September 26, 1996

Ms. Irene Johnson, Acting Manager
Nuclear Regulatory Services
Commonwealth Edison Company
Executive Towers West III
1400 Opus Place, Suite 500
Downers Grove, IL 60515

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION - ZION NUCLEAR POWER STATION, UNITS 1 AND 2 (TAC NOS. M96228 AND M96229)

Dear Ms. Johnson:

In a submittal dated July 26, 1996, Commonwealth Edison Company (ComEd) submitted a request to amend the Zion Technical Specifications (TS). The proposed amendments would allow licensee control of the reactor coolant system (RCS) pressure and temperature limits (P-T limits) for heatup, cooldown, low temperature operation and hydrostatic testing. The changes included the institution of a pressure-temperature limits report (PTLR) which would contain information on both the RCS P-T limits and the setpoint pressures and enable temperatures for the facilities' low temperature overpressure protection system (LTOP). They would also revise the reactor vessel material surveillance program specimen withdrawal schedule required by 10 CFR Part 50, Appendix H, such that the Unit 2 removal of capsule X is delayed until 19 Effective Full Power Years (EFPY). Additional information, as discussed in the enclosure, is requested for the staff to complete its review. In phone conversations on September 10 and 11, 1996, the content of the enclosed request for additional information (RAI) was discussed, in part, with the ComEd staff. The issues that were not discussed, developed as the staff continued its review.

To ensure timely review and final action on the amendment request, a response is requested as soon as possible to this RAI.

Sincerely,

Original signed by:

Clyde Y. Shiraki, Project Manager
Project Directorate III-2
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Docket Nos. 50-295, 50-304

Enclosure: RAI

cc w/encl: See next page

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REQUEST FOR ADDITIONAL INFORMATION

1. Concerning the pressure-temperature limits curves in the current Zion TS:

   a. What was the value of the Adjusted Reference Temperature (ART) which was used to generate the cooldown curves?

   b. Will the cooldown curves be applied to define the acceptable region of operation for the upcoming Zion, Unit 2, shutdown?

2. Concerning the pressure-temperature limits curves submitted in LAR 92-03, which were based on a reassessment of the limiting Zion ART:

   a. Confirm that the ART value used to calculate the cooldown curve which was proposed for 14 EFPY was 206 degrees Fahrenheit and whether this value was greater than the ART value requested in 1.a. above.

   b. Has this cooldown curve been used in the Zion Operational Procedures at any time since September 1, 1992, to define a more conservative (more limiting than the TS curve) are of acceptable operation during cooldown?

   c. Address the same issue from 2.b. for the Heatup Rate and Criticality Limit Curves.

3. Based upon the methodology used to develop the July 1996 Zion submittal to institute a PTLR:

   Indicate what the limiting ART would be for the current condition (14 EFPY) of the Zion, Unit 2, vessel with regard to the cooldown curves and whether this condition is bounded by the cooldown curves addressed in 2.a. and 2.b. above.

4. LCO 3.3.2.G is applicable in MODE 4 when the temperature of any RCS cold leg is less than or equal to 250 degrees Fahrenheit, MODE 5 and MODE 6 with the reactor vessel head on. UFSAR Section 5.2.2.1.5 provides a calculation of the enable temperature which suggests that it should be 320 degrees Fahrenheit. In addition, in 1992, Zion submitted LAR 92-03 requesting to change LTOP enable temperature from 250 degrees Fahrenheit to 320 degrees Fahrenheit based on new data.

   a. What is Zion's current practice with regard to LTOP enable temperature and, specifically, the enable temperature that will be used for the upcoming shutdown?

   b. What is the technical basis for this practice?

ENCLOSURE

5. LCO 3.3.2.G.2 allows a safety injection pump to be operable during LTOP operation.

   a. In the mass addition portion of the LTOP analysis, does Zion account for injection from a safety injection pump?

   b. What is Zion's current operating practice with regard to the operability of safety injection pumps during LTOP operation?

   c. What is the technical basis for this practice?

6. LCO 3.3.2.G.3 states, "When starting a reactor coolant pump, when no reactor coolant pumps are running, the temperature in the secondary side of the steam generator in the loop in which the reactor coolant pump is to be started shall be less than 50 degrees Fahrenheit higher than the RCS temperature."

   a. How many loops of heat addition does Zion account for in the heat addition portion of the LTOP analysis?

   b. In the case of one reactor coolant pump running, how does Zion control the heat addition to the RCS?

   c. What is Zion's current practice with regard to starting reactor coolant pumps while in LTOP operation?

   d. What is the technical basis for this practice?

7. The pressure difference between the pressure instrument controlling LTOP and the limiting location in the vessel is a function of the number of reactor coolant pumps and residual heat removal pumps running.

   a. How is this pressure difference accounted for in the LTOP PORV setpoint?

   b. How does Zion control the number of pumps running to ensure that the LTOP PORV setpoint is conservative?

8. In reference to Attachment F, Attachment 2 (WCAP-14666, "Radiation Analysis and Neutron Dosimetry Evaluation," Revision 0):

   On page 3-2 it is stated,

   > For Zion Unit 1, the extrapolations of pressure vessel exposure into the future were based on the assumption that the best estimate exposure levels characteristic of the average of low leakage fuel cycles employed during Cycles 13 through 15 would remain applicable throughout plant life.

However, in Tables 3.1-1 through 3.1-10, information on the cycle fluences is only given through Cycle 14 for Zion Unit 1. The appendix to this attachment indicates that applicable information is available from report NDIT 95-064-R0.

a. Provide the cycle specific data related to Tables 3.1-1 through 3.1-10 for Zion, Unit 1, Cycle 15.

b. Explain any systematic variations in average cycle wall fluxes within the subset of cycles in which low leakage core designs were used by addressing the manner in which fuel management and core design concepts are being employed for Zion.

c. Describe the manner in which concerns regarding the azimuthal wall flux shape are addressed in the Zion core design program.

d. If systematic variations exist, explain why these should not be accounted for in assessing the vessel and/or capsule fluences at select EFPYs.

9. In reference to Attachment F, Attachment 1 (Framatone Technologies Report 32-1257382-00):

EPRI report NP-373 is referenced in Tables 5 and 6 as the source document for the initial RT_{ndt} (IRT_{ndt}) value of +10 degrees Fahrenheit for SA-1769 (heat number 71229) weld material. A Babcock and Wilcox generic value of -5 degrees Fahrenheit had been reported previously for this material in ComEd's July 1992 response to Generic Letter (GL) 92-01, Revision 1.

a. Provide all of the test data (Charpy test results and drop weight data) which have been generated for the determination of IRT_{ndt} for the SA-1769 weld material and for welds fabricated from weld wire heat number 71249.

b. Demonstrate, based on the data provided above, why the data from the EPRI NP-373 report has now been deemed valid for determining the IRT_{ndt} value of this material.

10. ComEd's submittal dated July 26, 1996, states that the changes being requested are consistent with the guidance of GL 96-03. Attachment 1 to GL 96-03 provided a table which noted minimum requirements to be included in the PTLR, one of which (item 6) was the identification of "minimum temperatures *on* [emphasis added] the P/T curves such as minimum boltup temperature and hydrostatic test temperature." It is not clear that such an identification has been made on Figures 1 through 5 of Attachment F, Attachment 3 to your submittal.

Explain or correct this apparent deviation from the guidance of the GL and submit corrected copies of these figures, if necessary.

11. In reference to the discussion in Attachment F, Attachment 1, Appendix A (Credibility of Surveillance Data) ComEd indicated that surveillance data from the Point Beach, Unit 2, reactor capsules were applicable to Zion. This conclusion was drawn for Zion WF-154 welds (weld heat number 406L44).

    Demonstrate that the irradiation environments in the Point Beach, Unit 2, and Zion, Unit 2, vessels are similar with respect to the following conditions: damage rate, irradiation temperature, neutron spectral balance, and gamma flux/gamma heating. To address the irradiation temperature, provide data on a cycle-by-cycle basis for each unit's cold leg temperatures. Either provide data which explicitly quantifies and assesses the impact of differences in the aforementioned irradiation conditions or provide data which shows irradiation environment similarity due to a consistent shift in material properties for a surveillance material common to both vessels' surveillance programs.