

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

**Job # 10.112195**

District: <b>Fort St. John BC.</b>	Skid No.
Facility: <b>Jedney</b>	Location (LSD): <b>A-62-E-94-G-8</b>
Vessel Name Equipment Number: <b>Flare Knockout Drum</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. <b>C35076</b>		CRN Number:	
Vessel serial number: 98-0056		Size: 72 in. X 12 ft.	
Shell thickness:		Shell material:	
Head thickness:		Head material:	
Tube wall thickness:		Tube material:	
Tube diameter:		Tube length:	
Channel thickness:		Channel material:	
Design pressure	Shell: 14.7 PSI	Operating pressure	Shell: 0 – 60 PSI
	Tubes:		Tubes:
Design Temp.	Shell: 100 Deg F.	Operating temperature	Shell:
	Tubes:		Tubes:
X-ray: Nil		Heat treatment: Nil	
Code parameters: ASME VIII, Div 1		Coated: yes	
Manufacturer: Tornado Flare Systems		Year built: 1998	
Corrosion allowance:		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	

**SERVICE CONDITIONS-INDICATE ALL THAT APPLY**

Sweet	Sour X	Oil	Gas X	Water
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. 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

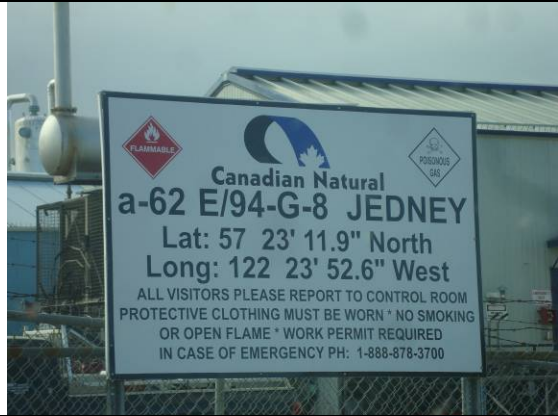
External Inspection Items	G	F	P	N/A	Comments
<b>Insulation</b> Verify sealed around manways, nozzles, no damage present, and there is no egress of moisture.	X				<b>No damage present, no egress of moisture. Sealed around nozzles and saddle supports All straps in place and secure.</b>
<b>External Condition</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, 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: bolted directly to skid frame. No buckling or dents. No corrosion at attachment welds to vessel Ground wire attached to vessel.</b>
<b>Anchor Bolts</b> Hammer tap to ensure secure. Look for cracking in treads or signs of deformation.	X				<b>Securely fastened – 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, 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>Flanged and threaded nozzle joints are fully engaged. No leaks, no damage or deflection. 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. Suitable for operational range of vessel. Pressure gauge 0 – 60 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>Well supported – all clamps and supports are in place. No structural overloads or deflection. Piping insulated – no open or torn sections.</b>
<b>Valving</b> Ensure no leaks are visible. Valves are properly supported and chained if necessary.	X				<b>No leaks are visible- valves are supported properly.</b>
<b>PSV</b> Ensure PSV is set at pressure at or below that of vessel.				X	<b>Vent to flare.</b>
<b>NDE methods</b> Was UT/ MPI done on vessel (MI coordinator to review results)				X	
<b>Other</b>					
<p><b>Recommendations or corrective actions : Vessel is Fit for Service or describe corrective actions required)</b>  (MIC to review corrective actions with Operations, discuss with Chief Inspector where necessary, and get remedial action implemented)  <b>Recommendations:</b> No recommendations.  <b>Summary:</b>  <b>Vessel is fit for service.</b></p>					

<b>Internal Inspection Items</b>	<b>G</b>	<b>F</b>	<b>P</b>	<b>N/A</b>	<b>Comments</b>
<b>Coating</b> Assess coating. Describe area coated, general condition of coating.	X				<b>Coating in man way peeling and outlet nozzle. Corrosion on exposed metal.</b>
<b>Anodes.</b> How many, type, condition. % consumed. Are they being replaced?				X	<b>No anodes in vessel</b>
<b>Internal Piping</b> 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				<b>Heat medium coil in place and clamped securely. No deflections or dents. Coating blistered and peeling from coil – corrosion on exposed metal.</b>
<b>Trays</b> How many? Type of material. Are valves in place. Check for erosion/ corrosion; wear on tray valve legs. Cleanliness?				X	<b>No trays</b>
<b>Baffles, deflector plates, etc.</b> If present, describe condition. Look closely at welds attached to vessel wall.	X				<b>Inlet deflector plate welded to head – no mechanical damage. No erosion or corrosion- coating in place.</b>
<b>Top Head</b> Note all corrosion, erosion or mechanical damage. (If vessel is horizontal identify direction of this head)	X				<b>East head – No mechanical damage or peeling coating.</b>
<b>Bottom Head</b> Note all corrosion, erosion or mechanical damage. (If vessel is horizontal identify direction of this head)	X				<b>West head – heat medium coil piping welded to head- no corrosion or service related damages.</b>
<b>Shell Sections</b> 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				<b>Shell in good condition –No mechanical damage. Man way coating peeling to 50% of area – corrosion pitting on exposed metal – pit depth of .005”. Level floats operational. Nozzles are clear- outlet nozzle peeling to 80% of area- corrosion on exposed metal.</b>
<b>Demister pad</b> Is it in place? Is it clean? If any corrosion is apparent in vessel, lift pad and check top head for corrosion.				X	<b>None.</b>
<b>Welds</b> Inspect all welds, including attachment welds. Record all service-related damages and if there is any discuss with Chief Inspector before closing.	X				<b>Over all welds are in good condition – head to shell weld has no corrosion – no erosion or pitting. Attachment welds are in good condition no corrosion or erosion.</b>
<b>Repairs Required.</b> If yes, ensure procedure and copy of AB 40 is on file, and one sent to local ABSA, and Chief Inspector	X				<b>Sandblast and re-coat heat medium piping, nozzle and man way.</b>
<b>NDE</b> Was any NDE done. ( MI coordinator to review results)				X	
<p><b>Recommendations or corrective actions : Vessel is Fit for Service or describe corrective actions required)</b>  (MIC to review corrective actions with Operations, discuss with Chief Inspector where necessary, and get remedial action implemented)  <b>Recommendations:</b> Sandblast and recoat outlet nozzle, man way and heat medium coil piping.</p> <p><b>Summary:</b> Vessel in good overall condition, Visual external and internal inspection performed on vessel. No visual defects observed.</p> <p><b>Vessel is fit for service.</b></p>					

**Inspected By:** Gerry Avery

**Date:** September 14, 2012

Photo Table



LSD

Vessel data plate



Coating peeling in man way

Vessel overview



Vessel pressure gauge

Inlet deflector plate



Level floats

Suction nozzle



Heat medium coil



Coating peeling in outlet nozzle



Shell coated tee weld



Coating blistered on heat medium piping