

# STANDARD OPERATING PROCEDURE

**Live Work - Working on Equipment While Running**

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## LIVE WORK – WORKING ON EQUIPMENT WHILE RUNNING



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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 equipment while it is running (live work).

## 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

- Contacting, or being contacted by, moving parts or equipment.
  - Use the most secure level of isolation as possible; conduct live work as a last resort for the specified task.
  - All energy sources that can be individually isolated must be. Only those energy sources directly required to be live for the testing should be left un-isolated.
  - Complete Live Work Checklist (Appendix A) to identify additional controls for the task.
  - Ensure all personnel are aware of the live work and remove unnecessary personnel from the area.
  - Do not place tools or other equipment in the line of fire. Never stand or place body parts in the line of fire or pinch/crush areas.
  - Remove only guards absolutely necessary for the task.
  - Ensure holding devices such as wheel chocks are in place.
  - Ensure clearances are adequate between moving segments and the ground or support structures such as stands.
  - Establish communication plan with workers; use spotters/signal persons as required to ensure effective communication is maintained for duration of task. Confirm all personnel understand the spotting signals. Primary spotter must stay in view of equipment operator at all times.
  - Ensure person operating the equipment being tested understands the equipment controls.
  - Do not wear baggy clothes or articles around machine controls. Baggy items can become caught on machine control levers causing accidental movement of equipment.
  - Designate "Watchman" to be posted at isolation location to prevent any person from re-energizing the power supply and starting the machinery or equipment. The "Watchman" will have no other duties. ***(Applicable to work in British Columbia only.)***

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## 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.

### 5.4 Hazardous Energy

Electrical, mechanical, hydraulic, pneumatic, chemical, nuclear, thermal, gravitational, or any other form of energy that could cause injury due to the unintended motion, energizing, start-up or release of such stored or residual energy in machinery, equipment, piping, pipelines or process systems.

### 5.5 Total Isolation

Tasks are performed with the equipment engine shut off and all energy sources isolated (locked out).

### 5.6 Partial Isolation

Tasks are performed with identified energy sources isolated, with the exception of the required systems for the specific task to be performed (i.e. the engine is running and the propel system is isolated). A live work checklist is not required. The task is to be documented on the worker's hazard assessment.

### 5.7 Live Work

Powered mobile equipment is fully functional (work performed without hazardous energy sources isolated). A Live Work Checklist must be completed prior to the task to identify the hazards and additional controls required. The checklist is to be reviewed and signed by all personnel involved in the work.

## 6.0 PROCEDURE

- 1) Review OEM procedures for the task. A JSA or SOP will be required if there is no OEM procedure available.
- 2) Complete a hazard assessment (i.e. FLRA) for the task. Notify supervision if unsure of task and if there are hazards outside of the worker's control.



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- 3) Complete a Live Work Checklist (refer to Appendix A). Review with all personnel involved in the task. Discuss Live Work hazards and controls with supervision if unsure.
- 4) The supervisor and other people in the work area will be informed of the live work task.
- 5) Place a "Live Work or Live Testing" sign or tag on the machine where it is visible to anyone approaching the controls or cab.
- 6) Post "Watchman" at isolation location to prevent any person from re-energizing the power supply and starting the machinery or equipment. ***(Applicable to work in British Columbia only.)***
- 7) In congested work areas or areas with high personnel traffic use caution tape or barricades to create a barrier around the machine at a distance at least greater than the range of any components that may move (i.e.: a blade or boom). Attach a tag or sign on each side to explain the hazard and advise of restricted entry.
- 8) Ensure the necessary safety devices and stops are in place (i.e. wheel chocks, hydraulic cylinder blocks).
- 9) Ensure people are in places with enough room to perform their task without unwanted contact with moving parts (out of the line of fire).
- 10) Place all tools and equipment out of the line of fire so that they will not be contacted with moving parts.
- 11) Designate a spotter. Any movement of components under power by an operator will be done only at the direction of the designated spotter.
- 12) Review the machine controls to confirm understanding.
- 13) Complete task.
- 14) When the task requiring live work is complete, remove barriers and signs. Isolate all hazardous energy for the remainder of the job.

## 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 – {Part15, Section 212 (2) Managing the Control of Hazardous Energy - Isolation}
- Health, Safety and Reclamation Code for Mining In British Columbia 2008 - {Part 4.11 Lockout Procedures}
- 950C-C-028 {Hazardous Energy Isolation Code}

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## 9.0 APPENDICES

- Appendix A – Mobile Equipment Live Work Checklist

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## Appendix A      Mobile Equipment Live Work Checklist



**MOBILE EQUIPMENT  
LIVE WORK CHECKLIST**

**Date:**

**Time:**

**Location:**

**Unit #:**

**Equipment Type:**

**Task Leader:**

**Supervisor:**

**Reason Lockout Cannot be Performed:**

DESCRIPTION OF WORK / TEST	HAZARDS	CONTROLS

CHECKLIST	YES	NO	COMMENTS (Required for NO answers)
Procedure (OEM or SOP) has been reviewed for the task OR a JSA has been created.			
Tasks are communicated & assigned to all individuals directly involved; all workers signed the Live Work Checklist. All workers understand the test/live work task being performed.			
Live Work task has been communicated to other personnel in the area.			
Signage and/or flagging indicating Live Work have been placed in the area.			
Equipment guards are in place.			
Suspended loads are secured.			
Spotters have been identified; personnel have clear visibility of each other. Primary spotter has been designated. Everyone understands spotter signals.			
All potential stored energy sources have been de-energized or controlled by blocking, bleeding, guarding, mechanically securing or identified as a controlled hazard during the live work/test task. (i.e. wheel chocks, box pins/cables, propel lockouts, park brakes, grounded implements).			
Person operating equipment being tested understands the machine controls.			
Equipment is returned to service in a safe manner and is fully isolated after the live work task is complete.			

<b>SIGNATURES: *All workers involved in the task, must review and sign off on this checklist*</b>				
Workers Involved:				
Supervisor Review: (Signature, date and time)				