October 30, 2003

Mr. John L. Skolds, President
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION REGARDING A ONE-TIME EXTENSION OF THE ESSENTIAL SERVICE WATER COMPLETION TIME - BYRON STATION, UNITS 1 AND 2, AND BRAIDWOOD STATION, UNITS 1 AND 2 (TAC NOS. MB9547, MB9548, MB9545, AND MB9546)

Dear Mr. Skolds:

By letter dated June 11, 2003, Exelon Generation Company, LLC (Exelon) submitted a request for a license amendment for a one-time extension of the essential service water train completion time.

During the course of review of Exelon's request, the Nuclear Regulatory Commission staff has determined that it needs additional information. Enclosed is a Request for Additional Information (RAI) which has been discussed with members of your staff. Based on those discussions, Exelon is requested to respond to the RAI by December 5, 2003.

Please note that because Exelon's response to the enclosed RAI is considered to be a supplement to the June 11, 2003, amendment application, we request that it be submitted under oath and affirmation in accordance with Sections 50.90 and 50.30(b) of Title 10 of the *Code of Federal Regulations* (10 CFR).

Please contact me if there are questions regarding the RAI.

Sincerely,

/RA/

George F. Dick, Jr., Project Manager, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos.: STN 50-454 and STN 50-455
STN 50-456 and STN 50-457

Enclosure: RAI

cc w/encl: See next page

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October 30, 2003

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Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION REGARDING A ONE-TIME EXTENSION OF THE ESSENTIAL SERVICE WATER COMPLETION TIME - BYRON STATION, UNITS 1 AND 2, AND BRAIDWOOD STATION, UNITS 1 AND 2 (TAC NOS. MB9547, MB9548, MB9545, AND MB9546)

Dear Mr. Skolds:

By letter dated June 11, 2003, Exelon Generation Company, LLC (Exelon) submitted a request for a license amendment for a one-time extension of the essential service water train completion time.

During the course of review of Exelon's request, the Nuclear Regulatory Commission staff has determined that it needs additional information. Enclosed is a Request for Additional Information (RAI) which has been discussed with members of your staff. Based on those discussions, Exelon is requested to respond to the RAI by December 5, 2003.

Please note that because Exelon's response to the enclosed RAI is considered to be a supplement to the June 11, 2003, amendment application, we request that it be submitted under oath and affirmation in accordance with Sections 50.90 and 50.30(b) of Title 10 of the *Code of Federal Regulations* (10 CFR).

Please contact me if there are questions regarding the RAI.

Sincerely,
/RA/

George F. Dick, Jr., Project Manager, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos.: STN 50-454 and STN 50-455
STN 50-456 and STN 50-457

Enclosure: RAI

cc w/encl: See next page

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REQUEST FOR ADDITIONAL INFORMATION

RELATED TO A ONE-TIME EXTENSION OF THE ESSENTIAL SERVICE WATER

ALLOWED OUTAGE TIME

EXELON GENERATION COMPANY, LLC

BYRON STATION, UNITS 1 AND 2

BRAIDWOOD STATION, UNITS 1 AND 2

DOCKET NOS. STN 50-454, STN 50-455, STN 50-456, AND STN 50-457

By letter dated June 11, 2003, Exelon Generation Company, LLC (Exelon, the licensee) submitted a request for license amendments for Byron Station, Units 1 and 2 (Byron), and Braidwood Station, Units 1 and 2 (Braidwood). The submittal requested an extension of the essential service water (SX) train completion time from 72 hours to 144 hours. The requested change would be used one time on each unit at Byron and on Braidwood, Unit 1.

In reviewing the licensee's submittal, the staff is using, in part: draft Chapter 18 (Human Factors Engineering) of the Standard Review Plan (NUREG-0800); An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis (Regulatory Guide 1.174), and An Approach to Plant-Specific, Risk-Informed Decision making: Technical Specifications (Regulatory Guide 1.177). During its review, the staff has determined that it needs the following additional information.

1. In Attachment 1, Section 4.1 (1st paragraph) of the June 11, 2003, submittal, the licensee states that, ".....However, the actual plant design and supporting analyses demonstrate that the plant has additional capability to prevent and mitigate a loss of SX to a unit than credited in the current plant licensing basis, (e.g., the backup fire protection system cooling to Chemical and Volume Control (CV) centrifugal charging pumps which is not credited in the licensing basis)." Discuss fully the additional capabilities that exist, and to what extent these capabilities satisfy licensing basis requirements for safety-related applications (e.g., Seismic Category I, QA-1, EQ). Also, discuss the compensatory measures that will be taken to assure that these additional capabilities will be available.

2. In Attachment 1, Table -2, the licensee indicated that the defenses against human errors are preserved. However, the staff notes that the licensee's compensatory measures credit additional operator actions. This would suggest that the potential for human error has increased. Please explain.

3. Describe the compensatory measures that will be taken to preserve the SX function against the adverse effects of inclement weather conditions that might arise, and to preserve on-site and off-site electrical sources during the period of allowed outage time (AOT) extension.

Enclosure

4. In its application, the licensee has stated, “Credit for the dedicated operator to maintain and respond to SX-related problems is recognized as a key compensatory measure.” In the six bullets that follow this statement the term “dedicated” operator occurs three times and “designated” operator appears twice. The staff position on “dedicated” does not necessarily mean that operator has no other duties as long as the other duties do not interfere with performing the required tasks. A “dedicated” operator is located in the immediate vicinity of where the task is to be performed and is capable of performing the task on demand. Therefore, no decision time, preparation time, or travel time is involved. A “designated” operator is available to perform the specific task when required, but may have other responsibilities that require him/her to be away from the immediate vicinity of where the required task is to be performed. Implied in both “dedicated” and “designated” is that the individual is “qualified” to do the task. Please clarify whether the operators are “dedicated” or “designated” in each of the five instances in this case. If these are “designated” operators, what tasks take precedence and how does the operator know when and what tasks to perform?

5. The submittal further indicates, “These personnel represent additional operators (i.e., one senior reactor operator in the control room, one reactor operator, and one equipment operator) assigned to monitor SX performance and take these actions as a back up to the normal shift staff;(.)”

   a. Please describe the command, control, and communication arrangement and protocol these additional operators have with the normal control room crew.

   b. What are the tasks anticipated to be required in this case and what is the level of complexity/difficulty of each? What are the consequences of not successfully accomplishing the tasks?

   c. How much time is available to accomplish the above tasks and how much time have the tasks been demonstrated to take? If these are “designated” operators how has travel time been accounted for? Please describe the demonstration.

   d. What are the communication requirements and how have they been demonstrated acceptable?

   e. Please describe the environmental conditions at each task location. Please describe the access to required equipment.

6. Section 9.2.1.2.2 of the Byron and Braidwood (B/B) updated final safety analysis report (UFSAR) states that the essential service water pumps are located at the lowest level of the auxiliary building to ensure net positive suction head. Section 9.2.1.2.7 of the B/B-UFSAR states that Pumps 1A and 2A are located in one compartment, and that Pumps 1B and 2B are located in a separate adjacent compartment. Each compartment has a watertight door. During replacement of the SX pump suction isolation valves, a postulated flood originating in one of the SX pump rooms (caused, for example, by spurious opening of the common upstream suction isolation valve) could propagate to other areas of the auxiliary building since the watertight door would be opened to allow personnel and equipment access.

Please describe how internal floods that may originate in one of the SX pump rooms during replacement of the SX pump suction isolation valves have been addressed in the risk evaluation. Provide relevant flood initiating event frequencies, sequence descriptions, core damage frequency estimates, and large early release frequency estimates.

7. Section 4.3.1.2 (Page 16 of 52) in Attachment 1 of Exelon's request states that, "The risk evaluation of internal events incorporates a number of compensatory measures that the plant will take to assure the risk impacts are acceptably low." In order to: (a) ensure that the proposed compensatory measures are not being relied upon to compensate for weaknesses in plant design, and (b) clearly understand which compensatory measures should be referenced in the staff's safety evaluation supporting the license amendment, please provide the results of a sensitivity study that shows how the incremental conditional core damage probability and the incremental conditional large early release probability change if none of the compensatory measures are implemented.

8. Provide the details of any significant findings and observations from the probabilistic risk assessment (PRA) peer review certification conducted for the Byron Station. Include in the discussion any improvements or corrections that were made in the plant as a result of the findings. Note that it is not necessary to provide this information for the Braidwood Station since it was previously sent to the Nuclear Regulatory Commission staff on July 7, 2000 as a response to a request for additional information issued in conjunction with Exelon's request to extend allowable completion times and change surveillance requirements for emergency diesel generators.

9. Attachment 4, Table 2-1 of Exelon's request summarizes the major changes made to the Braidwood and Byron PRA models since Exelon's request to extent allowable completion times and change surveillance requirements for emergency diesel generators was submitted (January 20, 2000). Please provide the following information:

   a. Describe the quality process used to control how the PRA model changes were reviewed and approved. Discuss internal, external, and peer reviews as applicable.

   b. What is the current "freeze date" of the Braidwood and Byron PRA models? List all PRA model changes that have been identified/planned but not yet implemented, indicating their anticipated impacts (if any) on the risk results and conclusions concerning the extension of the SX train completion time request that is currently under consideration.