

July 29, 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 - AMENDMENT RE:  
EDDY CURRENT PROBE SIZE FOR STEAM GENERATOR TUBE  
INSPECTION (TAC NO. MB5375)

Dear Mr. Kansler:

The Commission has issued the enclosed Amendment No. 230 to Facility Operating License No. DPR-26 for the Indian Point Nuclear Generating Unit No. 2. The amendment consists of changes to the Technical Specifications (TSs) in response to your application transmitted by letter dated June 13, 2002.

The amendment revises TS Section 4.13.A, "Inspection Requirements," to allow the use of the optimum eddy current probe size when performing steam generator tube inspections. The proposed amendment also corrects several grammatical errors.

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission's next regular biweekly *Federal Register* notice.

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

Enclosures: 1. Amendment No. 230 to DPR-26  
2. Safety Evaluation

cc w/encls: See next page

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Package: ML022120064

TSs: ML022110275

Accession Number: ML021770104

\*See previous concurrence

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DATE	07/18/02	07/18/02	07/01/02	07/12/02	07/25/02

Official Record Copy

DATED: July 29, 2002

AMENDMENT NO. 230 TO FACILITY OPERATING LICENSE NO. DPR-26 INDIAN POINT  
UNIT 2

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ENTERGY NUCLEAR INDIAN POINT 2, LLC

ENTERGY NUCLEAR OPERATIONS, INC.

DOCKET NO. 50-247

INDIAN POINT NUCLEAR GENERATING UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 230  
License No. DPR-26

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Entergy Nuclear Operations, Inc. (the licensee) dated June 13, 2002, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-26 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 230, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 30 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

Richard J. Laufer, Chief, Section 1  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: July 29, 2002

ATTACHMENT TO LICENSE AMENDMENT NO. 230

FACILITY OPERATING LICENSE NO. DPR-26

DOCKET NO. 50-247

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove Pages

4.13-2  
4.13-3  
4.13-4

Insert Pages

4.13-2  
4.13-3  
4.13-4



SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 230 TO FACILITY OPERATING LICENSE NO. DPR-26  
ENTERGY NUCLEAR OPERATIONS, INC.  
INDIAN POINT NUCLEAR GENERATING UNIT NO. 2  
DOCKET NO. 50-247

## 1.0 INTRODUCTION

By letter dated June 13, 2002, Entergy Nuclear Operations, Inc. (ENO or the licensee) submitted a request for changes to the Indian Point Nuclear Generating Unit No. 2 (IP2) Technical Specifications (TSs). The requested changes would revise TS Section 4.13.A, "Inspection Requirements," to allow the use of the optimum eddy current probe size when performing steam generator tube inspections. The proposed amendment would also correct grammatical and typographical errors.

## 2.0 REGULATORY EVALUATION

The U.S. Nuclear Regulatory Commission (NRC) staff finds that ENO in its June 13, 2002, application identified the applicable regulatory requirements. The regulatory requirements for which the staff based its acceptance are as follows:

1. Title 10 of the *Code of Federal Regulations* (10 CFR) establishes the fundamental regulatory requirements with respect to the integrity of the steam generator (SG) tubing. Specifically, these requirements are set forth in several General Design Criteria (GDC) in Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," as follows:
  - a. GDC-1, "Quality Standards and Records," states in part that structures, systems, and components important to safety must be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety functions to be performed.
  - b. GDC-14, "Reactor Coolant Pressure Boundary [RCPB]," states that the RCPB shall be designed, fabricated, erected, and tested so as to have an extremely low probability of abnormal leakage, of rapidly propagating failure, and of gross rupture.
  - c. GDC-32, "Inspection of Reactor Coolant Pressure Boundary," states that components that are part of the RCPB are to be designed to permit periodic

inspection and testing of important areas and features to assess their structural and leaktight integrity.

Consistent with the GDC, 10 CFR 50.55a(c) specifies that components that are part of the RCPB must meet the requirements for Class 1 components in Section III of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code), with certain exceptions. To ensure the continued integrity of the tubing at operating pressurized-water reactor (PWR) facilities, 10 CFR 50.55a further requires that throughout the service life of a PWR facility, Class 1 components meet the requirements in Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," of the ASME Code. This requirement includes the inspection and tube repair criteria of Section XI of the ASME Code. However, an exception is provided for design and access provisions and preservice examination requirements in Section XI.

2. The IP2 TSs require periodic inservice inspections (ISIs) of the SG tubing and repair or removal from service (by installing plugs in the tube ends) of all tubes exceeding the tube repair limit. These requirements are intended to ensure that burst margins are maintained consistent with Appendices A and B to 10 CFR Part 50 and that the potential for leakage is maintained consistent with what has been analyzed as part of the plant licensing basis.
3. Revision 1 of NRC Regulatory Guide 1.83, "Inservice Inspection of Pressurized Water Reactor Steam Generator Tubes," provides guidance concerning SG inspection scope and frequency and nondestructive examination (NDE) methodology.
4. Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50 establishes the quality assurance requirements for the design, construction, and operation of safety-related components. In particular, Criterion IX, "Control of Special Processes," requires that measures be established to ensure that special processes, including welding, heat treating, and nondestructive testing, are controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes, standards, specifications, criteria, and other special requirements.

### 3.0 TECHNICAL EVALUATION

The NRC staff has reviewed the licensee's regulatory and technical analyses in support of its proposed license amendment which are described in the licensee's June 13 application. The detailed evaluation below will support the conclusions that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

#### 3.1 Background

The ISI of the SG tubes is conducted to provide reasonable assurance of adequate structural and leakage integrity. Structural integrity refers to maintaining adequate margins against gross failure, rupture, and the collapse of the tubes. Leakage integrity refers to limiting

primary-to-secondary leakage during normal operation and postulated accidents to within acceptable limits. The inspections are intended to detect mechanical and corrosive damage to the tubes from inservice conditions. The inspections also provide a means of characterizing the nature and cause of any tube degradation so that corrective measures can be taken.

Eddy current testing has been the primary means for inspecting SG tubes. This method involves inserting and transversing a test coil inside the tube. The test coil is excited by alternating current, thereby creating a magnetic field that induces eddy currents in the tube wall. Disturbances of the eddy current caused by flaws in the tube wall produce corresponding changes in the electrical impedance as seen at the test coil terminals. Instruments are used to translate these changes in impedance into an output that can be monitored by a test data analyst. The variance in test coil impedance is affected by such operating variables as coil impedance, magnetic permeability, skin effect, lift-off, fill factor, and signal-to-noise ratio.

### 3.2 Current TS 4.13

The current TS 4.13.A.3.f describes the examination technique and instrument probe sizes that are to be used during ISI of the IP2 SGs. Specifically, the TS states that the inspection shall be by eddy current technique using a 700-mil (i.e., 0.700-inch) diameter probe unless previous data indicates that a 700-mil probe would not pass through the SG tube.

### 3.3 Proposed Changes to TS 4.13

In its June 13, 2002, application, the licensee proposed to revise TS 4.13.A.3.f to allow the use of an optimum size eddy current test probe during the SG ISIs. The licensee indicated that the restrictive specificity of the existing IP2 TS surveillance requirements prohibits the use of improved inspection equipment without processing a license amendment. The licensee also stated that the current restrictions were imposed during an era when the nature of the problems with the RCPB in the SG tube region were being discovered and the tools and techniques to prevent and detect degradation of the pressure boundary were still under development. New inspection techniques and more precise instrumentation have been and are continuing to be developed. The proposed change would allow the use of a more optimum eddy current inspection probe diameter during the SG tube inservice surveillance. Thus, the licensee proposed to replace the specific requirements on the use of a 700-mil probe with a requirement that the examination be conducted by eddy current techniques as specified by the SG examination program, submitted to the NRC in accordance with TS 4.13.C.1

In addition, the licensee proposed changes to correct two typographical errors in TSs 4.13.A.1 and 4.13.A.4.1.a.

### 3.4 Staff Evaluation

On April 2, 2002, the NRC issued Amendment No. 226 to Facility Operating License for IP2. The amendment consisted of changes to the TSs in response to an application dated December 11, 2000, from Consolidated Edison Company of New York, Inc. (Con Edison), the former IP2 licensee. On September 6, 2001, Con Edison's operating authority under the license was transferred to Entergy Nuclear Operations, Inc. (ENO, the licensee). On September 20, 2001, ENO requested that the NRC continue to review and act on all requests

before the Commission which had been submitted before the transfer. The December 11, 2000, application was supplemented by letters dated November 5 and December 7, 2001.

Amendment No. 226 revised TS 3.1.F.2.a, "Primary to Secondary Leakage," and TS 4.13.A.3.f, "Steam Generator Tube Inservice Surveillance," based on the prior replacement of the SGs. During the 2000 refueling outage, Con Edison replaced the Westinghouse Model 44 SGs with Model 44F SGs. Specifically, the amendment (1) revised the primary to secondary leakage limits and (2) deleted the requirements associated with tube sleeve repair, SG tube denting, and F\* repair classification and criteria.

In its safety evaluation (SE) for Amendment No. 226, the NRC staff noted that Generic Letter (GL) 97-05, "Steam Generator Tube Inspection Techniques," emphasized the importance of using qualified inspection techniques and equipment capable of reliably detecting SG tube degradation. In addition, Information Notice 2001-16, "Recent Foreign and Domestic Experience with Degradation of Steam Generator Tubes and Internals," emphasized the importance of performing comprehensive inspections of SG tubes throughout the lifetime of the SG. Because probe size is a significant factor in reliably detecting tube degradation, size selection should be appropriately considered for the replacement SGs. The staff also stated that, according to the current TSs, the standard eddy current probe size diameter is 0.700 inch and the minimum probe size is 0.610 inch. These probe sizes applied to the original SGs; however, the licensee had elected to use these requirements for the replacement SGs.

The use of a larger diameter probes typically results in improved sensitivity to tube degradation. The 0.700-inch diameter probe is smaller than the typical probe used in inspecting 7/8-inch (0.875-inch) diameter tubing. As such, the 0.700-inch probe could result in reduced sensitivity to degradation. In its April 2 SE, the NRC staff noted that, although the licensee's choice of the 700-inch probe size was not optimal for detecting tube degradation, the staff found that it would provide adequate examination performance. The staff further noted that, if denting occurs in the tubes, the Basis section for TS 4.B.1.a states that the passage of a 0.610-inch diameter probe is a criterion for leaving tubes in service. This probe size is the minimum probe diameter, which is based on analyses of the original SGs. However, the original SGs and the replacement SGs have different designs. Because their designs are different, it was not evident to the staff that passage of the 0.610-inch diameter probe would ensure tube integrity in the new SGs. But, keeping this criterion in the TSs does not prevent the licensee from repairing tubes because of integrity concerns. Therefore, although the original basis for the criterion may no longer be valid, the size requirement would not prevent appropriate actions.

In the June 13 application, the licensee stated that the proposed TSs changes will remove the unnecessarily prescriptive restriction on eddy current probe size from the examination criteria and allow selection of the optimum equipment for performing the SG tube inservice surveillance. Also, regulatory control will not be reduced since the minimum probe size is maintained and current TS 4.13.C.1 requires the licensee to submit the SG inspection plan for NRC review at least 60 days prior to the scheduled inspection.

### 3.5 Summary

TS 4.13.C.1 requires the licensee to submit its proposed SG examination program to the NRC for review at least 60 days prior to each scheduled examination. The change would also allow the licensee to use an optimum size eddy current probe that may provide a better

signal-to-noise ratio by improvements in the affected operating variables. The licensee is also required to demonstrate the performance of the eddy current examination techniques to qualify its test procedures and inspection personnel in accordance with the requirements of Appendix B to 10 CFR Part 50 and the ASME Code Section XI. Accordingly, the NRC staff finds that the replacement of the specific requirements for the use of a 700-mil diameter probe with a reference to the SG examination program is acceptable.

In addition, the staff finds the proposed changes to TSs 4.13.A.1 and 4.13.A.4.1.a to be editorial in nature and to correct prior typographical errors. The staff finds these changes acceptable.

#### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the New York State official was notified of the proposed issuance of the amendment. The State official had no comments.

#### 5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (67 FR 42806). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

#### 6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: P. Milano

Date: July 29, 2002