HEALTH, SAFETY & ENVIRONMENTAL MANUAL	14.12 Crane Operation			
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CRANE OPERATION

PURPOSE

The safe operation of cranes by J-AAR Assets and Logistics workers is essential for the health and safety of both the operator and others in the vicinity of the crane and its load.

SCOPE

J-AAR Assets and Logistics currently operates 2 types of cranes:

1. Overhead (bridge) crane in the maintenance shop
2. 0–8-ton mobile cranes on field service vehicles

A mobile crane is a mechanical device or structure that incorporates a boom that is,

a. capable of moving in the vertical and horizontal plane
b. capable of raising, lowering, or moving a load suspended from the boom by a hook or rope and;
c. mounted on a mobile base or chassis.

Training

Operators of each type of crane must receive training and instruction on the proper operation and inspection of each crane. Currently third-party external trainers are used.

Crane Hazards

Hazards involving cranes can lead to catastrophic events. Hazards relating to this type of equipment can include:

- Struck-by injuries from moving equipment
- Electrocution from contact with overhead powerlines
- Crushing injuries from equipment overturning
- Dropped Loads

When working with cranes, dropped loads are one of the most common safety hazards. Improper operator training, side pulling with the crane, poor rigging technique, using an incorrect lifting device and hoist overloading, are the most common causes for dropped loads.

To help avoid dropped loads and increase crane safety, the following safety checks shall be considered in addition to any inspections or training required:

- Make sure that all crane operators have complete and up to date training.
- Always follow the manufacturer’s guidelines for proper maintenance.
- Test that the motion’s travel speed matches the intended specifications.
- Ensure that the wire rope is not twisted, kinked, or damaged, in addition, check to ensure all other limit devices are properly functioning.

Hoisting and Rigging

- Ensure all loose materials, parts, blocking and packing have been removed from the load before lifting.
- The centre of gravity of the load shall be directly below the crane hook when rigging the load.
- Remove any slack from the sling and hoisting ropes before lifting the load.
- Make sure that the lifting device seats in the saddle of the hook.

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- Verify that the load is not heavier than the maximum load capacity.
- Loads must not swing when the hoist is moved, raised, or lowered.
- Crane operators must position themselves with operating pendants to the side of the load being lifted and keep loads as low as possible during movement.
- No one is to remain under the load while being hoisted.
- Hoist hooks shall be raised to an appropriate height when parking the crane.

Operating Crane

Mistake: As long as the hoist has enough rope, I can pull a small piece of steel out of the adjoining bay without a problem. After all, the piece I'm picking up is well below capacity.

This is one of the most common mistakes made with cranes. Cranes are designed to lift straight up and lower straight down only.

Mistake: I don't need to worry about overloading an overhead crane; the manufacturer built a big safety factor into its design.

This is the single most dangerous misconception about overhead cranes. Although some parts of an overhead crane are designed with a built-in safety factor, this is not true of the whole crane system. 80% of all cranes structural failures can be attributed to exceeding the crane's operational capacity.

Safe operation:

- Move crane controls smoothly. Avoid abrupt, jerky movements of the load.
- Follow signals only from one signaler in charge of the lift, except a stop signal.
- Make sure everyone is away from the load before hoisting. Sound a warning device and start to hoist slowly.
- Ensure nothing links or catches on the load while raising it or traveling.
- Ensure that nothing obstructs the movement of a load.
- Keep the load under control when lowering a load.
- Do not lower the load below a level that corresponds to less than two full wraps of wire rope left on a drum.
- Do not operate a crane if limit switches are out of order, or if cables show defects.
- Do not attempt lifts beyond the rated load capacity of a crane or slings.
- Do not allow anyone to ride on a load or hooks.
- Do not leave slings dangling from the load hook.
- Do not raise loads higher than necessary to clear objects.
- Do not pass a load over workers.
- Do not reverse a motor until it has come to a full stop except to avoid accidents.
- Do not leave suspended loads unattended.

Knowing how cranes must be used and how they must not be used is critical to crane safety.

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Inspection and Maintenance

Daily inspection is the simplest but most overlooked rule of crane operation. This type of inspection doesn't require a maintenance person, just a common-sense checklist.

- The equipment must be maintained as per the manufacturer's recommendations.
- Inspections and non-destructive testing must be performed (when required by the regulations) and records maintained.
- Maintenance reports and logbooks must be up to date.
- Structural components of the equipment must be working properly.
- Safety system indicators must be used and functioning properly.
- Mobile crane documentation includes a review of the operator logbook and operator manual and proof that the crane was properly inspected and maintained.