



Craning & Lifting Procedure

Health & Safety

1 Purpose and Scope

The Purpose of this Procedure is to prevent injury to personnel and damage to property through the safe operation of cranes and lifting equipment.

This Cranes and Lifting Procedure provides the mandatory requirements to support implementation and conformance with Roy Hill Operations HSES Performance Standard 03 – Lifting Operations.

It applies to all cranes and lifting equipment, including, but not limited to:

- Mobile cranes
- Overhead cranes
- Vehicle loading cranes (VLCs)
- Monorails
- Chain and rope hoists
- Multi-functional tool carriers (MFTC) when used as cranes
- Support stands and hydraulic jacks
- Vehicle hoists
- Any equipment used for lifting or attaching loads, i.e. Forklifts, Intergraded Tool Carries e.tc

This Procedure applies to all persons entering Roy Hill operations, other workplaces or any area which Roy Hill has accountability.

2 General Requirements

At no time shall any person place themselves or any part of their body under or in the foot print of a suspended load, apart from working underneath fully secured vehicle hoists for the purpose of under vehicle servicing and maintenance

All structures and equipment with lifting points or attachments that are used for lifting, or lifting from, shall meet the requirements of this procedure.

All cranes and lifting equipment shall be designed, inspected and maintained in accordance with the relevant Legislation, Australian Standards, manufacturer's instructions and the requirements of this procedure. Any supplier, designer, manufacturer, importer or supplier of such plant shall ensure that it is complaint with the requirements of Regulation 6.33 of the Mines Safety and Inspection Regulations 1995.

All cranes and hoists shall be registered as classified plant in accordance with regulation 6.34 of the Mines Safety and Inspection Regulations 1995 and the Department of Mines and Petroleum General Exemption of June 2013.

Lifting equipment and support stands shall only be used for its designed purpose and the WLL shall not be exceeded.

THIS DOCUMENT IS UNCONTROLLED IN HARD COPY FORMAT

| Rev | Document Number | Author | Approver / BFO | Approver Signature | Issue Date | Review Date | Page |
|-----|-----------------|--------|----------------|---|------------|-------------|---------|
| 4 | OP-PRO-00035 | J Day | GM - HSE |  | 24/03/2017 | 27/02/2018 | 1 of 15 |

Craning & Lifting Procedure

Health & Safety

Towing equipment is to be stored separately from lifting equipment and identified and tagged as towing only equipment. There shall be a sign stating 'Do not use for lifting' **where towing equipment is stored**.

To prevent the use of lifting or rigging equipment in lifting operations if such equipment has been used for towing. Sites shall develop a work instruction for towing with the use of lifting equipment.

To prevent accidental disconnection of the load, all lifting hooks (except for grab and chain shortening hooks) shall be fitted with a safety latch unless otherwise specified in an approved risk assessment or work instruction (WIN).

2.1 Crane and Lifting Equipment Requirements

2.1.1 Cranes

Any cranes used on Roy Hill sites and / or areas of control shall meet the following requirements:

- Fitted with an orange rotating beacon, or beacons that is clearly visible from all approaches to all mobile cranes
- The crane tip shall be fitted with a red strobe light for all crawler type and tower cranes
- Cranes, support vehicles and associated plant fitted with lockable energy isolation points
- Mobile cranes fitted with front and rear lights including driving lights, brake lights, reversing lights, audible reversing alarm and directional indicator lights
- All cranes except Franna type cranes, 20 tonnes or less shall be fitted with anti-two block devices to both main and auxiliary hoist lines in accordance with AS 1418.5 2002
- Load indicator equipment shall be fitted to all cranes over ten tonne in capacity and shall be maintained and calibrated with calibration certificate to be produced on command to verify accuracy of lift load
- Anemometers shall be fitted to all mobile cranes except Non-slewing type cranes
- All cranes shall have a laminated front windscreen type and be fitted with windscreen wipers, and washer
- All cranes shall have air conditioned and heated cabs with air intakes adequately filtered against the ingress of dust
- All cranes will be fitted with safe means of access (maintain 3 points of contact) and egress the crane operators and or maintenance/support personal to other parts of the crane, this shall include handrail protection where practicable
- All cranes shall be registered and certified according to state law or other statutory requirements
- A copy of the manufacturers operating manual shall be available in the cab of the crane at all times
- All cranes shall be fitted with external rated capacity indicator lighting and audible alarms
- All crane hooks shall be fitted with a safety latch or locking device to prevent the roll out of slings and fittings.

2.1.2 Signage and Labelling

All lifting devices and equipment shall have equipment numbers displayed where they can be easily seen. Classified plant shall also display its registration identification number as issued by the Department of Mines and Petroleum.

The Working Load Limit (WLL) shall be clearly marked on all lifting devices, including but not limited to;

- sheave blocks
- shackles

THIS DOCUMENT IS UNCONTROLLED IN HARD COPY FORMAT

| Rev | Document Number | Author | Approver / BFO | Issue Date | Page |
|-----|-----------------|--------|----------------|------------|---------|
| 4 | OP-PRO-00035 | J Day | GM - HSE | 24/03/2017 | 2 of 15 |

Craning & Lifting Procedure

Health & Safety

- eye-bolts
- Caterpillar lifting lugs
- crane girders
- crawl beams
- hooks, slings, chains and lifting lugs
- other equipment designed for lifting
- lever hoists
- chain blocks
- support stands
- jacks

Working load limits (WLL) above 500kg shall be marked in tonnes, e.g. 0.5t and 50t; and below 500kg in kilograms, e.g. 200kg.

The maximum WLL displayed on the crawl beam or girder of a permanently installed lifting device shall be no more than the working load of the weakest component.

Where two or more lifting devices are permanently installed, the maximum WLL displayed on the crawl beam shall be the sum of the WLL's of the lifting device. For example, on a beam with two 2-tonne lifting devices, the beam shall be marked 2 x 2t.

2.1.3 Registers

All cranes, VLC, hoists, support stands, rigging attachments including Multi-function tool carrier jibs and associated lifting equipment shall be recorded on a register.

All classified plant shall be recorded in the relevant Classified Plant Registration book as per s.6.34 of the Mines Safety and Inspection Regulations 1996. Reference crane itinerant classified plant site inspection report.

Each site shall develop and maintain a register of Critical Lifts.

3 Pre-mobilisation Requirements

The following requirements shall be completed for all cranes and lifting equipment to be mobilised to site.

3.1 Roy Hill Cranes and Lifting Equipment

Prior to Roy Hill owned cranes being commissioned and put into service, they shall:

- Comply with approved design regulations as per the relevant sections of Australian Standards and this procedure.
- Have a risk assessment, approved by the Department Manager, addressing both operational and maintenance requirements including liaising with appropriate stakeholders
- Have a current test and inspection certificate for all relevant components
- Be recorded on a register and, where applicable, be registered as classified machinery
- Have an on-site pre-use safety inspection to ensure the crane is fit for purpose.
- Have an appropriate operation and maintenance training package for the class and configuration
- Have an appropriate maintenance plan developed and loaded into the maintenance system

THIS DOCUMENT IS UNCONTROLLED IN HARD COPY FORMAT

| Rev | Document Number | Author | Approver / BFO | Issue Date | Page |
|-----|-----------------|--------|----------------|------------|---------|
| 4 | OP-PRO-00035 | J Day | GM - HSE | 24/03/2017 | 3 of 15 |

Craning & Lifting Procedure

Health & Safety

- Have an approved Roy Hill approved VOC, verification of competency for the type of crane being used.
- Prior to Roy Hill owned lifting equipment being commissioned and put into service, they shall:
 - Be legibly marked with unique identification and recorded on a register
 - WLL shall be legibly marked
 - Have current inspection tag in place
- Vehicle hoists shall not be used at any time for vehicles beyond their rated capacity
- Chain blocks and lever hoists shall have overload protection devices to prevent overloading.
- Shackles and eye-bolts shall:
 - WLL shall be legibly marked
 - Have a current test and inspection certificate

3.2 Contractor/Service Provider Cranes and Lifting Equipment

Pre-Mobilisation notification needs to be given prior to cranes coming on to any Roy Hill site by completing the Plant, Machinery and Vehicle Access Request form and providing copies of all certification, registration and licensing details. Failure to do so will result in access to the site being denied.

All contractor and hire cranes and lifting equipment shall:

- Comply with the requirements of the Roy Hill HSES Performance Standard 03 – Lifting Operations and this procedure
- Be formally inspected prior to site entry. Cranes shall be inspected using the relevant Crane Approval Checklist to ensure it is fit for purpose,
- Be recorded on the contractor's cranes and lifting equipment register, and
- Be recorded in the Itinerant plant book.

4 Inspections of Plant

All plant that is covered by this procedure and is designated as Itinerant classified plant in accordance with Regulations 6.33 and 6.34 of the Mines Safety and Inspection Regulations 1995, shall be inspected as follows:

- Periodic inspections by competent external accredited inspectors as per Schedule 3 of the Mines Safety and Inspection Regulations
- Initial formal site inspections when the equipment first arrives at site by competent appointed personnel. This will include documentation being provided by the equipment contractor and entries being recorded in the Itinerant Plant Book.
- Inspections of cranes shall be carried out by appointed persons in accordance with the level of appointment detailed in the Appointment Procedure for Classified Plant Inspectors.
- Daily pre start inspections by competent and VOC operators of the equipment prior to commencing work.

5 Training, Competency and Authorisation

To operate cranes, set-up or rig loads or provide signals for controlling lifts, personnel shall:

- Hold the relevant class of high risk work licence
- Meet the requirements of the Fitness for work Procedure for safety critical roles

THIS DOCUMENT IS UNCONTROLLED IN HARD COPY FORMAT

| Rev | Document Number | Author | Approver / BFO | Issue Date | Page |
|-----|-----------------|--------|----------------|------------|---------|
| 4 | OP-PRO-00035 | J Day | GM - HSE | 24/03/2017 | 4 of 15 |

Craning & Lifting Procedure

Health & Safety

- Hold, as a minimum, a Dogman (DG) qualification to select and inspect lifting equipment, sling loads and direct loads.
- Hold, as a minimum, a Basic Rigger qualification to use lever hoists or chain blocks
- Hold, as a minimum, an Intermediate Rigger qualification to design or approve critical lifts and or rig (re reeve) cranes
- Be trained and/or assessed, deemed competent and authorised.
- Records of training and competency shall be retained in Success Factors and in individual training files.

5.1 Crane Operators

The Supervisor/line manager shall ensure any person required to operate a crane holds a current High Risk Work Licence (HRWL) for that type of crane. The HRWL requirements for cranes are as follows:

- CT Tower cranes
- CS Self-erecting Tower cranes
- CD Derrick cranes
- CP Portal boom cranes
- CB Bridge and gantry cranes
- CV Vehicle loading cranes (10 metre tonnes or greater lifting capacity)
- CN Non-slewing mobile cranes (greater than 3 tonnes lifting capacity)
- C2 Slewing mobile cranes (up to and including 20 tonnes lifting capacity)
- C6 Slewing mobile cranes (up to and including 60 tonnes lifting capacity)
- C1 Slewing mobile cranes (up to and including 100 tonnes lifting capacity)
- CO Slewing mobile cranes (open/over 100 tonnes lifting capacity)
- HM Materials hoists (cantilever platforms)
- HP Hoists (personnel and materials).

In addition, cranes are only to be operated by persons who have a current verification of competency (V.O.C) for that particular crane and Roy Hill site authority to use that specific type of crane.

All operators of VLC shall be trained and deemed competent for both the vehicle and the VLC being used.

All operators of multi-function tool carriers, whilst utilising a jib attachment, regardless of capacity, shall hold a CN high risk license and be deemed competent to operate that piece of machinery. All loads must be slung by a qualified Rigger or Dogman or under their supervision.

5.2 Riggers and Dogmen

Any personnel required to set-up or rig loads or provide signals for controlling lifts; personnel shall hold a current HRWL for that activity:

- Dogman (DG) qualification as a minimum to select and inspect lifting equipment, sling loads and direct loads.
- Basic Rigger (RB) qualification as a minimum to use lever hoists or chain blocks
- Intermediate Rigger (RI) qualification as a minimum to design or approve critical lifts and or rig (re reeve) cranes

THIS DOCUMENT IS UNCONTROLLED IN HARD COPY FORMAT

| Rev | Document Number | Author | Approver / BFO | Issue Date | Page |
|-----|-----------------|--------|----------------|------------|---------|
| 4 | OP-PRO-00035 | J Day | GM - HSE | 24/03/2017 | 5 of 15 |

Craning & Lifting Procedure

Health & Safety

This includes Operators of all cranes including vehicle loading cranes under 10 metre tonnes shall hold a (DG) Dogging H.R.W.L as a prerequisite.

5.3 Forklifts

Any person required to operate a forklift shall hold a current High Risk Work Licence (HRWL) for that type of forklift. The HRWL requirements for forklifts are as follows:

- Forklift Truck (LF)
- Order Picking Forklift Truck (LO).
- Telescopic Handlers and M.F.T.C (multifunctional tool carriers) with a Fork Lift attachment require a (LF) Fork Lift H.R.W.L.

6 Operational Requirements

The following operational requirements are applicable to all personnel that operate cranes and lifting equipment on sites under the control of Roy Hill.

6.1 Pre-Lift Assessment

All lifting tasks using cranes shall be subject to a Pre-Lift Assessment.

- Non – Slewing Mobile Crane Pre – Lift Assessment. (OP-CHK-00101)
- Slewing Mobile Crane Pre – Lift Assessment. (OP-CHK-00103)
- Overhead Traveling Crane Pre – Lift Assessment. (OP-CHK-00102)
- Vehicle Loading Crane Pre – Lift Assessment. (OP-CHK-00104)

The purpose of the Pre-Lift Assessment is to determine if the lift is classified as a Critical Lift or Standard Lift and to ensure that the lift is planned and executed safely.

6.2 Critical Lifts

All load movements will be defined as a “**critical lift**” if they meet any of the following:

- The load, including rope, block, rigging etc. is greater than 80% for mobile non –slewing cranes and Vehicle loading Cranes & 90% for and Overhead traveling cranes & mobile slewing cranes
- There are two or more cranes involved in the lift
- A technical lift (submerged load, load cannot be verified, centre of gravity could change etc.) requiring specialist or engineering input
- Hazardous materials or explosives are being lifted
- Personnel being lifted by the crane
- Loads being lifted over occupied buildings and manned operating facilities
- The arcs of two or more cranes likely to interact
- Lifting in the proximity of live electrical conductors or over unprotected live plant or equipment.

A Critical Lift Plan and a JHA shall be completed for all critical lifts. The Critical Lift Plan shall identify requirements for the lift and should include the following documents and information;

- A copy of the Work Instruction (WIN) and/or JHA;
- A drawing of the lift and load in its position from lifting to final placement;

THIS DOCUMENT IS UNCONTROLLED IN HARD COPY FORMAT

| Rev | Document Number | Author | Approver / BFO | Issue Date | Page |
|-----|-----------------|--------|----------------|------------|---------|
| 4 | OP-PRO-00035 | J Day | GM - HSE | 24/03/2017 | 6 of 15 |

Craning & Lifting Procedure

Health & Safety

- Plan view drawing of the crane position for the lift;
- Lift Calculation Sheet Single Crane Lift or Lift Calculation Sheet Multiple Crane Lift associated with the lift;
- Detailed rigging arrangement drawings;
- Load charts for the lifting crane/s;
- Lift methodology;
- Certification for the lifting equipment to be used;
- Written (detailed) weight calculations of the item to be lifted and a drawing of the item;
- Details of design or supply of any custom lifting equipment;
- Test certificates or documentation for lifting lugs and other attachments supporting the load.

A Work Instruction (WIN) may be developed for repetitive Critical Lift activities based on the outcomes of the initial Critical Lift Plan and risk assessment. The WIN shall be reviewed prior to the lift to ensure the requirements detailed within the WIN are still relevant to the activity being performed, work area and environmental conditions.

6.3 Multiple Crane Lifts

Multiple Crane lifts shall only be used in the following conditions:

- When the physical dimensions, characteristics, mass or required movement of the load prevent the load from being lifted by one crane or single jib crane
- Only single motions in the same direction simultaneously must be taken otherwise the operation should be carried out in a stepped sequence, undertaking only one motion at a time.
- All multiple crane lifts are to be treated as “Critical Lifts” and Critical lift requirements applied
- Where the motions of multiple crane operations are not synchronized during the lifting cycle, the following minimum capacity requirements for each crane shall apply:
 - For two cranes - 20% greater than the calculated share of the load.
 - For three cranes - 33% greater than the calculated share of the load.
 - For four or more cranes - 50% greater than the calculated share of the load.

6.4 Standard Lifts

All lifts that are not classified as critical lifts.

As a minimum, a Pre-Lift assessment shall be conducted for all Standard lifts.

A Work Instruction (WIN) may be developed for repetitive Standard Lift activities based on the outcomes of the JHA.

The WIN shall be reviewed prior to the lift to ensure the requirements detailed within the WIN are still relevant to the activity being performed, work area and environmental conditions.

6.5 Pre-Lift Meeting

A pre-lift meeting shall be conducted prior to the commencement of any lift to ensure that the crane driver/operator and lifting crew have completed the following:

- Requirements within the lift plan, risk assessment, JHA and/or WIN are reviewed understood and agreed.
- Site inspection has been carried out and all hazards have been identified
- Agreed on the method for communication between the crane operator and the rigger/dogman

THIS DOCUMENT IS UNCONTROLLED IN HARD COPY FORMAT

| Rev | Document Number | Author | Approver / BFO | Issue Date | Page |
|-----|-----------------|--------|----------------|------------|---------|
| 4 | OP-PRO-00035 | J Day | GM - HSE | 24/03/2017 | 7 of 15 |

Craning & Lifting Procedure

Health & Safety

- Required barricading has been erected
- Persons in the local area that may be affected have been notified and are moved from harm's way
- Lift Plan, risk assessment, JHA and/or WIN have been approved.

6.6 Minimum Crane Crew Requirements

As a minimum no crane lift shall commence unless the following conditions have been satisfied:

- A mobile crane with a maximum rated capacity of more than 60 tonnes cannot be used unless there is at least one experienced crane operator and two other crew who must be qualified as either dogman or riggers with experience in the use of such cranes;
- A crane with a maximum rated capacity of equal to or more than 10 tonnes, but less than or equal to 60 tonnes cannot be used unless there is at least one experienced crane operator and dogman involved in the use of that crane; a dogman certification is required for lifting activities associated with Vehicle Loading Crane (VLC) regardless of capacity
- If a vehicle loading crane with a maximum rated capacity of less than 10 tonnes has a boom length of more than 3 metres, then it cannot be used unless there is at least one experienced crane operator and one dogman involved in the use of that crane.

6.7 Crane Operation

- Cranes shall only be used in the vertical plane, and not to pull items.
- Overhead travelling cranes shall be fitted with audible travel alarms or an equivalent warning device for long and cross travel.
- When a crane or any other type of lifting equipment/plant must operate within 10 metres of any high voltage overhead power lines, the power must be isolated prior to any work commencing and the crane operated under a valid HV Vicinity Permit, as per the High Voltage Isolation Procedure.
- Loads shall not swing over people or occupied buildings and no person shall be under a suspended load or in a position where they could be struck by a suspended load.
- The crane working radius shall be demarcated in accordance with the requirements of the Guarding, Barricading, Demarcation and Signage Procedure to define the area that the crane jib and load may traverse.
- The operator shall not leave the crane controls whilst a load is suspended.
- Chain blocks and hoists shall not be left unattended whilst under load unless lifting chain backup is used
- At no time shall any personnel place themselves or any part of their body under a suspended load. No person shall ride the headache ball, the hook, or the load being handled by the crane.
- Slew pins shall be secured in place in mobile cranes while travelling, where fitted and required by the manufacturer's operating instructions and / or manual.
- Spare remotes shall be disabled and stored in a secure location removed from the vicinity of the crane. Radio controlled crane components shall be verified for correct frequency before being installed.
- Operator control stations for VLC shall be located in an area protected from swinging loads and away from the crane jib.
- Where a VLC has a remote control this shall be used in preference to the local control panel and shall only be operated from outside the working radius.
- The VLC jib or boom shall not pass over the active operator control station and the operator shall remain clear of the working radius.

THIS DOCUMENT IS UNCONTROLLED IN HARD COPY FORMAT

| Rev | Document Number | Author | Approver / BFO | Issue Date | Page |
|-----|-----------------|--------|----------------|------------|---------|
| 4 | OP-PRO-00035 | J Day | GM - HSE | 24/03/2017 | 8 of 15 |

Craning & Lifting Procedure

Health & Safety

- Control stations that are not in use must be mechanically or electrically isolated to prevent inadvertent operation of the VLC.
- Outriggers must be fully extended and supported by base plates prior to commencing lifts.
- Slewing to test the integrity of outriggers on mobile cranes must be conducted prior to commencing lifts.
- Installation of warning decals to identify pinch points between lockers and crane counterweights
- Risk assessment to be reviewed to identify set-up of the crane and the retrieval of rigging equipment
- Shackle /rigging boxes are to be located in a position that doesn't expose the rigger/dogman to crush or pinch points.

6.8 Guiding Loads

Tag lines shall be attached to loads that require steadying or guidance while suspended. The load must be well secured and properly balanced in the sling or lifting device.

The guiding of loads by hand for fine placement where tag lines are not practical the following shall apply:

- The load must be within 300mm of the final placement of the load.
- The person directing the load must be a competent dogman or rigger.
- A person(s) shall not place any part of their body between the load and a pinch point
- A person shall not place themselves in the shadow of the load.

The guiding of loads through narrow openings by hand where tag lines are not practical due to snagging the following must apply:

- The load must be within 300mm of narrow opening
- The person directing the load must be a competent dogman or rigger
- A person(s) shall not place any part of their body between the load and a pinch point
- A person shall not place themselves in the shadow of the load.

6.9 Lifting in Adverse Weather Conditions

The danger to lifting operations when adverse weather conditions are present or imminent shall be managed as follows.

6.9.1 Electrical Storms

When lightning is observed on the horizon or closer, all lifting operations shall cease as soon as possible, that is, when the situation around the lift has been made safe.

For direction and guidance of managing operation activities in an electrical storm refer to the Roy Hill's Lightning Management Plan.

6.9.2 Wind

When, in the opinion of the Rigger or Crane Operator, winds are such as to render the lifting operation unsafe, having regard for the characteristics of the load being lifted, lifting operations shall cease as soon as possible, that is, when the situation around the lift has been made safe.

Anemometers should be fitted to cranes when they are necessary to provide wind speed at the work site and help reduce risk to acceptable levels.

Operations shall cease work when wind speed is in excess of the equipment manufacturers recommendations specified on the load chart for the particular crane and configuration being used.

THIS DOCUMENT IS UNCONTROLLED IN HARD COPY FORMAT

| Rev | Document Number | Author | Approver / BFO | Issue Date | Page |
|-----|-----------------|--------|----------------|------------|---------|
| 4 | OP-PRO-00035 | J Day | GM - HSE | 24/03/2017 | 9 of 15 |

Craning & Lifting Procedure

Health & Safety

When lifting personnel in work boxes, all work shall cease when the wind speed is equal to or greater than 7 m/ seconds (25 km/h).

6.10 Using Earthmoving Equipment as a Crane

Utilising Earthmoving equipment as a crane is not recommended, a crane shall be used were possible. In the event that an earthmoving equipment is used as a crane. All the requirements outlined in AS1418.8 (2009) shall be met. Key requirements are:

- WLL to be noted for boom lengths and represent in a load chart
- Testing shall be carried out such as performance testing, static stability test and hydraulic test as well as a visual inspection
- Slope, level indicators and audible warning devices are to be fitted.
- The rated capacity chart shall be mounted in the operators cab and shall show the following:
 - Manufacturers name and model
 - Boom identification and length in metres
 - Arm identification and length in metres
 - Tyre inflation pressures
 - Track gauge or shoe width
 - Deductions for certain attachments
 - Ground speed limits
 - Maximum permitted slope
 - Bucket mass in kg if fitted
- Any other equipment conditions that may impact on rated capacity.

6.11 Pick and Carry Operations

Non-slewing cranes and Crawler mounted cranes may be used for pick and carry operations.

Rubber tyre slewing cranes are permitted to be used for pick and carry operations only if their load chart permits it and their slew motion is capable of being locked to prevent slewing during the carrying operation.

Loads shall be tied back to the crane during pick and carry operations, the Dogger/Rigger shall not hold onto the load unless in a restricted area.

Vehicles with flashing lights shall be the preferred method of escorting pick and carry operations. Where a Dogger is used to escort the pick and carry operation on foot, they shall be in front of and to the side of the crane out of its path and in full view of the crane operator. All pick and carry operations shall be conducted in crane mode (low speed).

Trucks shall be used for moving and carrying loads over long distances; mobile cranes shall not be used for this purpose.

THIS DOCUMENT IS UNCONTROLLED IN HARD COPY FORMAT

| Rev | Document Number | Author | Approver / BFO | Issue Date | Page |
|-----|-----------------|--------|----------------|------------|----------|
| 4 | OP-PRO-00035 | J Day | GM - HSE | 24/03/2017 | 10 of 15 |

Craning & Lifting Procedure

Health & Safety

6.12 Slings

Only chain slings shall be used when rigging loads where there is a risk of the load being hot (>100 degrees Celsius). Slings that have been exposed to high temperatures shall be de-rated in accordance with manufacturer's standards.

Fibre and woven synthetic slings (including webbing and round slings) should not be in contact with UV radiation, dirt, hydrocarbons or other chemical contaminants. These type of sling are more difficult to determine the standard of acceptance. There can be no well-defined criteria between slings that are safe and those that are not, because the degree of safety depends upon the degree of deterioration of the sling and the severity of service to which it is to be subjected. Any decision as to whether or not to withdraw a sling from use has to be based on an assessment of its general condition. The effect of wear and mechanical damage is greater with smaller slings, which therefore require more rigid standards of acceptance. If after examination any doubt exists about the condition of a sling being safe, it should be withdrawn from service.

All slings shall be stored on suitable racks, shelves or hooks, off the ground and in clean and dry areas. Synthetic fibre slings should be stored away from direct sunlight to prevent UV damage.

Slings shall not be cleaned in chemical baths.

Slings shall be periodically checked as required and rating tags shall be verified on each sling. If no rating tags exist the sling shall be removed from service.

6.13 Support Stands and Jacks

Fabricated or custom built support stands and jacks shall be supplied with engineering calculations and drawings, checked and certified by a qualified engineer, which demonstrate it can support the rated WLL.

The positioning of support stands used on each load shall be formally identified through maintenance manuals or approved work instruction to ensure the load is secure and correctly positioned and the support stands used are suitable to support the load.

7 Inspection and Maintenance

An approved system shall be in place for the regular inspection, maintenance of cranes, vehicle loading cranes, hoists, support stands and jacks, rigging attachments and associated lifting equipment, which verifies the equipment is able to function to its design specifications and checks the integrity of:

- Mechanical and electrical components;
- Controls for each piece of lifting or rigging equipment;
- Crane cables and all lifting attachments;
- Structural components of the hoist;
- Function of the brakes;
- Wheels;
- Baskets;
- Outriggers;
- Structures (including buildings, hooks, hook-blocks and rails);
- load limiting devices;
- safety devices;
- limit switches;

THIS DOCUMENT IS UNCONTROLLED IN HARD COPY FORMAT

| Rev | Document Number | Author | Approver / BFO | Issue Date | Page |
|-----|-----------------|--------|----------------|------------|----------|
| 4 | OP-PRO-00035 | J Day | GM - HSE | 24/03/2017 | 11 of 15 |

Craning & Lifting Procedure

Health & Safety

Control systems required for individual equipment e.g. independent fail-safe braking systems, a device to stop the crane such as a 'dead-persons' switch, and emergency shut-off switch.

Note: All inspections and maintenance shall be in accordance with manufacturer's specifications and current legislation AS2550:1

Individual equipment maintenance inspections and cable test certificates shall be kept in the Classified Plant and Itinerant Pant log book as per the Roy Hill Cranes and lifting Procedure.

Inspections of lifting equipment, as per regulatory requirements and as a minimum quarterly, shall be carried out by a person who has successfully completed, as a minimum, a dogging course or equivalent and records of their competency shall be kept.

Quarterly inspection periods shall conform to the below Roy Hill requirements

| Inspection Period (Quarter) | Colour |
|-----------------------------|--------|
| December - February | Red |
| March – May | Green |
| June – August | Blue |
| September – November | Yellow |

Inspections and assessments on structural integrity shall be conducted by a competent and authorised person. Inspection results shall be recorded on a register and inspected equipment tagged or painted with the appropriate colour code.

Faulty lifting gear shall be tagged 'Out of Service' and not used until repaired by an authorised repairer. Non-repairable lifting equipment, including shackles, hooks and slings, shall be destroyed.

Details of the destroyed equipment, date and reason for destruction shall be recorded on the relevant register.

Lifting hooks shall not be welded, ground, heated or repaired.

Repairs and maintenance to cranes, VLC, cables and lifting equipment shall, as a minimum, comply with the manufacturer's specifications and regulatory requirements, and be repaired by a qualified person.

There shall be no modifications to cranes and lifting equipment without the approval of the Original Equipment Manufacturer (OEM).

After modifications and/or repairs cranes and lifting equipment shall be inspected and tested before being returned to service.

8 Definitions

| Term | Definition |
|-------|--|
| Crane | <p>Cranes, as covered by this work practice, include:</p> <ul style="list-style-type: none">• Mobile cranes• Vehicle loading cranes(VLC)• Overhead cranes• Pedestal cranes• Davits |

THIS DOCUMENT IS UNCONTROLLED IN HARD COPY FORMAT

| Rev | Document Number | Author | Approver / BFO | Issue Date | Page |
|-----|-----------------|--------|----------------|------------|----------|
| 4 | OP-PRO-00035 | J Day | GM - HSE | 24/03/2017 | 12 of 15 |

Craning & Lifting Procedure

Health & Safety

| Term | Definition |
|--|---|
| Lifting Equipment | Includes, but is not limited to: <ul style="list-style-type: none"> • Chains • Slings • Lever hoists & chain blocks • Eye-bolts & shackles • Spreader bars • Other equipment fitted with lifting points |
| Vehicle Loading Crane | A crane mounted on a vehicle/vessel. |
| Working Radius | The distance between the centre of slew to the centre of the load. |
| Critical Lift | Critical Lifts refer to: <ul style="list-style-type: none"> • Lifts over operating facilities • Lifts over or near power lines and electrical transformers or substations • Lifts involving personnel cages Lifts at or above 90% of the maximum rated capacity of the crane as configured for that task Multiple crane lifts or use of multiple lifting devices such as multiple chain blocks or lever hoists. |
| Critical task review | A review of competency that is conducted, as a minimum annually, by a qualified and authorised assessor. |
| Personnel Cage | A device designed, manufactured to Australian standard AS1418.17 for use with a crane for the purpose of lifting people and tools. Synonyms include “Work Box”, “Man Cage” |
| Classified Plant | As defined under the Mines Safety and Inspection Regulations 1995 sec. 6.1, Classified Plant or Machinery means any: <ol style="list-style-type: none"> Boiler Crane Hoist Lift Pressure Vessel. |
| Working Load Limit (WLL) | The maximum gross load that may be applied under general conditions of use. The abbreviation WLL is now normally stamped on lifting equipment instead of SWL. |
| Multi-function tool carriers (M.F.T.C) | A machine that has the ability to operate as a crane with a jib attachment. E.g. Caterpillar I.T28, Manitou Telescopic handler etc. |
| Impact zone | An area in which a person may be caught. |
| Footprint | The surface area in which the object above casts from the 12 o’clock sun. |
| Rigging of cranes | Attachment of fly, re-reeving hook blocks, fitting super lift, assembling lattice boom cranes |

Table 1: Definitions

9 References and Associated Documents

| Document Number | Title |
|-----------------|--|
| | Bow Tie PH-04 Electricity Interaction |
| | Bow Tie PH-05 Dropped Object During Lifting |
| | Bow Tie PH-06 Dropped Tools and Equipment |
| | Bow Tie PH-09 Crushed by Moving Equipment |
| | Bow Tie PH-15 Severe Weather |
| | Plant, Machinery and Vehicle Access Request form |

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| Rev | Document Number | Author | Approver / BFO | Issue Date | Page |
|-----|-----------------|--------|----------------|------------|----------|
| 4 | OP-PRO-00035 | J Day | GM - HSE | 24/03/2017 | 13 of 15 |

Craning & Lifting Procedure

Health & Safety

| Document Number | Title |
|------------------|---|
| | Vehicle Loading Crane (VLC) Approval Checklist |
| | Non Slewing Crane Approval Checklist |
| | Slewing Crane Approval Checklist |
| OP-PRO-00477 | Fitness for work Procedure |
| | Mobile Crane Pre Lift Assessment |
| | VLC & OHT Crane Pre Lift Assessment |
| | Critical Lift Plan |
| | Lift Calculation Sheet Single Crane Lift |
| | Lift Calculation Sheet Multiple Crane Lift |
| OP-STD-00036 | Guarding and Barricading Standard |
| | Roy Hill Operations HSES Performance Standard - 03 Lifting Operations |
| | Mines Safety and inspection Act 1994 (WA) |
| | Mines Safety and Inspection Regulations 1995 (WA) |
| | Occupational Safety and Health Act 1984 (WA) |
| | Occupational Safety and Health Regulations 1996 (WA) |
| AS 1380 | Fibre-rope slings |
| AS 1380.1-1998 | Fibre – rope slings Product Specification (March 1998) |
| AS 1380.2-1998 | Fibre – rope slings Care and Use (March 1998) |
| AS 1418 | Cranes (including Hoists and Winches) (SAA Crane Code) |
| AS 1418.1-2002 | Cranes (General Requirements) |
| AS 1418.2-1997 | Cranes (Serial Hoists and Winches) |
| AS 1418.3-1997 | Cranes (Bridges, Gantry and Portal Cranes (including Container Cranes) (December 1997) (Amd 1 September 1998) |
| AS 1418.4-2004 | Cranes (Tower Cranes) |
| AS 1418.5-2002 | Cranes (Mobile and Vehicle-loading Cranes (Includes Amd 1 - June 1999 and Amd 2 August 1999) |
| AS 1418.6-2004 | Cranes (Guided Storing and Retrieving Appliances) |
| AS 1418.7-1999 | Cranes (Builders' Hoist and Associated Equipment (October 1999) |
| AS 1418.8-2008 | Cranes (Special Purpose Appliances) |
| AS 1418.9-1996 | Cranes (Vehicle Hoists (October 1996) |
| AS 1418.10-2011 | Cranes (Elevating Work Platforms) See also AS:2550.10. |
| AS 14.18.11-2007 | Vehicle Loading Cranes (see also AS:2550) |
| AS 1418.12-1991 | Crane Collector Systems |
| AS 1418.13-1996 | Cranes (Building Maintenance Units (April 1996) |
| AS 1418.14-1996 | Cranes (Requirements for Cranes Subject To Arduous Working Conditions (July 1996) |
| AS 1418.15-1994 | Cranes (Concrete Placing Equipment) (Amd 1 December 1995) |
| AS 1418.16-1997 | Cranes (Mast Climbing Work Platforms) (December 1997) |
| AS 1418.17-1996 | Cranes (Including hoists and winches)Design and Construction of Workboxes |

THIS DOCUMENT IS UNCONTROLLED IN HARD COPY FORMAT

| Rev | Document Number | Author | Approver / BFO | Issue Date | Page |
|-----|-----------------|--------|----------------|------------|----------|
| 4 | OP-PRO-00035 | J Day | GM - HSE | 24/03/2017 | 14 of 15 |

Craning & Lifting Procedure

Health & Safety

| Document Number | Title |
|-----------------|---|
| AS 1666 | Wire-rope Slings |
| AS 1666.1-2009 | Product Specification (November 1995) |
| AS 1666.2-2009 | Care and use (November 1995) |
| AS 1735.10 | Tests (August 1998) |
| AS 2549-1996 | Cranes - Glossary of Terms (October 1996) |
| AS 2550 | Cranes - Safe Use |
| AS 2550.1-2011 | Cranes - General Requirements |
| AS 2550.4-2004 | Tower Cranes |
| AS 2550.5-2003 | Mobile and Vehicle-Loading Cranes |
| AS 2550.6-1995 | Guided Storing and Retrieving Appliances (issued December 1995) |
| AS 2550.9-1996 | Vehicle Hoists (issued August 1996) |
| AS 2550.10-2006 | Elevating Work Platforms |
| AS 2550.11-2004 | Vehicle Loading Cranes |
| AS 2550.13-1997 | Building Maintenance Units (issued June 1997) |
| AS 2550.16-1997 | Mast Climbing Work Platforms (issued December 1997) |
| AS 2615-2004 | Hydraulic Trolley Jacks (issued November 1995) |
| AS 3012-2008 | Electrical Installations, Construction and Demolition Sites |

10 Review

This procedure will be reviewed in accordance with the Roy Hill Change Management Standard.

If no changes are requested it will be reviewed annually.

THIS DOCUMENT IS UNCONTROLLED IN HARD COPY FORMAT

| Rev | Document Number | Author | Approver / BFO | Issue Date | Page |
|-----|-----------------|--------|----------------|------------|----------|
| 4 | OP-PRO-00035 | J Day | GM - HSE | 24/03/2017 | 15 of 15 |