May 14, 2014

LICENSEE: Exelon Generation Company, LLC

FACILITY: Byron Station, Units 1 and 2
Braidwood Station, Units 1 and 2

SUBJECT: SUMMARY OF TELEPHONE CONFERENCE CALL HELD ON APRIL 10, 2014, BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION AND EXELON GENERATION COMPANY, LLC CONCERNING DRAFT REQUEST FOR ADDITIONAL INFORMATION, SET 22, PERTAINING TO THE BYRON STATION AND BRAIDWOOD STATION, LICENSE RENEWAL APPLICATION (TAC NOS. MF1879, MF1880, MF1881, AND MF1882)

The U.S. Nuclear Regulatory Commission (NRC or the staff) and representatives of Exelon Generation Company, LLC (Exelon or the applicant), held a telephone conference call on April 10, 2014, to discuss and clarify the staff's draft request for additional information (DRAI), Set 22, concerning the Byron Station, Units 1 and 2, and the Braidwood Station, Units 1 and 2, license renewal application. The telephone conference call was useful in clarifying the intent of the staff's DRAIs.

Enclosure 1 provides a listing of the participants, and Enclosure 2 contains a listing of the DRAIs discussed with the applicant, including a brief description on the status of the items.

The applicant had an opportunity to comment on this summary.

/RA/

Lindsay Robinson, Project Manager
Projects Branch 1
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket Nos. 50-454, 50-455, 50-456, and 50-457

Enclosures:
1. List of Participants
2. List of Draft Request for Additional Information

cc w/encls: Listserv

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ADAMS Accession No.: **ML14112A418** *concurred via email

OFFICE	LA:DLR*	PM:RPB1:DLR	BC:RPB1:DLR	PM:RPB1:DLR
NAME	IKing	LRobinson	YDiazSanabria	LRobinson
DATE	4/29/14	5/7/14	5/13/14	5/14/14

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SUBJECT: SUMMARY OF TELEPHONE CONFERENCE CALL HELD ON APRIL 10, 2014, BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION AND EXELON GENERATION COMPANY, LLC CONCERNING DRAFT REQUEST FOR ADDITIONAL INFORMATION, SET 22, PERTAINING TO THE BYRON STATION AND BRAIDWOOD STATION, LICENSE RENEWAL APPLICATION (TAC NOS. MF1879, MF1880, MF1881, MF1882)

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TELEPHONE CONFERENCE CALL
BYRON STATION, UNITS 1 AND 2, AND BRAIDWOOD STATION, UNITS 1 AND 2
LICENSE RENEWAL APPLICATION

LIST OF PARTICIPANTS
April 10, 2014

PARTICIPANTS	**AFFILIATIONS**
Lindsay Robinson	U.S. Nuclear Regulatory Commission (NRC)
Matthew Homiack	NRC
James Medoff	NRC
Seung Min	NRC
Carolyn Fairbanks	NRC
John Hufnagel	Exelon Generating Company, LLC (Exelon)
Don Warfel	Exelon
Al Fulvio	Exelon
Albert Piha	Exelon
Gary Becknell	Exelon
Pete Tamburro	Exelon
Phil O'Donnell	Exelon
Paul Thimmesch	Exelon
Don Brindle	Exelon
Ralph Wolen	Exelon

ENCLOSURE 1

DRAFT REQUEST FOR ADDITIONAL INFORMATION
BYRON STATION, UNITS 1 AND 2, AND BRAIDWOOD STATION, UNITS 1 AND 2
LICENSE RENEWAL APPLICATION

April 10, 2014

The U.S. Nuclear Regulatory Commission (NRC or the staff) and representatives of Exelon Generation Company, LLC (Exelon or the applicant), held a telephone conference call on April 10, 2014, to discuss and clarify the following draft request for additional information (DRAI), Set 22, concerning the Byron Station, Units 1 and 2, and the Braidwood Station, Units 1 and 2, license renewal application (LRA).

DRAI B.2.1.19-1a

Applicability:

Byron Station (Byron) and Braidwood (Station), all units

Background:

By letter dated December 12, 2013, the staff issued a request for additional information (RAI) titled, "RAI B.2.1.19-1," requesting an updated surveillance capsule withdrawal schedule for each unit "including, but not limited to: identification of the capsule and associated neutron fluence value which will provide test results consistent with the [Generic Aging Lessons Learned] GALL Report recommendation of a neutron fluence exposure of between one and two times the peak reactor vessel wall neutron fluence at the end of the period of extended operation, and identification of a date for the submittal of each summary technical report." In its response dated January 13, 2014, the applicant stated that each technical summary report for the next surveillance capsule testing "will be submitted to the NRC prior to entering the associated period of extended operation." Currently, each unit of Byron and Braidwood stores the untested surveillance capsules in the spent fuel pool for future use.

Per Appendix H of 10 CFR Part 50, "Each capsule withdrawal and the test results must be the subject of a summary technical report to be submitted…within one year of the date of capsule withdrawal, unless an extension is granted by the Director, Office of Nuclear Reactor Regulation." The Byron and Braidwood Pressure-Temperature Limits Reports (PTLRs) include Tables for surveillance capsule withdrawal schedules and state that "surveillance capsule testing has been completed for the original operating period. Other capsules will be removed to avoid excessive fluence accumulation should they be needed to support life extension." These surveillance capsule withdrawal schedules are no longer applicable beyond the original operating period.

Issue:

In its response, the applicant did not clearly address the withdrawal dates and summary technical report submittal dates. The surveillance capsules have already received neutron fluence exposures of 1-2 times the projected neutron fluence values at the end of the period of extended operation and have been withdrawn from the reactor vessel and moved to the spent fuel pool. Since the current surveillance capsule withdrawal schedule is valid for the current operating period, the staff considers the initiation of a new surveillance capsule withdrawal schedule to be necessary for the period of extended operation. Upon receiving a renewed

operating license, the surveillance capsules, identified in Table 1 of the applicant's response dated January 13, 2014, would no longer be considered standby capsules; instead, they would be considered part of the program to meet the GALL Report and 10 CFR Part 50, Appendix H, requirements. Capsules should be tested and summary reports submitted within 1 year of receiving the renewed license, unless Byron and Braidwood submits a request for extension for approval by the Director, Office of Nuclear Reactor Regulation, within this period.

Request:

For each surveillance capsule identified in Table 1 of the applicant's response dated January 13, 2014, provide the withdrawal date and expected date of submittal of the summary technical report. A request for extension must be submitted for approval by the Director, Office of Nuclear Reactor Regulation, if the expected date for the submittal of the summary technical report exceeds 1 year from the date of capsule withdrawal.

Discussion: The applicant requested clarity on the staff's concern. No edits were proposed. This question will be sent as part of the formal request titled: "RAI B.2.1.19-1a."

DRAI 4.7.1-1

Applicability:

Byron and Braidwood

Background:

Per 10 CFR Part 50, Criterion 4 of Appendix A, "General Design Criteria for Nuclear Power Plants" (GDC-4), systems, structures, and components (SSCs) important to safety are required to be appropriately protected against dynamic effects associated with postulated pipe ruptures, unless analyses reviewed and approved by the Commission demonstrate that the probability of rupture is extremely low under conditions consistent with the design basis for the piping. An approved leak-before-break analysis permits a licensee to remove protective hardware such as pipe whip restraints and jet impingement barriers; redesign pipe connected components, their supports, and their internals; and other related changes. License renewal application (LRA) Section 4.7.1 describes the applicant's time limited aging analyses (TLAA) evaluation for the Byron and Braidwood leak-before-break analyses. The LRA states that the applicant updated the existing leak-before-break analyses for the reactor coolant primary loop piping ~~and the safety injection accumulator piping cold leg nozzles~~ and concludes that the updated analyses meet the requirements of 10 CFR 54.21(c)(1)(ii).

Issue:

To meet the requirements of 10 CFR 54.21(c)(1)(ii), the applicant must demonstrate that its updated leak-before-break analyses, which have been projected to the end of the period of extended operation, satisfy the requirements of GDC-4. The LRA provides a general description of how the applicant updated the leak-before-break analyses for the reactor coolant primary loop piping ~~and the safety injection accumulator piping cold leg nozzles~~. However, the LRA does not clearly identify the methodology used to update these analyses, nor does it contain a sufficient level of technical detail for the NRC staff to confirm that the updated analyses comply with GDC-4.

Request:

Provide the full updates to the leak-before-break analyses for the reactor coolant primary loop piping ~~and the safety injection accumulator piping cold leg nozzles~~ for NRC staff review and approval. The submitted analyses should contain a sufficient level of technical information to demonstrate compliance with the GDC-4 requirements for extremely low probability of rupture. A sufficient level of technical information would address items 1 through 11 from NUREG-0800, "Standard Review Plan," Section 3.6.3, "Leak-Before-Break Evaluation Procedures," Subsection III, dated March 2007.

Discussion: The applicant requested clarity on the staff's concern. The applicant did not agree with the staff's concern that full updates needed to be provided. The staff agreed to add the following statement as the last sentence in the Request to provide the applicant an opportunity to provide its rationale: "Otherwise, provide the rationale for not submitting the full updates to these leak-before-break analyses." Also, the applicant requested that "safety injection accumulator piping cold leg nozzles" be removed from this question and added to DRAI 4.7.1-4 since that question relates to this component. The staff agreed to make the edit as annotated by the strikethrough. Minor edits will also be made to the final issuance of this question and will be sent as part of the formal request titled: "RAI 4.7.1-1."

DRAI 4.7.1-2

Applicability:

Byron and Braidwood

Background:

LRA Section 4.7.1 describes the applicant's TLAA evaluation for the Byron and Braidwood leak-before-break analyses. The LRA states that the applicant either updated the existing leak-before-break analyses or confirmed that they remain valid for the period of extended operation. Sargent and Lundy Report SL-4518, "Leak Before-Break Evaluation for Stainless Steel Piping, Byron and Braidwood Nuclear Power Stations Units 1 and 2," dated May 12, 1989, documents some of the existing analyses.

Issue:

In accordance with 10 CFR 54.21(c)(1), the LRA must contain an evaluation of TLAAs. As defined in 10 CFR 54.3, TLAAs are those calculations and analyses that are contained or incorporated by reference in the current licensing basis. Sargent and Lundy Report SL-4518 meets this definition because it is incorporated by reference into FSAR Section 3.6.2.1.1. The scope of this report covers leak-before-break analyses for three piping systems: (1) reactor coolant bypass system, (2) residual heat removal system, and (3) safety injection system. However, the LRA does not include a TLAA evaluation for the leak-before-break analysis for the residual heat removal system piping.

Request:

Justify why the existing leak-before-break analysis for the residual heat removal system piping does not meet the definition of a TLAA in 10 CFR 54.3. Otherwise, provide a demonstration for this analysis in accordance with the requirements of 10 CFR 54.21(c)(1).

Discussion: The applicant discussed with the staff that the leak-before-break analysis for the residual heat removal system piping had not been approved by the NRC (see NRC correspondence to applicant for additional information: ADAMS Accession Number 9104290046); therefore, there is no basis for this question. This question will be deleted from Set 22.

DRAI 4.7.1-4

Applicability:

Byron and Braidwood

Background:

GDC-4 requires SSCs important to safety to be appropriately protected against dynamic effects associated with postulated pipe ruptures, unless analyses reviewed and approved by the Commission demonstrate that the probability of rupture is extremely low under conditions consistent with the design basis for the piping. An approved leak-before-break analysis permits a licensee to remove protective hardware such as pipe whip restraints and jet impingement barriers, redesign pipe connected components, their supports and their internals, and other related changes. LRA Section 4.7.1 describes the applicant's TLAA evaluation for the Byron and Braidwood leak-before-break analysis for the safety injection accumulator piping cold leg nozzles, which are made of cast austenitic stainless steel (CASS). Because this material is susceptible to the effects of thermal aging, the LRA states that the applicant determined the fracture toughness properties for the materials at the fully aged condition applicable to the period of extended operation, and it used these properties to update the existing leak-before-break analysis. The LRA concludes that the updated analysis meets the requirements of 10 CFR 54.21(c)(1)(ii).

Issue:

To meet the requirements of 10 CFR 54.21(c)(1)(ii), the applicant must demonstrate that its updated leak-before-break analysis, which has been projected to the end of the period of extended operation, satisfies the requirements of GDC-4. The LRA does not clearly identify the methodology used for the updated leak-before-break analysis for the safety injection accumulator piping cold leg nozzles, nor does it contain a sufficient level of technical detail for the NRC staff to confirm that the updated analysis complies with GDC-4. ~~To fulfill the requirements of 10 CFR 54.21(c)(1)(ii), the applicant must demonstrate the adequacy of its projected analysis. LRA Section 4.7.1 does not demonstrate that the projected analysis for the safety injection accumulator piping cold leg nozzles is adequate because the LRA does not identify and justify the specific methodology used to determine the CASS material properties at the end of the period of extended operation.~~

Request:

1. Provide for NRC staff review and approval the full update to the leak-before-break analysis for the safety injection accumulator piping cold leg nozzles. The submitted analysis should contain a sufficient level of technical information to demonstrate compliance with the GDC-4 requirements for extremely low probability of rupture. A sufficient level of technical information would address items 1 through 11 from

NUREG-0800, “Standard Review Plan,” Section 3.6.3, “Leak-Before-Break Evaluation Procedures,” Subsection III, dated March 2007. Otherwise, provide the rationale for not submitting a full update to the leak-before-break analysis.

2. Identify and provide justification for the methodology used to determine the CASS fracture toughness properties at the end of the period of extended operation.

~~Identify the methodology that was used to determine the material properties of the CASS safety injection accumulator piping cold leg nozzle components at the end of the period of extended operation. Provide justification if this methodology has not been approved by the NRC.~~

Discussion: The applicant requested clarity on the staff’s concern. Based on the applicant’s request to remove “safety injection accumulator cold leg nozzles” from DRAI 4.7.1-1, the staff rewrote DRAI 4.7.1-4 to address both the methodology and updated leak-before-break analysis. The staff’s additions to the original request are annotated by the underlined portions and the deletions are annotated by the strikethroughs. This question will be sent as part of the formal request titled: “RAI 4.7.1-3.”