November 13, 2002

Mr. Michael R. Kansler
Senior Vice President and
Chief Operating Officer
Entergy Nuclear Operations, Inc.
440 Hamilton Avenue
White Plains, NY 10601

SUBJECT: INDIAN POINT NUCLEAR GENERATING UNIT NO. 2 - STEAM GENERATOR EXAMINATION PROGRAM FOR 2002 REFUELING OUTAGE (TAC NO. MB6180)

Dear Mr. Kansler:

By letter dated August 21, 2002, Entergy Nuclear Operations, Inc. (Entergy) provided its proposed steam generator examination program for refueling outage (RFO) 2R15 at Indian Point Nuclear Generating Unit No. 2 (IP2). The program was submitted to the U.S. Nuclear Regulatory Commission (NRC) for review in accordance with IP2 Technical Specification (TS) 4.13.C.1. In a safety evaluation supporting Amendment No. 226 dated April 2, 2002, the NRC staff noted that Entergy had not performed an analysis to determine the plugging criteria for the replacement steam generators. However, Entergy committed to providing a summary of this analysis at least 60 days prior to the first inservice inspection, including the loads considered, the tube support plate conditions (locked or unlocked), a list of guidelines used to support the plugging criteria, and a summary of any departure from the guidelines. On the basis of this commitment, Entergy included this analysis in its August 21 submittal.

During the review of the steam generator examination program, the NRC staff found that Entergy plans to inspect a representative sample of steam generator tubes and internals during RFO 2R15. Entergy will inspect, using eddy current techniques, 100% of the active tubes in all four steam generators with a bobbin coil probe. In addition, Entergy will inspect localized regions of the tubes (e.g., U-bends and the expansion transitions in the hot leg top-of-tubesheet) with a rotating probe containing a Plus Point coil. The NRC staff noted that Entergy does not plan to inspect dings or dents with a rotating probe. However, based on industry experience, there is a low likelihood of dings and dents cracking after the first cycle of operation in steam generators with thermally treated tubing. Should unexpected degradation mechanisms occur in the IP2 steam generators, the NRC staff appreciates that the degradation would be identified through the other planned steam generator tube inspections. Entergy indicated that expansion of the steam generator tube inspection scope will comply with the TSs and the Electric Power Research Institute Pressurized Water Reactor Steam Generator Examination Guidelines. Thus, the NRC staff finds the planned inspections satisfactory.

Entergy submitted Westinghouse Report WCAP-15909, “Regulatory Guide 1.121 Analysis for the Indian Point Unit 2 Steam Generators,” dated August 2002 which was performed to determine the replacement steam generator tube structural limits. The report stated that the worst-case scenario demonstrated that remaining tube wall thickness can be 0.024 inch and still exhibit adequate margin of safety against steam generator tube burst or collapse. This is consistent with the bases for the steam generator tube plugging limit defined in the TSs.

Therefore, Entergy concluded the Regulatory Guide (RG) 1.121 analysis confirmed the adequacy of the current steam generator tube plugging limits contained in the TSs.

The NRC staff noted that Entergy stated that the structural limit criteria are not applicable to circumferential cracks, and that if circumferential cracks were to occur, they would be considered through a degradation specific program. During a conference call between the NRC staff and representatives from Entergy on September 13, 2002, Entergy clarified the following:

1. Circumferential cracks, should they occur, would be assessed on a case-by-case basis to determine whether they challenged the steam generator tube structural integrity.

2. Circumferential cracks, should they occur, would be plugged on detection, regardless of size. The staff acknowledges this is common industry practice for circumferential cracks.

3. If in the future Entergy were to consider leaving a circumferential crack in service, it would notify the NRC in accordance with a previous commitment, documented in a letter to the NRC dated November 7, 2000 (ADAMS Accession No. ML003769327).

The staff noted that the TS plugging limit for steam generator tubing includes assumptions about flaw growth and nondestructive evaluation uncertainties. If circumferential cracks were to occur (or any degradation for that matter), Entergy should consider evaluating the appropriateness of these assumptions.

The staff found that Entergy's submittal contained the information in accordance with its prior commitment. Although the staff did not conduct a detailed review of the RG 1.121 analysis, the staff was able to determine, based on the information discussed above, that Entergy's conclusions were reasonable and consistent with the plugging limit used for almost all domestic steam generators.

If you should have any questions, please contact me at 301-415-1457.

Sincerely,

/RA/

Patrick D. Milano, Sr. Project Manager, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-247

cc: See next page

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