July 11, 2001

Oliver D. Kingsley, President
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Exelon Generation Company, LLC
Executive Towers West III
1400 Opus Place, Suite 500
Downers Grove, IL 60515

SUBJECT: QUAD CITIES - REQUEST FOR ADDITIONAL INFORMATION REGARDING RISK-INFORMED INSERVICE INSPECTION PLAN (TAC NOS. MB0721 AND MB0722)

Dear Mr. Kingsley:

By letter dated November 30, 2000, Commonwealth Edison Company (ComEd), now Exelon Generation Company (EGC, the licensee) submitted a request to implement a risk-informed inservice inspection plan for the Quad Cities Nuclear Power Station, Units 1 and 2. The staff requires additional information in order to complete its review. These questions have been discussed with your staff, and your staff agreed to respond to this request for additional information (RAI) within thirty days of the date of this letter.

If you have any questions about this RAI, please contact me at (301) 415-1321.

Sincerely,

/RA/

Stewart N. Bailey, Project Manager, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-254 and 50-265

Enclosure: Request for Additional Information

cc w/encl: See next page

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Dear Mr. Kingsley:

By letter dated November 30, 2000, Commonwealth Edison Company (ComEd), now Exelon Generation Company (EGC, the licensee) submitted a request to implement a risk-informed inservice inspection plan for the Quad Cities Nuclear Power Station, Units 1 and 2. The staff requires additional information in order to complete its review. These questions have been discussed with your staff, and your staff agreed to respond to this request for additional information (RAI) within thirty days of the date of this letter.

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cc w/encl: See next page

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QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2

REQUEST FOR ADDITIONAL INFORMATION

REGARDING RISK-INFORMED INSERVICE INSPECTION PLAN

1. Please provide the following information for each unit:
   a) When does the current inspection period start and end?
   b) What cumulative percentage of inspections have been completed for the current interval?

2. The implementation of a risk-informed inservice inspection (RI-ISI) program for piping should be initiated at the start of a plant's 10-year inservice inspection interval consistent with the requirements of the ASME Code Section XI, Edition and Addenda committed to by the Owner in accordance with 10 CFR 50.55a. However, the implementation may begin at any point in an existing interval as long as the examinations are scheduled and distributed to be consistent with ASME XI requirements, e.g., the minimum examinations completed at the end of the three inspections intervals under Program B should be 16 percent, 50 percent, and 100 percent, respectively, and the maximum examinations credited at the end of the respective periods should be 34 percent, 67 percent, and 100 percent.

   It is our view that it is a virtual necessity that the programs for the RI-ISI inspections (RI-ISIs) and for the balance of the inspections be on the same interval start and end dates. This can be accomplished by either implementing the RI-ISIs at the beginning of the interval or merging RI-ISIs into the program for the balance of the inspections if the RI-ISIs are to begin during an existing ISI interval. One reason for this view is that it eliminates the problem of having different Codes of record for the RI-ISIs and for the balance of the inspections. A potential problem with using two different interval start dates and hence two different Codes of record would be having two sets of repair/replacement rules depending upon which program identified the need for repair (e.g., a weld inspection versus a pressure test).

   In addition, with the change to a RI-ISI program the Code minimum and maximum percentages of examination per period still apply to the RI-ISIs. For example, if a licensee is interested in starting the RI-ISIs during the second period, either the RI-ISIs or the Code required inspections should satisfy the second period minimum/maximum percentages. The code required percentages would have already been satisfied for the first period.

   Please describe your implementation plan with respect to the above discussion.

3. Will the RI-ISI program be updated every 10 years and submitted to the NRC consistent with the current ASME XI requirements?

4. Under what conditions will the RI-ISI program be resubmitted to the NRC before the end of any 10-year interval?

5. Relief Request CR-33, page 3 states that in lieu of the evaluation and sample expansion requirements of Section 3.6.6.2 contained in EPRI TR-112657, Quad Cities will utilize the requirements of Subarticle-2430 of Code Case N-578-1. Please clarify if any of these requirements deviate from the approved EPRI methodology for necessary additional examinations. Please provide the basis for this deviation. Please also state if your interpretation of the Code Case is in agreement with recent interpretations presented and discussed at the ASME XI Risk Based Working Group meetings. Also, there is a description of additional examination requirement in Section 3.5, page 8 of Attachment 2. Please state if this description is your interpretation of the requirement for additional examinations when unacceptable flaws are found. Additionally, please clarify that if there are not enough high safety significant elements with the same failure mode, lower safety significant elements will be selected such that the number of additional elements is at least equal to the number of elements with the same postulated failure mode originally scheduled for examination.

6. Relief Request CR-33, page 3 states that to supplement the requirements listed in Table 4-1 of EPRI TR-112657, Quad Cities will utilize the provisions listed in Table 1 of Code Case N-578-1. Please clarify if any of these requirements deviate from the approved EPRI methodology. If so, please provide your justification for the deviation.

7. Page 4 states that "The potential for synergy between two or more damage mechanisms working on the same location was considered in the estimation of pipe failure rates and rupture frequencies which was reflected in the risk impact assessment." Specifically how was this synergy reflected in the risk impact? Was synergy also reflected in the safety significant categorization; and if so, how?

8. Please provide references to all the equations that you are using to calculate the change in risk. Please also provide references from which all the input parameters required by the equations were developed and justified (except for the conditional core damage and condition large early release probabilities). Please provide specific references, e.g., equation numbers, table numbers, page numbers, and report references.

9. It is our understanding that you are calculating an inspection effectiveness factor (IEF) for use in equation 3-9 of EPRI TR-112657. Please provide a table identifying the probability of detection, the time to detect a leak, and the resulting IEF for all the IEFs used in the submittal.

10. Please provide the estimates of the change in core damage frequency (CDF) and large early release frequency (LERF) calculated using the bounding failure frequencies without the IEF.

11. Page 4 states that, "If no other damage mechanism was identified, the element was removed from the RI-ISI element selection population and retained in the appropriate augmented program." When Section XI inspections for elements removed from the RI-ISI population are discontinued, how is this discontinued inspection reflected in the change in risk calculation? How are the augmented program inspections credited in the RI-ISI inspection program?

12. Please provide a reference to the version of the probabilistic risk assessment (PRA) used to support the RI-ISI submittal. What are the CDF and the LERF estimates in this version of the PRA?

13. The July 1998 staff evaluation report on your IPE noted a concern that your method to estimate common cause factors (CCF) may have undercounted CCFs and that the values developed tended to be less than generic CCF values. Your RI-ISI submittal states that the current PRA, including the CCF analysis, has been upgraded. How was the CCF analysis upgraded?