**Canadian Natural Resources Limited**
**GENERAL PRESSURE VESSEL INFORMATION** **Job # 105.00157**

| | |
|---|---|
| District: **Grande Prairie AB.** | Skid No. |
| Facility: **Saddle Hills Gas Plant** | Location (LSD): **10-11-75-07W6M** |
| Vessel Name Equipment Number: **Glycol Contactor** | |
| Orientation: **Vertical** | |
| Status: **In Service** | **Regulatory Inspection** |

**PRESSURE VESSEL NAMEPLATE DATA**

| | | | |
|---|---|---|---|
| "A" or "G" or "S" (Sask.) or BC Registration Number. **C38593** | | CRN Number: K2684.1 | |
| Vessel serial number: 01168-501 | | Size: 60 in. X 36 ft. | |
| Shell thickness: 57.15mm | | Shell material: SA 516-70N | |
| Head thickness: 53.98mm | | Head material: SA 516-70N | |
| Tube wall thickness: | | Tube material: | |
| Tube diameter: | | Tube length: | |
| Channel thickness: | | Channel material: | |
| Design pressure | Shell: 1740 PSI | Operating pressure | Shell: |
| | Tubes: | | Tubes: |
| Design Temp. | Shell: 200 Deg F | Operating temperature | Shell: |
| | Tubes: | | Tubes: |
| X-ray: not stated | | Heat treatment: Yes | |
| Code parameters: ASME VIII, Div 1 | | Coated: no | |
| Manufacturer: Propak Systems | | Year built:2002 | |
| Corrosion allowance: not stated | | Manway: Yes | |

**PRESSURE SAFETY VALVE NAME PLATE DATA**

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

**SERVICE CONDITIONS-INDICATE ALL THAT APPLY**

| | | | | |
|---|---|---|---|---|
| Sweet | Sour X | Oil | Gas X | Water |
| 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** | **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 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** | | | | **Skirt: bolted directly to support frame.**<br>**Support frame welded to pilings**<br>**No buckling or dents.**<br>**No corrosion at attachment welds to vessel**<br>**Ground wire attached to vessel and pilings.** |
| **Anchor Bolts** Hammer tap to ensure secure. Look for cracking in treads or signs of deformation. | **X** | | | | **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 to nuts.**<br>**No leaks, no damage or deflection.**<br>**No short bolting.**<br>**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.**<br>**Suitable for operational range of vessel.**<br>**Temperature gauge 0 – 200 Deg C.** |
| **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 – all clamps and supports are in place.**<br>**No structural overloads or deflection.**<br>**Paint in good condition- no exposed metal.** |
| **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** | | | | **Located on inlet piping.**<br>**Removed for service.** |
| **NDE methods** Was UT/ MPI done on vessel (MI coordinator to review results) | | | | **X** | |
| **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: No recommendations at this time.**
**Summary:**
**Vessel is fit for service.**

**Inspected By**: Gerry Avery **Date:** June 9, 2010

| Internal Inspection Items | G | F | P | N/A | Comments |
|---|---|---|---|---|---|
| **Coating** Assess coating. Describe area coated, general condition of coating. | | | | X | **vessel not coated** |
| **Anodes.** How many, type, condition. % consumed. Are they being replaced? | | | | X | **No anodes in vessel** |
| **Internal Piping** Is there any? If so, carbon or stainless steel. Describe condition, dents, corrosion, erosion, etc. Ensure supports are secure and any bolts are suitable for future use. | X | | | | **Coil in bottom in good condition – supports and clamps in place - no mechanical damage or dents.** |
| **Trays** How many? Type of material. Are valves in place. Check for erosion/ corrosion; wear on tray valve legs. Cleanliness? | | | | X | **No trays.** |
| **Baffles, deflector plates, etc.** If present, describe condition. Look closely at welds attached to vessel wall. | | | | X | |
| **Top Head** Note all corrosion, erosion or mechanical damage. (If vessel is horizontal identify direction of this head) | X | | | | **No mechanical damage.**<br>**Man way gasket seating face is clean no mechanical or corrosion damage.** |
| **Bottom Head** Note all corrosion, erosion or mechanical damage. (If vessel is horizontal identify direction of this head) | X | | | | **No mechanical damage- no corrosion or erosion.**<br>**Drain nozzle is clean and unobstructed.** |
| **Shell Sections** Record number of shell sections. Record location, size and depth of all erosion, corrosion or mechanical damage. Describe general condition. If any corrosion greater than corrosion allowance is observed in either shell or head, discuss with Chief Inspector before closing vessel. | X | | | | **Shell in good condition –No mechanical damage.**<br>**Nozzles are unobstructed, No corrosion or erosion on shell.**<br>**Man way at top and bottom in good condition- no mechanical damage or corrosion on gasket seating face.**<br>**No corrosion in throat of man ways.** |
| **Demister pad** Is it in place? Is it clean? If any corrosion is apparent in vessel, lift pad and check top head for corrosion. | X | | | | **Filter packing in top head is damaged and not in place.**<br>**Packing view from bottom is in good condition and in place – no damage present.** |
| **Welds** Inspect all welds, including attachment welds. Record all service-related damages and if there is any discuss with Chief Inspector before closing. | X | | | | **Over all welds are in good condition – head to shell weld has no corrosion – no erosion or pitting.**<br>**Attachment welds are in good condition no corrosion or erosion.** |
| **Repairs Required**. If yes, ensure procedure and copy of AB 40 is on file, and one sent to local ABSA, and Chief Inspector | | | | X | |
| **NDE** Was any NDE done. ( MI coordinator to review results) | | | | X | |

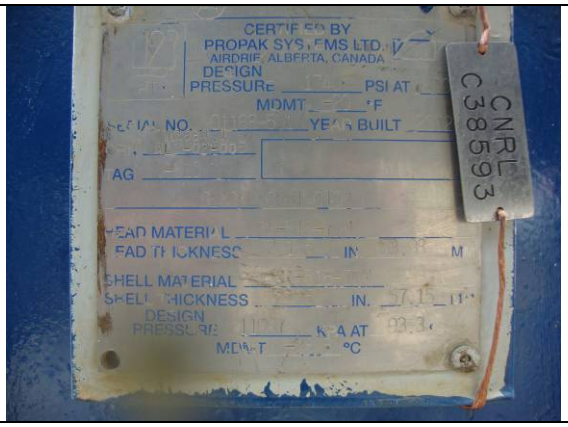
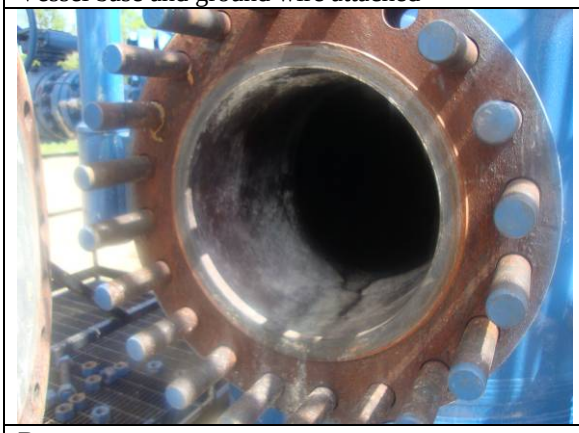
**Recommendations or corrective actions : Vessel is Fit for Service or describe corrective actions required)**
**(**MIC to review corrective actions with Operations, discuss with Chief Inspector where necessary, and get remedial action implemented)
**Recommendations:** Replace damaged packing at top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

**Summary:** Vessel in good overall condition, Visual external and internal inspection performed on vessel. No visual defects observed.

**Vessel is fit for service.**

**Inspected By**: Gerry Avery **Date:** June 10, 2010

**Photo Table**

<table>
<tr><td> 
</td><td> 
</td></tr>
<tr><td>LSD</td><td>Vessel data plate</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Vessel base and ground wire attached</td><td>Vessel overview</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Bottom man way</td><td>Bottom coil</td></tr>
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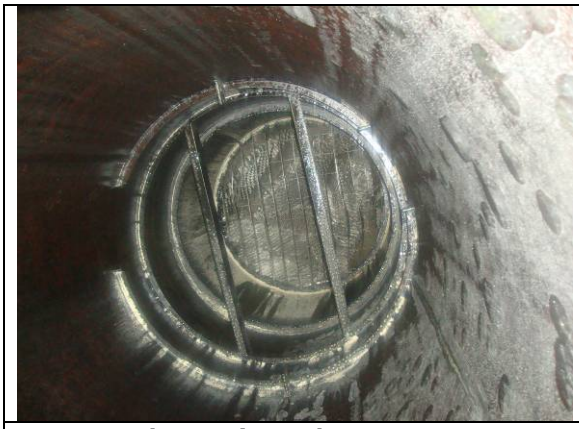
|---|---|
|  |  |
| View up in the vessel at packing | Piping attachment to shell |
|  |  |
| Coil attachment weld to shell | Bottom nozzle and shell to head weld |
|  |  |
| Top man way | Packing in top head |
|  |  |
| Damaged packing under top man way | Shredded packing in top man way |