

STANDARD OPERATING PROCEDURE

Hot Work by Welders

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HOT WORK BY WELDERS

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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 completing hot work by welders.

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

- Damaged or defective equipment and tools.
 - Inspect welder and tools prior to use. Tagout and remove from service any damaged or defective equipment and tools.
- Personal injury such as but not limited to burns, flashes, and strains.
 - Stretch before task. Take microbreaks if task is for long duration or in a cramped position.
 - Keep the flame directed away from the body.
 - Do not touch hot surfaces with bare skin; keep the torch under control to keep the tip away from the body; beware of other people in range of torches, electric arcs, and hot metal.
 - Always maintain a controlled grip on the torch; keep the torch in the line of sight; turn the torch off and set down whenever two hands are needed or set the torch down in a supported position.
 - Wear additional body covering PPE such as leather chaps, apron or jacket. Wear FR coveralls and ensure work boots have metatarsal protection.
 - Wear welding shield / helmet with a filter shade suitable for the type of welding being completed.
 - Place welding screens in area to prevent other workers from being exposed to welding flashes.
 - Identify hot objects and surfaces when leaving unattended.
- Materials igniting due to sparks and slag.
 - Ensure proper housekeeping in the work area. Remove flammable and combustible materials from the work area. Alternatively, fire blankets and welding screens may be used to protect flammable and combustible materials.
 - Ensure there are no aerosol cans in the area.
 - Know what is on the other side of an object being cut or heated.

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- Ensure oils and grease have been cleaned from equipment or covered adequately to prevent ignition.
- Ensure a 20 lb. fire extinguisher is in the work area and immediately accessible.
- Set up fire watch when the area will be left unattended and has a potential to ignite.
- Damaging equipment or systems due to heat.
 - Inspect equipment before task. Identify areas that could be damaged by heat exposure. Inert or cover areas.
 - Ensure fire suppression systems have been disarmed prior to working on equipment.
- Inhalation hazard due to fumes being released from heated or melted coatings or residue.
 - Ensure there is adequate air movement to direct fumes away from worker and work area.
 - Wear appropriate air purifying respirator for the task.
- Falling metal (dropped object) striking a person.
 - Ensure cutouts are supported by way of a vice or table.
 - Do not place body parts below a cut piece.
 - Flag off exclusion zone if working overhead to protect other workers from entering the area.
- Heat exhaustion in enclosed spaces.
 - Ensure there is adequate air movement; extract heat with ventilation and introduce cool air with ventilation.
 - Take frequent breaks from the space.
- Electrocution or electric shock.
 - Maintain proper grounding as close to the weld point as practical.
 - Avoid bodily contact between the ground cable and the stinger so the body does not become the ground path.
 - Do not handle rods with wet hands/gloves.
- Damaging parts or starting fires at points where secondary arcing may occur (i.e.: at bearings).
 - Have the grounding cable as close to the work as practical so the current is not travelling through other parts.

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.

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- ☐ **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 the task. Understand what the task is and how much heat is needed or will be generated. Notify supervision if unsure of task or if there are hazards outside of the worker's control.
- 2) Determine whether a hot work permit or confined space permit is required and complete as necessary before starting the work.
- 3) Select appropriate specialized PPE for the task. This can include but is not limited to additional boy coverings, air purifying respirator and welding helmet with the appropriate filter shade. If unsure, confirm with supervision. Inspect PPE prior to use.
- 4) Inspect welder and tools before use. Tagout and remove from service any damaged or defective tools and equipment. Notify supervision.
- 5) Inspect the work area for combustible and flammable materials. Remove materials or protect from sparks and slag.
- 6) Set up an exclusion zone to prevent unauthorized access, if required. Set up welding screens.
- 7) Confirm a 20 lb. portable fire extinguisher is readily available in the area.
- 8) Position work pieces for optimal exposure of the surface to be worked on. Ensure pieces are well supported and alignment will be maintained.
- 9) Confirm there is adequate ventilation for the work space. Set up fans and up exhaust ventilation (i.e. smoke eaters) to capture the weld fume or burning smoke so it does not contaminate the whole area.
- 10) Set up the work so the worker's body will not be in the line of fire of falling metal, sparks, slag, or spatter.
- 11) Make torch cuts moving away from the body. Molten steel slag tends to blow out in front of the line of travel.
- 12) Determine whether a spark/fire watch is required and ensure it is in place prior to leaving the 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.

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8.0 REFERENCES

- Alberta Occupational Health and Safety Act, Regulation and Code – {Part 10, Section 169}
- CSA Standard W117.2-94, Safety in Welding, Cutting, and Allied Processes
- 950C-C-028 Hazardous Energy Isolation Code
- 950C-C-031 Hot Work Code
- 950C-C-029 Hazardous Space Entry Code
- 960C-SOP-308 Air Arcing – Gouging Metal
- 960C-SOP-305 Safe use of Compressed Gas Cylinders

9.0 APPENDICES

No appendices.