Exelon Generation®

Michael P. Gallagher
Vice President, License Renewal
Exelon Nuclear

200 Exelon Way
Kennett Square, PA 19348

610 765 5958 Office
610 765 5956 Fax
www.exeloncorp.com

michaelp.gallagher@exeloncorp.com

10 CFR 50
10 CFR 51
10 CFR 54

RS-13-273

December 17, 2013

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

Braidwood Station, Units 1 and 2
Facility Operating License Nos. NPF-72 and NPF-77
NRC Docket Nos. STN 50-456 and STN 50-457

Byron Station, Units 1 and 2
Facility Operating License Nos. NPF-37 and NPF-66
NRC Docket Nos. STN 50-454 and STN 50-455

Subject: Responses to NRC Requests for Additional Information, Set 3, dated November 25, 2013, related to the Braidwood Station, Units 1 and 2, and Byron Station, Units 1 and 2 License Renewal Application

References:

1. Letter from Michael P. Gallagher, Exelon Generation Company LLC (Exelon) to NRC Document Control Desk, dated May 29, 2013, "Application for Renewed Operating Licenses."

2. Letter from John W. Daily, US NRC to Michael P. Gallagher, Exelon, dated November 25, 2013, "Requests for Additional Information for the Review of the Byron Nuclear Station, Units 1 and 2, and Braidwood Nuclear Station, Units 1 and 2, License Renewal Application – Aging Management, Set 3 (TAC NOS. MF1879, MF1880, MF1881, AND MF1882)

In the Reference 1 letter, Exelon Generation Company, LLC (Exelon) submitted the License Renewal Application (LRA) for the Braidwood Station, Units 1 and 2, and Byron Station, Units 1 and 2 (BBS). In the Reference 2 letter, the NRC requested additional information to support the staffs' review of the LRA.

Enclosure A contains the responses to this request for additional information.

Enclosure B contains an update to LRA Section 2, consistent with the RAI responses.

There are no new or revised regulatory commitments contained in this letter.

If you have any questions, please contact Mr. Al Fulvio, Manager, Exelon License Renewal, at 610-765-5936.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 12-17-2013

Respectfully,

Michael P. Gallagher
Vice President - License Renewal Projects
Exelon Generation Company, LLC

Enclosures: A: Responses to Requests for Additional Information
B: LRA Updates

cc: Regional Administrator – NRC Region III
NRC Project Manager (Safety Review), NRR-DLR
NRC Project Manager (Environmental Review), NRR-DLR
NRC Senior Resident Inspector, Braidwood Station
NRC Senior Resident Inspector, Byron Station
NRC Project Manager, NRR-DORL-Braidwood and Byron Stations
Illinois Emergency Management Agency - Division of Nuclear Safety

Enclosure A

Byron and Braidwood Stations (BBS), Units 1 and 2
License Renewal Application
Responses to Requests for Additional Information

RAI 2.3.3.12-2
RAI 2.1.3.4-1
RAI 2.1.3.4-2
RAI 2.1.3.4-3
RAI 2.1.3.4-4
RAI 2.5.2.1-1

RAI 2.3.3.12-2, Fire Protection Scoping-Screening, components not included, filter housings et al
Applicability: Byron and Braidwood

Background:

For Byron Station, Units 1 and 2, and Braidwood Station, Units 1 and 2, the staff reviewed the combined LRA, drawings, and several other applicable documents. The staff has identified that certain fire protection systems and components have been excluded from the scope of license renewal and an aging management review (AMR). These systems and components that were not included in the license renewal boundaries appear to have fire protection intended functions required for compliance with Title 10 of the *Code of Federal Regulations* (CFR) 50.48, "Fire protection," as stated in 10 CFR 54.4.

Issue:

Tables 2.3.3-12 and 3.3.2-12 of the LRA do not include the following fire protection components:

- filter housings
- passive components in the diesel fuel fire pump
- floor drains for fire water

Request:

The staff requests that the applicant verify whether the fire protection components listed above are in the scope of license renewal in accordance with 10 CFR 54.4(a) and whether they are subject to an AMR in accordance with 10 CFR 54.21(a)(1). If they are excluded from the scope of license renewal and are not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.

Exelon Response:

The subject components are addressed as follows:

- Filter housings: There are no filters in the portion of the Fire Protection System within the scope of license renewal that are subject to aging management review in accordance with 10 CFR 54.21(a)(1). The fire pumps and jockey pumps have suction strainers with a filter intended function. These components are evaluated as component type "Strainer Element" in LRA Table 3.3.2-12, page 3.3-230, for license renewal aging management review.

- Passive components in the diesel-driven fire pump engine: These components are included in the scope of license renewal but are not subject to AMR. The diesel engines include various components necessary to support engine operation. Many of these components are either located internal to the engine or are physically mounted on the engine. These components are considered integral subcomponent parts of the active diesel engine assembly. Table 2.1-5 of NUREG-1800, Revision 2, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants" indicate that the fire pump diesel engines are not subject to aging management review.

- Floor drains for fire water: These drains are included in the scope of license renewal and are subject to AMR. As described in LRA Section 2.3.3.19, the Radioactive Drain System includes the drains credited for Fire Protection. The drains are included in LRA AMR Table 3.3.2-19, pages 3.3-272 to 3.3-273, as the piping, piping components, and piping elements component type.

RAI 2.1.3.4-1, SATs and SBO recovery boundary – Byron
Applicability: Byron

Background:

On Page 8.3-5 of the Byron-Braidwood Stations (BBS) Updated Final Safety Analysis Report (UFSAR), Section 8.3.1.1.2.1, the licensee provided the preferred configuration for both stations' Unit 1 and Unit 2 under normal operating conditions in the following statements: "The 4160-volt ESF bus 141 (241 [for Unit 2]) fed from the 345-kV utility grid through system auxiliary transformer (SAT) 142-1 (242-1) and circuit breaker 1412 (2412)…" and "The 4160-volt ESF bus 142 (242) fed from the 345-kV utility grid through SAT 142-2 (242-2) and circuit breaker 1422 (2422)..." The staff notes that these statements indicate that there are SATs and circuit breakers between the 345-kilo-volts (kV) utility grid and the 4160-volt ESF buses.

Issue:

Figure 2.1-2 in the LRA, Section 2.1.3.4, which depicts the Byron Station Blackout (SBO) recovery boundary, does not show circuit breakers 1412, 1422, 2412, and 2422 between the 345-kV circuit breakers and the 4160-volt ESF buses.

Request:

a. Clarify why circuit breakers 1412, 1422, 2412 and 2422 are not included in Figure 2.1-2.

b. Confirm that all components, including breakers and disconnect switches, between the 345-kV utility grid and the 4160-volt ESF buses that are in the SBO recovery path are within the scope of license renewal.

c. Provide a revised Figure 2.1-2, as applicable, for the Byron SBO recovery boundary including all components in the SBO recovery path that shows a clear distinction between components that are within the scope of license renewal and those that are not.

Exelon Response:

a. LRA Figure 2.1-2, Byron Station Blackout (SBO) Recovery Boundary is a simplified representation of the Byron SBO recovery path. Circuit breakers 1412, 1422, 2412 and 2422 were not shown on LRA Figure 2.1-2 to maintain the figure as simple as possible. Circuit breakers 1412, 1422, 2412 and 2422 are in the Byron SBO recovery path and are within the scope of license renewal.

b. The components in the SBO recovery path between the 345-kV utility grid and the 4160-volt ESF buses, including breakers and disconnect switches, are within the scope of license renewal.

c. Consistent with this response, LRA Figure 2.1-2, page 2.1-14, is revised as shown in Enclosure B. The revised LRA Figure 2.1-2 for the Byron SBO recovery boundary includes circuit breakers 1412, 1422, 2412, and 2422. Also, an explicit demarcation line that shows a clear distinction between components that are within the scope of license renewal and those components that are not in the scope of license renewal is added to LRA Figure 2.1-2.

RAI 2.1.3.4-2, 345-kV breakers 6-7, 7-13 and SBO boundaries – Byron
Applicability: Byron

Background:

On Page 2.1-12 of the LRA, Section 2.1.3.4, the applicant stated that Byron Station 345-kV circuit breakers 5-6, 3-7, 7-10, and 12-13, which define the SBO recovery boundary between the electrical transmission network and the plant electrical distribution system and equipment, are within the scope of license renewal. The staff notes that 345-kV circuit breakers 6-7 and 7-13 in Figure 2.1-2 also connect the plant distribution system to the transmission lines.

Issue:

The applicant did not include 345-kV circuit breakers 6-7 and 7-13 in Figure 2.1-2 within the scope of license renewal.

Request:

Clarify whether 345-kV circuit breakers 6-7 and 7-13 are within the scope of license renewal.

Exelon Response:

The 345-kV circuit breakers 6-7 and 7-13 are within the scope of license renewal. Consistent with this response, LRA Figure 2.1-2, page 2.1-14, is revised as shown in Enclosure B. LRA Figure 2.1-2 is revised to add an explicit demarcation line that shows a clear distinction between components that are within the scope of license renewal, including circuit breakers 6-7 and 7-13, and those components that are not in the scope of license renewal.

RAI 2.1.3.4-3, SATs and SBO recovery boundary – Braidwood
Applicability: Braidwood

Background:

On Page 8.3-5 of the BBS Updated Final Safety Analysis Report (UFSAR) , Section 8.3.1.1.2.1, the licensee provided the preferred configuration for Unit 1 (Unit 2) under normal operating conditions in the following statements: "The 4160-volt ESF bus 141 (241) fed from the 345-kV utility grid through system auxiliary transformer (SAT) 142-1 (242-1) and circuit breaker 1412 (2412)…" and "The 4160-volt ESF bus 142 (242) fed from the 345-kV utility grid through SAT 142-2 (2422) and circuit breaker 1422 (2422)..." The staff notes that these statements indicate that there are SATs and circuit breakers between the 345-kV utility grid and the 4160-volt ESF buses.

Issue:

Figure 2.1-3 in the LRA, Section 2.1.3.4, which depicts the Braidwood Station Blackout (SBO) recovery boundary, does not show circuit breakers 1412, 1422, 2412, and 2422 between the 345-kV circuit breakers and the 4160-volt ESF buses.

Request:

a. Clarify why circuit breakers 1412, 1422, 2412 and 2422 are not included in Figure 2.1-3.

b. Confirm that all components, including breakers and disconnect switches, between the 345-kV utility grid and the 4160-volt ESF buses that are in the SBO recovery path are within the scope of license renewal.

c. Provide a revised Figure 2.1-3, as applicable, for the Braidwood SBO recovery boundary including all components in the SBO recovery path that shows a clear distinction between components that are within the scope of license renewal and those that are not.

Exelon Response:

a. LRA Figure 2.1-3, Braidwood Station Blackout (SBO) Recovery Boundary is a simplified representation of the Braidwood SBO recovery path. Circuit breakers 1412, 1422, 2412 and 2422 were not shown on LRA Figure 2.1-3 to maintain the figure as simple as possible. Circuit breakers 1412, 1422, 2412 and 2422 are in the Braidwood SBO recovery path and are within the scope of license renewal.

b. The components in the SBO recovery path between the 345-kV utility grid and the 4160-volt ESF buses, including breakers and disconnect switches, are within the scope of license renewal.

c. Consistent with this response, LRA Figure 2.1-3, page 2.1-15, is revised as shown in Enclosure B. The revised LRA Figure 2.1-3 for the Braidwood SBO recovery boundary includes circuit breakers 1412, 1422, 2412, and 2422. Also, an explicit demarcation line that shows a clear distinction between components that are within the scope of license renewal and those components that are not in the scope of license renewal is added to LRA Figure 2.1-3.

RAI 2.1.3.4-4, 345 kV breakers 1-3, 9-15, and SBO boundaries – Braidwood
Applicability: Braidwood

Background:

On Page 2.1-12 of the LRA, Section 2.1.3.4, the applicant stated that Braidwood Station 345-kV circuit breakers 3-4, 4-7, 11-14, and 14-15, which define the SBO recovery boundary between the electrical transmission network and the plant electrical distribution system and equipment: are within the scope of license renewal. The staff notes that 345-kV circuit breakers 1-3 and 9-15 in Figure 2.1-3 also connect the plant distribution system to the transmission lines.

Issue:

The applicant did not include 345-kV circuit breakers 1-3 and 9-15 in Figure 2.1-3 within the scope of license renewal.

Request:

Clarify whether the 345-kV circuit breakers 1-3 and 9-15 are within the scope of license renewal.

Exelon Response:

The 345-kV circuit breakers 1-3 and 9-15 are not in the scope of license renewal. The first circuit breakers between the plant electrical distribution system and the electrical transmission network for Braidwood Unit 1 are 345-kV circuit breakers 3-4 and 4-7. The first circuit breakers between the plant electrical distribution system and the electrical transmission network for Braidwood Unit 2 are 345-kV circuit breakers 11-14 and 14-15. Circuit breakers 1-3 and 9-15 are beyond the first circuit breakers between the plant electrical distribution system and the electrical transmission network, therefore, circuit breakers 1-3 and 9-15 are not in the scope of license renewal. Consistent with this response, LRA Figure 2.1-3, page 2.1-15, is revised as shown in Enclosure B. LRA Figure 2.1-3, is revised to add an explicit demarcation line that shows a clear distinction between components that are within the scope of license renewal and those components that are not in the scope of license renewal.

RAI 2.5.2.1-1, Electrical components subject to AMR and pressure boundaries
Applicability: Byron and Braidwood

Background:

On Page 2.5-2 of the LRA, Section 2.5.2.1, the applicant included elements, resistance temperature detectors (RTDs), sensors, thermocouples, and transducers in the list of electrical components and commodities for in-scope systems. However, NEI 95-10, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule," Appendix B, Item 84 indicates that elements, RTDs, sensors, thermocouples and transducers should be included in the list of components/commodity groups subject to an AMR if a pressure boundary is applicable.

Issue:

The applicant did not include these components in the components commodity groups subject to an AMR.

Request:

Clarify whether a pressure boundary is applicable to each of these components and whether they are subjected to an AMR.

Exelon Response:

Electrical and I&C components such as elements, resistance temperature detectors (RTDs), sensors, thermocouples, and transducers as well as electric heaters primarily serve an electrical function; however, they can also serve a mechanical pressure boundary function. According to Appendix B of NEI 95-10, the electrical portions of these components are active per 10 CFR 54.21(a)(1)(i) and are therefore not subject to aging management review. Only the pressure boundary of such an in scope component is subject to aging management review, and the pressure boundary function for these electrical and I&C components is addressed in the mechanical review.

Enclosure B

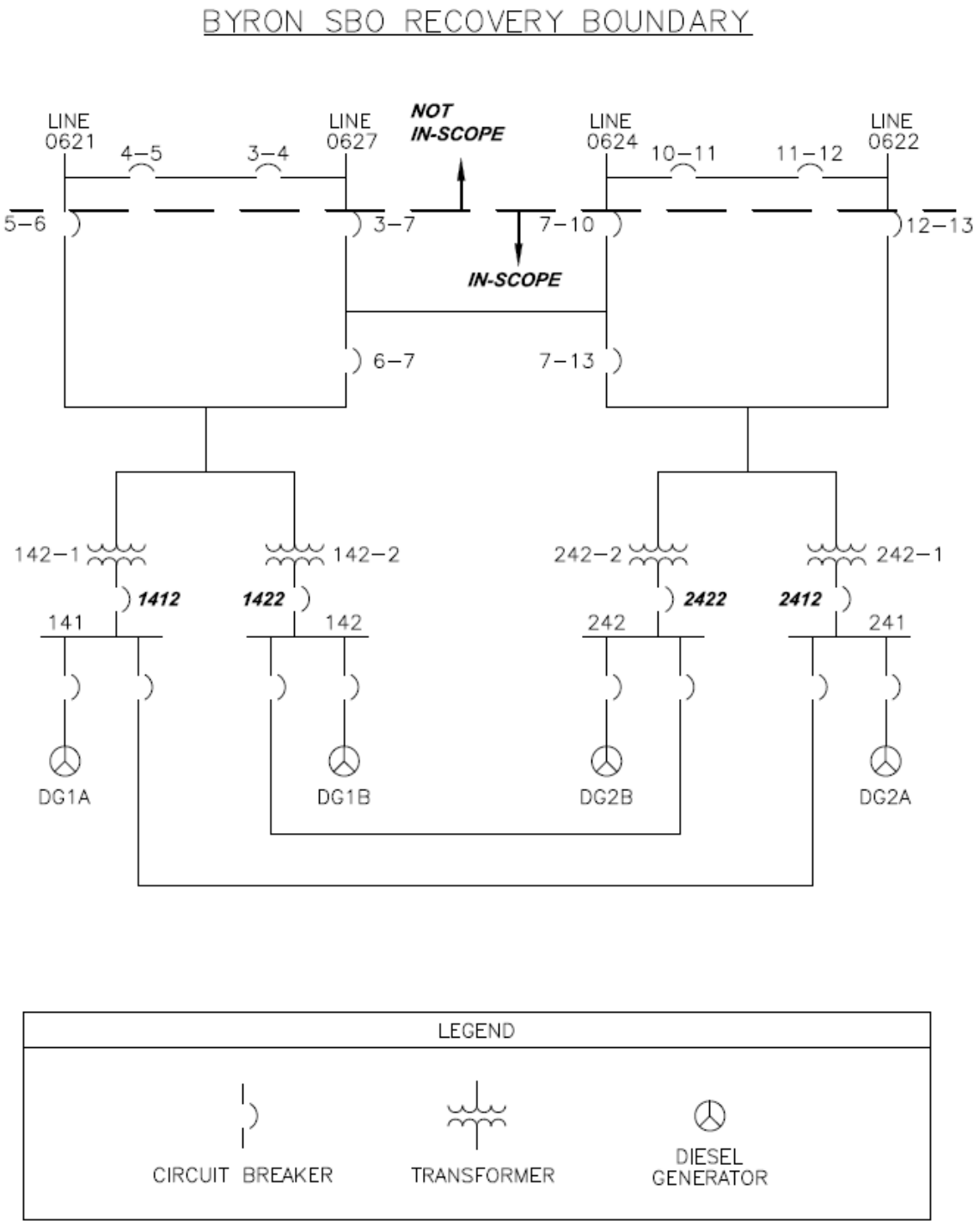
Byron and Braidwood Stations, Units 1 and 2
License Renewal Application (LRA) updates resulting from the responses to the following RAIs:

RAI 2.1.3.4-1
RAI 2.1.3.4-2
RAI 2.1.3.4-3
RAI 2.1.3.4-4

Note: To facilitate understanding, the original LRA Figure 2.1-2, page 2.1-14 and Figure 2.1-3, page 2.1-15 have been repeated in this Enclosure, with revisions indicated. Existing LRA text is shown in normal font. Changes are highlighted with ***bolded italics*** for inserted text.

As a result of the responses to RAI 2.1.3.4-1 and 2.1.3.4-2 provided in Enclosure A of this letter, LRA Figure 2.1-2, "Byron SBO Recovery Boundary," page 2.1-14, is revised as shown below:

Figure 2.1-2



As a result of the responses to RAI 2.1.3.4-3 and 2.1.3.4-4 provided in Enclosure A of this letter, LRA Figure 2.1-3, page 2.1-15, "Braidwood SBO Recovery Boundary," is revised as shown below:

Figure 2.1-3