



**PRESSURE VESSEL
VISUAL INSPECTION
REPORT**

Report #: **150170-CA-01**
 Inspect Date: 01/10/2011
 Page: 1 of 11
 Insp. Co. Job #: 150170

Criticality Designation:



Insp. Comp: Matrix_Inspection District: Edson Field: Peppers
 Location: Peppers Sour Unit / Skid #: N/A LSD: 07-17-052-23W5M
 Jurisdiction #: A0458976 Equip Tag #: N/A Serial #: 6569-50
 CRN #: E9867.213 Nat'l Bd #: N/A Year Built: 2000
 Manufacturer: Presson Equipment Description: Indirect Fired Glycol Line Heater
 Status: In Service - Standby Equip. Type: Exch.: Line Heater Service: Sour
 MAWP Shell: ATM --- @ Volume: N/A Code Stamp: Y N
 MAWP Tube: 35654 kPa @ 93 °C Height/Length: 300 in. Insulated: Y N
 MDMT: N/A RT: RT-1 Size/Diameter.: 96 in. O.D. PWHT: Y N
 Support: Saddle Vessel on Original CNRL Inventory List: Y N Manway: Y N
 C.A.: N/A Coated: N/A Clad: N/A J.E.: 1.00 Remote Access: -

Component	Material	Nominal Thk	Diameter	OD/ID	Tube Side	Shell Side
1 Main - Shell					<input type="checkbox"/>	<input type="checkbox"/>
2 Top - Head		0.673 in.			<input type="checkbox"/>	<input type="checkbox"/>
3 Bottom - Head		0.539 in.			<input type="checkbox"/>	<input type="checkbox"/>
4 -					<input type="checkbox"/>	<input type="checkbox"/>
5 -					<input type="checkbox"/>	<input type="checkbox"/>

Static Data: Confirmed Changed (See Comments)

Comments:

All data plate information found was for the internal coils. As this is a newly acquired piece of equipment, no entry currently exists in Maxi-Trak.

PSV Static Data

PSV -1 Tag #: N/A 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 -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

The Pressure/Process (tube) side of the line heater is currently disconnected. The process side of this vessel is pipeline protected when in service. The glycol (shell) side operates at atmospheric pressure, maintained by a stove pipe cover style pressure relief system on the overflow tank.



**PRESSURE VESSEL
VISUAL INSPECTION
REPORT**

Report #: **150170-CA-01**
 Inspect Date: 01/10/2011
 Page: 2 of 11
 Insp. Co. Job #: 150170

Insp. Company: Matrix_Inspection LSD: 07-17-052-23W5M Jurisdiction #: A0458976

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	3 Plates-Clear and Readable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Foundation and Supports	<input type="checkbox"/>	Accept	Firmly attached to the skid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Anchor Bolts	<input type="checkbox"/>	Accept	Bolting tight and free of corrosion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grounding	<input type="checkbox"/>	Accept	ground to structure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Insulation Condition	<input type="checkbox"/>	Accept	Externally portions insulated and undamaged	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PSV	<input checked="" type="checkbox"/>		See PSV comments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shell Heads & Nozzles	<input type="checkbox"/>	Accept	See UT survey info	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Metal Surfaces (Paint)	<input type="checkbox"/>	Accept	Surface and paint in exposed areas are good	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aux Equipment	<input checked="" type="checkbox"/>		N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cathodic Protection	<input checked="" type="checkbox"/>		N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alignment	<input type="checkbox"/>	Accept	Appears to be level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flange Connections	<input type="checkbox"/>	Accept	All flanges are tightly bolted	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pressure Gauge	<input type="checkbox"/>	Accept	Clear and readable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Temperature Gauge	<input type="checkbox"/>	Accept	Clear and readable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sight Glass	<input type="checkbox"/>	Accept	For viewing the burner only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ladder / Platform	<input type="checkbox"/>	Accept	Ladder to overflow and platform in good cond.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leaks	<input type="checkbox"/>	No	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Piping from Vessel	<input type="checkbox"/>	Accept	Free of corrosion-Some locations found below nominal			
Previous UT Survey	<input type="checkbox"/>	No	N/A	UT Company: N/A		

External Visual Observations

An external visual inspection and Ultrasonic corrosion survey was performed on A0458976, line heater on the recently purchased Peppers Sour site, LSD 07-17-052-23W5M to determine the current condition of the equipment and to determine its suitability for return to service after modifications to the on site well head are complete. When most recently in service, the line heater was used to heat pipeline product arriving from offsite wells. These lines are currently physically isolated from the equipment. The future plan will be to modify the existing piping to heat the product from the onsite well.

This line heater has 3 internal coils, 2 high pressure and 1 low pressure. As the vessel was not open and the coils were installed, no inspection of the coils could be performed.

The vessel and skid appear to be level and no evidence of excess movement or settling was noted.

All exposed areas on the shell and heads are inside the skid building and are painted. The paint is in good condition with no evidence of peeling, wear, chipping or other degradation. All painted areas are free of corrosion and pitting.

Areas on the vessel outside the building are insulated and cladded. The cladding is free of rips, punctures, tears or other damage. No bulging or staining was noted.

The saddle supports and bolts are painted and free of corrosion and pitting. All bolting is properly fastened.

There are 3 data plates attached to the vessel, all pertaining to the internal coils. Two are for the original construction of the equipment and one is an alteration plate for the low pressure coil. All are clear and readable.

All attached pressure and temperature gauges are clear and readable and properly cover the full range for design limitation of the vessel. There is 1 sight glass for burner viewing. It was found to be clear and free of dirt or other obstructions.

Continued on pg 9

Recommendations:

Before returning to service, the status of the pipeline PSV protection should be confirmed. Any modifications to the piping of this vessel should be inspected prior to a return to service

Static information on the glycol shell should be obtained.

Previous inspection data should be obtained. If this information is not available, a repeat UT corrosion survey should be performed at a reduced interval (mid-term, 12-24 months) to help determine corrosion rates and remaining life for the equipment.



**PRESSURE VESSEL
VISUAL INSPECTION
REPORT**

Report #: **150170-CA-01**
 Inspect Date: 01/10/2011
 Page: 3 of 11
 Insp. Co. Job #: 150170

Insp. Company: Matrix_Inspection LSD: 07-17-052-23W5M Jurisdiction #: A0458976

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 checked="" 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 #: **150170-CA-01**
 Inspect Date: 01/10/2011
 Page: 4 of 11
 Insp. Co. Job #: 150170

Insp. Company: Matrix_Inspection LSD: 07-17-052-23W5M Jurisdiction #: A0458976

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 #: **150170-CA-01**
Inspect Date: 01/10/2011
Page: 5 of 11
Insp. Co. Job #: 150170

Insp. Company: Matrix_Inspection LSD: 07-17-052-23W5M Jurisdiction #: A0458976

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 level and properly supported. All visible and exposed surfaces are painted and free of corrosion and pitting. The paint is well adhered and unfaded and undamaged. The insulation cladding was undamaged and free of bulges and stains.

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

The status of the pipeline PSV protection should be confirmed. Missing static data should be obtained. Previous inspection history should be obtained or mid term survey should be performed to determine corrosion rates and remaining life.

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

None

Additional Visual Observations

None

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

None



PRESSURE VESSEL
VISUAL INSPECTION
REPORT

Report #: 150170-CA-01
Inspect Date: 01/10/2011
Page: 6 of 11
Insp. Co. Job #: 150170

Insp. Company: Matrix_Inspection LSD: 07-17-052-23W5M Jurisdiction #: A0458976

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 #: **150170-CA-01**
Inspect Date: 01/10/2011
Page: 7 of 11
Insp. Co. Job #: 150170

Insp. Company: Matrix_Inspection LSD: 07-17-052-23W5M Jurisdiction #: A0458976

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



PRESSURE VESSEL VISUAL INSPECTION REPORT

Report #: 150170-CA-01
Inspect Date: 01/10/2011
Page: 8 of 11
Insp. Co. Job #: 150170

Insp. Company: Matrix_Inspection LSD: 07-17-052-23W5M Jurisdiction #: A0458976

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? : 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 [Red] [Yellow] [Green]

Vehicle #: 324 Kms:
Time In: 00:00 Time Out: 00:00 Hrs
Personnel: CA JD
Billing Info:

Inspector (Name): Chris Auld PESL: IBPV 206
Inspector (Signature): API: 510-34022
CNRL Coordinator (Name):
CNRL Coordinator (Signature):
CNRL Chief Inspector (Signature): (I am in full agreement with report contents)



PRESSURE VESSEL
VISUAL INSPECTION
REPORT

Report #: 150170-CA-01
Inspect Date: 01/10/2011
Page: 9 of 11
Insp. Co. Job #: 150170

Additional Visual External Comments:

Continued from page 2

All bolting for the head to shell and nozzle flanges were found with proper engagement and all bolting was free of corrosion and pitting. All bolt threads were noted to be clean and sharp with no evidence of wear.

No evidence of current or previous leaking was found.

The ladder and platform for the overflow tank installed on the top of the vessel was firmly attached and free of corrosion, pitting and mechanical damage.

All piping associated with this vessel is painted and free of corrosion and all flanges and bolting were found to be tight. No sign of current or previous leaking was found.

There was no on-site overprotection found for the process coils. The shell operates at atmospheric pressure, maintained by a stove pipe like nozzle cover on the overflow tank. The cover appears to be operating properly.

A bolt was found inserted into the side of the stack. It appears to be for draining as no environmental protection was found on the top, i.e.: cover or other protection from rain or snow ingress, or an added sample point. There appears to be some preferential corrosion attack on the stack around the inserted bolt

An Ultrasonic Corrosion survey was performed on the glycol side shell and attached piping. The glycol side shell was free of corrosion and pitting and all inspected locations varied less than 3% between highest and lowest reading at each location and when compared to each other. No previous survey information was found but based on the existing markings on the vessel, UT corrosion survey has been performed in the past. No nominal thickness or corrosion allowance for the glycol side shell could be found so no assessment on corrosion rates or remaining life could be completed. One inlet elbow on the piping (location 05) was found to be below nominal but still above nominal-mil tolerance.

Equipment Photographs:



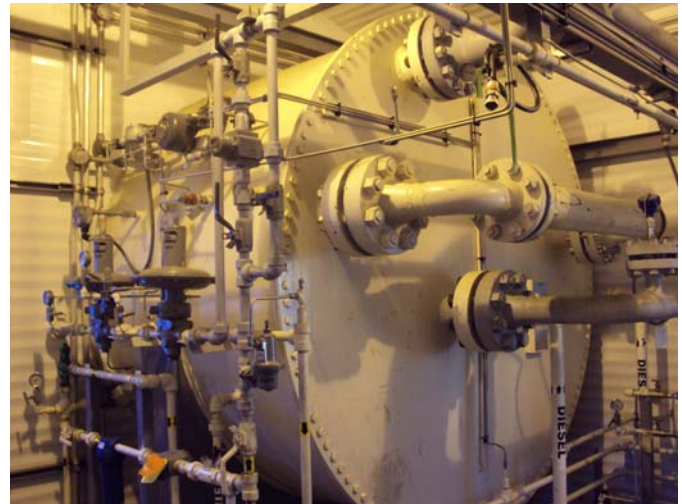
01-Data Plate 1



02-Data Plate 2



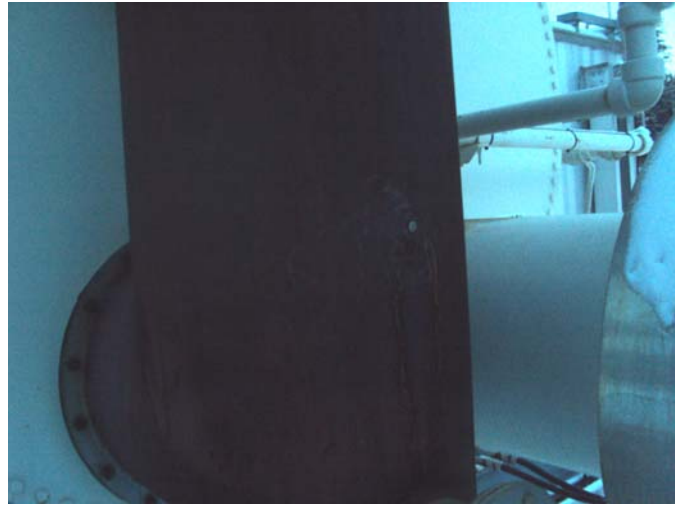
03-Data Plate 3



04-Vessel Overview Inside



05-Vessel Overview Outside



06-Drain Plug on Stack