ICE LUGGING TRACKS USING TRACK TURNER DEVICE

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3	APP	Apr 18, 2025	Approved	Crystal Chisholm	Gerald Kuipers	Tammy Siver
2	APP	Apr 13, 2022	Approved			Tammy Siver
1	APP	Jan 15, 2012	Approved	Tammy Siver	Stan Miller	Stan Miller
Rev	**Status**	**Rev. Date**	**Status Description**	**Prepared by**	**Reviewed by**	**Approved by**

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 ice lugging tracks using a tracking turning device.

2.0 SCOPE AND APPLICATION

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

3.0 HAZARDS AND CONTROLS

- Striking or crushing a person while positioning stands under the machine.
    - Follow 960C-SOP-401 Raising-Blocking Dozers Using Hydraulic Attachments in Shop.
- Machine falling off stands due to vibration caused by tracks turning.
    - Follow 960C-SOP-401 Raising-Blocking Dozers Using Hydraulic Attachments.
- Machine starts or moves while being worked on.
    - Dozer will remain shut off and locked out at all times. Track turning device (inching drive unit) will rotate the tracks under the control of the front welder, and only when an adequate “all clear” communication signal has been received from the rear welder. Rear welder must be clear of the machine and in full view of the front welder.
- Other personnel entering work area while tracks are turning, or ice lugs are being welded.
    - Flag off area to control access to machine.
    - Set up welding screens to protect other personnel from welding flashes and sparks.
- Musculoskeletal injuries from heavy, awkward and over shoulder height lifting.
    - Use two people or a mechanical lifting device to lift, position and secure inching drive unit in final drive.
    - Stretch before task.

- Pinch points when inserting inching drive unit into final drive.
    - Ensure fingers, hands, and other body parts are not in the line of fire.
    - Use two people or a mechanical lifting device to assist in positioning the unit.
- Damaging inching drive unit due to a lack of hydraulic fluid.
    - Check hydraulic fluid reservoir prior to operation and top up as required.
- Damaging splined drivers or inching drive unit.
    - Use the correct splined driver and adapter for the size of machine being worked on.
    - Confirm number on splined driver matches dozer size and review manufacturer's Operations and Maintenance Guidelines to ensure the adapter matches the dozer model.
- Rigging failure or reaction arm not secured, resulting in contact with nearby personnel.
    - Use adequate rigging and attachment points for the task.
    - Inspect rigging prior to use and remove damaged or defective rigging.
    - Ensure no personnel are in the line of fire when moving the track.
- Stored energy in hydraulic oil hoses on the inching drive unit.
    - Inspect hoses, connections and fittings prior to use.
    - Ensure pressure does not exceed 1500 PSI while in use, and ensure PSI is at zero prior to disconnecting hoses.
- Rotating track striking a welder.
    - Clearly communicate between the two welders that the track is going to rotate and ensure each person is clear of the track.
- Pinch points created when track is turning (i.e. between track and stabilizer link).
    - Ensure all body parts and clothing are clear from the track and surrounding areas while track is turning.
    - Front welder will use the track turner to rotate the tracks while the rear welder has stepped clear from the machine and is in full view of the front welder.
    - Turn track in the reverse direction.
    - Optional: Lift blade and support it on stands to have better access to the right-side track.
- Complacency and strain injuries due to length of task and static body position.
    - Take frequent micro breaks.
    - Optional: Lift blade and support on stands. This will create more room at the front of the machine and will allow the welder to sit on a stool while completing the task (better ergonomic position).

- Mud and frozen material falling from machine and contacting welder.
    - Clean the tracks and frame as much as possible.
    - Ensure there is no hanging material or frozen lumps present.
    - Do not raise and block blade if the frame is not clean.
- Uncontrolled and/or unanticipated movement of inching drive unit and track.
    - Foot controller pedal and dead man switch must be activated at the same time to activate the track turning device.
    - Ensure unit is powered down and unplugged when left unattended.
- Slipping, tripping, or falling over debris, ice or water on the floor/ground, as well as cables from welding machines and track turning device.
    - Clean the tracks and frames as much as possible to control the material on the floor.
    - Limit tripping hazards from cables.
    - Remove water from work area.
- Electrocution and/or electrical short from power cable on inching drive unit.
    - Inspect power cable prior to plugging in unit.
    - Ensure there is no water around power cable.
- Hot work hazards (i.e. sparks, fumes, flashes, etc.)
    - Follow 960C-SOP-307 Hot Work by Welders.
- Debris and leaks causing fire during hot work.
    - Ensure machine and work area are inspected prior to start of task and that leaks have been controlled.
    - Ensure tracks and frame are free from dirt, debris, and flammable material (i.e. oil sands).

4.0 CHECKLIST

- ☐ Attend all preparatory meetings (IE: daily PSI; job scope; review of JSAs 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 SOPs; JSAs; and FLRAs.
- ☐ 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

1) Complete a hazard assessment (i.e. FLRA) for task. Inform supervisor if unsure of task or if there are hazards outside of the worker's control.

2) Inspect all tooling before task. Remove from service and report to supervision any damaged or defective tooling.

3) Check for oil and fuel leaks. If there are substantial fuel or oil leaks, contact the supervisor to have the repairs done before the welding starts. For oil leaks, place drip pans and shield them so hot sparks or slag cannot ignite the oil. For minor leaks, use floor dry compound to absorb oil and prevent pooling.

4) Place the machine on stands so the tracks can rotate.

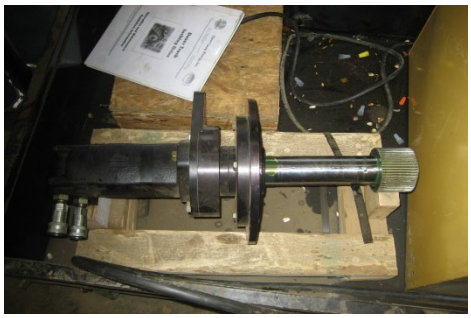
5) Isolate (lockout) machine and flag off work area to control entry of unnecessary personnel.

6) Remove the tires from under the tracks so they will not be pushed by the lugs when the track is rotated.

7) Remove the axle covers and axles as per Caterpillar or OEM procedures.

8) Clean the drive shaft and the mounting flange area. Ensure that no debris is allowed to enter into the final drive area.

9) Assemble inching drive unit using the correct splined drivers and adapters for the size and model of the dozer being ice lugged. Splined drivers will be stamped on the end with the machine model they are used on. Refer to the manufacturer's Operations and Maintenance Guidelines Information package for more information on splined driver and adapter types.



10) Inspect inching drive unit. Make sure all bolts and drive shaft are tight and secure.

11) Use two people or a mechanical lifting device to install inching drive unit into the final drive. Ensure the splines are fully engaged in the sun gear. Watch for pinch points and line of fire hazards. Secure mounting bolts using basic hand tools.

12) Using adequate rigging, securely fasten the inching drive unit's reaction arm to a suitable anchor point on the machine. This will prevent the rotation of the unit while it's in operation. Depending on the size of the machine, a 2–3-inch ratchet strap or a 1 inch sling can be wrapped around the trunnion and connected to the reaction arm to prevent movement.

13) Connect hoses to unit, making sure couplings and fittings are clean and properly connected.

14) Complete a walk-around of the dozer and track area to ensure that no personnel, tools, equipment, or other hazards are around the machine and track area.

15) Plug in the unit and power it on. Using the foot controller pedal and the dead man switch, advance the tracks to ensure the reaction arm has been secured properly and that the unit is operating correctly. Monitor the pressure gauge to ensure the pressure does not exceed 1500 PSI.

    - If the pressure exceeds 1500 PSI, power down the unit and unplug. Inspect the tracks for hazards preventing movement, check that the splines have been fully engaged in the sun gear, check that the correct splined driver and adapter have been used, inspect inching drive unit and connections before repowering the machine and attempting a second time.

16) Unplug the unit and prepare the area for welding. Position inching drive unit and controls near the front welder.

17) Establish communication plan between front and rear welders. Front welder will be responsible for using the inching drive controls to rotate the track. Both welders and their equipment must be clear of the track prior to it being rotated. Rear welder must step clear of the machine and be in full visual contact with the front welder while the tracks are turning. The front welder will not advance the track until they have received a clear visual and verbal “all clear” confirmation signal from the rear welder.

18) Plug in and power up inching drive unit.

19) Weld the lugs. Clear the tracks of equipment and personnel. Front welder will rotate tracks in the REVERSE direction using the inching drive foot controller pedal and the dead man switch. Tracks will rotate only after the rear welder is in full view of the front welder and an “all clear” confirmation signal has been given to the front welder. Repeat process for next ice lug.

20) Take frequent micro breaks. The position for this task is very static; therefore, there is a need to stretch and flex to minimize aches and pains.

21) After all the ice lugs have been welded to the track, power down and unplug the inching drive unit. Disassemble the inching drive unit from the final drive and set it up in the second track.

22) Repeat steps to ice lug the second track.

23) After all the ice lugs have been welded to the second track, power down and unplug the inching drive unit. Disassemble the inching drive unit from the final drive. Note: Before disconnecting the hoses from the inching drive, check and confirm that there is no stored energy. Check the pressure gauge and confirm PSI is at zero.

24) Install the axle covers and axles as per Caterpillar or OEM procedures.

25) If the surface is concrete, replace the tires under the track.

26) Remove the machine from the stands.

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

- 950C-C-028 Hazardous Energy Isolation Code
- 950C-C-033 Hot Work Code
- 960C-SOP-401 Raising-Blocking Dozers Using Hydraulic Attachments in Shop or Field
- 960C-SOP-307 Hot Work by Welders
- Dozer Track Inching Drive (Open Loop Energy Inc) – Operation and Maintenance Guidelines and Information

9.0 APPENDICES

No appendices.