

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

**Job 10.112902**

|  |                                       |
|--|---------------------------------------|
| District: <b>Grande Prairie AB.</b>            | Skid No.                              |
| Facility: <b>Clear Hills Gas Plant</b>         | Location (LSD): <b>16-11-88-13W6M</b> |
| Vessel Name Equipment Number: <b>Blow Case</b> |                                       |
| Orientation: <b>Horizontal</b>                 |                                       |
| Status: <b>In Service</b>                      | <b>Regulatory Inspection</b>          |

**PRESSURE VESSEL NAMEPLATE DATA**

|   |                   |                                |                     |
|---|-------------------|--------------------------------|---------------------|
| "A" or "G" or "S" (Sask.) or BC Registration Number.<br><b>C45222</b> |                   | CRN Number:<br><b>H 5741.1</b> |                     |
| Vessel serial number: 94043-07  |                   | Size: 24 in. X 60 in.          |                     |
| Shell thickness: 31.8 mm  |                   | Shell material: SA 516-70N     |                     |
| Head thickness: 35.6 mm   |                   | Head material: SA 516-70N      |                     |
| Tube wall thickness:  |                   | Tube material:                 |                     |
| Tube diameter:  |                   | Tube length:                   |                     |
| Channel thickness:  |                   | Channel material:              |                     |
| Design pressure   | Shell: 1600 PSI   | Operating pressure             | Shell: 0 – 1500 PSI |
|   | Tubes:            |                                | Tubes:              |
| Design Temp.  | Shell: 350 Deg F. | Operating temperature          | Shell:              |
|   | Tubes:            |                                | Tubes:              |
| X-ray: RT 1   |                   | Heat treatment: HT             |                     |
| Code parameters: ASME VIII Div 1                                      |                   | Coated: No                     |                     |
| Manufacturer: Enerflex Systems  |                   | Year built: 1994               |                     |
| Corrosion allowance: Not stated                                       |                   | 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    |
|-----------|----------------------------------|--------------------------|-----------------|--------|-------------|-----------|--------------------|
| C441      | Taylor//82E8351311//8<br>0196-31 | 1440 PSI                 | 5181            | 1"x 1" | No          | Top shell | Powell<br>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** \_\_\_\_\_

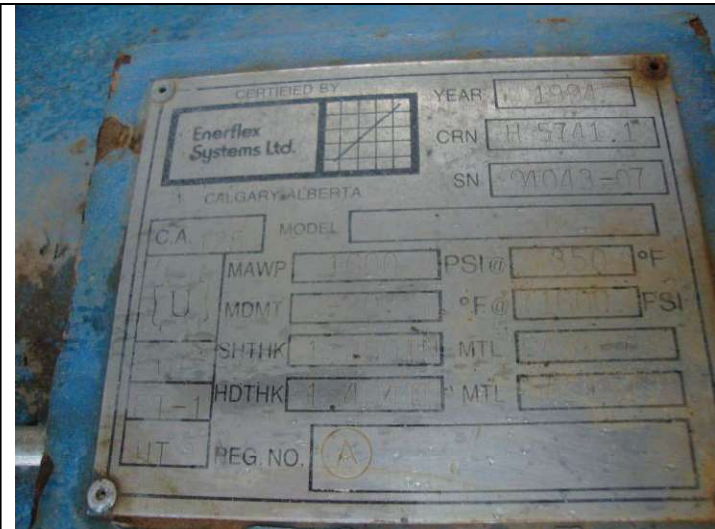
(Determined by MIC in conjunction with Chief Inspector following guidelines of CNRL's Owner-User Inspection Program)

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  |
|--|---|---|---|-----|---|
| <b>Insulation</b> Verify sealed around manways, nozzles, no damage present, and there is no egress of moisture.  |   |   |   | X   | <b>Vessel not insulated.</b>  |
| <b>External Condition</b> Assess paint condition, areas peeling, record any corrosion, damage, etc (record location, size and depth of corrosion or damage)  | X |   |   |     | <b>Paint in good condition – no exposed metal.</b>  |
| <b>Leakage</b> Record any leakage at flanges, threaded joints, weep holes on repads, etc.  | X |   |   |     | <b>No leaks observed.</b>   |
| <b>Saddle/skirt</b> 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 |   |   |     | <b>Saddle: Welded directly to pilings.<br/>No buckling or dents.<br/>No corrosion at attachment welds to vessel.<br/>Ground wire attached to skid.</b>  |
| <b>Anchor Bolts</b> Hammer tap to ensure secure. Look for cracking in treads or signs of deformation.  | X |   |   |     | <b>Vessel saddles welded firmly to support pilings – no deformation.</b>  |
| <b>Concrete foundation</b> Check for cracks, spalling, etc.  |   |   |   | X   |   |
| <b>Ladder / Platform</b> Describe general condition, ensure support is secure to vessel, and describe any hazards.   |   |   |   | X   |   |
| <b>Nozzle</b> Assess paint, look for leakage, and ensure stud threads are fully engaged. Record any damage, deflection, etc. Are nozzles gusseted?   | X |   |   |     | <b>Threaded nozzle joints are fully engaged.<br/>No damage or deflections – no leaks.<br/>Nozzles are not gusseted.</b>   |
| <b>Gauges</b> Ensure gauges are visible, working, no leakage, and suitable for range of MAWP/ Temp.  | X |   |   |     | <b>Clear and clean – no leakage.<br/>Within operational range for service.<br/>Pressure gauge 0 – 1500 PSI.</b>   |
| <b>External Piping</b> 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 |   |   |     | <b>Piping is well supported; no deflection, all clamps and supports are in place.<br/>Paint peeling to 50% of area – corrosion on all exposed metal.</b>  |
| <b>Valving</b> Ensure no leaks are visible. Valves are properly supported and chained if necessary.  | X |   |   |     | <b>Valves are supported properly – no leaks.</b>  |
| <b>PSV</b> Ensure PSV is set at pressure at or below that of vessel.   | X |   |   |     | <b>Location: top shell - Set below MAWP of vessel.<br/>No block valve between vessel and PSV.<br/>Discharge piping is same size as valve out let.<br/>Seal in place.</b>  |
| <b>NDE methods</b> Was UT/ MPI done on vessel (MI coordinator to review results)   | X |   |   |     | <b>Ultrasonic corrosion survey carried out – head metal thickness detected below nominal.<br/>Thickness calculations carried out:<br/>Lower Head – nominal thickness is 35.6mm / min thickness is 32.5mm / T min thickness is 24.8mm.</b> |
| <p><b>Recommendations or corrective actions : Vessel is Fit for Service or describe corrective actions required)</b><br/> (MIC to review corrective actions with Operations, discuss with Chief Inspector where necessary, and get remedial action implemented)<br/> <b>Recommendations:</b> Vessel requires “A” Registration number – some research is required.<br/> <b>Summary: This vessel is in good condition, visual external and ultrasonic thickness inspection carried out – head metal thickness detected below nominal. Thickness calculations carried out to ensure sufficient metal exists for safe operation.</b><br/> Short term corrosion rate based on greatest thickness loss (head) 0.163mm per year. Retirement Date to “T”min is year 2060.</p> <p><b>Vessel is fit for service.</b></p> |   |   |   |     |   |



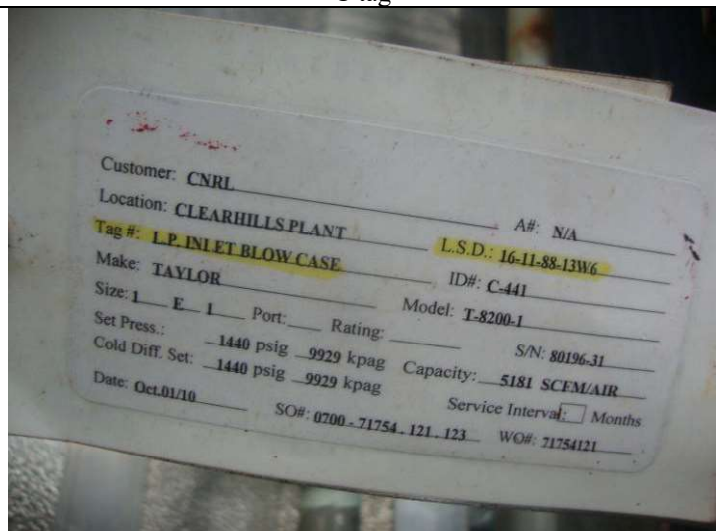
Vessel data plate



C tag



Pressure gauge



PSV data tag



PSV



overview



Head and saddle view