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10 CFR 50
10 CFR 51
10 CFR 54

RS-14-239

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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: Response to NRC Request for Additional Information, Set 40, dated August 20, 2014, 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 Lindsay R. Robinson, US NRC to Michael P. Gallagher, Exelon, dated August 20, 2014, "Request for Additional Information for the Review of the Byron Station, Units 1 and 2, and Braidwood Station, Units 1 and 2, License Renewal Application, Set 40 (TAC NOS. MF1879, MF1880, MF1881, AND MF1882)"

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

The Enclosure to this letter contains the response to this request for additional information.

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 9-5-2014

Respectfully,

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

Enclosure: Response to Request for Additional Information

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

RAI 4.7.8-2

Applicable:

Byron Station and Braidwood Station (BBS), all units

Background:

License renewal application (LRA) Section 4.7.8 states that BBS, Units 1 and 2, performed pre-emptive flaw evaluations based on crack growth rate analyses on reactor vessel, pressurizer, primary steam generator sub-components, and primary coolant components. The LRA further states that flaw evaluations, which use fracture toughness as an input, were performed on reactor vessels. The applicant defines these analyses supporting flaw evaluations as plant-specific time limited aging analyses (TLAAs).

Issue:

The applicant's TLAA evaluation basis discussion in the "Fatigue Crack Growth Analyses" subsection of LRA Section 4.7.8, "Analyses Supporting Flaw Evaluations of Primary System Components," does not clearly identify which reactor pressurizer vessel (RPV), steam generator (SG), pressurizer, or reactor coolant pressure boundary (RCPB) piping components had contained flaws and were analyzed in accordance with the generic flaw evaluation methodology in WCAP-11063, "Handbook on Flaw Evaluations For Byron Unit 1 and 2 Steam Generators and Pressurizers" (LRA Reference 4.8.27) and which RPV, SG, pressurizer, or RCPB piping components had contained flaws and were analyzed in accordance with the generic flaw evaluation methodology in WCAP-12046, "Handbook on Flaw Evaluations for the Byron and Braidwood Units 1 and 2 Reactor Vessels" (LRA Reference 4.8.28).

Request:

Describe the RPV, SG, pressurizer, and RCPB flaws that were evaluated in accordance with the flaw evaluation criteria in WCAP-11063 and the RPV, SG, pressurizer, or RCPB flaws that were analyzed in accordance with the generic flaw evaluation methodology in WCAP-12046. Identify the NRC safety evaluation references that were issued in approval of these flaw evaluations.

Exelon Response:

During the development of LRA section 4.7.8, an operating experience review was performed to identify Byron and Braidwood in scope SSCs that were evaluated consistently with WCAP-11063, WCAP-12046, or related Westinghouse analyses. In addition, in response to this RAI, key word searches were performed in ADAMS and the Exelon Electronic Document Management System (EDMS) regulatory correspondence database. Documented in the following table are descriptions of flaws that were identified on Byron and Braidwood reactor pressure vessel (RPV), steam generator (SG), pressurizer, or reactor coolant pressure boundary (RCPB) systems and components, and evaluated consistently with the methodology and criteria in WCAP-11063 (Items 1, 2, and 3 in the table below) or WCAP-12046 (Items 4 and 5 in the table below). ADAMS accession numbers are shown in parenthesis. The table also provides the NRC safety evaluations that approved the flaw evaluations.

Byron and Braidwood Flaws Evaluated Consistently with WCAP-11063 or WCAP-12046

Item	Description of Flaw	Station Unit	Applicable NRC Safety Evaluation
1	During preservice examinations, several flaws were detected in the steam generators and pressurizer. Byron submitted a letter dated October 27, 1983 (8311030134) to the NRC with justification to accept the flaws on the pressurizer and not perform repairs. The flaws on the pressurizer were characterized as "fine-lines" of embedded slag. The Byron Unit 1 steam generators have since been replaced.	Byron Unit 1	NUREG-0876 Supplement 4 page 5-1
2	During preservice examinations, several flaws were detected in the steam generators and pressurizer. These flaws were characterized as small embedded slag inclusions of the same nature as those found during preservice inspections in Byron Unit 1 steam generators and pressurizers. Byron submitted a letter dated May 21, 1986 (8605280272) to the NRC with a justification to accept the flaws and not perform repairs.	Byron Unit 2	NUREG-0876 Supplement 7 page 5-7 (Incorrectly Identified on the NUREG document title page as NUREG-76)
3	During preservice examinations, several flaws were detected on the steam generators and pressurizer. These flaws were characterized as small embedded innocuous slag inclusions of the same nature as those found during preservice inspections of the Byron Units 1 and 2 steam generators and pressurizers. Braidwood submitted a letter dated February 28, 1986 (8603060086) to the NRC with a justification to accept the flaws and not perform repairs. The Braidwood Unit 1 steam generators have since been replaced.	Braidwood Unit 1	NUREG-1002 Supplement 1 page 5-3
4	During preservice examinations, a flaw was detected on an elbow-to-loop stop valve weld in the reactor coolant system and a preliminary evaluation was submitted to the NRC in a November 20, 1987 letter (8711300104). The flaw was 1.5 inches long, 0.5 inches deep, oriented circumferentially, and very close to the weld root, but not breaking through to the inside surface. An interim flaw evaluation to accept the flaws and not perform repairs was provided to the NRC in a February 23, 1988 letter (8803070355), and a final evaluation was provided to the NRC in a June 2, 1988 letter (8806150402) in support of Relief Request 2NR15, Revision 0.	Braidwood Unit 2	NUREG-1002 Supplement 6 page 5-3 reviewed the February 23, 1988 letter and in NRC letter dated October 4, 1991 (9111250070) the NRC reviewed and approved the relief request.
5	Ultrasonic examination during the fall 1997 refueling outage found a flaw in the nozzle shell to the intermediate shell weld (weld number 2RV-01-004) of the RPV and an evaluation was submitted to the NRC in an October 15, 1997 letter (9710210140). The flaw, was embedded, was 5.86 inches long, 0.61 inches deep, oriented circumferentially, and 0.46 inches from the nearest surface.	Braidwood Unit 2	NRC letter dated April 20, 1998 (9805040048)