Lifting & Rigging Operations Safety Procedure

HEALTH, SAFETY AND ENVIRONMENT PROCEDURE

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Pars Oil & Gas Company
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SUGGESTION FORM
1. INTRODUCTION

Pars Oil and Gas Company (POGC), a subsidiary of National Iranian Oil Company (NIOC), was established in 1998. POGC is a developmental and manufacturing organization that specializes in the fields of engineering and management of development projects, production, operation and integrated management of oil and gas reservoirs. POGC’s mission is to ensure sustainable and preservative production and development of Iran’s oil and gas industry in the areas under its responsibility, development of oil and gas value chain as well as optimization of energy supply processes at national, regional and international levels. POGC is also in charge of development of joint and non-joint oil and gas fields of the country including South Pars, North Pars, Golshan and Ferdowsi.

Aimed at creating superior value and boosting the level of satisfaction of the beneficiaries and with an approach focusing on sustainable, integrated and knowledge-oriented production and development, the company feels committed to comply with national and international requirements, regulations and standards in such areas as quality, safety, as well as occupational and environmental health.

2. Purpose

To outline the requirements for managing and controlling lifting and rigging operations during activities POGC projects.

It is the purpose of this document to provide guidance during the assessment of each equipment lifting operation, and to aid him in the safe execution of his contract obligations.

3. Scope

This procedure applies to all operations involving the use of Cranes, Lifting Gear, Hoists, Fork Lifts and Telescopic Material Handlers. For lifts that are programmed to go over live process areas, in the vicinity of other potentially hazardous areas and passing overhead or nearby members of the public, these requirements need to be reviewed, assessed and planned for applicability.

4. RESPONSIBILITIES

4.1 Site Manager

To ensure that all lifting operations are adequately planned and executed and that all lifting equipment used on site is certified and conforms to this procedure.

4.2 HSE Manager

- To liaise with all members of the Project Management Team, Supervisors and
contractors on the planning of all lifting including erection, certification and maintenance of all lifting appliances as per item 3 (scope).

- To ensure that all persons involved in the lifting operations are competent and suitably trained in HSE matters for the operations to be performed.
- To ensure that all lifting appliances and gears are properly tested and certified, fit for their intend purpose and are maintained and inspected at appropriate intervals.

4.3 Contractor(s)
- In cases that a main HSE contractor exist, duty of HSE department forwarded to contractor HSE department and POGC HSE department supervise them. Some of their duties are:
  - Contractor shall bring to the attention any item of equipment which is in need of maintenance, or which is found to be overdue for test or inspection.
  - To ensure that all persons involved in the lifting operations are competent and suitably trained in HSE matters for the operations to be performed.
  - To ensure that all lifting appliances and gears are properly tested and certified, fit for their intend purpose and are maintained and inspected at appropriate intervals.

4.4 Lifting Supervisor
- To ensure that the crane operation team carry out their duties safely.
- To carry out the assessment of the lifting operation to provide such planning, selection of crane(s), lifting gears and equipment, instruction and supervision as necessary for the task to be undertaken safely.
- To ensure that adequate inspection and maintenance of the equipment has been carried out.

4.5 Discipline Engineers/Technicians
All Discipline Engineers/Technicians are required to ensure that all operations using light lifting gear are performed in accordance with this Procedure.

4.6 Safety Officer and Safety/Environment Engineer
The Safety Officer and Safety/Environment Engineer are responsible for monitoring safe working practices on site.

4.7 Senior Inspection Engineer
The Senior Inspection Engineer is responsible for ensuring that all lifting gear is examined and tested in accordance with this Procedure.

4.8 Lifting Operators
- To be responsible for the correct operation of the crane in accordance with the manufacturer's instructions and within the Safe System of the work.
- To respond to the signals from the banksman who should be clearly identified at
any time.

- To ensure the crane is in good working condition by daily inspection.
- To be familiar with the fire appliance on the crane and trained in their use.

4.9 Riggers
- To be responsible for attaching and detaching the load to and from the crane load lifting attachment and for the use of the correct lifting gear and equipment in accordance with the planning of the operation.
- To ensure that adequate inspection and maintenance of the equipment has been carried out

4.10 Banksmen
- To be responsible for relaying the signal to the crane operator.
- To direct movement of the crane and load.

5. Procedures

5.1 Light Lifting
The incorrect use of light lifting equipment can be hazardous. This is because light lifting equipment is sometimes not subjected to the same rigorous inspection schedules as heavier lifting equipment such as cranes, etc. However the same basic principles must apply:

- The SWL of the equipment should always be known.
- All light lifting gear must be thoroughly examined and tested. All tests and examinations must be properly documented. All documents shall be maintained and quickly accessible for internal or external auditing by company, contractor or third party.
- All equipment should have the appropriate colour coding.
- Only trained and competent persons should be in charge of a lifting operation.

5.1.1 General Instructions
All equipment used in light lifting operations whether fixed or portable must be inspected and/or tested to confirm that it is fit for its intended use. A color coding system is used to ensure that all equipment in use has been either inspected or tested. The color code is changed every three months. No equipment other than those bearing the valid color displayed is allowed to be used in lifting operations.

Every lifting appliance or piece of lifting gear must be clearly marked with its working load or loads and must be used within these parameters.
- If No Safe Working Load, Identification Number or the correct Color Code adequately marked, then DO NOT USE IT.
- Lifting appliances and associated lifting gear must be examined and where necessary tested by an approved inspector as follows:
  - Before it is used initially.
- Whenever the equipment has been substantially modified or repaired and
before it is used again.
- At intervals and times laid down by TPA and/or in accordance with the
relevant legislation.

- Color coding system shall apply for all machines & equipments in site such
  cranes, lift trucks, forklifts, chains, slings, shackles, …by contractor HSE. (Every three
  month).
- Particular, daily, weekly, monthly and pre use inspections for lifting devices &
equipment should be done and approved by a certified third party in compromised
specific periods.
- Of course above mention system is so different for wire rope and critical lifting.
- PM (Preventive Maintenance) as an essential system should be deployed at the
whole system.
- All examinations and tests must be recorded in a lifting equipment register
(attachment 3). A current copy of the register must be available on the site. All
lifting gear is to have an identification number clearly marked.
- Any appliance or piece of lifting gear that fails the examination or test must not be
used until it is repaired and retested.
- Any lifting gear which fails during an operation must not be moved until an
investigation has been carried out. This does not apply in emergency situations.

5.1.2 Pre-lift Meeting

Staff should participate in the meeting hold which is called Pre-lift Meeting to review
the plan/procedure before making a critical or pre-engineered lift. All participants
should be briefed as follows (and as a minimum):
- Intended lift sequence and load path;
- Establishing a Work Control Zone and keeping no participants out;
- Identified hazards;
- Methods of hazard mitigation;
- Load securement;
- Stop Work Authority

5.1.3 lift plan

Regulations :

- A lift plan should be prepared prior to lifting tilt-up or pre-cast panels. The plan
should show a dimensioned site plan with the following information detailed:
  - crane set-up position(s) on site;
  - locations where the panels are to be lifted from and to, with the operating
    radius of the crane shown;
  - areas on site where obstacles such as walls or braces may be in the traveling or
    slew path of the crane; and
- Areas where the crane cannot be set up (i.e. trenches and covered penetrations on site).

- The lift plan should specify the type and set up of lifting gear to be used.
- Responsibilities for rigging, dogging and spotting duties (i.e. ensuring the crane does not contact obstacles) should be specified.

5.1.3.1 General:

Purpose
This section describes the process of how to use the hoisting and rigging lift plan (HRLP) and conduct safe hoisting & rigging activities.

Scope
The introduction of the hoisting and rigging lift plan document. This Lift Plan can be used to perform all routine hoisting & rigging activities and will still be completed for non-routine and hoisting and rigging activities requiring special lift fixtures and processes.

Recordkeeping
This procedure requires the preparation and approval of a Lift Plan for each lifting activity. Lift Plans have unique document numbers. Copies of approved lift plans must remain on file with the area supervisor during the job in progress and later added to the engineering document archive.

Applicability
This procedure applies to all routine hoisting & rigging activities performed by personnel.

Precautions and Limitations
Ensure that below-the-hook lifting devices; and cranes, hoists, and other lifting equipment are never loaded beyond their rated capacity.

Equipment Description
The types of lifting equipment covered by this procedure include:
Overhead cranes: common names used to describe these include bridge, gantry, mobile gantry, monorail, jib, floor-operated, and wall mounted cranes.
Shop cranes, engine hoists, and cherry pickers.
Forklifts - when used with rigging gear.
5.1.3.2 Operator qualifications and requirements

Training
Personnel who operate cranes and hoists must be current in Hoisting & Rigging training.

5.1.3.3 Job Hazard Analysis and Mitigation (JHAM)
Personnel who are involved in hoisting & rigging activities must have hazard analysis documentation (routine or non-routine JHAM) that addresses hoisting & rigging activities. Many elements of the JHAM process (hazard identification and mitigation) are included in this procedure, and do not need to be repeated in a JHAM.

5.1.3.4 Preparing a Lift Plan
This procedure requires that a Lift Plan be prepared and approved for all routine hoisting & rigging activities. A Lift Plan provides a formal mechanism to plan, document, and perform hoisting & rigging activities. Lift plans can be re-used for identical tasks. Lift plans must be prepared using the Hoisting and Rigging Lift Plan template.

General Information
The following general information should be included in the Lift Plan:
Unique document number, Author of lift plan, a general description of the load and the lift activity.
Indication of radioactivity or hazardous materials that could be released if the load were dropped.
Indication if the load is irreplaceable or very costly to replace if damaged.

Equipment Information
Equipment ID (hoist #, forklift #, Building crane#) and custodian.
Rated capacity and operator capacity if applicable different from rated capacity.

Personnel Protective Equipment (PPE)
The plan must identify the potential hazards to personnel, and the personnel protective equipment required to mitigate those hazards.

Hazards
Identify additional hazards associated with the lift and describe how they will be mitigated. Examples of hazards/mitigations to consider include:
Obstacles in the operator or load path (walk load path and remove obstacles prior to lift).
Foot traffic around load (barricade work zone).
Special hazards or precautions of rigging equipment.
Rigging sketch
The rigging sketch is a critical element of the lift plan. It diagrams all of the rigging details for the activity. All rigging gear used in the lift must be sufficiently rated to withstand the forces that will be applied to it during the lift. The rigging sketch must contain enough information to demonstrate this.

Note: If the physical characteristics (size, weight, or configuration) of the item changes significantly during the manufacturing process, or if you will be handling the item in various positions, a rigging sketch may be required for each configuration.

Approvals and Authorization
Lift plans must be “approved” for use as described below. Once a lift plan has been approved, specific personnel are “authorized” to use the plan.

5.1.4 CRANE
All contractors of crane and heavy construction equipment shall be subject to inspection by a Competent Person (HSE Department Rigging Inspector or its nominated representative) prior to entry to the Work Site and shall enter the Work Site through contractor controlled main gate.

HSE Department shall maintain records of all mobile cranes entering the Work Site using valid Road Transport Department (RTD) registration numbers.

Cranes requiring assembly at the Work Site shall be load tested in accordance with construction industry requirements and the manufacturer's recommendations.

HSE Department shall:
- Direct the mobile crane or equipment to the holding area adjacent to the main gate.
- Check for records of any crane Work Site history, if any, so that any cranes that have been rejected or disallowed earlier from Work Site are screened.
- The Crane / Motor Vehicle Inspection Checklist' as in Attachment #2 of this Procedure, shall be completed.
- Restrict any crane disallowed by HSE Department, its nominated representative or Company from entering Work Site.
- Provide the approved cranes with a entry pass.
- Ensure that cranes are inspected on every occasion they re-enter Work Site.
- HSE Department or its nominated representative shall verify that Crane Load Charts are available in the crane cab, are written in the English language and/or Farsi, and that the crane operator understands their content.

HSE Department shall verify all third party inspection certification regarding cranes, lifting appliances and equipment prior to the use of the crane or equipment at the Work Site.(if third party inspectors will be requested)

Contractor shall ensure that:
Only cranes and rigging equipment (slings, wire ropes, shackles etc.) suitable for the job intended and maintained in good working order are brought into Work Site. HSE Department are notified of the arrival of any crane and/ or rigging equipment, to be utilized by the contractor, to Work Site to enable crane records to be reviewed, if applicable, and to arrange for the crane inspection by a competent person. All lifting and rigging equipment either owned by the contractor, or by others employed by the contractor, is. Registered using the "Lifting Equipment Register" as per Attachment #3 of this Procedure.

Lifting and rigging equipment must be inspected by the nominated Competent Person prior to being brought into and used at the Work Site and monthly thereafter. Following the initial inspection the equipment shall be color coded every three month Period as per color coding instructions that will be issued by HSE Manager. The nominated Competent Person or their authorized representative shall inspect all crane wires and slings upon entry to Work Site and then based on this procedure thereafter. Inspection details shall be recorded in the "Wire Rope Inspection" form as per Attachment #3 of this Procedure.

Following the above inspection every wire rope, belt slings, chains, etc. must be clearly marked with its Safe Working Load and carry a metal identity tag and be color coded accordingly.

Hand spliced wire ropes shall not be brought into the Work Site.

The nominated Competent Person shall submit to HSE Manager all entries made in the "Lifting Equipment Register" and "Wire Rope Inspection" forms after each three-monthly inspection.

5.1.4.1 Crane Preventive Maintenance Programs

Preventive maintenance programs would customize that reduce down time so we can get the optimum use out of our lifting equipment. A maintenance program would be created to help avoid costly emergency repairs and down time. This program would be developed based on needs, industries standards, and OSHA recommendations.

A comprehensive inspection combined with a custom PM program will identify trouble spots before they become a problem. The PM program will include the following:

- Inspections of all wear items for signs of excessive wear or fatigue
- Load chains or wire ropes
- All components requiring lubrication
- Checking gear-boxes for proper levels
- Checking control stations for safe operation
- Inspect all structure and support for safe operation
- Test brakes for proper operation and adjust as needed
- Confirm all limit switches and safety devices
- Inspect all contactors and replace tips as needed
- Inspect and lube load hooks and other lifting devices

Notice: it's unavoidable that PM team is in charge of all above mentioned duties

5.1.4.2 Crane maintenance
What should be checked for inspecting a crane before maintenance?
- Lower hoist to unload rope sheaves.
- Unwind all wire rope from the hoist drum to expose all parts of a rope, making sure that the rope does not rewind in the reverse direction.
- Inspect sheaves, sockets, dead-ends, thimble joints, and all wire rope hardware.
- During rope changes, check the sheaves for worn bearings, broken flanges, proper groove size, smoothness, and contour.
- Inspect all parts of the cable, cleaning wire rope only as required to complete an inspection. Excessive removal of lubrication will lead to damage.
- Re-lubricate rope to prevent corrosion, wear, friction, and drying out of the core.
- Check for ropes that may have been operated dry (UN lubricated). Replace dry ropes. There may be hidden damage that is not detected by visual inspection.
- Compare the rope length and diameter with the original dimensions. Lengthening accompanied by diameter reduction is often an indication of interior core defects.
- Visually examine the crane structure for deformed, cracked or corroded members in the structure and boom. Check for loose bolts or rivets. Check for excessive wear on brake and clutch system parts.
- Check for deterioration or leakage in air or hydraulic systems.
- Check all control mechanisms for poor adjustment or excessive wear.
- Check accuracy of marking on the load/radius indicator over full range.
- Establish a schedule of rope replacement to change wire rope before it breaks. Periodic replacements do not take the place of inspections. If rope breaks or inspections reveal abnormal wire breakage or defects, reduce the time between replacements. Do not make wire rope slings from used wire rope.

What are some things to remember when repairing a crane?
- Take a crane to a location where repairs will least interfere with other cranes.
- Ensure that all controllers are placed in the "off" position, and the main switches are open and locked.
- Place on the switch a standard warning tag stating "DO NOT START." The tag must be filled out and signed.
- Place rail stops or make other safety provisions when another crane operates on the same runway.
- Use fall protection equipment.
- Do not carry anything in your hands when going up and down ladders. Items that are too large to go into pockets or belts should be lifted to or lowered from the crane by a rope.
- Prevent loose parts or tools from falling to the floor.
- The area below the crane must be cleared and a barrier erected to prevent injury from a falling object.
- Replace all guards and other safety devices before leaving a crane.
- Remove all stops, tools, loose parts and other material and dispose of them before completing the repair job.
- Enter all service inspections and repairs in a crane log book or file.

5.1.5 Forklift Truck Safety

Industrial workplaces have come to rely on forklift trucks for their ability to lift and transport just about any load around the plant. The power of forklifts makes them indispensable, but also dangerous. Often when employees grow accustomed to using forklifts they tend to stop thinking of them as a safety hazard, and forget or neglect to follow some important operating and maintenance procedures. When forklift injuries occur, they're usually serious given the tremendous weight of those powerful machines.

Employees must be trained to work safely with forklifts, not just when they're hired but periodically thereafter. Refresher training for the experienced operator is just as important as first-time training for new employees. It's also a good idea for employees to receive basic first aid training in case of injuries.

5.1.5.1 Forklift Inspection

Although forklifts are designed to perform rugged tasks, each time they are used they can get damaged in any number of ways. That's why inspection is of critical importance. At the start of each shift, perform both a visual inspection of the general condition and cleanliness of the lift truck, as well as an operational check to test its proper functioning. If you notice anything that may affect the normal operation of the forklift, immediately alert your supervisor.

Checklist for Visual Inspection

- floor--clear of objects that could cause an accident
- no obstructions overhead
- note any nearby objects to avoid as you drive away
- fire extinguisher present, and charged
- engine oil level, fuel level, radiator water level (LPG, gas and diesel forklifts)
- battery fully charged and securely in place
- cables for exposed wires
- battery plug connections not loose, worn or dirty
- vent caps not clogged
- electrolyte levels in cells
- hold downs or brackets
- bolts, nuts, guards, chains, or hydraulic hose reels not damaged, missing or loose
- wheels and tires not worn or damaged
- air pressure of pneumatic tires
- forks not bent or cracked
- positioning latches in good working condition
- carriage teeth not broken, chipped or worn
- chain anchor pins not worn, loose or bent
- no damp spots or drips that may indicate a leak
- hoses held securely, not loose, crimped, worn or rubbing

Checklist for Operational Pre-Use Inspection

- horn working and loud enough to be heard in working environment; other warning devices operational
- floor brake: pedal holds, unit stops smoothly
- parking brake: holds against slight acceleration
- dead man seat brake: holds when operator rises from seat
- clutch and gearshift: shifts smoothly with no jumping or jerking
- dash control panel: all lights and gauges operational
- steering: moves smoothly
- lift mechanism: operates smoothly (check by raising forks to maximum height then lowering completely)
- tilt mechanism: moves smoothly, holds (check by tilting mast all the way forward and backward)
- cylinders and hoses: not leaking after above checks
- no unusual sounds
- Permit only qualified people to service and maintain forklift trucks.

5.1.5.2 Forklift Operation

No one must ride or operate a forklift truck except for a trained forklift operator who is able to maintain control of the forklift and operate it smoothly when stopping, starting, lifting and tilting. The following pages list some important guidelines on forklift safety.

Traveling

Keep your hands, arms, head, feet and legs inside the forklift truck. Travel with forks as low as possible from the floor and tilted back. Obey posted traffic signs. Decrease speed at all corners, sound horn and watch the swing of both the rear of the lift truck and the load. Avoid sudden stops. If the load blocks your vision, travel slowly in reverse. Always look in the direction of travel. Keep an eye out for oil spots, wet spots, loose objects, holes, rough surfaces, people and vehicles on the floor or roadway.
To ensure the safety of others, know the blind spots of the lift truck with and without a load. When anyone crosses the route being traveled, stop the forklift truck. Lower the load to the floor, and wait until passage is clear.

**Traveling on an Incline**

Keep the forks pointed downhill without a load, and pointed uphill with a load. Do not attempt to turn the lift truck until it's on level ground.

**Steering**

Support the load by the front wheels and turn with the rear wheels. Do not turn the steering wheel sharply when traveling fast. If the lift truck is overloaded, steering will be difficult. Do not exceed load limits, and do not add a counterweight as an attempt to improve steering.

**Loading**

It's important to know the recommended load limit of the forklift (shown on the data plate) and the capacity of the fork, and to never exceed these limits.

Position the load according to the recommended load centre. Do not add extra weight to counterbalance an overload. Keep the load close to the front wheels to keep the lift truck stable.

When inserting the fork, keep the mast of the forklift in an upright position before inserting the fork into a pallet. Level the fork before inserting it.

**Raising the Load**

Do not raise or lower the fork unless the lift truck is stopped and braked. Avoid lifting a load that extends above the load backrest if there's any risk of the load, or part of it, sliding back toward the operator. Check for adequate overhead clearance before raising a load, and maintain a safe working distance from overhead power lines. Lift the load straight up, then tilt back slightly. Watch that the load doesn't catch on adjacent loads or obstructions. Don't back up until the forks are free.

When a load is raised, the lift truck is less stable. The operator must stay on the forklift when the load is in a raised position. Don't allow anyone to stand or walk under the elevated part of the forklift, whether it's loaded or unloaded.
Handling Pallets

Ensure that forks are level and high enough to go into the pallet, and that they go all the way under the load. Forks must be the proper width to provide even weight distribution.

Avoid trying to move or adjust any part of the load, the forklift or the surroundings when on the forklift. Do not use pallets elevated by forklifts as an improvised working platform.

Parking

Park only in an approved location. When leaving the lift truck unattended, secure it by setting the brakes, lowering the forks or load to the floor, neutralizing the controls, and turning off the motor switch. Disconnect the battery or go through propane shut-down procedures.

Loading or Unloading Straight Trucks, Tractor Trailers, and Railway Cars

Preparing the vehicle being loaded or unloaded

Set the vehicle's brakes, and chock the wheels. Install fixed jacks to support a semi-trailer that is not coupled to a tractor to prevent it from upending. Post signs warning people not to move a vehicle. Check that the height of the vehicle's entrance door clears the forklift height by at least 5 cm (2 in). Make sure floors can support the combined weight of the forklift and the load.

Inspect the vehicle's interior for trash, loose objects and obstructions, holes in the floor, and poor lighting. Install no slip material in any area that could be a slipping hazard.

Ensure that docks and dock plates are clear of obstructions and not oily or wet.

Loading or unloading the vehicle

Stay clear of edges of docks, rail cars or ramps. Have edges clearly marked.

Do not tow or push railway cars or trucks with a forklift. Do not operate forklifts inside vehicles for long periods without ventilation. Make sure that the dock plate is properly secured and can support the load (load weight should be clearly marked). Drive carefully and slowly over the plate. Do not spin the wheels.

Loading railway cars

Cross the railway track on a diagonal. Set handbrakes, wheel blocks and derailed before entering a railway car. Do not park a forklift within three meters of railway tracks. Do not open railway car doors with forklift forks.

Entering an Elevator with a Forklift Truck
Do not enter any elevator unless specifically authorized to do so. Before entering, ensure that the forklift plus load weight does not exceed the elevator capacity. Approach the elevator slowly. Stop at a safe distance from the elevator gate, and then enter squarely.

Neutralize the forklift controls. Shut off the motor and apply the brakes.

When working on or near a forklift, stay alert and prepare for the unexpected. Immediately report any collisions, damage or near-misses to a supervisor.

5.1.6 Lifting appliances
5.1.6.1 Wire Ropes
These are normally small electrically powered winch-drums arranged for overhead suspension, often on a traveling carriage. The following conditions apply:

Wire ropes are used on cranes, hoists, hangers and etc. including passenger transfers. The following precautions (including Coding system, Colour coding, Identifying & Tracing system like Labeling and …) must be taken simultaneously when handling or fitting wire ropes:

- Always wear protective gloves, do not wear rings.
- Avoid twisting or kinking wire ropes.
- Ropes in use must be lubricated periodically.
- Check that the rope is of the correct specification for the crane to which it is to be fitted.
- Ropes must be fitted to the relevant equipment in accordance with the instructions of the equipment manufacturer.
- Ensure all anchorages are secure and only the correct fittings are used.
- Rope guards must only be removed for the purpose of maintenance, inspection or adjustment.
- All slings and strops shall be examined by the user before and after each use.
- Ropes must be discarded when the visible number of broken wires in any length equal to ten times the rope diameter exceeds 5% of the total number of wires in the rope.
- Ropes removed from equipment as unserviceable must be identified as such, brought to the attention of the Site Manager and removed from the register.
- When a rope is replaced the test certificate of the new rope must be retained with the register of the lifting equipment.
- Replacement rope must be stored on pallets or drums in a place where deterioration from condensation is minimized.
- The supporting beam must be properly designed by a competent person.
- The Identification number and Safe Working Load (SWL) must be recorded on the blocks.
- Only the correct wire rope, in accordance with the manufacturers’ instructions, should be used.
• The wire rope must be installed and laid on the drum smoothly and under tension.
• If the wire rope becomes crossed on the drum it is to be immediately paid off and re-laid.
• The wire rope and block shall be inspected weekly and a record kept.
• Notice: The form (attachment # 3) could be used for this purpose.
• The operator shall be trained in the use of powered wire rope lifting blocks

5.1.6.2 Chain Hoist
Before use ensure that the load to be lifted does not exceed the safe working load marked on the hoist, and that the support points for the hoist are capable of taking the load.

Additional precautions to be taken during the operation of the hoist are:
• The chain should never be run out to its full length so that the load is hanging on the chain retaining bolt.
• The load chain must not be used to encircle the load; slings must be used.
• Loads must not be left suspended and unattended on a chain fall without first securing the pull chain.

5.1.6.3 Shackles
The procedure for lifting shackles is as follows:
• Use the correct type of shackle for the job in hand.
• Check the safe working load (SWL) and color code of the shackle.
• Do not use any shackle which is not marked with the SWL.
• Do not use any shackle which shows damage or distortion.
• Always use the correct shackle pin.
• Make sure the pin is a good, secure fit in the shackle.
• Never side load a shackle, the hook should always be in the bow, above the pin.
• Do not use shackles which have been subjected to welding operations.
• Do not use shackles which have been heated to widen the jaws.

5.1.6.4 Eye Bolts
The procedure for the use of eye bolts is as follows:
• Check the safe working load (SWL) and color code of the eye bolt.
• The SWL refers to vertical lifts and is reduced by an inclined lift.
• Check that thread of the eye bolt is the same as the tapped hole and make sure the thread is a good fit.
• Ensure that the shoulder or collar is in contact with the load.
• Use a collar eye bolt for inclined loading. On an inclined lift the eye must always be in line with the sling.
- When using welded pad eyes on structures, ensure the weld has been load tested.
- When using a single eye bolt lift, prevent the load from rotating by the use of a tag line.
- No single point lifts should be made over a deck area.

5.1.6.5 Chains
Chains are not normally used as a lifting device except for barrel lifting slings. All such must be checked before use. The procedure to be followed is:
- Check the safe working load (SWL) and color code before using.
- Do not use a chain which is kinked or twisted.
- Never hammer a chain down on to a load.
- Do not use a chain which is pitted or corroded.
- Never lengthen a chain by joining pieces together.
- Never shorten a chain by knotting.
- Do not drop chains on hard surfaces.
- Always use suitable packing to protect chains from sharp corners.

5.1.6.6 Pulley Blocks with Fibre Ropes
1. The reeving of multiple fall blocks using fiber ropes is an accepted part of a trained rigger's role. The following conditions apply:
2. The SWL is not normally marked on fibre ropes. Information should be available on site concerning the SWL relating to various sizes and types of fibre ropes. Fibre rope terminations should be performed by a skilled person. Any knots should be frequently checked.
3. Anchor points should be checked by an Inspection Engineer in advance.
4. Due allowance should be made for impact / snatch loads.
5. Hooks used on fibre ropes or on fibre rope return blocks should be fitted with a safety catch. Bent pieces of wire are not acceptable. Hooks should be properly spliced onto rope.

5.1.6.7 Slinging and Lifting (Figures 1, 2, 3, 4 & 5)
Tables of safe working loads shall be available for all lifting gear and be retained by the relevant superintendent with the Lifting Appliance Registers. These must be consulted to enable the correct size of lifting gear to be selected.
When using multiple leg slings the safe working load decreases as the angle between the legs increases. For three and four leg slings the safe working load is determined by the largest angle between the legs. Special care must be exercised, Practiced and calculated when a larger size sling is supposed to be used in following cases:
- The exact load is in doubt.
- There is liable to be shock loading e.g. lifting from / to a vessel.
- There are exceptional hazards, or the possibilities of accidents are seen to exist (e.g. lifting over "live" plant).
Cables, slings and chains must always be padded when passing over sharp or machined edges of equipment. When using a single sling to lift pipes or equipment with no lifting eyes or hoses, the sling must be wrapped around the equipment with at least two turns. Hook points must always point outwards when using multiple leg slings.

The following list of prohibited actions is brought to the attention of all personnel using lifting gear:

- Never lift with the point of a hook.
- Never use nuts and bolts to join a broken chain.
- Never use a chain in which the links are locked, stretched or are without free movement.
- Never use corroded, worn or excessively pitted chains.
- Never hammer a chain to straighten a link or to force a link into position.
- Never drag a sling from under a load if it is not free.
- Never cross, twist, kink or knot any sling.
- Never drop any item of lifting gear from a height.
- Never join slings by threading the eyes.
- Never attempt to force a spread hook back into shape.

5.1.6.8 Pre-Slinging of Pipe work, Containers, Etc.

- Load (sets) must be properly assembled, slung and have tag lines attached before they are hoisted or lowered.
- Before heavy loads, such as long lengths of rolled sections, tubes, etc., are swung, the load must be given a trial lift to test the security of the slinging.
- Strops and slings must be so applied and pulled sufficiently tight to prevent the load, or any part of the load, from slipping and falling.
- Lifting hooks must not be attached to:
  - The bands, strops or other fastenings of packages of cargo, unless the fastenings have been provided for lifting purposes.
  - The rims (chins) of barrels or drums for lifting purposes, unless the construction and condition of the barrels or drum is such as to permit lifting to be done safely with properly designed and constructed can hooks.
- Suitable precautions, such as the use of packing or chafing pieces, must be taken to prevent chains, wire and fiber ropes from being damaged by any sharp edges of loads.
- The angle between the legs of slings should not normally exceed 90° Where this is not reasonably practicable, the angle may be extended up to 120°, provided that the slings are designed to work at the greater angles and have an appropriately greater safe working load rating.
• Trays and pallets must be hoisted with four-legged slings and, where necessary, precautions, such as the provision of nets, must be taken to prevent any part of the load from falling.

• When bundles of long metal goods such as tubes, pipes and casing are being hoisted, two slings double wrapped and bulldogged, and where necessary, a spreader must be used. Suitable tag lines should also be attached. Buckets, skips and similar appliances must be:
  - So loaded that there is no risk of the contents falling out, by using retaining nets where necessary.
  - Securely attached to the hoist (e.g. by a shackle) to prevent tipping and displacement.

• Shackles should be used for slinging thick sheet metal, if there are suitable holes in the material, otherwise suitable clamps on an endless sling must be used.

• Small drums, canisters, bottled gases, etc., must be loaded or discharged in suitable containers or skips with sufficiently high sides, lifted by four-legged slings.

BS 1290 states the following:

(a) 2 - Leg Sling
With a 2-leg sling, the SWL of the sling is not doubled but the SWL of one sling * 1.4 (up to an angle of 90°). For an angle above 90° the SWL of the pair of slings is the same as for one sling only.

(b) 3 - Leg Sling
The legs should be equally spaced and equally loaded. The angle between any two adjacent legs should not exceed 90°. Up to this angle the SWL will then be the same as for a single sling * 2.1.

(c) 4 - Leg Sling
It is difficult to arrange for equal tension in the legs. Therefore the SWL is the same as a 3-leg sling. The angle is measured between two diagonally opposite legs.

All multiple slings should be marked with a SWL and a maximum internal angle. For example, a 2 leg sling marked "SWL - 5 Tones 90° " can be used for lifting 5 tones with a maximum angle between the slings of 90°.

5.1.6.9 Slinging Procedures
The procedure for slinging operations is as follows:
• Know the weight being lifted.
• Check the safe working load (SWL) and color code of the sling.
• Select slings long enough to avoid a wide angle between the legs of a multi-leg sling.
• Ensure all legs of a multi-leg sling are evenly loaded.
• Never shorten chains or wire slings by tying knots or wrapping around the crane hook.
• Insert suitable packing to protect slings from any sharp corners, particularly when lifting steel sheets.
• Use end links, rings and shackles which are large enough to hang freely on the crane hook.
• To prevent swinging when the load is lifted, ensure that the hook is placed above the centre of gravity of the load.
• When slinging casing, fit bulldog grips to retain the sling in position when the load is lowered.
• With a multi-fall hook use a safety pennant on to which the load is hooked.
• If two slings are to be joined, shackles of compatible safe working load must be used.

5.1.6.10 Lifting Steel Plates Edgewise (SEE FIG 6)
1. The safest way of lifting steel plates is with holes near the edge to attach the lifting slings via shackles.
2. For plates without holes, plate clamps must be used. These clamps, which depend on friction gripping, are not as positive as shackles. The greatest care must therefore be taken. When employing a single clamp it must be attached squarely to the plate. Packing must never be used between the clamp and the plate. A single clamp must not be used to lift more than one plate at a time.
3. Plate clamps are to be marked with a SWL, Identification number and be color coded.
4. Where a crane hook is attached directly to a clamp or shackle, over lowering of the crane hook is liable to detach the hook from the shackle and the plate can then fall over. This risk is greatly reduced by having a short wire sling between the clamp or shackle and the crane hook. When using two lifting clamps on a plate, each clamp must be in line with the leg of the sling attached to it.

5.2 HEAVY LIFTING SAFETY PROCEDURE :

5.2.1 General requirements
All requirements of light lifting is applicable for this section also.
For the purposes of assessing the handling equipment required, the weight of the individual components identified as being capable of being handled as a unit, have been considered. Each identifiable component should be listed with its corresponding unit weight and the model of construction crane suitable for the operation. This document shall be reviewed and revised during construction upon changes in machinery or equipment dimensions and weights or when any changes are met in the attached classification listing.
The manufacturer’s specifications and limitations applicable to the operation of any
and all cranes and derricks shall be complied with their specifications.

Rated load capacities, recommended operating speeds, special hazard warnings, or instructions must be visible to the operator while he is at the control station. All lifting and rigging equipment such as cranes, slings, ‘D’ shackles, hooks, etc. shall be certified by HSE at least for 6 months and all relevant certificates shall be copied to the HSE department.

Rigging equipment must be inspected by HSE every 3 months, also operator should check the equipments prior to use on each lifting operation and as necessary during its use to ensure that it is safe. Defective rigging equipment must be tagged out of service and removed from the site. Contractor lifting supervisor and HSE Manager shall make a thorough, monthly inspection of the hoisting machinery. The operator shall maintain a record of the dates and results of inspections for each hoisting machine and piece of equipment.

Standard operating signals should be agreed upon and should be used to direct all operations. No modifications or additions, which affect the capacity or safe operation of the equipment, shall be made without the manufacturer’s written approval.

Accessible areas within the swing radius of the rear of the rotating superstructure of the crane must be barricaded to prevent any personnel from being struck or crushed by the crane. All cranes and lifting appliances shall be plainly marked on each side of the appliance as to its rated load capacity. The following restrictions during lifting operations shall be observed:

- Personnel shall not ride on the hook or load.
- Personnel shall not stand, walk or crawl beneath a slung load.
- The hoist rope shall be in a vertical position when tensioned to prevent swinging of the load.
- The twisting or kinking of the wire rope shall be avoided.
- Bolts and nuts shall not be used to join a broken chain.
- Lifting appliances shall not be dropped from a height.
- Tension shall not be applied to any kinked wire rope.

No heavy lifting operations shall proceed until a detailed lifting plan has been prepared by mechanical department and approved by the HSE. A Heavy Lift shall be categorized as that in which the load exceeds 20 tons. If no Safe Working Load (SWL), Identification Number or correct Color Code is adequately marked, then do not use. Every lifting appliance or piece of lifting gear must be clearly marked with the SWL and must be used within these parameters.
Lifting appliances and associated lifting gear must be examined and where necessary tested by HSE inspector as follows:

- Before it is used initially.
- Whenever the equipment has been substantially modified or repaired and before it is used again.
- At intervals and times according to Inspection Procedures and/or in accordance with the relevant legislation.

All examinations and tests must be recorded in a lifting equipment register. A current copy of the register must be available on the site. All lifting gear is to have an identification number clearly marked.

Any appliance or piece of lifting gear that fails the examination or test must not be used until it is repaired and re-tested.

Any lifting gear that fails during an operation must not be moved until an investigation has been carried out. This does not apply in emergency situations.

5.2.2 Drawing and approval

All heavy lifting should be planned by Mechanical department and receive approval from HSE department. Mechanical section prepares the lifting plan contains all equipments technical details (crane, lifting equipments ) and the location, the load characteristics such as weight, dimensions and so, all necessary precautions, the responsible persons and the time. HSE receives this permit after signs by mechanical heavy lifting responsible and they start to review the documents and make a risk assessment. If HSE founds some more precautions or any special item, they inform to mechanical department to follow. The operations should be done after approving the permit by HSE.

5.2.3 Inspection, Certification & Construction

All equipment used in lifting operations whether fixed or portable must be inspected and/or tested to confirm that it is fit for its intended use. A color coding system is used to ensure that all equipment in use has been either inspected or tested. The color code is changed every 3 months. No equipment other than those bearing the valid color displayed is allowed to be used in lifting operations.

A certificate shall be issued for all cranes by HSE Lifting and Rigging section. Entrances and Operation of any crane shall not be permitted before receiving suitable certificate from HSE department.

All cranes should be inspected, as a minimum, in accordance with the local legislation. The inspection should be carried out by HSE Lifting and Rigging section in accordance with national and international rules.

Every lifting appliance, and all parts of it, shall be,

- Of good construction,
- Of sound material,
- Of adequate strength,
- Free from patent defect,
- Suitable for purpose for which it is used,
- Adequately & securely supported.

A proper working place and proper means of access for the crane driver (and maintenance personnel) shall be provided. A driver cab shall,
- Provide adequate protection from the weather,
- Be ventilated and/or cooled,
- Allow clear and unrestricted view for the safety of the lifting operations.

Every lifting appliance should be properly maintained. The inspection & maintenance operations shall be documented & logged.

5.2.4 Load indicator

All cranes shall be fitted with an appropriate load indicator and a load chart. The load indicator shall be serviceable. The load chart shall allow the crane driver to readily ascertain the safe working load (SWL) of the crane at the particular boom length and radius at which it is working.

It is the responsibility of the supervisor in charge of the lifting operation to inform the crane driver of the weight of the load about to be lifted.

5.2.5 Access to cranes

Only the normal means of access between the ground/deck and the crane structure shall be used to access or leave the crane or the crane cab. It is not permitted to get on or off a crane in motion.

Emergency escape route or equipment shall be used in emergency only (tower cranes).

5.2.6 Daily & pre-operational check

It is the duty of the crane driver to inspect his crane daily when lifting operations are to take place. The daily checks should be documented and logged. The inspection includes but is not limited to,
- Obstruction on tracks (if applicable),
- Signal lights & horns,
- Limit & overload switches & alarms,
- Radio & hard wire communication means (if any),
- Crane motion controls,
- Emergency devices control.

Before leaving the crane, the crane driver shall ensure that,
- The load is removed and the hook(s) is (are) raised to the highest position,
- There is no risk of spurious move of the crane,
- The power supply is shut off,
- The windows and door of the cab are closed and locked.
The engineering/maintenance department shall check each crane, regularly and at the beginning of a contract. Reference should be made to the inspection & maintenance procedures.

5.3 CRITICAL LIFT PERMIT

PLANNED CRITICAL LIFT PERMIT – means this permit, including the terms and conditions contained in this permit and includes supporting Documents which must be completed prior to a Planned Critical Lift.

CRITICAL LIFT DEFINITION – A lift which involves multiple crane lifts, lifts over operating facilities where they may endanger personnel, lifts over or close to power lines, lifts involving personnel cages, lifts exceeding 20 tones, lifts which meet or exceed 85% of the maximum rated loads, a lift over an occupied building, a lift from a berth deck, or a lift adjacent to sheet pile edge.

CRITICAL LIFT CHECK LIST

<table>
<thead>
<tr>
<th>CRITICAL LIFT CHECK LIST</th>
<th>CRITERIA</th>
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<tbody>
<tr>
<td>LOAD EXCEEDS 75% OF LOAD CHART FOR CRANE OR DERRICK</td>
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<tr>
<td>TWO OR MORE CRANES / BOOMS REQUIRED</td>
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<tr>
<td>SPECIAL HOISTING / RIGGING EQUIPMENT WILL BE UTILIZED</td>
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<tr>
<td>OTHER – SPECIFY:</td>
<td></td>
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DESCRIPTION OF OBJECT TO BE RAISED

DATE OF LIFT:

HOW THE WEIGHT OF THE OBJECT WAS OBTAINED

CERTIFIED SCALE WEIGHT: [ ] TICKET # [ ]

CALCULATED BY MORE THAN ONE SOURCE

SOURCE: WEIGHT: SOURCE: WEIGHT:

IF THE LIFT IS AN EXISTING ITEM BEING REMOVED OR DEMOLISHED, THE WEIGHT IS TO BE RECALCULATED, TAKING INTO ACCOUNT ALL MODIFICATIONS INCLUDING INTERNAL, AS WELL AS AN ALLOWANCE FOR SCALE, SEDIMENT, SLUDGE, INSULATION, LIQUID, ETC.

SOURCE: WEIGHT: SOURCE: WEIGHT:

DESCRIPTION AND WEIGHT OF ALL RIGGING EQUIPMENT AND CRANE ATTACHMENTS FROM LOAD CHARTS

ITEM: WEIGHT: ITEM: WEIGHT:

ITEM: WEIGHT: ITEM: WEIGHT:

ITEM: WEIGHT: ITEM: WEIGHT:

ITEM: WEIGHT:
<table>
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<tr>
<th>CRANE # 1 MAKE</th>
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<tr>
<td>MODEL</td>
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<td>MAXIMUM OPERATING RADIUS</td>
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<tr>
<td>PLANNED OPERATING RADIUS</td>
<td>PLANNED OPERATING RADIUS</td>
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<td>ALLOWABLE LOAD (FROM LOAD CHART)</td>
<td>ALLOWABLE LOAD (FROM LOAD CHART)</td>
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<td>RATIO OF LIFT TO ALLOWABLE LOAD</td>
<td>RATIO OF LIFT TO ALLOWABLE LOAD</td>
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<tr>
<td>CLEARANCE BETWEEN BOOM AND LIFT</td>
<td>CLEARANCE BETWEEN BOOM AND LIFT</td>
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<tr>
<td>CLEARANCE TO SURROUNDING FACILITIES</td>
<td>CLEARANCE TO SURROUNDING FACILITIES</td>
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<tr>
<td>CLEAR PATH FOR LOAD MOVEMENT CHECKED</td>
<td>CLEAR PATH FOR LOAD MOVEMENT CHECKED</td>
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5.4 Personnel

5.4.1 Discipline Engineers/Technicians
All Discipline Engineers/Technicians are responsible for:
Those personnel who directly supervise any lifting operation are responsible for ensuring that all materials are handled in a safe and correct manner and in accordance with this Procedure.

5.4.2 Safety Officer and Safety/Environment Engineer
The HSE Officer /Supervisor are responsible for monitoring safe working practices on site

5.4.3 Operator
The crane operator must be in possession of a current Government Crane Operator’s License. In addition, he must be fully familiar with and competent to operate the particular type of crane to which he is assigned. The HSE department shall test the operator prior to commencement of his first lifting operation and issue a certificate. An operator may be certified to operate more than one type of crane, but under no circumstances is an operator permitted to operate a crane for which he has not been certified. The contractors supervisor must ensure that his operator is physically fit and mentally alert. If the operator demonstrates any signs of illness, he must be immediately removed from the crane. The crane operator should attend in HSE lifting and rigging courses. After passing the courses, he should pass the theory exams and after this, he has to pass the practical exams. The certificate will be issued after these exams according to his license and exams results.
A crane shall not be driven except by a person specially appointed.
The crane drivers shall be,
• Able to show a certificate of medical fitness, with particular regard to stature, eyesight, hearing and reflexes,
• Able to show evidence of crane driving competence & experience (crane driving license or any equivalent documentation),
• Adequately trained in the operation of the type of crane they will have to drive,
• Able to carry out the daily checks,
• Able to understand the signals & the language of the signal man,
• Able to make the decision whether or not a lifting operation is safe.

5.4.4 Signalman
The signalman,
• Supervises the lifting operations,
• Is responsible for the safety of the whole lifting operation,
• Shall have been trained in the job or shall be able to demonstrate his ability & experience,
• Shall ensure the riggers operate safely and follow the basic rules for safe lifting (use of tag lines, means of escape, safe location, etc.),
• Shall ensure that personnel not involved with the lifting operation is kept well away,
• Shall keep visual or radio communication with the crane driver,
• Shall ensure that he is identified & fully understood by the crane driver and by the riggers.

If, at any time, the signalman must leave, the lifting operation shall be interrupted.

The signal man should stand in a safe position, preferably facing the crane driver, where,

• He can escape from,
• He can be seen by the crane driver,
• He can see the load, the loading area and his riggers.

5.4.5 Riggers
The rigger shall be responsible for properly attaching the load to the crane and for giving the correct hand signals to the crane operator.
The rigger must be adequately trained in all techniques of rigging, be conversant with the standard lifting hand signals and with the general capabilities of the crane with which he is working.
The HSE department shall certify the riggers capabilities by performing a test prior to his first day of work at site.
The riggers,
• Attach & remove the lifting gears (slings, shackles, tag lines, etc.),
• Attend the tag lines of loads being lifted,
• Shall be medically fit, with particular regard to strength, agility, eyesight, hearing & reflexes,
• Shall have received minimum training or shall have experience of lifting,
• Shall be able to select lifting gears suitable for the loads to be lifted,
• Shall be able to understand the language of the signalman.

5.5 Crane Operations
5.5.1 Crane operation precautions
The signalman is responsible for the safety of the lifting operation.
The crane driver is responsible for the safe operation of the crane. He is fully entitled to refuse to commence a lift, which from his judgment, is not safe.
The crane driver shall,

• Ensure that the SWL of the crane and lifting gears is not exceeded at any time,
- Ensure that the weight of the load is taken smoothly to prevent boom or rope failure,
- Ensure that the loads are not dragged or pulled sideways,
- Ensure that slewing is done slowly and that there is sufficient clearance between the crane moving parts and fixed objects nearby,
- Not lower or raise the crane hook when it is out of sight, unless directed by the signal man,
- Not allow anyone to travel on the load or on the crane hook,
- Ensure that the riggers stay well clear of the load.

In case of sudden illness, the crane driver shall stop the operation, call for help and wait until help arrives. In case of special lifting operation, a skilled mechanic attends in the crane cabin.

5.5.2 Crane Operators

Crane operators must:
- Be over 18 years of age and be trained and certified in crane operations and slinging.
- Be adequately trained in the operation of cranes, both the general principles and the specific type of machine he is required to operate.
- Be familiar with safe working practices applicable to crane operation.
- Be medically fit with normal muscular reflexes.
- Be able to read and understand Operating Instructions and Procedures.
- Have a working knowledge of safe slinging practices.
- Be familiar with and act upon the signals used for the control of crane operations (refer to attachment # 1, figure # 8).
- Have sufficient working knowledge of the crane to enable him to carry out the routine maintenance checks for which the operator is responsible.

Before any new crane operator is allowed to work on Worksite he should be given a competence check by the Contractor’s HSE.

5.5.3 Pre Operating Checks

1. Before a crane is allowed to operate on Worksite, its certificate must be reviewed by the HSE Department. Records of tests and inspections must be available on the site.
2. At the beginning of each shift or prior to a lift, the crane operator must carry out the following safety checks. (which could be called a checklist).
   - Check that all lifting tackle is correctly color coded.
   - Check hydraulic and coolant levels.
   - Check that the audible alarms are working for overload conditions.
- Check that the load/radius indicator is operating correctly. (No crane with a capacity of over 1 ton should be allowed to operate without an operational load indicator)
- Check hydraulic actions, operating motions and braking system.
- Check the crane cabin to ensure that no materials that constitute a fire hazard are present. Ensure a fire extinguisher is present.
- Check radio communications (if the operator and banksman are not in visual contact throughout the complete lifting operation.)

3. Before a lift is undertaken the crane operator must know the Safe Working Load (SWL).

5.5.4 Operations

During crane operations check the following:
- Unusual noises, loss of power or slow response to controls.
- All gauges for proper readings.
- The hoist drum; to ensure that the wire rope is spooling properly.

5.5.4.1 Wind Speed and Visibility

1. When wind speeds exceed 35 knots extreme caution must be taken.
2. When wind speed exceed 40 knots (refer to Below Table for wind speed conversions), operations may only proceed with the permission of Site Manager or a responsible person delegated by him.

<table>
<thead>
<tr>
<th>Wind Speed Conversions</th>
<th>Meters per Second</th>
<th>Miles per Hour</th>
<th>Knots</th>
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3. Prior to permission being given consideration must be given to, but not limited by, the following:
- Weather forecast.
- Sea State
• Wind Direction
• Type of lifting operation
• Visibility (especially during weathers of darkness)

4. The manufactures instructions must always be followed. In weather which causes inadequate visibility, crane operations must be suspended.

5.5.4.2 Emergencies
Crane activities must cease in the event of any emergency or potentially dangerous situation. The crane operator must obey the emergency stop signal whoever gives it.

5.5.4.3 Lifting Tackle
- Latches or safety bolts on hooks must be always used. All loads must be checked for correct slinging prior to lifting and all pipe work should be pre-slung.
- Only certified lifting tackle should be used.
- The crane’s hook must not be used to lower, raise or carry people; the correct equipment for carrying out such an operation is the man basket.

5.5.4.4 Suspended Loads
Loads must never be left suspended for longer than is absolutely necessary. When loads are left suspended, the crane controls must never be left unattended.

PERSONNEL MUST NEVER BE ALLOWED TO BE UNDERNEATH A SUSPENDED LOAD

5.5.4.5 Crane and Load Movements
- Loads must be lifted gently and the crane motions operated smoothly to avoid loads swinging.
- In general lifting across "live" process plant is forbidden. Permission should be sought from the site manager. Special precautions may be necessary and procedures produced.
- If the rope becomes slack on the drum, cross coiled, or trapped, lifting operations must be suspended until the rope is paid out, examined for possible damage and re-spooled correctly.
- For all jib cranes with a capacity over 1 ton, a safe load indicator should be fitted with audible & visual alarm. The alarm starts when the actual load being lifted is between 90 % & 98 % of the safe working load. In addition there should be an audible alarm outside the cabin when the actual load is between 100 % & 110 % of the permitted safe working load.
- Operating instruction/manuals & special procedures must be available in the crane cabin & supervisors office.
• An audible alarm must be sounded prior to slewing if personnel are at risk. Where practicably possible, tag lines must be attached to heavy, long or awkward loads.

5.5.4.6 Communications
• The normal method of communication between the banksman and the crane operator should either be by hand signals or two-way VHF radio.
• All hand signals given to control crane operations, must comply with the Standard Code of Hand Signals (attachment # 1, figure # 8). These must be clear, distinct, easily seen by the crane operator.
• Only the person in charge of the lift may give signals to the crane operator (except in an emergency).

5.5.4.7 Safe Working Load and Maximum Working Radius
• The Safe Working Loads (SWL) of the crane must not be exceeded except for the purpose of a test, and then only by a qualified test engineer, conforming to the crane manufacturer's specifications and recommendations.
• The maximum working radius of a crane boom must never be exceeded with a load on the crane hook.
• When a load is equal, or nearly equal to the Safe Working Load, the load should be temporarily halted when just clear of the area to check the balance and security of the load and the effectiveness of the brake.

5.5.4.8 Restrictions on Crane Operations
Normal crane operations will be restricted during the following:
• When lifting over live process plant. Permission must be obtained from the Site Manager. Extra safety precautions may be necessary.

5.5.4.9 Shutdown
On completion of the work, the crane boom and hook must be properly secured on the boom rest and the motors stopped, before the operator leaves the crane.

**Furthermore:**

**Before leaving his crane unattended, the operator shall:**

- Land any attached load, bucket, or other device
- Disengage clutch
- Set travel, swing, boom brakes, and other locking devices
- Put controls in the OFF position
- Stop the engine
- Secure crane against accidental travel
- When wind alarm is given or on leaving crane overnight, set ground chocks on truck and crawler cranes
- Lower crane booms to ground level or otherwise fasten securely against displacement by wind loads or other outside forces
- If there is a lockout/tagout sign on the switch or engine starting controls, the operator shall not close the switch or start the engine until the warning or lock has been removed by the person placing it there
- Before closing the switch or starting the engine, the operator shall see that all controls are in the OFF position and all personnel are in the clear

**If power fails during operation, the operator shall:**

- Set all brakes and locking devices
- Move all clutch or other power controls to the OFF position
- If practical, the suspended load should be landed under brake control

### 5.6 Inspection and Certification Guidelines

All cranes and associated lifting gears must be thoroughly examined and tested in accordance with this document; all tests and examinations must be properly documented.

The controls are implemented by various methods, including routine periodic inspections of equipment in service, periodic inspection audit of conditions and usage of equipment; verification of serviceability of new and in-service equipment by testing, where appropriate; and maintenance of certification records and inspection histories for various categories of equipment.

Contractor is responsible for ensuring that all its equipment is properly tested and certified, is fit for its intend purpose, and is maintained and inspected at appropriate intervals. Nevertheless, should immediately bring to the attention of any item of equipment which is in need of maintenance, or which is found to be overdue for test or inspection.
Contractor is responsible for ensuring that all its equipment is properly tested and certified, is fit for its intended purpose, and is maintained and inspected at appropriate intervals.

Inadequately certified equipment shall be refused for entry and service. Also, while equipment is in service, POGC may undertake inspections or certification audits of contractor’s equipment, and shall have the right to quarantine, or to place operational limitations on, any such equipment which is inadequately certified or is considered unfit for service.

5.6.1 General
This includes all manner of lifting equipment including, such as cranes and lifting appliances; wire or fiber ropes; loose gear such as slings (wire or fiber) and shackles; transportation containers and associated rigging; transportable tanks; winches; hoists and pulling devices; hydraulic jacks; runway beams and spreader beams; tool lifting clamps; pad eyes and eyebolts; and skid frames which are used for transportation.

The term “test certificate” normally means a certificate of proof load test, witnessed and signed by a competent lifting equipment certified supervisor. Certain types of equipment require periodic re-test and re-certification (e.g. cranes, containers – see below), while other equipment has no requirement for periodic re-test but may require re-testing after significant repair or modification.

Proof-load testing will be performed in accordance with relevant industry standards for the specific type of equipment – typically these include British Standards.

The term “inspection report” normally means a record of examination (visual / functional) by a competent lifting equipment engineer. Inspection reports have a maximum validity of six months, unless the inspecting engineer specifies any further limitation of validity.

As proof-load testing will also involve” examination after test, a test certificate is effectively also considered valid as an inspection report, for a period of six months from the date of test.

Permissible load capacity and date of next inspection should be writing on both side of crane.

For equipment tested or inspected by an engineer, the lifting equipment engineer should be suitably approved by the local authorities.

For equipment tested or inspected in Iran, the lifting equipment engineer shall be formally authorized by Company Inspection department.

Signed originals of all test certificates and inspection reports should be provided. If for whatever reason it is not possible or practical to supply the original, any photocopies supplied should be endorsed / signed by a party who has seen and verified the original document, or by the party issuing the original document.
The terms “certificate of conformity” or “type approval certificate” refer to different forms of statement by a manufacturer that equipment is in accordance with specified standards. With very few exceptions, as noted below, such certificates are not acceptable for materials for offshore and onshore sites use.

5.6.2 Basic Requirements for Inspection Documents

1. For general equipment (e.g. wire rope slings, shackles, chain blocks, winches, etc...):
   a. A test certificate when equipment is new, and after any significant maintenance, repair or modification (test load ranges from 1.1 to 2 x SWL).
   b. An inspection report, inspection to be undertaken every six months. See note above concerning six-month validity of a test certificate in lieu of an inspection report.

2. For transportation equipment (e.g. containers, boxes, tanks, baskets, skid units, etc...):
   a. A test certificate when equipment is new, and after any significant maintenance, repair or modification (test load ranges from 1.1 to 2 x SWL).
   b. An inspection report, as for (1.b) above.

3. For fiber slings (inc. fiber ropes, cargo nets, jumbo bags, etc...):
   a. Type approval certificate with measured breaking load for similar item. Physical proof-load testing is usually not practical as damage to fibers cannot be accurately assessed.
   b. An inspection report, as for (1.b) above.

4. For cranes and fixed lifting appliances:
   a. A test certificate when equipment is new, at 1-year intervals, and after any significant maintenance, repair or modification (test factor dependent on SWL, typically 1.25 x SWL up to 20T, reducing progressively above 20T).
   b. An inspection report, inspection and functional test to be undertaken every six months.

5. For wire ropes (including crane ropes, winch ropes, etc...):
   a. Test certificates when equipment is new, comprising a breaking test certificate for the rope (equivalent to Form 87 under UK Statutory Instrument 1019). Proof test on terminations to be repeated in the event of significant maintenance, repair or modification (2 x SWL proof load for terminations).

**Breaking test**

A break test can be performed on the wire rope. This is accomplished by cutting off sections of the wire rope and placing each section of the rope on a wire rope break test machine. The machine pulls the wire rope apart and computes the breaking...
strength. By testing several sections of the wire rope, you can determine the average breaking strength for that type of wire rope.

Proof test
A nondestructive tension test performed by the sling manufacturer or an equivalent entity to verify construction and workmanship of a sling.

b. An inspection report, as for (1.b) above.

Note: A third party inspection agency shall review inspection documents.

5.6.3 Basic Requirement for Equipment Marking
All equipment must be marked with an identification number (as mentioned in wire rope section), which can be unambiguously correlated to the appropriate certification or reports. In most cases, this will mean a unique reference number per item. All equipment must also be marked with the relevant Safe Working Load (SWL), or for transportation equipment, the Maximum Gross Weight (MGW).

All equipment must be color coded. Logistics department, before authorizing any lifting equipment entry, shall check the above required documents and shall visually inspect all items.

Upon satisfactory checks, a color code label (colored strap/paints…) will be put on all inspected lifting equipment by logistics representatives.

A common color code should be used on all premises. Validity periods and color identification shall be given by HSE department.

Any lifting equipment found on or delivered to the Worksite without the above required certification documents and without valid color code label in place will be immediately removed from service and placed in quarantine until such times as the relevant documentation is supplied.

5.7 Man Basket Safety Rules
Where scaffolds cannot be used for specific elevated works, cranes shall be used to raise or lower personnel in specially fabricated cages (man baskets), approved by HSE Department, which are:

- Properly designed by a qualified engineer and well constructed and maintained.
- Have means to stop personnel from falling out.
- Prevented from spinning or tipping.
- Be operated from one position only.

All personnel within such cages (man baskets) shall wear a full safety harness which shall be attached separately to the crane hook ball by an approved lanyard.
A work permit, together with a detailed method statement approved by HSE Department, shall be required.

5.7.1 Basket Loading
- The personnel man-basket shall not be loaded in excess of its rated load capacity.
- The number of employees occupying the personnel man-basket shall not exceed the number required for the work being performed.
- Personnel man-basket’s shall be used only for employees, their tools, and the materials necessary to do their work, and shall not be used to hoist any materials or tools when not hoisting personnel.
- Materials and tools for use during a personnel lift shall be evenly distributed within the confines of the man-basket while it is suspended.
- Traveling the crane while personnel are in a hoisted man-basket is prohibited.

5.7.2 Rigging for Man Baskets
When a wire rope bridle is used to connect the man basket to the load line, each bridle leg shall be connected to a master link or shackle in such a manner to ensure that the load is evenly divided among the bridle legs. Hooks on overhaul ball assemblies, lower load blocks, or other attachment assemblies shall be of the type that can be dosed and locked, eliminating the hook throat opening. Alternatively, an alloy anchor type shackle with a bolt, nut and retaining pin may be used. Wire rope, shackles, rings, master links and other rigging hardware must be capable of supporting, without failure, at least five times the maximum intended load applied or transmitted to the component. Where rotation resistant rope is used, the slings shall be capable for supporting without failure at least ten times the maximum intended load. All eyes in wire rope slings shall be fabricated with thimbles. Bridles and associated rigging for attaching the man basket to the hoist line shall be used only for the man basket and the necessary employee, their tools and the materials necessary to do their work, and shall not be used for any other purpose when not hoisting personnel.

5.7.3 Inspection of Man Baskets
Prior to the man basket being used the 'Man Basket Check list must be completed by the respective contractor in the presence of HSE Department personnel. The requirements of the 'Man Basket Checklist' (Attachment # 2) shall be adhered to.

5.7.4 Trial Lift and Inspection
A trial lift shall be performed immediately prior to placing personnel on platforms. The operator shall determine and confirm that all systems, controls and safety devices are activated and functioning properly, that no interference exist, and configuration
necessary to reach the work locations will allow the operator to remain under 50% limit of the hoist rated capacity.

A single trial lift may be performed at one time for all locations that are to be reached from a single set up position for the same radius.

The trial lift shall be repeated prior to hoisting employees whenever the crane is moved and set up in a new location.

The trial lift shall be repeated when the lift route is changed unless the operator determines that the route change is not significant, that is the route change would not affect the safety of the hoisted personnel.

The operator shall, prior to hoisting personnel, first hoist the platform a minimum of one meter (1m) to ensure that it is secure and properly balanced.

The following must be confirmed:

- Hoist wires shall not be kinked
- Multiple hoist wires shall not be twisted around each other.
- The primary attachment shall be centered over the platform.
- The hoisting system confirmed that the load wire is not slack, and ensure all wires are properly secured on the drums and sheaves.

A visual inspection of the crane, rigging, personnel platform and the crane base support or ground shall be conducted by a Competent Person immediately after the trial lift to determine whether the testing has exposed any defect or produced any adverse effect upon any component or structure.

Any defects found during inspection which create a safety hazard shall be corrected before hoisting personnel.

5.7.5 Safety Rules for Men in the Basket

The following rules must be explained to the personnel being lifted within the man-basket:

- Employees shall keep all parts of the body inside the man-basket during raising, lowering, and positioning. (NOTE) This provision does not apply to an occupant of the man-basket performing the duties of a signal person.
- Before employees exit or enter a hoisted personnel man-basket that is not landed, the man-basket shall be secured to the structure where the work is to be performed, unless securing to the structure creates an unsafe situation.
- Tag lines shall be used unless their use creates an unsafe condition.
- Employees being hoisted shall remain in continuous sight of and in direct communication with the operator or signal person. In those situations where direct visual contact with the operator is not possible, and the use of a signal person would create a greater hazard for that person, direct communication by radio must be used.
- Employees occupying the personnel man-basket shall use a full body harness system with double lanyard appropriately attached to the Hook or overhaul ball of the crane or to a structure member within the personnel platform capable of supporting a fall impact for employees using the anchorage.
• No lifts shall be made on another of the crane's or derrick's load lines while personnel are suspended on a man basket.

5.7.6 Safety Rules for the Crane Operator

• Hoisting of the personnel man-basket shall be performed in a slow, controlled, cautious manner with no sudden movements of the crane or the platform.

• Load lines shall be capable of supporting, without failure, at least seven times the maximum intended load, except that where rotation resistant rope is used, the lines shall be capable of supporting without failure, at least ten times the maximum intended load. The required design factor is achieved by taking the current safety factor of 3.5 and applying the 50 per cent de-rating of the crane capacity.

• Load and boom hoist drum brakes, swing brakes, and locking devices such as pawls or dogs shall be engaged when the occupied personnel man-basket is in a stationary working position.

• The crane shall be uniformly level within one percent of level grade and located on firm footing. Cranes equipped with outriggers shall have them all fully deployed following manufacture’s specifications, insofar as applicable, when hoisting employees.

• The total weight of the loaded personnel man-basket and related rigging shall not exceed 50 percent of the rated capacity for the radius and configuration of the crane.

• The crane operator shall remain at the controls at all times when the crane engine is running and the man-basket is occupied.

• Hoisting of employees shall be promptly discontinued upon indication of any dangerous weather conditions or other impending danger.

• No lift shall be made on another of the crane or derrick’s load lines while personnel are suspended in a man-basket.

5.8 Mobile Working Platforms

5.8.1 Definitions

• Mobile Elevating Work Platforms (MEWPs).
  a) Mobile elevating work platforms are often used as an alternative to ladders, scaffolds and cradles. They are particularly suitable for short duration tasks requiring a work platform as they are easily moved from place to place. A variety of types are available and guidance on specific applications should be sought from the manufacturers.
  b) Work platforms may be towable units, lorry or trailer-mounted or self-propelled.

Self-Propelled.
This type of platforms is available in three main types-scissors, teleboom and articulated boom. They are normally used on construction sites or for maintenance on existing buildings. Some of these platforms have been specially developed so
that they can fit through a standard doorway to allow access to the most restricted areas.
They can normally be obtained in diesel or electric powered models with some having the option of running on petrol or propane.

Vehicle-Mounted.

c) This type of platform can be obtained in various sizes from small trailer-mounted platforms to large truck-mounted ones. The two most common types are the van-mounted and truck-mounted platforms. Van-mounted platforms are normally used for access on or from highways, a common use being the servicing of street lighting. Truck-mounted platforms are normally used where access by other methods is too expensive or time consuming.

d) There are other vehicle-mounted platforms that have been developed for specialized applications including all-terrain and under bridge work platforms.

e) All-terrain platforms are often dumper-mounted to allow the vehicle access to positions where only off-road vehicles can reach. Under bridge units were specially developed for inspection of bridges which cannot be accessed easily by other means.

- Mast Climbing Work Platforms (MCWPs)

Mast climbing work platforms (MCWPs) allow access to a localized area of a construction project. The rack and pinion drive gives an adjustable working platform, which can be positioned exactly to suit the task in hand. Tools and materials can be carried up to the work site, together with the operatives. MCWPs must not be used for transferring men and materials between levels. An appropriate hoist should be used for this.

MCWPs consist of three main components:

f) Mast(s) or tower(s) which support(s) a platform or cage. The mast or tower may be in one piece or constructed from separate sections.

g) A platform capable of supporting persons and equipment.

h) A chassis supporting the tower/mast structure. The chassis may provide stability for the machine with or without outriggers, up to a specified free-standing height, above which the mast must be tied to a building or other structure.

i)

j) MCWPs are available in various configurations with:

k) Single or twin masts.

l) Mobile or static chassis.

m) Freestanding or tied-in mast.

n) Variable length working platforms.

o) Single or twin storey working platforms.

- Man-riding Skips and Cradles
Man riding skips or cradles can be used to gain access to structures or as working platforms. The skip/cradle must be suitable for the intended purpose; e.g. if the skip is used for access into a shaft or cofferdam it should have a roof to protect the occupants from falling objects.

The crane used must have a dead-man’s handle; this means that the brake is applied automatically when the control lever or switch is not held in the operating position. The crane must not be capable of lowering by free-fall.

This means that the conventional crawler crane with separate clutch control and footbrake is not suitable for use with man-riding skips.

5.8.2 Instructions
Operation of MEWPs. (Mobile Elevating Work Platforms)
   a) Operatives must be specifically trained and authorized to operate a particular class of mobile work platform and a record should be kept of authorized persons and the training they have received. The mobile work platform must be used strictly in accordance with the manufacturer’s instructions and company operating procedures. Safe working loads, the permitted number of persons on the platform and maximum wind speeds must not be exceeded.

   b) Consideration should also be given to the sitting and stability of the platforms, especially on uneven ground of soft ground and on slopes where the danger of overturning exists. When outriggers are to be used, the load bearing capacity of the ground should be ascertained and a check made for drains, cellars and other hazards which may affect the safety of the work platforms.

   c) Use of mobile work platforms.
      1) **Do**
         - Take care not to come into contact with overhead obstructions when elevating the platform.
         - Wear a suitable safety harness in boom type machines.
         - Use outriggers where fitted.
         - Make sure that MEWPs are regularly inspected by a competent person and that records are kept.
      2) **Do not**
         - Leave a platform or cage except at the proper disembarkation point.
         - Use MEWPs to transfer materials from one level to another. If they are used for this purpose, they are classified as hoists and require significant modifications.

Use of MCWPs.
a) MCWPs should only be erected by skilled and competent persons and should only be used by trained operatives.

b) MCWPs should be inspected daily before use by the user.

c) MCWPs should be regularly inspected by a competent person and records of inspection should be kept.

d) MCWPs should be clearly marked with the safe working load and permitted number of persons allowed on the platforms at each configuration.

e) The manufacturer’s instructions on inspection, maintenance and servicing must be followed at all times.

f) The operator should not carry out repairs and adjustments unless qualified and authorized to do so.

g) Safe means of access to the platforms should be provided at its lowest level. This may be by a short fixed ladder, raised platforms or by control arrangements which allow the platforms to be brought down to ground level.

h) Ground conditions must be checked for adequate bearing.

i) A safety barrier must be erected to exclude personnel from the area below the platform

Use of Man-Riding Skips

b) Personnel must remain wholly within the skip or cradle when it is being lifted or lowered-do not climb or ride outside.

c) Safe working load should be displayed inside and outside the skip or cradle.

d) Make sure there is good communication between the passengers and the crane driver. 2-way radios may be required.

e) When used for access:
   - Provide a firm level surface where the skip or cradle is to be landed. The surface must be wide enough to fully support it.
   - Enter or leave the skip or cradle one person at a time.
   - The alighting area should be big enough to allow people to climb in and out of the skip or cradle easily and safely. Provide guardrails where appropriate.
   - Provide a safe means of access from the landing place to the place of work.

f) Do not leave the skip or cradle at height unless you are wearing a safety harness or belt.
g) The safety harness should be clipped to the crane hook block when traveling or working in the man-rider and to the structure when leaving the man-rider.

h) Notice: All required principles for safe use of fixed lifting equipment has been mentioned in this procedure and they could be applied to Mobile lifting equipment too, so it has been avoided to repeat them.

5.9 General Safety in Rigging and Lifting:

5.9.1 Safe Work Systems
Contractor shall ensure that a safe system of work shall be laid down and effectively communicated to all personnel involved in a lifting operation. It shall include but not limited to:
- Thorough planning of the operation, along with the selection, provision and use of suitable cranes and equipment.
- The maintenance, testing and examination of all equipment.
- Supervision by trained and competent personnel, together with all necessary authority to progress or stop a job as necessary.
- The provision of all test certificates and other documentation relevant to the equipment being used.
- The prevention of unauthorized use or movement of equipment, by unauthorized workers.
- The safety of all personnel, those involved in the lift as well as those not involved in the lift, but who may be affected by the lifting operation.

5.9.2 Signals
Every crane operation shall be accompanied with a trained signaler to provide clear and distinct signals to the crane operator. The signaler shall be clearly identified by wearing a green colored vest.

Signaling communications may be by standard hand signals (attachment # 1, figure # 8), whistles and radio communications and shall be discernable at all times. Radios shall be licensed by the relevant authorities and the requirements of the license be strictly complied with.

Radio communications shall be such that clear and precise words of command shall be given, so that there can be no misunderstandings between the signaler and the crane operator.

The use of hand signals, as guide-lined in Attachment, shall be equally clear and distinct.

5.9.3 Rigging a Load with Rigging Equipment
The Contractor's rigging personnel (Appointed Person) shall ensure, that when rigging a load with rigging equipment, the following is observed:
- The weight of the load is determined and not guessed.
- Sling capacities and equipment are checked and confirmed as suitable for the load to be lifted.
- Shackle pins and shouldered eyebolts are installed in accordance with the manufacturer's instructions.
- Sharp edges are padded to prevent damage and/or cutting of the sling.
- Slings, eyebolts, shackles, hooks etc. have not been modified, cut, welded or brazed.
- The center of gravity and balance of the load has been determined, prior to moving the load, and the attachment. Points of the rigging accessories are as far as practical from the center of gravity.
- Initially the load is trial lifted, approximately 150mm from ground, to test the rigging and balance of the lift.

5.9.4 Safety during Crane Operations
The Subcontractor's rigging personnel shall ensure, that when preparing a load for lifting, the following is observed;
- A preoperational check has been made to the crane and rigging equipment.
- That any practice which may interfere or divert the attention of the crane operator or rigging personnel is ceased.
- Method of communication using hand signals and/or radio contact has been agreed between the crane operator and the signalman.
- The crane operator shall only respond to signals from the appointed signal man.
- The load shall not be suspended over any person and the area over which the load is suspended shall be checked and evacuated of all personnel.
- Watch for obstructions and overhead facilities such as pipe-racks and/or power lines.
- Ensure that a Preliminary Hazard Analysis is completed for all lifts over 20 tons and/or over live equipment.

Crane Pitch Points
Grooves should be smooth and slightly larger than the rope to prevent it from being pinched or jammed in the groove.

Jib/boom hoisting sheaves should have pitch diameter of not less than 15 times the nominal diameter of the rope used.

Load hoisting sheaves should have pitch diameters not less than 18 times the nominal diameter of the rope used, and the load block sheaves should also have pitch diameters not less than 16 times the nominal diameter of the rope used.

Depth of sheave grooves should be at least 1.5 times the rope diameter, and the tapered side walls of the grooves should not make an angle of more than 18 degrees with respect to the centre line.
Bearings should be permanently lubricated or be equipped with means for lubrication. Sheave should be equipped with cable keepers or close fitting guards to prevent the rope from leaving the groove.

5.9.5 Preliminary Hazard Analysis
All crane lifts exceeding 20 tons shall be subject to a Preliminary Hazard Analysis. Once the hazards have been identified, the Subcontractor shall remove or reduce those hazards as far as reasonably practicable. All critical lifts exceeding 100 tons, irrespective of crane lifting capacity or lifting radius, shall require a detailed rigging study submitted for approval to contractor and reviewed by Company. Of course, JHAMs would be considered (section 6.6: Lift Plan) and should be registered.

5.9.6 Drums and Pulleys
The size of the crane's drums or pulleys must match the size of the wire rope being used. The wire rope must be anchored to the drum and there shall be never less than two 'dead' turns on the drum.

5.9.7 Brakes, Controls, Etc.
Crane, winches, etc. must be fitted with brakes capable of holding and controlling the maximum load. Controls on all lifting devices must be clearly marked so that they cannot be operated accidentally.

5.9.8 Cranes with Derrick Jibs
If the derrick motion of a crane is driven by the hoist motor through a clutch, and can only be controlled by the hoist brake, an interlock must be fitted to prevent dual operation.

5.9.9 Location of Cranes and Lifting Appliances
The Construction Manager shall decide on the location of cranes or other lifting appliances but, in the case of mobile cranes, the operator is responsible for ensuring that the movement and position of the crane are both safe and suitable. The crane operator shall be responsible for checking that any ramps, slopes or overhead lines do not cause an obstacle or danger, and that refueling or other vehicles can gain access without causing a hazard. A 600mm wide clearance between traveling or slewing cranes and any fixture (guardrail, scaffold, walkways, etc.) must be maintained; where this is not practical, any place where persons can be trapped must be enclosed by barriers.

5.9.10 Overhead Power Cables or Pipe-racks
Particular care shall be taken when locating cranes or lifting appliances near overhead power cables. The jib or boom must not be raised near to and/or touch a live power
cable or a "flashover" may occur. A "flashover" can occur over considerable distance, depending on the voltage carried by the overhead cables.

The minimum recommended safe working distance away from overhead cables is the length of the jib of the crane, plus 6 meters, measured with the jib pointing towards the cable, even when the crane will be working in the opposite direction.

If the minimum safe working distance cannot be maintained, the electricity supply shall be switched off or otherwise disconnected by an authorized engineer.

The 'maximum clearance height' fixed at all pipe-racks within the operational plant shall not be removed without the written approval (Permit to Work, etc.) from the Company.

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Minimum distance</th>
<th>Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 300 volts</td>
<td>3 feet (0.9 m)</td>
<td></td>
</tr>
<tr>
<td>300 volts to 50 kv.</td>
<td>10 feet (3.1 m)</td>
<td></td>
</tr>
<tr>
<td>More than 50 kv....</td>
<td>10 feet (3.1 m) plus 0.4 inches (1.0 cm) for each 1 kv over 50 kv.</td>
<td>2 times the length of the line insulator, but never less than 10 feet (3.1 m).</td>
</tr>
</tbody>
</table>

*Uninsulated lines

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Minimum distance</th>
<th>Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 50 kv....</td>
<td>10 feet (3.1 m)</td>
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<td>2 times the length of the line insulator, but never less than 10 feet (3.1 m).</td>
</tr>
</tbody>
</table>

5.9.11 Stability

Cranes must have stable and level base. The stability and load-bearing capacity of the ground must be sufficient to carry the most severe static and dynamic loads, taking into account such factors as the slewing torque, wind stress and shock loading, as well as the weight of the crane and its load.

Care shall be taken to see that the ground is firm and stable. Excavations which may not have been correctly filled or ground shafts may reduce the stability of the ground and constitute a hazard to machinery and heavy loads. The same applies when a crane is sited on a roadway for the purpose of working into the Work Site.

5.9.12 Outriggers
All crane outriggers must be extended fully and equally on both sides of the crane. Outriggers are effective only if they are used correctly. The safe rule is to use outriggers for all lifting duties.
Suitable crane mats must be used under each outrigger in order to spread the load and reduce the grand area loading.
Particular care shall be taken on ground condition where long jibs are in use as sloping ground can significantly affect the stability and capacity of crane.

5.9.13 Rigging and De-Rigging of a Crane
No crane or other lifting appliance shall be erected unless under the direct supervision of a competent person.
The de-rigging of a crane must only be carried out under the supervision of a Competent Person and as recommended by the crane manufacturer.
Care must be taken to see that nobody stands under any jib section while the connecting pins are being withdrawn.

5.9.14 Instruments and Components
HSE Department or its nominated representative shall verify that all safety devices installed by crane and derrick manufactures are still fully operational prior to their use at the work site.
Cranes and derricks with variable angle booms shall be equipped with a boom angle indicator, readily visible to the operator.
Cranes with telescopic booms shall be equipped with a device to indicate clearly to the operator, at all times, the boom extended length, or an accurate determination of the load radius to be used during the lift shall be made prior to hoisting.
A positive acting device shall be used which prevents contact between the load block or overhaul ball and the boom tip (anti-two-blocking device), or a system shall be used which deactivates the hoisting action before damage occurs in the event of a two-blocking situation (two block damage prevention feature).
Note : All cranes should be equipped with proper extinguishers.

5.9.15 Crane Markings
All cranes and other lifting appliances must be clearly marked with their Safe Working Loads (SWL) and date of next inspection. If the lifting radius can be varied, an indicator must be fitted which shows the safe operating radius of each lift.

5.9.16 Qualification and Competency of Lifting Operators & Involved persons
One person, other than the crane operator, shall be appointed to take responsibility for the organization and control of any lifting operation. He should have adequate training and have the necessary experience to be deemed to be competent.
The appointed person must:
• Assess the proposed lift to provide for planning, selection of equipment, instruction and supervision to enable the work to be carried out safely.
- Ensure that all tests, inspections, examinations and maintenance have been carried out, and that there is a procedure for reporting defects and taking whatever corrective action is necessary.
- Have the authority to carry out his duties to stop the operations if he thinks there is a danger.
- The appointed person's duties, but not his responsibilities, may be delegated to another competent person.
- Drivers of cranes and other lifting appliances and others involved in lifting operations, including signalers, must be adequately trained and experienced and aged 18 years and above.
- No one shall be allowed to operate cranes or other lifting appliances within the work site for the purpose of training, even under the supervision of a competent person.

5.9.17 Restriction on Use
A hoisting mechanism should be used for raising and lowering the loads vertically and for no other purpose, unless competently supervised and can be done without overstressing the crane structure and mechanism, or endangering its stability.
Crane jibs shall not be worked at a radius greater than that specified on the test certificate.

5.9.18 Loads
Loads shall be raised to a height of about 150 mm and held, while the stability of the crane is assessed, prior to proceeding with the lift.
Tag-lines shall be mandatory for all lifts.
Loads shall not be pulled in order to free them from their attachments or their surroundings, as the stress and load exerted to the crane boom cannot be determined and when a load does break free the sudden shock can result in damage to the boom or crane machinery, failure of sling or wire, whiplash, and other dangers.
Jobs that require meticulous planning with precise knowledge of the load, its centre of gravity and its planned location on the ground, such as the handling of long columns from the horizontal to the vertical and multiple lift operations shall require written procedures, setting out the safe system of work to cover such operations. In multiple and tandem lifting, all loads shall be calculated.
Loads must be correctly slung and made secure to prevent any part of the load slipping or falling. Precautions shall be taken to prevent the load striking any obstacle or knocking anything down.
Loose materials shall be lifted in a properly constructed box or container.
The operator shall remain at the controls whenever the load is suspended.
When two cranes or other lifting appliances are used for one load, they must remain stable throughout the lift. Such multiple lifts shall be supervised by specially appointed competent personnel and be subject to a detailed rigging study, which has prior approval from HSE Department.
Lifting of hazardous material
Perform security rounds, prevent fires, handle and store hazardous materials, comply with legislation, operate equipment, wear protective clothing, identify potential safety hazards, operate emergency equipment, report injuries, advise customers of hazardous materials, maintain good housekeeping, use hand and power tools, use material handling equipment, perform store openings and closings, perform recycling duties, use correct manual lifting techniques and handle and ship air bags.

Perform security rounds and conduct a visual inspection of the equipment prior to use to insure safe and effective operation, checking component wear or damage, fluid levels and tire condition in accordance with company policies, manufacturers' recommendations and government regulations.

Prevent fires by inspecting the work area, removing combustible materials and flammable products, ensuring that the required fire extinguishers are available and ready for use, labeling the area with the prescribed warning signs, examining electrical equipment and cords for signs of wear or overload, in accordance with company policies, manufacturers' recommendations and government regulations.

Handle, use and store hazardous materials including: paints, solvents, acids, refrigerants and oils, fuels, propane, acetylene, batteries, cylinders and volatile organic compounds; securing materials in designated areas, ensuring that waste materials are in approved containers in preparation for recycling or disposal; to protect self, others, property and the environment, in accordance with company policies, manufacturers' recommendations and government regulations.

Comply to the workplace regulations, by interpreting the acts and regulations, and performing the work in accordance with the requirements of The Occupational Health & Safety Act (OHSA), Workplace Hazardous Materials Information System (WHMIS), Workers Compensation Act, the Environmental Protection Act.

Operate equipment safely and effectively to move, load, unload and place stock, including: forklifts, pump lift carts, dollies and overhead cranes, to protect self, others and property, in accordance with company policies, manufacturers' recommendations and government regulations.

Wear protective clothing and equipment ensuring correct fit and application for the work to be performed, including: kidney belts, safety shoes, skin and eye protection, ear protection, breathing masks and required ventilation, hard hats and protective suits or clothing, to achieve optimum protection of self and others, in accordance with company policies, manufacturers' recommendations and government regulations.

Identify potential health and safety hazards within the workplace by conducting routine visual inspections to determine fire hazards, obstacles and impediments, spills and leaks of chemical or liquid products; and, by taking corrective action when
required in accordance with company policies, manufacturers' recommendations and government regulations.

Operate emergency safety equipment correctly including: eye wash stands, fire extinguishers, hoses, fire alarms and fire doors in order to respond effectively to emergencies, injuries and accidents by assisting others, activating alarms and signals and by notifying others in accordance with company policies, manufacturers' recommendations and government regulations.

Report injuries and accidents to immediate supervisor and health and safety Committee, ensure that all required forms and reports are completed and submitted in accordance with company policies and government regulations.

Advise customers of hazardous materials by describing their specific uses and explaining the hazards of misuse of the product involved; and, by providing material safety data sheets for the specific product to protect others and the environment in accordance with company policies, manufacturers' recommendations and government regulations.

Practice and maintain good housekeeping by keeping a safe and tidy work area, clearing away debris, removing obstacles and impediments and storing materials in the proper location, in accordance with company policies and government regulations.

Use and maintain hand tools safely and effectively, reporting and tagging damaged and defective tools; and by properly storing tools to protect self and others in accordance with company policies, manufacturers' recommendations and government regulations.

Use and maintain electric and pneumatic power tools and equipment in a safe and effective manner, tag and report damaged or defective tools; and store equipment correctly after use to protect self and others in accordance with company policies, manufacturers' recommendations and government regulations.

Use and maintain material handling equipment to move and lift stock, including slings, chains, dollies, pump lift carts and conveyor belts, ensuring that all components are in safe working order and have the rated capacity for the work being performed, to protect self and others in accordance with company policies, manufacturers' recommendations and government regulations.

Perform store/shop opening and closing duties including: operating lighting panels, checking security systems and fire alarm systems, securing/opening of entrances and exits, loading docks and truck bay doors, to ensure a safe protected environment for self, others and property, in accordance with company policies and manufacturers' recommendations.
Perform recycling duties by separating and storing used products until disposal including: oil, coolant, filters, rags, cardboard, plastics and glass, using the correct bins and containers and informing others of pick up and disposal to protect self, others and the environment, in accordance with company policies, manufacturers' recommendations and government regulations.

Use correct manual lifting techniques when moving stock, wearing a back supporting kidney belt, keeping the back straight and using leg power when lifting objects from ground level, to protect self and others, in accordance with company policies, manufacturers' recommendations and government regulations.

Handle, package and ship air bags and air brake chambers by checking for damage to the air bag and the carbon dioxide (Co2) canister, ensuring that the specified heavy duty carton is used, labeling the carton with the significant warning label and completing the required documentation, to protect self and others, in accordance with company policies, manufacturers' recommendations and government regulations.

5.9.19 Security When Not In Use

Cranes shall be secured when not in use, to minimize the chance of tampering, vandalism and damage.

For short periods the operator shall:
- Lower the load to the ground and disconnect it from the lifting gear.
- Raise the jib clear of other operations.
- Chock all the wheels on inclines.
- Apply all brakes and the slewing lock.
- Stop the engine, remove the ignition keys and lock the cabin.

For longer periods, such as end of each working day, at weekends, etc. the operator shall:
- Lower the load to the ground and disconnect it from the lifting gear.
- Where space permits, swing the jib clear of the load, of other operations and lower it onto the ground or stable support, taking care not to foul the crane block.
- Where space is limited and the jib can’t be lowered, the hook should be secured to a suitable or stable anchor (but not to the crane), to prevent slewing in very windy conditions.
- Apply all brakes.
- Stop the engine, remove the ignition keys and lock the throttle in the closed position.
- Isolate or lock off all control switches.
- Secure and lock the cabin.

5.9.20 Strong Wind and Rainy Conditions
Crane manufacturers' operating instructions normally specify a maximum wind speed for safe operation which may vary depending on the jib length, the radius, the load and other factors. All proposed lifting operations shall take cognizance of such instructions.

Crane operations will cease during rainy conditions.

5.9.21 Chains, Slings and Lifting Gear.
All wire ropes, chains, slings, etc. must be clearly marked, with its Safe Working Load, color coded as instructed by HSE Department, registered in the wire rope inspection and the safe working load specified.

All equipments use in lifting operations must be:
- Properly constructed and maintained.
- Free of any defects or damage likely to affect its strength.
- Securely attached to the load to be lifted.
- Inspected by HSE Department or its nominated representative.

5.9.22 Hooks
All crane hooks shall be in good working order and must be:
- Fitted with safety catches.
- Marked with Safe Working Load.
- Checked for cracks, nicks, bending or excessive wear.
- Free from twisting sideways from the plane of the unbent hook.
- Free from excessive opening at the throat.

5.9.23 Slings
Slings must be:
- Free from abnormal wear.
- Free from torn stitching
- Free from visible threads from the interior of the sling fabric.
- Free from broken or cut fibers.
- Free from discoloration or deterioration.
- Free from evidence of heat damage.

Slings shall be attached to the lifting appliance correctly by approved methods either by securing the eye of the sling directly onto the hook if size permits, or by use of a suitable shackle, fitted with the crown of the shackle on the hook and the pin fully engaged.

The correct method of slinging will vary with the types of loads, the different materials or items lifted. However, the load must be secured. Care must be taken to see that slings are not damaged and any suspect or defective slings must be discarded.

Multiple sling lifts (two legged, three legged, etc.) must be connected by a ring or shackle and the load properly distributed so that no leg is overloaded.

The angle between sling legs should be less than 90°. At angles greater than this, the strain on each leg increases very rapidly to a point where they may break because of overloading.
With a simple two-legged parallel sling lift, the load in each sling leg is half the total load. As the angle between sling legs increases, the load in each slings increases to approximately double, at an angle of 1200. With a sling angle of 900, the SWL of the capacity of the sling should be at least 43% weight of the load.

5.9.24 Tag Lines
Tag lines, securely attached to the end of the load, must be used for all loads to direct the load into position and prevent it spinning. Tag lines should not be less than 3 meter in length.

5.9.25 Repaired Ropes, Chains, Etc.
Any sling, etc. which has been altered or repaired by welding or other works must be examined and retested and a new certificate obtained, from a recognized third party inspection agency, before it can be used.

5.9.26 Knotted Slings and Chains
Knotted chains or slings and those which have been shortened or joined by nuts and bolts through the links shall not be used.

5.9.27 Unbalanced Load
Particular care should be taken to see that the centre of gravity (point of balance) is in the approximate centre of the load, with the line of lift passing through it. An unbalanced load may result in far greater strain on one leg of a sling and cause it to break or the load to swing out of control.

5.9.28 Shackles
Two types of shackles may be used in lifting operations. They are the Bow type and Dee type shackles, both of which are available with threaded or plain pins. Bow shackles should be used when more than one attachment is to be made, or to allow movement on the plain of the shackles. Dee shackles are usually joining shackles. Overloading, eccentric shackle loads, and misuse can distort shackles. They should be checked regularly for shape and wear.

5.9.29 Eyebolts
Eyebolts, with SWL and specified for lifting purposes, shall be used to screw indoor through a load and may be plain or have collars. Plain eyebolts shall be used only for vertical loading. Collared eyebolts with links may be used, provided the angle of load to the axis of eyebolt thread does not exceed 15 degrees. When installed, the collar must be at right angles to the hole, should be in full contact with the surface, and be properly tightened. The load should be applied in the plane of
the eye, never in the other direction. If necessary, washers or shims should be inserted below the collar to ensure that the eye is correctly aligned when tight.

Extreme care must be taken to ensure that metric threaded eyebolts are not inserted in imperial threaded holes. Although these might appear to match, it is an interference fit only, and the mechanical strength may be almost nothing.

6. Definitions

**A competent person** : means a person who, by experience and/or reason of training, is competent to perform and assume the responsibility to perform a task or function and is designated to perform such task or function.

**Appointed Person (Rigger) means** ; An Appointed Person is a person who has adequate training, authority and experience to take overall responsibility and control of a lifting operation, having been appointed by the management of the organization requiring the load to be moved. The Appointed personnel shall be clearly identified by wearing of green colored vests.

**Blind Lift** : A lift where at any point in time during the lifting operation the crane operator Cannot directly see the load.

**Chains** : Chains shall be carefully inspected before use for stretching, wear and surface cuts. A reduction in diameter of 8% should be considered as a maximum.

**Chain blocks** : Chain blocks should be treated with care. They shall not be dropped from a height. The load chain shall not be reeve around the load. They shall not be used to tow vehicles. Always use them to lift vertically.

**Competent Person (Rigging Inspection Personnel) means** ; A competent person is a person who has the knowledge and practical experience of what they are going to examine so as to detect errors, defects, faults or weaknesses, which it is the purpose of the examination or inspection to discover, and to assess the importance of any such discovery. Training and assessment refreshing is a must and there is a thorough regulation in “HSE Training Procedure “.

**Containers**  Containers shall normally be fitted with their own sets of slings suitable for the load to be lifted. The whole assembly of container and slings shall be marked with its SWL. Loose materials & articles inside the container should be secured to prevent spurious displacement,

**Cradle** : a platform or trolley in which workmen are suspended on the side of a building or ship
Flat belt slings: Made of woven fibers, they can be damaged by sharp edges. Sharp edges of load shall be packed.

Heavy Lifting: any lifting which the load is equal or more than 20 tons.

Hoist: A lifting machine, whether worked by mechanical power or not, with a carriage, platform or cage the movement of which is restricted by a guide or guides, but does not include a lifting appliance used for the movement of trucks or wagons on a line of rails.

lifting accessories:
- Textile slings and their components
- Steel wire rope slings and their components
- Chain slings and their components
- Lifting eyelets
- Lifting ear
- Lifting anchor
- Rope eyelets
- Lifting beam
- Lifting forks
- Lifting magnet
- Foundry crane
- Lifting wheel

Hooks: Hooks are normally fitted with a safety catch. If the catch is missing or damaged the hook should not be used. In certain case, the hook can be mouse with wire and a shackle used.

Jacks: Jacks shall be used on a strong sound footing of sufficient area to distribute the load. Precautions shall be taken to prevent the jack head from slipping. A load should not be left supported by jacks, only packing shall be used.

Lifting Appliances: means any lifting machine including cranes used for the purpose of raising, suspending, Supporting or lowering of persons, goods or materials. A crab, winch, pulley block or gin wheel used for rising or lowering and a hoist, crane, etc.

lifting equipment
- a) Cranes, hoists and winches - hand or power operated.
- b) Ropes, chains and slings of all materials used for lifting purposes.
- c) Eyebolts, shackles, pulley blocks and gin wheels.
- d) Lifting beams - portable or runway.
- e) Specially designed lifting rigs, e.g. for handling of magnets, specialized
equipment included in the experimental rigs etc.

f) Lifts - passenger and goods.

g) Fork lift trucks, power workers, similar devices and attachments used with the equipment.

Lifting Gear: include all means of attaching a load to a lifting appliance (ropes, slings, chains, shackles, hooks, link plates, spreader bars, swivels, containers, baskets, etc.).

Man Basket: a lift platform that slides onto the tines (forks) meant for hoisting workers. The man basket has railings and brackets for attaching safety harnesses.

Mobile Crane means: A mobile crane is defined as a crane capable of traveling under its own power, but not including a crane that travels on a line of rails.

Safe Working Loads (SWL): The Safe Working Load (SWL) is defined as the maximum load that can be safely handled by a crane.

Every lifting appliance and piece of lifting gear shall be clearly marked with,

- Its SWL as shown on the latest record of examination,
- An identifying number or mark either by stamping or tagging.

A lifting appliance or lifting gear shall not be used for any load exceeding its SWL.

Shackles: shackles pins shall be fitted with a safety link to prevent spurious release of the pin nut. Bolts shall not be used as replacement of missing pins.

Slings: A looped or hanging band, strap, etc. used in raising and lowering a heavy object or for carrying, supporting, or steadying something. Slings up to ½” diameter is the most common type of slings used on site. The SWL of a sling depends on the steel wire it is made of. Two wire ropes of same diameter may be of different SWL. Never use a sling, which is not marked with its SWL. Properly manufactured slings only are to be used. Spliced slings shall not normally be used for lifting. Bulldog grips shall not normally be used. If they are used the de-rating of the eye-is 25%.

The strain in the legs of a multiple sling increases when the angle between the legs increases. The angle should not be more than 90°.
Thorough examination means detailed visual examination and other means of measure to ascertain the condition of the piece of lifting gear. Inspection means a visual inspection to ascertain that the piece of lifting gear is safe for use.

Work means: All and any of the works, services and Materials required to be provided by Contractor for the full and complete realization of the Plant.
7. REFERENCES

- B.S (British Standard) Ed:2004
- OGP Standard (The International Association of Oil & Gas producers)

8. Attachments

Attachment 1: Figures
Attachment 2: Checklists
Attachment 3: Lifting equipment register form
Attachment 1: Figures

FIGURE 1: SLINGS (GENERAL)

[Diagram showing different types of slings: 3-leg sling, 2-leg sling (back-hooked), and 4-leg sling.]

CORRECT

1 TON

INCORRECT

1 TON

NOTE INCREASE IN LOAD ON EYEBOLT
FIGURE 2; PIPE SLINGS

(PADDED TYPE WITH SPREADER)

DOUBLE WRAP SLINGS

REEVING SLINGS

LIFTING BEAM

CRADLE SLINGS
FIGURE 3; COMBINATION SLINGS

WITH FOUR-LEG SLING

WITH TWO-LEG SLING

FINALLY:
HOLD BACK SLING ONTO
RING AFTER LOAD HAS BEEN DEPOSITED

CHAIN BLOCKS

INCORRECT

CORRECT

NOTE: EACH BLOCK SHOULD HAVE A SWL GREATER THAN LOAD TO BE LIFTED
FIGURE 4; HOOKS AND EYEBOLTS

SERVICE EYE BOLT
FOR INCLINED LOADING

CORRECT

2T, 15 cwt  1 TON  13.5 cwt

1" DIA

DYNAMO EYE BOLT
DIRECT LIFT ONLY

CORRECT

INCORRECT

MOORES EYE BOLT

CORRECT

CORRECT
Figure 5 below gives the maximum load in the rope and the load on the support when lifting a load W with a friction figure of 8%.
FIGURE 6 : HOOKS AND EYEBOLTS (CONT)

CORRECT

INCORRECT

MOUSED HOOK
A THROAT MOUSE
B SADDLE MOUSE
FIGURE 7; PLATE LIFTING

Correct

Incorrect

Correct

Incorrect

Incorrect

Hook may displace when plate grounds

Correct

Use short length of chain

Incorrect

LOCKING CATCH

For clarity of illustration, spring hooks and mousings have not been shown, but those should be used where practicable to prevent accidental unhooking.
### FIGURE 8:  
**HAND SIGNALS FOR CRANE OPERATIONS**

<table>
<thead>
<tr>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td>OPERATIONS START (FOLLOW MY INSTRUCTIONS)</td>
</tr>
<tr>
<td><img src="image2.png" alt="Image" /></td>
<td>STOP</td>
</tr>
<tr>
<td><img src="image3.png" alt="Image" /></td>
<td>EMERGENCY STOP</td>
</tr>
<tr>
<td><img src="image4.png" alt="Image" /></td>
<td>CLENCH AND UNCLENCH FINGERS TO SIGNAL WINCH THE LOAD</td>
</tr>
<tr>
<td><img src="image5.png" alt="Image" /></td>
<td>HOIST</td>
</tr>
<tr>
<td><img src="image6.png" alt="Image" /></td>
<td>LOWER</td>
</tr>
<tr>
<td><img src="image7.png" alt="Image" /></td>
<td>LOWER SLOWLY</td>
</tr>
<tr>
<td><img src="image8.png" alt="Image" /></td>
<td>SLEW IN DIRECTION INDICATED</td>
</tr>
<tr>
<td><img src="image9.png" alt="Image" /></td>
<td>JIB UP</td>
</tr>
<tr>
<td><img src="image10.png" alt="Image" /></td>
<td>JIB DOWN</td>
</tr>
<tr>
<td><img src="image11.png" alt="Image" /></td>
<td>EXTEND JIB</td>
</tr>
<tr>
<td><img src="image12.png" alt="Image" /></td>
<td>RETRACT JIB</td>
</tr>
<tr>
<td><img src="image13.png" alt="Image" /></td>
<td>TELESCOPERING JIB SIGNAL WITH ONE HAND OTHER ON HEAD</td>
</tr>
<tr>
<td><img src="image14.png" alt="Image" /></td>
<td>TRAVEL TO ME</td>
</tr>
<tr>
<td><img src="image15.png" alt="Image" /></td>
<td>TRAVEL FROM ME</td>
</tr>
<tr>
<td><img src="image16.png" alt="Image" /></td>
<td>TRAVEL IN DIRECTION INDICATED</td>
</tr>
<tr>
<td><img src="image17.png" alt="Image" /></td>
<td>OPERATIONS CEASE OR CEASE TO FOLLOW MY INSTRUCTIONS</td>
</tr>
</tbody>
</table>
FIGURE 9

Figure 9.1 Self-Propelled MWP

Self-Propelled Articulated Boom

Self-Propelled Scissor

[Figure 9.2 Vehicle-Mounted MWP]

Van-mounted

Telescopic Boom
[Figure 9.3  Mast Climbing Work Platforms]

Note: Safety Barrier omitted for clarity.

[Figure 9.4  Man-Riding Skips and Cradles]
## ATTACHMENT 2 : CHECKLISTS

### CRANE /MOTOR VEHICLE INSPECTION CHECKLIST

<table>
<thead>
<tr>
<th>CONTRACTOR/SUBCONTRACTOR</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>VEHICLE NO:</td>
<td>______________________</td>
<td>PMA</td>
</tr>
<tr>
<td>TYPR:</td>
<td>______________________</td>
<td>NO:</td>
</tr>
<tr>
<td>MODEL:</td>
<td>______________________</td>
<td>EXPIRES NO:</td>
</tr>
<tr>
<td>CAPACITY:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NIRC NO:</td>
<td>______________________</td>
<td>DATE OF INSPECTION:</td>
</tr>
<tr>
<td>LICENSE NO:</td>
<td>______________________</td>
<td></td>
</tr>
<tr>
<td>SIGNAL MAN NAME:</td>
<td>______________________</td>
<td></td>
</tr>
<tr>
<td>BADGE NO:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONTRACTOR/INSPECTOR NAME:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DATE OF INSPECTION:</td>
<td>______________________</td>
<td>INSPECTION CERT. NO:</td>
</tr>
<tr>
<td>NEXT INSPECTION ON:</td>
<td>______________________</td>
<td>REINSPECTED ON:</td>
</tr>
<tr>
<td>INSPECTION CERT. NO:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ALL CRANE, EXCAVATORS, FORKLIFTS SHALL BE REINSPECTED FOLLOWING AN ENTRY WHENEVER IT IS TAKEN OFFSITE AFTER EACH WORK DAY.**

<table>
<thead>
<tr>
<th>Y= YES</th>
<th>N= NO</th>
<th>NA= NOT APPLICABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOAD RATING SHART</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAFE LOAD INDICATOR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OUTRIGGERS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEAKING HYDROAULICS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BOOM BREAK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BOOM HANDLING DEVICE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HOOK OVER HEIGHT LIMIT SWITCH ALARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HOOK CATCH/MOUSED/&quot;C&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BOOM TELESCOPIC MECHANISM HOLDING DEVICE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SLEWING BREAK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SLEWING HOLDING DEVICE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SLEWING LOCK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FLY JIB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VISIBLE DAMAGE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VISIBLE CORROSION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VISIBLE CRACKS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SHACKLES WITH S.W.L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SLINGS WITH S.W.L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>LOCATION FOR CRANE POSITION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GROUND CONDITION CHECKED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OUTREIGGING WITH STEEL PLATE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CRANE BOOM SLING WIRE ROPE CHECKED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HOIST BLOCK CHECKED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WORKING RADIOUS LOAD CAPACITY CONFIRMED</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

REMARKS

* description, e.g., little, etc.

** comments, e.g., description of a rope deformation.
## Wire rope inspection Check List

<table>
<thead>
<tr>
<th>Machine:</th>
<th>application:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Type of rope:</th>
<th>left hand lay</th>
<th>right hand lay</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Nominal diameter [ mm]:</th>
<th>regular lay</th>
<th>langs lay</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Tensile strength [N/mm²]:</th>
<th>ungalvanized</th>
<th>galvanized</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Rope length [m]:</th>
<th>type of end fitting:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Date of installation:</th>
<th>working hours to date:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Location measured</th>
<th>no. of broken wires on10xd</th>
<th>abrasion</th>
<th>corrosion</th>
<th>Diameter/φ-reduction mm/%</th>
<th>other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allowed no.:</td>
<td>*</td>
<td>*</td>
<td>eff. φ of new rope</td>
<td>**</td>
<td></td>
</tr>
</tbody>
</table>
CHECK LIST (A)

BELOW ARE SOME ITEMS WHICH SHOULD BE CHECKED WHEN CONSIDERING LIFTING GEAR / MATERIAL HANDLING.

<table>
<thead>
<tr>
<th>No</th>
<th>Description</th>
<th>yes</th>
<th>no</th>
<th>n/a</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Is the correct color code clearly displayed on prominent signs around the site?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Are suitable quarantine arrangements made for out of spec. / out of test lifting gear?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Is a list of lifting gear &amp; examination results available?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Are correct slinging arrangements being used?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Do all crane hooks have safety latches?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Are slings marked with a SWL, ID number and color coded?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Are personnel aware of the maximum internal angle between each leg of a sling and that special precautions should be taken when lifting with an angle &gt; 90°.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Is the weight of the object satisfactorily known?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Are all shackles and eye bolts marked with the SWL, ID number and color coded?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Are all chains and plate clamps marked with the SWL, ID number and color coded?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Are plates being handled correctly?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Has the correct examinations / tests been carried out on the crane?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Before a new crane works on site has the certification of the crane &amp; the driver been checked?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CHECK LIST (B):
BELOW ARE SOME ITEMS WHICH SHOULD BE CHECKED WHEN CONSIDERING CRANE OPERATIONS

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>yes</th>
<th>no</th>
<th>n/a</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Does the crane have the correct certification?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Does the crane operator have the correct certification? Is he competent? Has he been tested by Authorities?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Are the appropriate weekly checks made and records kept?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Has the crane been load tested and examined in accordance with the inspection procedures? Are records OK?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Is the lifting tackle properly marked? Are the records OK?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Has the lifting gear been examined in accordance with the inspection procedures? Are records OK?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Is all lifting tackles correctly color coded?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Is the radius/load indicator working correctly?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Are there audible signals both inside &amp; outside the cabin at predetermined radius/load values?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Is there a fire extinguisher in the cabin?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Is the crane operator aware of any restricted area i.e. lifting over live process plant or pipelines?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>Y</td>
<td>N</td>
<td>n/a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>-----</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The basket has been designed with a 5:1 safety factor by a qualified engineer and welded by a qualified welder.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The suspension rigging system has been designed in such a way as to minimize tipping of the manbasket</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The maximum rated load and maximum capacity is posted on a permanently affixed plate on the manbasket.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The guardrail designed to enclose the platform is provided and is enclosed from the toeboard to the mid-rail.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body harness anchorage provided</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The access gate has been designed to open in and is positively prevented from swinging outward while the manbasket is in use.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The access gate must have a positive locking system to prevent accidental opening during operation.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The design allows enough headroom for employees to stand upright</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There are no rough edges on any manbasket surface.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In addition to hard hats, overhead protection is provided when employees are exposed to falling objects.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A trial-lift meeting has been attended by the crane or derrick operator, signal person(s) (if necessary for the lift), employee(s) to be lifted, and the employee responsible for the task to be performed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Precautions have been taken to protect employees from any special hazards in the area where the crane and manbasket will be operating; for example, power lines or areas where the manbasket will be out of the operator’s view.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special precautions have been taken to protect personnel from electrical hazards. When the crane with a manbasket is working near electrical lines or devices, the minimum working clearances shall be at least twice those for material handling operations.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A manbasket use authorization has been issued dated and properly signed for the task at hand.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The manbasket and rigging has been proof-tested to 125 percent of the platform rated capacity.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>An unoccupied trial lift loaded to at least the anticipated lift weight has been performed and hoisted to each location where work is to be performed, or to any point where employees are expected to enter or exit the platform. NOTE: The trial lift must be performed each time the crane is moved.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A post trial-lift inspection of the crane has been carried out by a designated employee.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The loading is less than 50 percent of the crane-rating chart for all work locations.

The operator has determined that all systems, controls, and safety devices are activated and functioning properly and that no interferences exist.

The manbasket has been hoisted a few inches and has been re-inspected after the trial lift for any deficiencies.

Prior to hoisting personnel, the manbasket has been hoisted a few inches to verify its hang level.

All hoist ropes are free of kinks.

### MANBASKET Checklist

<table>
<thead>
<tr>
<th>Item</th>
<th>Y</th>
<th>N</th>
<th>n/a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multipart lines are not twisted around each other.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The hook is centered over the load.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The hoist lines are laying properly on hoist drums and in the sheaves.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All post trial lift defects have been corrected.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The crane-bearing surface has been rechecked and crane re-leveled as required.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have the crane safety components, dogs, pawls, brakes, etc., have been re-inspected after the trial lift.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel with the crane is not permitted except where all requirements are satisfied and where not to do so would endanger life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The operator has been advised that the load and boom hoist drum brakes, swing brakes, and locking devices such as pawls or dogs must be engaged when the occupied personnel platform is in a stationary working position.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The operator has been advised that the platform must be hoisted in a slow, controlled, cautious manner with no sudden movement of the crane, derrick or platform.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The operator has been advised that the platform must be hoisted in a slow, controlled, cautious manner with no sudden movement of the crane, derrick or platform.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employees have been advised to perform tasks specified in the manbasket authorized only. NOTE: Only the number of employees needed for the task at hand is allowed to be hoisted.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prior to hoisting personnel, the manbasket has been hoisted a few inches to verify its hang level.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All hoist ropes are free of kinks.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All employees have been advised to keep all body parts inside the platform during raising. NOTE: This provision does not apply to an occupant of the platform performing the duties of a signal person.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All employees have been advised that they are not allowed to enter or exit the</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
platform when it is secured to the structure where the work is to be performed unless securing to the structure creates an unsafe situation.

All employees have been advised that they are not allowed to exit the platform before landing.

All employees have been advised that taglines must be used unless their use would create an unsafe condition.

The operator has been advised to remain at the controls at all times while the crane engine is running and the platform is occupied.

All employees have been advised that platform use must be promptly discontinued if there is any indication of dangerous weather conditions or other impending danger.

The operator is in constant contact by standard hand signals or voice communications during operation of crane and manbasket.

All employees have been advised to remain in continuous sight of or in direct communication with the operator or signal person.

All employees have been advised that the use of a radio is permissible when direct visual contact is not possible, or where the use of a signal person could create a greater hazard.

### MANBASKET Checklist

<table>
<thead>
<tr>
<th>Item</th>
<th>Y</th>
<th>N</th>
<th>n/a</th>
</tr>
</thead>
<tbody>
<tr>
<td>All employees occupying the platform have been advised to wear a body belt or harness system, with the lanyard appropriately attached to the lower load block, overhaul ball, or structural member within the personnel platform capable of supporting the fall impact for employees using the anchorage.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All employees have been advised to wear a life vest when working over water.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employees have been advised to secure materials and tools to prevent displacement during the lift.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All employees have been advised to load the manbasket evenly and to only carry tools and materials needed for the task at hand.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The operator, and all employees that will be using the platform, have been advised that no other object may be lifted on any of the crane load lines while the platform is suspended.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>An audible and visual device has been provided to the personnel in the platform so that they can signal for assistance in the event of an emergency.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personnel have been advised to stand firmly on the floor of the platform and to not sit or climb on the edge of the platform or use planks, ladders, or other devices for attaining a work position.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If welding is to be performed by employees occupying the platform, the electrode must be protected from touching the metal components of the platform.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Any needed repairs to the crane or manbasket used only original manufacturer parts to ensure that the new components are compatible with their original counterparts.

Care taken to prevent ropes, electrical chords, and hoses from becoming entangled in the platform when the platform is being moved.

Operator aids or interlocks have not been altered, modified, or disabled in any way.

The crane operator responsible for operating the cranes used for personnel handling is a thoroughly trained operator and has related experience operating the subject crane.

All manuals, operating instructions, and load charts provided have been read and understood by the operating personnel prior to starting the operation.

The operator has ensured that the area surrounding the platform is clear of personnel and equipment before moving the platform.

Prior to the trial lift at each new location, a pre-lift meeting has been held, and is also held for any new employee assigned to the manbasket.

All deficiencies discovered in post trial-lift inspection have been corrected.

All employees attending the pre-lift meeting signed the roster for the meeting.

The trial-lift calculation sheet has been completed, signed and dated.

All employees have been advised to keep all body parts inside the platform during raising. NOTE: This provision does not apply to an occupant of the platform performing the duties of a signal person.

All employees have been advised that they are not allowed to enter or exit the platform when it is secured to the structure where the work is to be performed unless securing to the structure creates an unsafe situation.

All employees have been advised that they are not allowed to exit the platform before landing.

All employees have been advised that taglines must be used unless their use would create an unsafe condition.

**MANBASKET Checklist**

<table>
<thead>
<tr>
<th>Item</th>
<th>Y</th>
<th>N</th>
<th>n/a</th>
</tr>
</thead>
<tbody>
<tr>
<td>The operator has been advised to remain at the controls at all times while the crane engine is running and the platform is occupied.</td>
<td></td>
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</tr>
<tr>
<td>All employees have been advised that platform use must be promptly discontinued if there is any indication of dangerous weather conditions or other impending danger.</td>
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<tr>
<td>The operator is in constant contact by standard hand signals or voice communications during operation of crane and manbasket.</td>
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<tr>
<td>All employees have been advised to remain in continuous sight of or in direct communication with the operator or signal person.</td>
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</tr>
<tr>
<td>All employees have been advised that the use of a radio is permissible when direct visual contact is not possible, or where the use of a signal person could create a greater hazard.</td>
<td></td>
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</tr>
<tr>
<td>All employees occupying the platform have been advised to wear a body belt or harness system, with the lanyard appropriately attached to the lower load block, overhaul ball, or structural member within the personnel platform capable of supporting the fall impact for employees using the anchorage.</td>
<td></td>
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<tr>
<td>All employees have been advised to wear a life vest when working over water.</td>
<td></td>
<td></td>
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<tr>
<td>Employees have been advised to secure materials and tools to prevent displacement during the lift.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All employees have been advised to load the manbasket evenly and to only carry tools and materials needed for the task at hand.</td>
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<tr>
<td>The operator, and all employees that will be using the platform, have been advised that no other object may be lifted on any of the crane load lines while the platform is suspended.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>An audible and visual device has been provided to the personnel in the platform so that they can signal for assistance in the event of an emergency.</td>
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<tr>
<td>Personnel have been advised to stand firmly on the floor of the platform and to not sit or climb on the edge of the platform or use planks, ladders, or other devices for attaining a work position.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Lifting Equipment Register Form

<table>
<thead>
<tr>
<th>Equipment Name (Description)</th>
<th>Serial Number</th>
<th>Name of manufacturer</th>
<th>Subcontractor</th>
<th>Working area</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Date of first Used</th>
<th>SWL:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Test Date</th>
<th>Test Load:</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Defects:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Comments:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Results:</th>
<th>Defective (Unusable)</th>
<th>Repairable</th>
<th>Safe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retest date:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operator:</th>
<th>tester:</th>
<th>HSE Supervisor:</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Signature:</th>
<th>Signature:</th>
<th>Signature:</th>
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</table>

<table>
<thead>
<tr>
<th>Date:</th>
<th>Date:</th>
</tr>
</thead>
</table>

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**Attachment 3: Lifting equipment register form**
MANAGER, HSE Department
Pars Oil & Gas Company
Tehran I.R. Iran

Please consider the following suggestion(s) relative to the POGC Lifting, rigging & heavy lifting operations safety procedure:

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_________________________________________________________________________________________

(Signature)

(Date)

(Address)

Contact Telephone Number

Contact FAX Number