



**PRESSURE VESSEL  
VISUAL INSPECTION  
REPORT**

Report #: **91517-MD-43**  
 Inspect Date: 05/03/2011  
 Page: 1 of 10  
 Insp. Co. Job #: 91517

**Criticality Designation:**



**Yellow**

Insp. Comp: Matrix\_Inspection District: St Albert - South Field: Brightview 1431  
 Location: 14-02-046-01W5 Unit / Skid #: \_\_\_\_\_ LSD: 14-02-046-01W5  
 Jurisdiction #: A0244706 Equip Tag #: \_\_\_\_\_ Serial #: VS-5956  
 CRN #: H5274.2 Nat'l Bd #: \_\_\_\_\_ Year Built: 1988  
 Manufacturer: LARSEN D' AMICO MFG LTD Equipment Description: Other: SEPARATOR  
 Status: In Service - Equip. Type: Vessel: Separator Service: Sweet  
 MAWP Shell: 1440 Psi @ 130 °F Volume: 1.34 m³ Code Stamp:  Y  N  
 MAWP Tube: \_\_\_\_\_ Psi @ \_\_\_\_\_ °F Height/Length: 120.00 in. Insulated:  Y  N  
 MDMT: 45 °F RT: RT-1 Size/Diameter.: 30.00 in. O.D. PWHT:  Y  N  
 Support: Saddle Vessel on Original CNRL Inventory List:  Y  N Manway:  Y  N  
 C.A.: 1.59 mm Coated: Yes 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	35.000 mm	30.000 in.	OD	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2 Top - Head	SA-516-70	32.000 mm	30.000 in.	OD	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3 Bottom - Head	SA-516-70	32.000 mm	30.000 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 #: PSV244706 Serial #: 88C2028 CRN: 01832.52  
 Model #: 1996C1-1-1-1-1 Capacity: 7064 Set Pressure: 1440 psi  
 Manufacturer: Consolidated Service Company: \_\_\_\_\_  
 Inlet Size & Type: 1.00 in. - Last Service Date: 6/21/2006  
 Outlet Size & Type: \_\_\_\_\_ in. - Block Valve: N/A - -  
 Carseal Intact: Yes Code Stamp: Yes  
 Shell Side / Tube Side: Shell Side Out for Service During Insp.: Y 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**

PSV to be removed for service during the 2011 TA



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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	secure and legible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Foundation and Supports	<input type="checkbox"/>	Accept	acceptable conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Anchor Bolts	<input type="checkbox"/>	Accept	tight with no signs of cracking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grounding	<input type="checkbox"/>	Accept	grounded to building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Insulation Condition	<input type="checkbox"/>	Accept	caulking seal thru-wall is deteriorated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PSV	<input type="checkbox"/>	Accept	properly vented	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shell Heads & Nozzles	<input type="checkbox"/>	Accept	minor surface corrosion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Metal Surfaces (Paint)	<input type="checkbox"/>	Accept	minor paint chipping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aux Equipment	<input type="checkbox"/>	Accept	secure, no signs of vibration damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cathodic Protection	<input checked="" type="checkbox"/>		no anode for inspection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alignment	<input type="checkbox"/>	Accept	vessel is level with building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flange Connections	<input type="checkbox"/>	Accept	Acceptable thread engagement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pressure Gauge	<input type="checkbox"/>	Accept	0-2000 psi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Temperature Gauge	<input type="checkbox"/>	Accept	20-240° F	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sight Glass	<input type="checkbox"/>	Accept	clean and intact	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ladder / Platform	<input checked="" type="checkbox"/>		no ladders or platforms on vessel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leaks	<input type="checkbox"/>	Yes	evidence of weeping from npt plug on press gauge	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Piping from Vessel	<input type="checkbox"/>	Accept	well supported.			
Previous UT Survey	<input checked="" type="checkbox"/>					

UT Company:

**External Visual Observations**

Minor surface corrosion noted at the previous UT locations as well as between the flange faces, bottom head and drain. Evidence of weeping from npt plug on Pressure gauge. Paint is chipped and flaking throughout vessel. The thru-wall caulking on the inlet nozzle and thru-wall of roof is deteriorated allowing moisture ingress. The skirt is anchored and welded but the weld is broke and deteriorated.

UT corrosion survey was performed on selected areas of the shell, heads, nozzles and piping at suspect locations using GE DMS2 SN 01NOV4. All readings recorded were found to be at or above nominal thickness - corrosion allowance. Evidence of previously performed surveys was noted but no access to previous UT data was available at the time of inspection.

**Recommendations:**

Tighten or replace the npt plug on the Pressure gauge. Replace caulking seals on thru-walls. Clean UT survey locations and touch-up the paint. Maintain the inspection and UT corrosion survey frequency.



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**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



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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 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):**

Minor surface corrosion noted at the previous UT locations as well as between the flange faces, bottom head and drain. Evidence of weeping from npt plug on Pressure gauge. Paint is chipped and flaking throughout vessel. The thru-wall caulking is broken

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

Tighten or replace the npt plug on the Pressure gauge. Replace caulking seals on thru-walls. Clean UT survey locations and touch-up the paint. Maintain the inspection and UT corrosion survey frequency.

**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**

Vessel is Shut down for 2011 TA

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

No safety issues to report at this time



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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 3<sup>rd</sup> 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 3<sup>rd</sup> 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 3<sup>rd</sup> Party In-Service Pressure Vessel Inspector.*

**Criticality Designation**



*Yellow*

Vehicle #: 380 Kms: \_\_\_\_\_  
 Time In: 00:00 Time Out: 00:00 Hrs \_\_\_\_\_  
 Time In: 00:00 Time Out: 00:00 Hrs \_\_\_\_\_  
 Personnel: \_\_\_\_\_  
 Billing Info: \_\_\_\_\_

Inspector (Name): Matthew B Dickinson PESL: \_\_\_\_\_  
 Inspector (Signature): \_\_\_\_\_ API: 39483  
 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:



01 nameplate



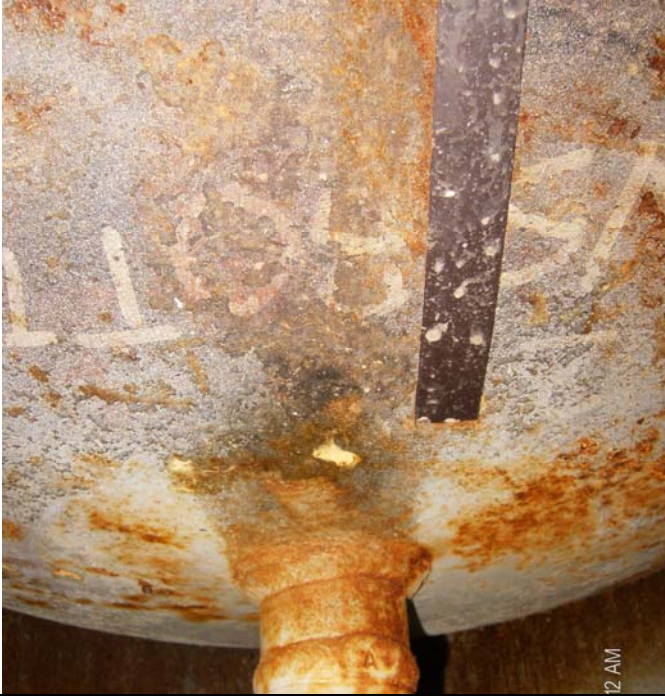
02 overview



03 external overview



04 corrosion between flanges and caulking seal is deteriorated



05 surface corrosion on bottom head and drain



06 evidence of weeping from pressure gauge plug



07 support plate weld is deteriorated