

August 18, 2004

Mr. Michael Kansler, President  
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440 Hamilton Avenue  
White Plains, NY 10601

SUBJECT: INDIAN POINT NUCLEAR GENERATING UNIT NO. 3 - EVALUATION OF  
STEAM GENERATOR TUBE INSPECTION RESULTS FOR 2003  
(TAC NO. MC1912)

Dear Mr. Kansler:

By letters dated April 25, August 19, and December 8, 2003, and May 25, 2004, Entergy Nuclear Operations, Inc. (Entergy) submitted reports summarizing the steam generator tubing inservice inspections performed at Indian Point Nuclear Generating Unit No. 3 (IP3) during Refueling Outage 12 in April 2003. The results of the inspections were submitted pursuant to IP3 Technical Specification (TS) 5.6.8, "Steam Generator Tube Inspection Report."

The Nuclear Regulatory Commission staff has reviewed the information in the reports. The staff concludes that Entergy has provided the information required by TS 5.6.8. In addition, the staff did not identify any technical issues that warranted follow-up action at this time.

A copy of the related Staff Evaluation is enclosed.

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. 50-286

Enclosure: As stated

cc w/encl: See next page

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STAFF EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO STEAM GENERATOR TUBE INSPECTION  
DURING 2003 REFUELING OUTAGE  
ENTERGY NUCLEAR OPERATIONS, INC.  
INDIAN POINT NUCLEAR GENERATING UNIT NO. 3  
DOCKET NO. 50-286

1.0 INTRODUCTION

By letters dated April 25 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML031200250), August 19 (ADAMS No. ML032330262), and December 8, 2003 (ADAMS No. ML033450339), and May 25, 2004 (ADAMS No. ML041560463), Entergy Nuclear Operations, Inc. (the licensee) submitted reports summarizing the steam generator (SG) tube inspections performed at Indian Point Nuclear Generating Unit No. 3 (IP3) during Refueling Outage (RFO) 12 in April 2003. The results of the inspections were submitted pursuant to IP3 Technical Specification (TS) 5.6.8, "Steam Generator Tube Inspection Report." The inservice inspection of the SG tubes is controlled by the SG Tube Surveillance Program pursuant to TS 5.5.8.

2.0 BACKGROUND

The SGs at IP3 were replaced in 1989 with Westinghouse Model 44F SGs. Each SG contains 3214 thermally-treated Alloy 690 tubes. Each tube has a nominal outside diameter of 0.875 inch and a nominal wall thickness of 0.050 inch. The tubes were hydraulically expanded at both ends for the full length of the tubesheet and are supported by a number of stainless steel tube support plates. The tubes installed in rows 1 through 8 were thermally stress relieved after bending.

3.0 TECHNICAL EVALUATION

The licensee provided the scope, extent, methods, and results of SG tube inspections in its submittals. In addition, the licensee described corrective actions (i.e., tube plugging or repair) taken in response to the inspection findings. Based on a review of the information provided, the Nuclear Regulatory Commission (NRC) staff has the following observations regarding the tube inspections.

- a. Three tubes in row 3 were reported as having restrictions during RFO 12 such that a 0.700 inch bobbin probe could not pass through the U-bend region. These tubes were previously inspected during the pre-service inspection with a 0.740 inch bobbin probe.

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The licensee assumed that the tubes were restricted as a result of slightly higher ovality of the tubing in the U-bend region than in other tubes and the use of a different bobbin probe design during the 2003 inspections than had been used during the pre-service inspection. During the 2003 outage, the U-bends of these tubes were inspected with a 0.680 inch rotating probe and no degradation was detected. The NRC staff notes that continued monitoring of tubes for restrictions is important, especially if these restrictions are a result of a service-induced condition rather than fabrication related (i.e., higher ovality).

- b. One tube was classified by the licensee as having a "trackable anomaly." This tube was not considered to be flaw-like, but was added to the sample population for the next inspection of that SG. In addition to the trackable anomaly, a free span bobbin indication was identified in one tube in 1997 in SG 4 (Row 8 Column 21). During the 1997 outage, a rotating probe inspection was performed at this location which revealed the presence of a small ding. No inspections were required to be performed on this tube and the licensee did not consider it necessary to inspect this tube as part of the sample inspection performed during RFO 12 in 2003 (i.e., the licensee did not consider it necessary to inspect this tube until its regularly scheduled inspection during RFO 14). The staff notes that continued monitoring of these indications provides added confidence that these signals do not represent a tube integrity concern.
- c. The licensee periodically inspects specific components on the secondary side of the SG. During the 1997 outage, possible indications of erosion-corrosion were identified in two J-tube welds in SG 4 (refer to page 11 of 31 of the December 19, 1997, report). Inspections of the J-tube welds to the feed ring were performed in SGs 2 and 3 in 2001 and 1999, respectively. These inspections did not reveal any erosion-corrosion of these welds. Since the last visual inspections of the two welds in SG 4 in 1997 were inconclusive and there is no evidence of wear at the J-tube weld for any other SGs, the licensee did not consider it necessary to alter its original plans for performing their next steam drum inspection of SG 4, which is scheduled for RFO 14 in 2007. The staff notes that re-inspection of the possible indications identified during the 1997 inspections may provide added confidence that service-induced degradation of these welds is not occurring/progressing.

#### 4.0 CONCLUSION

The NRC staff concludes that the licensee provided the information required by IP3 TSs. 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.

Principal Contributor: K. Karwoski

Date: August 17, 2004