B18.15, BS 4278	ASME B18.15, BS 4278	ISO 3266, Australia AS2317
	Turnbuckles	FF T 791b, BS 4429, ASTM F1145	BS 4429	Australia AS 2319
	Open Wedge Sockets	RR-S-55OD, BS EN 13411-6	BS EN 1341106	Australia AS 2740
	Wire Rope Slings	ASME B30.9, API RP2D, BS EN 13414-1 to 3	ASME B30.9, API RP2D, BS EN 13414-1 to 3	ISO 7531 Russian GOST 14110 Australia As 1666 1&2
	Man made fibre Slings	ASME B30.9, API RP2D, BS EN 1492-1-2-4	ASME B30.9, API RP2D, BS EN 1492-1-2-4	Australia AS1352.1 & 2
	Chain Slings	ASME B30.9, API RP2D, BS EN 818-2 to 6	ASME B30.9, API RP2D, BS EN 818-2 to 7	ISO 3076, 7593, Australia AS 3775 & 6
Below the hook lifting devices (spreader Bars, drum lifters etc)	ASME B30.20	ASME B30.20		
Lifted equipment	Offshore Containers (includes padeyes)	European standard EN 12079, DNV 2.7	European standard EN 12079, DNV 2.7	AMSA Marine Orders part 4 Safe containers, NZ Maritime rules Part 24E Carriage of Cargoes-offshore containers
	Bulk Bags (FIBCs)	BS EN 1898	BS EN 1898	ISO 21898
	Pallets	ASME MH1, BS ISO 6780		Australia AS 4068
	ISO Containers general	ISO 1496-1	ISO 3874	

Proof load testing†					Periodic examination required							Documentation requirements						Design factors								
Proof load†					Inspection records formally kept of equipment condition							Certificate of conformity/test	Destruction sample certificate	Calibration certificate	Stress calculations	Full fabrication package	Other	These may vary slightly dependent on manufacturers								
% above SWL				SWL X2.5	Pre-use	Months												2:1	3.5:1	4:1	4.5:1	5:1	7:1	8:1		
10	25	50	100			3	6	12	36	48	60															
•					•	•	•	•	•		•															
•					•	•	•	•			•				•											
					•																					
	•				•			•			•															
	•				•			•			•										•	air				
	•				•			•			•										•					
•					•	•		•			•															•
•					•	•		•			•										•					
•					•			•			•									•						
			•		•			•			•					○										
			•		•			•			•					•	•									
	•				•			•			•														•	
				•	•			•			•										•					
				•	•			•			•										•					
				•	•			•			•										•					
				•	•			•			•										•					
				•	•			•			•										•					
				•	•			•			•										•					
				•	•			•			•										•					
				•	•			•			•										•					
				•	•			•			•										•					
				•	•			•			•										•					
				•	•			•			•										•					
				•	•			•			•										•					
				•	•			•			•										•					

† Execution of proof load testing may depend on local legislation

Appendix 10: Example colour coding system

Given below is an example colour coding and identification scheme. It is recommended that where practicable, operations in a geographical location aim to standardise on colour coding.

Application of Colour Codes

Colour codes are an add-on for visual identification only. They do not replace the requirements to perform a full pre-use inspection, and they are not intended to replace other means of identification e.g., serial no. stamps, etc.

All lifting accessories shall be colour coded where applicable must be in accordance with regional or international accepted Safety Signs and Colour Codes. Lifting accessories, which are incorrectly colour coded shall be stored in a separate clearly marked area and returned for re-inspection, certification and colour coding

Avoiding conflicting colours in Colour Coding

In many locations a particular colour is used to denote equipment “unsuitable for the job” – this colour should not be used in colour coding.

YEAR	Netherlands (IMO)	United Kingdom (½ Year)		Norway (Norsok)
	Yearly	Half yearly		Yearly
2004	Brown	Blue	Yellow	Blue
2005	Blue	Green	Blue	Red
2006	Yellow	Yellow	Green	Yellow
2007	Red	Blue	Yellow	Green
2008	Black	Green	Blue	Blue
2009	Green	Yellow	Green	Red
2010	Brown	Blue	Yellow	Yellow
2011	Blue	Green	Blue	Green
2012	Yellow	Yellow	Green	Blue

All lifting accessories shall be labelled or provided with readable marks with the minimum information below:

- ID/Serial number;
- WLL (work load limit) or SWL (safe working load);
- Date load inspection.

Appendix II: Example pre-use inspection checklist

Area ----- Crane ----- Date -----
 Location ----- Checked by -----

General appearance:

	Y/N	Comments
1. Is the crane visually in good condition and clean		
2. Are the accessories properly stored		
3. Are the storage containers clean and well organized		

Mechanical

	Y/N	Comments
1. Check fluid levels:		
Engine oil		
Hydraulic oil		
Battery fluid		
Radiator coolant		
Fuel		
2. Are pressure gauges operational?		
3. Is the windscreen clean with good visibility?		
4. Are all steps and handles free of grease?		
5. Is the crane deck tidy and clean of oil spills?		
6. Have all operational functions of crane been checked?		
7. Are crane and winch controls well positioned and laid out?		

Hydraulics

	Y/N	Comments
1. Are hoses in good condition?		
2. Are there any leaks in hoses or cylinders?		

Pneumatics

	Y/N	Comments
1. Are hoses in good condition?		
2. Are there any leaks in hoses or valves?		

Electrical

	Y/N	Comments
1. Is wiring in good condition?		
2. Are lights operational?		

Safety systems

	Y/N	Comments
1. Is a level gauge installed?		
2. Is main horn operational?		
3. Is Safe Working Load displayed?		
4. Is a height-limiting device fitted on all lines, with automatic shutdown?		
5. Are load / radius charts displayed?		
6. Are overboom/underboom stops available, functioning correctly?		
7. Are load limiting devices operational?		
8. Is a boom angle indicator available that can be seen by the operator?		

Lifting gear

	Y/N	Comments
1. Has winch been certified in last 12 months? (Including load test)		
2. Are brakes adequately rated for SWL?		
3. Do brakes auto apply on loss of power?		
4. Is a warning displayed to check failsafe brake application before using?		
5. Have brakes been serviced in last 3 months?		
6. Do 5 turns of cable remain on drum when hook is in contact with the ground?		
7. Is cable of correct type and size for winch?		
8. Is cable properly terminated?		
9. Is the hook rating adequate for SWL?		
10. Is the hook in good condition (incl. swivel, safety latch)?		
11. Do operating levers return to neutral position when released?		
12. Are operating levers clearly labeled?		

13. Are slings/chains tagged, certified as per OHS QHSE Standard 013?		
14. Are slings/chains in good condition?		
15. Are sheaves in good condition?		
16. Check for missing or damaged hardware like bolts, cotter pins, snap rings?		
17. Are all safety guards installed?		

Certification of crane

	Y/N	Comments
1. Has crane been load tested in last 12 months?		
2. Is valid certificate available?		

Training

	Y/N	Comments
1. Is crane operator qualified?		
2. Is operator knowledgeable on operation?		

Mobile cranes

	Y/N	Comments
1. Are inertia type seat belts installed?		
2. Is the "Fasten seat belt" sign posted in English and/or the local language?		
3. Does crane driver have a local license?		
4. Is the speed limit posted in English and/or local language?		
5. Are the insurance and registration papers current?		
6. Are all fitted tires in good condition and all tire bolts present and tight?		
7. Is the spare tire in good condition?		
8. Are the following in good working condition?		
Lights & indicators		
Brakes including parking brake		
Windscreen wiper including washer		
Rearview mirrors (left & right side)		
Reversing light and alarm		
Flashing light/alarm for road transit		
9. Is swing lock device operational?		
10. Are outriggers and landing pads in good condition, with no visible leaks?		
11. Are the following available?		
Reflective emergency triangle		
Warning decals in English and local language		
– outrigger control functions,		
– hand signals,		
– electrocution warning hazard		
Reflective marker on the rear of the crane		
First aid kit		
Fire extinguisher in driving cab & on platform		

Comments

Crane rating is:

Appendix 12: Example pre-use inspections for man-riding and work platform operations

Appendix 12A: Example pre-use inspection for man-riding operations

All personnel who are to be involved in the task shall be involved in the completion of this list.

Start criteria		OK
1	Has a work permit been obtained?	<input type="checkbox"/>
2	Has the reason for man riding and the job objectives been explained clearly and been understood	<input type="checkbox"/>
3	Verify that the passenger has agreed and understands that the ride is voluntary	<input type="checkbox"/>
4	Verify that weather conditions are within following criteria; alternatively that O.I.M. has issued a Deviation Permit:	
	• Wind maximum 45 knots	<input type="checkbox"/>
	• Sea/swell combined height less than 6m (when working above sea)	<input type="checkbox"/>
	• Daylight conditions	<input type="checkbox"/>
	• Visibility greater than 100m	<input type="checkbox"/>
5	Have you reviewed the risk assessment and the Company procedure for man riding	<input type="checkbox"/>
6	Have you attended a tool box talk with all persons involved in the task	<input type="checkbox"/>
7	Have you reviewed the emergency escape and rescue plan and prepared the necessary equipment	<input type="checkbox"/>
8	Have all activities within the area of the task that may interfere with man riding been stopped	<input type="checkbox"/>
9	Have "Do not use" signs been placed on the draw-works brake, the derrick ladder, other winches <i>etc</i>	<input type="checkbox"/>
10	If "over the side" work is to be involved have these extra risks been addressed as follows:	
	• Stand by boat shall be close standby and be able to maintain close stand by prior to task commencing	<input type="checkbox"/>
	• Radios shall be used and a close stand by watch maintained with direct contact to control room/radio room	<input type="checkbox"/>
	• Stand by watch shall keep the person man riding in sight at all times during the task	<input type="checkbox"/>
11	If radio's are to be used, have they been checked to ensure that they are fully operational and comply with the following:	
	• Radio fully charged prior to use, maintained and fully operational	<input type="checkbox"/>
	• Single dedicated channel shall be used and with no interfering traffic on same wavelength	<input type="checkbox"/>
	• Recognized radio protocol is to be observed at all times <i>ie</i> the use of term "over" when you have completed your statements	<input type="checkbox"/>
	• No "chatting" over the radio during operations	<input type="checkbox"/>
	• Radios shall be returned after use, checked for correct operation and the batteries returned for recharge.	<input type="checkbox"/>
12	Have hand signals to be used been agreed upon by all involved	<input type="checkbox"/>
13	Has the "No signal – no movement" principle been agreed	<input type="checkbox"/>
14	Is the harness and connectors in good condition, fir for operation with relevant current certification	<input type="checkbox"/>
15	Has the harness been adjusted properly for comfort	<input type="checkbox"/>
16	The correct PPE worn complete with hard hat and chin strap secured	<input type="checkbox"/>
17	Is the winch line fitted to the harness directly <i>i.e.</i> with no swivels or hooks	<input type="checkbox"/>
18	Is the winch marked for man riding and is the certification relevant and in date	<input type="checkbox"/>
19	Is the winch cable fir for operation spooled correctly and is the certification relevant and in date	<input type="checkbox"/>
20	Has the winch cable been painted on the last 50 feet and is it long enough for the task	<input type="checkbox"/>
21	Is the area above clear or if not has nay possible obstructions been removed or tied back	<input type="checkbox"/>
22	Are all the winch safety devices in place in accordance with the manufacturers and company requirements	<input type="checkbox"/>
23	Have the winch safety devices been tested in accordance with the manufacturers and company requirements	<input type="checkbox"/>
24	Have the hand tools been checked and are they fit for purpose	<input type="checkbox"/>
25	Are the hand tools secured with a lanyard correctly	<input type="checkbox"/>
26	Have all loose articles been removed from the person who is to go aloft	<input type="checkbox"/>
End criteria		
1	Has the operational debrief / operations review been held (any comments to be added below)	<input type="checkbox"/>
2	Has all equipment been properly rigged down and checked, cleaned and stowed	<input type="checkbox"/>
3	Has the permit been signed off as closed	<input type="checkbox"/>
4	Has the man riding register been completed	<input type="checkbox"/>

Appendix 12B: Example pre-use inspection for an operation using a mobile crane with a work platform

Date:	-----	Employed by: ----- Number work platform: -----
Principal:	-----	
Name operator:	-----	
Type crane:	-----	
Owner work platform:	-----	
Location operations:	-----	
Remarks:	-----	

	Yes	No
1. Is certificate of the work platform, slings, fastening present?	<input type="checkbox"/>	<input type="checkbox"/>
2. Is there an EU statement and a CE marking (or Equal) on the work platform?	<input type="checkbox"/>	<input type="checkbox"/>
3. Throwing line(s) present?	<input type="checkbox"/>	<input type="checkbox"/>
4. Steering line(s) present?	<input type="checkbox"/>	<input type="checkbox"/>
5. Communication:	<input type="checkbox"/>	<input type="checkbox"/>
Method – visual	<input type="checkbox"/>	<input type="checkbox"/>
Method – portophone	<input type="checkbox"/>	<input type="checkbox"/>
6. 1 items escape mask per person present?	<input type="checkbox"/>	<input type="checkbox"/>
7. 1 items harness belt with fall damper per person present?	<input type="checkbox"/>	<input type="checkbox"/>
8. 2 items fire extinguishers (P9) present if required?	<input type="checkbox"/>	<input type="checkbox"/>
9. Is work platform in good condition?	<input type="checkbox"/>	<input type="checkbox"/>
10. Only work at height? (without getting out)	<input type="checkbox"/>	<input type="checkbox"/>
11. Loading crane not more than 25% of the workload?	<input type="checkbox"/>	<input type="checkbox"/>
12. Fastening basket correct? (secured against undesired weight loss)	<input type="checkbox"/>	<input type="checkbox"/>
13. Fastening cable on winch correct?	<input type="checkbox"/>	<input type="checkbox"/>
14. Fastening cable on block correct?	<input type="checkbox"/>	<input type="checkbox"/>
15. Fastening block on 4-way correct? (secured against undesired weight loss)	<input type="checkbox"/>	<input type="checkbox"/>
16. Fastening 4-way on workbasket correct?	<input type="checkbox"/>	<input type="checkbox"/>
17. Harness belts are worn and fastened?	<input type="checkbox"/>	<input type="checkbox"/>
18. Wind speed not greater than 6 Beaufort?	<input type="checkbox"/>	<input type="checkbox"/>
19. Entering/leaving takes place only on firm surface?	<input type="checkbox"/>	<input type="checkbox"/>

Use of the work platform without this obligatory inventory and checklist is not allowed.

Name operator:

Name: ----- Signature: -----

Name user(s):

Name: ----- Signature: -----

Dept. transport:

Name: ----- Signature: -----

What is OGP?

The International Association of Oil & Gas Producers encompasses the world's leading private and state-owned oil & gas companies, their national and regional associations, and major upstream contractors and suppliers.

Vision

- To work on behalf of the world's oil and gas producing companies to promote responsible and profitable operations

Mission

- To represent the interests of oil and gas producing companies to international regulators and legislative bodies
- To liaise with other industry associations globally and provide a forum for sharing experiences, debating emerging issues and establishing common ground to promote cooperation, consistency and effectiveness
- To facilitate continuous improvement in HSE, CSR, engineering and operations

Objectives

- To improve understanding of our industry by being visible, accessible and a reliable source of information
- To represent and advocate industry views by developing effective proposals
- To improve the collection, analysis and dissemination of data on HSE performance
- To develop and disseminate best practice in HSE, engineering and operations
- To promote CSR awareness and best practice

Essential Principles for Lifting & Hoisting Operations

Planning

- A lift plan is required for every lift. If the lift deviates from the plan, make safe and stop the job.
- Hazard identification and risk assessment are an integral part of planning a lift.
- An assessment of the lift and determination of the lift method, equipment and number of people required are critical to planning of the lift.

Control

- One person in the lift team shall be designated as the person in charge of the lifting operation (referred to as PIC).
- The PIC shall review the lift plan and ensure that the required controls are in place and the lift is carried out following the plan.
- The PIC ensures that the lift team has tested and understood visual or radio communications prior to the lift.
- All personnel involved in the lifting operation shall have their individual responsibilities clearly allocated.
- All people shall be kept clear of overhead loads and areas of potential impact.
- Manual load handling shall not be used to stop a swinging load and shall only be performed below shoulder height.

Competence

- All persons involved in planning/performing lifting and maintaining lifting equipment shall be trained and competent for their role.
- Refresher training and periodic assessment is necessary to assure competence.

Equipment

- Equipment shall be fit for its intended purpose and operating conditions and shall be designed to a recognized standard.
- Equipment shall be fitted with appropriate safety devices.
- Any safety devices installed on lifting equipment shall be operational and not over-ridden.

Inspection, maintenance and certification

- Equipment integrity shall be maintained, supported by an equipment register.
- Lifting devices and equipment shall undergo detailed/thorough examination by a *competent person* at least every 12 months, and at least every 6 months for equipment used to lift people.
- All lifting devices and equipment shall be visually examined before use.

Load integrity and stability

- Load shall not exceed *dynamic and/or static capacities* of the lifting equipment
- The integrity and stability of loads shall be verified before lifting.

Lifting of personnel

- Lifting of personnel shall be avoided unless the risk has been demonstrated as being as low as is reasonably practicable.
- Lifting of personnel shall be according to a specific personnel lift plan for that lift.
- Lifted personnel shall be properly secured with lanyards unless written procedures and risk assessment require otherwise.

Management system

- Lifting operations will be conducted in accordance with a documented Management System.



**International
Association
of Oil & Gas
Producers**

209-215 Blackfriars Road
London SE1 8NL
United Kingdom
Telephone: +44 (0)20 7633 0272
Fax: +44 (0)20 7633 2350

165 Bd du Souverain
4th Floor
B-1160 Brussels, Belgium
Telephone: +32 (0)2 566 9150
Fax: +32 (0)2 566 9159

Internet site: www.ogp.org.uk
e-mail: reception@ogp.org.uk