

## PORTAL CRANE STANDARD OPERATING PROCEDURES

### Pre Start-Up Inspection (PSI) –

#### Ground:

- ❑ remove all 4 chock blocks
- ❑ check tracks for obstacles
- ❑ check wheels, flanges, park brakes and gears for lube and damage, wheel motors for over-heating
- ❑ check pins and holding bolts on keepers
- ❑ check for damaged wiring, oil leaks and bent sill beam
- ❑ check grapple oil level and grapple condition
- ❑ check ladders, landings and elevator for damage
- ❑ when brakes could be frozen there should be someone on the ground to check if wheels are turning
- ❑ gears should be checked once a shift for condition and lack of grease; if gears are starting to show lack of grease, make sure you put some on; type of grease (Capac or equivalent)

#### Top:

- ❑ look for loose objects on walkways and remove
- ❑ inspect wire ropes on drum for spaces between wraps and for wear and lube
- ❑ check busbars and pickups
- ❑ check trolley rails and wheels for wear and cracks
- ❑ check mexican hat, composite cable and hoist weight limit
- ❑ cables should be lubed once a week for maximum life

#### Cab:

- ❑ press emergency stop (red) button in cab and try all controls to make sure they are not sticking
- ❑ press reset button and grapple pump start
- ❑ operate hoist and carefully check that limits work
- ❑ operate grapple spin and open/close to check
- ❑ operate trolley and gantry to check operation
- ❑ ensure no recent damage to cab and the rest of the crane
- ❑ visually inspect north rail and then trolley over and inspect south rail

#### Controls:

On starting hoist and gantry motions, always go from “neutral” or (middle) to “full stick” where it is safe to do so. If you run them slow for long periods of time, the electric motors heat up, eddy current brakes heat up and resistors heat up.

For stopping, a different procedure is required on each motion as follows:

Hoist (Lower): Go from full speed lower to “first point” lower – first point can be detected by feeling a small indent or notch when moving the control stick towards it’s neutral position. Hold hoist in this position until grapple slows down to creep speed and then put stick to neutral.

Gantry –

- ❑ go from full speed to “first point” in whatever direction you are traveling (i.e. if to the west, full speed west to “first point” west.
- ❑ hold in this position until the crane is at creep speed or first point.
- ❑ when at creep speed, “plug” crane in “first point” in the opposite direction.
- ❑ as soon as crane has stopped, put stick to neutral, gantry brakes will apply in approximately 5 seconds.
- ❑ eddy current brakes are electric load brakes on the electric motors, which slow you down and stop equipment during normal operation.
- ❑ parking brakes are to be used only for parking after crane has been stopped already or hoist is at creep speed; then you can go to neutral to apply park brakes.

Gantry Brake (Foot Pedal) –

- ❑ used to bypass the delay timer and immediately apply gantry parking brakes.
- ❑ only to be used where high winds are moving the crane after being plugged to a stop.

Trolley –

- ❑ allow trolley to coast into area required.
- ❑ plug to stop.
- ❑ do not use foot brake.
- ❑ foot brake is only for use when you want to hold trolley in position (i.e. wind).

Trolley (Park Button) –

- ❑ this is used only when you wish to park the trolley (i.e. when another person wishes to board the trolley from the walkway).

Slew Rotate (Left/Right) –

- ❑ only one position (on or off)
- ❑ allow load to coast into position required.

Grapple (Open/Close) –

- ❑ foot pedal and/or thumb switch on master(s)
- ❑ when holding load in grapple, always maintain “grapple closed” in case of a pinched log, especially when coming between legs or close to sawmill and woodroom decks.
- ❑ if grapple tines become out of synchronization, open to full extent.

#### Emergency Stop Button –

- ❑ only use “emergency stop” button in extreme emergencies.
- ❑ in most cases, you can power the crane to a stop by using gantry travel controller quicker than by using stop button
- ❑ use of this button brings on brakes immediately which then locks wheels and you will slide along the track
- ❑ this also could cause flat spots to form on the wheels, causing down time/expense.

#### Limit Switches –

##### Cat Wisker

- to stop hoist drum if cables reach ends of drum, so cables do not go off end of drum and wind around pillow blocks or drum shafts.

##### Upper Limit (Weight)

- final limit up if other limits fail; make sure lifting beam does not hit bottom of trolley. Can only be tested if the rotary switch is disabled for the test.

##### Rotary Limit

- this is the normal upper and lower limit.
- it has a slow down for the upwards motion built into it.

#### Electrical Components -

- ❑ Operators can only reset equipment that does not require the opening of cabinets that have exposed conductors

#### Lock-Out and Grounding Procedures:

1. Portal yard crane operator requires a reset of the switch gear. Contact is made through saw mill operators to saw mill electrician, or by other methods to mill shift electrician. Contact with the portal yard crane operator is required to confirm the operator is in the crane.
2. The reset is to be tried once. If it holds in, then the system was probably tripped by a nuisance trip. No other action is required.
3. Note – If the system resets but there is still no power to the crane(s), the two person grounding out procedure must be followed before the portal yard crane operator can dismount.
4. If the switch gear trips on the reset try, then the switch gear is to be disconnected, visually verified, and the switch gear tagged, locked and grounded out. A saw mill electrician will ground out the system (following proper high voltage lock-out process) when requested to buy direct communication from the portal yard crane operator or by other verified means.

Communication with the portal yard crane operator will be re-established and confirmed of his/her discount. Once this has been done, the saw mill electricians (or mill) can then remove grounds.

Wood processing E&I will then have to re-ground the system before attempting to work on the 4160 system.

5. Key(s) from the portal yard crane switch gear are to be passed personally to the wood processing electrician(s). If this is not possible,
  - a saw mill electrician will store the key in the saw mill electrical shop during regular saw mill operating shifts. At the end of the saw mill operating shift, the key(s) from the portal yard crane switch gear is to be left with scale house security. If a mill shift electrician locks out the portal yard crane switch gear and is not to pass on the key(s) personally to a wood processing electrician, the key(s) is to be left with scale house security.

Priorities of the “need to ground out” the system versus other needs to be clarified and confirmed during the communication process. Safety is of great importance and the “obvious” is to make the right decision.

#### Elevator Operation (Alimak Elevator) -

If elevator is at the top and you are at the bottom landing, there is a call button you push to bring the elevator down. Once you get in (only 2 people maximum), shut both sets of doors and either push and hold the up button or wait for a few seconds and the elevator will move up automatically. Elevator will also stop automatically at the top landing. Always close all doors when you get out.

To come down, push and hold the down button, elevator will stop automatically at the lower landing. If there is anybody on the crane or it is very cold, close all doors so elevator will go back up automatically. Elevator stays at top level when not in use to prevent log damage to the car.

If you lose power to the elevator between landings, open the door above the elevator control panel. On the end of the motor is a motor brake which can be disengaged by pulling lever out.

Caution – Lower elevator slowly and stop periodically to let brake cool off. If elevator goes too fast, there is a safety device which will be activated. To reset the safety device, follow instructions below:

Switch off the three-phase switch and reset the safety device as follows below.

1. Remove the screws (1).
2. Lift cover (2).
3. Remove screws (3).
4. Use the special tool (5) and the cranking lever (4) to screw the nut (7) until the end of the pin (6) is brought level with the end face of the safety device. Install the screws (3) and the cover (2).
5. Remove the cover (9).

6. Tighten screw (8) by hand as much as possible, then use the socket wrench to tighten the screw (8) another 30 degrees.
7. Fit the cover (9).
8. Turn on the three-phase switch and drive the hoist about 20cm upwards to release the centrifugal weight from the friction cone.

Note – Last option is to push in red button in elevator and walk up the elevator track.

#### Housekeeping –

- ❑ Keep your area clean.
- ❑ Use and empty the ash tray in the cab.
- ❑ Clean the windows.
- ❑ Vacuum weekly.
- ❑ Clean up (ongoing) whether it be unloading trucks or reclaiming. Clean up as you go to make it easier for you (your cross shift and everybody concerned).

#### Picking Up Passengers –

- ❑ Do not climb onto the crane without advising the operator.
- ❑ Do not ride on ladders or landings.
- ❑ Wait until passenger(s) is in the cab before moving the crane.
- ❑ If the passenger(s) is not familiar with the elevator, crane, etc., the operator of the crane should go down to pick-up the passenger.

#### Crossings –

- ❑ The crane has the right of way at crossings. All other equipment, trucks, etc., must notify the crane before crossing the tracks.

#### Start-Up Procedures –

- ❑ If starting the crane after a prolonged shut-down in cold weather, open and close the grapple several times after the warm-up period and before using. Do not bottom out cylinders if oil is cold.

#### Cold Weather –

- ❑ If -35° and getting colder, see attachment for cold weather shut-down.

#### Track Maintenance –

- ❑ If a rail break is under 2 inches, crane travel should be minimal.
- ❑ If the break is over 2 inches, don't cross.
- ❑ If track maintenance repairs have to be done when the crane is in operation, radio contact must be kept with crane operator(s).
- ❑ Personal safety from crane travel is a must.

## Unloading Trucks – policy varies from mill to mill

The truck driver will leave at least one wrapper on until he parks where he is to be unloaded. Some mills require the grapple to be around the logs before the last wrapper is taken off.

After making sure that all wrappers are off and the flagging and lights are off, you can get ready to unload. Make sure you know where the driver is. He should be on the far side of the load near the front bunk so he can give the crane operator directions.

Do not lift more than 30 tons (crane capacity). If a 60 ton (overloaded) load comes in, try as near as possible to split the load in half. Balance the load properly. If the load is not balanced properly, it is better to have the load a bit top heavy than butt heavy.

When lifting the load, back away from the cab of the truck at the same time.

At all times, keep an eye out for falling logs and the location of the driver. Sometimes the truck driver will get in a hurry and run under the load that is being lifted off. In that case, he should be given immediate feedback.

## High Wind Conditions –

- ❑ Shutdown the crane when you feel it is unsafe (generally 55mph). Use your own discretion. Look at what is causing the wind. Strong storm with gusts versus steady winds.

## Fog –

- ❑ Shutdown the crane at your own discretion.

## Chock Blocks –

- ❑ Chock blocks are used for an extra safety measure when parking cranes. When left for any length of time (i.e. all night or on weekends), they must be used. If you are just going to leave the crane for a short while and the wind is down, you can close the grapple around some logs before leaving the crane. Apply storm brakes if supplied.

## Board/Leave Crane Safely –

Never carry anything in one hand and attempt to climb the ladder with the other. Place tools or other objects in pockets, tool belt or back pack. Anything that cannot be safely carried on the person must be lifted by the maintenance hoist or on a hand line.

Before boarding the crane, it is essential that the operator understands your intention. Signal or speak to the operator and get his acknowledgement.

The crane must be stationary at a designated boarding station. The operator must be able to see the person boarding. Do not move the crane until the person is safely aboard.

Leaving the crane a similar procedure must be followed. The person wishing to leave the crane must communicate his intentions to the operator who will park the crane at a designated spot and keep the crane stationary until the person leaving the crane signals the operator from the ground.

#### General Safety –

- ❑ Never forget the speed with which the gantry or trolley can move
- ❑ Be alert at all times around moving equipment
- ❑ Know what and how to give the emergency stop signal (both arms extended straight out, crossing back and forth).
- ❑ Never divert the operator's attention while he is operating the crane.
- ❑ Remedy and report any hazards in the operating areas.
- ❑ Be observant and report any signs of damage or wear to the cranes, components or tracks.
- ❑ Keep protective guards in place.
- ❑ Obey lock-out regulations and "do not operate" and "out of order" notices.
- ❑ Ensure there is adequate clearance for the load.
- ❑ Maintain accident records.
- ❑ Follow good housekeeping rules.
- ❑ Follow maintenance safety procedures.
- ❑ Never ride on the grapple or load.
- ❑ Never work under the path of a load.
- ❑ Do not carry loaded grapple over anyone or anything.
- ❑ Make sure that all fire extinguishers are mounted properly and in working order.

#### Do Not:

- ❑ Lift more than rated capacity of hoist or crane.
- ❑ Operate with twisted, kinked or damaged hoist rope.
- ❑ Operate with damaged or malfunctioning hoist.
- ❑ Operate if wire rope is not seated in drum or sheave grooves.
- ❑ Lift people or travel with people on load.
- ❑ Make side pulls with hoist.
- ❑ Operate unless all limit switches are functioning properly.
- ❑ Lower below point where less than two full wraps of rope remain on hoist drum.
- ❑ Use upper limit to "stop" hoist. Limit switch is for "emergency stops" only.
- ❑ Leave operating position with load suspended.
- ❑ Permit load to contact obstacles.
- ❑ Run hoist if a cable breaks; stop operating immediately.
- ❑ Run in unsafe conditions, high wind, fog, etc.
- ❑ Get off crane if there is a loss of power until saw mill disconnects are pulled and 4160 grounded out (crane may be hot).

Do:

- ❑ Test hoist and travel limit devices at the start of each shift.
- ❑ Sound warning signal when approaching personnel.
- ❑ Balance loads properly.
- ❑ Make visual checks on equipment at reasonable intervals and report defects immediately.
- ❑ Use controller to “stop” hoist, not limit switches.
- ❑ Know standard hand signals.
- ❑ Read manufacturer’s operating instruction book.
- ❑ Ask a qualified operator if you are not sure about something.

Shutdown Checks –

- ❑ Raise the hoist to the top and close the grapple until the tines meet. If left open, one side will seep shut faster than the other causing problems when you start-up again.
- ❑ In the summer, press the stop button.
- ❑ In the winter, leave everything running if it is cold.
- ❑ Log shift data.
- ❑ Before leaving, check cab.
- ❑ Announce you are leaving the cab.
- ❑ If you are the last one on the crane (i.e. weekend), you should do a “walk around” check (i.e. check to see if any gantry motors are overly hot).
- ❑ Hit red button off when cold, then start grapple pump.

Cross Shift Procedures:

- ❑ Announce leaving cab.
- ❑ Trolley and gantry brakes on.
- ❑ Grapple in pile or on ground to service.
- ❑ Inform next operator of operational strategies.
- ❑ Inform next operator of any electrical or mechanical problems not resolved.
- ❑ Inform electrical or mechanical coordinators of any problems not resolved.

Personal Protective Equipment (PPE) –

- ❑ Hard Hat (Not required while in cab.)
- ❑ Safety Glasses (Not required while in cab.)
- ❑ Steel Toe Boots
- ❑ Gloves
- ❑ Hearing Protection (optional while operating).
- ❑ Boot Laces will always be tied up.
- ❑ Baggy, loose or torn clothing or coveralls will not be worn.

END