Crane and Rigging Policy

Health and Safety FCX-HS32 | Release Date 10/29/2020 | Version 1

POTENTIAL FATAL RISKS

Lifting Operations

CRITICAL CONTROLS

- Barriers and Segregation
- Mechanical Integrity of Lifting Equipment
- Lifting Execution

TRAINING REQUIREMENTS

General Awareness for all personnel working around cranes
Reference the Training Requirements Technical Supplement

ADDITIONAL RESOURCES

ASME
OSHA
NCCCO
CIA
Other local and national resources as required

POLICY

OVERVIEW

This policy applies to all contractors and employees at all locations that utilize cranes and rigging equipment for the movement or adjusting of objects by hoisting. Employees and contractors will not work around or with cranes unless they are properly trained for their level of interaction. This policy does not apply to personnel hoisting in shaft conveyances.

ACTIONS TO STAY SAFE

- Person in charge of lifting operations will have the knowledge to advise crews on load limits of lifting devices.
- Conduct and document inspections prior to use, including monthly/annually (rigging materials including ropes, chains, slings, etc. and crane components including outriggers, cables, blocks, hooks, etc.)
- Conduct pre-task risk assessments and implement critical controls.
- Ensure anti two-block devices are installed and functioning.
- Always use softeners to protect slings from damage.
- Crane operators will not engage in distracting activities.
- Anyone can give the signal to **stop** operations.
- No crane will be loaded beyond its capacity or used for other than its designated purpose.
- Ensure all moving parts are guarded if they expose employees to hazards.
- Complete critical lift plans where necessary (see Technical Supplement).
- All crane activity will utilize a designated signalperson or radios on a designated channel.

Suspended Loads

- No one is permitted to ride the hook, ball or any portion of a load.
- No one is allowed under a load unless it is effectively blocked from inadvertent movement.
- Use spotters, flagging or barricading to communicate the fall zone.
- Use push/pull sticks and tag lines whenever possible.
- Guiding a load into place by hand is only permitted when employees:
  - Have view of the height of the load
  - Understand potential pinch points and trip hazards
  - Understand the potential and actual swing hazards
  - Not at risk of being struck should the load fall
  - Maintain distance from the sling and load and between the sling and hook

OPERATOR EXPECTATIONS

- The operator has final responsibility and control over the crane operations.
- When two or more operators are required, one will be designated as the lead.
- Do not respond to unclear signals, or signals from anyone other than the designated signalperson (with the exception of **STOP**).

- Never intentionally ignore signals.
- All loads will be attached to the hook with a sling or other approved device.
- Position the hook over the load to prevent load swing.
- Properly seat rope in the drum and sheaves, ensuring line is not kinked or twisted (multiple part lines).
- Do not suddenly accelerate or decelerate a load, allow load to contact obstructions, swing over personnel, or allowing side loading or load dragging.
- When side pulling must occur, follow manufacturer recommendations and a written plan approved by a competent person.

Overhead and Gantry Cranes

- Control boxes will be labeled for button action and direction.
- If there are two or more control boxes, all but one must be removed from service and locked, or procedures in place for pitch and catch activities.

Mobile Cranes

- Use outriggers, with pads (when necessary), placed on a firm level surface, for all lifts unless manufacturer says otherwise.
- Consider soil type per 30CFR 1926.1402 when designing crane pads.
- Install swing radius and boom clearance protection as needed.
- Position mobile cranes to obtain the best rated lift capacity relative to the load and landing area.
- Distance from high walls should be equal to the height of the high wall.
- Set crane back from leading edge of benches or excavations (non-sloped-distance equal to the height of the wall or bench; sloped- distance equal to half the height of the wall or bench).
- Lower mast and boom when traveling (with no load).
- Use a spotter when traveling within 20ft (9m) of an overhead power line.
- Never use a rubber tire crane for pick and carry. Complete a risk assessment and follow manufacturer recommendations.
- Ensure load chart is legible and visible to mobile crane operators.
- When weather conditions warrant, de-rate crane capacity per manufacturer's recommendations.
- Follow site specific procedures for lightning detection protocol.
- Assess wind speed prior to making a pick.
- Stop work if wind speeds are in excess of manufacturer's recommendations
- De-energize all overhead power lines before lifting over or under.
- Maintain minimum safe distances from power lines:

Voltage (KV)	Minimum Clearance
Up to 50 KV	10 ft (3.3m)
50-200 KV	15 ft (4.6m)
200-350 KV	20 ft (6.1m)
350-500 KV	25 ft (7.6m)
500-750 KV	35 ft (10.6m)
750-1,000 KV	45 ft (13.7m)

Inspections

- Pre-use inspections
- Monthly inspections documented and retained for at least three (3) months.
- Quarterly inspection for severe use (i.e. tankhouses, corrosive environments) per ASME B30.2
- Annual inspection documented and retained for at least twelve (12) months.
    - Reference 1926.1412 for details for mobile cranes
    - Reference 1910.179 for details for overhead cranes

Crane Certification, Repair

- Crane certifications must be current (within 12 months) and on-site, and a certification tag/label legible on equipment
- Recertify any crane that has been damaged or structurally repaired in any way.
- Inspect all crane equipment prior to use.
- Remove any damaged/defective crane equipment immediately and tag as out of service. Report to supervisors immediately.
- All repairs must be to manufacturer specifications, by qualified individuals, and include load testing if required.

Technical Supplement

Cranes and Rigging Policy FCX-32 |Rigging Requirements | Release Date 10/29/20

Rigging

- All rigging equipment will meet ANSI, ASME, or local equivalent requirements and not exceed designated working load limits (WLL).
- All rigging equipment will be rated. Capacity, material and manufacturer will be indicated on the equipment.
- Rigging assemblies will never be used in excess of the rated capacity of the weakest component.
- Rigging equipment used for towing will be clearly marked for that purpose and not used as rigging.
  - It will be inspected prior use per manufacturer recommendations and not used beyond capacity.
  - Conduct and document inspections prior to use, including monthly/annually
- Rigging equipment used as part of a fall protection system will be clearly marked for that purpose and not used as rigging.
  - It will be inspected prior use per manufacturer recommendations and not used beyond capacity.
  - Conduct and document inspections prior to use, including monthly.

Inspection, Storage and Repair

- A qualified person will inspect all equipment and hoisting materials prior to use.
- Remove any damaged/defective lifting equipment immediately and tag as out of service or destroy. The manufacturer must complete all repairs.
- Maintain documented inspection logs. Inspect all hoisting equipment annually, and equipment used to hoist personnel every 6 months.
- Store in clean, orderly location, per manufacturer recommendations, and away from incompatible material and conditions.
- Do not store equipment on the floor, with liquids, or in direct sunlight.

Load Rating Determination

- Conducted by a qualified rigger prior to a lift.
- Will account for:
  - Weight, shape, and center of gravity of load to be lifted
  - Sling configuration while rigged
  - Stability of the load
  - Weight of all equipment including hoist blocks, headache balls, hooks and rigging and any other items added.

Locally Installed Lifting Points

- All lifting points must meet ASME or equivalent standards.
- Use positive connection points (eyes, D-rings, shackles, etc.) in place of lifting lugs whenever possible.
- Only qualified welders can attach lifting eyes.
- A qualified person will determine eye location.
- When lifting points are welded, contact item manufacturer to determine the type of material you will be attaching lifting points.
- Load rating must be clearly marked on each lifting point.
- Manufacturer installed enclosed lifting points must be labeled as a lift point.

General Inspection Criteria

*__NOTE__: Consult manufacturer recommendations for complete inspection criteria.

Slings (synthetic and wire rope)

- Never modify slings, including shortening by knotting, with bolts or using other makeshift devices.
- Load ratings must be clearly indicated on the sling.
- Shock-loaded slings will be removed from service immediately.
- Do not use slings assembled with wire rope clips.
- Remove fiber core wire rope slings from service and destroy if they are exposed to temperatures over 200F (93C).
- Remove non-fiber core wire rope slings from service and destroy if they are exposed to temperatures over 400F (204C) or below -60F (-51C).
- Polyester and nylon slings will be not be used at greater than 180F (82C).
- Do not use polypropylene slings at greater than 200F (93C).
- Protect from corrosive environments.
- Never expose slings to welding splatter.

Chains

- All chains and come-alongs will be made of alloy steel
- Inspect per manufacturer specifications by a qualified person.
- Conduct and document inspections prior to use, including monthly/annually.

Come-Alongs, Pulleys, Snatch blocks, etc.

- Conduct and document inspections prior to use, including monthly/annually

Hooks

- Must have functional safety latches (unless designed otherwise).
- Never apply heat or repair hooks.
- Inspected per manufacturer specifications by a qualified person.
- Conduct and document inspections prior to use, including monthly/annually
- Shake out hooks are only for shaking out materials.
- Use shackles or hoist rings when two or more slings/choker eyes are used.

Below the Hook Devices

- Identification tags/plates/markings must be permanent and include rated capacity, manufacturers name, device weight, serial/drawing number. NOTE: if the lifting devices can be disassembled, each component must be so marked.
- No substitution of attachment.

Taglines, Push/Pull Sticks

- Must be non-conductive.
- Will be of sufficient strength to restrain the load.
- Must be long enough so that people can control the load without being under it or in the line of fire.
- Of a length so as not to become entangled in nearby equipment/obstacles in the flight path.

Lifting Eyes

- Inspect prior to each lift.

Technical Supplement

Cranes and Rigging Policy FCX-HS32 | Critical Lifts | Release Date 10/29/20

Critical Lifts- Anytime one of the below criteria are met, a critical lift permit must be completed

- **Criteria for Mobile Cranes**
  - Exceeds 75% capacity of the crane
  - Requires more than one crane
  - Damage or upset of the load could release hazardous material in excess of PEL or could endanger personnel
  - The load is unique, irreplaceable, irreparable and vital to system, facility or operation
  - Any lift involving personnel hoisting
  - All lifts within the boom length of energized power lines
  - Lifts where the center of gravity could change
  - Pick and Carry operations
  - Lifts involving non-routine, high risk, or technically difficult rigging arrangements
  - Any lift where the crane is set up over underground facilities (building, structure, transportation tunnel, etc.)
  - Any lift deemed critical by site supervision, project management or other qualified person

- **Criteria for Overhead Cranes**
  - When lifting at 100% of crane capacity
  - Requires more than one hook
  - Damage or upset of the load could release hazardous material in excess of PEL or could endanger personnel
  - The load is unique, irreplaceable, irreparable and vital to system, facility or operation
  - Any lift involving personnel hoisting
  - Lifts where the center of gravity could change
  - Lifts involving non-routine, high risk, or technically difficult rigging arrangements
  - Any lift deemed critical by site supervision, project management or other qualified person

- **Critical Lift Plan and Permit**
  - Complete the permit in its entirety
  - Conduct a pre-job risk assessment
  - If the plan changes in any way, stop work, re-evaluate with documentation and conduct another pre-lift meeting
  - Pre-lift meetings will include review of the critical lift plan, risk and controls, emergency procedures, project coordination, responsibilities, communication methods and any other questions or concerns

FREEPORT-McMoRan

Operator, Rigger and Signalperson Qualification (Training) – Technical Supplement

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Overview

Mobile crane operator requirements apply to operators of all boom trucks, carry deck cranes, rough terrain, all terrain, truck mounted, service trucks utilizing a jib with 2,000-pound capacity or higher, articulated boom trucks, and crawler mounted cranes. Certification is valid for five (5) years. Operators shall be required to successfully meet the qualifications for the specific type crane which they are operating.

Qualification of Mobile Crane Operators

1. Operator and operator trainees will meet the physical qualifications defined in ASME B30.5 or other national/regional or local standard.
   - Evidence that an operator is subject to seizures or loss of physical control shall be sufficient reason for disqualification. Specialized medical tests may be required to determine these conditions.

2. Operator requirements include, but are not limited to:
   - Evidence of successfully passing a physical examination.
   - Satisfactory completion of a written examination covering operational characteristics, controls, and emergency control skills such as response to fire, power line contact, loss of stability, or control malfunction, as well as characteristic and performance questions appropriate to the crane type for which qualification is sought.
   - Demonstrated ability to read, write, comprehend, and exhibit arithmetic skills and load/capacity chart usage, in the language of the crane manufacturer's operation and maintenance instruction materials.
   - Satisfactory completion of a combination written and verbal test on load/capacity chart usage that covers a selection of the configurations (the crane may be equipped to handle) for the type crane for which qualification is being sought.
   - Completing an operation test demonstrating proficiency in handling the specific type crane, including both pre-start and post-start inspection, maneuvering skills, shutdown and securing procedures.
   - Demonstrated understanding of the applicable sections of the B30 Standard for federal, state, and local requirements.

3. Trainee qualification requirements shall include, but not be limited to the following:
   - Evidence of successfully passing a physical examination.
   - Satisfactory completion of a written examination covering safety, operational characteristics and limitation, and controls of the type crane for which they are being qualified.
   - Operator trainees shall demonstrate their ability to read, write, comprehend, and exhibit arithmetic skills and load/capacity chart usage, in the language of the crane manufacturer's operations and maintenance instruction materials.
   - Satisfactory completion of a combination written and verbal test on load/capacity chart usage covering various crane configurations.

4. Trainee qualification, operator qualification, and operator re-qualification shall be performed by a designated person who, by experience and training, fulfills the requirements of a qualified person.

5. Operator physical examinations shall be required every three years, or more frequently if supervision deems it necessary.

6. If specialized medication is being used, physical re-qualification shall be required annually.

Crane Operator Development Process

1. Small Telescoping Boom Mobile Crane up to 21 ton:
   - Classroom Training - Selected employee must attend CRNMTI1001C Mobile crane operator training class and RIGFCX1001C Technical Rigging class. Passing of written examinations is required for both classes as well as successful completion of a Mobile Crane simulator program. Upon completion of these classes and simulator program, employee will be signed off as a Qualified Trainee on Small Telescoping Boom Mobile Crane up to 21 tons. Completion of the above is required before field training may commence.
   - Field Training – A qualified trainee requires at least eight (8) hours of field training on each type of crane (i.e., carry deck, boom truck, etc.) before being considered Task Trained on that type of crane. All field training must be conducted under the supervision of a Certified Crane Operator or Certified Trainer. Final sign off to be conducted by Certified Crane Trainers only.
   - Certification – Upon completion of all classroom and field training and supervisor approval, employee is now eligible to test for Certification on Small Telescoping Boom Mobile Crane up to 21 tons. The certification process includes both a written and practical test. In final preparation for the test, a (24) hour refresher course will be provided by the Training Dept.
   - If the employee passes the certification process, then they are considered a Certified Crane Operator for Small Mobile Cranes up to 21 tons. If the employee does not pass the process, they will be provided more training and allowed to try again. If the employee does not pass the second time, the employee will be disqualified and not allowed to operate such crane for a period of at least three years. [Note: Based on business need, the department superintendent may decide to provide additional training and a third attempt to pass the certification process. Reasons shall be documented.]

2. Medium Telescoping Boom Mobile Crane from 21 to 75 ton:
   - Employees must be certified on a Small Crane up to 21 tons to be considered eligible and have accumulated at least 1,000 hours on Small Cranes up to 21 tons.
   - Field Training – The selected trainee requires at least eight (8) hours of field training on each type of medium sized crane (i.e., boom truck, Link Belt, Grove) before being considered Task Trained on that type of crane. All field training must be conducted under the supervision of a Certified Crane Operator or Certified Trainer. Final sign off to be conducted by Certified Crane Trainers only.
   - Certification – Upon completion of all field training and supervisor approval, employee is now eligible to test for Certification on Medium Telescoping Boom Mobile Crane from 21 to 75 tons. The certification process includes both a written and practical test. In final preparation for the test, a (24) hour refresher course will be provided.
   - If the employee passes the certification process, then they are considered a Certified Crane Operator for Medium Mobile Cranes from 21 to 75 tons. If the employee does not pass the process, they will be provided more training and allowed to try again. If the employee does not pass the second time, then employee will not be eligible to operate medium sized cranes for at least another five years.

3. Large Telescoping Boom Mobile Crane 75 ton and over:
   - Employees must be certified on a medium crane from 21 to 75 tons to be considered eligible and have accumulated at least 1,000 hours on medium cranes.
   - Field Training – The selected trainee requires at least sixteen (16) hours of field training on each type of large sized crane (i.e., Link Belt, Grove) before being considered Task Trained on that type of crane. All field training must be conducted under the supervision of a Certified Crane Operator or Certified Trainer. Final sign off to be conducted by Certified Crane Trainers only.
   - Certification – Upon completion of all field training and supervisor approval, employee is now eligible to test for Certification on Large Telescoping Boom Mobile Crane above 75 tons. The certification process includes both a written and practical test. In final preparation for the test, a (24) hour refresher course will be provided.
   - If the employee passes the certification process, then they are considered a Certified Crane Operator for Large Mobile Cranes 75 tons and over. If the employee does not pass the process, they will be provided more training

and allowed to try again. If the employee does not pass the second time, then employee will not be eligible to operate large sized cranes for at least another five years.

4. Additional Guidance:
   - Employees currently tasked trained on medium and/or large cranes will be 'grandfathered' into applicable crane category. However, employee may still be required to attend the necessary training classes for refresher and certification.
   - Exceptions to the above training process may be necessary depending on specific business needs and shall be evaluated by the area manager on a case by case basis. For example:
     i. There is no requirement to train on Small Crane equipment under 21 tons before progressing to Medium Cranes if such department does not operate Small Cranes as a general practice
     ii. The 1,000 hour 'seat time' criteria may be expedited based on department need and input from the Crane Instructor
   - Mobile crane operators will attend eight-hour refresher courses annually or 24-hour refresher every three years

Qualification of Overhead Crane Operators

- Overhead crane operators will be trained in handling and moving the load
- Will successfully complete the Overhead Operator Training (CRN FCX1002C)
- One person will be deemed in charge when two or more cranes are used to lift a load

Qualification of Riggers

Based on qualified person definition. Need not be qualified for all loads, only the load they are actively rigging. Must attend and successfully complete Technical Rigging Training (RIG FCX1001C).

Qualification of Signal Persons

Signal persons will be qualified through an oral or written test and a practical test by a Qualified Evaluator. Each signalperson must:

- Know and understand the types of signals used, including the Standard Method for hand signals
- Be competent in the application of hand signals
- Have a basic understanding of crane operations and limitations, including the dynamics of swinging and stopping loads and boom deflection from hoisting
- Know and understand the requirements of radio, phone, other electronic and voice signals

All signal persons will attend and successfully complete the Technical Rigging Training (RIG FCX1001C)