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

March 31, 2011

Vice President, Operations
Entergy Nuclear Operations, Inc.
Indian Point Energy Center
450 Broadway, GSB
P.O. Box 249
Buchanan, NY 10511-0249

SUBJECT: INDIAN POINT NUCLEAR GENERATING UNIT NO. 2 - REVIEW OF THE STEAM GENERATOR TUBE INSERVICE INSPECTION REPORT FOR THE REFUELING OUTAGE IN SPRING 2010 (TAC NO. ME4614)

Dear Sir or Madam:

By letter dated August 24, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession Number ML102440036), Entergy Nuclear Operations, Inc. (the licensee) submitted the steam generator (SG) inspection report for Refueling Outage 19 (RFO 19) in accordance with Technical Specification (TS) Section 5.6.7. Additional information regarding the SG tube inspections for RFO 19 was provided by the licensee in a letter dated February 16, 2011 (ADAMS Accession No. ML110550188).

The U.S. Nuclear Regulatory Commission (NRC) staff has completed its review of the report and concludes that the licensee provided the information required by Indian Point Unit 2 TSs and that no additional follow-up is required at this time. The NRC staff's review of the reports is enclosed.

Please contact me at (301) 415-2901 if you have any questions on this issue.

Sincerely,

John P. Boska

John P. Boska, Senior Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-247

Enclosure:
As stated

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REVIEW OF THE 2010 STEAM GENERATOR TUBE

INSERVICE INSPECTION REPORTS

INDIAN POINT NUCLEAR GENERATING UNIT NO. 2

DOCKET NO. 50-247

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Indian Point Unit 2 SGs are replacement SGs which were installed during RFO 14 in 2000. The replacement SGs are Westinghouse model 44F SGs. All four SGs were inspected during RFO 19. Each SG contains approximately 3,214 thermally treated Alloy 600 tubes which have a nominal outside diameter of 0.875 inches and a nominal wall thickness of 0.050 inches. The tubes are supported by stainless steel plates with quatrefoil-shaped holes and V-shaped anti-vibration bars.

The licensee provided the scope, extent, methods, and results of the Indian Point Unit 2 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.

The staff has the following notes/observations:

- The only service induced indications detected were indications due to wear at the anti-vibration bars.

- Not all tubes were inspected during RFO 19. All tubes in rows 22 and higher in all 4 SGs were inspected, which the licensee indicates are the rows most susceptible to wear at the anti-vibration bars.

- The licensee clarified that the fabricator of the tubes in the Indian Point Unit 2 SGs was Sandvik and thus, they did not use the 2-sigma screening process in selecting their locations for rotating probe inspections.

- The licensee performed a degradation assessment for RFO 19 and determined that primary water stress-corrosion cracking (PWSCC) at the tube ends was a non-relevant degradation mechanism, based, in part, on the age and operating conditions of the SGs at Indian Point Unit 2. The staff did not review this assessment in detail; however, a conclusion that PWSCC would not be prevalent seems reasonable, given the age and hot-leg temperature at the plant.

Enclosure

- Several tubes were identified with permeability variations in RFO 17 (spring 2006). The licensee's long term strategy for the tubes with permeability variations is to keep them in service until degradation is anticipated at the locations with the permeability variation, at which time the tubes will be preventatively plugged unless new inspection techniques are developed that can reliably inspect these locations.

Based on a review of the information provided by the licensee, the NRC staff concludes that the licensee provided the information required by their TSs. In addition, the NRC staff also 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.

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ADAMS ACCESSION NO.: ML110871920 (*) No substantial change in Evaluation Memo

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