

From: Brian Holian
To: Bill Bateman, David Lew, Diane Screnci, Emmett Murphy, Jack Strosnider, John Zwolinski, Joseph Shea, Mark Satorius, Marsha Gamberoni(...)
Date: Fri, Jul 14, 2000 5:16 PM
Subject: Re: Status of IP2 letter on Staff's Concerns re: Operation Assessment

Thank you for the letter...we will get regional comments, if any, Monday. One quick thought... We are still aiming at a Tuesday 1 pm exit with IP2 (onsite). I rec'd a call from their licensing this afternoon...following our 1.5 hour phone discussion...requesting the exit be switched to Thursday to accomodate Groth's desire to be there. We left it as scheduled for Tuesday for now...

I have attached an inspection summary that Dave Lew and Wayne Schmidt have authored. I took an hour to incorporate NRR comments rec'd verbally from Stephanie. This document may receive additional regional work this weekend...but I am getting it out now.

If we obtain consensus with NRR on Monday with an inspection summary that has performance issues, and we exit Tuesday....we may desire to include some summary (like the attached) in the NRR letter. This would give the "complete" SG story as of July 18....

more discussion monday
Brian

>>> Marsha Gamberoni 07/14 4:53 PM >>>

The letter has been through Bill Bateman and DLPM management. A copy went to Dick Wessman for Jack. Brian Sheron is taking the original home.

We will continue on Monday getting comments/concurrence.

Marsha

CC: HJM1, JTW1, WDL

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Indian Point 2 Steam Generator Special Inspection Exit Summary

The NRC conducted a special team inspection to review the causes of the failure of a steam generator tube on February 15, 2000. The NRC team members included personnel from the Office of Nuclear Reactor Regulation and Region I, and NRC-contracted specialists in steam generator eddy current testing. The team assessed the adequacy of Con Edison's performance during the 1997 steam generator inspections and Con Edison's root cause evaluation, date April 14, 2000.

The team conducted an exit with Con Edison on July 18, 2000. This summary provides the preliminary team findings, which are still being finalized and are subject to NRC management review. The overall significance determination for this event is still being developed. These findings and the significance determination of the event will be documented in NRC inspection report No. 50-247/2000-010.

The team concluded that during the 1997 steam generator inspection, ConEd did not recognize significant conditions adverse to quality, or implement effective corrective actions relating to factors that caused significant limitations and uncertainties in eddy current data collection and analysis. The team concluded that ConEd's response to the available steam generator data was deficient in that opportunities were missed where an effective corrective action process could have increased the likelihood that steam generator tubes with detectable flaws would not have been left in service.

For example, high signal noise in the low radius U-bend areas did not receive focused attention. The inability to correct this high signal noise negatively affected flaw detection capability. Additionally, adequate corrective actions were not taken in response to the identification of a newly discovered degradation mechanism, i.e., inside diameter (ID) primary water stress corrosion cracking (PWSCC) at the apex of a U-bend in a row 2 tube, that increased the likelihood of tube integrity problems.

The team identified the following performance issues:

1. Based on an independent NRC review of the eight U-bend PWSCC indications that were identified in 2000 through review of existing 1997 inspection data, the NRC determined that Con Edison should have identified six of these defects and removed the associated tubes from service in 1997. These tubes included SG 24 tube R2C5, which failed on February 15, 2000. The following issues decreased the probability of defect detection and increased the likelihood of apex flaws in the small radius U-bend steam generator tubes:

Con Edison did not recognize the significance of, or adequately evaluate the flaw masking effects of, the high noise encountered in the eddy current signal (low signal to noise ratios). In the case of SG 24 tube R2C5, the magnitude of the

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signal noise was estimated to equate to a 70-100% through-wall tube defect. The data analysis techniques were not adjusted to compensate for the noise to improve the identification of a flaw signal and ensure the appropriate probability of detection.

Con Edison did not adequately respond to a PWSCC indication in the U-bend area of tube R2C67 in SG 24. This indication, which was located in the apex of this small radius tube, was a new and significant degradation mechanism at Indian Point 2. Apex cracking is more likely to burst than other u-bend cracks. Con Edison did not enter this significant issue into the corrective action program to ensure that this new degradation mechanism and the associated root cause were fully understood.

Con Edison did not sufficiently assess eddy current probe restrictions in the upper support plate with respect to flow slot hourglassing (a condition that increased the likelihood of higher apex stresses and subsequent PWSCC).

2. Con Edison did not properly set-up the U-bend plus-point eddy current probe, which negatively affected the probability of detection of U-bend indications. The probe was not set-up with the proper calibration standard or with the phase rotation specified by the EPRI qualified technique sheet.
3. Con Edison did not have an accurate method of measuring, nor criteria for determining, when significant hourglassing of the upper tube support plates had taken place. As

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