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Chief Nuclear Officer

August 23, 1996  
IPN-96-093

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

SUBJECT: Indian Point 3 Nuclear Power Plant  
Docket No. 50-286  
License No. DPR-64  
**Additional Information for Proposed Technical Specification Change  
Regarding Reactor Coolant System Leakage Test**

Reference: NYPA letter, W. J. Cahill, Jr. to NRC (IPN-96-051), "Proposed Technical Specification Change Regarding Reactor Coolant System Leakage Test At Normal Operating Pressure," dated April 26, 1996.

Dear Sir:

This letter provides additional information regarding the technical basis for the proposed Indian Point 3 Technical Specification changes submitted in the referenced License Amendment Request (LAR). The information was discussed with the NRC staff during a teleconference on August 6, 1996. This letter addresses each of the proposed changes to the Technical Specification provisions as presented in the referenced LAR, and does not propose any additional changes to the Technical Specifications. All references to the code pertain to the ASME Boiler & Pressure Vessel Code, Section XI, 1983 Edition, currently applicable to Indian Point 3.

There are no new commitments associated with this letter.

Should you have any questions regarding this matter, please contact Mr. K. Peters at (914) 736-8029.

Very truly yours,

A handwritten signature in black ink, appearing to read 'William J. Cahill, Jr.', written in a cursive style.

William J. Cahill, Jr.  
Chief Nuclear Officer

Attachment  
cc: see next page

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Additional Information for Proposed Technical Specification  
Change Regarding Reactor Coolant System Leakage Test

Technical Specifications

4.3 Reactor Coolant System Integrity Testing

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 refueling, repair, replacement or modification."

Technical Basis

The reference to "normal opening" of the Reactor Coolant System (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.

Proposed Change

Revise Section 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."

Technical Basis

There are two features associated with this proposed change. One 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. Secondly, the current requirement to perform a leakage test of the entire RCS each time the system is opened is deleted.

- 1) 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-5220). A test pressure of 2335 psig exceeds a code required hydrostatic test pressure of 2280 psig (based on a test temperature greater than 500 degrees 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 elevated pressure, resulting in a potential challenge to plant safety. The testing 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 pressures 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 a compensating increase in the level of safety or quality over the proposed system leakage test at NOP.

- 2) Regarding the second feature, currently Specification 4.3(a) requires a leakage test of the entire RCS every 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, can not be implemented. For example, IWA-4400(b)(5) exempts weld repairs to component connections, piping, and associated valves that are one 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 start-up 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 regulation 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 Technical Specifications, as proposed, require leakage testing, as appropriate, to assure the integrity of the RCS boundary.

#### Proposed Change

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

#### Technical Basis

There are two features associated with this proposed change. One feature involves expanding the scope of the specification to envelop all RCS components, rather than only "new strength welds" on components. Secondly, the proposed change limits the scope of the

specification to the "testing" of the RCS and its components following repairs, replacement, or modifications.

- 1) Expanding the scope of the specification to envelop all RCS components establishes consistency with the ASME Code; therefore, avoiding the potential for an interpretation error.
- 2) Limiting the scope of the specification to the testing of the RCS and its components establishes consistency with the intent of Specification 4.3 as stated in its Applicability and Objective sections.

#### Proposed Change

Basis Section: Revise the first paragraph to read, " 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."

#### Technical Basis

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