



All DeLong's Facilities

Procedure #:  
CS-026

Overhead Crane/Hoist  
Operation and Training

Rev 1

### 1. Purpose:

1.1 The purpose of this procedure is to outline the procedure for inspection and safe operation of overhead cranes/hoists.

### 2. Responsibility:

2.1 The Environmental Health and Safety (EHS) Specialist is the program coordinator, with overall responsibility for the program, including reviewing and updating this plan as necessary.

2.2 The EHS Specialist and/or Supervisors are responsible for implementation of this procedure and training all employees with regard to this procedure.

### 3. References:

3.1 ASME B30.2-2011 – Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder, Top Running Trolley Hoist)

3.2 29 CFR 1910.179 – Overhead and Gantry Cranes

### 4. Procedure:

#### 4.1 Training

4.1.1 Training shall include those items that apply to the crane and the particular application of the crane.

4.1.2 Only designated personnel will be permitted to operate a crane.

4.1.3 Designated personnel will be trained on the following:

- Physical characteristics of the workplace.
- Performance characteristics and complexity of the crane.
- Type of load to be handled.
- Responsibilities of the crane operator and other persons involved in the movement of the load.

4.1.4 Written and practical examinations will be given that verify the person has acquired the knowledge and skill to operate a particular crane/hoist.

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## 4.2 Operation

### 4.2.1 General Requirements

- A warning sign, lock, or tag that is on any switch that controls power to the crane, such as, but not limited to the crane disconnect, motion disconnect, or runway disconnect, shall not be removed by any person other than the person who placed the sign, lock or tag on the device.
- Warning or safety signs, labels, plates, or tags furnished on the lifting equipment shall not be removed or obscured.
- The crane shall not lift, lower or travel while anyone is on the load or hook.
- The hoist rope shall be free from kinks or twists and shall not be wrapped around the load.
- A hook latch shall be used when applicable.
- The hook latch shall be closed, and shall not be used to support any part of the load.
- The load, sling, or lifting device shall be seated in the bowl of the hook.
- The hoist rope shall be seated in the drum grooves and the sheave grooves.
- Persons shall stay clear of a suspended load.
- Caution shall be exercised when using a crane having a lifting magnet, due to hazard of possible falling metal.
- The crane shall be used to lift loads vertically without side pull except when specifically authorized by a qualified person who has determined that
  - The various parts of the crane will not be overstressed.
  - The hoist rope will not bear or rub against other members of the crane, such as girders or trolley frame, except members specifically designed for such contact.
  - Such side pulls will not cause the hoist rope to be pulled out of the sheave or across drum grooves.
- The crane shall not be used to lift loads in excess of the rated load of the crane except during properly authorized tests or planned engineered lifts in accordance with ASME B30.2 Section 2-3.4.

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- The hoist rope shall be protected so far as is practical from weld spatter or other damaging contaminants.

#### 4.2.2 Before the Lift – Operators Shall:

- Read and be familiar with the applicable provisions of crane equipment safety standards and the instructions listed in manual(s) provided with the equipment
- Be familiar with controls, instructions, and warnings located on the lifting equipment
- Operate the equipment only when physically and otherwise fit.
- Not energize the main switch (crane disconnect) if a warning sign, lock, or tag is on the device until the sign, lock, or tag is removed by the person who placed it on the device, or by an authorized person
- Not remove a warning sign, lock, or tag was placed on the device by another person.
- Place all controllers in the off position before closing the main line disconnect device.
- Verify that no worker is on or adjacent to the crane before closing the main switch (crane disconnect) perform a functional test inspection and test in accordance with the requirements of ASME B30.2 para. 2-2.1.3.
- Not remove or obscure the warning or safety labels, plates, or tags furnished on the lifting equipment.
- Be familiar with and understand hand signals.
- Verify that the hook, bridge, and trolley travel in the same direction as shown on the controls.
- Verify that the hoist rope is free from kinks or twists and is not wrapped around the load.
- Attach the load to the hook or have the load attached to the hook by means of slings or other lifting devices.
- Verify that the load, sling, or lifting device is seated in the bowl of the hook.
- Use a hook latch when applicable.

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- Verify that the hook latch is closed and not supporting any part of the load.
- Verify that the rope is seated in the drum grooves and in the sheave(s) grooves if there is or has been a slack rope condition
- Activate the warning device, when a device is furnished
  - Before starting the bridge or trolley motion of the crane.
  - Intermittently during travel of the crane when approaching persons in the path of the load.
- Board the crane cab only at authorized locations and designated boarding entrances.
- Verify that the transmitter selected is the correct transmitter for the crane to be operated.

#### 4.2.3 During the Lift – Operators Shall

- Respond to signals from the person directing the lift or a designated signalperson.
- Be responsible for the lift when a signal person is not used.
- Obey any stop signal regardless of who gives it.
- Lift a load only if its weight and the weight of any lifting device are within the rated load of the crane and hoist(s) as marked on the crane and hoist load block or load blocks.
  - The operator shall verify the weight of the total load (load and rigging) if there is a question whether the total load to be lifted exceeds the rated load of the crane and/or hoist(s).
  - The operator shall not use a load-limiting device to measure the load.
  - A total load exceeding the rated load shall not be lifted except during properly authorized tests or planned engineered lifts in accordance with ASME B30.2 Section 2-3.4.
- Stop the crane's functions in a controlled manner when the operator has doubt as to the safety of crane operations. Lift operations shall resume only after the safety concerns have been addressed.

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- Verify multiple part lines are not twisting around each other when the lift is made.
- Take up slack rope carefully, lift the load a few inches to check the load holding brake action and verify that the load is secured, balanced, and positioned on the hook and in the sling or lifting device.
- Minimize swinging of the load or load hook.
- Maintain firm footing when operating lifting equipment.
- Avoid sudden acceleration and deceleration of the load.
- Use the crane to lift vertically, without side pull, except when specifically authorized by a qualified person who has determined that
  - The various parts of the crane will not be overstressed.
  - The hoist rope will not bear or rub against other members of the crane, such as girders or trolley frame, except members specifically designed for such contact.
  - Such side pulls will not cause the hoist rope to be pulled out of the sheaves or across drum grooves.
- Verify that the load and rigging are free to move and will clear all obstructions.
- Check the hoist brake(s), if a load approaching the rated load is to be handled, by lifting the load a short distance and applying the brake(s).
- Stop the lifting of the load before the upper limit device is engaged. The hoist limit device that controls the upper limit of travel of the load block shall not be used as an operating control in normal operation.
- Never carry loads over people.
- Concentrate on operating the crane and shall not allow attention to be diverted while operating the crane.
- Activate the warning device, when a device is furnished
  - Before starting the bridge or trolley motion of the crane.
  - Intermittently during travel of the crane when approaching persons in the path of the load.
- Promptly report, to the person responsible for the crane, any malfunction, unusual performance or sound, or damage of equipment

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that could indicate the need for adjustment, repair, or replacement in order to maintain proper operation.

- Contact runway stops or another crane with caution for the safety of the operator and persons on or under the cranes.
- Warn persons on or under a crane when contact is to be made with another crane prior to contact being made.
- Place all controllers or master switches in the off position when power is interrupted during normal operation.
- Check the controllers for correct direction of motion when power is restored after a power outage.
- Follow the directions of the designated person in charge of the operation when two or more cranes are used to lift a load.
- Not leave a suspended load unattended unless provisions have been made to provide auxiliary supporting means under the suspended load, or guards or barriers are utilized on the floor to prevent people from entering the area affected by the suspended load.
- Not lower the load below the point where two wraps of rope remain on each anchorage of the hoisting drum unless a lower-limit device is provided, in which case, no less than one wrap shall remain.
- Stop the lowering of the load before the lower limit device, if furnished, is engaged. The lower limit device shall not be used as an operating device during normal operation.
- Properly secure an outdoor overhead or gantry crane when the wind indicating alarm is activated in accordance with the requirements listed in ASME B30.2 para. 2-1.3.1.
- Use the harness or belt, if provided, for use with the transmitter or place the transmitter in the location intended for its support.
- Not override safety devices on the transmitter.
- Not wear gloves that interfere with the operation of the controls.
- Shut off the transmitter when a power failure occurs.

**4.2.4 After the Lift – Operators Shall:**

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- Lift the load block and attachments above the highest moveable obstruction under the crane when the crane is not in use.
- Notify the next operator if required adjustment, repair, or replacement has not been made.
- Properly secure an outdoor overhead or gantry crane when the crane is shut down.
- Open the crane main line disconnect device and the magnet disconnect switch (when applicable) before leaving the crane cab.
- Place the controllers in the off position, before leaving the controls of the crane.
- Shut off the power to pendant-operated cranes before leaving area.
- Shut off and store transmitter in a designated and protected location.

#### **4.2.5 Signals**

- Signals to the operator shall be in accordance with Figure 1, unless voice communication (telephone, radio, or equivalent) is utilized.
- Hand signals shall be posted conspicuously and should be as illustrated in Figure 1.

**Figure 1**

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

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