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

February 26, 2018

Mr. Bryan C. Hanson
Senior Vice President
Exelon Generation Company, LLC
President and Chief Nuclear Officer
Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: THREE MILE ISLAND NUCLEAR STATION, UNIT 1 - REQUEST FOR ADDITIONAL INFORMATION REGARDING INSPECTION PLAN FOR REACTOR INTERNALS ACTION ITEM 7 (EPID L-2016-LLL-0002)

Dear Mr. Hanson:

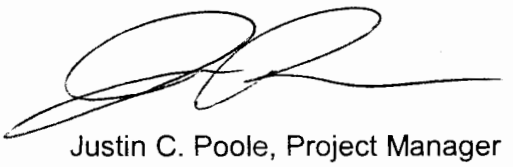
By letter dated September 16, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16263A318), Exelon Generation Company, LLC, (Exelon or the licensee) submitted to the U. S. Nuclear Regulatory Commission (NRC) its evaluation of applicant/licensee action (A/LAI) 7 in accordance with the safety evaluation in MRP-227-A, "Materials Reliability Program: Pressurized Water Reactor Internals Inspection and Evaluation Guidelines" (ADAMS Package Accession No. ML120170453), for Three Mile Island Nuclear Station, Unit 1.

The NRC staff has determined that additional information is necessary to complete its review. A request for additional information is enclosed (proprietary and non-proprietary versions). On January 12, 2018, the draft questions were sent to Mr. Frank Mascitelli of your staff to ensure that they were understandable, the regulatory bases for the questions were clear, and to determine if the information was previously docketed. A teleconference was held on January 25, 2018, to clarify the request for additional information questions. In a followup conversation, Exelon stated that they would respond to the request for additional information within 45 days of the date of this letter.

Enclosure 2 contains Proprietary Information. When separated from Enclosure 2, this letter is DECONTROLLED.

If you have any questions, please contact me at 301-415-2048 or by e-mail to Justin.Poole@nrc.gov.

Sincerely,



Justin C. Poole, Project Manager
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-289

Enclosures:
1. Request for Additional Information (non-proprietary version)
2. Request for Additional Information (proprietary version)

cc w/Enclosure 1 only: Listserv

Enclosure 1

NON-PROPRIETARY VERSION

REQUEST FOR ADDITIONAL INFORMATION

REGARDING MRP-227-A APPLICANT/LICENSEE ACTION ITEM 7 EVALUATION

EXELON GENERATION COMPANY, LLC

THREE MILE ISLAND NUCLEAR STATION, UNIT 1

DOCKET NO. 50-289

REQUEST FOR ADDITIONAL INFORMATION

MRP-227-A APPLICANT/LICENSEE ACTION ITEM 7 EVALUATION

EXELON GENERATION COMPANY, LLC

THREE MILE ISLAND NUCLEAR STATION, UNIT 1

DOCKET NO. 50-289

By letter dated September 16, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16263A318), Exelon Generation Company, LLC (the licensee) submitted to the U. S. Nuclear Regulatory Commission (NRC) its evaluation of applicant/licensee action (A/LAI) 7 in accordance with the safety evaluation in MRP-227-A, "Materials Reliability Program: Pressurized Water Reactor Internals Inspection and Evaluation Guidelines" (ADAMS Accession No. ML120170453), for Three Mile Island Nuclear Station (TMI), Unit 1. A/LAI 7 requires, in part, applicants or licensees of Babcock and Wilcox reactor designs to develop plant-specific analysis to demonstrate that reactor vessel internals (RVI) made of cast austenitic stainless steel (CASS) and precipitation-hardened (PH) stainless steel will maintain their functionality during the period of extended operation (PEO). By letter dated December 19, 2014 (ADAMS Accession No. ML14297A411), the NRC staff issued its assessment of all TMI, Unit 1, RVI. In the December 19, 2014, NRC staff assessment, the licensee committed to submit its evaluation of the CASS and PH stainless steel RVI in accordance with A/LAI 7 of the safety evaluation in MRP-227-A. The main purpose of the September 16, 2016, submittal is to fulfill this commitment. Please note that the NRC staff's request for additional information contains licensee proprietary information and is thus marked accordingly with **[[ ]]**.

Title 10 of the *Code of Federal Regulations* (10 CFR) Part 54 addresses the requirements for managing the effects of aging components during the PEO, and MRP-227-A provides inspection and evaluation guidelines for adequately managing aging effects of RVI components. These inspection and evaluation guidelines must be followed if applicants or licensees implement them for their units. RVI include components that are made of CASS and PH stainless steel, which are susceptible to the following aging degradation mechanisms: thermal embrittlement (TE), irradiation embrittlement, or the synergistic effects of thermal embrittlement and irradiation embrittlement. For TMI, Unit 1, the three RVI components in question are the control rod guide tube (CRGT) spacer castings, the in-core monitoring instrumentation guide tube spider castings, and the vent valve retaining rings.

The regulation in 10 CFR 54.21(a)(3) requires, that for each component in scope of license renewal and subject to aging management review as detailed in 10 CFR 54.21(a)(1), that an applicant demonstrate that the effects of aging will be adequately managed so that the intended function(s) will be maintained, consistent with the current licensing basis for the PEO.

In order to determine if aging of the three components listed above will be adequately managed for the PEO in accordance with 10 CFR 54.21(a)(3), the NRC staff requires additional information regarding the licensee's submittal, as detailed below.

RAI-1

Provide the details of the evaluation that concluded that the CRGT tube spacer casting material will [[ ]]. Provide the saturated fracture toughness value that was determined.

RAI-2

ANP-3979P describes the location and type of the peak stresses in the CRGT spacer castings determined by stress analysis, but not the magnitude of these stresses. Provide the peak stress values for the CRGT spacer castings.

RAI-3

For the the in-core monitoring instrumentation guide tube spider castings, provide details of the structural analysis that show the [[ ]]:

a) How were the stresses determined (e.g., finite element method, hand calculations);

b) Provide the stress levels with all four legs intact compared to stress levels with one or more legs failed; and

c) Provide the displacement of hub with one failed leg, compared with displacement that could prevent instrumentation insertion).

RAI-4

The licensee stated in ANP-3479P that [[

]]. However, the licensee did not discuss how it made this determination and did not discuss the reference for the lower bound fracture toughness value.

The NRC staff, therefore, requests that the licensee provide a discussion of how the licensee determined that fracture toughness of the TMI, Unit 1, vent valve retaining rings [[ ]] and a discussion of the reference for the lower bound fracture toughness value it provided.

SUBJECT: THREE MILE ISLAND NUCLEAR STATION, UNIT 1 - REQUEST FOR ADDITIONAL INFORMATION REGARDING INSPECTION PLAN FOR REACTOR INTERNALS ACTION ITEM 7 (EPID L-2016-LLL-0002) DATED FEBRUARY 26, 2018

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JPoehler, NRR
DDijamco, NRR

ADAMS Accession Nos.: ML18043B134 (proprietary)
ML18043B142 (non-proprietary) *by memo dated

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DATE	02/16/18	02/15/18	12/13/17
OFFICE	NRR/DORL/LPL1/BC	NRR/DORL/LPL1/PM	
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DATE	02/26/18	02/26/18	

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