



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

February 10, 2009

Mr. Charles Pardee
President and Chief Nuclear Officer
Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: THREE MILE ISLAND NUCLEAR STATION UNIT 1 — REVIEW OF STEAM
GENERATOR TUBE INSPECTION REPORT FOR FALL 2007 OUTAGE (TAC
NO. MD8268)

Dear Mr. Pardee:

By letter dated February 14, 2008, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML080650174), AmerGen Energy Company, LLC (the licensee, now Exelon Generation Company, LLC) submitted the Cycle 17 Refueling (T1R17) Inservice Inspection Summary Report for Three Mile Island Nuclear Station, Unit 1 (TMI-1). This report included an enclosure describing the results of the T1R17 steam generator (SG) inspection activities in the Fall of 2007. The SG inspection results were provided in accordance with Technical Specification 6.9.6, "Steam Generator Tube Inspection Report." Additional information concerning the SG inspection was provided by letter dated December 11, 2008 (ADAMS Accession No. ML083470238). In addition to these reports, information concerning these inspections was summarized by the Nuclear Regulatory Commission (NRC) staff in a letter dated January 27, 2008 (ADAMS Accession No. ML080160563).

The NRC staff has completed its review of the submittals pertaining to the TMI-1 T1R17 SG inspections, and the associated review summary is enclosed. The NRC staff finds that the licensee has provided the information required by the technical specifications. Based on this consideration the subject TAC is being closed.

Please contact me at 301-415-2833, if you have any questions.

Sincerely,

A handwritten signature in black ink that reads "Peter Bamford".

Peter Bamford, Project Manager
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-289

Enclosure: As stated

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THREE MILE ISLAND, UNIT 1

REVIEW OF 2007 STEAM GENERATOR TUBE INSPECTIONS

TAC NO. MD8268

DOCKET NO. 50-289

By letter dated February 14, 2008, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML080650174), AmerGen Energy Company, LLC (the licensee, now Exelon Generation Company, LLC) submitted information summarizing the results of the 2007 steam generator (SG) tube inspections at Three Mile Island, Unit 1 (TMI-1). The SG inspection results were provided in accordance with Technical Specification 6.9.6, "Steam Generator Tube Inspection Report." Additional information concerning the SG inspection was provided by letter dated December 11, 2008 (ADAMS Accession No. ML083470238). In addition to these reports, information concerning these inspections was summarized by the Nuclear Regulatory Commission (NRC) staff in a letter dated January 27, 2008 (ADAMS Accession No. ML080160563).

TMI-1 has two Babcock and Wilcox (B&W) once-through SGs. Each SG contains approximately 15,500 stress relieved, mill annealed, Alloy 600 tubes. Each tube has a nominal outside diameter of 0.625 inches and a nominal wall thickness of 0.034 inches. The tubes were mechanically roll expanded in both the hot- and cold-leg tubesheet for approximately 1 inch of the 24 inch thick tubesheets. In the 1980s, the tubes were kinetically expanded in the upper tubesheet to make the length of engagement between the tube and the tubesheet either 17 inches or 22 inches. The tubes are supported by a number of carbon steel support plates.

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

As a result of the review of the reports, the NRC staff has the following comments/observations:

The SGs are scheduled to be replaced at the next refueling outage (currently scheduled for fall 2009).

Bobbin indications previously characterized as wear at the tube support plate elevations were not re-inspected with a rotating probe this outage unless there was a change in the indication.

Several previously identified small, inside diameter initiated intergranular attack indications were not detected during the 2007 outage since they were not inspected with a rotating probe. Some of these indications had previously been identified during rotating probe examinations performed in 2005. The licensee indicated that the bobbin probe is used to inspect all of the tubes and that any significant intergranular attack indications would be detected with the bobbin probe.

Enclosure

On January 6, 2009, the licensee clarified during a conference call that no indications were detected in the lower tubesheet crevice region (but that some indications were detected at the lower tube end).

Accident-induced leakage is postulated from Framatome/AREVA rolled tube plugs, Westinghouse rolled tube plugs, and sleeves. Accident-induced leakage for degradation mechanisms with NRC-approved repair criteria is also postulated in accordance with the approved criteria. Accident-induced leakage from other flaw indications is in accordance with industry guidelines.

The licensee determined that the best-estimate total projected primary-to-secondary leakage during a hypothetical large-break loss-of-coolant accident (LBLOCA) would be less than 1 gallon per minute (based on the as-found 2007 inspection results). The licensee concluded that this amount of leakage is acceptable in that it would not be expected, on a best estimate basis, to result in a significant increase in radiological releases during a hypothetical LBLOCA. The NRC staff's review did not address the acceptability of the best-estimate, primary-to-secondary leakage expected during a LBLOCA. This best estimate determination was performed in accordance with the licensee's kinetic expansion repair criteria.

The Pressurized Water Reactor (PWR) Owner's Group (PWROG) is addressing the LBLOCA of concern on a generic basis in a topical report that is applicable to Three Mile Island. The topical report was submitted on January 4, 2007 (ADAMS Accession No. ML070330123). The NRC staff believes that the generic PWROG program is the proper place to address the LBLOCA issue since the technical nature of this issue is complex, the issue is generic to B&W plants, and the licensee is planning to replace their SGs during the next refueling outage.

Based on a review of the information provided, the NRC staff concludes that the licensee has provided the information required by their technical specifications. In addition, the staff concludes that there are no technical issues that warrant follow-up 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. As discussed above, the staff is reviewing the best-estimate, primary-to-secondary leakage expected for a LBLOCA with the PWROG on a generic basis for the B&W plants.

February 10, 2009

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Sincerely,
/ra/
Peter Bamford, Project Manager
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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ADAMS Accession Number: ML090300153

*concurrence via memo

OFFICE	LPLI-2/PM	LPLI-2/LA	CSGB/BC	LPLI-2/BC
NAME	PBamford	ABaxter	AHiser *	HChernoff (REnnis for)
DATE	2/3/09	2/9/09	01/16/2009	2/10/09

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