

CCGS AMUNDSEN

TECHNICAL SPECIFICATION

INSPECTION AND CERTIFICATION OF 2 HEPBURN CRANES (DECK CRANES)

Provide materials and labor to carry out the work required for a quinquennial inspection and certification of two Hepburn cranes on the starboard side of the ship.

Coordination the work will be under supervision of the chief engineer, assisted by the Chief Officer in collaboration with the Marine Safety's inspector. The Contractor will be responsible for coordinating inspections with different inspection authorities.

The Contractor shall set itself up and then begin work safely in accordance with applicable on board regulations (lock the circuit breakers, etc.).

Accurate measurements of all components will be taken and recorded in a final report describing all work performed. This includes the readings required on electrical components. The report should also include all certificates, description of work done and the list of parts replaced. The latter will be presented in three copies to the chief engineer at the end of the work.

All parts found defective and excessively worn will be replaced by equivalent parts supplied by the contractor. The extra costs will be negotiated on 1379 form.

If hot work is required, the Contractor shall obtain a permit for hot work signed by the chief engineer before starting work.

All work must be to the entire satisfaction of PWGSC representative, CCG project officer, the chief engineer of the ship and the TCMS inspector.

There will be no crane services available on the ship, the firm chosen must provide its own service crane as required. The Contractor shall provide scaffolding and crane services.

There will be no room available for company staff.

The contractor shall deliver the ship in the same state of cleanliness than before the work begins.

Electrical work must be done by an experienced firm in the maritime field. It must provide certified electricians.

The following work must be performed on two cranes:

1. Dismantle the 3 hydraulic rams, 6 pins, 6 bearings. Clean and measure. The hydraulic rams' seals must be replaced and the "O" rings between the cylinders' head and the block lock valve. Parts will be provided by the contractor.
2. Dismantle the 3 sheaves and 3 pins. Clean and measure.
3. Check all lubrication points. Replace all grease nipples with Stainless Steel 316 types. All components must be lubricated with grease (Petro-Canada PXL2C30, Precision XL EP2) provided by the contractor.
4. Check with Dye Penetrant all the pins for detecting the presence of cracks.
5. Prepare and perform a magnetic particle inspection on crane's foundation. An inspection report must be provided. Apply paint on the exposed metal. This paint will be supplied by the ship (only on this item).
6. On the two cranes, disassemble the 8 booms' pins in order to carry out tests with Dye Penetrant. Thereafter, put the parts back together.
7. Perform a test on hydraulic rams' lock valves.
8. Show dismantled parts and the measures to TCSM's inspector.
9. Reassemble all parts such as stipulated in manufacturer's manual.
10. The Contractor shall provide and replace filter elements of the hydraulic system. Clean the tank. 10 microns filtering pump will be used to fill up the system with new oil provided by CCG. Used oil will be disposed by the contractor in accordance with the current environmental standards.
11. The four (4) seals on the oil tanks will be replaced.
12. Lifting hooks must be removed and sent for certification. On return the certificate will be given to the chief engineer and the cables and hooks should be installed.
13. Hooks must be dismantled to make a Dye Penetrant test on the pins. Thereafter, put the hooks back together.
14. Replace the control panel inside on the left hand side of the cab by similar but made of stainless steel which will be provided by the CCG. Each end of each wire must be identified according to drawings.
15. Check correct operation of horn and repair as needed.
16. Remove the thermostat, which is mounted on the junction box on the left, inside the cabin.

17. Check proper windscreen wipers' operation. Repair as needed. Check the heaters of the windscreen wipers and provide readings of the ground resistance insulation, the resistance and the intensity of the current flowing in each element. Repair as needed. Replace the end of eight (8) wiper arms in order to install standard automotive wiper's blades on the four cranes.
18. Check the heating elements of the hydraulic oil and provide readings of the ground resistance insulation, the resistance and the intensity of the current. Check correct operation of thermostats and replace if necessary. Adjust according to manufacturer's specifications.
19. On two heating systems equipping each crane (a small type (Convectaire) and one originally installed), check the heating elements and provide readings of the ground resistance insulation, the resistance and the intensity of the current flowing in each element. Repair defective components.
20. Check anti-condensation heaters of the electrical motor, the switch and the control panel and provide the insulation resistance to ground, the resistance and the intensity of the current flowing in each element. Repair defective components.
21. Check correct operation of limit switches and replace as needed. There are 2 for the crane's rotation and one for cable's slack.
22. Check correct operation of foot controls inside the cab, repair as needed.
23. Check thermostat operation that prevents the pump from starting if the oil is below 10 degrees Celsius.
24. A proper brake maintenance should be done. There is possibility that the brake bands are to be replaced. Use a lathe cutter to rectify the braking surface on the drum. To do so, the drum will rotate with the cable removed and the encoder's signal bypassed.
25. All components must be lubricated with grease (Petro-Canada PXL2C30, Precision XL EP2) provided by the contractor.
26. Provide and install "Petro-Tape" on the end of the hydraulic ram's run in order to protect the remaining of the piston which can't be protect when the rams are totally closed.
27. Where the paint has been removed by the work performed, apply paint provided by the CCG.
28. Seal oil leakage that will be noticed during work.
29. After each day's work, let the cranes around clean and safe.
30. Lifting tests should be performed at 125% of the maximum load of the cranes in the presence of TCMS's inspector. The GC will provide the weights.