From: Cooke, Michelle
Sent: 4/26/2011 9:09:59 AM
To: Stock, William (/O=PG&E/OU=CORPORATE/CN=RECIPIENTS/CN=WCS3)
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Bcc:
Subject: Hydro Testing Symposium

Bill- I have been having dialogue with Bob Nickell about a possible role in the symposium and that is still under discussion, in the meantime, he has suggested some ideas for what might be good to include in the opening discussion about what is a hydro test and what you can learn as set forth below. I do not have an opinion on this, but I think it is interesting to think about his ideas as the presentation on What is Hydrotesting is developed.

Michelle:

In order to achieve your objective, I would recommend that you cover in your opening remarks the nominal arguments for hydrostatic pressure testing of existing piping. The attached Kiefner-Maxey paper summarizes the nominal arguments very well, including a brief discussion of pressure reversals. You should consider using Figure 1 in your opening presentation, since that figure makes a strong argument for hydrostatic pressure testing. The figure is also based on a pipe that is 30 inches in diameter with a 0.375 inch thick wall and a yield strength of 52,000 psi. Note, however, that the Charpy V-notch impact energy is 50 ft lb, not 8 ft lb.

It is only my personal opinion, but if I were in your shoes, I would not bring up pressure reversals unless the subject is brought up by others. The general public and perhaps even the Commissioners will have a tough time if we get into deep discussions about sub-critical defect growth under hydrostatic pressurization loading, and whether the existing defect distribution includes any defects whose growth during pressurization and de-pressurization could pose a problem. It might be better to simply say that "industry experience indicates that a higher hydrostatic test pressure will expose the presence of more defects and appears to reduce the future propensity for pipe failures under normal operating pressures."

I think that almost every piping expert would agree that the probability of future pipe failures following a 150% x MAOP hydrostatic pressure test is reduced, but the probability of such a failure is not zero. And I think the probability is even further reduced if the pipeline operator has performed an in-line inspection and has a reasonable idea of the defect potential. Of course, you probably would not hydrostatically pressure test a pipe for which you have acceptable in-line inspection results. About all that I can say is, if I knew that all of the pipe sections that PG&E plans to test had Charpy energies of 50 ft lb, I would sleep very well at night. Even if all of the pipe sections had Charpy energies of 25 ft lb, I would not lose much sleep either. We also know from operating experience with these pipe segments over the years that, even with reduced Charpy energies (say to 10 or 12 ft lb),

very long defects that extend significantly across the wall could not be present. However, for the pipe segments to be hydrostatically pressure tested, the defect potential is unknown (other than that they cannot be very long and 50% across the wall) and the Charpy energy is unknown (other than that it certainly is not 5 ft lb or lower). Therefore, it is probably best for me to offer a perspective on might be an alternative or at least a precursor to hydrostatic pressure testing, rather than to either provide direct support or direct criticism of the PG&E program, considering my contractual status with the Independent Panel.

Bob Nickell