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July 13, 2000

Re: Indian Point Unit No. 2
Docket No. 50-247
NL-00-090

Document Control Desk
US Nuclear Regulatory Commission
Mail Station P1-137
Washington, DC 20555-0001

Subject: Responses to the NRC's Request For Additional Information Regarding Steam Generator Operational Assessment Report (TAC No. MA9288)

References:

1) USNRC Letter to A. A. Blind from P. D. Milano, "Indian Point Nuclear Generating Unit No. 2 - Request For Additional Information Regarding Steam Generator Operational Assessment Report (TAC No. MA9288)," dated July 3, 2000.

2) Telecon on July 5, 2000 between the NRC and Con Edison.

Recently the US Nuclear Regulatory Commission (NRC), issued to Consolidated Edison Company of New York, Inc. (Con Edison) a request for additional information (Reference 1) and subsequently, in a telecon between the NRC and Con Edison (Reference 2), several additional questions were raised.

Attachment A provides the responses to Questions 2, 4, 7, 8, 9 of Reference 1 and Attachment B provides the response to Question 4 of Reference 2.

No new regulatory commitments are being made by Con Edison in this correspondence.

Should you or your staff have any questions regarding this matter, please contact Mr. John F. McCann, Manager, Nuclear Safety and Licensing.

Sincerely,

AW1

Attachment

C: Mr. Hubert J. Miller
Regional Administrator-Region I
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Mr. Patrick D. Milano, Senior Project Manager
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ATTACHMENT A

RESPONSES TO RAIS FROM NRC LETTER DATED JULY 3, 2000

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
INDIAN POINT UNIT NO. 2
DOCKET NO. 50-247
JULY 2000

NRC Request for Additional Information 2:

In the June 2 report, ConEd requested approval for 0.85 effective full power years, which is approximately 10 months of operation. However, your cover letter to the condition monitoring and operational assessment report indicated that you planned to shut down and replace your steam generators at the end of the year. Clarify the actual period of planned operation for the stream generators.

Con Edison Response:

Con Edison is actively planning for steam generator replacement. It is the intent of Con Edison to begin the Steam Generator Replacement Project when the necessary planning and preliminary engineering are complete. The replacement of the steam generators will begin no later than December 31, 2000.

NRC Request for Additional Information 4:

The following questions stem from our review of the sludge pile operational assessment, specifically regarding your nondestructive examination (NDE) uncertainty assumptions:

a. Discuss the database used to develop the NDE uncertainties used in the sludge pile operational assessment. What data went into this database? How does it differ from the POD database? Justify the exclusion of any data not used.

b. Provide a more detailed discussion of the adjustments you make to raw NDE data.

Con Edison Response:

a. Discuss the database used to develop the NDE uncertainties used in the sludge pile operational assessment. What data went into this database? How does it differ from the POD database? Justify the exclusion of any data not used.

For a sizing data set, Appendix H of the EPRI ISI guidelines recommends a minimum of 16 flawed specimens with at least one-third of the specimens < 60% maximum depth and the depths as reasonably distributed as practical. The number of specimens for the sizing data set was planned to be limited to about 20 to 25 indications since alternate sizing techniques were being evaluated and one analyst was performing the sizing analyses. To limit analyst variability in the sizing efforts, the same analyst was used to size the significant IP2 indications and to perform the sizing analyses for NDE uncertainties. Alternate sizing techniques evaluated included depth sizing applying the part of the phase response yielding the deepest depth and sizing applying the peak to peak phase response.

Available pulled tube data with axial ODSCC include sludge pile indications (near TTS), freespan indications and indications at TSP intersections. A total of 9 sludge pile pulled tube indications from two plants are available and all were included in the sizing data set. Additional freespan and TSP intersection data were selected to obtain an approximately uniform distribution of depth sizes between 30% and 100% maximum depth with about equal numbers of freespan and TSP indications. Freespan indications selected were limited to locations between the TTS and 1st TSP where heavy deposits on the tube simulate that in the sludge pile. Indications at TSP intersections were selected to balance the depth distribution. The selected indications include 11 < 60% and 11 > 60% maximum depth distributed as 8 in 30 – 50%, 6 in 50 – 70% and 8 in 70 – 100% depth. More shallow indications (< 60% depth) were included than required by the EPRI guidelines as this range is representative of the IP2 indications and tends to be more difficult to size. Overall, the sizing data set objectives for sample size, depth distribution and IP2 similarities were satisfied for the selected data set.

Con Edison Response:
(continued)

Therefore, the database was selected to include all of the available data from the 9 sludge pile pulled tube indications. Free span and TSP indications then supplemented this database until the database was slightly larger than the minimum required per the EPRI guidelines (22 Vs 16). The criteria is that the sample size meets the minimum quantity (>16) and that at least one-third of them be less than 60% through wall indications. The sample size was 50/50 for above and below 60% through wall. Both criteria were complied with and the absolute number is not part of the guidelines

b. *Provide a more detailed discussion of the adjustments you make to raw NDE data.*

For the sludge pile ODSCC, the length adjustment applied is to cut off the tails at 15% of maximum voltage for indications having maximum +Point voltages ≥ 0.8. No length adjustments were made for the smaller indications with maximum volts < 0.8. For low voltage indications ≤ 0.6 volt, the maximum depth of the indication is set to the depth at maximum volts from the phase analysis. If the resulting maximum depth is < 30%, the maximum depth is set to 30%. The depth profile from the phase angle analysis is scaled to the depth at maximum volts to obtain the adjusted profile. If the maximum +Point voltage is > 4.5 volts, the phase angle based profile would be adjusted to a maximum depth of 100%. However, no sludge pile indications required this adjustment. The adjusted data set is obtained when these length and depth adjustments are performed.

NRC Request for Additional Information 7:

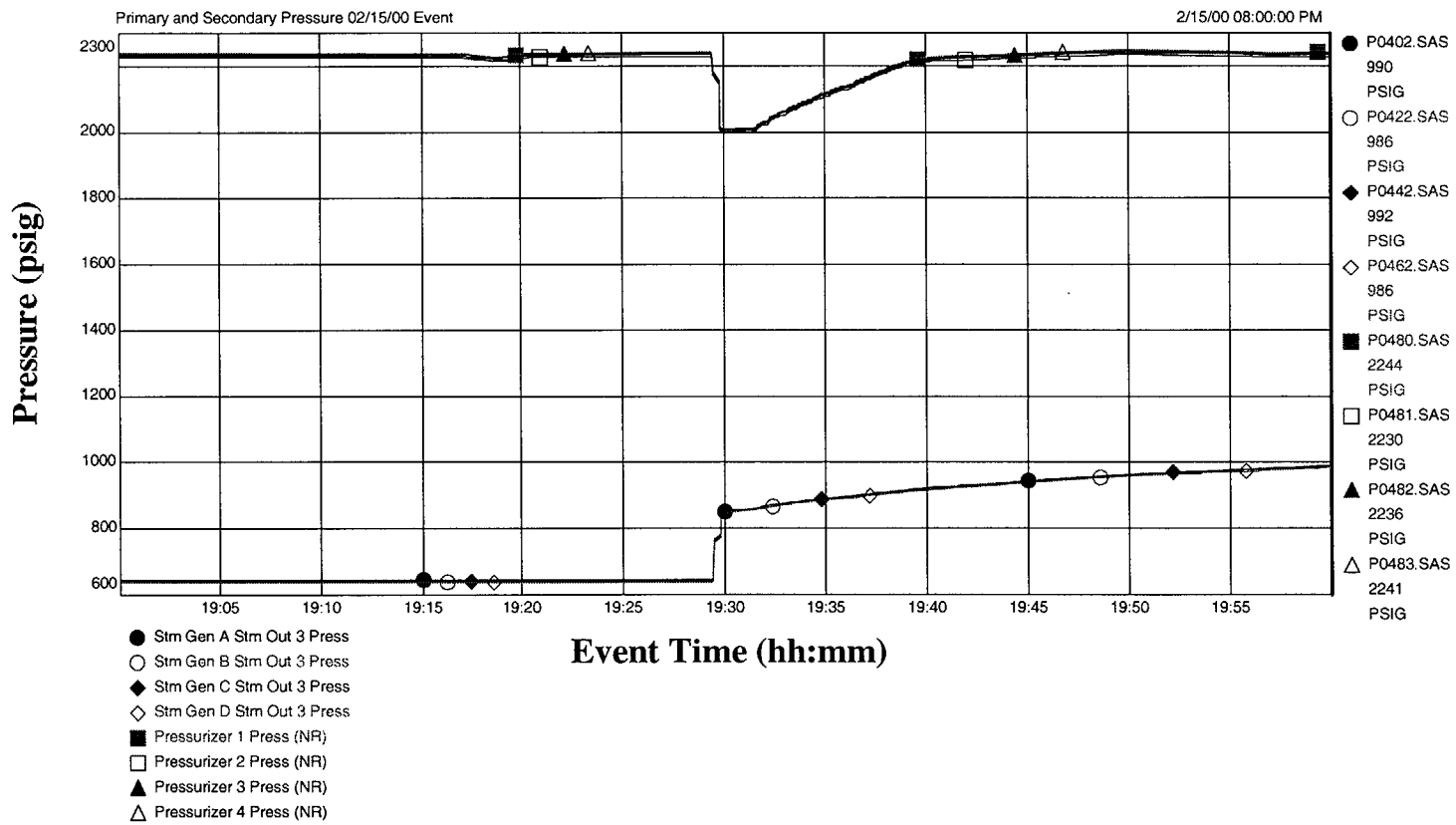
Provide primary and secondary side pressure as a function immediately following the tube failure event.

Con Edison Response:

See Figure RAI-7-1.

Figure RAI-7-1

Primary and Secondary Pressure vs. Time



NRC Request for Additional Information 8:

Page 2-6 of the U-bend operational assessment report is missing some paragraphs.

Con Edison Response:

The inadvertently missing paragraph is provided below.

Input Data for Tube Integrity Analyses

The tube integrity analysis methods require input data for PODs, growth rates, NDE sizing uncertainties and U-bend tube material properties as well as length and depth distributions for new indications in the single cycle analysis model. Since direct destructive exam data is not available for U-bend axial PWSCC, a lower bound POD is applied in the single cycle analyses of this report based on the lower range of detectability found for +Point analyses. Growth rate distributions are conservatively developed from Indian Point-2 growth rate data for Cycle 14 based on lookback reanalysis (based on year 2000 knowledge of indication location) of the 1997+Point inspection data. NDE sizing uncertainties have been previously developed for 300 to 400 kHz +Point sizing of axial PWSCC at dented TSP intersections. The associated sizing techniques and uncertainties are applied in this report with the standard deviation on the uncertainties increased by 25% to reflect potential uncertainty differences between U-bend and dented TSP conditions. The tube material flow stress for burst and leakage analyses is defined for the U-bend regions reflecting the strain hardening from manufacturing bending of the tubes.

NRC Request for Additional Information 9:

Provide a commitment to close the open items identified in Section 2.3 of the U-bend operational assessment report prior to startup.

Con Edison Response:

Paragraph 2.3 of the U-Bend CMOA identifies open items. The current status of these items is as follows:

a. The Cycle 14 Degradation Assessment, SG-00-06-001, was issued on June 6, 2000. Revision 1 of the DA was issued on July 5, 2000.

b. Verification of the computer code AUTOAXPROFILE has been completed. Documentation of this is in place, and the code has been placed under configuration control.

c. Spreadsheets utilized for preparing the CMOA have been formally verified. A calculation note on the verification has been issued.

Thus, all open items referenced by this question are closed and the files are available onsite for NRC inspection.

ATTACHMENT B

RESPONSE TO QUESTION FROM NRC TELECON DATED JULY 5, 2000

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
INDIAN POINT UNIT NO. 2
DOCKET NO. 50-247
JULY 2000

NRC Telecon Question 4:

In response to the Union of Concerned Scientists' correspondence of June 29, 2000, the CMOA provides operating cycle length in terms of EFPY. However, PWSCC at the U-bend is not a function of power level but is instead a function of temperature. Please address this issue accordingly.

Con Edison Response:

The industry standard for assessing primary water stress corrosion cracking, (PWSCC), starting with Alloy 600 plug cracking in the late 1980's, has been to utilize effective full power years (EFPY) as a time measure for the rate of progression of this degradation mechanism. While the issue raised by the Union of Concerned Scientists is theoretically accurate, in practice EFPYs have proven to be an appropriate measure for this type of application. However, to address this concern, Con Edison conservatively proposes to utilize an operating time limit measured in effective power years (EPY), which shall be defined for this purpose in accordance with the Indian Point 2 Technical Specification definition for Power Operation Condition: "When the reactor is critical and the neutron flux power range instrumentation indicates greater than 2% of rated power." The EPY is readily measurable since it is a defined Technical Specification condition. In accordance with the condition monitoring and operation assessment that was previously submitted, Con Edison will interpret and apply operating interval measurement, for purposes of steam generator inspection, in a way that 0.85 EFPY will mean 0.85 EPY. This change to actual operating time is conservative; although, the impact is expected to be minimal. As previously communicated, Con Edison plans to commence steam generator replacement by December 31, 2000.