

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

Job # 10.112227

| | |
|---|--------------------------------------|
| District: Fort St. John BC. | Skid No. |
| Facility: Milligan Compressor | Location (LSD): d-31-G-94-H-2 |
| Vessel Name Equipment Number: 3 Phase Horizontal Separator | |
| Orientation: Horizontal | |
| Status: In Service | Regulatory Inspection |

PRESSURE VESSEL NAMEPLATE DATA

| | | | |
|---|------------------|----------------------------------|----------------------|
| "A" or "G" or "S" (Sask.) or BC Registration Number. A0454495 | | CRN Number: L 7688.213 | |
| Vessel serial number: HS 9813 | | Size: 48 in. x 15 ft. | |
| Shell thickness: 57.2mm | | Shell material: SA 516-70N | |
| Head thickness: 54.91mm | | 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: 0 – 2000 PSI |
| | Tubes: | | Tubes: |
| Design Temp. | Shell: 100 Deg F | Operating temperature | Shell: 0 – 200 Deg F |
| | Tubes: | | Tubes: |
| X-ray: RT 1 | | Heat treatment: HT | |
| Code parameters: ASME VIII, Div 1 | | Coated: No | |
| Manufacturer: Larsen & D'Amico | | Year built: 2000 | |
| Corrosion allowance: 3.2mm | | Manway: No | |

PRESSURE SAFETY VALVE NAMEPLATE DATA

| PSV Tag # | Manufacture | Model # | Serial # | Set Pressure (kPa) | Capacity (scfm) | Service Date |
|---------------|----------------------|-------------------|----------------------|-----------------------|--------------------|-----------------|
| 19083F | Farris | 26JA13-120 | 4625104-1-A10 | 1440 PSI | 35956 | 8/2011 |
| CRN # | Service By | Block Valve | Location | Size | Code Stamp | |
| | Unified Valve | No | top shell | 2.5"x4" | UV | |

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 exposed metal. |
| 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, 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: bolted directly to skid floor. No buckling or dents. No corrosion at attachment welds to vessel. Ground wire attached to skid. |
| Anchor Bolts Hammer tap to ensure secure. Look for cracking in treads or signs of deformation. | X | | | | Anchor bolts are securely fastened. No deformation. |
| Concrete foundation Check for cracks, spalling, etc. | | | | X | |
| Ladder / Platform Describe general condition, ensure support is secure to vessel, describe any hazards. | | | | X | |
| Nozzle Assess paint, look for leakage, and ensure stud threads are fully engaged. Record any damage, deflection, etc. Are nozzles gusseted? | X | | | | Stud threads are fully engaged No leaks observed. No damage or deflections. Nozzles are not gusseted |
| Gauges Ensure gauges are visible, working, no leakage, and suitable for range of MAWP/Temp. | X | | | | Clear and clean – no leakage. Suitable for range of MAWP/Temperature. Pressure gauge 0 -2000/temp. gauge 0 -250 Deg 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 and supports are in place. No structural overloads or deflections. Paint in good condition. |
| Valving Ensure no leaks are visible. Valves are properly supported and chained if necessary. | X | | | | No leaks are visible. Valves are supported properly. |
| PSV Ensure PSV is set at pressure at or below that of vessel. | X | | | | Location: top shell - set at MAWP of vessel. Discharge piping is same size as valve outlet. PSV seal in place – no block valve between vessel and PSV. |
| NDE methods Was UT/ MPI done on vessel (MI coordinator to review results) | X | | | | Ultrasonic corrosion survey carried out – no metal thickness detected below nominal minus corrosion allowance. |
| 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: No recommendations at this time | | | | | |
| SUMMARY: Vessel is in overall good condition, visual external inspection and ultrasonic corrosion survey performed – no 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 (head) 0.925mm per year. Retirement Date to “T”min is year 2025. Vessel is fit for service. | | | | | |

Photo Table



LSD



Data Plate



Overview



Saddle bolted to skid floor



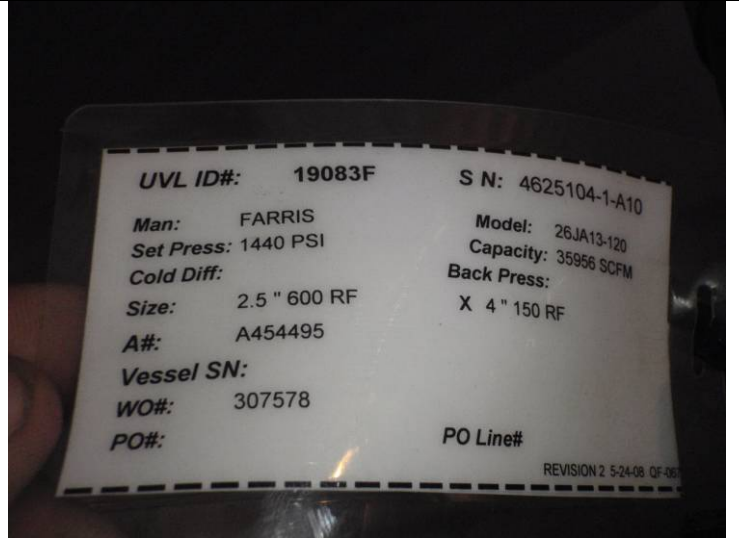
Pressure gauge



Temperature gauge



PSV



PSV service tag