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Overhead Crane and Gantry Crane Policy

Purpose

The purpose of this policy is to assure the Escanaba Mill complies with MIOSHA Parts 18 (Overhead Bridge and Gantry Cranes) and Part 20 (Underhung Cranes and Monorail Systems). It details how cranes will be operated and inspected. It describes the training program for permitted operators.

Extent

This Overhead Crane and Gantry Crane Policy applies to all NA employees, contractors and visitors (while working on Billerud property).

Safety Execution

Safe crane operating procedures are broken into five categories. They are:

- A. Attaching and securing a load
 - B. Safe operation of the crane
 - C. Use of a spotter
 - D. Side pulls
 - E. General requirements
- Each category is described below in detail.

Attaching and securing a load

All crane operators are responsible for ensuring any load they transport is secured or attached correctly to the lifting mechanism. These requirements include but are not limited to the following:

1. A crane operator must always ensure that both bar hooks are properly engaged before and during any load movement.
2. The crane operator must never attempt to engage a spinning mandrel or log.
3. The crane operator must keep the evener bar and hooks a safe distance from a spinning mandrel or log to prevent incidental contact between the hooks or evener bar and the spinning mandrel or log.
4. A crane operator must ensure that the load is securely held and balanced when using a cable or slings to support the load.
5. The operator must verify the position of all crane hooks and determine if they can be moved safely.

Safe operation of the crane

A crane operator is responsible for the safe operation of the crane. This includes moving or transporting a load as unattended or suspended loads. These requirements include but are not limited to the following:

1. When transporting a load, the load shall be raised to a safe level for the conditions, being especially aware of pedestrians and truck traffic.

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2. When transporting/moving a load, you should walk behind the load you are moving.
3. When slabbing or taking samples under the spreader bar, if possible, offset the spreader bar away from the individual(s) who are slabbing. Use safety chains or flag off the area while performing these tasks.
4. When a “pitch and carry” crane control box is being used while slabbing a mandrel, the control box shall be placed in a designated “safe area” with the unit “powered up”. The control box must be hung on a hook or secured to prevent the possibility of the control box falling over while powered up. The designated safe area shall be as close to the slabbing area as possible and within the “line of sight” and audible warning distance of the crane operator.
5. A crane operator shall always be within a safe viewing distance (25 feet or less) of a crane (with or without a load) while that crane is in operation.
6. An operator shall use a warning device (horn, bell or siren) before starting and intermittently while traveling in occupied areas.
7. A crane operator must notify people in a control room, conference room or other location whenever a load is passing over that area. These people must leave that area until the load has passed.
8. A crane operator must ensure that the load can pass from one elevation to the next using a clear path of travel.
9. A crane operator must never leave a suspended load unattended. When leaving a suspended load the crane operator must be in close proximity (35 feet or less) of the load and be able to warn any traffic, including pedestrians, to stay clear of the hazard. It’s **not** acceptable to have a load suspended and be in an enclosed area, such as a control room, without first flagging off the area below the suspended load.
10. The crane operator must ensure the load is free from obstructions such as chucks, clamps, guards, etc. prior to initiating a lift.
11. The crane operator must ensure the path of travel is free of any obstacles.
12. The crane operator must never use a suspended load for the purpose of bumping and moving other materials or equipment. One allowable exception to this rule is the use of bridge crane to push another when movement by other means is not practical. (ie. One crane repairs or is disabled).
13. A crane operator will never operate a crane while positioned between a fixed object and the load. Extreme caution must be used to stay out of potential “Line of Fire” situations.
14. An operator shall respond to signals only from the employee directing the lift (except for an emergency situation). See Attachment B for table showing Standard Hand Signals.
15. A crane hook shall be discarded if the throat opening is more than 15% greater than the manufactured size, or has more than a 10 degree twist from a vertical center line drawn through the hook socket.

Use of a Spotter

When tasks are performed that may create obstructions in the crane operator’s line of sight, a spotter must be used. The spotter’s role is to ensure the load being moved is handled in a manner that prevents injury to

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others as well as property damage events. The list below includes examples of when a spotter is to be utilized (this is not an all-inclusive list):

1. A spotter must be utilized anytime a piece of equipment extends into, or other work is being performed, in the path of an oncoming crane or load, such as working on top of E3 or E4 Coater, while using the Broderson, a scissor lift or knuckle lift, etc.
2. When a crane is being utilized for overhead work, or work is being performed on the crane and there is a potential for collision. Spotters are not required when affected sections of the crane rail are isolated with either mechanical or de-energizing devices. Tagging of control boxes will not be required, but can be used as a communication aid for the spotter. The crane operator cannot rely on the presence or absence of tags.
3. When raising or lowering a load through a hatchway a spotter must be used to control traffic and to check hooks, slings or straps.
4. If a mobile crane is being used in the vicinity of an overhead crane and the overhead crane cannot be locked out, a spotter must be used while the mobile crane is in operation (making picks).
5. Obstructions in the path of travel making direct line of site difficult for the crane operator or others (slabs piled, piles of broke, etc.).
6. Hauling paper past the coater while the coater is down or during an outage.
7. During designated crane training.
8. Using the east coater crane at the west end of E1 Coater while the west crane is out of service.
9. Operating E1 Coater cranes beyond any designated east/west posted limits.
10. On top of the Press Section of E1 Paper Machine or on top of the Former while using the Wet End crane.
11. While placing a log on the rack between E1 Paper Machine and Rereeler.
12. Whenever a Mechanic is moving roll on the machine floor.

Side Pulls

Side pulls (horizontal loading) with cranes must be avoided unless approved by area production or maintenance supervision. The following are approved activities where the use of minimal side loads on cranes is permitted as long as it is performed in a consistent and safe manner:

1. Removing/Installing the internals from a suction, swimming or controlled crown roll.
2. Removing/Installing the 1st Press Venta Nip roll on paper machines.
3. Removing/Installing certain felts and wires on paper machines.
4. Rolling slabs off the paper logs in all paper machine systems
5. Removing/Installing top dryer felts/boxes on paper machines and coater.
6. Pulling logs out of the chipper throats in the Woodroom

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The hoist, cables, sheaves and drum shall be visually inspected after making an approved side pull. If damage is suspected, a thorough maintenance inspection of the crane shall be completed prior to the crane being placed back into service.

General requirements

Below is a list of general requirements that must be followed to ensure safe operation of cranes:

1. A qualified trainer must properly train all personnel as part of their initial crane training. Initial and annual refresher training is required for all personnel who operate cranes.
2. When/If there is a doubt concerning the safety of a crane or hoisting mechanism, an operator shall stop the crane and report the condition to their supervisor. Supervision will then follow-up with Tour Mechanic, Tour Electrician or Crane Crew. The Tour Mechanic, Tour Electrician or Crane Crew will notify the area when the crane is ready to be returned to service.
3. When/If the crane has been involved in an incident, the Crane Crew must be called to inspect the crane immediately (do not continue any crane movement). The Crane Crew will notify the area when the crane is ready to be returned to service.
4. Utilize designated crane parking areas.
5. When not in use, the crane control box must be turned off. The crane box must be stored in the designated shack/control room when not in use.

6. When avoidable, an employee must never walk or drive under a suspended load. **Certain tasks, such as roll changes, require working or moving under a suspended load. Extreme caution must be taken to minimize these occurrences and their associated risks.**
7. An employee shall not walk through a barricaded area where crane maintenance is being performed unless given appropriate authorization.

General Requirements and Responsibility

All employees are required to comply with the components of the Crane Policy which include but are not limited to:

- Safe operation of the Crane
- Completing documented daily visual inspections of the crane
- Reporting operating, physical or mechanical defects to their Supervisor, crane crew or Tour Electrician
- Attend required Crane Safety Training

Management is responsible for enforcing compliance with the Crane Policy by:

- Auditing safe operation of the crane utilizing the crane Audit Form.

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- Conducting spot checks to ensure daily visual inspections are completed properly and correct any deficiencies as needed.
- Using discipline as appropriate when violations of the Crane Policy are identified.

The Safety Department is responsible for:

- Ensuring training is developed in compliance with applicable regulations, exceeding regulatory requirements where appropriate.
- Maintaining files for Crane Audits
- Maintaining files for completed Daily Visual Inspections
- Providing resources to Operations/Maintenance to ensure compliance with regulations and safe operation of cranes.

The Crane Crew is responsible for:

- Ensuring compliance with monthly, quarterly and annual crane inspection requirements.
- Responding to crane performance/safety concerns
- Inspecting cranes after any approved side pull
- Maintaining appropriate records to demonstrate regulatory compliance

Training Requirements

The Safety Department is responsible for initial orientation and assigning computer-based training every three years which includes a test:

1. New employee general crane training (classroom)
2. Refresher training on a 3 year basis (computer based training including test)
3. Refresher training for all employees involved in a crane incident/accident

Operator Testing

Potential crane operators shall be tested for their knowledge and ability before being permitted to operate a crane. The test shall determine all of the following with respect to the member:

- Ability to safely operate the equipment through its functions necessary to perform the required jobs.
- Knowledge of the equipment.
- Knowledge of daily inspection requirements.
- Knowledge of applicable standards and company rules and regulations.
- Verification of the physical qualifications.

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Testing shall be documented, with a copy maintained on file. Crane operators must also pass a crane operator evaluation before being qualified to operate a crane. This evaluation must be conducted by a mill certified (or contracted) trainer. Operator evaluations must be conducted and documented on an annual basis following the initial training. Records of training and permits will be maintained in the Verso Learning Center and all documentation will be maintained in the area in which it was conducted.

Refresher training in relevant topics shall be provided to an operator under any of the following conditions. This training must be documented.

- An operator has been observed to operate the crane in an unsafe manner.
- An operator has been involved in an accident or a near-miss incident.
- An operator is assigned to a different type of crane.
- A condition in the workplace changes that could affect safe operation of the crane.

Daily Crane Inspections

A visual inspection of the crane must be conducted by the crane operator at the beginning of each shift. Visual inspections shall be documented through Operator Driven Reliability. Completed inspection checklists shall be maintained by the Safety department. The following items are included in the inspection:

- Operator controls: Remote and Pendant
- Upper Limit Switches
- Hooks: Deformation or cracks
- Rope/Cable: Wear, broken wire, bird caging or kinks
- Rope Reeving
- Oil Leakage
- Brakes

If a defect is identified as part of the inspection it will be reported in the mill's Safety Incident Tracking System (SITS) and reported to one of the following immediately:

- Supervisor
- Crane crew
- Tour Electrician
- Tour Maintenance

Red Tagging The Crane

The following are examples that may require the crane to be red tagged:

- An unauthorized side pull
- Shock loading the crane

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- Excessive twisting or bouncing of a load
- A defect identified during the daily crane inspection

Crane Crew Call-outs

Whenever a crane is to be taken out of service for repair or inspection, Tour Maintenance or the Tour Electrician should be utilized first. However, if a crane is involved in an incident/accident, the Crane Crew should be contacted. If further assistance is required, the Crane Crew will contact the supervisor in the area for additional help.

Write all work orders pertaining to cranes to the Crane Technicians using Planner ID – 047 (5CSCRN), craft code. Make sure that all work orders are written using the crane's equipment number or house crane number.

Formal, documented inspections and maintenance will be performed on a periodic basis by a qualified person. Records of these inspections will be maintained (Monthly inspections for 3 months / Annual Comprehensive inspections for 12 months).

Remote Control Crane Box Procedure

For safe crane control with the radio controlled cranes we cannot allow two of the same colored radio control boxes on the floor at the same time for a single crane when the pitch and catch method is being used.

Red radio controlled crane boxes shall be used for the super calendar only.

Blue radio controlled crane boxes shall be used for the winder only.

If for any reason two of the same colored radio control boxes are in for repairs, one control box will be shared for the operation of the crane.

Control Box Checkout

The remote control boxes for overhead bridge and gantry cranes operate on a 7.4 volt battery and a signal relayed between the remote control and the crane. This system does have control box and signal failures that will prevent the crane from operating. When this occurs there may be a need to obtain and use the spare remote control crane box. This section details the procedure to follow to obtain the spare remote control crane box.

In order to obtain a spare replacement control box; Contact the Tour E&I Person on shift.

The following steps are to be done by the Tour E&I Person, the crane operator, the shift foreman and the crane crew.

1. The crane operator will enter a G3PTM entry for the malfunctioning control box.
2. The Tour E&I Person and crane operator will take the non-working crane control box to the control box lock up area to exchange.

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3. The Tour E&I Person will fill out a crane box red tag with the proper information confirming the information with the crane operator.
4. The Tour E&I Person will remove the battery from non-working control box.
5. The Tour E&I Person will unlock spare crane control box lockbox and sign out the control box to the crane operator. At this point the crane operator may return back to the area.
6. The Tour E&I Person will deliver the non-working red tagged crane box to the shift foreman.
7. The shift foreman will validate the G3PTM work request into a work order and enter the work order number on the red tag.
8. The shift Foreman will notify the crane crew of the defective crane box.
9. Once the crane crew has repaired the defective box they will return it to the spare crane control lockbox.

Control boxes

To eliminate the potential for multiple remote control crane boxes affecting a single crane, it is the responsibility of the operator/individual to ensure that spare remote control crane boxes are locked out prior to beginning crane operation. Follow the steps below prior to operating any crane for maintenance activities:

1. Before using any crane for maintenance work or while performing maintenance work on cranes, individuals must locate the main and spare control boxes for that crane. Note: The crane shall not be operated until the spare box is locked out.
2. If the main control box is to be used, the employee assigned to operate the crane must lock out the battery compartment on the spare box. If the spare control box is to be used, the employee assigned to operate the crane must lock out the battery compartment on the main box. Each area has a cabinet where spare boxes can be locked out. All unnecessary/spare control boxes must be locked in the appropriate cabinet during maintenance work.
3. After placing the lockout device, the affected employee must verify the spare control box cannot be activated.
4. If more than one employee will operate a maintenance crane, each individual must appropriately lock out the spare control box.
5. In the event that a control box is being repaired, a tag shall be placed (where the box is normally located) and locked stating that the box is being repaired.
6. If the lockout devices are not removed prior to leaving the mill, the Verso - Michigan Operation's Lockout policy, Key Tag Release Procedure will be followed.

Deviation From Policy

1. Policy exceptions are allowed only with the authorization of both the Safety Manager and Acting Area Manager.
2. Because of the magnitude of danger associated with crane failures, the Crane Safety Policy will be enforced. Deviation from this policy will result in disciplinary action up to and including discharge.

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Provisions For Contract Employees

All contract employers, employees, and subcontractors shall adhere to this policy. Deviation from this policy will result in disciplinary action up to and including discharge.

Definitions

Side Pull: To pull a load with a hoist, chain or cable in a direction other than vertical.

Spotter: A designated individual whose responsibilities include looking out for crane and other traffic that could present hazards should they come to close to a work area. The spotter shall communicate with crane/traffic operators and personnel performing overhead work as necessary to prevent collisions. Person(s) initiating affected overhead work are responsible for ensuring a spotter is assigned to that task. The crane spotter will know the locations of the crane emergency stops (E-stops) be familiar with the “Standard Hand Signals for Controlling Overhead and Gantry Cranes” (shown at end of policy), and have in his/her possession an air horn

Daily Visual Inspection: This inspection is conducted each shift prior to crane usage to ensure there are no visible defects that should prevent the crane’s use.

Revisions

Subject: Crane Policy		Revision Date: August 2015	
Effective Date: October 19, 2007		Approved By: Safety Leadership Committee	
Revision History			
REVISION	PAGE(S) AFFECTED	DATE	DESCRIPTION OF CHANGE
01	Section 9	10/19/07	<ul style="list-style-type: none"> Verbiage added regarding not allowing two of the same colored radio control boxes on the floor at the same time.
02	Section 4 – Training Requirements	3/19/2014	<ul style="list-style-type: none"> Verbiage changed to match requirements for all permit/licensing MIOSHA required standards.
03	Section 5-E2, 5-E3 Section 7 Section 8	4/15/14	<ul style="list-style-type: none"> Removed verbiage suggesting tour Mechanic or Electrician can inspect a crane after an incident, changed to only Crane Crew for inspection. Added Section VII – Red Tagging the Crane Required Crane Crew be called for inspection after a crane incident.

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04	Section 4	3/17/15	<ul style="list-style-type: none"> • Training Requirements: Addition of refresher training • Put the policy into new Verso form, name changes
05	Section 2 – Definitions Section 5 C – Use of a Spotter Section 5 B – Safety Operation of the crane	4/21/15	<ul style="list-style-type: none"> • Added Spotter Permit Requirements • Added Spotter Permit Requirements • Bullet 2, transporting a load
06	Section 4 Section 5B	8/15	<ul style="list-style-type: none"> • Testing requirements • Training requirements • Crane signals
07	XXX	7/20	<ul style="list-style-type: none"> • Crane spotter changes (added additional detail) • Removal of the Crane Spotter Permit • Removal of the Crane Key Release Form
08	A. Control Box Checkout	12/20	<ul style="list-style-type: none"> • Added updated contact information.
09	Section 5B Section 5E	3/23	<ul style="list-style-type: none"> • Eliminated key • Eliminated key release information






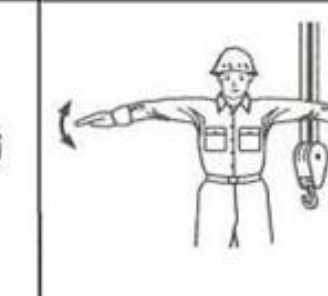
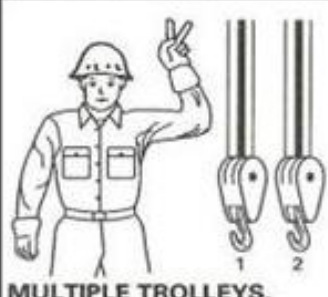
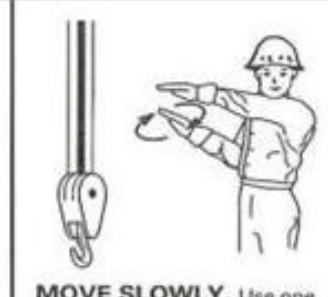
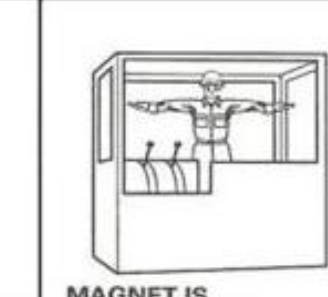
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Standard Hand Signals for Controlling Overhead and Gantry Cranes

		
<p>HOIST. With forearm vertical, forefinger pointing up, move hand in small horizontal circle.</p>	<p>LOWER. With arm extended downward, forefinger pointing down, move hand in small horizontal circle.</p>	<p>BRIDGE TRAVEL. Arm extended forward, hand open and slightly raised, make pushing motion in direction of travel.</p>
		
<p>TROLLEY TRAVEL. Palm up, fingers closed, thumb pointing in direction of motion, jerk hand horizontally.</p>	<p>STOP. Arm extended, palm down, move arm back and forth horizontally.</p>	<p>EMERGENCY STOP. Both arms extended, palms down, move arms back and forth horizontally.</p>
		
<p>MULTIPLE TROLLEYS. Hold up one finger for block marked "1" and two fingers for block marked "2". Regular signals follow.</p>	<p>MOVE SLOWLY. Use one hand to give any motion signal and place other hand motionless in front of hand giving the motion signal. (<i>Hoist slowly</i> shown as example.)</p>	<p>MAGNET IS DISCONNECTED. Crane operator spreads both hands apart – palms up.</p>

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