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

March 5, 2019

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

SUBJECT: THREE MILE ISLAND NUCLEAR STATION, UNIT 1 – REVIEW OF THE FALL 2017 STEAM GENERATOR TUBE INSPECTIONS (EPID L-2018-LRO-0014)

Dear Mr. Hanson:

By letter dated March 19, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18085A168), as supplemented by letter dated September 21, 2018 (ADAMS Accession No. ML18264A008), Exelon Generation Company, LLC (Exelon) submitted information summarizing the results of the Fall 2017 steam generator tube inspections at the Three Mile Island Nuclear Station, Unit 1. These inspections were performed during the 22nd refueling outage.

The U.S. Nuclear Regulatory Commission (NRC) staff has completed its review of the information and determined that Exelon provided the information required by its technical specifications. In addition, the NRC staff did not identify any technical issues that warrant followup action at this time. Enclosed is the NRC staff's review of the Three Mile Island Nuclear Station, Unit 1, I steam generator tube inspection report.

If you have questions, please contact me at 301-415-2048 or 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

Enclosure:
Review of Fall 2017 Steam Generator
Tube Inspections

cc: Listserv

REVIEW OF THE FALL 2017 STEAM GENERATOR TUBE INSPECTIONS

EXELON GENERATION COMPANY, LLC

THREE MILE ISLAND NUCLEAR STATION, UNIT 1

DOCKET NO. 50-289

By letter dated March 19, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18085A168), as supplemented by letter dated September 21, 2018 (ADAMS Accession No. ML18264A008), Exelon Generation Company, LLC (Exelon, the licensee) submitted information summarizing the results of the Fall 2017 steam generator (SG) tube inspections performed at the Three Mile Island Nuclear Station, Unit 1 (TMI) during Refueling Outage 22.

TMI has two AREVA Enhanced Once-Through Steam Generators with 15,597 thermally treated Alloy 690 tubes. Each tube has a nominal outside diameter of 0.625 inches and a nominal thickness of 0.0368 inches. The tubes are supported by 15 stainless steel tube support plates (TSPs). The TSPs have trefoil broached holes, except for the 1,740 drilled holes in the uppermost TSP on the outer periphery of the tube bundle.

The licensee provided the scope, extent, methods, and results of its SG tube inspections in the documents referenced above. In addition, the licensee described corrective actions (e.g., tube plugging) taken in response to the inspection findings.

Based on U.S. Nuclear Regulatory Commission (NRC) staff's review of the information submitted by Exelon, the staff has the following observations and comments:

- In its response to Request for Additional Information 1, the licensee clarified that the inspections were limited to SG B.

- In its response to Request for Additional Information 2 requesting that the licensee discuss the results of condition monitoring and operational assessment (OA) that provide assurance that tube integrity will be maintained for SG A, the licensee stated the following:

    - SG A is not expected to be subject to the same TSP-to-shroud locking mechanism as observed in SG B over its operational life. If present in SG A, the susceptibility to TSP-to-shroud locking would have manifested itself as high wear near the "W-axis" and/or peripheral tubes in the first three inspections performed after SG replacement, as was the case with SG B. The condition has not manifested itself during the first three cycles of operation, and the assumptions have been confirmed by the observation of the deepest TSP wear indication reported in SG A as being 33 percent through-wall.

    - In addition, SG A has exhibited a more uniform distribution of wear depths as a function of radius from the center of the SG, and the majority of wear flaws near the W-axis in SG A are of the same magnitude as the rest of the population. Therefore, the licensee believes that the TSP-to-shroud locking mechanism will not become active in SG A in the future.

- Operational Assessments have been performed with fully-probabilistic methods on both SGs A and B since the first inservice inspection. Predictions from the OA models have bounded the actual inspection results with respect to wear depths and growth rates. With respect to the methodology implemented for the OA for SG A, the same methods used to justify a single cycle of operation for SG B were applied to SG A, and two operating cycles were supported, which is why the licensee was able to defer inspections for SG A to Refueling Outage 23.

Based on a review of the information provided, the NRC staff concludes that the licensee provided the information required by its technical specifications. In addition, the NRC staff concludes that there are no technical issues that warrant followup action at this time since the inspections appear to be consistent with the objective of detecting potential tube degradation, and the inspection results appear to be consistent with industry operating experience at similarly designed and operated units.

SUBJECT: THREE MILE ISLAND NUCLEAR STATION, UNIT 1 – REVIEW OF THE FALL 2017 STEAM GENERATOR TUBE INSPECTIONS (EPID L-2018-LRO-0014) DATED MARCH 5, 2019

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ADAMS Accession No.: ML19059A028 *by memorandum

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