

PRESSURE VESSEL & COLUMN INSPECTION REPORT

LSD: 07-27-051-19W5M

Date: JUNE 11, 2014

SAP Equipment ID: 66042738

VESSEL STATIC DATA						
Plant		Ansell Gas Plant		Op Unit		System
Prov. Insp. #		A0157978		CRN		F-2109.2
Equipment Description		Stabilizer Tower		Serial #		1704-201
Manufacturer		Vada Ind.		Vessel Class		
Internal Access: yes		Description: 2 x 20" manways		Year Built		1984
MAWP 486		PSI @ 354		°F		MDMT °F
CODE : U		RT : 1		PWHT : yes		
Diameter	30in	Length	(s/s) 814 in	OAL	mm / in	Vertical
Shell Mat'l	SA-516-70	Thickness	0.625 in	Corr Allowance	0.125 in	
Head Mat'l	SA-516-70	Thickness	0.543 in	Corr Allowance	0.125 in	
Nozzle Mat'l		Thickness	in	Corr Allowance	mm	
Internal Coating: NO		Internal Clad : NO		Capacity		m3
Manway : yes		Inspection Port : no		Skirt		
Nozzle Rating	lb ANSI	Painted : YES		Insulated		yes
PROCESS DATA						
Product Description		Condensate		Sweet		
Operating Pressure		PSI		Operating Temperature		°C
PSV STATIC DATA						
Serial No.	Location	Set Pressure	Capacity SCFM / Lbs/Hr / GPM	Manufacturer	Model / Type	Service Date / Company
C27216A10	Piping	485psi	3199scfm	Farris	286FA12-120/55M	Sept-2011, Wizard. Tag PSV-1003
SHELL SIDE PSV DETAILS						
	Type (Thread/Flange)		ANSI Rating		Size (in)	
PRD Inlet	Flanged				1.5"	
PRD Outlet	Flanged				2"	
NDE Equipment records						
Procedure#	Description	Manufacturer	Model#	Serial#	Due Date	

INSPECTION SUMMARY

A visual external and partial internal inspection was conducted on tower during plant outage. West of plant 1 stabilizer building.

External:

Vessel and piping are insulated and clad, cladding in good condition, with a few small dents in cladding noted. Vessel manway paint shows signs of deterioration due to temperature. Very light corrosion / rusting noted at paint failure locations. All piping appears well supported. Ladder and platforms to access top of tower are securely attached. Ladder from middle platform to top is very close to tower. The distance between ladder rungs and tower cladding prevents any more than the front of the foot to rest on the rung. This makes for a somewhat unsafe climb up ladder. Chain at top platform does not reach across platform to ladder opening. Top and bottom manway davit arms are in good condition, only single nut. The vessel is anchored to a concrete footing that appears to be in good condition, with only some minor cracking. There is an inspection port in skirt to allow for access to bottom head. Anchor bolts not visible. A ground cable connection was found securely attached directly to vessel. Dataplate is legible and securely attached to vessel. Temperature gauge glass is cracked. The vessel is protect by PSV that is set at MAWP and was last serviced Sept 2011.

Internal:

Internal inspection was done after vessel was opened, and detrayed from top to bottom. Bottom chimney tray was not removable. Internal access was through the top 20" manway into tray section and through bottom 20" manway into bottom section. Due to extremely tight conditions within tray section and offset openings in each tray, inspector was only able to go down and inspect first 3 tray levels before getting stuck and having to come back out through the top. Tower tray crew stated that no damage to the trays, bubble caps, tray or downcomer supports was noted from tray 4 down to the chimney tray. Top section (including tray section): Top manway nozzle and flange face was found to be in good condition with no damage noted. Top demister pad was not removed at time of inspection. No visual access to top head. Demister pad was in good condition and well supported with no fouling noted. Top shell down to the third tray was found to be in good condition. No corrosion or damage noted. All visible welds, longseams, nozzle welds, tray ring fillet welds, etc were in fair condition, with no corrosion or defects noted. All trays inspected appeared to be in fair condition. All bubble caps appeared to have full functional mobility with no fouling or damage noted. Nozzle deflector was securely attached. Bottom section:

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Access to bottom section is through bottom manway. Manway nozzle and flange face is in good condition, no corrosion or damage noted. A layer of scale and debris was found covering bottom shell and head. Scale was easily removed with a wire brush. Shell was in fair condition with no corrosion or damage found. There were 2 small areas of corrosion on bottom head around drain nozzle. 0.030" and 0.020" deep. Drain vortex breaker was securely attached. No erosion, corrosion or obstructions were found within nozzles in bottom section, including drain. Chinmey tray was found to be in fair condition and securely attached.

Tower was re-trayed after inspection.

Vessel was found to be in fair condition and fit for continued service.

RECOMMENDATIONS

Consider removing larger section of trays for next inspection in a fashion that will allow for better / safer access for inspection / inspector. Tower will require a full top to bottom inspection. (review drawings).
Install longer safety chain / safety bar across platform opening to ladder (at top platform).
Replace temp gauge

NONCONFORMANCES / INSPECTION DEFICIENCIES

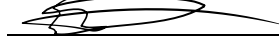
No non-conformances were noted during visual external inspection.

INSPECTION PLANNING

Inspection Strategy	Availability	Inspection Interval
Inspection Date	Date of Last Inspect	Date of Next Inspect
June 11, 2014		

REPORT CERTIFICATION

The signatures below certify that inspections/tests have been completed in accordance with the identified inspection strategy and that the specified equipment is considered fit for service until the date of next inspection.

Inspected by	<u>Ed Tymensen</u>		Date	<u>June 11, 2014</u>	
Company	<u>Streamline Inspection</u>	PESL #	<u>000711</u>	API #	<u>27479</u>
Reviewed and Approved by	<u></u>	<u></u>	Date	<u></u>	
	<u></u>	PESL #	<u></u>	API #	<u></u>
Criticality Assessment Rerun	<u></u>	Inspection Planning Rerun	<u></u>		
Assessed Next Inspection Date					

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DETAILED INSPECTION VISUAL EXTERNAL

ID	Description	Condition	Location	NCR	Comments
V1	General Other (Please Explain)	Fair			Overall
V2	General Corrosion	n/a			Very minor corrosion / rusting on manways where paint has failed
V3	General Leaks	n/a			No leaks noted
V4	Vibration	n/a			Plant was down during inspection
V5	Dissimilar Flange Rating	Good			Similar flange ratings
V6	Ladder/Stairway	n/a			
V7	Heads	Good	Bottom head		No corrosion or damage noted
V8	Guy Wires	n/a			
V9	Electrical Ground	Good	Attached directly to vessel skirt		Ground cable connection tight and secure
V10	Painted Inactive Corrosion	n/a			
V11	Coating/Painting	Fair	Manway		Temperature caused paint deterioration
V12	Expansion Joint or Bellows	n/a			
V13	Gauge/Site Glass	Fair	Temp gauge		Gauge glass is cracked
V14	Shell	Fair			Limited visual due to insulation
V15	Jacket	n/a			
V21	Support Other (Please explain)	Good	Piping		Well supported
V22	Foundation	Good			Vessel on concrete base, a few minor cracks
V23	Anchor Bolts	n/a			Not visible
V24	Saddle/Skirt	Good	Skirt		Anchored to concrete base
V25	Davit	Good			Single nut only
V26	Fireproofing	n/a			
V31	Connections Other (Please explain)	Good			All connections secure
V32	Small Branches	Good	Tubing		No leaks or kinks
V33	Nozzles	Good			No significant corrosion or damage noted
V34	Manways	Good			
V35	Reinforcing Pads	n/a			Insulated
V36	Inadequate Thread Engagement	Good			Adequate thread engagement
V37	Bolting	Good			Bolting tight and secure. No corrosion of threads noted
V38	Flanges	Good			No leaks or corrosion noted
V39	Leak Clamps	n/a			
V41	Insulation Other (Please explain)	Fair	Vessel and piping		Insulated and clad
V42	Damage	Fair			Some minor areas of cladding damage
V43	Penetrations	Fair	UT ports		Coverplates in place but not sealed
V44	Insulation Jacket	Fair			Tim cladding, some minor dents and damage
V45	Banding	Good			
V46	Seals/Joints	Fair			Some seal failures, UT coverplated not sealed
V51	Relief Devices Other (Please explain)	Good	Piping		Service up to date, set at MAWP
V52	Corrosion	n/a			None noted
V53	Leaks	n/a			None noted
V54	Restricted Inlet/Outlet	n/a			
V55	Manual Operation Lever	Good	PSV inlet and outlet isolation valves		Both valves carsealed open

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DETAILED INSPECTION VISUAL INTERNAL

ID	Description	Condition	Location	NCR	Comments
V1	General Other (Please Explain)	Fair			Overall
V2	Corrosion (depth, length, width)	good	Bottom head		2 areas of minor corrosion 0.020" and 0.030" deep
V3	Erosion	n/a			No erosion noted
V4	Distortion	n/a			No distortions noted
V5	Blisters	n/a			No blisters noted
V6	Deposits	n/a			No deposits found
V7	Heads	Good	Bottom head		2 areas of minor corrosion 0.020" and 0.030" deep
V8	Welds	Good			No corrosion, damage or visible defects noted
V9	Nozzles	Good			No corrosion, damage or obstructions noted
V10	Shell	Good			No corrosion or damage
V11	Gasket Surfaces	Good	Manways		No corrosion or damage noted
V21	Internals Other (Please explain)	Good	Nozzle deflectors, vortex breaker		Securely attached
V22	Demister	Good			No fouling or debris noted
V23	Baffle/Wier	n/a			
V24	Sparger	n/a			
V25	Thermowells	Good			Secure
V26	Metallic Linings	n/a			
V27	Nonmetallic Linings	n/a			
V28	Trays	Good	First 3 trays		Bubble caps have full functional mobility, no damage
V29	Tray Rings	Good	First 3 trays		Securely attached
V30	Other Welded Attachments	n/a			

DETAILED INSPECTION OTHER TECHNIQUES

ID	Location	Observation/Measurement	Acceptance Criteria	NCR	Comments
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

DETAILED INSPECTION UT THICKNESS

CML	Nom. Thk	Current Reading	Short Term Corr Rate	Long Term Corr Rate	Remaining Life	Comments

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PHOTOS



LSD sign



Dataplate



Vessel overview



Bottom manway and davit arm, single nut only



Concrete base



Cracked temp gauge glass

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PHOTOS



Paint deterioration on bottom manway



Top manway davit arm



Top manway flange face



Demister supports



Demister pad



Top shell

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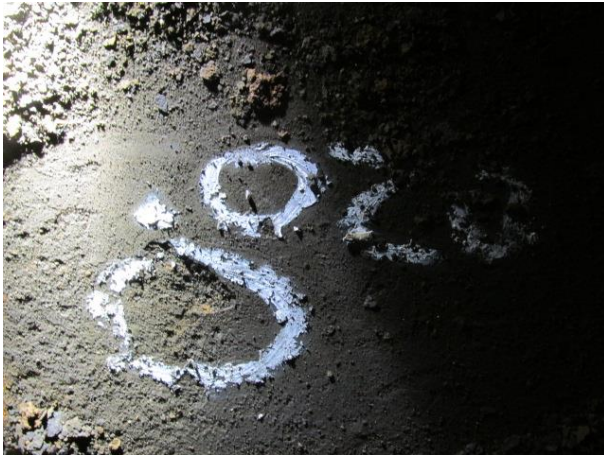
PHOTOS



Bubble cap trays



Bottom manway flange face



Corrosion on bottom head 0.020" deep



Corrosion on bottom head 0.030" deep



Bottom head



Bottom shell, scale and debris easily wire brushed clean

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PHOTOS



Bottom shell nozzle



Looking up at bottom of chimney tray