UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

November 3, 2017

Mr. Andrew McGehee
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Mr. Bryan C. Hanson
Senior Vice President
Exelon Generation Company, LLC
President and Chief Nuclear Officer (CNO)
Exelon Nuclear
4300 Winfield Road
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SUBJECT: DRESDEN NUCLEAR POWER STATION, UNIT NO. 3 – REQUEST FOR EXTENSION OF DATE TO SUBMIT REACTOR PRESSURE VESSEL SURVEILLANCE CAPSULE SUMMARY TECHNICAL REPORT (CAC NO. MF9148, EPID: L-2017-LRO-0003)

Dear Messrs. A. McGehee and B. Hanson:

By letter dated January 26, 2017, (Agencywide Documents Access Management System (ADAMS) Accession No. ML17030A087), the Electric Power Research Institute (EPRI) and Boiling Water Reactor Vessel and Internals Project (BWRVIP) requested an extension in the reporting date for the results from the testing of the Dresden Nuclear Power Station (DNPS), Unit 3, 245° (degree) surveillance capsule as part of the BWRVIP Integrated Surveillance Program (ISP) in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix H, "Reactor Vessel Material Surveillance Program Requirements." The DNPS, Unit 3, 245° surveillance capsule was withdrawn from the reactor on November 7, 2016, consistent with the requirements of the BWRVIP Integrated Surveillance Program (ISP) withdrawal schedule documented in BWRVIP-86, Revision 1-A, "BWR Vessel and Internals Project, Updated BWR Integrated Surveillance Program (ISP) Implementation Plan" (ADAMS Accession No. ML13176A096). The requested extension would revise the submittal date from November 7, 2017, to no later than May 31, 2018. This would accommodate placing contracts for performance of the testing and for the BWRVIP's committee review and approval process.

Nuclear power plant licensees are required by Appendix H to 10 CFR Part 50 to implement reactor vessel (RV) material surveillance programs to "monitor changes in the fracture toughness properties of ferritic materials in the reactor vessel beltline region which result from exposure of these materials to neutron irradiation and the thermal environment." Two specific alternatives are provided with regard to the design of a facility's RV surveillance program which may be used to address the requirements of Appendix H to 10 CFR Part 50. The first alternative is the implementation of a plant-specific RV surveillance program consistent with the

requirements of American Society for Testing and Materials (ASTM) Standard Practice E-185, "Standard Practice for Conducting Surveillance Tests for Light-Water Cooled Nuclear Power Reactor Vessels." In the design of a plant-specific RV surveillance program, a licensee may use the edition of ASTM Standard Practice E 185 which was current on the issue date of the American Society of Mechanical Engineers Code to which the reactor vessel was purchased, or later editions through the 1982 edition. The second alternative provided in Appendix H to 10 CFR Part 50 is the implementation of an ISP. An ISP is defined in Appendix H to 10 CFR Part 50 as occurring when, "the representative materials chosen for surveillance for a reactor are irradiated in one or more other reactors that have similar design and operating features."

The NRC staff approved the BWRVIP ISP in a safety evaluation (SE) which was provided to the BWRVIP by letter dated February 1, 2002 (ADAMS Accession No. ML020380691). BWRVIP-86, Revision 1-A, (ADAMS Package Accession No. ML131760082), provides guidance for the establishment of an acceptable alternative to all existing BWR plant-specific reactor pressure vessel (RPV) surveillance programs for the purpose of maintaining compliance with the requirements of Appendix H to 10 CFR Part 50 through the end of current facility 40-year and/or 60-year extended operating licenses. Amendment No. 194 (ADAMS Accession No. ML032320569), dated September 29, 2003, permitted DNPS, Unit No. 3, to modify the Updated Final Safety Analysis Report (UFSAR) to allow the use of BWRVIP-86, Revision 1-A, for demonstrating compliance with the requirements of 10 CFR Part 50, Appendix H.

10 CFR Part 50, Appendix H.IV.A, states that the summary technical report must be submitted within one (1) year of the date of capsule withdrawal, unless an extension is granted. As part of the BWRVIP ISP, the summary technical reports go through the BWRVIP's committee review process. This adds a minimum of 2 to 3 months to the timeline for the completion and publication of the surveillance capsule summary technical report.

As indicated in BWRVIP-86, Revision 1-A:

> The BWRVIP shall submit any changes regarding the ISP testing matrix, withdrawal schedule, or testing and reporting of individual capsule results to the NRC for review and approval prior to implementing these changes. Further, the BWRVIP will perform testing and submit capsule reports to the NRC in accordance with the provisions found in Appendix H to 10 CFR Part 50 on behalf of BWR licensees.

In the BWRVIP submittal dated January 26, 2017, EPRI states the DNPS, Unit 3, 245° capsule is identified in BWRVIP-86, Revision 1-A, as containing representative weld materials for the reactor vessels of DNPS, Units 2 and 3 (including Quad Cities, Units 1 and 2). However, the weld material in the DNPS, Unit 3, 245° capsule is not a heat-specific match to any of the target materials. By letter dated January 26, 2017, EPRI states:

> [T]herefore, direct use will not be made of the surveillance data and there will be no impact on the pressure-temperature limit curves of Dresden, Units 2 and 3 and Quad Cities, Units 1 and 2.

Additionally, the plate material in the DNPS, Unit 3, 245° capsule is not identified in BWRVIP-86, Revision 1- A, as representative for any reactor vessel plate materials in the BWR fleet. As stated in Regulatory Issue Summary 2002-05, "NRC Approval of Boiling Water Reactor Pressure Vessel Integrated Surveillance Program," dated April 8, 2002:

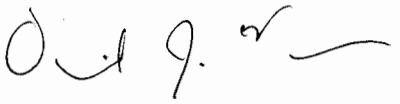
> The staff also accepted the BWRVIP proposal for using surveillance data from the ISP to support evaluations of BWR RPV fracture toughness or integrity. Position C.2 of NRC Regulatory Guide 1.99, Revision 2, "Radiation Embrittlement of Reactor Vessel Materials" (ADAMS Accession No. ML003740284) states that plant-specific surveillance program data used to directly modify RPV integrity evaluations should come from surveillance material samples with the same heat number as the limiting RPV material. If position C.2 is used, it is necessary that adjustments be made for chemistry and irradiation temperature differences between the surveillance material and the RPV limiting material. The NRC staff will review the direct use of surveillance data from the ISP program as part of plant-specific RPV integrity evaluations. Surveillance materials which do not have the same heat number as the limiting RPV material may be used for general monitoring, but not for direct determination of RPV embrittlement. The chemistry factor table of position C.1 of NRC Regulatory Guide 1.99, Revision 2, is used for RPV materials for which no matching heat number surveillance material exists within the ISP. Finally, if a licensee uses advanced fracture mechanics based evaluations (i.e., the Master Curve methodology) for RPV integrity assessments, additional differences between surveillance materials and RPV materials (e.g., heat treatment during fabrication) should be addressed.

The summary technical report shall contain the evaluations required by Appendix H, including the assessments described in BWRVIP-86, Revision 1-A. Appendix H to 10 CFR Part 50 requires the testing of all Charpy and tensile specimens. Correlation monitoring materials are optional.

Based on the above evaluation, the staff determined that extending the submittal of the summary technical report from November 7, 2017, to May 31, 2018, is in accordance with 10 CFR Part 50, Appendix H because the extension of the reporting of the results from this ISP capsule will not change the overall effectiveness of the ISP and will not affect the continued safe operation of the BWR fleet.

If you have any questions, please contact Russell Haskell at 301-415-1129 or Russell.Haskell@nrc.gov.

Sincerely,



David J. Wrona, Branch Chief
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No.: 50-249

cc: Listserv

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ADAMS Accession No.: ML17041A011 *by memo dated

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