**FQM LIMITED**

**XXX-OP-012**

**Lifting Operations**

1. **PURPOSE**

The purpose of this procedure is to define a safe system of work covering the planning, risk assessment, execution, monitoring and review of lifting operations carried out at all [COMPANY NAME] sites.

The overall aim is to reduce the risk of incidents occurring that could cause harm to people, the environment, assets and/or reputation.

The process described within this procedure has been developed to comply with the Lifting Operations and Lifting Equipment Regulations (LOLER) 1998 and Provision and Use of Working Equipment Regulations (PUWER) 1998, Health and Safety at Work Act 1974, BS7121, and British Standard Code of Practice for the Safe Use of Cranes.

1. **SCOPE**

This procedure is intended for use by all personnel with a role or responsibility for lifting management or lifting operations. This procedure outlines safe working practice for qualified employees who participate in lifting operations with the use of mobile cranes.

The purpose of this procedure is to ensure that lifting operations never commence without:-

* Appointing a competent lift supervisor responsible for assigning roles and responsibilities.
* A risk assessment being in place and communicated to all involved in the lifting operation.
* Ensuring that loads are rigged by competent personnel using certified equipment as per lift plan.
* Designating safe areas being in place.
* Agreeing and testing communication methods.
* Preparing a lifting plan for lifts classed as out with normal dry dock and site activities.
* Having an appointed person available to attend for all regular and irregular/complex lifts.

1. **RESPONSIBILITIES**

* **Operations Managers** are responsible for:
  + Implementing the requirements of this procedure at their specific sites and ensuring all employees follow this lifting procedure.
  + Overall accountability for lifting operations at their site.
  + The co-ordination of all lifting operations carried out on site via daily Planning Meetings.
  + Appointing a lift supervisor to carry out any lifting operations.
  + Ensuring the lift supervisor has a sufficient level of competency for this position.
  + Ensuring there is a sufficient numbers of competent personnel to plan, supervise and conduct safe lifting operations on their site.
  + Reviewing and understanding lifting plans prior to the lift commencing.
* **HSE Manager** is responsible for:
  + The implementation of this procedure at all [COMPANY NAME] sites and ensuring all employees follow this lifting procedure.
  + Ensuring all lift supervisors have received sufficient training for this role.
  + Ensuring personnel on site that have been sufficiently trained to plan, supervise and conduct safe lifting operations.
  + Ensuring there is a trained and competent appointed person on site to carry out and complete and lift plans for all irregular/complex lifts.
  + Organising any refresher training for the above personnel.
* **Appointed Persons** are responsible for:
  + The implementation of this procedure at all [COMPANY NAME] sites and ensuring all employees follow this lifting procedure
  + Preparing generic lift plans for Basic/Standard lifting operations;
  + Preparing specific lift plans for Complex lifting operations;
  + Making sure all lifting operations are carried out in accordance with BS7121 parts 1 & 3, LOLER and PUWER 1998.
  + Updating lifting plan register on shared drive.
* **Foremen** are responsible for:
  + Ensuring, as lift supervisors, that lifting operations are carried out and followed as set out in this procedure and task lift plan.
  + The co-ordination of all lifting operations carried out on site via daily Planning Meetings.
  + Ensuring there are a sufficient numbers of competent personnel involved in any lifting operations that they are supervising.
  + Carrying out a toolbox talk prior to any lifts commencing.
  + Understanding the lift plan as instructed by the appointed person.
  + Checking the route, load and laydown area.

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| * **Crane Operators** are responsible for:   + Completing daily/weekly checks of their crane to ensure safe operations.   + The reporting of any defects to the operations manager immediately.   + The safe and controlled operation and set up of the Crane.   + Following the commands of the appointed banksman for any lifts.   + Following the Banksman’s instructions during the lift.   + Stopping the crane lifting operation if communication is lost. * **Banksman** are responsible for: * The safe control of the crane load during the lift at all times. * Any point of the lift whilst in the air if out of vision of the Crane Operator. * The lay down of the load in the required set down area as per lift plan. * Standing in a prominent position with a good view of the lifting activities and personnel. * Allowing and maintaining a clear escape route from the lifting area at all times. * Maintaining communications with the load handlers and Crane Operator at all times. * Keeping the Load Handlers in sight during the lifting operation. * Ensuring adequate tag lines for handling of the load are attached. * Ensuring no load handlers touch the load when above waste height. * Understanding the lift plan as instructed by the appointed person. * Checking the route, load and laydown area. * **Load Slingers** are responsible for:   + For the preparation and slinging of loads for lifting as per lift plan.   + Checking all lifting equipment is certified and in a good state of repair prior to being used.   + Attaching and detaching the loads to the lifting equipment. * **Load Handlers** are responsible for:      * + Standing in a safe position and confirming to the Banksman that they are clear whilst the slack is taken up, the load is lifted clear of the deck and the load is landed.   + Avoiding touching a load above waist height unless the lift supervisor or banksman has deemed it safe to do so, tag lines should be used at all times. |

* **All Employees** are responsible for:
  + Working to and following the requirements of this procedure and associated Risk Assessments.
  + Following the instructions of the banksman while operating as load handlers.
  + Checking all lifting equipment is certified and in a good state of repair prior to it being used.
* **HSE Advisors** are responsible for:
* Checking all lifting operations are being carried out under the requirements of this procedure.
* The filing, for reference, of all completed lift plans.
* Ensuring all lifting equipment is certified and checked on a 6 monthly basis.

1. **PROCEDURE**
   1. **Lift planning**

To ascertain the level of planning and documentation a lifting operation requires, prior to its commencement, it has to be decided under which category each lift it is to be placed. All lifts that [COMPANY NAME] undertake will be classed under one of two categories, critical lifts or non-critical lifts.

Non critical lifts

Lifts that are carried out on a regular basis by [COMPANY NAME] employees will be classed as non-critical lifts and will require discussion at the daily morning shift meetings. Daily morning shift meetings will be attended by any or all of the following people:-

* Operations Manager
* Dales Marine Foremen
* Client Representative
* Vessel Superintendent
* HSE Advisor
* Appointed person if required

A tool box talk will be held by the lift supervisor prior to the lifting operation commencing to, discuss how the lift will be carried out, highlight any risks involved and make the lift party aware of all safety measures that should be put in place to allow the lift to be carried out in a safe manner. All common lifts will be covered by the generic risk assessment RA 16 – Lifting Loads.

Critical Lifts

Lifts that are considered out with the normal dry dock and site activities will be classed as critical lifts and will require a method statement and lift plan to be complete prior to the lift commencing. A critical lift is any lift by a mobile crane that meets the following criteria:-

* The lift exceeds 50% of the rated capacity of the equipment as determined by the load chart.
* All tandem or multi-crane lifts.
* Any lifts weighing more than 25 tons.
* Lifts requiring design and/or fabrication of special rigging equipment.
* Any other lifts that may not be completely routine.

These lifts should be identified during the job planning meetings. These meetings will be attended by any or all of the following people:-

* Operations Manager
* Contracts Manager
* Project Manager
* Appointed person
* HSE Manager
* HSE Advisor
* Client Representative
* Vessel Superintendent
* Dales Marine Foremen/lift supervisor

If any concerns are raised during the daily morning shift meetings about a lift that is to be carried out that day then it should have its status raised from non-critical to critical and the appropriate method statement and lift plan should be completed and put in place.

A pre-lift meeting and toolbox talk will be held by the lift supervisor, prior to the lifting operation commencing, highlighting the sequence of events on the method statement and also any hazards that have been identified in the lift plan. This meeting should be attended, at the minimum, by the following people:-

* [COMPANY NAME] Foremen/lift supervisor
* Appointed person
* Lift team
* Crane driver
* HSE Advisor

All critical lifts will also be covered by the generic risk assessment RA 16 – Lifting Loads, but if it is felt that this risk assessment does not fully cover the requirements of the lift that is to take place then a new task specific risk assessment will be issued by the QHSE office.

* 1. **Method Statement**

All lifting operations that are considered out with the normal dry dock and site activities, critical lifts, will require a completed task based method statement prior to the lift commencing. This method statement will be completed with the help of all employees involved, setting out a clear procedure with detailed instructions of how the task is to be undertaken, carried out and completed.

Where possible the toolbox talk should be held at the proposed lift site for easy and immediate recognition of the issues connected with the task. All personnel involved in the operation should sign off on the lift plan confirming their attendance.

When undertaking critical lifts, it is important to breakdown the activity into a sequence of steps at a level of detail that neither omits part of the activity nor provides so much detail that the analysis loses direction.

The method statement team must judge the appropriate level of detail required for the task, and the completed method statement should include the following areas:-

* Activity - task being done.
* Description - a brief statement of the task being undertaken.
* Key Plant and Tools Required.
* Key Materials Required.
* Other Essential Equipment.
* Sequence of Operations
  + Provides a statement of what must be done
  + Begins with a verb (an action word e.g. install, remove, etc.)
  + Ends with the subject being discussed (e.g. pump, valve, etc.)
  + Does not identify any hazards or safety precautions
* Temporary Supports and Props Needed to Facilitate Work.
* Method of Access and Egress to the Work Area.
* Fall Protection Measures.
* Any Other requirements.
  1. **Lift plan**

All lifting operations that are considered out with the normal dry dock and site activities, critical lifts, will require a lift plan to be completed by the [COMPANY NAME] appointed person, prior to the lift commencing. Lift plans must be available for presentation to any requesting party and the following points must be completed when preparing a lift plan:-

* All lifts must be planned with equipment capabilities, weights of loads, radius of lift, etc. determined before any lift is made.
* Where appropriate, drawings or a simple sketch shall be used to illustrate key points. A hand drawn sketch is sufficient, provided it is simple and clear.
* Any hazards identified do not need to be entered in the formal risk assessment, however the controls must be detailed in the lifting plan and communicated to the lift party during the pre-lift toolbox talk.
* The signed and dated documentation of the formal lifting plan is to be kept in the jobsite files for one year.
* If there are any questions, doubts or uncertainties about the equipment, rigging, setup, load chart interpretations, or the load, the lift supervisor should be consulted prior to completing the lift plan.
* Once a formal lift plan has been developed, if there are any changes in the equipment, load or lift, then the plan must be updated or a new lift plan must be developed.

The appointed person should consult with other people who may be involved in the lift prior to the completion of the lift plan, especially the crane operator and the lift supervisor, in order to develop an idea of how the lift can be executed safely and effectively. If any hazards or risk are identified then the appointed person should consult with the HSE Manager/HSE Advisor on how best to remover or reduce them in order for the lifting operation to be carried out safely.

* 1. **Risk Assessment**

All critical and non-critical lifts will be covered by the generic risk assessment RA 16 – Lifting Loads, but if it is felt that this risk assessment does not fully cover the requirements of a critical lift that is to take place then a new task specific risk assessment will be issued by the QHSE office.

The appointed person competing the lift plan and method statement will consult with the HSE Manager/HSE Advisor so they can complete a new task based risk assessment specifically for the new lifting operation. The risk assessment must identify:-

* Any hazards that have not been eliminated by the generic controls in the risk assessment RA 16 – Lifting loads.
* Any hazards that have not been eliminated by lifting methods in the lift plan.

The risk assessment shall focus on the specific hazards associated with the lifting operation. Where hazards have been identified as continuously re-occurring and are already covered in RA 16 or by standard lifting controls, these do not need to be listed on the new task based risk assessment.

For personnel involved in the lifting operation to work effectively and safely as a team, good communication is a vital element. It is therefore critical to highlight and address any potential communication issues during the risk assessment and planning stages, as well as during the toolbox talk to ensure effective communications during the actual lifting operation.

* 1. **Pre-lift checks**

Prior to the lifting operation commencing, all lifting equipment and accessories shall be subject to a pre-use inspection. In addition, where equipment has been pre-rigged or rigged for some time between lifting operations, a pre-use inspection shall be undertaken prior to the commencing of lifting operations to ensure the equipment is still safe to use.

All lifting equipment should be within its 6 month certification or colour coding and the required paperwork to confirm this should be held on site and made available on demand.

* 1. **General slinging and rigging safety**

All rigging and slinging of loads must be undertaken by a training and competent person, and the following rules should be followed:-

* Don’t commence any lift without knowing the weight of the item.
* Don’t make a lift without knowing the lifting equipment’s capacity and its method of use.
* Familiarise yourself with the types of slings available for easiest and safest lifting.
* Inspect all lifting equipment before and after it is used to make sure it is in good condition.
* Report any lifting equipment that appears to be unsafe to the HSE Manager/HSE Advisor immediately.
* Remove damaged equipment for general use.
* Don’t use lifting equipment that is damaged to lift loads lower than the original rated capacity of the equipment.
* Don’t move a load if you are not satisfied with the way the load is attached.
  1. **Crane set up**

As part of the pre-lift preparations, the crane driver and the appointed person of lift supervisor should inspect the area where the lift will be made to determine the best location for the crane to set up and the path of travel for the load. Special consideration should be given to lifts made over piping and equipment, instruments, utilities, roadways and areas where personnel travel. The appointed person is responsible for the selection of outrigger mats and point of set up for critical lifts and a thorough investigation of the ground-bearing conditions must be made prior to the positioning of the crane. To ensure the safest working conditions, observe the following minimum guidelines when positioning for a lift:-

* Thoroughly check the surface conditions to ensure they will support the intended load.
* Make inquiries regarding the presence of voids beneath the surface, such as loose fill, conduit, drainage channels, etc.
* Use outrigger mats at least 2ft wider than the outrigger plate to distribute loads over a greater area in order to reduce the possibility of surface failure.
* Level and centre the mats beneath the outrigger pads. Mats should be strong enough to prevent crushing, free from defects, and of sufficient width and length to prevent shifting or toppling under a load.
* Re-check mat positions and integrity after each lift.
  1. **Lifting from uncertified steelwork**

For lifting operations it is critical to assess pre-existing loads in structural steel work before the addition of further loading from lifting operations in order to ensure it is of sufficient strength to bare the load being lifted.

Once an anchor point has been identified as uncertified steelwork by the appointed person undertaking the lift plan or the lift supervisor, the anchor point must be load tested to verify its integrity before it can be used.

* 1. **Lifting area**

Barricade tape shall be placed around the swing radius of the lift to prevent unauthorised people from entering the area where the lift is taking place. Any exception must be approved collectively by the lift supervisor, lift party, crane operator and the HSE Advisor.

Only designated and authorised employees will be allowed inside the barricaded area. The crane operator has final say as to who is allowed in the designated area. Typically, this should only be the rigger and lift party directly involved in the lift.

* 1. **Commencing the lift**

The crane operator will sound the crane horn or initiate some other type of audible alarm prior to making the lift to alert everyone that the lift is being made.

The boom should always be directly above the load when lifting, never side-load a boom or use the crane to push or pull a load.

The crane operator is ultimately responsible for the lift and if there are any doubts or uncertainties about the equipment, rigging, set up, load chart interpretations, or the load, it is the crane operator’s responsibility to halt proceedings until the appropriate authority has been consulted.

* 1. **Communication**

The crane operator shall respond to signals only from the appointed signal person or by radio contact. The crane operator shall obey an emergency stop signal when given at any time, regardless of who gives the signal. Specific communication procedures must be reviewed and agreed to prior to the lift taking place, including designating a specific signal person.

* 1. **Controlling the load**

It is the crane driver’s responsibility to keep the load under control at all times, this can be accomplished by starting and stopping smoothly and by avoiding swinging the load too fast. Never allow the load or any object to strike the boom. The crane driver must, at all times, operate the equipment within the guidelines set forth by the manufacturer.

Once a load has left the ground and is above waist height then it should not be physical touch by any person. Tag lines for controlling the load should be attached and used to secure, control and manoeuvre the load when lifting has commenced. The tag lines should be controlled by the lift party and not the lift controller or the appointed signal person.

* 1. **Setting down the load**

A clear area for the setting down of the load should be established prior to the lift commencing. If there is the possibility of encroachment from unauthorised personnel then the set down area should be segregated with the use of barricade tape, access to this area will be restricted to the lift party.

The load should be controlled by the use of the tag lines until it is below waist height and can then be manoeuvred into the final position by the lift party. Load bearing batons should be used it there is the possibility of the ground or surface being unstable or if there is the need for a secondary lifting device to pick up the load from below, e.g. forklift truck.

The appointed banksman should have a good view of the set down area and be in visual or radio contact with the crane operator at all times. Only once the appointed banksman is sure that the lift party is clear of the load should he instruct the crane operator to set the load down.

* 1. **Removing rigging**

Once the load has been set down and the lift supervisor is happy with the final position, the rigging can be removed. The competent person should then inspect all slings, shackles, chains etc. for signs of any damage. Damaged equipment should be taken out of service immediately, the HSE Manager/Advisor should be informed and the item placed into quarantine. All other lifting equipment should be returned to the rigging loft.

1. **HAZARDOUS CONDITIONS AND OPERATIONS** 
   1. **Working around high-voltage electricity**

Power distribution lines are a major cause in the electrocution of crane operators. At no time shall any part of the load or crane be closer than 10ft to any power line.

A person shall be designated to observe clearance of the crane and give timely warning for all operations where it is difficult for the crane operator to maintain the required clearance by visual means. Any deviations from this requirement must be approved in writing by the appointed person and the HSE Manager.

* 1. **Adverse weather conditions**

In high winds or poor weather conditions, consideration should be taken that if they are of such level that it may warrant the shutting down of the crane and lifting operations. This decision should be taken after consultation between the crane operator and the lift supervisor although the crane operator will have final say if he feels it is unsafe to continue.

Lifting operations will be stopped immediately when the load cannot be controlled due to wind or weather conditions. Crane operations shall not be performed in sustained winds of 30mph or greater. Crane operations shall stop in lightning storms and the crane boomed down.

All lifting operations shall be in accordance with crane manufacturer’s operations manual.

* 1. **Man riding operations**

The term man riding applies to the lifting or lowering of personnel using personnel transfer baskets or personnel work baskets. The lifting or lowering of personnel using such equipment is particularly challenging in respect of ensuring the safety of the personnel involved.

There is an important distinction between the terms “personnel transfer baskets” and “personnel work baskets”. A personnel transfer basket is designed for the purpose of transferring people from one location to another, i.e. from the dockside to a vessel. A personnel work basket is designed to provide a working platform from which personnel can access structure, plant or equipment for work purposes.

Lifting employees in transfer or work baskets suspended from a crane should only be used when the supervisor considers this practice safer than other methods or when other methods are not feasible due to structural design or other jobsite conditions. When making the determination as to whether or not a personnel platform should be used, the supervisor should consider the following:-

* Alternative methods to access the jobsite, including MEWPS, permanent platforms, ladders, scaffolding, etc.
* Frequency with which the location must be reached
* The nature of the work to be performed
* The minimum number of personnel required
* Surrounding facilities and/or processes

In all cases where consideration is being given to the use of a man riding basket, the supervisor should consult with personnel experienced in other methods of providing access and the personnel who will be performing the work prior to finalizing the decision.

1. **EQUIPMENT INSPECTIONS**

Employees are responsible for inspecting tools equipment, and mechanical lifting devices prior to use.

Employees must not use defective or broken tools or equipment. Tools and/or equipment found defective during inspection will be tagged and immediately removed from service until properly repaired by qualified personnel.

Employees must not modify, redesign, or repair tools or equipment without specific instructions from the operations manager. Tools and equipment are to be used only for the purposes for which they were designed and in accordance with the manufacturer's recommendations.

All tools, equipment and hand operated lifting equipment will be inspected every six months by an competent outside contractor.

1. **MOBILE CRANE INSPECTIONS**

At the beginning of each shift or prior to use if the crane is not used daily, the crane operator shall conduct a visual and functional inspection prior to using the equipment. The inspections should be documented on the Daily/Weekly Inspection Form and shall be maintained onsite for three years.

All equipment shall undergo a thorough annual inspection and a six monthly intermediate check if used for man riding purposes. All inspection reports should be kept on site and be are available for inspection for all equipment being used on site.

Deficiencies that are discovered through operational use or inspection should be reported immediately to the operations manager, and the defective equipment should be placed out of service. No equipment shall be placed back in service until deficiencies are evaluated and corrected by a qualified person.

1. **EQUIPMENT**
   1. **Fibre slings**

When using fibre slings the following rules should be adhered to:-

* Inspect the surface and stitching of the sling for cuts and abrasions before use.
* Don’t attempt to inspect the inside nylon fibres of webbing (this is not necessary because these fibres are protected by the outside fibres, and it may damage the sling).
* Use nylon slings in the presence of oils and greases.
* Don’t use nylon slings at temperatures above 250 F.
* Don’t use nylon slings on hoist hooks that are gouged or nicked (there could be sharp edges that could cut the sling).
* Use softeners, pads, sheaths, etc. to protect nylon and synthetic slings from cuts and abrasions.
  1. **Shackles**

When using shackles the following rules should be adhered to:-

* Make certain that the bolt in a screw pin shackle turns easily, and then tighten it (use oil on the threads).
* Don’t use any screw pin shackle where the bolt is very difficult to turn (the pin is either bent due to overload or the threads have been damaged).
* Use safety shackles wherever possible (they are safer).
* Don’t use round pin shackles instead of safety shackles or screw pin shackles.
* Use the largest bearing surface possible on the shackle pin. This will reduce the bending movement on the pin.
  1. **Man riding baskets**

When using man riding baskets the following rules should be adhered to:-

* They shall be certified (design and construction) by a qualified structural engineer.
* They shall be clearly labelled as to their empty weight, rated load capacity, or the maximum intended load.
* In addition to the use of hardhats, they shall be equipped with overhead protection when there is a potential for personnel to be exposed to falling objects.
* They shall be proof tested at 125% of the platforms rated capacity prior to lifting personnel.
* All rigging used for lifting personnel baskets shall be dedicated to that purpose.
* They are not to be used for lifting materials or tools except when associated with personnel lifts.
* Personnel occupying a man riding basket shall keep all body parts inside the platform during raising, lowering, and positioning. The individual giving signals to the crane operator is exempt from this requirement to the extent required to adequately communicate with the operator.
* Only one person is to give signals to the crane operator.
* Hoisted personnel shall be in radio contact and/or in continuous sight of the crane operator or relay signal person.
* All personnel must wear a safety harness while working from a work personnel work basket.
  1. **Chains and wire slings**

When using chains and wire slings the following rules should be adhered to:-

* Protect the sling/chains from the cutting action in making a lift by using padding, blocks, or corner protectors.
* Select the proper style hook or attachments.
* Don’t subject hooks or attachments to a bending action.
* Stand clear while a sling is being drawn from beneath a load. Hooks, chains and slings may catch and suddenly fly free or tip the load.
* Don’t let the load lie directly on a sling wrapped around a load (lower the load on proper blocking).

1. **CONTRACT LIFTS**

All lifts that are identified as critical lifts will be discussed at the planning stage to see if it would be beneficial and better practice to bring in an outside contractor to carry out a contract lift. If it is decided that the lift is out with the capabilities of the [COMPANY NAME] lift team, out with the capabilities of the onsite equipment or if the lift would pose a significant risk when being carried out then an outside contractor will be brought in to carry out a contract lift.

Such contractors shall demonstrate that they have a documented safe system of work for operations involving equipment used to lift loads, the documented system shall as a minimum address the following aspects of lifting operations management:-

* There will be an adequate organisational structure to manage the lifting operations safely, with clearly defined roles and responsibilities.
* Personnel involved in the lifting operations shall meet or exceed the competency requirements detailed in this procedure.
* All lifting operations shall be subject to a risk assessment and planning process which shall meet or exceed the requirements detailed in this procedure.
* The contractor shall liaise sufficiently with the site personnel where there is a need for the support of site resources including personnel and specialist services or where lifting operations may have an impact on other activities or areas of a site.
* The contractor shall ensure sufficient technical support is available to site personnel to provide guidance and support where required.
* All lifting equipment used by the contractor shall be designed, maintained, stored, inspected and thoroughly examined to a standard in line with or exceeding the requirements specified in this procedure.

1. **REVIEW**

This procedure will be reviewed regularly, at a minimum on a yearly basis, at the annual management meeting. Additional review maybe required due to changes in legislation, operations, technology, personnel etc.