FN:JPACS2003.xls

2009 Jackson Prairie Atmospheric Corrosion Survey

1= No Corrosion 2=Minor Corrosion 3=Major Corrosion

Location	Cond. #	Description	Initials	Date
SU#1	2	Flanges on tree, run and senior orifice	JS	6/1/09
SU#2	1		JS	6/5/09
SU#5	2	Separator, run piping, relief, big joe, dump valve, senior orifice	JS	6/7/09
SU#6	2	Ins. flange, big Joe, relief, dump valve, junior fitting, run piping, separator flanges, run valve flanges, Low psi sep. relief valve and dump valve	JS	6/7/09
SU#16	2	Flanges, goose neck, relief valve, big joe, dump valve, separator	JS	6/5/09
SU#18	1		JS	6/1/09
SU#19	2	Dump valve	JS	6/5/09
SU#20	2	run piping, dump valve	JS	6/5/09
SU#21	2	big joe, dump valve, high pressure gauge piping, relief valve	JS	6/2/09
SU#22	2	relief valve	JS	6/2/09
SU#23	2	Tree hammer union, relief valve	JS	6/5/09
SU#24	2	Casing valve, sep. relief valve, big joe, run pipe, dump valve, safety valve	JS	6/7/09
SU#25	2	1/2 in valve on run, dump valve, big joe, tree, separator	JS	6/5/09
SU#26	1		JS	6/7/09
SU#27	2	Dump valve, big joe, relief, 1/2" h/p gauge fittings, 1in 90 after relief valve, senior drain valve	JS	6/7/09
SU#29	2	flanges, goose neck, tree, relief valve, big joe, dump valve, run piping	JS	6/5/09
SU#30	2	tree, safety valve, casing valve, run piping, separator and all fittings on it, relief valve dump valve big joe, low psi separator, tape wrap	JS	6/5/09
SU#31	2	Big joe, relief valve, piping after run valve near ground contact,	JS	6/1/09
SU#38	2	Separator, run, big joe, run valve, low psi separator, senior fitting	JS	6/5/09
SU#43	4	Low pressure separator. Heavy rust scale build up. Separator is unused but connected to wel	JS	6/2/09
	2	Tree, run piping relief valve, big joe, run valve		
SU#44	2	Run valve flanges, separator, relief valve, big joe	JS	6/7/09
SU#46	2	Tree, safety valve, goose neck, separator piping, dump valve, run piping , junior fitting	JS	6/1/09
	4	Low pressure separator. Rust hole in unused separator. Separator is connected to well		
SU#50	2	Separator, run piping, big joe, relief valve, low pressure separator, 6 in check valve, run valve	JS	6/2/09
SU#53	2	relief valve, dump valve, flanges	JS	6/2/09
SU#54	1		JS	6/5/09
SU#55	2	Dump valve, big joe, safety relief valve	JS	6/1/09

Z-2 Wells Cont.

Location	Cond. #	Description	Initials	Date
SU#56	2	Dump valve	JS	6/1/09
SU#59	2	Safety valve, flanges, relief valve, big joe, dump valve, senior fitting,	JS	6/7/09
SU#60	2	Dump valve	JS	6/5/09
SU#63	2	Tree, valves, run piping , separator, relief valve, sight glass, dump valve	JS	6/2/09
SU#69	2	Tree flanges, rupture disk, big joe	JS	6/5/09
	4	2 in plug on the bottom of separator. Heavy scale and rust build up on threads of plug		
SU#70	2	Tree, relief valve, big joe	JS	6/5/09
SU#71	1		JS	6/5/09
SU#72	2	Tree, Safety valve, separator, dump valve, sight glass, rupture disk, relief valve, senior orifice	JS	6/5/09
		run piping, and all pipe fittings		
SU#73	2	Sight glass, big joe, dump valve. Piping to separator, separator	JS	6/1/09
SU#74	2	2in vent valve, senior orifice, dump valve, separator, big joe, dump controller, sight glass	JS	6/1/09
SU#75	4	Tape wrap at end of run. The damaged area is at the top 2 to 4in of wrap	JS	6/1/09
	2	2in vent valve, senior orifice, big joe, sight glass		
SU#76	2	Big joe, relief valve, rupture disk, sight glass, separator piping senior fitting	JS	6/1/09
SU#77	2	relief valve rupture disk. Separator piping, dump valve, sight glass, big joe, senior fitting	JS	6/1/09
SU#78	2	Separator, relief valve, rupture disk, all fittings and valves, sight glass, dump valve, big joe,	JS	6/2/09
		senior orifice		
SU#79	2	Relief valve, sight glass, big joe, separator, rupture disk, dump valve	JS	6/5/09
SU#80	1		JS	6/1/09
SU#81	1		JS	6/2/09
SU#83	1		JS	6/1/09
SU#84	1		JS	6/5/09
SU#85	1		JS	6/5/09
SU#86	1		JS	6/2/09
SU#87	1		JS	6/2/09
SU#88	1		JS	6/1/09
SU#89	1		JS	6/1/09
SU#90	1		JS	6/1/09

Field Riser Locations

Location	Cond. #	Description	Initials	Date
Drain for 24	1	needs paint	JS	6/8/09
Metter station	2	Pipe supports are fixed and are unable to be inspected, shows signs of rust.	JS	6/8/09
Rural Tap	1		JS	6/8/09
W. of SU#27	2	2 in vent flanges	JS	6/8/09
	4	Tap wrap has broken down. West 16in line. The damaged area is at the top 2 to 4in of wrap		
SE of SU 13	1		JS	6/8/09
S. of SU#53	1		JS	6/8/09
E. of SU#31	2	Run piping	JS	6/8/09
E. of SU#29	1		JS	6/5/09
N. of SU#70	2	2 in. vent flanges, 4 in vent flanges	JS	6/5/09
E. of SU#56	1		JS	6/8/09
N. of SU#12	2	Tap wrap damaged, no plastic under pipe support, minor rust on valve	JS	6/5/09

Z-2 Water Wells

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Location	Cond. #	Description	Initials	Date
SU#40	2	All 2 in piping and fittings, relief valve, dump valve, separator	JS	6/5/09
SU#41	1		JS	6/5/09
SU#58	1		JS	6/5/09
SU#61	2	Tree all run piping	JS	6/5/09
SU#64	2	2 in run piping, relief valve	JS	6/5/09
SU#65	2	Separator, run piping, dump valve, relief valve	JS	6/7/2009
SU#67	2	Tree flanges, 2in union on run	JS	6/5/09

Z-9 Wells

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Location	Cond. #	Description	Initials	Date
SU#903	2	Big joe, sight glass, relief valve	JS	6/5/09
SU#906	1		JS	6/5/09
SU#911	2	Safety valve, rupture disk, sight glass, dump valve, low pressure separator, tee at end c	JS	6/5/09
		end of run		
	2	area between flanges on tree have heavy rust, scale build up		
SU#914	1		JS	6/5/09

2009 Comp. Station Atmospheric Corrosion Survey

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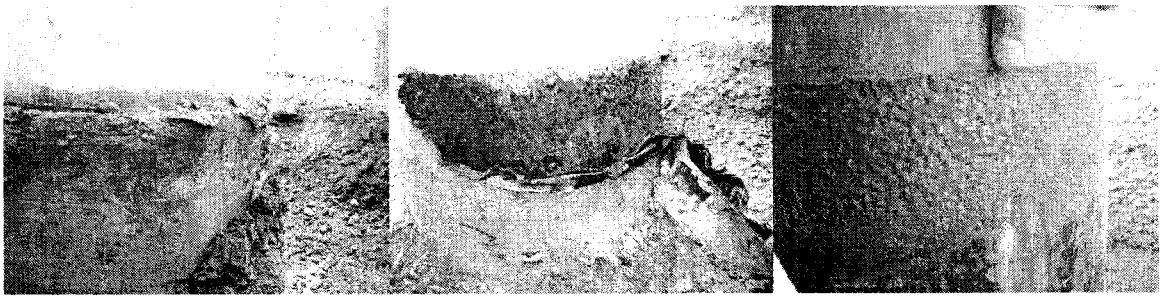
Location	Cond. #	DESCRIPTION	INITIALS	DATE
Section # 1	2	C-8 gas cooler piping and flanges	JS	6/8/09
	2	C-8 suction piping,		
	2	vent valve flanges on 36in header		
	2	valve 50408 and flanges		
	2	relief valve on C-8 vortex separator		
Section # 2	1		JS	6/8/09
Section # 3	2	Flanges for blow down valves on each main line	JS	6/8/09
	2	50401 Valve and Flange Bolts		
	2	Station Vent Valve Piping Flanges and Bolts		
Section # 4	2	C-6, C-7 gas cooler flanges, valve flanges and flange bolts	JS	6/8/09
	2	suction and discharge piping		
	2	blind flange and pipe in vault		
	2	valve for inlet on coalalesser #1		
Section # 5	2	suction and discharge lines had a 2in pipe welded to the line that have not been removed properly	JS	6/8/09
		old 2 in pipe will hold water		
	2	old Saturn bypass valve line (3 in) unknown condition of pipe. Wrong type of support		
	2	Z-9 discharge line, piping is not coated or wrapped but is half buried		
	2	16" suction and discharge piping, rust spots		
	2	1" and 1/2" valves and plugs in 16" suction and discharge piping		
	2	Teg vortex separator sight glass and piping for sight glass		
Section # 6	4	Z-2 discharge line, outlet of towers, below 16in tee, tape wrap has broken down, heavy rust, scale	JS	6/8/09
	2	Check valves on towers 1-4		
	2	Z-9 suction line		
	2	Z-9 piping in and out of heat exchanger		
	2	dump valves and piping for towers 1-4		
Section # 7	2	Piping in vault	JS	6/8/09
	2	Towers 5,6,7,8,9		
	2	Flanges on towers 5-9		
	2	Dump valves on towers 5-9		
	2	Sight glass on towers 5-12		
	2	relief valves on towers 5-10		
Section # 8	2	Blow down valve and flanges on 8" 16" 24" line	JS	6/8/09
	2	Slug catcher 24" pipe, paint chips and rust spots on east end		

2009 Jackson Prairie Atmospheric Corrosion Survey
Remedial Action Report

Location	Description	Date
Station section 6	Corrosion was found under tape wrap that was above ground level. Tape wrap was removed 2 feet below ground level, at this point there is no corrosion but tape wrap is disbonded. The area with the corrosion was sandblasted and is to be inspected.	5/7/2009
Station section 6	The Corrsion was down rated to a 2 by Alan Mulkey corrison engineer with PSE	5/7/2009
West of SU 27	Corrosion was found under tape wrap that was above ground level. Visually the tap wrap was cracked and slightly disbonded. The wrap was removed until good bonded wrap was found at 2in below ground. Max pit depth of .06 was found. Pipe was sandblasted and wrapped with polyken tape.	6/11/2009
SU 75	Corrosion was found under tape wrap that was above ground level. The tape wrap was disbonded at the transition point of tape and painted pipe. The disbonded wrap was removed to good wrap, 12 in above ground. Max pit depth of .02. Pipe was repainted	6/12/2009
SU 46	Major corrosion was found on low psi separator that is not in use. Lines were disconnected, plugged and separator was removed from location	6/12/2009
SU 43	Major corrosion was found on low psi separator that is not in use. Lines were disconnected, plugged and separator was removed from location	6/12/2009
Su #69	Corrosion was found on an 2" pipe plug was heavily pitted. The vessel was blown down and pipe plug was replaced.	6/12/2009
Meter station	Corrosion was found under tape wrap that was above ground level. Tape wrap was removed to ground level and sandblasted pipe before wrapping pipe with polyken tape. Max pit depth was .03.	6/17/2009

Atmospheric Corrosion Repair Report

On the June 2009 Atmospheric Corrosion Survey John Santee reported found what he believed to be a class 4 corrosion cell in Section 6 of the compressor station. The north end of the 14"-H-15-801 line about 12" above ground level at the pipe wrap to air interface. The pipe was hand dug down 2 feet and the polyken wrap removed. The following information was emailed to Alan Mulkey, Steven Schueneman and Michelle Gallardo of PSE's corrosion department along with the following pictures.



This is the response from Alan Mulkey,

Jim,
I used ASME B31G to evaluate the MAOP in the corroded region.

Assumptions:

Nominal OD = 14"
Wall thickness = 0.463"
Maximum pit depth ion corroded area = 0.1"
Longitudinal extent of the continuously corroded area = 5"
SMYS = 35,000 psi
MAOP = 1000 psig

Based on the assumptions above, the pipe is safe to operate at the established MAOP of 1000 psig. If the corrosion extended beyond 6.3" along the longitudinal axis of the pipe, or was deeper than 0.114", we would need to reevaluate the MAOP.

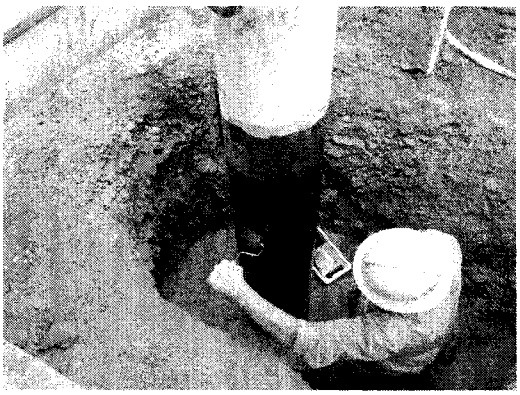
The root cause of the corrosion appears to be a failed coating which trapped moisture and debris. Rick stated the wrap is Polyken and was applied from top down. Polyken 930 is not UV resistant and may become brittle over time when exposed to the sunlight. When the tape deteriorates, it may lose adhesion. Since it was applied from top down, it could easily trap water.

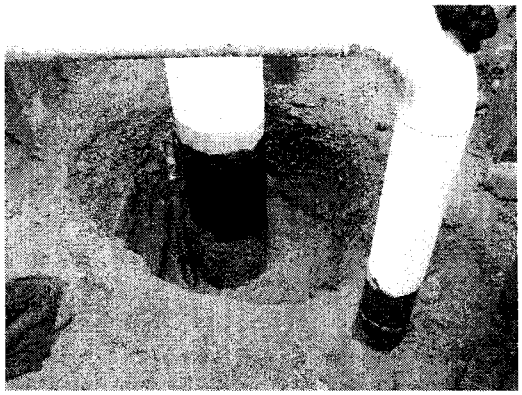
I recommend the Polyken tape be removed from the above ground portion of the pipe, the pipe be cleaned and then rewrapped with an UV resistant coating such as Tapecoat H35. Tapecoat H35 tape (MID 9997000 (2") or MID 9997004 (4")) is stocked in the PSE warehouse.

I also believe it would be a good idea to check other locations where Polyken was used above ground and consider rewrapping with the Tapecoat tape. If the Polyken hasn't failed yet and adheres tightly to the pipe, there is no need to remove it. It can be over wrapped with Tapecoat.

Thanks,
Alan

The pipe was excavated with a vacuum trailer to a depth of 3 foot 11 inches which was the extent of the dis-bonding. At the same time two adjacent pipes (14"-H-12-801 & 6"-G062-D) where found to have dis-bonding of the wrap and was also excavated to a depth of 2 feet. The dis-bonded wrap was removed and found surface rust only. The exposed pipe was walnut shell blasted to remove all rust and loose material. The pipe was then painted with Tapecoat's TC Omniprime primer.





The pipe was then wrapped using Tapecoat's H35 Gray which is UV rated. Tape was started 4 inches, one full wrap below any removed dis-bonded Polyken wrap. The excavations was back filled with sand and topped with gravel at the surface.