



**PRESSURE VESSEL  
VISUAL INSPECTION  
REPORT**

Report #: **92242-MD-40**  
 Inspect Date: 06/26/2010  
 Page: 1 of 9  
 Insp. Co. Job #: 92242

**Criticality Designation:**



**Yellow**

Insp. Comp: Matrix\_Inspection District: Slave Lake Field: Brintnell  
 Location: 13-22-081-22W4M Unit / Skid #: N/A LSD: 13-22-081-22W4M  
 Jurisdiction #: A0429774 Equip Tag #: N/A Serial #: 1960K1 V1001  
 CRN #: N6415.2 Nat'l Bd #: N/A Year Built: 1997  
 Manufacturer: Plains Oil Ltd. Equipment Description: Other: Flare Knock Out Drum  
 Status: In Service - Equip. Type: Vessel: Flare K.O. Drum Service: Sweet  
 MAWP Shell: 345 kPa @ 38 °C Volume: \_\_\_\_\_ Code Stamp:  Y  N  
 MAWP Tube: N/A @ N/A Height/Length: 144 in. Insulated:  Y  N  
 MDMT: -29 °C RT: RT-3 Size/Diameter.: 60 in. O.D. PWHT:  Y  N  
 Support: Saddle Vessel on Original CNRL Inventory List:  Y  N Manway:  Y  N  
 C.A.: \_\_\_\_\_ Coated: No Clad: No J.E.: N/A Remote Access:  - \_\_\_\_\_

Component	Material	Nominal Thk	Diameter	OD/ID	Tube Side	Shell Side
1 Main - Shell	SA-516-70N	9.500 mm	60.000 in.	OD	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2 East - Head	SA-516-70N	8.760 mm	60.000 in.	OD	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3 West - Head	SA-516-70N	8.760	60.000 in.	OD	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4 -					<input type="checkbox"/>	<input type="checkbox"/>
5 -					<input type="checkbox"/>	<input type="checkbox"/>

Static Data: Confirmed  Changed (See Comments)

Comments:

Data plate is legible and firmly attached.

**PSV Static Data**

PSV -1 Tag #: N/A Serial #: N/A CRN: N/A  
 Model #: N/A Capacity: \_\_\_\_\_ Set Pressure: \_\_\_\_\_  
 Manufacturer: N/A Service Company: N/A  
 Inlet Size & Type: \_\_\_\_\_ Last Service Date: N/A  
 Outlet Size & Type: \_\_\_\_\_ Block Valve: \_\_\_\_\_  
 Carseal Intact: \_\_\_\_\_ Code Stamp: \_\_\_\_\_  
 Shell Side / Tube Side: \_\_\_\_\_ Out for Service During Insp.: \_\_\_\_\_ Location of PSV: \_\_\_\_\_

PSV -2 Tag #: N/A Serial #: N/A CRN: N/A  
 Model #: N/A Capacity: \_\_\_\_\_ Set Pressure: \_\_\_\_\_  
 Manufacturer: N/A Service Company: N/A  
 Inlet Size & Type: \_\_\_\_\_ Last Service Date: N/A  
 Outlet Size & Type: \_\_\_\_\_ Block Valve: \_\_\_\_\_  
 Carseal Intact: \_\_\_\_\_ Code Stamp: \_\_\_\_\_  
 Shell Side / Tube Side: \_\_\_\_\_ Out for Service During Insp.: \_\_\_\_\_ Location of PSV: \_\_\_\_\_

**PSV Comments**

No PSV required, vessel vents to atmosphere.



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**External Inspection Results – VE External Inspection Performed**

Item	N/A	Condition	Comment (Check Status Bar or Press F1 for Help)	NCR	Action Item Integrity	Action Item Maintenance
Nameplate	<input type="checkbox"/>	Accept	Clear and legible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Foundation and Supports	<input type="checkbox"/>	Accept	Good condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Anchor Bolts	<input type="checkbox"/>	Accept	Good bolting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grounding	<input type="checkbox"/>	Accept	Good Grounding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Insulation Condition	<input type="checkbox"/>	Accept	Damage and, minor sealant deterioration	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PSV	<input checked="" type="checkbox"/>		Not applicable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shell Heads & Nozzles	<input checked="" type="checkbox"/>		Under insulation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Metal Surfaces (Paint)	<input checked="" type="checkbox"/>		Under insulation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aux Equipment	<input checked="" type="checkbox"/>		Not applicable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cathodic Protection	<input checked="" type="checkbox"/>		Not applicable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alignment	<input type="checkbox"/>	Accept	Good alignment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flange Connections	<input checked="" type="checkbox"/>		Under insulation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pressure Gauge	<input type="checkbox"/>	Accept	Clear and firmly attached	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Temperature Gauge	<input type="checkbox"/>	Accept	Clear and firmly attached	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sight Glass	<input type="checkbox"/>	Accept	Clear and firmly attached	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ladder / Platform	<input checked="" type="checkbox"/>		Not applicable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leaks	<input type="checkbox"/>	No	No visible leaks at time of inspection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Piping from Vessel	<input checked="" type="checkbox"/>		Under insulation			
Previous UT Survey	<input type="checkbox"/>	Yes	No significant losses noted	UT Company:		

**External Visual Observations**

An external visual inspection was performed on the Flare Knock Out Drum and the findings are as follows:

The vessel was operating at time of inspection. No process leaks were noted.  
 Minor sealant deterioration around vessels attachments and inspection cut out covers.  
 Minor insulation damage on shell and heads.  
 The data plate is firmly attached and legible.  
 The visible un-insulated piping, bolting, and external attachments appear to be in good condition and firmly attached.  
 The vessel is grounded through the skid it sits on.  
 The vessel appears to be properly leveled and the saddles are bolted securely.  
 The sight glass, temperature, and pressure gauges are clear, firmly attached, and appear too be working properly.  
 No PSV required, vessel vents to atmosphere.  
 External UT was performed with no significant wall losses noted. UT was carried out with GE DMS 2 IRISNDT#31069.  
 All thickness values recorded were considered acceptable at the time of the inspection.  
 See attached UltraMate UT file for complete thickness values.

**Recommendations:**

Repair insulation, and apply sealant to required areas to prevent CUI from occurring.  
 Continue regular inspections to maintain vessel integrity and continued safe operation.



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**Internal Inspection Results – VI N/A (Not Applicable)**

Item	N/A	Condition	Comment (Check Status Bar or Press F1 for Help)	NCR	Action Item Integrity	Action Item Maintenance
Shell	<input checked="" type="checkbox"/>		No Internal Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heads	<input checked="" type="checkbox"/>		No Internal Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Manway	<input checked="" type="checkbox"/>		No Internal Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gasket Surfaces	<input checked="" type="checkbox"/>		No Internal Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Welds	<input checked="" type="checkbox"/>		No Internal Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Refractory	<input checked="" type="checkbox"/>		No Internal Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heating Coils	<input checked="" type="checkbox"/>		No Internal Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Demister Pad	<input checked="" type="checkbox"/>		No Internal Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vane Pack	<input checked="" type="checkbox"/>		No Internal Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baffles	<input checked="" type="checkbox"/>		No Internal Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trays	<input checked="" type="checkbox"/>		No Internal Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Filter	<input checked="" type="checkbox"/>		No Internal Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal Coating	<input checked="" type="checkbox"/>		No Internal Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tubesheet	<input checked="" type="checkbox"/>		No Internal Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tube Bundle	<input checked="" type="checkbox"/>		No Internal Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Internal Visual Observations**

No Internal Inspection Carried Out

**Recommendations:**

No Internal Inspection Carried Out



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**Firetube Static Data Vessel Not Equiped with Firetube**

Diameter: Not Applicable Nom Thickness: Not Applicable Bend: Not Applicable  
 Length: Not Applicable Firetube Description: Not Applicable  
 Firetube NDE Performed: UT  Report#: Not Applicable ET  Report#: Not Applicable  
 MT  Report#: Not Applicable RT  Report#: Not Applicable  
 PT  Report#: Not Applicable Other  Report#: Not Applicable

**Firetube Inspection Results**

Item	N/A	Condition	Comment (Check Status Bar or Press F1 for Help)	NCR	Action Item Integrity	Action Item Maintenance
Burner	<input checked="" type="checkbox"/>		No Firetube Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stack	<input checked="" type="checkbox"/>		No Firetube Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flange (Throat)	<input checked="" type="checkbox"/>		No Firetube Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tube Sheet	<input checked="" type="checkbox"/>		No Firetube Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hot Side	<input checked="" type="checkbox"/>		No Firetube Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Miter	<input checked="" type="checkbox"/>		No Firetube Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Return Bend	<input checked="" type="checkbox"/>		No Firetube Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supports	<input checked="" type="checkbox"/>		No Firetube Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Butt Welds	<input checked="" type="checkbox"/>		No Firetube Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fillet Welds	<input checked="" type="checkbox"/>		No Firetube Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Firetube Visual Observations**

No Firetube Inspection Carried Out

**Recommendations:**

No Firetube Inspection Carried Out



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**Vessel NDE and Final Summary:**

UT	<input checked="" type="checkbox"/>	Report#:	_____	ET	<input type="checkbox"/>	Report#:	_____
NDE Performed: MT	<input type="checkbox"/>	Report#:	_____	RT	<input type="checkbox"/>	Report#:	_____
PT	<input type="checkbox"/>	Report#:	_____	Other	<input type="checkbox"/>	Report#:	_____

**Maxi-Trak Observations Summary (Summarize inspection results Max 255 Characters):**

Minor sealant deterioration around vessels attachments and inspection cut out covers. Insulation damage on shell and heads.

**Maxi-Trak Recommendations Summary (Summarize Recommendations Max 255 Characters):**

Apply sealant to required areas to prevent CUI from occurring.  
Continue regular inspections to maintain vessel integrity and continued safe operation.

**Actions Corrected at Time of Inspection: (If actions were corrected at the time of Inspection – note the corrected actions here.)**

No actions carried out at the time of inspection.

**Additional Visual Observations**

No Additional Visual Observations at this time.

**Any other safety concerns or observations from associated equipment: (for example associated piping, buildings, pumps etc...)**

No Safety or other concerns were noted.



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**Thickness and Remaining Life Evaluation “ Must be Completed”**

**MUST BE COMPLETED AND RESOLVED WITH CNRL IMMEDIATELY UPON DISCOVERY OF LOW WALL THICKNESS AREAS**

Step 1: Was any thickness measurement location found to be less than (Nominal WT – Corrosion Allowance)?: **No**

If YES, proceed to Step 2; if NO, proceed to “Crack Evaluation” and “CNRL Criticality Designation”.

Step 2: Which component(s) were found below (Nominal WT – Corrosion Allowance)?

Components found below Nom - CA:

Components
N/A - N/A
N/A - N/A
N/A - N/A
N/A - N/A
N/A - N/A

Perform Steps 3 – 8 for each component with actual thickness less than (Nominal WT – Corrosion Allowance).

Step 3: Describe Location and Extent of Corrosion:

Components	Location and Extent of Corrosion
N/A - N/A	Not Applicable for this Inspection
N/A - N/A	Not Applicable for this Inspection
N/A - N/A	Not Applicable for this Inspection
N/A - N/A	Not Applicable for this Inspection
N/A - N/A	Not Applicable for this Inspection

Notes:  
Not Applicable for this Inspection

Step 4:

- For shells and nozzles, calculate minimum required thickness (T-min) as per ASME Section VIII UG-27.
- For heads, calculate minimum required thickness (T-min) as per ASME Section VIII UG-32.

Components	T-Min
N/A - N/A	N/A
N/A - N/A	N/A
N/A - N/A	N/A
N/A - N/A	N/A
N/A - N/A	N/A



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**Thickness and Remaining Life Evaluation (Continued)**

Step 5: Is any measured thickness less than calculated minimum required thickness (T-min)? **N/A**

*If YES, complete Step 6  
If NO, proceed to Step 7..*

Step 6: Is nature and extent of pitting acceptable as per API 510? **N/A**

Step 7: Calculate Remaining Life as per API 510. How? (Find last reading; use nominal thickness if nothing available). Short Term Corrosion Rates and Long Term Corrosion Rates.

Components	Remaining Life (Yrs)
N/A - N/A	N/A
N/A - N/A	N/A
N/A - N/A	N/A
N/A - N/A	N/A
N/A - N/A	N/A

Step 8: Contact CNRL Integrity Coordinator to discuss above results.

- Name of CNRL contact: Not Applicable for this Inspection
- Date and time of conversation: Not Applicable for this Inspection

Summary/results of conversation:  
Not Applicable for this Inspection

**Crack Evaluation by Magnetic Particle or Alternative Inspection “ Must be Completed”**

**MUST BE COMPLETED AND RESOLVED WITH CNRL IMMEDIATELY UPON DISCOVERY OF CRACK-LIKE INDICATIONS**

Were any indications found to suggest the vessel contained cracks? **No**

If NO, proceed to “CNRL Criticality Designation”.

If YES, Contact CNRL Integrity Coordinator to discuss results.

- Name of CNRL contact: Not Applicable for this Inspection
- Date and time of conversation: Not Applicable for this Inspection

Summary/results of conversation:  
Not Applicable for this Inspection



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CNRL Criticality Evaluation - MUST BE COMPLETED

The CNRL In-Service Pressure Vessel Inspector MUST answer all the following questions

- 1. Is the vessel fit-for-service? : Yes
2. Was the measured thickness less than the calculated minimum required thickness (T-min) for any component?: No
3. Were MT indications found?: N/A
4. Was the remaining life less than 6 years for sour service vessels or less than 10 years for sweet service vessels?: No
5. Were NCR's generated as a result of the inspection? : No
6. Were Action Items generated as a result of the inspection? : Yes
7. Were UT readings below (Nominal WT - Corrosion Allowance) found? : No

Information on CNRL Owner User Program - Criticality Designation and Required Review

RED - Vessel Inspection Results are deemed RED if one of the following occurred:

- The vessel was declared NOT fit-for-service by the 3rd Party In-Service PV Inspector.
The measured thickness was less than the calculated minimum required thickness (T-min) for any component.
MT indications were found.
The remaining life was calculated to be less than 6 years for sour-service vessels or less than 10 years for sweet-service vessels.
NCR's were generated as a result of the inspection

RED inspection reports must be signed off by the CNRL Chief Inspector.

YELLOW - Vessel Inspection Results are deemed YELLOW if the vessel was declared fit-for-service by the 3rd Party In-Service PV Inspector and one or both of the following occurred:

- Action Items were generated as a result of the inspection.
UT readings below (Nominal WT - Corrosion Allowance) were found.

YELLOW inspection reports must be signed off by the CNRL Pressure Equipment Integrity Coordinator.

GREEN - Vessel Inspection Results are deemed GREEN if all of the following are true:

- The vessel was declared fit-for-service by the 3rd Party In-Service PV Inspector.
UT readings below (Nominal WT - Corrosion Allowance) were NOT found.
MT indications were NOT found.
NCR's or Action Items were NOT generated as a result of the VE inspection.

GREEN inspection reports must be signed off by the 3rd Party In-Service Pressure Vessel Inspector.

Criticality Designation



Yellow

Vehicle #: 295 Kms:
Time In: Time Out: Hrs
Time In: Time Out: Hrs
Personnel:
Billing Info:

Inspector (Name): Mike Dymchuk PESL:
Inspector (Signature): API:
CNRL Coordinator (Name):
CNRL Coordinator (Signature):
CNRL Chief Inspector (Signature):
(I am in full agreement with report contents)



Equipment Photographs:



Figure 1\_Data plate



Figure 2\_Flare knock out drum



Figure 3\_Insulation damage