



PRESSURE VESSEL
VISUAL INSPECTION
REPORT

Report #: **156732-MD-35**
Inspect Date: 02/18/2012
Page: 1 of 13
Insp. Co. Job #: 156732

Criticality Designation:



Yellow



Insp. Comp: Matrix Inspection District: Grande Prairie - North Field: North Hamburg
 Location: 11-27-097-09W6 Unit / Skid #: 16971 LSD: 11-27-097-09W6
 Jurisdiction #: A0448830 Equip Tag #: C-2 Serial #: C-8940
 CRN #: L2347.21 Nat'l Bd #: N/A Year Built: 1998
 Manufacturer: Larsen & D'Amico Mfg Ltd Equipment Description: Other: Vertical Contactor
 Status: In Service - Equip. Type: Vessel: Separator Service: Sweet
 MAWP Shell: 1440 Psi @ 100 °F Volume: 1.42 m³ Code Stamp: Y N
 MAWP Tube: @ Height/Length: in. Insulated: Y N
 MDMT: -29 °C RT: RT-2 Size/Diameter.: 20 in. O.D. PWHT: Y N
 Support Skirt Vessel on Original CNRL Inventory List: Y N Manway: Y N
 C.A.: 3.2 in. Coated: N/A Clad: N/A J.E.: 0.90 Remote Access: - Winter Road

Component	Material	Nominal Thk	Diameter	OD/ID	Tube Side	Shell Side
1 Main - Shell		in.	20.000 in.	OD	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2 Top - Head		in.	20.000 in.	OD	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3 Bottom - Head		in.	20.000 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 updated

PSV Static Data

PSV -1 Tag #: G708019 Serial #: SE-19342-2 CRN: OG0201.2C
 Model #: 981106 MA Capacity: 8779 SCFM Set Pressure: 1440 psi
 Manufacturer: Crosby Service Company: Unified Valve
 Inlet Size & Type: 2.00 in. - Threaded Last Service Date: 2/12/2008
 Outlet Size & Type: 2.00 in. - Flanged 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 #: _____ Serial #: _____ CRN: _____
 Model #: _____ Capacity: _____ Set Pressure: _____
 Manufacturer: _____ Service Company: _____
 Inlet Size & Type: _____ Last Service Date: _____
 Outlet Size & Type: _____ Block Valve: _____
 Carseal Intact: _____ Code Stamp: _____
 Shell Side / Tube Side: _____ Out for Service During Insp.: _____ Location of PSV: _____

PSV Comments

Blank area for PSV comments.



**PRESSURE VESSEL
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Report #: **156732-MD-35**
 Inspect Date: 02/18/2012
 Page: 2 of 13
 Insp. Co. Job #: 156732

Insp. Company: Matrix_Inspection LSD: 11-27-097-09W6 Jurisdiction #: A0448830

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"/>	Accept	Tight with no deformation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grounding	<input type="checkbox"/>	Accept	Grounded directly to North skirt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Insulation Condition	<input type="checkbox"/>	Reject	Thru wall caulking seal is deteriorated	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PSV	<input type="checkbox"/>	Accept	Adequately carsealed and vented	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shell Heads & Nozzles	<input type="checkbox"/>	Accept	Minor surface corrosion noted throughout	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Metal Surfaces (Paint)	<input type="checkbox"/>	Accept	Chipped and flaked exposing base metal	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Aux Equipment	<input type="checkbox"/>	Accept	Adequately supported and intact	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cathodic Protection	<input checked="" type="checkbox"/>		No external anode	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alignment	<input type="checkbox"/>	Accept	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 type="checkbox"/>	Accept	-40-160° F: acceptable range	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sight Glass	<input type="checkbox"/>	Accept	Clear and intact	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ladder / Platform	<input type="checkbox"/>	Accept	Secure with cage, located on roof	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leaks	<input type="checkbox"/>	No	No evidence of leaks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Piping from Vessel	<input type="checkbox"/>	Accept	Adequately supported			
Previous UT Survey	<input type="checkbox"/>	Yes	Locations marked, no history provided	UT Company: N/A		

External Visual Observations

70% of the separator is outside the building with no access.

Staining noted on still inside building indicating that the thru wall caulking seal is deteriorated allowing for moisture ingress

The bottom head and drain have been exposed to minor surface corrosion

The coating is chipped and flaking exposing the base metal to minor surface corrosion with no evidence of pitting

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

Recommendations:

Clean and touch up the coating to aid in protection against corrosion

Seal the thru wall caulking to prevent moisture ingress



**PRESSURE VESSEL
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Report #: **156732-MD-35**
Inspect Date: 02/18/2012
Page: 3 of 13
Insp. Co. Job #: 156732

Insp. Company: Matrix Inspection LSD: 11-27-097-09W6 Jurisdiction #: A0448830

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 #: **156732-MD-35**
 Inspect Date: 02/18/2012
 Page: 4 of 13
 Insp. Co. Job #: 156732

Insp. Company: Matrix Inspection LSD: 11-27-097-09W6 Jurisdiction #: A0448830

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 #: **156732-MD-35**
Inspect Date: 02/18/2012
Page: 5 of 13
Insp. Co. Job #: 156732

Insp. Company: Matrix Inspection LSD: 11-27-097-09W6 Jurisdiction #: A0448830

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 coating is chipped and flaking exposing the base metal to very minor surface corrosion with no evidence of pitting
Thru wall caulking seal is missing

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

Clean and touch up the coating to aid in protection against corrosion
Seal the thru wall caulking to prevent moisture ingress

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

Minor vibration noted

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

Some of the piping around the separator is hot, adequate PPE required



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Inspect Date: 02/18/2012
Page: 6 of 13
Insp. Co. Job #: 156732

Insp. Company: Matrix Inspection LSD: 11-27-097-09W6 Jurisdiction #: A0448830

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 #: **156732-MD-35**
Inspect Date: 02/18/2012
Page: 7 of 13
Insp. Co. Job #: 156732

Insp. Company: Matrix_Inspection LSD: 11-27-097-09W6 Jurisdiction #: A0448830

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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Report #: 156732-MD-35
Inspect Date: 02/18/2012
Page: 8 of 13
Insp. Co. Job #: 156732

Insp. Company: Matrix_Inspection LSD: 11-27-097-09W6 Jurisdiction #: A0448830

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? : Yes
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



Vehicle #: 380 Kms:
Time In: 00:00 Time Out: 00:00 Hrs
Time In: 00:00 Time Out: 00:00 Hrs
Personnel: SR, LP
Billing Info: AFE :

Inspector (Name): Matthew B Dickinson PESL: 601
Inspector (Signature): [Signature] Matthew Dickinson 2012.11.13 08:04:10 -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 bottom head overview



05 surface corrosion



06 loose ladder bolt



07 coating deterioration



08 staining on shell



09 corrosion flange



10 PSV overview