Picker Truck Operator -Role&Responsibilites + Training Checklist

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SKILLS AND ABILITIES

Successful picker truck operators are capable decision-makers who are prepared to work independently when necessary. They also enjoy the comradery of being part of a team and traveling to different locations. They often like variety in their work.

To be successful picker truck operators must have:

- coordination and manual dexterity
- the ability to work at heights
- the strength, stamina, and ability to use proper lifting techniques to lift items weighing in excess of 25 kilograms
- good vision
- the ability to work as part of a team and communicate with ground crews, usually using hand signals and voice communication

STANDARD WORKPLACE SAFETY

1. Demonstrate the ability to apply the Occupational Health and Safety Act, Regulation and Code.
2. Explain the role of the employer and employee in regard to Occupational Health and Safety (OH&S) regulations, Worksite Hazardous Materials Information Systems (WHMIS), fire regulations, Workers Compensation Board regulations, and related advisory bodies and agencies.
3. Explain industry practices for hazard assessment and control procedures.
4. Describe the responsibilities of workers and employers to apply emergency procedures.
5. Describe positive tradesperson attitudes with respect to housekeeping, personal protective equipment and emergency procedures.
6. Describe the roles and responsibilities of employers and employees with respect to the selection and use of personal protective equipment (PPE).
7. Select, use and maintain appropriate PPE for worksite applications.

CLIMBING, LIFTING, RIGGING AND HOISTING

1. Select, use and maintain specialized PPE for climbing, lifting and load moving equipment.
2. Describe manual lifting procedures using correct body mechanics.
3. Describe rigging hardware and the safety factor associated with each item.
4. Select the correct equipment for rigging typical loads.
5. Describe hoisting and load moving procedures.

HAZARDOUS MATERIALS & FIRE PROTECTION

1. Describe the roles, responsibilities features and practices related to the workplace hazardous materials information system (WHMIS) program.
2. Describe the three key elements of WHMIS.
3. Describe handling, storing and transporting procedures when dealing with hazardous material.
4. Describe safe venting procedures when working with hazardous materials.
5. Describe fire hazards, classes, procedures and equipment related to fire protection.

PICKER TRUCK COMPONENTS AND FUNCTIONS

1. **Identify** the structural and operational characteristics of picker trucks:
    1. telescoping (stiff) boom
    2. articulating boom
2. **Identify** and describe the components of boom trucks and their functions (for stiff boom and articulating boom):
    1. truck chassis: *rear/front stabilizers, turret or pedestal (including mounting bolts) swing circle, base or heel section, telescopic powered and manual boom sections boom extensions (jibs), main hoist*
    2. Boom- *Boom section, telescoping sections, pinned sections, boom extension cylinders, boom lift cylinders, boom wear pads, rest (cradle)*
    3. Jib
    4. Outriggers: *beams, Jacks, cylinders, pads,*
    5. Swing Assembly: *rotation bearing (slewing ring, swing circle, ball race)*
    6. Carrier: frame, mounting bolts, counterweights
    7. Control System

PICKER TRUCK MAINTENANCE

1. Maintain equipment (including some adjustments) as specified by the manufacturer, which includes:
2. tires - *maintain correct inflation, repair/report any damage before permanent damage occurs report when tires need replacing, tighten wheel lugs if loose*
3. Identify Lubrication points on boom truck
4. Conduct basic housekeeping duties
5. Check for leaks and fluid levels
6. Check Swing gear box
7. Check mounting bolts
8. Describe the functions, characteristics, types, and classification of lubricants.
9. Interpret manufacturer's manual to determine:
    1. types of lubricants
    2. method of lubrication
    3. lubrication schedule
10. Identify the lubrication points for each component.
11. Identify and demonstrate use of:
    1. hand-operated guns and oilers
    2. pneumatic and pressurized equipment
    3. mobile lubricators and dispensers

PICKER TRUCK HYDRAULIC SYSTEMS

1. Describe the basic principles of operation of an hydraulic system:

1. pumps and motors
2. cylinders
3. circuits
4. Describe the transmission of engine power through hydraulic power to such functions as:
    1. swinging/slewing
    2. boom up/down
    3. hydraulic boom extension and retraction
    4. hydraulic pumps and motors
5. Identify the following components of a basic hydraulic system:
    1. reservoirs
    2. pumps
    3. control valves
    4. relief valves (port and main)
    5. connecting hoses

6. cylinders - check and holding valves
7. motors
8. gauges
9. filters/strainers - suction, pressure and circuit coolers
10. hydraulic oil coolers

6. Determine the effects of cold weather and contaminants in the system.

PICKER TRUCK LOG BOOK

1. Describe the steps required to maintain an equipment log book as per owner's instructions and in accordance with the Occupational Health and Safety Act.
2. Record usage and work location of equipment as required by the owner.

BOOM TRUCK CHECKS IN THE YARD (BEFORE STARTING THE ENGINE)

1. Describe the process for conducting checks in the yard (before starting the engine).
2. Use and interpret manufacturer's manual to determine:
    1. inspection procedures
    2. inspection schedule
    3. items to inspect
        1. all fluids at sufficient levels, including fuel, crankcase oil, coolant, hydraulic
        2. battery electrolyte level correct
        3. belts, radiator hoses - in place and not damaged or frayed
        4. visual check for loose bolts/mountings around engines
        5. coolant or oil leaks
        6. air cleaner and connections secure
        7. drain cocks closed
    4. location of items to inspect
    5. location and function of control panel gauges
    6. evidence of vandalism
    7. safety guards - in place
3. Conduct pre-operational checks using tools such as:
    1. wheel wrench
    2. tire gauge

PICKER TRUCK CHECKS IN THE YARD (WITH THE ENGINE RUNNING)

1. Describe the process for conducting checks in the yard (with engine running).
2. Demonstrate the pre-operational checks to be made while the boom truck is running, engine brought up to operating temperature, and with boom truck on firm base:
3. Explain the importance of checks prior to starting the engine.
    1. Engine operation
        1. oil pressure—normal gauge reading
        2. temperature—normal gauge reading
        3. battery—not discharging, ammeter/voltmeter reading normal
        4. air cleaner indicators—normal reading
    2. air systems
4. pressure correct for operation

5. hoses—check for cuts, abrasions and bulging, ensure tight and leak-proof
6. tanks, dryers
    3. hydraulic system
7. check for oil leaks
8. filters: check gauge/warning light/alarm
9. hoses – check for cuts, abrasions and bulging, ensure tight and leak-proof
10. reservoirs
11. All picker truck controls operational (e.g. hoist, swing, boom telescoping, lower/raise load line, swing brake, travel lock (if equipped))
12. test anti-two-blocking devices by raising hook until contact is made
13. back up alarm, warning flashers, bells or horns
14. ensure hydraulic boom will telescope with sections extending equally or sequentially as per manufacturer’s instructions
15. Load weighing or moment devices are operational safety and warning devices are operational

- wire rope—check for wear and replace where necessary (replacement criteria is defined by manufacturer’s specifications and ANSI codes)
- tires—check for cuts, abrasion and wear, adequate pressure
- braking system (service brake check, emergency and/or parking brakes are operational)

6. steering operational, correct alignment, and without excessive slackness lighting is operational, includes
7. dash/control panels
8. floodlights
9. headlights
10. dome lights
11. running/clearance
12. back-up lights
13. fastening devices on boom—pins and keepers in place hooks and hook blocks
14. hook—check for cracks and deformation, hook should rotate freely
15. sheaves—check for excessive wear and rotating freely

TRANSPORTING AND LEAVING PICKER TRUCK UNATTENDED

1. Prepare picker trucks for transportation by following manufacturer's instructions, which include:
    1. remove parts and attachments to comply with highway regulations (counterweights if necessary)
    2. if machine is rigged, tie hook block down and tightening hook block down sufficiently to prevent excessive movement during travel
    3. secure the load with proper tie-downs
    4. set all brakes, latches and house locks
    5. disengage pump (PTO)
    6. lock doors and panels

2. Demonstrate procedures for leaving the boom truck unattended when it is set up to do a job by following manufacturer's instructions, codes and statutes, which include:
    1. landing any attached loads
    2. setting all brakes and locking devices
    3. securing the unit against accidental travel and unexpected movement by the use of blocking and parking brake
    4. disengage pump
    5. park on a level and stable area
    6. retract hydraulic booms and lower into cradle
    7. shut off power source(s)/master switch

8. lock and secure vehicle, equipment, bins and storage containers

OPERATING AND HOISTING (SAFETY AND HAZARDOUS SITUATIONS)

1. Identify the responsibility of each person regarding operating procedures for a lift:
2. crane operator
3. rigger
4. signal person
5. site supervisor
6. maintenance person(s)
7. crane owner
8. Perform trade calculations: mentally, on paper, or with a calculator

1. add
2. subtract
3. multiply
4. divide
5. order of operations
6. fractions
7. convert fractions to decimals
8. percentages
9. convert feet and inches into feet
10. determine the area and volume of geometric shapes (including rectangles,
    1. triangles, cubes (metric and imperial)
11. circumference and area of circles
12. imperial and metric conversion
    3. Use accepted industry formulas for the items listed
13. load weights
14. load distribution
15. effect of sling angle
16. sheave friction
17. number of parts of line required calculate safe working loads for slings

4. Identify and describe how cranes can be overloaded by:
5. lifting loads in excess of their gross capacity
6. booming down and increasing load radius
7. telescoping out and increasing load radius
8. shock loading
9. Describe and demonstrate the correct way to raise or lower the load, boom and swing the load including points such as:
    1. raising
    2. lowering
    3. swinging
    4. releasing the load
    5. raising and lowering booms
    6. telescoping hydraulic booms
    7. no impact
    8. no overloading
    9. no excessive side loading
    10. no free fall
    11. no swing-out
    12. allowance made for wind
    13. allowance for boom deflection (loading/unloading)
10. Define and describe static load vs. dynamic load.
11. Describe the process for releasing the load without impact.

12. Describe how to protect personnel in the vicinity of the lift by:
    1. avoiding swinging over people/property if possible
    2. using barricades
    3. using job rules and Alberta Occupational Health and Safety Act
    4. ensuring that when welding is being done
        1. the boom truck is properly grounded
        2. welding cables are not dragged across the machine
    5. Describe the operation of the crane around high voltage equipment.
        1. interpret provincial statutes and codes to determine procedures to use when working around high voltage equipment
        2. describe how to operate around high voltage equipment considering
            1. limits of approach—defined by statutes
            2. location of personnel
                1. only required personnel to be in area of lift
                2. no one is to be simultaneously touching boom truck or load and ground
                3. notification of local utility company when and where boom truck is to be working use of designated signal person(s)
            3. Describe procedures to follow if electrical contact is made:
                1. operator remains at controls
                2. warn people away

- remove contact if possible

1. escape procedures if necessary
2. inspect boom truck for damage (recertification)

9. Describe and demonstrate communication during the lift:
    1. communication with job supervisors about general job procedures
    2. audio signals to lift, move, lower, and position various loads when loads are out of view of operator
    3. types and characteristics of audio communicators
    4. proper operation of audio communicators
10. Recognize crane and hoist operation terminology and movements.
11. Use hand signals to lift, move, lower, and position loads when loads are out of view of the operator.
12. Use and interpret international hand signals and determine their application for picker truck and hoist operations.
13. Use and interpret horn signals.
14. Describe how a signal-person must be identified.
15. Assess factors that influence the capacity of a boom truck (articulating and telescoping)
16. Describe set-up conditions affecting boom truck capacity, such as:
    1. off-centre reeving
    2. equipment condition
    3. off-level boom truck
    4. outrigger extension
    5. effect of firm base
    6. definition of a firm base
    7. hook placement
17. Describe operating conditions affecting boom truck capacity, such as:
18. side loading
19. impact loading
20. swing-out
21. swing rate
22. weather
    1. wind
    2. cold

- moisture

1. ice and snow

1. machine configuration

2. base configuration
3. load radius
4. vertical hoist line
5. dynamic loading caused by rapid hoisting or lowering

PRINCIPLES OF LEVERAGE

1. Describe the principles of leverage and the relationship between leverage and stability.
2. Define the following terms:
    1. leverage of a crane
    2. leverage of a load
    3. tipping axis
    4. centre of rotation
    5. centre of gravity
3. Identify the symbol for centre of gravity.
4. Identify and determine the centre of gravity for major boom trucks:
    1. centre of gravity of a crane
    2. centre of gravity of a load
    3. centre of gravity location during rotation of upper works
5. Define fulcrum and how it applies to crane operation.
6. Describe the basic mechanical advantage of leverage systems and the leverage systems used in craning:
    1. class 1 lever
    2. class 2 lever
    3. class 3 lever
7. Describe the load leverage principles including:
    1. leverage and stability
    2. stability vs. instability
    3. effect of tipping axis location on stability and capacity
8. Describe changes in crane leverage during rotation of upper works:
    1. most stable area
    2. less stable area
    3. least stable area
9. Describe changes in crane capacity during rotation of upper works for:
    1. greatest capacity
    2. less capacity
    3. least capacity
10. Describe the load moment for:
    1. tipping moment
    2. resisting moment
11. Describe the tipping axis location as the upper structure rotates.
12. Describe forward stability rating in percentage of tipping.
13. Describe backward stability for a Picker truck.
14. Describe static load vs. dynamic load.
15. Describe the effect of the load on the boom:

AREAS OF OPERATION

1. Describe the importance of areas for operation for picker trucks.
2. Identify the sweep area.
3. Describe the division of sweep area into quadrants.
4. Describe and identify working areas.

LOADS CHARTS

1. Describe how the factors listed below affect load chart conditions:
    1. boom length
    2. operating radius
    3. boom angle
    4. boom truck configuration
    5. load weight
2. Explain the difference between gross capacity and net capacity.
3. Explain the difference between gross load and net load.
4. Describe the difference between:
    1. tipping capacity
    2. structural capacity

OPERATING PROCEDURES

1. Explain and interpret lift study drawings.
2. Inspect access to the picker truck site to ensure area is compacted, graded and free from hazards:
    1. access roads adequate
    2. operating locations firm and level
    3. operating locations away from trenches and/or underground hazards
    4. blocking and/or hardwood mats available
    5. operating locations away from power lines
    6. sufficient room for crane erection
    7. access to site restricted to authorized personnel
    8. competent personnel only (rigging crew)
3. Determine the crane configuration and attachments required for the lift taking into consideration pre-calculated gross load in accordance with manufacturers' manuals, OH & S policy.
4. Determine proper set up location.
5. Locate the truck on firm level ground with outriggers extended and stabilizers set:
    1. correct outrigger use (set up)
    2. as per manufacturer's recommendation
    3. pads on firm footing
    4. pads to be at right angle and secured
    5. beams extended to manufacturer's specifications
6. Demonstrate calculations of maximum outrigger loadings(use outrigger pad blocking to reduce ground pressure)
7. Describe procedures necessary when temperatures fall within cold weather operations parameters:
8. avoid maximum capacity lifts
9. slow down cycle of operation
10. no dynamic or shock loading of any structural components
11. proper warm up of hydraulic system
12. slow, smooth and infrequent lifting and only if necessary
13. lifting as per manufacturer's charts

OPERATING PROCEDURES

1. Identify weights of loads using available means:
2. information shown on load
3. source of weight information, e.g. drawings, shipping bills, catalogues, etc.
4. use of load weighing devices
5. estimating weight using accepted industry formulas (volume, density and area)

1. Demonstrate the use of a lift study to perform a set-up.
2. Determine the centre of gravity of the load:
    1. stable vs. unstable
    2. relative to rigging position and sling force

3. centre of gravity of load under crane hook

3. Define and determine a critical lift: (shell defined this as anything over 50% of the capacity of the Truck, not sure if this applies to you J
    1. precautions to be taken
    2. lift study
4. Demonstrate use of boom angle indicators (exact radius over boom angle)
5. Identify reasons for slack rope on drums and uneven spooling including:
    1. rope incorrectly installed on the drum
    2. incorrect fleet angle
    3. sheaves poorly lubricated
    4. sheaves stiff due to cold weather
    5. effect of wind on the hoist line (side wind)
    6. sudden stop as load is being hoisted
    7. hook block or headache ball too light
    8. sudden change in rope tension
        1. excessive speed when lowering hook block or headache ball
    9. Demonstrate procedures to protect personnel during the lift:
        1. between upper works and carrier
        2. swing area of crane during operation
        3. outrigger jacks during lowering
        4. extending and retracting outrigger beams
    10. Demonstrate safety procedures when working near power lines:
        1. operator responsibility
        2. site supervisor responsibility
        3. pre-job planning
        4. rules and regulations (OH & S)
        5. maintaining a safe distance
        6. in the event of contact
        7. bailout procedure
        8. working near transformers
    11. Describe the effect on the boom when the following happens:
        1. load contacting boom
        2. boom touching or resting on structure
        3. boom design (compression vs. bending)
    12. Describe how two-blocking happens and the results:
        1. telescoping or lowering boom
        2. hook block or headache ball pull into boom tip sheaves
    13. Describe how to telescope the booms following manufacturer’s instructions:
        1. powered section extended equally
        2. newer cranes designed for sequencing of boom sections
        3. use of manually telescoping sections
    14. Interpret and use international signals designed for hoisting operations:
        1. use and interpret hand signals
        2. use audio or radio signals
    15. Identify and describe procedures and precautions when working with jibs:
        1. jib offset to main boom
        2. safe operating procedures with long booms and jibs
        3. jib capacity (strength or tipping rating)
    16. Describe the effects and causes of overloading:
        1. tipping failure
        2. structural failure
        3. mechanical failure
    17. Demonstrate the correct outrigger use (set up):
        1. tires off the ground as per manufacturer
        2. pads on firm footing
        3. pads to be at right angle and secured
        4. beams extended to manufacturer’s specifications
    18. Identify safe ground stability for the operation of a boom truck:
        1. crane and ground pressure calculations

    2. outrigger pads blocking to reduce ground pressure
19. Demonstrate proper procedures to level the crane with ground by raising or lowering the outrigger jacks, blocking, and ensuring crane is level using a levelling device:
    1. in the cab level
    2. on the carrier deck level
    3. on the base of turntable (carpenter's level)
    4. using hoist line

BOOM TRUCK SET UP (PRACTICAL)

1. Demonstrate proper set up for boom trucks:

1. minimum swing clearance
2. outrigger beams fully extended (most boom trucks)
3. pads set on firm footing
4. boom truck level
5. know weight of load
6. know radius of lift
7. centre of gravity of load in line with hoist line
8. site inspection for hazards
9. Describe safety procedures involved in rigging up or rigging down boom trucks.
10. Demonstrate procedures of rigging up or rigging down for boom trucks.
11. Demonstrate how to measure the load radius.
12. Determine the total load from the net load.
13. Apply the total load to the values in the load capacity chart, area diagram and range diagram, to determine where the load can be placed prior to and after hoisting.
14. Determine maximum radii at which given weights may be safely handled.
15. Operate the equipment in a safe, smooth and controlled manner.
16. Describe the following workplace coaching skills used for training apprentices:
    1. identify the point of the lesson
    2. link the lesson
    3. demonstrate a skill
    4. provide opportunity to practice a skill
    5. give feedback to the learner
    6. assess the learner's progress

SAFE RIGGING PRACTICES AND RIGGING PROCEDURES

1. Identify types of rigging hardware:
    1. shackles
    2. wire ropes
    3. slings
    4. turnbuckles
    5. come-along
    6. choker hooks
    7. spreader bars
    8. equalizer beams
    9. chain hoists
    10. sheaves
    11. hooks
    12. rings, links and swivels
    13. eye bolts and lugs
    14. wire rope blocks
    15. snatch block
2. Describe and demonstrate the uses of spreader bars, including:
    1. purpose

    2. effect on horizontal forces on the load
3. Explain and demonstrate the use of taglines to control the load.
4. Describe how loading is equalized by using such devices as:
    1. turnbuckles
    2. come-along or chain hoist
    3. safety slings (used with come-along and chain hoist)
5. Describe and demonstrate procedures for rigging boom trucks from:
    1. wire rope on drums of boom truck
    2. wire rope on reels
6. Describe and demonstrate methods of reeving and lacing.
7. Identify and describe types and configurations for slings including:
    1. wire rope slings
    2. nylon web slings
    3. polyester and Kevlar
    4. metal mesh slings
    5. chain slings
8. State the design factor for slings.
9. Recognise and demonstrate the use of various sling arrangements.
    1. single vertical hitch
    2. bridle hitch
    3. single basket hitch
    4. double basket hitch
    5. double wrap basket hitch
    6. single choker hitch
    7. bridle choker hitch
    8. double wrap choker hitch
10. Describe materials and constructions used in slings, such as:
    1. Synthetic (Nylon web, Round Sling, Twin path)
    2. Steel (wire rope) (Grommet, eye to eye, eye to hook)
    3. Chain(master link to master link, masterlink to hook, multiple chains on masterlink to masterlink or hooks – alloy steel)
11. Explain the advantages and disadvantages of slings made from:
12. synthetic materials
13. wire rope
14. chain

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