January 7, 1997

Mr. William J. Cahill, Jr.
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. M95441)

Dear Mr. Cahill:

The Commission has issued the enclosed Amendment No.171 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 April 26, 1996, as supplemented August 23, 1996.

The amendment changes requirements regarding reactor coolant system leakage testing following refueling outage and other system pressure testing of reactor coolant system following repairs, replacements, or modifications.

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. 171 to DPR-64
2. Safety Evaluation

cc w/encls: See next page

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ISSUANCE OF AMENDMENT NO. 171 TO FACILITY OPERATING LICENSE NO. DPR-64

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

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Docket No. 50-286

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cc w/encls: See next page

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William J. Cahill, Jr.
Power Authority of the State
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Indian Point Nuclear Generating
Station Unit No. 3

cc:

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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.171
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 April 26, 1996, as supplemented August 23, 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. 171 , 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 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION

S. Singh Bajwa, 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: January 7, 1997

ATTACHMENT TO LICENSE AMENDMENT NO. 171

FACILITY OPERATING LICENSE NO. DPR-64

DOCKET NO. 50-286

Revise Appendix A as follows:

Remove Pages	Insert Pages
4.3-1	4.3-1

4.3 REACTOR COOLANT SYSTEM (RCS) TESTING

A. Reactor Coolant System Integrity Testing

Applicability

Applies to test requirements for Reactor Coolant System integrity.

Objective

To specify tests for Reactor Coolant System integrity after the system is closed following refueling, repair, replacement or modification.

Specification

a) The Reactor Coolant System shall be tested for leakage at normal operating pressure prior to plant startup following each refueling outage, in accordance with the requirements of ASME Section XI.

b) Testing of repairs, replacements or modifications for the Reactor Coolant System shall meet the requirements of ASME Section XI.

c) The Reactor Coolant System leak test temperature-pressure relationship shall be in accordance with the limits of Figure 4.3-1 for heatup for the first 11.00 EFPYs of operations. Figure 4.3-1 will be recalculated periodically. Allowable pressures during cooldown from the leak test temperature shall be in accordance with Figure 3.1-2.

Basis

Leak test of the Reactor Coolant System is required by the ASME Boiler and Pressure Vessel Code, Section XI, to ensure leak tightness of the system during operation. The test frequency and conditions are specified in the Code.

For repairs on components, the thorough non-destructive testing gives a very high degree of confidence in the integrity of the system, and will detect any significant defects in and near the new welds. In all cases, the leak test will assure leak tightness during normal operation.

The inservice leak test temperatures are shown on Figure 4.3-1. The temperatures are calculated in accordance with ASME Code Section III, Appendix G. This Code requires that a safety factor of 1.5 times the stress intensity factor caused by pressure be applied to the calculation.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 171 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

The Technical Specifications for Indian Point Nuclear Generating Unit No. 3 state that the inservice inspection and testing of the American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code (ASME Code) and applicable Addenda as required by 10 CFR 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6).

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements that become effective subsequent to editions specified in 10 CFR 50.55a(g)(2) and (g)(3), except the design and access provisions and the pre-service examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) on the date 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The applicable edition of Section XI of the ASME Code for the Indian Point Nuclear Generating Unit No. 3 second 10-year inservice inspection (ISI) Interval is the 1983 Edition.

By letter dated April 26, 1996, as supplemented August 23, 1996, the Power Authority of the State of New York (PASNY) submitted proposed changes to the Technical Specifications (TSs) regarding reactor coolant system (RCS) leakage test following refueling outage, and other system pressure testing of reactor coolant system following repairs, replacements, or modifications. The proposed TS changes would require the RCS pressure tests to be performed in accordance with ASME Code Section XI requirements; the current TS requires that pressure tests be performed at a pressure greater than that required by the Code. The August 23, 1996, submittal contained supplemental information that did not change the initial no significant hazards consideration determination.

2.0 EVALUATION

2.1 TS 4.3 - Objective

2.1.1 Proposed Change

Revise "Objective" to delete "normal opening, modification or repair" and read, "To specify tests for Reactor Coolant System integrity after the system is closed following repair, replacement or modification."

2.1.2 Licensee's Basis

The reference to "normal opening" of the RCS is removed because this is a term not described in the ASME Code Section XI and any opening of the RCS that may compromise the integrity of the system is covered by the repair, replacement, and modification requirements of the Code. This includes disassembly and reassembly of mechanical joints of a component [IWA-5214(e)]. Additionally, the Code requires a system leakage test prior to plant startup following each refueling outage.

2.1.3 Evaluation

ASME Code Section XI, IWA-5211(a) and Table IWA-5210-1, requires that for Class 1 components, a system leakage test be conducted following opening and reclosing of a component in the system after repressurization to nominal operating pressure. Table IWB-2500-1 requires that a system leakage test be conducted after each refueling outage and that a system hydrostatic pressure test be conducted at or near the end of each inspection interval. IWA-5214 requires that a system hydrostatic test be conducted following repairs and replacements. However, IWA-5214(e) states that if only disassembly and reassembly of mechanical joints of a component are involved, a system pressure test shall be acceptable in lieu of the system hydrostatic test.

The objective of TS 4.3 is revised to delete the system pressure test requirement after a "normal opening" of the RCS, because the licensee contends that the term of "normal opening" is not described in the ASME Code Section XI and any opening of the RCS that may compromise the integrity of the system is covered by the repair, replacement, and modification requirements of the Code. Although the term "normal opening" is not described, IWA-2511(a) specifically states that a system leakage test be conducted following opening and reclosing of a component in the system after repressurization to nominal operating pressure. This requirement includes the situation in which an RCS component is opened for reasons other than refueling, repair, replacement, or modification. With regard to the system leakage test as required by IWA-5211(a) and Table IWA-5210-1, its intent is to assure closure of a specific component after it was opened and to verify leak tightness of the affected component after its closure. As such, the test does not require a leak testing and inspection of the entire RCS. If the affected component is isolable within a portion of a system, testing only that portion of the system meets the intent of this Section XI requirement.

Although the proposed TS 4.3 does not cover the leakage test as required by IWA-5211(a) and Table IWA-5210-1, it should be noted that, by means of TS 4.2.1.3 and 10 CFR 55.55a, the licensee is committed to perform inservice inspection of ASME Code Class 1, 2, and 3 components in accordance with ASME Code Section XI requirements. This commitment would require a localized leak test discussed above to be performed after opening and reclosing of a specific RCS component in accordance with IWA-5211(a) and Table IWA-5210-1. Therefore, the proposed change combined with TS 4.2.1.3 meets the requirements of ASME Section XI and is acceptable.

2.2 TS 4.3(a)

2.2.1 Proposed Change

Revise TS 4.3(a) to read, "The Reactor Coolant System shall be tested for leakage at normal operating pressure prior to plant startup following each refueling outage, in accordance with the requirements of ASME Section XI."

2.2.2 Licensee's Basis

There are two features associated with this proposed change. The first feature involves a reduction in the leak test pressure from an elevated pressure of 2335 psig to the RCS normal operating pressure (NOP) of 2235 psig. The proposed reduction in the leak test pressure to the normal RCS operating pressure is consistent with the requirements of the ASME Code Section XI (Table IWB-2500-1 and IWB-5200). A test pressure of 2335 psig exceeds a Code required hydrostatic test pressure of 2280 psig (based on a test temperature greater than 500 °F). There are no requirements in the Code for a periodic leakage test at the elevated pressure of 2335 psig (100 psig above the NOP), and the Code requirement for a hydrostatic test once per inservice inspection interval has an alternative provided by ASME Code Case N-498. The power operated relief valves (PORVs) must be temporarily blocked closed or have their setpoints increased to accommodate a leakage test at an elevated pressure, resulting in a potential challenge to plant safety. The test involves extensive preparation activities, and preparation and conduct of this test adds critical path time at the end of each refueling outage.

Leak testing at elevated pressure was at one time considered as a means to enhance leakage detection during the examination of components under pressure. Subsequently, industry experience has demonstrated that leaks are not discovered as a result of elevated test pressure propagating a pre-existing flaw through wall. In most cases, leaks are discovered when the system is at normal operating pressure. The system leakage test at normal operating pressure, proposed in lieu of a test at elevated pressure, will demonstrate leak-tightness of the RCS following each refueling outage.

The NRC, through their approval of ASME Code Case N-498, recognized the system leakage test at NOP as an effective demonstration of the leak tightness of Class 1 Systems. The leakage test of the RCS system at elevated pressure poses a challenge to plant safety, and adds critical path time at the end of each refueling outage, without compensating increase in the level of safety or quality over the proposed system leakage test at the NOP.

The second feature involved the deletion of the current requirement to perform a leakage test of entire RCS each time the system is opened. This involves pressurization and a visual inspection of the entire system for leakage. Consequently, many of the inspection and exemption provisions in the ASME Code Section XI, associated with the repair of RCS components, cannot be implemented. For example, IWA-4400(b)(5) exempts weld repairs to component connections, piping, and associated valves that are 1 inch nominal pipe size or smaller from a hydrostatic pressure test. Further, IWA-5214(c) permits a localized pressure test of repaired or replaced components that are isolable within a portion of the system. As currently written, Specification 4.3(a) does not permit this inspection flexibility recognized by the Code. The proposed change would limit this specification to the leakage test prior to startup following each refueling outage as required by Table IWB-2500-1 of the Code. Leakage testing of the RCS and its components following their repair, replacement, or modification, will be performed in accordance with the provisions of the applicable ASME Code Section XI, as required by proposed Specification 4.3(b), and 10 CFR 50.55a. Repairs and replacements will be in accordance with the inservice inspection program as required by 10 CFR 50.55a. Accordingly the TS, as proposed, require leakage testing, as appropriate, to assure the integrity of the RCS boundary.

2.2.3 Evaluation

TS 4.3(a) currently requires a system leakage test of the entire RCS at not less than 2335 psig when the RCS is closed after it has been opened, regardless the reasons why and where the RCS is opened. TS 4.3(b) addresses Section XI required pressure test or hydrostatic test following repairs, replacements, or modifications of the RCS.

ASME Code Section XI, IWA-5211(a) and Table IWA-5210-1, requires that for Class 1 components, a system leakage test be conducted following opening and reclosing of a component in the system after repressurization to nominal operating pressure. Table IWB-2500-1 requires that a system leakage test be conducted after each refueling outage. IWB-5221(a) requires that a system leakage test be conducted at test pressure not less than the nominal operating associated with 100% rated reactor power. These preceding ASME Code Section XI requirements do not require a system leakage test be conducted at a pressure greater than the nominal operating pressure. Therefore, the proposed TS change to reduce the test pressure from 2335 psig to 2235 psig (nominal operating pressure) meets the requirements of ASME Section XI for a system leakage test. The staff has previously determined in its review of Code Case N-498 that a leakage test at nominal operating pressure is accepatble and that performing such a test at elevated pressure can cause unnecessary challenges to the plant. The staff concludes, therefore, that that the proposed TS change to reduce the test pressure from 2335 psig to 2235 psig is acceptable.

Secondly, the TS 4.3(a) is revised to require a leakage test of entire RCS after refueling outages in lieu of each time the RCS is opened. During a refueling outage, numerous activities may be performed to the RCS. It is imperative to perform a leakage test of the entire RCS. However, when a specific RCS component is opened for reasons other than refueling, a localized pressure test and inspection should be adequate to ensure the leak tightness of the affected components. Performing a leak test of the entire RCS when only a specific component is involved would result in hardship and unwarranted cost without compensating increase in the level of quality and safety. Therefore, the proposed change retaining the leakage test only after refueling outages meets the requirement of IWB-2500-1 and is acceptable.

2.3 TS 4.3(b)

2.3.1 Proposed Change

Revised TS 4.3(b) to read, "Testing of repairs, replacements, or modifications for the Reactor Coolant System shall meet the requirements of ASME Section XI."

2.3.2 Licensee's Basis

There are two features associated with this proposed change. The first feature involves expanding the scope of the specification to envelop all RCS components, rather than only "new strength welds" on components. Expanding the scope of the specification to envelop all RCS components establishes consistency with the ASME Code, thus avoiding the potential for an interpretation error.

The second feature involves limiting the scope of the specification to the "testing" of the RCS and its components following repairs, replacement, or modifications. Limiting the scope of the specification to the testing of the RCS and its components establish consistency with the intent of Specification 4.3 as stated in its Applicability and Objective sections.

2.3.3 Evaluation

The proposed TS change expands the scope of the specification to cover testing of all RCS components, rather than only "new strength welds" on components. The revised scope is consistent with ASME Section XI and is, therefore, acceptable.

The second proposed change is to limit the scope of this specification to "testing" of the RCS and its components following repairs, replacements, or modifications. The proposed change is consistent with the intent of the objective of this specification, i.e., for "Reactor Coolant System Integrity Testing." It should be noted that other aspects of ASME Section XI inservice inspection requirements are covered in TS 4.2. Therefore, the proposed TS change combined with TS 4.2 meets the requirements of ASME Section XI and is acceptable.

2.4 TS 4.3 - Basis

2.4.1 Proposed Change

Revise the first paragraph of the Basis to read, "Leak test of the Reactor Coolant System is required by ASME Code, Section XI, to ensure leak tightness of the system during operation. The test frequency and conditions are specified in the Code."

2.4.2 Licensee's Basis

The proposed changes to the Basis establishes consistency with the changes proposed to Specification 4.3.

2.4.3 Evaluation

The objective of Specification 4.3 is to ensure the leak tightness of the RCS during normal operation. By performing leak test as required by ASME Code, Section XI, will ensure the leak tightness of the RCS during operation. The proposed change to the Basis reflects the requirements of the ASME Section XI, and is acceptable.

It should be noted that the proposed change deletes the reference to a system leakage test at 2335 psig for normal reactor opening. Performing a system leakage test at 2335 psig exceeds the requirement of ASME Section XI. The test pressure of 2335 psig is about 100 psi higher than the normal operating pressure. The slightly higher test pressure during a system leakage test may produce only a minor improvement in leak detection capability. Therefore, the proposed change of reducing the test pressure from 2335 psig to normal operating pressure is acceptable because a minor improvement of leak detection capability, without a compensating increase in the level of quality and safety, does not justify the cost and hardships associated with performing the leak test at 2335 psig.

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. 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 28602). 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. Huang

Date: January 7, 1997