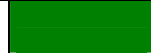




**PRESSURE VESSEL
VISUAL INSPECTION
REPORT**

Report #: **150126-SS-01**
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Criticality Designation:



Green

Insp. Comp: Matrix Inspection District: Slave Lake Field: Brintnell North
 Location: 07-27-082-21W4 Unit / Skid #: N/A LSD: 07-27-082-21W4
 Jurisdiction #: A0434166 Equip Tag #: N/A Serial #: 6913-03
 CRN #: N1530.2 Nat'l Bd #: N/A Year Built: _____
 Manufacturer: Natco Canada Ltd. Equipment Description: Other: Free Water Knockout
 Status: In Service - Equip. Type: Vessel: Free Water Knock Out Service: Sour
 MAWP Shell: 75 Psi @ 300 °F Volume: N/A Code Stamp: Y N
 MAWP Tube: N/A @ N/A Height/Length: N/A Insulated: Y N
 MDMT: -5 °F RT: RT-1 Size/Diameter.: N/A PWHT: Y N
 Support: Saddle Vessel on Original CNRL Inventory List: Y N Manway: Y N
 C.A.: _____ Coated: Yes Clad: No J.E.: _____ Remote Access: - _____

Component	Material	Nominal Thk	Diameter	OD/ID	Tube Side	Shell Side
1 Main - Shell	N/A	in.	in.	OD	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2 North - Head	N/A	in.	in.	OD	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3 South - Head	N/A	in.	in.	OD	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4 -	N/A			OD	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5 -	N/A			OD	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Static Data: Confirmed Changed (See Comments)

Comments:

Nameplate secure & legible

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: - Last Service Date: N/A
 Outlet Size & Type: - Block Valve: N/A - -
 Carseal Intact: N/A 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: 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: N/A Code Stamp: _____
 Shell Side / Tube Side: _____ Out for Service During Insp.: --- Location of PSV: _____

PSV Comments

No external inspection performed



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External Inspection Results – VE N/A (Not Applicable)

Item	N/A	Condition	Comment (Check Status Bar or Press F1 for Help)	NCR	Action Item Integrity	Action Item Maintenance
Nameplate	<input checked="" type="checkbox"/>		No External Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Foundation and Supports	<input checked="" type="checkbox"/>		No External Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Anchor Bolts	<input checked="" type="checkbox"/>		No External Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grounding	<input checked="" type="checkbox"/>		No External Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Insulation Condition	<input checked="" type="checkbox"/>		No External Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PSV	<input checked="" type="checkbox"/>		No External Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shell Heads & Nozzles	<input checked="" type="checkbox"/>		No External Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Metal Surfaces (Paint)	<input checked="" type="checkbox"/>		No External Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aux Equipment	<input checked="" type="checkbox"/>		No External Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cathodic Protection	<input checked="" type="checkbox"/>		No External Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alignment	<input checked="" type="checkbox"/>		No External Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flange Connections	<input checked="" type="checkbox"/>		No External Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pressure Gauge	<input checked="" type="checkbox"/>		No External Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Temperature Gauge	<input checked="" type="checkbox"/>		No External Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sight Glass	<input checked="" type="checkbox"/>		No External Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ladder / Platform	<input checked="" type="checkbox"/>		No External Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leaks	<input checked="" type="checkbox"/>		No External Inspection Carried Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Piping from Vessel	<input checked="" type="checkbox"/>		No External Inspection Carried Out			
Previous UT Survey	<input checked="" type="checkbox"/>		No External Inspection Carried Out			UT Company: N/A

External Visual Observations

No External Inspection Carried Out

Recommendations:

No External Inspection Carried Out



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Internal Inspection Results – VI Internal Inspection Performed

Item	N/A	Condition	Comment (Check Status Bar or Press F1 for Help)	NCR	Action Item Integrity	Action Item Maintenance
Shell	<input type="checkbox"/>	Accept	No concerns	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heads	<input type="checkbox"/>	Accept	No concerns	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Manway	<input type="checkbox"/>	Accept	No concerns	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gasket Surfaces	<input type="checkbox"/>	Accept	No damage visible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Welds	<input type="checkbox"/>	Accept	All full profile, no attack	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Refractory	<input checked="" type="checkbox"/>		N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heating Coils	<input type="checkbox"/>	Accept	No concerns	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Demister Pad	<input checked="" type="checkbox"/>		N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vane Pack	<input checked="" type="checkbox"/>		N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baffles	<input checked="" type="checkbox"/>		N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trays	<input checked="" type="checkbox"/>		N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Filter	<input checked="" type="checkbox"/>		N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal Coating	<input type="checkbox"/>	Reject	Multiple areas of coating failure	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Tubesheet	<input checked="" type="checkbox"/>		N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tube Bundle	<input checked="" type="checkbox"/>		N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Internal Visual Observations

Free Water Knockout was opened for regular maintenance.
 Multiple areas of coating damage noted. Blisters on both the fire side and the cold side to a max diameter of 0.250", concentrated on bottom 1/3 of vessel. None of the blisters are open to the surface. No changes from previous inspection in Spring 2009.
 9 areas of damage ranging from 1" to 3" sq. at diverter nozzles on bottom section of vessel.
 Firetube nozzle and all 3 manways also have coating damage.
 All areas of coating damage were marked and repaired prior to pushing firetube.
 All drain nozzles free and clear of obstructions or water with the exception of the far nozzle on the Cold side (was not sucked clear of water). Drain ID's have coating wear and some coating failure at elbow bends, with what appears to be little corrosion.
 Weir plate in good condition with no distortion. One support bracket on cold side has a loose bolt (West side, North End). Operations notified, and was scheduled to be tightened prior to pushing firetube.
 All internal piping has no concerns. All straight, no damage. No corrosion visible. All piping supports secure with no damage.
 All internal bolting intact with no concerns.
 No other concerns with this vessel.

Firetube not inspected as per Troy Adair.

UT carried out on all drain elbows and tees with GE DMS2 IRIS NDT #31080.
 Readings are above nominal.

Recommendations:

Continue to inspect vessel at regular inspection intervals.



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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

Firetube not inspected as per Troy Adair.

Recommendations:

Firetube not inspected as per Troy Adair.



PRESSURE VESSEL
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Vessel NDE and Final Summary:

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

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

Vessel internal has coating blisters that have not yet opened to the surface. Other areas of coating damage all repaired prior to closing manways. No other concerns with this vessel.

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

Continue to inspect vessel at regular inspection intervals.

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

N/A

Additional Visual Observations

N/A

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

N/A



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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? **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



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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 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



Green

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

Inspector (Name): Stephanie Simm PESL:
Inspector (Signature): API: 30892
CNRL Coordinator (Name): Dean Carnes
CNRL Coordinator (Signature):
CNRL Chief Inspector (Signature): (I am in full agreement with report contents)

Equipment Photographs:



Figure 01_Nameplate



Figure 02_Dataplate

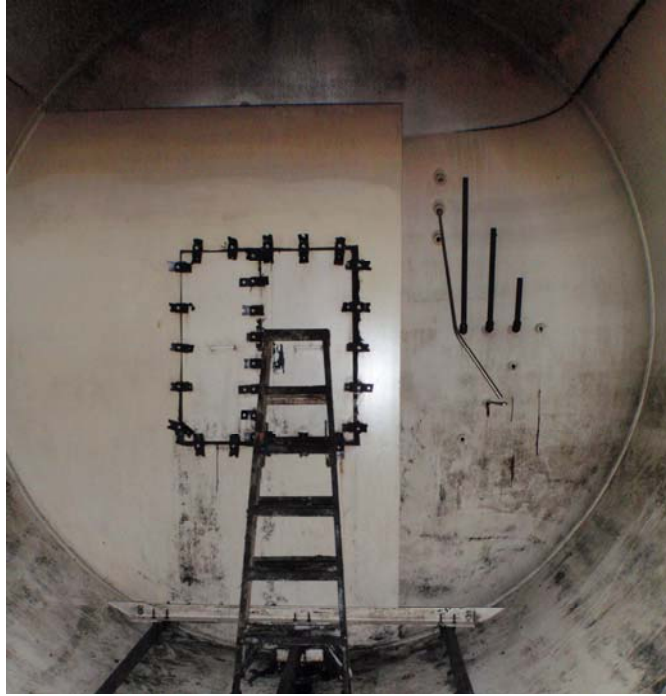


Figure 03_Cold Side Internal



Figure 04_Cold Side Internal



Figure 05_Nozzle



Figure 06_Weir Plate



Figure 07_Weir Plate



Figure 08_Loose Bolt on Weir Plate Supports



Figure 09_Hot Side



Figure 10_Hot Side Internal



Figure 11_Hot Side Internal



Figure 12_Coating Blisters



Figure 13_Coating Damage



Figure 14_Coating Damage



Figure 15_Coating Damage



Figure 16_Coating Damage

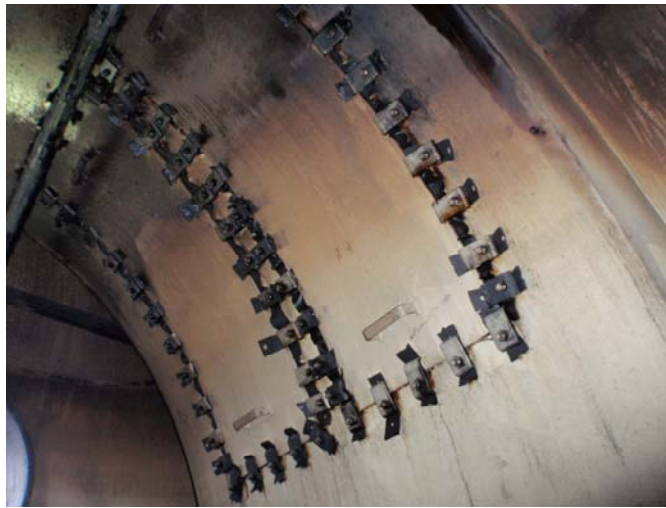


Figure 17_Oil Box



Figure 18_Coating Damage on Firetube Nozzle



Figure 19_Coating Damage on Firetube Nozzle