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To: "Dodd" [REDACTED] "tees" [REDACTED] Brian [REDACTED] 6  
Holian, David Lew, Gregory Cranston, Stephanie Coffin(...)  
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see the attached

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ITEM # 49

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~~PREDECISIONAL INSPECTION INFORMATION~~  
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**Indian Point 2 Steam Generator Special Inspection Summary**

The NRC conducted a special team inspection, following the failure of a steam generator tube on February 15, 2000, to assess the adequacy of Con Edison's 1997 steam generator inspections. 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 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, Con Edison did not recognize and take corrective actions for significant conditions adverse to quality relating to eddy current data collection and analysis and specific steam generator conditions. These missed opportunities caused significant limitations and uncertainties, resulting in tubes with detectable flaws being left in service. Collectively, these opportunities, along with a new active degradation mechanism, increased the likelihood of tube integrity problems during the subsequent operating cycle.

In particular Con Edison did not:

- 1) identify, assess, and compensate for high signal noise in the low radius U-bend areas that negatively affected flaw detection capability;
- 2) take adequate corrective actions following identification of a new tube degradation mechanism, i.e., inside diameter (ID) primary water stress corrosion cracking (PWSCC) at the apex of a low radius U-bend tube; and
- 3) sufficiently assess the potential for flow slot hourglassing following eddy current probe restrictions in the upper support plate.

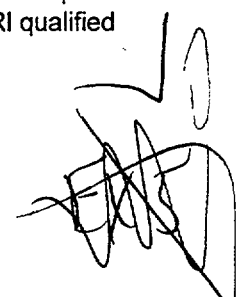
As an overall result, Con Edison did not identify detectable flaws in six low radius U-bend tubes, including tube R2C5 in SG 24, which failed due to PWSCC on February 15, 2000.

Additionally, the team identified several less significant performance issues:

- \* 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 such, no meaningful visual examination of the flow slots was conducted.
- \* Con Edison did not properly set-up the U-bend plus-point eddy current probe, which 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.

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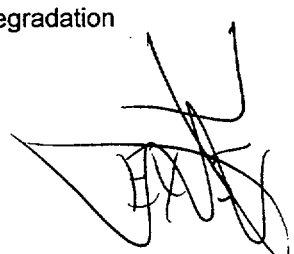




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Con Edison's root cause analysis, dated June 14, 2000, did not adequately address the failure to identify the tube flaws in the low radius U-bend region during the 1997 outage. While the analysis attributed the tube failure to a flaw that was obscured by eddy current signal noise, the adequacy in Con Edison's technical oversight of the 1997 steam generator inspections was not addressed. The root cause analysis also did not address the adequacy of the corrective actions taken in response to a new SG degradation



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