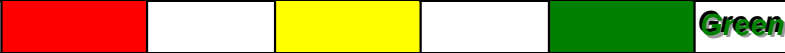




**PRESSURE VESSEL  
VISUAL INSPECTION  
REPORT**

Report #: **156892-MD-25**  
 Inspect Date: 08/07/2012  
 Page: 1 of 12  
 Insp. Co. Job #: 156892

**Criticality Designation:**



Insp. Comp: Matrix Inspection District: St Albert - North Field: Sedalia  
 Location: 09-16-31-04W4 Unit / Skid #: N/A LSD: 09-16-31-04W4  
 Jurisdiction #: A0583311 Equip Tag #: N/A Serial #: PE 10683  
 CRN #: R4588.213 Nat'l Bd #: N/A Year Built: 2007  
 Manufacturer: Penfabco Ltd Equipment Description: Other: 3 Phase Separator  
 Status: In Service - Equip. Type: Vessel: Separator Service: Sweet  
 MAWP Shell: 1480 Psi @ 100 °F Volume: N/A Code Stamp:  Y  N  
 MAWP Tube: @ Height/Length: 85 in. Insulated:  Y  N  
 MDMT: -20 °F RT: RT-2 Size/Diameter.: 16 in. O.D. PWHT:  Y  N  
 Support: Skirt Vessel on Original CNRL Inventory List:  Y  N Manway:  Y  N  
 C.A.: 0.062 in. Coated: N/A Clad: N/A J.E.: N/A Remote Access:  -

Component	Material	Nominal Thk	Diameter	OD/ID	Tube Side	Shell Side
1 Main - Shell	N/A	in.	16.000 in.	OD	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2 Top - Head	N/A	in.	16.000 in.	OD	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3 Bottom - Head	N/A	in.	16.000 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:

Static data confirmed

**PSV Static Data**

PSV -1 Tag #: N/A Serial #: N/A CRN: N/A  
 Model #: N/A Capacity: N/A Set Pressure: N/A  
 Manufacturer: N/A Service Company: N/A  
 Inlet Size & Type: 1.00 in. - Threaded Last Service Date: N/A  
 Outlet Size & Type: 1.00 in. - Threaded Block Valve: N/A - -  
 Carseal Intact: Yes Code Stamp: Yes  
 Shell Side / Tube Side: Shell Side Out for Service During Insp.: N Location of PSV: On Vessel

PSV -2 Tag #: N/A Serial #: N/A CRN: N/A  
 Model #: N/A Capacity: N/A Set Pressure: N/A  
 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**

PSV to be serviced at next Turnaround.



**PRESSURE VESSEL  
VISUAL INSPECTION  
REPORT**

Report #: **156892-MD-25**  
 Inspect Date: 08/07/2012  
 Page: 2 of 12  
 Insp. Co. Job #: 156892

Insp. Company: REF LSD\_PV \\* LSD: 09-16-31-04W4 Jurisdiction #: A0583311

**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	Firmly affixed and legible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Foundation and Supports	<input type="checkbox"/>	Accept	Welded skirt anchored to skid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Anchor Bolts	<input type="checkbox"/>		Secure with no deformation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grounding	<input type="checkbox"/>	Accept	Grounded by skid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Insulation Condition	<input checked="" type="checkbox"/>		Vessel is not insulated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PSV	<input type="checkbox"/>	Reject	Due for service	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Shell Heads & Nozzles	<input type="checkbox"/>	Accept	Acceptable condition, no mechanical damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Metal Surfaces (Paint)	<input type="checkbox"/>	Accept	Paint deterioration exposing the base metal	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Aux Equipment	<input type="checkbox"/>	Accept	Well supported and secure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cathodic Protection	<input checked="" type="checkbox"/>		No anode on separator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alignment	<input type="checkbox"/>	Accept	Vessel is vertical and upright	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flange Connections	<input type="checkbox"/>	Accept	Adequate thread engagement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pressure Gauge	<input type="checkbox"/>	Accept	0-1500 psi: acceptable range	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Temperature Gauge	<input checked="" type="checkbox"/>		No temp gauge on vessel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sight Glass	<input type="checkbox"/>	Accept	Minor staining in sight glass	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Ladder / Platform	<input checked="" type="checkbox"/>		No ladders or platforms on vessel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leaks	<input type="checkbox"/>	No	No evidence of any previous process leaks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Piping from Vessel	<input type="checkbox"/>	Accept	Secure and adequately supported			
Previous UT Survey	<input type="checkbox"/>	Yes	Vessel is marked	UT Company: N/A		

**External Visual Observations**

The PSV should be serviced

The outdoor section of the separator is wrapped in a black tarp limiting access for inspection and UT

The paint is deteriorated throughout the vessel exposing the base metal to minor surface with no evidence of pitting

The flange connections are secure with adequate exposed threads

There is minor staining in the sight glass

The thru wall caulking seal is deteriorated allowing for moisture ingress

No evidence of leaks noted at the time of inspection

The liquid level controller is secure and

A UT corrosion survey was performed at the time of inspection with no significant wall loss recorded at the time of examination

There is no access to the top head and shell outside the building

**Recommendations:**

Service PSV at next turnaround  
 Clean and repaint the areas where the paint is deteriorated  
 Consider cleaning the sight glass



**PRESSURE VESSEL  
VISUAL INSPECTION  
REPORT**

Report #: **156892-MD-25**  
Inspect Date: 08/07/2012  
Page: 3 of 12  
Insp. Co. Job #: 156892

Insp. Company: Matrix Inspection LSD: 09-16-31-04W4 Jurisdiction #: A0583311

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 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



**PRESSURE VESSEL  
VISUAL INSPECTION  
REPORT**

Report #: **156892-MD-25**  
 Inspect Date: 08/07/2012  
 Page: 4 of 12  
 Insp. Co. Job #: 156892

Insp. Company: Matrix Inspection LSD: 09-16-31-04W4 Jurisdiction #: A0583311

Firetube Static Data N/A (Not Applicable)

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



PRESSURE VESSEL  
VISUAL INSPECTION  
REPORT

Report #: **156892-MD-25**  
Inspect Date: 08/07/2012  
Page: 5 of 12  
Insp. Co. Job #: 156892

Insp. Company: Matrix Inspection LSD: 09-16-31-04W4 Jurisdiction #: A0583311

**Vessel NDE and Final Summary:**

NDE Performed: UT  Report#: \_\_\_\_\_ ET  Report#: \_\_\_\_\_  
MT  Report#: \_\_\_\_\_ RT  Report#: \_\_\_\_\_  
PT  Report#: \_\_\_\_\_ Other  Report#: \_\_\_\_\_

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

The PSV should be serviced  
Paint deterioration exposing the base metal to minor surface corrosion  
Minor staining in sight glass

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

Service PSV at next turnaround  
Clean and repaint the areas where the paint is deteriorated  
Consider cleaning the sight glass

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

No actions were corrected at the time of inspection

**Additional Visual Observations**

No additional visual observation

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

No other safety concerns



PRESSURE VESSEL  
VISUAL INSPECTION  
REPORT

Report #: **156892-MD-25**  
Inspect Date: 08/07/2012  
Page: 6 of 12  
Insp. Co. Job #: 156892

Insp. Company: Matrix Inspection LSD: 09-16-31-04W4 Jurisdiction #: A0583311

**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



PRESSURE VESSEL  
VISUAL INSPECTION  
REPORT

Report #: **156892-MD-25**  
Inspect Date: 08/07/2012  
Page: 7 of 12  
Insp. Co. Job #: 156892

Insp. Company: Matrix\_Inspection LSD: 09-16-31-04W4 Jurisdiction #: A0583311

**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? **N/A**

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



PRESSURE VESSEL VISUAL INSPECTION REPORT

Report #: 156892-MD-25
Inspect Date: 08/07/2012
Page: 8 of 12
Insp. Co. Job #: 156892

Insp. Company: Matrix\_Inspection LSD: 09-16-31-04W4 Jurisdiction #: A0583311

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 or Action Items generated as a result of the inspection? : No
6. 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 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.

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

YELLOW - Vessel Inspection Results are deemed YELLOW if one or more of the following occurred:

- The vessel was declared NOT fit-for-service by the 3rd Party In-Service PV Inspector.
NCR's or 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.

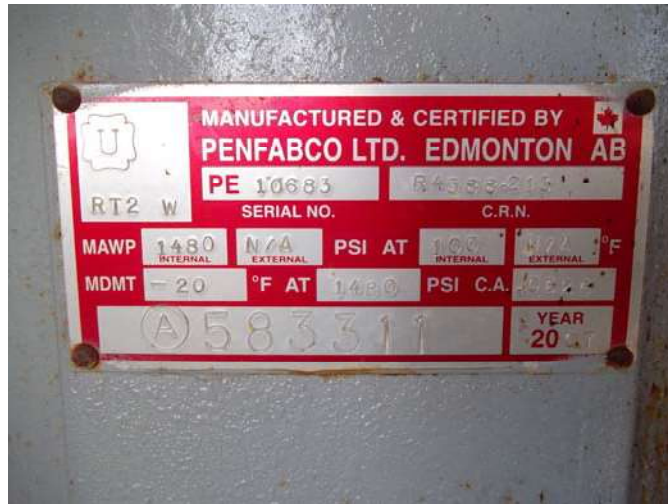
Criticality Designation [Red] [Yellow] [Green]

Vehicle #: 380 Kms:
Time In: 00:00 Time Out: 00:00 Hrs
Time In: 00:00 Time Out: 00:00 Hrs
Personnel:
Billing Info:

Inspector (Name): Matthew B Dickinson PESL: 601
Inspector (Signature): [Signature] Matthew Dickinson 2013.01.10 10:26:12 - 07'00' API: 39483
CNRL Coordinator (Name):
CNRL Coordinator (Signature):
CNRL Chief Inspector (Signature): (I am in full agreement with report contents)



Equipment Photographs:



01 nameplate



02 overview indoors



03 overview outdoors



04 surface corrosion on bottom head



05 paint deterioration



06 surface corrosion



**07 evidence of moisture ingress**