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April 12, 1993

Re: Indian Point Unit No. 2
Docket No. 50-247

Document Control Desk
US Nuclear Regulatory Commission
Mail Station P1-137
Washington, DC 20555

SUBJECT: Additional Information In Support of Proposed License Amendment dated April 8, 1993

The purpose of this letter is to provide additional information in support of our application for amendment to the Technical Specifications regarding Weld Channel Pressurization System Requirements, dated April 8, 1993.

Attachment A provides a description of the Weld Channel and Penetration Pressurization System. Attachment B explains the planned use of the subject Technical Specification provision. Attachment C amplifies the safety assessment previously submitted.

Should you or your staff have any questions regarding this matter, please contact Mr. Charles W. Jackson, Manager, Nuclear Safety and Licensing.

Very truly yours,

S. E. Quinn

Attachment

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ATTACHMENT A

SYSTEM DESCRIPTION

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
INDIAN POINT UNIT NO. 2
DOCKET NO. 50-247
APRIL, 1993

WELD CHANNEL AND CONTAINMENT

PENETRATION PRESSURIZATION SYSTEM

1.0 FUNCTION

1.1 Primary

The Primary function of the weld channel and containment penetration pressurization system is to prevent vapor containment atmospheric leakage to the natural environment through penetrations and liner seam welds if they were to develop leaks.

1.2 Secondary

The Secondary function of the weld channel and containment penetration pressurization system is to provide a means of monitoring the level of containment leakage from penetrations and liner seam welds during power operation.

2.0 INTRODUCTION

The containment penetration and weld channel pressurization system seals the containment liner seam welds, pipe penetrations and certain pipe penetrations not treated by the Isolation Valve Seal Water System. To ensure a high degree of leak-tightness, all plate to plate welds in the containment liner are covered with pressurization channels to assure that any leakage to the environment will be clean air. The system continuously maintains a pressure in excess of containment accident pressure, thereby ensuring that there will be no out-leakage of the containment atmosphere through the penetration and liner welds.

The system is sub-divided into four zones, each serviced by its own air receiver, supplied from a common header. The primary source of air is the Instrument Air System. Two compressors are available although only one is required to maintain pressurization at the maximum allowable leakage rate of the system. Instrument Air is backed up by the Station Air System. If both these sources are lost, each of the four pressurization zones will continue to be supplied from a back-up nitrogen storage facility, connected downstream of each receiver for selective use.

The Containment Penetration and Weld Channel Pressurization System can operate and meet its design function without reliance on any other system, except as limited by air compressor availability following depletion of all reserves in the systems' air receivers and back-up nitrogen cylinders. Electric power is not necessary for operation of the system although instrument power is required in order to provide indications in the control room of system operation.

The employment of this system following a loss-of-coolant accident provides an additional means of ensuring that leakage is minimized, if not altogether eliminated. No detrimental effect on any other safety system will be felt should the pressurization system fail to operate. Although no credit is taken for this system's operation in calculation of off-site accident doses (based on a loss of coolant accident), it is designed as an Engineered Safeguard and does provide added assurance that the containment leak rate in the event of an accident is lower than that assumed in the accident analysis.

3.0 DETAILED DESCRIPTION

3.1 Air Supply

3.1.A Instrument Air - Normal

The primary source of air for this system is via check valve IA-13 from the Instrument Air System feeding the PAB. The individual zone air receivers are supplied continuously with dry instrument air at 100 psig.

3.1.B Station Air - Backup

The plant air compressor acts as a backup to the instrument and control air system. Connection to the weld channel and penetration pressurization system is via valve IA-17 located on the PAB 80' elevation behind the zone air receivers.

Use of this backup supply is automatically tended to by pressure control valve 1140.

3.2 Nitrogen Supply - Emergency

A standby source of gas pressure for the system is provided by a bank of nitrogen cylinders. The associated nitrogen system will automatically deliver nitrogen at a higher pressure (approximately 100 psi) than the normal regulated air supply pressure of 52 psig. Thus, in the event of failure of the normal and backup air supply systems during periods when the system is in operation, the penetration and weld channel pressure requirements will be automatically maintained by the nitrogen supply. This assures reliable pressurization under both normal and accident conditions.

If the receivers become exhausted before normal and back-up air supplies can be restored, nitrogen from the bank of pressurized cylinders will be supplied to the affected zones. The nitrogen bank is sized to provide a 24 hour supply of gas to the system, based on a total leakage rate from the pressurization system of 0.2% of the containment free volume in 24 hours. There are three nitrogen cylinders in the bank.

The nitrogen supply will also automatically assume the pressurization gas load in the event an air receiver fails.

3.3 Air Receivers

Containment penetrations and liner weld channels are grouped into four independent zones to simplify the process of locating leaks during operation. Each such zone is served by its own air receiver. In the event that all normal and backup air supplies are lost, each of the four pressurization system zones continues to be supplied with air from its respective air receiver. Each of the air receivers is sized to supply air to its pressurized zone for a period of at least four hours, based on a leakage rate of 0.2% of the containment free volume per day (0.1% leakage into the containment and 0.1% leakage to the environment).

Check Valves FCV 1177-1,-2,-3 and -4 prevent the air receivers from backfeeding the air supply side. Check valves FCV-1178-1,-2,-3 and -4 prevent nitrogen feed to the receivers in event of air loss.

Normal air receiver pressure is 100 psig. Each receiver is also protected from over pressure by a safety relief valve. These valves are set to relieve at 150 psig.

3.4 Zone Identification

The following is a break down of the zones serviced by this system:

Zone I - Rack No. 12 Electrical Penetrations
Rack No. 13 Electrical Penetrations

Zone II - Rack No. 10 Piping Penetrations
Rack No. 11 Piping Penetrations
Rack No. 15 Steam and Feedwater Penetrations
Containment Purge Supply and Exhaust
Containment Pressure Relief
Equipment Hatch
Personnel Lock

Zone III - Rack No. 16 Dome and Sidewall Channels and Fuel Transfer Tube
Rack No. 17 Bottom Channels

Zone IV - Rack No. 14 Bottom Channels
Rack No. 18 Dome and Sidewall Channels
Steam Jet Air Ejector to Containment
Radiation Monitor to Containment
Radiation Monitor from Containment
Post Accident Containment Vent System

Portions of the Containment Liner, covering the bottom or floor of containment, and sections of the sidewalls of containment, are covered by reinforced concrete (Located in Zone III, Rack Nos. 16 and 17, and Zone IV, Rack Nos. 14 and 18). The nominal depth of the concrete on the floor above the liner is 3 feet. The air lines going to the welded channels for these portions are also, therefore, under reinforced concrete for part of their length.

The Welded Channels for the portions of the liner underneath concrete cover approximately 2148 feet of weld. The total length of liner weld covered by welded channels is approximately 11,780 feet.

ATTACHMENT B

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
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APRIL, 1993

PLANNED USE OF THE TECHNICAL SPECIFICATION PROVISION

The proposed technical specification provision would allow a portion of the weld channel pressurization system (WCPS) to be disconnected from the system if it is found to be inoperable and it is determined that it is not practicable to repair it. This provision is necessary because some repairs would be highly impracticable. The provision does not apply to the containment penetration pressurization system.

The criteria for determining impracticability would include the following considerations:

1. The source of the WCPS inoperability is inaccessible for repair.

   Some of the weld channel pressurization system and air supply piping is covered by concrete and is therefore inaccessible for conventional repairs. Some portions of the WCPS and air supply piping are inaccessible for repair either because of the high radiation exposure involved or the location of existing plant equipment.

2. The repair itself would require destructive intrusion to the containment structure or other components.

   Some portions of the WCPS are located on the sections of liner on the base mat of the Vapor Containment. Repairs to these portions of the WCPS could involve removing some portion of the containment structure, including concrete and rebar. Other repairs might require the relocation of equipment (e.g., cable trays, accumulator tanks, etc.) within the Vapor Containment in order to gain access to containment floor concrete before excavation could begin to gain access to the WCPS and air supply piping.

The use of this technical specification provision would be carefully controlled. Each use would be approved by the Operations Manger, and would be documented and reviewed under existing station administration controls covering modifications to the plant. Timing of repair is not a consideration in making the determination of impracticability in accordance with 1) and 2) above.

The disconnection of the specified portion of the WCPS from the system could consist of either a physical disconnection or a valve isolation. The method for disconnection will be selected so as not to interfere with the ability to pressurize those portions of the weld channel to containment atmospheric conditions during an integrated leak rate test (ILRT) in accordance with 10 CFR 50 Appendix J.

ATTACHMENT C

SAFETY ASSESSMENT

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
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DOCKET NO. 50-247
APRIL, 1993

SAFETY ASSESSMENT

Further Discussion

The reactor containment structure is a reinforced concrete vertical right cylinder with a flat base and hemispherical dome. A welded steel liner is attached to the inside face of the concrete shell to ensure a high degree of leak tightness.

The Weld Channel and Penetration Pressurization System (WCPPS) provides pressurized air to potential leak paths from the vapor containment following an accident. These potential leak paths include welds in the steel liner and penetrations to the liner not sealed by the isolation valve seal water system. The system maintains a pressure (52 psig), which is in excess of containment design pressure (47 psig), thereby ensuring that there will be no out leakage of the containment atmosphere through the penetrations and liner welds during an accident. If leakage paths do develop through containment penetrations or liner welds, the system ensures that the release will consist of WCPPS air, not containment atmosphere. No credit is taken for the system operation in the calculation of offsite accident doses.

The vapor containment liner was constructed in accordance with all applicable regulatory requirements and demonstrated to meet all applicable General Design Criterion (GDC) in effect at the time. The containment structure and all penetrations are designed to withstand the combined loadings of the design-basis accident and design and maximum potential seismic conditions. The Updated Final Safety Analysis Report (UFSAR) Section 5.1 describes compliance with GDC Nos. 1, 2, 3, 10, 49 and 50. These GDC's would continue to be met without reliance upon the Weld Channel and Penetration Pressurization System.

If the Weld Channel and Penetration Pressurization System were not available, the liner and penetrations would still be in compliance with all inservice testing requirements. The key inservice testing requirements are as contained in 10 CFR 50 Appendix J. Indian Point Unit No. 2 Technical Specification Section 4.4 describes the tests which are to be performed to verify that potential leakage from the containment is maintained within acceptable values. These testing requirements include: an integrated leak rate test, local leak rate tests and sensitive leak rate tests. When the integrated leak rate tests (ILRT) are performed, the WCPPS is disabled and vented to containment atmosphere. Those weld channels that would be disconnected from the WCPPS under the inoperable/impracticable to repair provisions of this proposed change would still be vented to containment atmosphere during ILRTs. Although the WCPPS facilitates the conduct of 10 CFR 50 Appendix J "B" and "C" testing, these tests can still be conducted with portions of weld channel disconnected from the WCPPS system.

Since the Indian Point Unit 2 Containment satisfies applicable regulatory design requirements without the weld channel pressurization system, and since the testing provision of 10 CFR 50 Appendix J can be satisfied without the weld channel pressurization system, disconnection of portions of the system will not have an adverse effect on containment performance as required by applicable regulations concerning containment design and inservice testing.