

March 24, 2000

Mr. A. Alan Blind  
Vice President, Nuclear Power  
Consolidated Edison Company  
of New York, Inc.  
Broadway and Bleakley Avenue  
Buchanan, NY 10511

SUBJECT: INDIAN POINT NUCLEAR GENERATING UNIT NO. 2 (IP2) - REQUEST FOR  
ADDITIONAL INFORMATION RE: PROPOSED STEAM GENERATOR TUBE  
EXAMINATION PROGRAM - SUPPLEMENT ONE (TAC NO. MA8219)

Dear Mr. Blind:

By letter dated March 14, 2000, the Nuclear Regulatory Commission (NRC) staff requested information pertaining to your proposed steam generator tube examination program. The letter stated that the NRC staff is conducting a formal review of your steam generators. The focus of the review is on the steam generator inspections, problem identification, root cause analysis, and corrective actions. To facilitate the staff's efforts to review the adequacy of your proposed actions and plans for evaluating steam generator tube integrity, we have had a number of telephone calls with your staff to clarify what information the NRC staff needs to complete the review. The enclosed request for additional information documents the information which is needed. These questions apply to all four steam generators and are not specific to steam generator 24. The NRC staff understands that these questions may be similar to the ones asked in the previous request, therefore when preparing your response, where appropriate, your responses may be combined. Please be advised that the enclosed questions may be supplemented as our interactions continue.

You notified the NRC on March 23, 2000, of your entering into condition C-3 in accordance with Technical Specification 4.13. Your entering this condition requires NRC staff approval before unit restart. To assess the steam generators readiness to support restart, the NRC staff requests that you provide your response in time for an adequate review. At the present, this period is estimated to be three weeks before unit restart. If you have any questions, please contact me at (301) 415-1421.

Sincerely,

**/RA/**

Jefferey F. Harold, Project Manager, Section 1  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket No. 50-247

Enclosure: Request for Additional Information

cc w/encl: See next page

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DATE	03/24/2000		03/24/2000	03/24/2000				

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## **REQUEST FOR ADDITIONAL INFORMATION**

### **PROPOSED STEAM GENERATOR TUBE EXAMINATION PROGRAM**

#### **INDIAN POINT NUCLEAR GENERATING UNIT NO. 2**

#### **DOCKET NO. 50-247**

In preparing your response to the following questions, provide sufficient detail to address the related questions and action items that have been discussed with the NRC staff and agreed upon by representatives of Consolidated Edison in interactions that have occurred since the February 15, 2000, tube failure.

1. Provide the inspection results (i.e., number, location, size, type of indications found in all four steam generators) for both the 1997 and 2000 outage inspections. Also, provide a separate list of pluggable indications and reasons for plugging.
2. Provide the results of secondary side examinations completed during the 1997 and 2000 outages (i.e., hourglassing and other observations such as cracking of tube support plates (TSPs)) for all TSPs. This should include videos of hill side port examinations (and still photos if available) of the fifth and sixth support elevations.
3. Provide the trending analysis of dents in the upper support plates and ovalization of rows 2, 3, and 4 u-bends. This trending analysis should be displayed in graphical or tabular form as appropriate to best illustrate the trends. A summary discussion should be provided of denting trends in the lower support plates. The licensee's July 29, 1997, inspection reported 20 tubes (mostly in steam generator 22) failed to pass the 0.610 bobbin in rows 2 and 3. Were these tubes able to pass a 0.610 or larger bobbin in earlier inspections? Have the row 2 - 4 u-bends been inspected with bobbin during the current inspection so as to contribute to the above trending analysis?
4. Provide the documentation of the site qualification review of the eddy current techniques applied during the 1997 and 2000 inspections.
5. Provide the structural analysis of TSPs assessing TSP structural integrity and deformation (including hourglassing) over the next inspection interval and impact of the predicted displacements on u-bend integrity and propensity to cracking. This analysis should be benchmarked against the inspection results from this outage and the results of trending analyses of denting progression.
6. Provide a description of the leakage monitoring program to be implemented upon plant restart, including monitoring systems, surveillance intervals, action levels, alarm setpoints, and leakage criteria for initiating plant shutdown.
7. Provide your plans in response to the staff's suggestion that you perform a helium leak test.

Enclosure

8. Provide a description of the operational assessment demonstrating that adequate structural and leakage integrity will be maintained until the next scheduled inspection for each degradation mechanism. This description should include a discussion of the input parameters (including flaw growth rates and flaw size measurement errors) and predictive structural and leakage models used in the assessment. Methods for accounting for flaws not detected during the inspection, or initiating after the inspection, should be discussed.
9. Provide a completed Appendix K of the EPRI Steam Generator Guidelines checklist for a forced outage.
10. Provide a response to NRC's inspection recommendations for the low row u-bends which include: (1) using a high frequency +Point probe, (2) using the midrange +Point run at 500kHz, (3) trying a 400/100 kHz mix, and/or (4) analyze using the 400 kHz channel. In addition, regarding the overall steam generator inspection program, discuss the need to improve analyst guidelines (e.g., clear setup guidelines, clear and objective noise criteria) and to develop a formal training program to incorporate "lessons learned."
11. Assess u-bend stress levels in the rows 2 - 4, broken down by residual stress introduced during fabrication, stress from denting related causes (including support plate deformation and hourglassing), thermally induced stress, and pressure induced stress.
12. Assess material susceptibility to intergranular stress corrosion cracking (IGSCC) for the heats used at Indian Point 2 rows 2 - 4.
13. Assess the time to crack initiation in initial tubes for rows 2, 3, and 4 u-bends.
14. Provide the specific steam generator tube selection information for in-situ pressure testing for each defect mechanism.
15. Provide the results of the condition monitoring assessment for each defect mechanism, including the results of the in-situ pressure tests.
16. For all indications identified by the Cecco and bobbin coil inspections, identify which indications were called by a single analyst versus those indications that were called by both analysts.
17. Identify how many tubes are affected by the "pilgering" type noise at the top of the tube sheet (TTS) and explain how you plan to disposition these tubes.
18. Identify how many tubes are affected by the "blind spot" located at the upper span of tubing between the TTS and 1H span and explain how you plan to disposition these tubes. Assess the potential for sludge pile ODSCC to be in the blind spot region. Given the results of this assessment, provide the basis for reasonable assurance that tube integrity will be provided while the plant is operating.
19. Provide the acceptance criteria for the secondary side hydro test.
20. Identify the number of tubes inspected with probes smaller than 0.700 inches in diameter. For these tubes, document the eddy current indications identified in these inspections (both Cecco and bobbin results, as well as rotating pancake coil results).
21. Provide the loose parts safety evaluation for the 2000 outage.

Indian Point Nuclear Generating Station  
Units 1/2

- 3 -

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