**Canadian Natural Resources Ltd.**
**GENERAL PRESSURE VESSEL INFORMATION** **Job# 105.00774**

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|---|---|
| **District: Fort St John, BC** | **Skid No.** |
| **Facility: West Blueberry Gas Gathering** | **Location (LSD): b-28-L/94-A-12** |
| **Vessel Name Equipment Number: Line Heater** | |
| **Orientation: Horizontal** | |
| **Status: In service** | **Regulatory Inspection** |

**PRESSURE VESSEL NAMEPLATE DATA**

| | | | |
|---|---|---|---|
| "A" or "G" or "S" (Sask.) or BC Registration Number. **A0418376** | | CRN Number: **M-1551.21** | |
| Vessel serial number: **BW139.073** | | Size: **30 in X 12 ft** | |
| Shell thickness: **7.9 mm** | | Shell material: **SA 36** | |
| Head thickness: **7.9 mm** | | Head material: **SA 36** | |
| Tube wall thickness: | | Tube material: | |
| Tube diameter: | | Tube length: | |
| Channel thickness: | | Channel material: | |
| Design pressure | 1st Pass: **17287 Kpa** | Operating pressure | Shell: |
| | 2nd Pass: **8943 kpa** | | Tubes: |
| Design Temp. | 1st Pass : **93 deg C** | Operating temperature | Shell: |
| | 2nd Pass : **93 deg C** | | Tubes: |
| X-ray: **RT-1 coil only** | | Heat treatment: **No** | |
| Code parameters: **ASME B 31.3** | | Coated: **No** | |
| Manufacturer: **Brooks Welding Ltd.** | | Year built: **1998** | |
| Corrosion allowance: **1.6 mm** | | Manway: **No** | |

**PRESSURE SAFETY VALVE NAMEPLATE DATA**

| PSV Tag # | Manufacture | Model # | Serial # | Set Pressure (PSI) | Capacity (scfm) | Service Date |
|---|---|---|---|---|---|---|
| | | | | | | |
| CRN # | Service By | Block Valve | Location | Size | Code Stamp | |
| | | | | | | |

**SERVICE CONDITIONS-INDICATE ALL THAT APPLY**

| | | | | |
|---|---|---|---|---|
| Sweet X | Sour | Oil | Gas X | Water X |
| Amine | LPG | Condensate | Air | Glycol X |
| Other (Describe): | | | | |

**Inspection Interval** _____ **PSV Service Interval**_____

(Determined by MIC in conjunction with Chief Inspector following guidelines of CNRL's Owner-User Inspection Program)

Reports reviewed and accepted by:

**Mechanical Integrity Coordinator**_____ **Date**_____

**Fill out all forms as completely as possible. <u>All information</u> is important! Use back of sheets to record additional information or sketch if required.**
**Copy of report to be filed by MIC at site, and copy sent to Chief Inspector**

| External Inspection Items | G | F | P | N/A | Comments |
|---|---|---|---|---|---|
| **Insulation** Verify sealed around manways, nozzles, no damage present, and there is no egress of moisture. | **X** | | | | **The line heater is fully insulated & in good condition - no loose bands or open sections - no visible signs of moisture egress.** |
| **External Condition** Assess paint condition, areas peeling, record any corrosion, damage, etc (record location, size and depth of corrosion or damage) | | **X** | | | **Paint is in fair overall condition – Exposed metal located inside the utilidoor box to approx 5% of the exposed shell – pitting to 0.010" deep.** |
| **Leakage** Record any leakage at flanges, threaded joints, weep holes on repads, etc. | **X** | | | | **No leaking fittings or connections.** |
| **Saddle** Assess condition of paint, fire protection, concrete. Look for corrosion, buckling, dents, etc. Look at vessel surface area near supports. Verify no signs of leakage at attachment to vessel and attachment welds are acceptable. Ground wire attached? | **X** | | | | **Saddle partly covered by insulation.**<br><br>**No visible corrosion – no missing paint.**<br><br>**Ground cable firmly secured to Skid unit.** |
| **Anchor Bolts** Hammer tap to ensure secure. Look for cracking in treads or signs of deformation. | **X** | | | | **Anchor bolts are secure.**<br>**No signs of deformation.** |
| **Concrete foundation** Check for cracks, spalling, etc. | | | | **X** | **None** |
| **Ladder / Platform** Describe general condition, ensure support is secure to vessel, describe any hazards. | | | | **X** | **None** |
| **Nozzle** Assess paint, look for leakage, and ensure stud threads are fully engaged. Record any damage, deflection, etc. Are nozzles gusseted? | **X** | | | | **Paint coating on nozzles are in good condition.**<br>**No leaking detected no damage or deflection.**<br>**All bolts/studs engaged to nuts.**<br>**No gussets.** |
| **Gauges** Ensure gauges are visible, working, no leakage, and suitable for range of MAWP/ Temp. | **X** | | | | **Temperature gauge is visible, working and suitable for Temp.**<br>**-40 to 160 deg F / 60 deg F @ gauge.** |
| **External Piping** Ensure pipe is well supported. All clamps, supports, shoes, etc. in place. Look for evidence of structural overload, deflection, etc. Paint condition, external corrosion? | **X** | | | | **Paint in good condition, no corrosion.**<br>**Well supported, no loose or missing clamps.**<br>**No evidence of structural overloading.** |
| **Valving** Ensure no leaks are visible. Valves are properly supported and chained if necessary. | **X** | | | | **No visible leaks. Valves are properly supported** |
| **PSV** Ensure PSV is set at pressure at or below that of vessel. | **X** | | | | **No PSV Atmospheric** |
| **NDE methods** Was UT/ MPI done on vessel (MI coordinator to review results) | **X** | | | | **Ultrasonic thickness survey carried out-2 inch piping metal thickness detected below nominal minus corrosion allowance. Thickness calculations carried out – nominal thickness is 8.7 mm / min thickness is 7.5 mm / T min thickness is 3.0 mm.** |
| **Other** | | | | | |

**Recommendations or corrective actions : Vessel is Fit for Service or describe corrective actions required)**
**(**MIC to review corrective actions with Operations, discuss with Chief Inspector where necessary, and get remedial action implemented)

**Recommendations: 1. No recommendations at this time.**

**Summary:** This vessel is in good over all condition, visual external and ultrasonic thickness survey carried out-2 inch piping metal thickness detected below nominal minus corrosion allowance. Thickness calculations carried out to ensure sufficient metal exists for safe operation.

**Long term corrosion rate based on greatest thickness loss – no corrosion rate to assess.**

**Vessel is fit for service.**

**Inspected By: Joseph Holdstock** **Date: Aug 08, 2010.**


**LSD Location**

**Site overview**


**Data plate**

**Vessel overview**

**Vessel overview**


**Temperature gauge**

| | |
|---|---|
|  | |
| **Shell external corrosion** | |