**Canadian Natural Resources Ltd.**
**GENERAL PRESSURE VESSEL INFORMATION** **Job# 105.00390**

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|---|---|
| District: **Fort St John, BC** | Skid No. |
| **Facility: Ladyfern Compressor** | **Location (LSD): b-17-I/94-H-01** |
| **Vessel Name Equipment Number: Water Flash Tank** | |
| **Orientation: Vertical** | |
| **Status: In Service** | **Regulatory Inspection** |

**PRESSURE VESSEL NAMEPLATE DATA**

| | | | |
|---|---|---|---|
| "A" or "G" or "S" (Sask.) or BC Registration Number. **A# 480967** | | CRN Number: **P-5098.2** | |
| Vessel serial number: **21148** | | Size: **36" X 98"** | |
| Shell thickness: **12.7mm** | | Shell material: **SA-516-70N** | |
| Head thickness: **14.3mm** | | Head material: **SA-516-70N** | |
| Tube wall thickness: | | Tube material: | |
| Tube diameter: | | Tube length: | |
| Channel thickness: | | Channel material: | |
| Design pressure | Shell: **1964 Kpa** | Operating pressure | Shell: **1200 Kpa** |
| | Tubes: | | Tubes: |
| Design Temp. | Shell: **38 deg C** | Operating temperature | Shell: **40 deg C.** |
| | Tubes: | | Tubes: |
| X-ray: **RT-1** | | Heat treatment: **Yes** | |
| Code parameters: **ASME Sec VIII** | | Coated: **No** | |
| Manufacturer: **Panax Oil & Gas Ltd.** | | Year built: **2002** | |
| Corrosion allowance: **N/S** | | Manway: **No** | |

**PRESSURE SAFETY VALVE NAMEPLATE DATA**

| PSV Tag # | Manufacture | Model # | Serial # | Set Pressure (PSI) | Capacity (scfm) | Service Date |
|---|---|---|---|---|---|---|
| **N/S** | **Farris** | **26JA10-120** | **436579-3-A10** | **1931 Kpa** | **7245** | **10/2001** |
| CRN # | Service By | Block Valve | Location | Size | Code Stamp | |
| **0G2369.5C** | **Delco Instruments** | **No** | **Top shell piping** | **1" X 2"** | **UV/NB** | |

**SERVICE CONDITIONS-INDICATE ALL THAT APPLY**

| | | | | |
|---|---|---|---|---|
| Sweet **X** | Sour | Oil | Gas | Water **X** |
| Amine | LPG | Condensate | Air | Glycol |
| 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 | **No insulation.** |
| **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 good overall condition – No chipped or exposed metal - no previous corrosion.** |
| **Leakage** Record any leakage at flanges, threaded joints, weep holes on repads, etc. | X | | | | **No leaking detected.** |
| **Saddle** Assess condition of paint, fire protection, and 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 | | | | **No distortion to skirt – no leaks at skirt to shell welds.**<br>**No exposed metal – no corrosion.**<br>**Ground cable attached to skid unit.** |
| **Anchor Bolts** Hammer tap to ensure secure. Look for cracking in treads or signs of deformation. | X | | | | **Vessel is firmly bolted to skid floor - no signs of deformation.** |
| **Concrete foundation** Check for cracks, spalling, etc. | | | | X | **None.** |
| **Ladder / Platform** Describe general condition, ensure support is secure to vessel, and 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 | | | | **All threads connections fully engaged.**<br>**No deflection – no leaks.**<br>**No gussets.** |
| **Gauges** Ensure gauges are visible, working, no leakage, and suitable for range of MAWP/ Temp. | X | | | | **Gauge is visible, appears to be functional, no leaks. Not suitable for range of MAWP.**<br>**Pressure gauge: 0 - 1400 Kpa / 1200 Kpa @ gauge.**<br>**Temperature gauge: -20 -120 deg C / 40 deg C @ 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 | | | | **Well supported – no deflection – all clamps and shoes in place.**<br>**Piping is painted and in good condition – no surface corrosion found.** |
| **Valving** Ensure no leaks are visible. Valves are properly supported and chained if necessary. | X | | | | **Well supported – no leaks.** |
| **PSV** Ensure PSV is set at pressure at or below that of vessel. | | | X | | **Located on Top shell piping - set at the vessels MAWP.**<br>**Discharge piping is larger than the inlet to PSV.**<br>**No block valve present. PSV last serviced in 2001.**<br>**Seal is intact. PSV vents to the Reboiler.** |
| **NDE methods** Was UT/ MPI done on vessel (MI coordinator to review results) | X | | | | **Ultrasonic thickness survey carried out-no metal thickness detected below nominal minus corrosion allowance.** |
| **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. Service this PSV – last known service date was 2001.**
**Summary:** This vessel is in good over all condition, visual external and ultrasonic thickness survey carried out-no metal thickness detected below nominal minus corrosion allowance.
Long term corrosion rate based on greatest thickness loss (shell) 0.025mm per year. Retirement Date to "T"min is year 2214.
**Vessel is fit for service.**

**Inspected By: Joe Holdstock** **Date: June-04-2010.**

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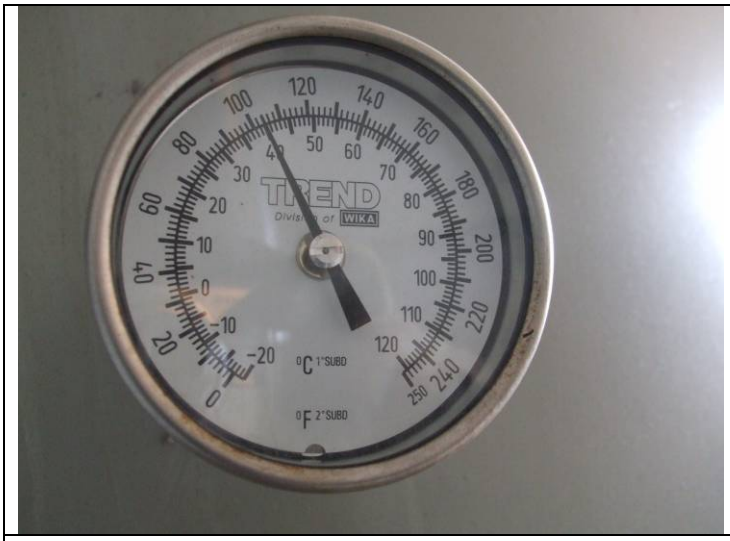
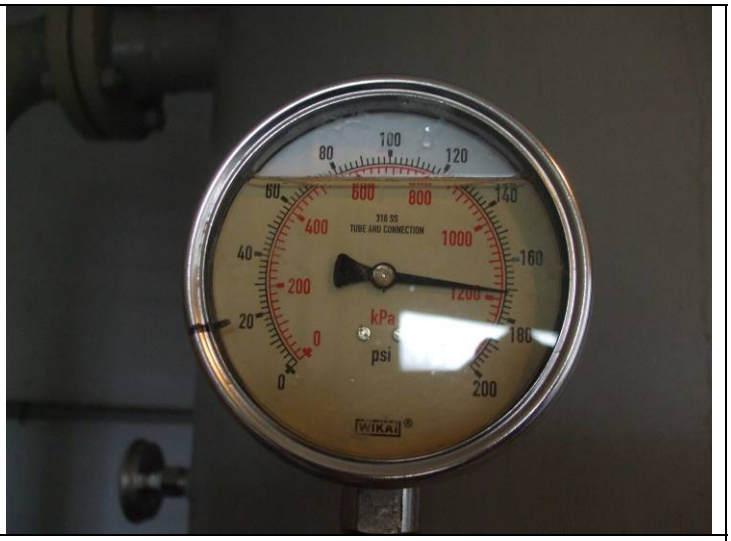
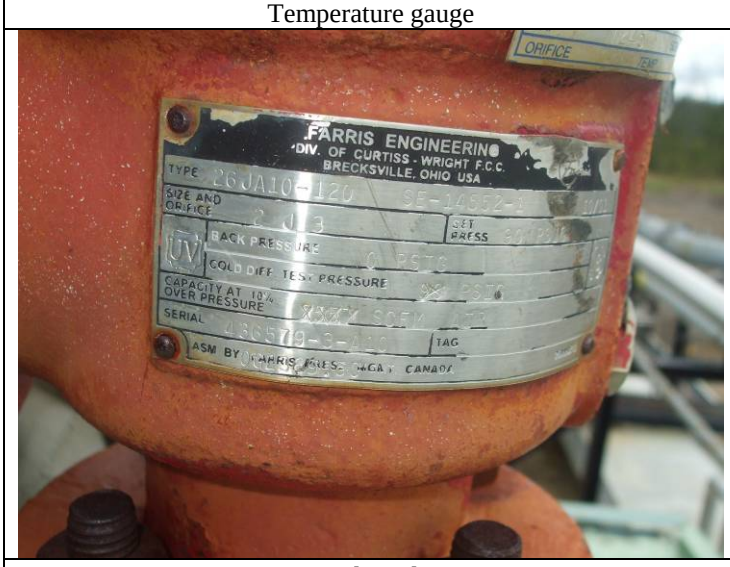
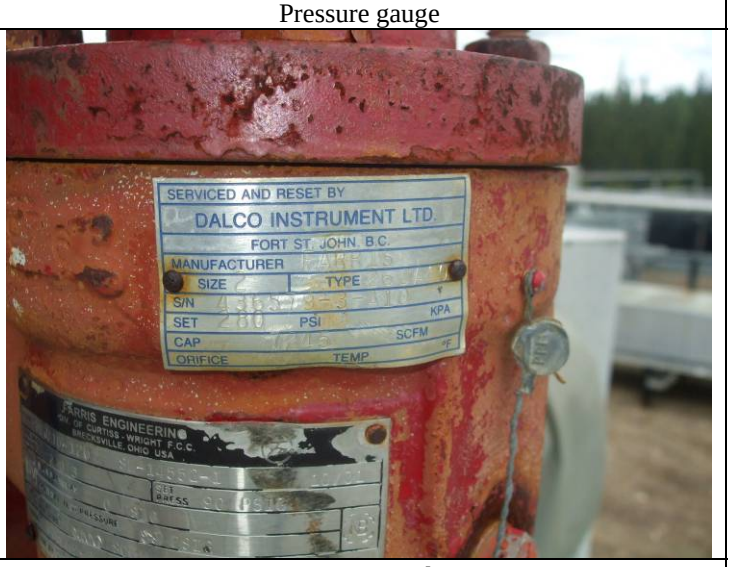
|---|---|
|  |  |
| LSD location | Site overview |
|  |  |
| Data plate | Overview |
|  |  |
| PSV service tag | Overview |

| | |
|---|---|
|  |  |
| Temperature gauge | Pressure gauge |
|  |  |
| PSV data plate | PSV – service plate |