

**Canadian Natural Resources Limited
GENERAL PRESSURE VESSEL INFORMATION**

Job 10.112837

| | |
|---|---------------------------------------|
| District: Fort St. John North | Skid No. |
| Facility: Chowade Gas Gathering | Location (LSD): b-48-L/94-B-09 |
| Vessel Name Equipment Number: Test Separator | |
| Orientation: Vertical | |
| Status: In Service | Regulatory Inspection |

PRESSURE VESSEL NAMEPLATE DATA

| | | | |
|---|-----------------|----------------------------|--------|
| "A" or "G" or "S" (Sask.) or BC Registration Number. C34779 | | CRN Number: H 8355.1 | |
| Vessel serial number: 1931-1 | | Size: 16 in x 84 in | |
| Shell thickness: 22.2mm | | Shell material: SA 516 70N | |
| Head thickness: 24.5mm | | Head material: SA 516 70N | |
| Tube wall thickness: | | Tube material: | |
| Tube diameter: | | Tube length: | |
| Channel thickness: | | Channel material: | |
| Design pressure | Shell: 1440 PSI | Operating pressure | Shell: |
| | Tubes: | | Tubes: |
| Design Temp. | Shell: 131 °F | Operating temperature | Shell: |
| | Tubes: | | Tubes: |
| X-ray: RT 1 | | Heat treatment: HT | |
| Code parameters: ASME VIII, Div 1 | | Coated: No | |
| Manufacturer: Moss Fabrication | | Year built: 1996 | |
| Corrosion allowance: 3.2 mm | | Manway: No | |

PRESSURE SAFETY VALVE NAMEPLATE DATA

| PSV Tag # | Manufacture / Model / Serial | Set Pressure (PSI / kPa) | Capacity (scfm) | Size | Block Valve | Location | Service by Date |
|-----------|--------------------------------|--------------------------|-----------------|-------|-----------------|--------------|-----------------|
| 16802F | Crosby / JOSE 45/A / SE12825-3 | 1440 PSI | 3145 | 1 x 2 | Yes – lock open | Inlet piping | Unified 09/2010 |

SERVICE CONDITIONS-INDICATE ALL THAT APPLY

| | | | | |
|-------|--------|--------------|-------|---------|
| Sweet | Sour X | Oil | Gas X | Water X |
| Amine | LPG | Condensate X | 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. All information 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 | Vessel not insulated |
| External Condition Assess paint condition, areas peeling, record any corrosion, damage, etc (record location, size and depth of corrosion or damage) | X | | | | Paint in good overall condition - no corrosion – no damage |
| Leakage Record any leakage at flanges, threaded joints, weep holes on repads, etc. | X | | | | No leaks observed |
| Saddle/skirt 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 | | | | Skirt in good overall condition: bolted directly to skid floor – no buckling or dents – no corrosion - no sign of leaking – ground wire attached to skid |
| Anchor Bolts Hammer tap to ensure secure. Look for cracking in treads or signs of deformation. | X | | | | Vessel is securely bolted to skid floor – no sign 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 | | | | Nozzle paint in good condition – all stud threads fully engaged – no leaks – no damage or deflection – nozzles are not gusseted |
| Gauges Ensure gauges are visible, working, no leakage, and suitable for range of MAWP/ Temp. | X | | | | Pressure gauge dirty, clouded fluid – within range for service: 0 – 1500 PSI and -40 – 160 °F |
| 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 | | | | Piping is well supported – all clamps in place – no evidence of structural overload – no deflection – paint in good condition – no corrosion |
| Valving Ensure no leaks are visible. Valves are properly supported and chained if necessary. | X | | | | Valves properly supported – no sign of leaking |
| PSV Ensure PSV is set at pressure at or below that of vessel. | X | | | | PSV is set at MAWP – seal intact – block valve in place: locked open – outlet piping does not reduce form PSV discharge orifice size |
| NDE methods Was UT/ MPI done on vessel (MI coordinator to review results) | X | | | | Ultrasonic corrosion survey carried out – head metal thickness detected below nominal minus corrosion allowance. Thickness calculations carried out: UT point 135 (Bottom Head) – nominal thickness is 25.4mm / min thickness is 23.4mm / T min thickness is 14.9mm. |
| Other | | | | | |
| <p>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: Summary: This vessel is in good condition, visual external and ultrasonic thickness inspection carried out – head metal thickness detected below nominal minus corrosion allowance. Thickness calculations carried out to ensure sufficient metal exists for safe operation. Short term corrosion rate based on greatest thickness loss (head) 0.178mm per year. Retirement Date to “T”min is year 2086. Vessel is fit for service.</p> | | | | | |



LSD



Overview



Data Plate



PSV



PSV Tag



Pressure Gauge