



**PRESSURE VESSEL  
VISUAL INSPECTION  
REPORT**

Report #: **156850-MD-02**  
 Inspect Date: 07/04/2012  
 Page: 1 of 15  
 Insp. Co. Job #: 156850

**Criticality Designation:**

      **Yellow**

Insp. Comp: Matrix Inspection District: Grande Prairie - North Field: South Hamburg  
 Location: 10-10-096-12W6 Unit / Skid #: N/A LSD: 10-10-096-12W6  
 Jurisdiction #: A0492612 Equip Tag #: V-300 Serial #: HS-9828  
 CRN #: P0183.21 Nat'l Bd #: N/A Year Built: 2000  
 Manufacturer: Larsen & D'Amico Mfg Ltd. Equipment Description: Other: Horizontal Separator  
 Status: In Service - Equip. Type: Vessel: Separator Service: Sweet  
 MAWP Shell: 720 Psi @ 125 °F Volume: 8.58 m³ Code Stamp:  Y  N  
 MAWP Tube: @ Height/Length: 15 Ft. Insulated:  Y  N  
 MDMT: -20 °F RT: RT-1 Size/Diameter.: 60 in. O.D. PWHT:  Y  N  
 Support Saddle Vessel on Original CNRL Inventory List:  Y  N Manway:  Y  N  
 C.A.: 3.2 mm Coated: No Clad: No J.E.: 1.00 Remote Access:  -

Component	Material	Nominal Thk	Diameter	OD/ID	Tube Side	Shell Side
1 Main - Shell		in.	60.000 in.	OD	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2 North - Head		in.	60.000 in.	OD	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3 South - Head		in.	60.000 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  
 Report updated for internal inspections during 2012 TA

**PSV Static Data**

PSV -1 Tag #: 254 Serial #: 424653-2-A10 CRN: 0G2369.5C  
 Model #: 26KA12-120/S7 Capacity: 25900 SCFM Set Pressure: 720 psi  
 Manufacturer: Farris Service Company: Tyco  
 Inlet Size & Type: 3.00 in. - Flanged Last Service Date: 06/14/07  
 Outlet Size & Type: 4.00 in. - Flanged Block Valve: Upstream - Carsealed - Open  
 Carseal Intact: Yes Code Stamp: Yes  
 Shell Side / Tube Side: Shell Side Out for Service During Insp.:    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**

Due for service



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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	<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 saddles anchored to skid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Anchor Bolts	<input type="checkbox"/>	Accept	Tight with minor surface corrosion	<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 type="checkbox"/>	Reject	Manway thru wall caulking is deteriorated	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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	Scratches and minor surface corrosion throughout	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Metal Surfaces (Paint)	<input type="checkbox"/>	Reject	Weathered & chipped exposing base metal	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Aux Equipment	<input checked="" type="checkbox"/>		No auxiliary equipment	<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	Level with skid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flange Connections	<input type="checkbox"/>	Accept	Adequate hardware and thread engagement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pressure Gauge	<input checked="" type="checkbox"/>		No pressure gauge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Temperature Gauge	<input checked="" type="checkbox"/>		No temperature gauge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sight Glass	<input type="checkbox"/>	Accept	Clear with no evidence of leaks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ladder / Platform	<input checked="" type="checkbox"/>		No ladders or platforms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leaks	<input type="checkbox"/>	No	No leaks noted at the time of inspection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Piping from Vessel	<input type="checkbox"/>	Accept	Adequately supported and secure			
Previous UT Survey	<input checked="" type="checkbox"/>	Yes	Locations marked, no history provided	UT Company: N/A		

**External Visual Observations**

The coating is weathered, scratched and chipped exposing the base metal to minor surface corrosion throughout the vessel  
 No pitting evident at the time of inspection

There is condensation noted throughout the vessel which is accelerating corrosion between the flanges, on the piping and hardware on the bottom of the vessel.

The manway thru wall caulking is deteriorated allowing for moisture ingress.

The manway is in acceptable condition as well as the davit arm and hardware.

The PSV is due for service

A UT corrosion survey was performed with no significant metal losses recorded at the time of inspection.

**Recommendations:**

Service the PSV

Reseal the thru wall caulking to prevent moisture ingress

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



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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	Minor flash corrosion from wash out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heads	<input type="checkbox"/>	Accept	No mechanical/ service related damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Manway	<input type="checkbox"/>	Accept	No mechanical/ service related damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gasket Surfaces	<input type="checkbox"/>	Accept	Adequated serrated sealing surface	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Welds	<input type="checkbox"/>	Accept	No mechanical/ service related 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 type="checkbox"/>	Reject	Sagging, segregated and product build-up	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Vane Pack	<input checked="" type="checkbox"/>		Not applicable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baffles	<input type="checkbox"/>	Accept	Product build-up on baffle plate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trays	<input checked="" 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 blinded, opened and cleaned for internal inspections July 04 2012

The overall internal condition of the vessel is good

It should be noted that there is product build-up on the heads, shell, baffles and demister

The demister is sagged and segregated with mild product build-up on the mesh. The sagging of the demister pad has resulting in the support harness out of position and partially in the outlet nozzle

The baffles are in acceptable condition with no evidence of mechanical or service related damage. There is no evidence of "knife-edging" but it should be noted that there is mild product build-up adhered to the baffle surface

There is minor flash corrosion on the exposed shell and head surfaces from washing and oxidation

**Recommendations:**

Remove and clean the demister pad and reinstall



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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**

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):**

PSV due for service  
Corrosion between the flanges, on the piping & hardware on the bottom of the vessel  
The manway thru wall caulking deteriorated  
TA 2012 - Demister pad is out of position with build-up and segregation

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

Service the PSV  
Reseal the thru wall caulking to prevent moisture ingress  
Clean and touch up the coating to aid in the protection against corrosion  
TA 2012 - Remove, clean and reinstall demister pad.

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

The demister pad was removed, cleaned and reinstalled

**Additional Visual Observations**

No additional visual observations were made at the time of inspection

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

No safety concerns at the time of inspection



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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? : 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: JD
Billing Info: AFE :

Inspector (Name): Matthew B Dickinson PESL: 601
Inspector (Signature): [Signature] Matthew Dickinson 2012.11.15 15:59:25 -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 manway overview



04 deteriorated caulking seal



05 corrosion between flanges



06 surface corrosion



07 PSV overview

Equipment Photographs:



08 demister pad overview



09 out of position





10 flash corrosion



11 flash corrosion on welds



**12 build-up on baffle**