



**PRESSURE VESSEL
VISUAL INSPECTION
REPORT**

Report #: **156816-KK-18**
 Inspect Date: 05/09/2012
 Page: 1 of 12
 Insp. Co. Job #: 156816

Criticality Designation:



Yellow

Insp. Comp: Matrix_Inspection District: St Albert - South Field: Hobbema-1775
 Location: Hobbema Field Unit / Skid #: N/A LSD: 10-09-044-24W4M
 Jurisdiction #: A0432472 Equip Tag #: N/A Serial #: V9716
 CRN #: N0978.21 Nat'l Bd #: N/A Year Built: 1997
 Manufacturer: Chadco Equipment Description: Other: Separator
 Status: In Service - Equip. Type: Vessel: Separator Service: Sweet
 MAWP Shell: 1480 Psi @ 100 °F Volume: N/A Code Stamp: Y N
 MAWP Tube: N/A @ N/A Height/Length: 8 Ft. Insulated: Y N
 MDMT: -20 °F 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.: 0.125 in. Coated: No Clad: No J.E.: N/A Remote Access: -

Component	Material	Nominal Thk	Diameter	OD/ID	Tube Side	Shell Side
1 Main - Shell	N/A	1.000 in.	20.000 in.	OD	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2 Top - Head	N/A	1.067 in.	20.000 in.	OD	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3 Bottom - Head	N/A	1.067 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:

Data not provided from MaxiTrack prior to inspections.
 Confirm data before overwriting database.
 Limited data available from data plate.

PSV Static Data

PSV -1 Tag #: E9024 Serial #: 014804-162 CRN: OG1316.2C
 Model #: T-8200-1 Capacity: 5180 SCFM Set Pressure: 1440 psi
 Manufacturer: Taylor Service Company: POWELL
 Inlet Size & Type: 1.00 in. - Threaded Last Service Date: 05-09-2012
 Outlet Size & Type: 1.00 in. - Threaded 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 #: N/A Serial #: N/A CRN: N/A
 Model #: N/A Capacity: N/A Set Pressure: _____
 Manufacturer: N/A Service Company: N/A
 Inlet Size & Type: _____ Last Service Date: N/A
 Outlet Size & Type: _____ Block Valve: _____
 Carseal Intact: _____ Code Stamp: _____
 Shell Side / Tube Side: _____ Out for Service During Insp.: _____ Location of PSV: _____

PSV Comments

PSV was removed during the external visual inspection and UT corrosion survey.
 PSV data was provided at a later date for updating reports with current service data.



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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	Limited data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Foundation and Supports	<input type="checkbox"/>	Accept	Secure and level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Anchor Bolts	<input type="checkbox"/>	Accept	secure and level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grounding	<input type="checkbox"/>	Accept	grounded through building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Insulation Condition	<input checked="" type="checkbox"/>		not insulated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PSV	<input checked="" type="checkbox"/>		PSV removed for service at time of inspection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shell Heads & Nozzles	<input type="checkbox"/>	Accept	good condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Metal Surfaces (Paint)	<input type="checkbox"/>	Accept	isolated product staining	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Aux Equipment	<input type="checkbox"/>	Accept	good condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cathodic Protection	<input checked="" type="checkbox"/>		not applicable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alignment	<input type="checkbox"/>	Accept	good alignment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flange Connections	<input type="checkbox"/>	Accept	proper bolt engagement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pressure Gauge	<input type="checkbox"/>	Accept	clear and legible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Temperature Gauge	<input type="checkbox"/>	Accept	clear and legible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sight Glass	<input type="checkbox"/>	Accept	clear and clean	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ladder / Platform	<input checked="" type="checkbox"/>		no ladders or platforms attached	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leaks	<input type="checkbox"/>	Yes	evidence of product leaks noted	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Piping from Vessel	<input type="checkbox"/>	Accept	isolated surface corrosion and flaking paint			
Previous UT Survey	<input type="checkbox"/>	Yes	evidence of previous survey	UT Company: unknown		

External Visual Observations

Nameplate is secure and easy to read, but contains little information.
 The vessel is secure and level, with properly aligned piping and external attachments.
 The paint is thick and rough in some locations.
 There is product staining noted on the shell and building floor.
 The weep hole on the repad for the inlet has corrosion noted and should be monitored for under pad issues.
 The attached piping is in good condition with isolated areas of surface corrosion.
 The vessel piping to roof interface is in good condition.
 The PSV discharge to wall interface requires sealant.
 The building has product staining noted on the floor.
 The PSV is removed for service at the time of the inspection.
 The plumbing for the PSV appears to be in good condition, and of adequate size and proper rating.
 The PSV service data has been supplied from the service company to update the static information in this report.
 The overall condition of this vessel is good.
 A UT corrosion survey was performed at the time of the inspection by IRISNDT using DMS2 SN 020448.
 Typical locations on the vessel heads, shell, and attachments were selected for the UT survey.
 The bottom drain nozzle (0.218" Nom) shows mild erosion losses (0.172" Min).
 No thickness values of concern were noted during the UT survey.
 See attached UT values and drawing for complete details.

Recommendations:

Repair product leaks, and clean building and vessel.
 Reseal the PSV discharge to wall interface.
 Monitor the corrosion at the inlet repad weep hole to ensure no progression.
 Clean and maintain buildings and packages to prevent further surface corrosion and potential degradation.
 Ensure PSV's are serviced, installed, and rated correctly before putting this equipment back into service post TAR.



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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 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



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Firetube Static Data Vessel Not Equiped with Firetube

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#: Included ET Report#: _____
MT Report#: _____ RT Report#: _____
PT Report#: _____ Other Report#: _____

Maxi-Trak Observations Summary (Summarize inspection results Max 255 Characters):

0.035" erosion losses noted on bottom drain nozzle. Product staining on shell and building floor. Inlet repad weep hole corrosion noted. PSV discharge pipe to wall interface requires sealant. Thick / rough paint. Building is dirty.

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

Monitor the drain nozzle erosion with UT. Repair product leaks. Reseal PSV discharge to wall interface. Monitor weep hole corrosion for progression. Clean the vessel and building. Ensure PSV connected / rated correctly prior to post TAR startup.

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

None

Additional Visual Observations

Overall site conditions are good.
It is clear that operations and maintenance staff take pride in the equipment, and try to maintain a tidy and clean workplace.

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

None noted



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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



Yellow

Vehicle #: _____ Kms: _____
 Time In: 00:00 Time Out: 00:00 Hrs _____
 Time In: 00:00 Time Out: 00:00 Hrs _____
 Personnel: _____
 Billing Info: _____

Inspector (Name): Kris Katryniuk PESL: N/A
 Inspector (Signature): _____
Inspector Signature
 API: 510-35238
06/30/2010 08:43:20 am
 CNRL Coordinator (Name): _____
 CNRL Coordinator (Signature): _____
Coordinator Signature
 CNRL Chief Inspector (Signature): _____
05/30/2010 08:44:03 am
 (I am in full agreement with report contents)
Chief Inspector Signature
05/30/2010 08:45:29 am
 (I am in full agreement with report contents)

Equipment Photographs:



01-A0432472 Data Plate



02-A0432472 Overview Inside



03-A0432472 Overview Outside



04-A0432472 PSV Discharge to Wall Interface



05-A0432472 Vessel to Roof Interface



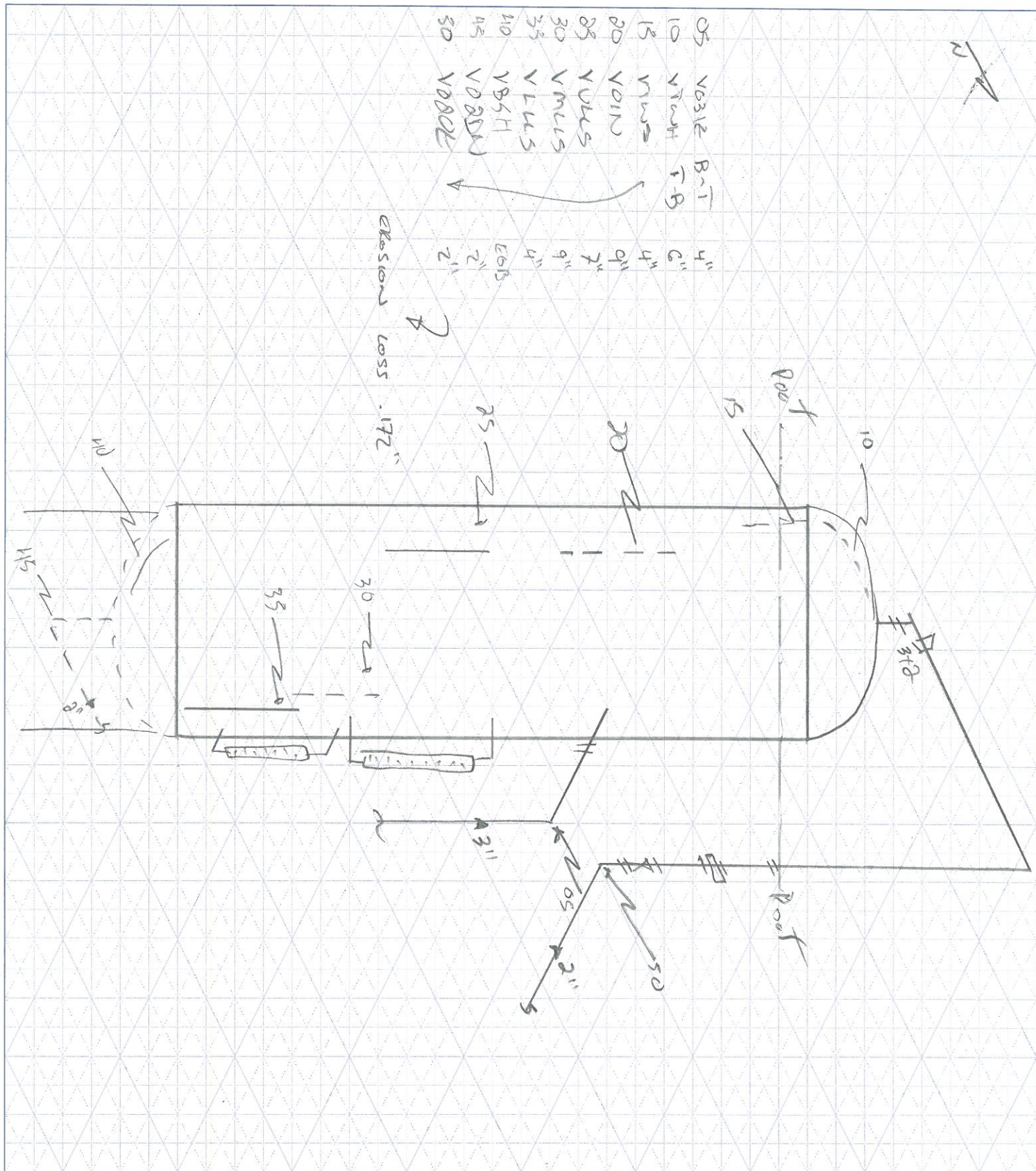
06-A0432472 Repad Weep Hole Corrosion



07-A0432472 Product Staining



08-A0432472 Flaking Paint at Base



CUSTOMER: CNRL FACILITY: 12-09 Hobbema Field LSD: 10-09-044-04W4M
 P & ID: _____ DRAWN BY: KK DATE: 05-09-12 DRAWING NO. 156216-KK-18

VESSEL DESCRIPTION: Separator
 Equip. No. _____ Pro.Reg.No. (A) A0432472 C.R.N. 100978-21 Serial No. V9716 Yr. Inst. _____
 Code/Div. 4W Size: 20" ID 10DX 8' Manufacturer: Chedco Yr. Blt. 1997
 C. Stamp _____ Service: Sweet PWHT: _____ J.E.: _____ Radiography: RT-2 Insulated: NO

HEAD SHELL:
 Top Mat'l _____ Top Nom. 1.067" Top C.A. .125" Material _____ Nominal 1.0" C.A. .125"
 Btm Mat'l _____ Btm Nom. 1.067" Btm C.A. .125" MDMT 1480psi @ Temp. 20°F

BOOT CHANNEL:
 Head Mat'l _____ Head Nom. _____ Head C.A. _____ Top Mat'l _____ Top Nom. _____ Top C.A. _____
 Shell Mat'l _____ Shell Nom. _____ Shell C.A. _____ Btm Mat'l _____ Btm Nom. _____ Btm C.A. _____
 MAWP Shell side: 1480 psi @ Temp. 100°F MAWP Tube side: _____ @ Temp. _____

PIPING INFORMATION:
 Circuit, No. _____ Line No. (s) (PLEASE PUT LINE NUMBERS ON APPLICABLE LINES ON THE DRAWING)
 Piping-Class _____ Service: _____ Yr. Blt. _____
 MAWP: _____ @ Temp. _____ Size & Schedule of Piping (PLEASE PUT APPROPRIATE SIZES AND SCHEDULES OF PIPING ON DRAWING)

A0432472

Readings in inches

	PNT1	PNT2	PNT3
LOC 5	0.292	0.276	0.276
LOC 10	1.085	1.168	1.085
LOC 15	1.008	1.011	1.004
LOC 20	1.016	1.023	1.012
LOC 25	1.018	1.020	1.016
LOC 30	1.029	1.022	1.015
LOC 35	1.012	1.012	1.010
LOC 40	1.176	1.067	1.067
LOC 45	0.388	0.414	0.386
LOC 50	0.223	0.196	0.172