Canadian Natural

PRESSURE VESSEL VISUAL INSPECTION REPORT

Report #:	123844-DB-09
Inspect Date:	07/16/2010
Page:	1 of 10
Insp. Co. Job #:	123844

Criticality Designation: Green

Insp. Comp: Matrix_Inspection | District: Slave Lake | Field: North Britnell
Location: 06-26-082-20 W4 | Unit / Skid #: Pad # 24 POLYMER | LSD: 06-26-082-20 W4
Jurisdiction #: C43478 | Equip Tag #: #B-176 | Serial #: FK0D-JH-T75-13446
CRN #: N/A | Nat'l Bd #: N/A | Year Built: 2004
Manufacturer: Bilton Welding and Manufacturing | Equipment Description: Other: Flare knock out drum. (Facility)
Status: In Service - | Equip. Type: Vessel: Flare K.O. Drum | Service: Sweet
MAWP Shell: 14.9 Psi @ | Volume: | Code Stamp: ☒ Y ☐ N
MAWP Tube: @ | Height/Length: 120 in. | Insulated: ☒ Y ☐ N
MDMT: -20 °F | RT: N/A | Size/Diameter.: 72 in. O.D. | PWHT: ☐ Y ☒ N
Support Legs | Vessel on Original CNRL Inventory List: ☐ Y ☒ N | Manway: ☒ Y ☐ N
C.A.: N/A | Coated: N/A | 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	0.375 in.	72.000 in.	OD	☐	☒
2	East - Head	SA-516-70N	0.375 in.	72.000 in.	OD	☐	☒
3	West - Head	SA-516-70N	0.375 in.	72.000 in.	OD	☐	☒
4	-					☐	☐
5	-					☐	☐

Static Data: Confirmed ☒ Changed (See Comments) ☐

Comments:
Nameplate secure and legible.
Contains adequate information.

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: - -
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: 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

NOT APPLICABLE VESSEL IS ATMOSPHERIC.

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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	☐	Accept	Name plate attached and legible	☐	☐	☐
Foundation and Supports	☐	Accept	Ground wire clean and tightly attached to skid	☐	☐	☐
Anchor Bolts	☐	Accept	Anchor bolts in good condition, and tight	☐	☐	☐
Grounding	☐	Accept	Ground wire clean and tightly attached to skid	☐	☐	☐
Insulation Condition	☒		Not applicable	☐	☐	☐
PSV	☒		Not applicable	☐	☐	☐
Shell Heads & Nozzles	☐	Accept	In good condition,insulation in good condition	☐	☐	☐
Metal Surfaces (Paint)	☒		Not applicable	☐	☐	☐
Aux Equipment	☒		Not applicable	☐	☐	☐
Cathodic Protection	☒		Not applicable	☐	☐	☐
Alignment	☐	Accept	Alignment is good	☐	☐	☐
Flange Connections	☐	Accept	Flanges are tight, bolts good condition	☐	☐	☐
Pressure Gauge	☒		Not applicable	☐	☐	☐
Temperature Gauge	☒		Not applicable	☐	☐	☐
Sight Glass	☒		Not applicable	☐	☐	☐
Ladder / Platform	☒		Not applicable	☐	☐	☐
Leaks	☐	No	No evidence of leakage	☐	☐	☐
Piping from Vessel	☐	Accept	Piping in good condition, well supported, no evidence of leakage			
Previous UT Survey	☐	No	No previous inspection	UT Company:		

External Visual Observations

Davot arm is in good condition and functional
Piping well supported and clean
No evidence of product leakage
Piping in good condition, well supported, no evidence of leakage
Flanges are tight, bolts good condition
Ground wire clean and tightly attached to skid
Anchor bolts in good condition, and tight
In good condition, insulation in good condition

Recommendations:

No problems noted

Insp. Company: Matrix_Inspection LSD: 06-26-082-20 W4 Jurisdiction #: C43478

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	☒		No Internal Inspection Carried Out	☐	☐	☐
Heads	☒		No Internal Inspection Carried Out	☐	☐	☐
Manway	☒		No Internal Inspection Carried Out	☐	☐	☐
Gasket Surfaces	☒		No Internal Inspection Carried Out	☐	☐	☐
Welds	☒		No Internal Inspection Carried Out	☐	☐	☐
Refractory	☒		No Internal Inspection Carried Out	☐	☐	☐
Heating Coils	☒		No Internal Inspection Carried Out	☐	☐	☐
Demister Pad	☒		No Internal Inspection Carried Out	☐	☐	☐
Vane Pack	☒		No Internal Inspection Carried Out	☐	☐	☐
Baffles	☒		No Internal Inspection Carried Out	☐	☐	☐
Trays	☒		No Internal Inspection Carried Out	☐	☐	☐
Filter	☒		No Internal Inspection Carried Out	☐	☐	☐
Internal Coating	☒		No Internal Inspection Carried Out	☐	☐	☐
Tubesheet	☒		No Internal Inspection Carried Out	☐	☐	☐
Tube Bundle	☒		No Internal Inspection Carried Out	☐	☐	☐

Internal Visual Observations

No Internal Inspection Carried Out

Recommendations:

No Internal Inspection Carried Out

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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	☒		No Firetube Inspection Carried Out	☐	☐	☐
Stack	☒		No Firetube Inspection Carried Out	☐	☐	☐
Flange (Throat)	☒		No Firetube Inspection Carried Out	☐	☐	☐
Tube Sheet	☒		No Firetube Inspection Carried Out	☐	☐	☐
Hot Side	☒		No Firetube Inspection Carried Out	☐	☐	☐
Miter	☒		No Firetube Inspection Carried Out	☐	☐	☐
Return Bend	☒		No Firetube Inspection Carried Out	☐	☐	☐
Supports	☒		No Firetube Inspection Carried Out	☐	☐	☐
Butt Welds	☒		No Firetube Inspection Carried Out	☐	☐	☐
Fillet Welds	☒		No Firetube Inspection Carried Out	☐	☐	☐

Firetube Visual Observations

No Firetube Inspection Carried Out

Recommendations:

No Firetube Inspection Carried Out

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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):

Vessel is in good external condition.
Insulationin good condition, as well as vessel components

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

This vessel and the components associated with it are in good external condition.
Continue to reinspect at regular intervals.

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

Not applicable

Additional Visual Observations

Vessel is in good condition externally.

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

Minor fouling on top from removal of old filter.

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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 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 #: 321 Kms:

Time In: Time Out: Hrs

Time In: Time Out: Hrs

Personnel:

Billing Info: :

Inspector (Name): DENNIS BOWLBY PESL:

Inspector (Signature): Dennis Bowlby CN = Dennis Bowlby, C = CA, O = Matrix 2010.08.17 08:52:35 -06'00' API: 34104

CNRL Coordinator (Name):

CNRL Coordinator (Signature):

CNRL Chief Inspector (Signature): (I am in full agreement with report contents)

(I am in full agreement with report contents)

Equipment Photographs:

FIGURE_001_NAMEPLATE

FIGURE_002_OVERVIEW

FIGURE_003_GROUND

FIGURE_004_SUPPORTS