

Cranes and Lifting

1 PURPOSE

This standard applies to all mining employees and all contractors. The intent is to establish standards for the safe operation of cranes or any other lifting or hoisting systems through the identification of roles and responsibilities, acquisition and assessment (new & existing equipment), general standards, lift plans, lifting equipment, mobile cranes, vehicle mounted crane/jib, man lift requirements, working around high voltage power lines, training, and audits and reviews.

2 DEFINITIONS

Crane - A machine designed to lift loads based on the fundamental principle of the lever. It includes a counterweight, a support point, and the load to be hoisted.

Critical Lift - A lift requiring more than 80% of the crane's rated or rigging capacity and/or a lift carried out under non-routine conditions (lifting over energized power lines or over existing facilities, using multiple cranes, etc.).

Man Lift - A machine that has a cage-type platform which is elevated to carry out works at different heights.

Operator - An Authorized Person who is qualified to operate a specific type of crane such as mobile cranes, bridge cranes and truck cranes, etc.

Rigger / Dogger - An authorized person who is qualified and is responsible for securing the load, movement of the load and the placement of the load.

3 RESPONSIBILITIES

<p>Department Managers/ Superintendents GF/Supervisors</p>	<ul style="list-style-type: none"> • Ensure only trained, certificated, competent and authorized personnel operate hoisting equipment. • Ensure equipment is made available for preventive maintenance as scheduled. • Ensure standard operating procedures are available for man lifting and crane operation. • Ensure inspections are conducted of all lifting accessories prior to use. • Ensure that crane operators and riggers are properly trained and qualified. • Ensure that legislative and certification requirements are current prior to cranes being placed into service. • Sign off on all critical lifts.
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3 RESPONSIBILITIES (CONT.)

<p>Maintenance General Foreman/ Supervisors</p>	<ul style="list-style-type: none"> • Ensure that formal inspections of all cranes and man lifting equipment are conducted no less than annually or per the OEM specifications. • Ensure that appropriate preventive maintenance and general inspections are in place for all cranes, man lifts and truck cranes. • Provide experts/competent personnel to conduct inspections on an annual basis. A record of these inspections must be kept on file. • Tests for lifting capacity shall be carried out after each repair or significant change to the crane. These tests shall be documented and kept on file.
<p>HSLP Managers/ Specialists/ Representatives</p>	<ul style="list-style-type: none"> • Conduct random general audits of all lifting elements. • File any documents which support compliance with the quarterly inspections conducted by the supervisors. • Perform a quality review of all critical lifts conducted, identifying approvals, engineering drawings and other relevant technical data. • Ensure the requirements of this standard are audited.
<p>All Employees</p>	<ul style="list-style-type: none"> • Complete the Equipment or Crane Pre-use Form each day prior to use as well as a Field Level Risk Assessment before every lift. • Immediately report any substandard condition to their Supervisor. • Comply with the requirements of this standard. • Stop work when lifting conditions or equipment change from those defined in the initial work assessment. • Crane operators must know the load weight and the crane limitations.

4 STANDARD REQUIREMENTS

New and Existing Equipment: Acquisition and Assessment

- All newly acquired cranes (including hired equipment), man lifts and lifting equipment shall meet the minimum manufacturer safety specifications defined by the OEM, legislative requirements and site specific safety specifications.
- Existing equipment shall be evaluated against the minimum manufacturer safety specifications for compliance.

4 STANDARD REQUIREMENTS (CONT.)

- Where substandard conditions are identified, corrective action shall be taken to ensure the equipment is operated safely.
- Lifting equipment shall not be used for towing of any equipment.

General Standards

- All cranes and man lifts must have the loading table and the operation manual readily available in the equipment.
- Every hoisting operation must be planned by the supervisor in charge in collaboration with the crane operator and rigger. Potential weather conditions such as wind shall be part of the plan and a risk assessment completed before lifting.
- A visual hand and/or radio signaling system as well as common language for movement of cranes shall be used and confirmed prior to the commencement of the lift.
- Loads shall be prepared and rigged for lifting by a trained and qualified person.
- Tag lines shall be used to guide suspended loads into position.
- At no time shall any person be permitted to work under a suspended load or any load swung over a person.
- No hoisting activity shall be carried out during an electric storm or severe weather.
- The swing radius and counterweight radius must be barricaded where appropriate.
- The work area must be visually inspected to detect potential hazards before moving the crane.
- Ground conditions must be adequate to support the mobile crane and its planned load.
- Safety devices must never be disconnected to exceed allowable limits.
- Any modification to cranes and lifting equipment shall be subject to the original equipment manufacturers (OEM) approval and to a rigorous change management process.

Critical Lift Plans

Documented Lift Plans are required for critical lifts and the following:

- a. lifting operations when the arcs of operation of two or more cranes can overlap
- b. lifting of workboxes or personnel cages when occupied by personnel
- c. multiple crane lifting operations
- d. Lifts at 80% or greater of the crane and riggings rated capacity
- e. people safety when cranes and lifting equipment are operating in the proximity of live electrical conductors

Lifting Equipment.

General Requirements:

- a. The safe capacity of lifting gear shall be determined and shall not be exceeded.
- b. The crane shall be configured to trip out or stop if 90% of the lifting capacity is reached.
- c. For items of rigging used in combination, the safe working load shall be that of the weakest item.
- d. All lifting gear shall be factory-made and certified. The use of job-fabricated lifting gear is prohibited.
- e. The installation, maintenance, and repair of lifting accessories shall be performed only by the manufacturer or in accordance with the manufacturer's written instructions.
- f. A pre-use inspection shall be conducted of all lifting gear including; chains, wire rope, slings, man/personnel lift baskets.
- g. Lifting equipment shall have the load rating identified.
- h. Proper storage shall be provided for lifting equipment when not in use to ensure against damage.
- i. Lifting equipment found to be defective shall be destroyed.
- j. Spreader bars shall be utilized where needed to ensure load stability.

Inspections:

- Prior to the initial use on site, all cranes and derricks must be inspected and tested to ensure compliance with all applicable regulation and site procedures.
- Owners, owners reps, and contractors are responsible for arranging the inspection and testing required to ensure that all requirements are met before placing the equipment into operation.
- Prior to making any lifts, the operator assigned to a crane or derrick shall completely fill out a daily crane inspection record. If in the opinion of the operator the equipment is unsafe to operate, he must immediately notify his foreman / supervisor of the unsafe condition.
- Capacity lift tests will be performed after each major repair or modification to the crane. This test will be documented in the equipment's permanent files.

Mobile Cranes

- Mobile cranes shall be inspected and certified annually by a competent person.
- With the exception of pick and carry operations, no lifting shall be carried out without outriggers being fully deployed.
- The movement of all oversize cranes and those which cannot safely travel at posted speeds (greater than 12 feet wide or higher than 20 feet) must be done with the appropriate escort vehicle.

Mobile Cranes (CONT.)

- Escort Vehicle must travel keeping the appropriate distance in front of the crane with warning lights flashing and headlights on.
- Crane must have all lights on while travelling.
- Dispatch operator shall be notified if crane is moving to the pit area. Dispatch will notify all affected personnel.
- Do not use any mobile crane to lift personnel except in an approved man basket secured by a safety cable to the hook.
- Operators shall wear seatbelts at all times while they are operating the crane.
- Passengers are not allowed to ride on the body, hook or load of a crane.
- Ensure that loads are properly rigged to prevent shifting and falling.
- Use of a spotter is mandatory to position the crane, especially when backing.
- Maintain a safe distance from obstacles, drop-offs, holes, depressions and other hazards.
- Ground speed shall be limited according to conditions to avoid collisions or injury to personnel.
- The operator shall immediately report to his Foreman / Supervisor any defects or malfunctions which become evident during operation. Any defects or malfunctions that affect the safe operation of the crane shall be tagged immediately and repaired prior to continuing use of the crane.
- There shall not be any modification or alteration to a mobile crane without prior approval and certification of the manufacturer.
- Never leave the cab of the crane with the engine running or a load suspended.

Before lifting a load:

- a. Check machine capacity.
- b. Check weight of load.
- c. Check the loading radius and consult the load chart, if necessary.
- d. Check load slings to ensure they are inspected, of sufficient size and in good condition.
- e. Check ground support and stability of the ground under the crane. Use appropriate jack plates, pads, or mats, if needed.
- f. Level the crane to within 1%.
- g. Perform a risk assessment before lifts and if necessary, perform a Trial Lift to check how the lift will be made safely.

Vehicle Mounted Crane/Jib

- Always use chocks under tires and hydraulic jacks before lifting the load to avoid movement of the vehicle if there is a sudden jerking of the load. In the event that the crane is working on soft ground, place appropriate support under each jack.
- The vehicle must never be moved with a suspended load.
- The operator must not lose sight of the load at any time; if they cannot see the load, then a rigger is required to guide the operation.
- When the crane is not in use, the jib must always be left in a folded position. If this is not possible it must be mechanically fixed to the platform.
- A crane must never be mounted on a vehicle that is not identified as appropriate by the OEM for such installation.

Man Lift Requirements

- Mobile cranes must not be used to lift people, unless approved baskets, fitted with a safety cable attached to the hook, are used.
- If the crane is equipped with a free fall load line, all relevant measures shall be taken to ensure that it is disabled when lifting people.
- Data plates shall be placed on man lifts, containing maximum nominal capacity, weight, and manufacturer.
- The combined weight of the personnel platform, tools or other equipment shall not exceed 50% of lifting capacity.
- Personnel platforms shall not be directly fastened to lattice boom mobile cranes.
- Lifting personnel and loads together is not allowed.
- Lifting accessories on the crane is not allowed while lifting personnel
- Personnel shall wear appropriate fall protection equipment as specified in the Working at Heights standard.
- When platform personnel are performing welding activities, electrode holders are not to be in contact with the platform components.

Work around High Voltage Power Lines

Safe distances to high-tension lines must be kept, as follows:

- a. For lines up to 125,000 volts: no part of a crane must get closer than 10 feet to cables, poles and accessories.
 - b. For lines between 125,000 volts and 250,000 volts: the distance must be 16 feet.
 - c. For lines over 250,000 to 500,000 volts: the appropriate distance is 25 feet.
 - d. Before moving a crane under high-tension lines, the route must have been previously inspected by the Supervisor to avoid coming into contact with any part of the crane and a working near overhead power line permit must be completed and approved.
- When persons are working from a man lift near electric power lines, twice the distance specified for load lifting shall be kept.

5 TRAINING

- Qualified, and competent person/s shall be involved in the planning, supervision and implementation of the lifting operations. (Crane operator, rigger, supervisors.)
- The roles and responsibilities for lifting operations shall be clearly defined.
- A competency based training program for employees and supervisors shall be in place. Training will be given by a qualified trainer.
- A competent inspector shall perform lifting equipment inspections.
- Crane operators and crew shall be able to communicate in a common language and to use the correct crane signals.
- Crane operators shall also be trained in proper rigging practices.
- The training program will be routinely audited.

6 AUDIT AND REVIEW

Facilities shall undertake a formal review of their crane and lifting equipment practices as needed and a detailed audit of this standard will be performed as required. Reviews, assessments, and audits shall be conducted by qualified professionals.