



PRESSURE VESSEL
VISUAL INSPECTION
REPORT

Report #: **156835-MD-01**
Inspect Date: 07/06/2012
Page: 1 of 14
Insp. Co. Job #: 156835

Criticality Designation:



Yellow



Insp. Comp: Matrix Inspection District: Grande Prairie - North Field: South Hamburg
 Location: 12-29-096-11W6 Unit / Skid #: N/A LSD: 12-29-096-11W6
 Jurisdiction #: A0201381 Equip Tag #: V-13A Serial #: 82-609-1
 CRN #: E5298.2 Nat'l Bd #: N/A Year Built: 1982
 Manufacturer: Dacro Industries Equipment Description: Other: Storage Tank (bullet)
 Status: In Service - Standby Equip. Type: Vessel: Bullet Service: Sweet
 MAWP Shell: 155 Psi @ 150 °F Volume: 352.2 m³ Code Stamp: Y N
 MAWP Tube: @ Height/Length: 120 Ft. Insulated: Y N
 MDMT: -29 °F RT: RT-2 Size/Diameter.: 144 in. O.D. PWHT: Y N
 Support: Saddle Vessel on Original CNRL Inventory List: Y N Manway: Y N
 C.A.: 1.6 mm 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-516-70	1.000 in.	144.000 in.	OD	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2 North - Head	SA-516-70	0.708 in.	144.000 in.	OD	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3 South - Head	SA-516-70	0.708 in.	144.000 in.	OD	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4 Mid - Shell	SA-516-70	0.751 in.	144.000 in.	OD	<input type="checkbox"/>	<input checked="" 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 #: 82C3728 CRN: N/A
 Model #: N/A Capacity: 54048 SCFM Set Pressure: 155 psi
 Manufacturer: Consolidated Service Company: Tyco
 Inlet Size & Type: 6.00 in. - Flanged Last Service Date: July 2012
 Outlet Size & Type: 8.00 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 #: **156835-MD-01**
 Inspect Date: 07/06/2012
 Page: 2 of 14
 Insp. Co. Job #: 156835

Insp. Company: Matrix_Inspection LSD: 12-29-096-11W6 Jurisdiction #: A0201381

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	Saddle supports with mesh exposed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Anchor Bolts	<input type="checkbox"/>	Reject	Loose anchors on saddle supports	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Grounding	<input type="checkbox"/>	Accept	Grounded directly to saddle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Insulation Condition	<input checked="" type="checkbox"/>		Bullet is not insulated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PSV	<input type="checkbox"/>	Accept	Vents to atmosphere	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shell Heads & Nozzles	<input type="checkbox"/>	Accept	Mechanical damage below the paint 0.032" deep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Metal Surfaces (Paint)	<input type="checkbox"/>	Accept	Weathered exposing the base metal	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Aux Equipment	<input checked="" type="checkbox"/>		No aux equipment on bullet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cathodic Protection	<input checked="" type="checkbox"/>		No anode on suction bullet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alignment	<input type="checkbox"/>	Accept	Aligned in a North to South direction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flange Connections	<input type="checkbox"/>	Reject	Loose hardware on valve to pipe flange	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Pressure Gauge	<input checked="" type="checkbox"/>		No pressure gauge on bullet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Temperature Gauge	<input type="checkbox"/>	Accept	-20 - 120 C: lense is cracked	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sight Glass	<input checked="" type="checkbox"/>		No sight glass on bottle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ladder / Platform	<input type="checkbox"/>	Accept	Firmly affixed ladder & cage, secure platform	<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	Not marked, performed in 2005			

UT Company: AITEC

External Visual Observations

The overall condition of the bullet is good.

The coating is weathered and chipping exposing the base metal to minor surface corrosion.
 The tell-tale holes are open with no evidence of leaks.

There is mechanical damage noted below the paint throughout the bullet head and shells with a maximum measured depth of 0.032"

The saddles and supports are partially fireproofed, exposed for inspections on the anchor bolts
 There are loose anchor bolts on the saddles
 There is a loose npt plug on the top of the bullet ball valve
 There are loose nuts to stud assembly on the 6" valve to flange connection on the top of the bullet
 The temperature gauge sight lense is cracked

The tell tale holes are open with no evidence of leaks present at the time of inspection

A UT corrosion survey was performed at the time of inspection with no significant wall losses noted at the time of inspection

Recommendations:

- Clean the vessel and touch up the coating to aid in corrosion protection.
- Consider replacing the temperature gauge sight lense
- Ensure the saddle anchors are secure prior to fireproofing
- Secure npt plug
- Ensure all flange connections are secure and tight



**PRESSURE VESSEL
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Report #: **156835-MD-01**
 Inspect Date: 07/06/2012
 Page: 3 of 14
 Insp. Co. Job #: 156835

Insp. Company: Matrix Inspection LSD: 12-29-096-11W6 Jurisdiction #: A0201381

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	0.040" pitting in 3 rd shell from the South	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heads	<input type="checkbox"/>	Accept	Minor surface corrosion throughout	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Manway	<input type="checkbox"/>	Accept	No recordable mechanical/ service damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gasket Surfaces	<input type="checkbox"/>	Accept	Adequate serrated sealing surface	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Welds	<input type="checkbox"/>	Accept	No recordable mechanical/ service damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Refractory	<input checked="" type="checkbox"/>		Not applicable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heating Coils	<input checked="" type="checkbox"/>		Not applicable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Demister Pad	<input checked="" type="checkbox"/>		Not applicable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vane Pack	<input checked="" type="checkbox"/>		Not applicable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baffles	<input checked="" type="checkbox"/>		Not applicable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trays	<input type="checkbox"/>		Not applicable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Filter	<input checked="" type="checkbox"/>		Not applicable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal Coating	<input checked="" type="checkbox"/>		Not applicable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tubesheet	<input checked="" type="checkbox"/>		Not applicable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tube Bundle	<input checked="" type="checkbox"/>		Not applicable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Internal Visual Observations

The vessel was opened for internal inspections

The internal condition of the vessel was not cleaned; therefore, an as found condition inspection was performed

The overall condition of the vessel is good

An MT examination was previously performed prior to TA

The entire internal surface of the vessel has a thin scale film with no significant evidence of mechanical damage or service damage

There is a pit on the 3rd shell from the North head (6 o'clock position) 0.040" deep, 0.75" long by 0.25" wide - acceptable to API 510

Recommendations:

Clean and remove scale film from the vessel



**PRESSURE VESSEL
VISUAL INSPECTION
REPORT**

Report #: **156835-MD-01**
 Inspect Date: 07/06/2012
 Page: 4 of 14
 Insp. Co. Job #: 156835

Insp. Company: Matrix Inspection LSD: 12-29-096-11W6 Jurisdiction #: A0201381

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 #: **156835-MD-01**
Inspect Date: 07/06/2012
Page: 5 of 14
Insp. Co. Job #: 156835

Insp. Company: Matrix_Inspection LSD: 12-29-096-11W6 Jurisdiction #: A0201381

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):

Loose anchor saddles Loose nut to stud assembly on 6" valve to pipe flange connection on the top of the bullet
Coating is weathered
Loose npt plug
Thin film scale on the internal surface of the shell and heads

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

Clean vessel & touch up the paint Secure npt plug
Consider replacing the temperature gauge sight lense Ensure full thread engagement on all flange connections
Ensure the saddle anchors are secure prior to fireproofing
Remove scale film from bullet

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 observations

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

1/2 or full face masks recommended for cleaning the bullet



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VISUAL INSPECTION
REPORT

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Inspect Date: 07/06/2012
Page: 6 of 14
Insp. Co. Job #: 156835

Insp. Company: Matrix Inspection LSD: 12-29-096-11W6 Jurisdiction #: A0201381

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 #: **156835-MD-01**
Inspect Date: 07/06/2012
Page: 7 of 14
Insp. Co. Job #: 156835

Insp. Company: Matrix_Inspection LSD: 12-29-096-11W6 Jurisdiction #: A0201381

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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Report #: 156835-MD-01
Inspect Date: 07/06/2012
Page: 8 of 14
Insp. Co. Job #: 156835

Insp. Company: Matrix_Inspection LSD: 12-29-096-11W6 Jurisdiction #: A0201381

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?: No
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: DH
Billing Info: AFE :

Inspector (Name): Matthew B Dickinson PESL: 601
Inspector (Signature): [Signature] Matthew Dickinson 2012.11.15 16:04:35 - 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



03 cracked temperature gauge



04 overview after installation



05 loose anchor bolts



06 exposed fireproofing



07 PSV overview



08 loose npt plug



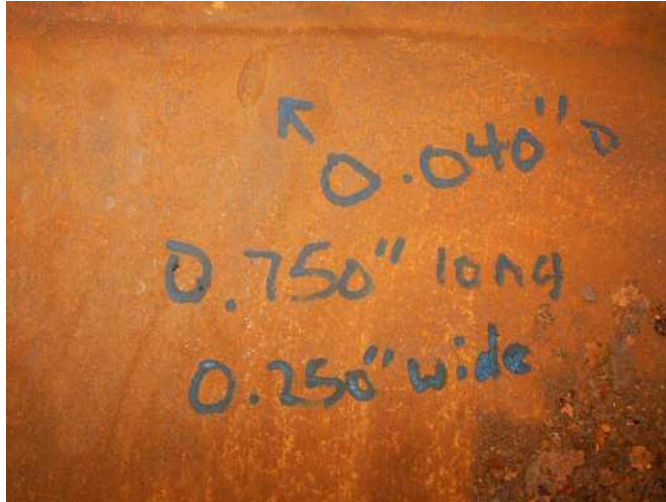
09 loose hardware



10 manway overview



11 film scale throughout bullet



12 pit