MOUNT-DISMOUNT MULTIPIECE WHEEL ASSEMBLIES (LOOSE)

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The following is a step-by-step procedure on how to complete a specific task or meet a facility specific requirement. Standard Operating Procedures (SOPs) are written for all identified critical tasks. By virtue of the hazard or complexity associated with critical tasks it is paramount that the SOP be followed as written. SOPs contain a listing of high-level hazards associated with the task, for detailed hazard analysis reference the applicable Task Hazard Assessments. SOPs do not replace the requirements contained in the company Standards, Codes, and Processes nor does it replace the need to comply with required legislation. Section 8.0 references documentation that the worker shall understand before work commences.

1.0 PURPOSE

- To establish a Company standard to safely and effectively carry out work as it applies to mounting or dismounting five piece wheel assemblies on off the road equipment when they are loose.

2.0 SCOPE AND APPLICATION

- This document applies to all Company Heavy Construction and Mining operations. Ensure all site-specific requirements are met or exceeded before performing the task.

3.0 HAZARDS AND CONTROLS

- Uncontrolled movement of equipment.
    - Isolate all forms of hazardous energy and use wheel chocks. Follow 950C-C-028 Hazardous Energy Isolation Code.
    - Inspect equipment prior to use.
    - When using tire manipulators to install/remove tires and wheel components:
        (a) Do not stand in the line of fire.
        (b) Do not stand under manipulator arms.
        (c) Ensure Park brake has been set before exiting tire manipulator.
- Tire rupture during installation and removal of tires and wheel components.
    - Ensure tire-wheel assemblies are fully deflated prior to mount-dismount. Run a wire down the valve stem to remove obstructions that would prevent full deflation.
    - Do not stand in the line of fire or trajectory zone when inflating tire.
    - Do not clamp the hands of the tire manipulator on the tire during inflation.
- Noise exposure when deflating tires.
    - Wear hearing protection when deflating tires. Double hearing protection may be required for tires with super large bore or larger valve stems; alternatively, a muffler may be used to reduce the noise.
- Contact with foreign objects when deflating tires.
    - Do not stand in the line of fire, always stand to one side to avoid contact with dirt and debris.

- Pinch points during installation and removal of wheel components.
    - Use tooling to keep hands and fingers away from pinch points.
    - Do not use fingers to remove O-rings.
    - Do not use fingers to pry lock ring out of groove. Lock rings are under tension and can spring from grooves resulting in injury.
    - Do not place hands or fingers near the lock ring split.
    - Ensure tire manipulator or truck mounted crane does not move when applying inward pressure to bead seat band/flange. Tire manipulators must have park brake engaged. Truck mounted cranes must use load holding valves.
    - Never use hands or fingers to insert or remove spacers.
- Line of fire when removing lock ring.
    - Do not allow lock ring to fall to ground, use controlled movement to lower to the ground. Use a lock ring catcher for larger lock rings.
    - Use more than one person to control the lock ring if load is too heavy or awkward.
    - Place lock ring away from work area and stack correctly to minimize the potential of falling.
    - Do not attempt to stop or catch a lock ring if it is falling to the ground.
- Tool failure.
    - Inspect all tools prior to task and ensure they have been calibrated as required.
    - Ensure bead breakers are set up correctly and locked at a right angle position to the rim. The bead breaker clevis must be snug with the rim and both feet should be touching the side ring flange.
- Injuries caused by using bead breaker.
    - Do not stand in front of bead breaker when using.
    - Do not hold onto pressurized bead breaker hoses; ruptured hoses can cause oil injection injuries.
    - Wear hearing protection.
- Uncontrolled work area
    - Communicate with co-workers involved in the removal-installation process.
    - Keep work area clear of unnecessary personnel, erect barriers as required.
- Equipment falling off jacks and stands.
    - Use jacks rated for the weight of the equipment and install under manufacturer designated lifting points.
    - Isolate all forms of hazardous energy, use wheel chocks on the opposite side of the equipment being jacked.
    - Never support an axle end with a jack by itself. Use stands with sufficient safe working load or cribbing to support the equipment. Jack stands with load holding rings or u-rings may be used to support the load providing personnel are not under the equipment.

- Do not push or pull too aggressively when removing tire from vehicle. Used controlled movement.

4.0 CHECKLIST

- ☐ Attend all preparatory meetings (i.e. daily PSI; job scope; review of JSA's and SOPs for the job)
- ☐ Complete FLRA cards before starting the work.
- ☐ Ensure all personnel involved in the task are aware of the hazards and the controls to be used, as identified in the SOP's; JSA's; and FLRA's.
- ☐ Conduct a pre-job inspection of all equipment to be worked on and tools to be used.
- ☐ **Standard of Training required for working on this job: On-the job training.**

5.0 DEFINITIONS

5.1 Company

Means North American Construction Group Ltd. (NACG) and all directly or indirectly owned subsidiary companies, including joint ventures.

5.2 Company Personnel

Includes the Company's employees, officers, directors, agents, associates, consultants/contractors, temporary employees and third-party processors.

5.3 HSE

Refers to the Health, Safety & Environment department.

6.0 PROCEDURE

6.1 Dismounting Five Piece Wheel Assemblies (Loose)

1) Complete a hazard assessment for task. Follow up with supervisor if unsure of task or if hazards cannot be controlled.
2) Perform a pre-use inspection of tire manipulator prior to operation. Follow up with supervisor if equipment is damaged or defective.
3) Isolate hazardous energy on equipment and install wheel chocks. Follow 950C-C-028 Hazardous Energy Isolation Code.
4) Lift the axle using an approved hydraulic jack with sufficient lifting capacity. Ensure jack is positioned under manufacturer approved lifting points, refer to manufacturer service manuals. Use stands and/or cribbing to support load, never support an axle end with the jack by itself. Jack stands with load holding rings or u-rings may be used to support the load providing personnel are not under the equipment.
5) Remove valve core or core housing and deflate tire completely. Do not stand in front of the valve stem. Use a deflator with muffler if the valve stem is super large bore or larger.
6) Insert wire into valve assembly to ensure complete deflation.
7) Use the tire manipulator to place the assembly on a flat and firm surface with the lock ring facing up.

8) Unseat bead band to expose O-ring and lock ring by using a wheeled manipulator or truck mounted crane to apply downward pressure on the bead seat band / flange with the manipulator pads. Ensure the O-ring and lock ring are easily accessible. Do not over push.

9) Ensure the tire manipulator is secure and will not release downward pressure on the assembly. Apply Park brake.

10) Use two lock ring bars to dislodge lock ring from lock ring groove. Start at the split in the lock ring. While holding the first bar under the end of the lock ring, insert a second bar or lever under the raised portion and gradually pry the lock ring away from the rim. Never place fingers under lock ring. Take care not to bend or distort the ring. Place lock ring away from area.

11) Insert an O-ring pick, screwdriver or tire iron under the O-ring and pull it free from the O-ring groove. Do NOT use your fingers to remove the O-ring.

12) Lift the assembly with the tire manipulator or crane and turn it over so that the lock ring side is now facing DOWN.

13) Use a hydraulic bead breaker or a hydraulic cylinder to break the back bead from the rim base. Apply enough pressure to depress the ring flange down approximately ¾ of an inch; release hydraulic pressure and reposition bead breaker tool until the bead is completely broken. Use spacers as required to fill in gaps between the rim and flange.

14) Lift the assembly with the tire manipulator or crane and turn it over so the tire, bead seat band and side ring flange can be removed from the rim base. Set the assembly on a flat hard surface with the bead seat band and side ring flange facing up.

15) Repeat step (13) to use a hydraulic bead breaker or hydraulic cylinder to remove the bead seat band and side ring flange from the front bead. If necessary, position a spacer in the gap between the rim base and the side ring flange.

16) Remove the tire with the tire manipulator.

17) Thoroughly clean the wheel and all wheel parts with a wire brush inspecting all parts for cracks, excessive wear or other abnormalities. Replace if necessary. Pay close attention to O-ring groove, lock ring groove and all welded areas while inspecting.

6.2 Mounting Five Piece OTR Wheel Assemblies (Loose)

1) Complete a hazard assessment for task. Follow up with supervisor if unsure of task or if hazards cannot be controlled.

2) Perform a pre-use inspection of tire manipulator prior to operation. Follow up with supervisor if equipment is damaged or defective.

3) Isolate hazardous energy on equipment and install wheel chocks. Follow 950C-C-028 Hazardous Energy Isolation Code.

4) Place wheelbase on stand or clean and firm platform to facilitate ease of mounting tire. Ensure lock ring and O-ring grooves are in the uppermost position.

5) Ensure all wheel assembly components are matched.

6) Install back side ring flange onto wheelbase so the concave side is facing AWAY from the operator. Use tire manipulator or crane as required.
7) Lubricate both beads with a non-oil-based lubricant, especially at the O-ring contact area.
8) Add “liquid tire life” if applicable.
9) Using tire manipulator install tire onto wheelbase being careful not to curl or distort the beads.
10) Install the front flange ring with the concave side facing the operator.
11) Install the bead seat band and tap with a soft steel hammer until the bead band drops below the O-ring groove. Lubricate the bead seat band where it contacts the O-ring.
12) Position tire manipulator so the bead seat band and side ring flange can be depressed far enough to expose the O-ring and lock ring grooves. Install appropriately sized O-ring. Use a tire iron or screwdriver to make sure it is properly positioned. Never use your fingers or hands to install the O-ring
13) Position the split in lock ring opposite the valve stem and guide the lock ring into the groove using lock ring bars making sure it is uniformly secured around the rim. Use care not to distort the lock ring.
14) Make sure all components are properly aligned and the O-ring is in the O-ring groove in the rim. Slowly release pressure on the tire manipulator so the bead seat band contacts the O-ring and lock ring.
15) Inflate the tire to five (5) PSI while ensuring the assembly seats properly. Tap the lock ring with a soft steel hammer to ensure proper seating.
16) Continue to inflate the assembly until the beads of the tire and wheel components are properly seated. If the assembly is to be stored, inflate to 10% beyond the recommended cold tire inflation pressure and deflate back to 20 PSI. This will ensure proper bead seating.

7.0 NOTES

If this task is to be done by a method different than described in this SOP, the work must **STOP,** and the alternate method must be **DOCUMENTED** with an adequate hazard assessment tool such as a JSA. The document must be **APPROVED** by a supervisor before such procedures are implemented.

8.0 REFERENCES

- Alberta Occupational Health and Safety Act, Regulation and Code – Part 12, Section 193, Tire Servicing
- Alberta Occupational Health and Safety Act, Regulation and Code – Part 14, Sections 208 & 209, Lifting and Handling Loads
- Tire Industry Association Earth Mover Tire Service Training Program – Module 8 – Service Five Piece Rim on Machine
- Equipment Manufacturer Service Manuals – Disassembly and Assembly of Wheels
- 960C-SOP-501 Rad Gun Use
- 960C-SOP-503 Hytorque Wrench; Use
- 960C-SOP-504 Hand Tools; Use of
- 950C-C-028 Hazardous Energy Isolation Code

9.0 APPENDICES

- No appendices.