


STANDARD OPERATING PROCEDURE

Changing Fluids & Filters on Equipment		Document Number: 960C-SOP-211
Original Approval Date: Mar 24, 2010	Revision Number: 2	Page 1 of 6
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CHANGING FLUIDS & FILTERS ON EQUIPMENT

						
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Rev	Status	Rev. Date	Status Description	Prepared by	Reviewed by	Approved by



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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 changing fluids and filters on 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

- Approaching heavy equipment.
 - Establish a safe approach plan with the operator. Approach from the front cab side and utilize the 50 m/10 m rule at a minimum when approaching mining equipment. Follow 962C-SOP-042 Approaching Equipment.
 - For unoccupied equipment, visually confirm there is no operator in the cab or completing their walk around.
- Uncontrolled movement of equipment while being serviced.
 - Follow 962C-SOP-037 Securing Disabled or Parked Equipment in an Operating Environment.
 - Park equipment on flat, level ground.
 - Engage park brake. On haul trucks, operators will confirm park brake has been set by checking that interior and exterior park brake indicator lights are illuminated (not flashing). Place "Operator out of Cab" placard in window. Operators are not permitted to engage/disengage the propel switch on haul trucks.
 - Follow 950C-C-028 Hazardous Energy Isolation Code for lockout/tag out. If unit cannot be shut down for servicing, follow 960C-SOP-111 Live Work and the steps outlined in this SOP for servicing haul trucks.
 - Wheel chocks must be placed on all rubber tired equipment. This includes service trucks.
 - Operators are not permitted in the cab of equipment while it is being serviced.
 - Operators are not permitted to re-enter the cab of equipment until the service person has signaled the operator that it is safe to do so and they are out of the line of fire.
- Mounting and dismounting equipment.
 - Maintain 4x3 contact at all times while climbing steps/ladders.

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- Inspect ladders/steps/rungs before mounting/dismounting.
- Secure any bags over both shoulders so hands are free.
- Do not carry any tools/objects in hands while mounting/dismounting.
- Always face the machine.
- Ensure gloves are free of oil/grease or anything that could cause your hands to lose grip.
- Elevated fluid temperature, burning fingers/hands with hot oil.
 - Allow fluids to cool down before handling (if allowable).
 - Workers to wear task appropriate gloves and wristlets when removing the filter. (Chemical and heat resistant.)
- Trip hazards (manual handling of fill hose).
 - Walk forward when pulling hose to work area and ensure hose is unreeled. Do not pull hose off reel while walking.
- Contaminating the oil system with dirt.
 - Clean off the filter canister cap before removing the bolts; clear the headroom by raising and securing the box when required so the filter does not hit the bottom of the box when filters are being removed or installed.
- Contaminating the ground with dripping oil.
 - Ensure to put a suitable spill tray to collect all overflows with a large enough holding capacity.
 - Remove the drain plugs if applicable from the bottom of the filter housings / canisters and drain oil into suitable container.

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

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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 General Procedure

- 1) Complete a hazard assessment (i.e. FLRA) for the task. Notify supervisor if unsure or if hazards are outside of the worker's control.
- 2) Approach equipment and confirm operator is out of cab.
- 3) Apply lockout and ensure hazardous energy is isolated.
- 4) Install drip trays.
- 5) Place and secure a ladder if needed to access work area.
- 6) Follow specific steps outlined in following the following procedure sections.
- 7) Remove the ladder, drip tray/filter(s) and tools.
- 8) Complete walk around.
- 9) Return the truck to service.

6.2 Removing Fluids from Tanks or Casing (i.e. engine, transmission, hydraulic, steering, torque, and coolants)

- 1) Shut down and lock out the engine master switch.
- 2) If necessary, relieve pressure in the system following the OEM procedure.
- 3) Ensure the waste tank has enough capacity for the amount of waste fluid to be pumped out.
- 4) Refer to Sections 6.2.1 Quick Connect Systems & 6.2.2 Drain Plug and Filler Spouts.

6.2.1 Quick Connect Systems (if equipped)

- 1) Ensure the pump flow valves are turned the right way to suction from the machine.
- 2) Clean the quick connect coupling.
- 3) Attach the hose and turn on the pump.
- 4) Confirm the tank is nearly empty (view the site glass; check the dip stick; hear the change in the pump noise; the hose is jumping).
- 5) Shut down the pump and disconnect.
- 6) Wipe the fittings and return the hose to its hanger or reel it in.
- 7) Replace the cover on the fitting.

6.2.2 Drain Plugs and Filler Spouts

- 1) Remove filler cap or fill plug to relieve pressure. Do not place body parts in the line of fire.
- 2) Place suitable container to catch flow and remove drain plug. If it has an "enviro plug", install a piece of NPT pipe nipple to open the internal drain valve and drain to a suitable container, or attach the quick-connect of the evacuation system.
- 3) Use the waste oil hose (without a quick-connect nozzle) to suck the fluid out. Alternatively, place the waste oil hose (without a quick-connect nozzle) into the fill hole and use the evacuation system to suck the fluid out.
- 4) Replace the plug.

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6.3 Remove Filters

- 1) Close all valves and relieve pressure to the filter area if applicable and open the drain valve and drain oil into a suitable container the close the drain valve.
- 2) If there is a drain plug on the filter canister, drain it into a suitable container before removing it.
- 3) Clean the filter housing base and make sure that former gaskets are removed.
- 4) Remove the canister by removing bolts or spinning it off. Loosen the bolts or canister, then turn them by hand if it is more ergonomically correct then using the filter wrench.
- 5) Allow the filter to drain into a suitable container or if it is a top access canister, lift it part way out and rest it against the side of the canister allowing the oil to drain into the canister. Remove the filter to the waste filter bin or used filter storage in the service truck.
- 6) Apply a thin film of clean oil to O-rings or seals of each new filter.
- 7) Ensure there is no pressure in the system caused by over-flow or back-flow.
- 8) Install the new filter and replace the canister.

6.4 Fill the System

- 1) Remove the oil filler cap or inspection plate and fill the oil through the oil fill tube or quick connect fitting. Refer to OEM capacities (refill) for correct system oil amount.
- 2) Do not overfill. Watch the site glass or the fill hole for correct level.
- 3) Follow start up procedure of the engine and inspect oil filters for oil leaks.
- 4) Follow the correct OEM procedure and maintain the oil levels to the correct mark.

6.4.1 Wheel Hubs and Final Drives

- 1) This task requires two (2) people.
- 2) Ensure the machine is on level ground.
- 3) Move the machine until the drain plug is at the bottom and the fill line is level.
- 4) Shut down the machine, isolate (lockout) and secure against movement (i.e. wheel chocks).
- 5) Relieve pressure by opening the fill line plug before the drain plug.
- 6) Remove the drain plug and use a chute or funnel to direct the oil to a barrel.
- 7) Use the waste oil hose to suck the suitable container dry to the waste oil tank.
- 8) Fill through the drain plug until the level reaches the fill level hole.
- 9) Remove the fill hose and replace the drain plug. There will be some oil loss, so ensure it is captured by the chute or funnel and does not spill to the ground.

6.4.2 Differentials

- 1) Crack the fill plug to vent.
- 2) Remove the drain plug and let drain to a suitable container.
- 3) Replace the drain plug and fill through the top hole.
- 4) Use the site glass to determine the oil level. Replace the top plug.
- 5) Use the waste oil evacuation system hose to suck the suitable container dry to the waste oil tank.

6.4.3 Grader Circle, Gear Ring Drive Oil, Chain Case & Excavator Swing Drives

- 1) Make sure the grader is reasonably level.
- 2) Remove the level plug to vent.
- 3) Remove the bottom drain plug and drain into a suitable container.
- 4) Replace the drain plug.
- 5) Fill through the level plug.
- 6) Use the waste oil hose to suck the suitable container dry to the waste oil tank.

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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

- OEM service manual
- 950C-C-028 Hazardous Energy Isolation Code
- 962C-SOP-042 Approaching Equipment
- 962C-SOP-037 Securing Disabled or Parked Equipment in an Operating Environment
- 960C-SOP-504 Hand Tools, Use of
- 960C-SOP-212 Field Servicing of Equipment

9.0 APPENDICES

- No appendices.