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

September 26, 2018

OMB Control No. 3150-0231

Mr. Bryan C. Hanson
Senior Vice President
Exelon Generation Company, LLC
President and Chief Nuclear Officer (CNO)
Exelon Nuclear
Clinton Power Station
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: CLINTON POWER STATION, UNIT 1 – CLOSEOUT OF GENERIC LETTER 2016-01, "MONITORING OF NEUTRON-ABSORBING MATERIALS IN SPENT FUEL POOLS" (CAC NO. MF9448; EPID L-2016-LRC-0001)

Dear Mr. Hanson:

On April 7, 2016, the U.S. Nuclear Regulatory Commission (NRC) issued Generic Letter (GL) 2016-01, "Monitoring of Neutron-Absorbing Materials in Spent Fuel Pools" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16097A169), to address the degradation of neutron-absorbing materials (NAMs) in wet storage systems for reactor fuel at power and non-power reactors.

The generic letter requested that licensees provide information to allow the NRC staff to verify continued compliance through effective monitoring to identify and mitigate any degradation or deformation of NAMs credited for criticality control in spent fuel pools (SFPs).

By letter dated November 3, 2016 (ADAMS Accession No. ML16308A470), as supplemented by letters dated January 25 and May 29, 2018 (ADAMS Accession Nos. ML18025A799 and ML18149A557, respectively), Exelon Generation Company, LLC (the licensee), responded to GL 2016-01 for Clinton Power Station, Unit 1 (Clinton). In the licensee's response to GL 2016-01, as supplemented, the licensee stated that, for Clinton, it relies on continual monitoring industry operating experience, including ongoing participation in the Electric Power Research Institute (EPRI) Neutron Absorber Users Group (NAUG) and its related programs, to evaluate the condition of the Boral in its SFP. The licensee indicated that the NAUG, through EPRI, has completed a study which analyzes the criticality impact of blisters and pits on Boral. This study is described in EPRI document 3002013119, "Evaluation of the Impact of Neutron Absorber Material Blistering and Pitting on Spent Fuel Pool Reactivity," May 2018 (ADAMS Accession No. ML18226A292). The licensee also stated that the NAUG, through EPRI, is developing an industry-wide program to gather water chemistry and Boral coupon data for SFPs. This program is described in EPRI document 3002013122, "Roadmap for the Industrywide Learning Aging Management Program (i-LAMP) for Neutron Absorber Materials in Spent Fuel Pools," May 2018 (ADAMS Accession No. ML18226A291). The licensee stated that

relevant issues emerging from such industry efforts will be monitored through the licensee's Operating Experience Program and Corrective Action Program.

The stated purpose of this program is to inform the condition of the Boral at sites with no coupon, or in-situ, testing of its Boral, with results from other sites using the "sister pool criteria." The NRC staff notes that aspects of the industry-wide program referenced in EPRI Report 3002013122 (i.e., the Boral coupon database, water chemistry database, sister pool criteria, etc.) are not yet complete and some guidelines might not be fully developed until 2020. While the program as described in EPRI Report 3002013122 is not yet complete, the NRC staff did use the information found in EPRI Report 300203119 to support the conclusion that no additional information is needed, at this time, to address the five areas of information described in Appendix A to GL 2016-01 for Boral.

The NRC staff also notes that the studies documented in EPRI Reports 3002013119 and 3002013122 are intended to be generic analyses and were not provided as site-specific analyses. Therefore, the results of the analyses, or any part of those analyses, have currently not been shown as directly applicable to Clinton. In addition, the NRC staff did not review whether the EPRI Reports could be used to justify equipment operability, design basis changes, or licensing changes requested pursuant to Title 10 of the *Code of Federal Regulations,* Section 50.90, "Application for amendment of license, construction permit, or early site permit." However, the NRC staff's review determined that the EPRI reports provide the information required to satisfy the request in GL 2016-01 for Boral, at this time.

Additionally, the licensee credits Metamic for criticality control and has an established NAM monitoring program. The NRC staff's review determined that the provided response sufficiently addressed the five areas of information described in Appendix A of GL 2016-01 for Metamic. In particular, the described monitoring program for the Metamic includes the following key features:

- Neutron attenuation testing of coupons.
- Established processes to ensure that the licensee will take the appropriate corrective actions if any potentially non-conforming material is discovered.
- A testing frequency not to exceed 8 years.
- Acceptance criteria to ensure maintenance of the 5-percent subcriticality margin for the SFP.

The NRC staff found that the licensee intends to continue monitoring the condition of its NAMs as described in its response.

For Clinton, the NRC staff's review determined that the information provided sufficiently addressed the five areas of information described in Appendix A to GL 2016-01. Based on the review of the information provided, the NRC staff concludes no further information is requested regarding GL 2016-01.

Sincerely,

/Douglas A. Broaddus/

Douglas A. Broaddus, Chief
Special Projects and Process Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-461

cc: Listserv

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ADAMS Accession No.: ML18249A231 ***via email**

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