LIFTING AND CRANAGE

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8 LIFTING AND CRANAGE

Intent

The intent of this protocol is to eliminate or minimise the potential for fatalities, injuries and incidents arising from risks associated with lifting and cranage activities.

Related Life-Saving Behaviours

1. Always come to work drug and alcohol free.
2. Always use or wear critical safety equipment.
4. Only operate equipment if trained and authorised.
6. Never modify or over-ride critical safety equipment without approval.
8. Never enter danger zones without approval.
9. Always report injuries and HPRIs.

Key actions

1. Conduct a risk assessment to identify hazards associated with lifting and cranage activities.
2. Develop a Lifting and Cranage Procedure.
3. Confirm Lifting Plant is certified for use and Lifting Equipment is inspected, maintained and fit for purpose.
4. Clearly identify and demarcate lift areas, drop zones and exclusion areas and never enter under or near a suspended load.
5. Regularly inspect, check and label Lifting Plant and Equipment.
6. Develop and implement lift plans and permits for complex or complicated lifts and use qualified Riggers and Dogmen.
7. Communication systems and protocols must be developed and followed for all lifting and cranage activities.

8.1 General Requirements

8.1.1 A risk assessment must be conducted and documented to identify the hazards and assess the risks associated with lifting and cranage and for the development of a Lifting and Cranage Procedure.

8.1.2 A Lifting and Cranage Procedure must be developed, implemented and maintained. As a minimum, it must include:

a) A process to verify that the Lifting Plant (crane, forklift, MEWP) is subject to an engineering design process and certified; and the associated Lifting Equipment is fit for use and purpose;

b) If Lifting Plant or Equipment has been repaired or modified, it must be recertified in accordance with the manufacturer's requirements;

c) The requirement for pre-use inspections to verify that rigging equipment, the load weight, hooks and safety devices to be used by operators are checked prior to the lift being undertaken;

d) The demarcation, access restriction and signposting of the lift area and potential drop zone;

e) Prohibition of persons entering an area under a suspended load, under any circumstances;

f) At least twenty (20) metres clearance of cranes and Lifting Equipment from power lines (clearance to be measured using machines fully extended capabilities) unless a risk assessment is conducted and documented to identify controls to allow for operations within twenty (20) metres;

g) That the Lifting Plant operator must remain at the controls whilst the load is suspended;

h) Establishment and compliance with communication protocols, including communication devices, for visual and non-visual load, lifting and personnel access control;

i) Tag lines must be used where a load requires steadying or guidance and to prevent personnel entering the load zone;

j) Records of Lifting Equipment in a register and subjecting it to routine inspection and maintenance. Shackles, light weight slings and eye bolts (<1 tonne) are exempt from the register but must be subjected to inspection before use;

k) Labelling and preferably colour coding Lifting Equipment to indicate its Safe Working Load (SWL) and to verify that it is within the inspection period;

l) SWL and radius limits that the crane and associated Lifting Equipment must not exceed. Loads are to be slung by competent persons, and the cranes are not to be operated at speeds that could de-stabilise the load in the event of a sudden stop;

m) Consideration of weather conditions with adjustment of lifting activities due to adverse weather or environment conditions; and

n) Prohibition of use of towing equipment for lifting activities.

8.1.3 A permit is required for complex lifts, such as:

a) Multiple crane usage;

b) Over facilities, buildings or restricted areas;

c) Over or adjacent to power lines;

d) At or more than 90% of the crane's or Lifting Equipment's SWL, including testing of cranes for recertification purposes;

e) When the work area is not visible from the crane operator's cabin;

f) Lifting people in a Workbox; and

g) Potential shifting or dynamic loading.

8.1.4 A Lift Plan (Rigging Study) must be developed and implemented for complex lifts and contain or reference:

a) A documented risk assessment that is communicated to the work party;

b) Lift data, e.g. equipment weight, rigging weight, height of lift, equipment surface area and centre of gravity, etc.

c) Equipment data, e.g. manufacturer, model, size, boom length, jib length, load block, material size, etc.

d) Rigging data, e.g. sling diameter, length, sling configuration, capacity, hook type, shackle size and capacity, etc.

e) Lift computation, e.g. boom length, radius of lift, equipment capacity, size of outrigger footplates and wind speed, etc.

f) Risks associated with power lines, crane travelling route, ground stability and agreed communication methods;

g) Evidence to verify that the crane operators, Riggers and Dogmen were involved in the development of the Lift Plan and/or were consulted before the Lift Plan was finalised; and

h) The permit, documented risk assessment and Lift Plan must be approved and signed by the relevant authorised person.

8.2 Lifting of Persons

8.2.1 Lifting of personnel with cranes or forklifts must only be carried out with a specifically designed, certified and clearly marked (including working load limit) Workbox or platform suitable for lifting persons. Tools and equipment for use by persons must be restrained.

8.2.2 Workboxes used for lifting persons with a crane shall have two separate mechanisms for preventing the Workbox from falling; one of which shall be fail-safe.

8.2.3 Workbox access gates must open inwards and include a safety catch.

8.2.4 A MEWP should be controlled by an operator in the platform. Where this is not possible (such as underground loaders) an override or emergency stop provision must be accessible in the platform.

8.2.5 Fall arrest equipment shall be worn by persons in a Workbox used with a crane and attached to a point separate to the Workbox.

8.2.6 A rescue plan shall be prepared for all personnel lifts as part of the lift permit. All equipment required to implement the rescue plan shall be readily available prior to and during the lift. Rescue plans shall be practised at regular intervals.

8.3 Cranes

8.3.1 Crane hooks must be fitted with a positive safety latch.

8.3.2 Overhead cranes must be fitted with appropriate stops (e.g. over-travel stops).

8.3.3 Fixed lifting devices/cranes must conform to an appropriate engineering design standard and be subject to routine structural integrity testing.

8.3.4 A Vehicle Loading Crane must not be able to be rotated over the location of the operator positioned at the controls.

8.3.5 Loads being carried by mobile cranes in transit must be secured so that they cannot swing and cause toppling of the crane.

8.3.6 Mobile cranes must be positioned so that they are on a firm level base sufficient for the crane and load. Inclinometers and warning devices must be installed and used to ensure that a crane cannot topple when slewing a load.

8.3.7 Load cells in the visual range of the crane operator or a load limiting device should be used if the load weight is unknown.

8.3.8 An Anti-Two-Block Device or limit switch that includes audible and visual alarm systems should be fitted to a crane and must be fitted whenever persons are lifted in a Workbox.

8.4 Loads

8.4.1 Designated lift points should be provided on equipment that is lifted on a regular basis.

8.4.2 Lifting procedures must include the inspection of fixed lifting points.

8.4.3 Loads that are lifted on a regular basis should be identified and display the component weight.

8.4.4 Loads must be stable and secure prior to lifting.

8.5 Forklifts

8.5.1 Forklifts must only be operated by a competent and authorised person(s).

8.5.2 The operator must not exit the machine with a suspended load.

8.5.3 Forklifts must be fitted with a load cell or load limiting device.

8.5.4 The maximum load height (or number of stacked packages) carried by forklifts must be defined and visibly displayed in the work area.

8.5.5 If an operator's vision is restricted, additional controls must be implemented, e.g. operate in reverse, use an escort on the ground, inspect and assess the travel route.

8.5.6 If a forklift is to be used to lift unusually shaped or long items, specific attachments should be provided, designed and certified to an approved engineering standard. Use of such attachments must also consider the impact on forklift stability and load capacity.

8.5.7 Forklifts must be fitted with: a seatbelt that must be worn by the operator when in use, reversing alarm, fire extinguisher, and flashing light.

8.5.8 Areas where forklift operation is permitted must be clearly and physically delineated or demarcated. Forklift operation is excluded in areas where the ground is uneven, the grade too

steep, the road in poor condition and in pedestrian zones, including walkway.

8.6 Training and Competence

8.6.1 Training needs and competency requirements of employees and contractors in relation to all aspects of general lifting and cranage must be identified and adequate Training, regular refresher Training and assessment to verify competency must be provided.

8.6.2 Competency requirements for more complex lifting activities must be identified. The crane operator, Rigger and Dogman must be assessed as competent and appointed to conduct the work.

8.6.3 MEWPs may only be used by persons who have been trained, are competent and have been authorised.

8.7 Additional Requirements for Catastrophic (PMC 5) Situations

Nil

8.8 Definitions

Anti-Two-Block Device

An Anti-Two-Block Device is an electrical sensing device that is installed on a crane to prevent the lower load block or hook assembly from coming into contact with the upper load block or boom point sheave assembly. Consists of a weighted ring around the hose line, the ring is suspended on a chain from a limit switch that is attached to the boom tip, and if the hook assembly (sometimes referred to as a 'headache ball') touches the suspended weighted ring, the switch opens preventing hoist up or telescope out, and an alarm sounds in the cab to warn the operator to stop hoisting.

Dogman (or Dogger)

Dogman is a certified person who inspects, selects and uses techniques to safely sling loads and directs the operation of a crane.

Lifting Equipment

Ancillary equipment that is used with Lifting Plant for the purpose of lifting or slinging a load – chains, slings, shackles, hooks, etc.

Lifting Plant

Plant that is used for lifting or elevating loads or people – cranes, forklift, MEWP.

Mobile Elevating Work Platform - MEWP (ISO 16368)

Machine/device intended for moving persons, tools and material to working positions, consisting of at least a work platform with controls, an extending structure and a chassis.

Permit

Formal system required for specific tasks or activities i.e. working in confined space, whereby a permit has to be issued to an operator prior to commencing work.

Procedure

Documented process detailing the requirements for conducting an activity or task.

Rigger

A Rigger is a certified person that uses mechanical load shifting equipment to move or secure loads, including setting up and dismantling cranes. It encompasses the requirements of a Dogman.

Training

Refers to the initial Training to verify competence and subsequent refresher Training to verify that the competencies have been retained.

Vehicle Loading Crane (Safe Work Australia)

A crane mounted on a vehicle for the purpose of loading and unloading that vehicle.

Workbox (Safe Work Australia)

A personnel-carrying device designed to be suspended from a crane to provide a working area for persons elevated by and working from the device.

Tools (See Glencore HSEC Intranet)

Tools provided include:

- Protocol Self-Assessment Workbook;
- Protocol Third Party Audit Workbook;
- Protocol Toolbox Talk;
- Glencore Complex Lifting Permit.

***Note**: Application of this Protocol must also comply with the General Mandatory Requirements outlined in Section II of the Glencore Life-Saving Behaviours and Fatal Hazard Protocols publication.*

8.9 References

None

8.10 Accountabilities

Team	Accountabilities
Glencore Corporate	• Maintain and update this Protocol.
Department	• Oversee the implementation of this protocol within department and apply assurance processes.
Asset management	• Apply the requirements of this protocol.
All employees/contractors	• Comply with relevant requirements of the protocol. • Report hazards and incidents related to energy isolation.

8.11 Control and Revision History

8.11.1 Document Information

Property	Value
Approved by:	Lucy Roberts
Document owner:	David Mellows
Effective date:	15/10/2020

8.11.2 Revision

Version	Date Reviewed	Review Team	Nature of Amendment(s)
1-0	29/10/2013	Corporate HSEC Leads	First published version
2-0	23/09/2020	David Mellows, Brett McIntosh and David Reece (The Safety Managers), Department technical reviewers.	Removal of the three-implementation stages general review of various industry practices, Glencore and other incidents and update. Inclusion of feedback on content, inclusion of learnings from recent lifting related fatalities in Chile. Clearer distinction between Workboxes (use on cranes and previously called manbaskets) and Mobile Elevating Work Platforms (MEWP). Clarification of Anti-Two Block Device; forklift visibility limitation and other minor amendments.