

# STANDARD OPERATING PROCEDURE

**Changing Bolted Ground Engaging Tools**

Document Number: 960C-SOP-300

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Revision Number: 3

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## CHANGING BOLTED GROUND ENGAGING TOOLS



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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 working on or changing bolted ground engaging tools on earthmoving equipment.

## 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

- Uncontrolled movement of equipment while working on it.
  - Ensure implements are grounded or supported by a stand/blocking if raised.
  - Ensure equipment is isolated from movement as per 950C-C-028 Hazardous Energy Isolation Code. Operators are not permitted in the cab of equipment during procedure.
- Components, tools and parts dropping and striking the worker.
  - Secure components so they cannot fall (i.e. support with crane, clamps or rigging/sling).
  - Ensure body position, including feet, is not in the line of fire.
  - Place a cart or similar device to catch components when they drop.
- Spinning worn bolt heads causing lacerations or injuries to hands.
  - Do not place the hand near the bolt being undone. Keep hands out of line of fire or pinch points.
- Materials striking workers entering the area unexpectedly.
  - Flag off area or use barricades while work is being done. If this is not possible, post a person to limit access to the work area.
  - Communicate the process to all workers involved and stress the importance of preventing any outside influences/disturbances.
- Struck by flying debris when using pneumatic tools to clean teeth, adaptors, parts, etc. or when spinning bolts/nuts.
  - Wear a face shield in addition to safety glasses.

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- Wear gloves and clothing that will stop material from penetrating the skin.
- Follow 960C-SOP-500 Safe use of Pneumatic Tools.
- Tool failure caused by faulty or damaged tools.
  - Inspect all tools prior to use. Tagout and remove from service any damaged or defective tools.
- Musculoskeletal injuries (muscle sprains/strains) and vibration injuries.
  - Stretch before the task and take frequent micro breaks.
  - Use a two person lift or a mechanical lifting aid such as a crane if the parts (i.e. teeth) weigh more than 50 lbs and are awkward to lift/position.

## 4.0 CHECKLIST

- Attend all preparatory meetings (IE: daily PSI; job scope; review of JSA's and SOP's 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

- 1) Refer to OEM procedure for task, if applicable. Complete hazard assessment (i.e. FLRA) for task. Notify supervision if unsure of task or if there are hazards outside of the worker's control.
- 2) Inspect tooling. Remove damaged or defective tools from service. Notify supervision.
- 3) Ensure operator is out of the equipment cab before proceeding. If the operator is required to be in the cab, 960C-SOP-111 Live Work procedure must be followed.
- 4) Block equipment components to prevent movement in the event of a hydraulic failure. Never position yourself where you could become pinned if an equipment component were to move.
- 5) Isolate hazardous energy, lockout tagout as per 950C-C-028 Hazardous Energy Isolation Code.
- 6) Secure the components so they will not drop to the floor/ground.

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- 7) Identify work area to prevent unauthorized access.

## 6.1 Removal of the GET

- 1) Using stands or similar device, support the bucket or blade so the cutting edge is not part of the support.
- 2) Clean the material from around and off the bolt and nut with a hammer and chisel, air chipper, or pressure washer.
- 3) Use an air wrench, rad gun or socket and long bar to start the nut moving.
- 4) Use an air wrench to remove the nuts. If the bolt needs to be held up in its slot so it will not turn, do not put your hand near the bolt. Press it into its seat with a tool such as a hammer head.
- 5) Insert a couple of bolts or pry bars from the top to hold the cutting edge from sliding off and dropping before removing the last two bolts.
- 6) Insert a lifting eye for large ground engaging tools such as a grader cutting edge. If needed, use a pry bar to lift the cutting edge so the pin has a space on the back side. Stay out of the line of fire. Lift the ground engaging tool off with the crane.

## 6.2 Installation

- 1) Clean the frog and the bolt holes with a scraper, chipper, or steam cleaner.
- 2) Position the ground engaging tool and hold in place by inserting two bolts or pry bars through bolt holes. Use two persons or a mechanical lifting aid such as a crane to lift and position the cutting edge (ground engaging tool).
- 3) Insert new bolts and start the nuts. Push the bolt up so the head is into the hex slot. Hold it up with a tool such as a hammer head.
- 4) If a lifting eye was used, remove it.
- 5) Tighten the nuts with the air wrench. Ensure all mounting hardware are torqued to specification to avoid premature failure.
- 6) Clean up the work area.

## 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-049 PPE General Code
- 950C-C-028 Hazardous Energy Isolation Code
- 960C-SOP-500 Safe use of Pneumatic Tools
- 960C-SOP-504 Safe use of Hand Tools
- 960C-SOP-505 Safe use of Power Tools

## 9.0 APPENDICES

No appendices.