

Exhibit B - Previous Calculation and Journal Entry

Janson, Jim

From: Mulkey, Alan
Sent: Tuesday, July 28, 2009 12:58 PM
To: Janson, Jim
Cc: Braaten, Ricky D; Schueneman, Steven T; Gallardo, Michelle
Subject: FW: JP Corrosion
Attachments: IMG_0142.JPG; IMG_0144.JPG; IMG_0147.JPG

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

Assumptions:
Nominal OD = 14"
Wall thickness = 0.463"
Maximum pit depth in 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 rewinding 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 overwrapped with Tapecoat.

Thanks,
Alan

From: Janson, Jim
Sent: Tuesday, July 28, 2009 11:40 AM
To: Mulkey, Alan
Cc: Braaten, Ricky D
Subject: FW: JP Corrosion

Any idea when we can expect some feedback?

From: Braaten, Ricky D
Sent: Thursday, July 02, 2009 3:15 PM
To: Janson, Jim
Cc: Mulkey, Alan; Schueneman, Steven T; Gallardo, Michelle
Subject: RE: JP Corrosion

Alan,

See comments below in red for answers to your questions.

Thanks,
Rick Braaten
JP - Gas Storage Superv
Puget Sound Energy
O (360) 262-3365
C (360) 508-0959

From: Janson, Jim
Sent: Monday, June 29, 2009 3:14 PM
To: Braaten, Ricky D
Cc: Mulkey, Alan; Schueneman, Steven T; Gallardo, Michelle
Subject: RE: JP Corrosion

Rick - would you please reply to Alan (see me with questions).

From: Mulkey, Alan
Sent: Monday, June 29, 2009 2:57 PM
To: Janson, Jim
Cc: Schueneman, Steven T; Gallardo, Michelle
Subject: FW: JP Corrosion

Jim,
I believe we can help. This appears to be a riser. Can you give me a little more information?

Pipe condition:

What is the pipe diameter? 14"

What is the pipe grade? I can not find the specks on that section but everything else that I did find from that time frame indicates Sch 40 - Grade B

What is the original wall thickness? We check the pipe about 6" above the pitted area with our thickness gauge and came up with .464 and .463 about 6" from the first read

What is the range of pit depth measurements? 10 – 100 thousands

What is the length of the corroded area along the longitudinal axis of the pipe? 27" around and 2" to 5" wide

What is the MAOP? 1000 psig

Corrosion root cause:

This appears to be above ground pipe. Is all the corrosion above ground? Is the corroded area at the soil to air interface? This is actually above the pipe to soil interface by about 1 foot. The corrosion is at and right below the Wrap to Air interface.

Is the piping indoors or under a shelter? No the pipe is exposed

What is the age of the coating? 1973 to 1975 there is a couple of references in the 1977 prints time frame of relocating the pipe 5 to 7 feet to the east.

What type of coating covered the corroded area? Polyken wrap

Is the coating that failed a different material or age than that which is still adhering to the pipe? No it is all the same age and material. In this case the wrap was wrapped backwards which might have aided in the failure. It was wrapped from the top down.

Do you have any pictures of the pipe before the coating was removed? Attached is a 3 picture. 1 before wrap was removed. 2 with the wrap piled back. 3 after we walnut blasted the area.

Thanks,
Alan

From: Janson, Jim
Sent: Friday, June 26, 2009 10:51 AM
To: Mulkey, Alan
Subject: JP Corrosion

Alan - we have discovered a section of gas piping that shows a fair amount of pitting corrosion that was under the coating . Can we get some help in evaluating the fix?

Jim Janson, PE
Mgr Jackson Prairie
Puget Sound Energy
360-262-3365 office
360-269-1010 cell
jim.janson@pse.com

200-42-Boise (800 992 7433)

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THURSDAY
JUNE, 2008

24th Week
16th Day

DIARY AND WORK RECORD

HOURS FOR SUBJECT • DESCRIPTION OF SERVICES TIME HRS. 1/10

8 6" schd 40 - allowable pit depth

Joe Ewing
X-3953

Alan Muekey - pitting - calc. of remaining burst strength
X-3889 - power in same ditch as pipeline

Schumann

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1
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FRIDAY
JUNE, 2008

24th Week
16th Day

DIARY AND WORK RECORD

HOURS FOR SUBJECT • DESCRIPTION OF SERVICES TIME HRS. 1/10

8 Alan Muekey
MAX pit depth
constant radius on vert - gas line 2 feet
variable length
MOP 11400

not less than 1' down gas piling

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