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

June 19, 1996

Mr. William J. Cahill
Chief Nuclear Officer
Power Authority of the State of New York
123 Main Street
White Plains, NY 10601

SUBJECT: ISSUANCE OF AMENDMENT FOR INDIAN POINT NUCLEAR GENERATING UNIT NO. 3 (TAC NO. M94980)

Dear Mr. Cahill:

The Commission has issued the enclosed Amendment No. 166 to Facility Operating License No. DPR-64 for the Indian Point Nuclear Generating Unit No. 3 (IP3). The amendment consists of changes to the Technical Specifications in response to your application transmitted by letter dated March 14, 1996. The proposed changes would allow a one-time extension of the intervals for the steam generator tube inspection that is due in July 1996.

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,

George F. Wunder, Project Manager
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket No. 50-286

Enclosures: 1. Amendment No. 166 to DPR-64
2. Safety Evaluation

cc w/encls: See next page

William J. Cahill, Jr.
Power Authority of the State
of New York

Indian Point Nuclear Generating
Station Unit No. 3

cc:

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Washington, DC 20036

DATED: June 19, 1996

AMENDMENT NO. 166 TO FACILITY OPERATING LICENSE NO. DPR-64-INDIAN POINT UNIT 3

Docket File
PUBLIC
PDI-1 Reading
S. Varga, 14/E/4
J. Mitchell
S. Little
G. Wunder
OGC
G. Hill (2)
C. Grimes, 11/F/23
ACRS
PD plant-specific file
C. Cowgill, Region I
J. Strosnider, O7-D4

cc: Plant Service list

280010

June 19, 1996

Mr. William J. Cahill
Chief Nuclear Officer
Power Authority of the State of New York
123 Main Street
White Plains, NY 10601

SUBJECT: ISSUANCE OF AMENDMENT FOR INDIAN POINT NUCLEAR GENERATING UNIT NO. 3 (TAC NO. M94980)

Dear Mr. Cahill:

The Commission has issued the enclosed Amendment No. 166 to Facility Operating License No. DPR-64 for the Indian Point Nuclear Generating Unit No. 3 (IP3). The amendment consists of changes to the Technical Specifications (TS) in response to your application transmitted by letter dated March 14, 1996. The proposed changes would allow a one-time extension of the intervals for the steam generator tube inspection that is due in July 1996.

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,

/S/

George F. Wunder, Project Manager
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket No. 50-286

Enclosures: 1. Amendment No. 166 to DPR-64
2. Safety Evaluation

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

POWER AUTHORITY OF THE STATE OF NEW YORK

DOCKET NO. 50-286

INDIAN POINT NUCLEAR GENERATING UNIT NO. 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 166
License No. DPR-64

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Power Authority of the State of New York (the licensee) dated March 14, 1996, 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-64 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 166 , 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 to be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

Jocelyn Mitchell, Acting Director
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: June 19, 1996

ATTACHMENT TO LICENSE AMENDMENT NO. 166

FACILITY OPERATING LICENSE NO. DPR-64

DOCKET NO. 50-286

Revise Appendix A as follows:

Remove Page	Insert Page
4.9-4	4.9-4

4. Interval of Inspection

a. The first inservice inspection of steam generators should be performed after six effective full power months but not later than completion of the first refueling outage.

b. Subsequent inservice inspections should be not less than 12 or more than 24 calendar months after the previous inspection.

c. If the results of two consecutive inspections, not including the preservice inspection, all fall into the C-1 category, the frequency of inspection may be extended to 40-month intervals.* Also, if it can be demonstrated through two consecutive inspections that previously observed degradation has not continued and no additional degradation has occurred, a 40-month inspection interval may be initiated.

B. Corrective Measures

All leaking tubes and defective tubes should be: (1) plugged, or (2) repaired.

C. Reports

1. Following each inservice inspection of steam generator tubes, the number of tubes plugged and repaired in each steam generator shall be reported to the Commission within 15 days.

2. The complete results of the steam generator tube inservice inspection shall be reported in writing on an annual basis for the period in which the inspection was completed per Specification 6.9.2. This report shall include:

a. Number and extent of tubes inspected.

b. Location and percent of wall-thickness penetration for each indication of an imperfection.

c. Identification of the tubes plugged and the tubes repaired.

* Except that the surveillance related to the steam generator tube inspection due no later than July 1996, may be deferred until the next refueling outage but no later than May 31, 1997.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 166 TO FACILITY OPERATING LICENSE NO. DPR-64

POWER AUTHORITY OF THE STATE OF NEW YORK

INDIAN POINT NUCLEAR GENERATING UNIT NO. 3

DOCKET NO. 50-286

1.0 INTRODUCTION

By a letter dated March 14, 1996, New York Power Authority proposed to revise Section 4.9.A.4 of the Technical Specifications for the Indian Point Nuclear Generating Unit No. 3 (IP-3). The licensee requested a one-time extension to the steam generator (SG) tube inspection interval required in the Technical Specifications (TSs). The request would allow the licensee to delay the inspection until the next refueling outage or until May 31, 1997, whichever comes first.

2.0 EVALUATION

The four original SGs in Indian Point 3 were replaced in 1989 with Westinghouse Model 44F SGs, which use tubes fabricated from thermally treated Alloy 690. Alloy 690 is classified as an ASME SB-163 material having an Unified Numbering System designation of N06690, and is used in accordance with ASME Code Case N-20. The Alloy 690 tubes are more resistant to degradation than the Alloy 600 tubes that were used in the original SGs. In addition, the U-tube ends in the replaced SGs are hydraulically expanded to the full depth of the tubesheet; this eliminates crevices and reduces residual stress at the expansion joint of the tube. These measures will reduce the propensity for degradation in the tube-to-tubesheet joints as both crevices and residual stress are know contributors to tube degradation.

Technical Specification Section 4.9.A.4.b requires that the SG tubes be inspected at intervals no greater than 24 calendar months after the previous inspection. Technical Specification Section 4.9.A.4.c specifies that this interval may be extended to 40 months if the results of two consecutive inspections, excluding the preservice inspection, fall into Category C-1. Category C-1 refers to inspection results that show less than 5 percent of the total tubes inspected are degraded tubes and none of them is defective. The previous inspection results for Indian Point 3 steam generators fall in the C-1 Category. The licensee stated that Technical Specification Section 1.12 allows a 25 percent extension of the surveillance interval. The licensee, therefore, increased the 40-month interval to the 50-month interval. However, as stated in Generic Letter (GL) 91-04, the staff's position is that the

25 percent extension is not applicable to the inspection interval for SG tubes. The staff relied upon a maximum allowed inspection interval of 40 months in this evaluation.

The new SGs started commercial service in June 1989. The first tube inspection was conducted in September 1990 and the second in May 1992. From February 27, 1993, to June 30, 1995, the unit was shut down in an extended outage. The unit operated for about 3 months from late June 1995 to September 1995 and subsequently shut down from September 1995 to April 1996. The unit restarted in April 1996 and is scheduled for a refueling outage in February 1997.

Assuming that a 50-month inspection interval from May 1992 was the appropriate limit, the licensee estimated that the next tube inspection would have to be performed by July 1996. Considering the 40-month inspection interval from May 1992, the staff estimated that the next inspection should have been performed by September 1995. Although the TS required intervals are based on calendar time between inspections, the actual operating time for the SGs from the May 1992 inspection to September 1995 is about 12 months. The actual operating time for the SGs from May 1992 to the proposed inspection in February 1997 (but no later than May 31, 1997) would be about 23 months (or 26 months).

A baseline inspection of 100 percent of the new SG tubes was performed before initial operation in 1989. The September 1990 and May 1992 inspections have shown that all tubes were in a "like new" condition with no service imperfections. Both inspections included a 20 percent random sample of tubes in all four SGs using the same type of bobbin coil probe that was used during the baseline inspection. Because of extended outages, the new SGs have been operated for less than 3 effective full-power years since commercial operation in June 1989.

The licensee has implemented a comprehensive chemistry control program to protect the SG tubing from degradation. The chemistry control program maintains the water chemistry in both the primary and secondary sides of the SG tubes to minimize the corrosive environment for the tubes. Section 2.1 of the IP-3 Facility Operating License (Amendment 29) requires a secondary water chemistry monitoring program to inhibit the degradation of the steam generator tubes. When the SGs are not operating, a lay-up program maintains the secondary side of the SGs in an environment to minimize corrosion. The lay-up program follows and, in certain areas, exceeds the generally accepted industry practice as specified in EPRI Report TR-102134, Revision 3, "PWR Secondary Water Chemistry Guidelines-Revision 3," May 1993. The licensee reported that there have been no gross (greater than EPRI level 3) chemistry excursions since the new SGs were installed. In addition, the licensee has visually inspected and performed chemical analyses on the secondary side of the SGs during the two refueling outages since the replacement of the SGs.

The licensee has implemented administrative controls to prevent tube leakage, which impose more restrictive administrative limits than the leakage limits in

Technical Specification Section 3.1.F. The administrative leakage limits are about three times more restrictive than those required by the TSs. The licensee also monitors all SG tube leakage and has administrative controls to ensure that the rate of change of the leak does not increase beyond prescribed limits.

Relatively low reactor coolant temperature minimizes corrosion in the steam generator tubing. For Indian Point 3, the reactor coolant temperature on the hot leg side (T-hot) has been maintained at about 593 °F since the SGs were replaced. This temperature should reduce the impact of corrosion on the tubes.

For the upcoming (1997) SG tube inspection, the licensee has committed to perform an augmented inspection to detect potential circumferential cracking at the hot leg expansion transition areas, small radius (rows 1 and 2 only) U-bend areas and dented locations. This augmented inspection is in response to GL 95-03. Sample size and sample expansion criteria for the augmented inspection will satisfy plant TSs. The method, equipment and criteria of the augmented inspection will follow the current revision of EPRI Report NP-6201, "PWR Steam Generator Examination Guidelines." When a rotating pancake coil is used, terrain plots will be used to analyze the data from the rotating pancake coil at locations susceptible to circumferential cracking.

On the basis of the information in the submittal, the staff has determined that (1) the steam generator tubes are fabricated from Alloy 690, which is less susceptible to corrosion than Alloy 600; (2) the licensee has implemented an industry-based water chemistry program to mitigate corrosive environment in the primary and secondary sides; (3) the steam generator tubes have experienced limited service to date; and (4) the licensee has not found any indications in the steam generator tubes. The staff concludes that the proposed one-time extension for the steam generator tube inspection will not be expected to affect the structural and leakage integrity of the steam generator tubes significantly. Therefore, the licensee may incorporate the proposed changes into the Indian Point Unit 3 Technical Specifications.

The licensee may not apply the 25 percent extension specified in Technical Specification Section 1.12 to the steam generator tube inspection interval. The staff's position is that the 25 percent extension is not applicable to the steam generator tube inspection as stated in GL 91-04. This deviation did not affect the staff conclusion on the licensee's request.

3.0 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.

4.0 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 (61 FR 20854). 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.

5.0 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: J. Tsao

Date: June 19, 1996