



June 13, 2002
Re: Indian Point Unit No. 2
Docket No. 50-247
NL-02-084

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop O-P1-17
Washington, DC 20555-0001

SUBJECT: Indian Point Nuclear Generating Unit No. 2 – Response to Request for Additional Information Regarding One-time Extension of Containment Integrated Leak Rate Test Frequency (TAC No. MB2414)

- References:**
1. Consolidated Edison letter (NL-01-093) to NRC, "Indian Point 2 License Amendment Request: Containment Integrated Leakage Rate Testing Frequency," dated July 13, 2001
 2. NRC letter to Entergy Nuclear Operations, Inc., "Indian Point Nuclear Generating Unit No. 2 – Request for Additional Information Regarding One-Time Extension of Containment Integrated Leakage Rate Test Frequency (TAC No. MB2414)," dated October 4, 2001
 3. Entergy Nuclear Operations, Inc. letter (NL-01-140) to the NRC, "Indian Point Nuclear Generating Unit No. 2 – Response to Request for Additional Information Regarding One-time Extension of Containment Integrated Leak Rate Test Frequency (TAC MB2414)" dated November 30, 2001
 4. NRC letter to Entergy Nuclear Operations, Inc., "Request for Additional Information Regarding One-Time Extension of Containment Integrated Leak Rate Test Frequency, Indian Point Nuclear Generating Unit No. 2 (TAC No. MB2414)," dated February 5, 2002
 5. Entergy Nuclear Operations, Inc. letter (NL-02-030) to the NRC, "Indian Point Nuclear Generating Unit No. 2 – Response to Request for Additional Information Regarding One-time Extension of Containment Integrated Leak Rate Test Frequency (TAC No. MB2414)" dated March 13, 2002

A-017

6. Entergy Nuclear Operations, Inc. letter (NL-02-047) to the NRC, "Indian Point Nuclear Generating Unit No. 2 – Response to Request for Additional Information Regarding One-time Extension of Containment Integrated Leak Rate Test Frequency (TAC No. MB2414)" dated April 3, 2002
7. NRC letter to Entergy Nuclear Operations, Inc., "Indian Point Nuclear Generating Unit No. 2 - Request for Additional Information Regarding One-Time Extension of Containment Integrated Leak Rate Test Frequency (TAC No. MB2414)," dated May 17, 2002
8. Entergy Nuclear Operations, Inc. letter (NL-02-075) to the NRC, "Indian Point Nuclear Generating Unit No. 2 – Response to Request for Additional Information Regarding One-time Extension of Containment Integrated Leak Rate Test Frequency (TAC No. MB2414)" dated May 30, 2002

By letter dated July 13, 2001 (Reference 1), Consolidated Edison Company of New York, Inc., (the previous licensee) submitted an application for an amendment to the Technical Specifications (TS) for Indian Point Unit No. 2 (IP2). The proposed amendment would allow a one-time extension of the frequency for the containment integrated leakage rate test from the current interval of one test in 10-years to one test in 15-years.

The U.S. Nuclear Regulatory Commission (NRC) staff reviewed the submittal, determined that additional information was required to complete its review, and requested the additional information in References 2, 4 and 7 above. Entergy Nuclear Operations, Inc. (ENO – the current licensee) submitted responses to the NRC's requests for additional information in References 3, 5, 6 and 8.

The NRC staff reviewed the additional information provided, determined that further additional information was required to complete the review and requested that additional information in telephone calls on June 10, 2002 and June 11, 2002. Attachment 1 to this letter provides the requested additional information.

The assessment submitted with the original application (Reference 1) concluded that the proposed TS did not involve a significant hazards consideration. The assessment is not affected by the additional information submitted herein or in the letters previously submitted in support of the application.

There are no commitments by ENO contained in this submittal.

Should you or your staff have any questions regarding this submittal, please contact Mr. John F. McCann, Manager, Nuclear Safety and Licensing at (914) 734-5074.

I declare under penalty of perjury that the foregoing is true and correct.

Sincerely,

Executed on 6/13/02



Fred Dacimo
Vice President – Operations
Indian Point Energy Center
Unit 2

cc: See page 4
Attachment

cc:

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ATTACHMENT 1

NL-02-084

**Response to Request for Additional Information
Regarding Proposed One-Time Extension
of the
Containment Integrated Leakage Rate Test Frequency**

**ENTERGY NUCLEAR OPERATIONS, INC
INDIAN POINT NUCLEAR GENERATING UNIT NO. 2
DOCKET NO. 50-247**

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

The NRC staff is reviewing information provided in the July 13, 2001 application along with the additional information submitted November 30, 2001, March 13, 2002, April 3, 2002 and May 30, 2002 and has determined that additional information is needed for the staff to complete its evaluation. On June 5, 2002, June 7, 2002, June 10, 2002 and June 11, 2002, telephone conferences with NRC staff and representatives of ENO were held to discuss the status of the Weld Channel and Penetration Pressurization System used to monitor the integrity of the IP2 containment liner. The NRC staff requested clarification of the status of the weld channel zone designated as W-11.

This air supply line to the zone was cut, both ends were capped and the zone was retired in place, as allowed by Technical Specification 3.3.D.2.c, when excessive air consumption was reported and the source of the leak could not be located in any of the supply piping above the containment floor. On June 6, 2002 and June 7, 2002, the retired weld channel zone was pressurized with a temporary test system to verify the extent and location of the reported excessive air consumption and the feasibility of repair. The test measured an air leakage rate of 2000 standard cubic centimeters per minute, which is equivalent to 0.0706 SCFM. This conflicted with previously reported leakage values and was well within the TS allowable airflow limits. The location of the leak was not determined although leak detection liquid was used on the mechanical fittings without identifying any leaks. A temporary facility change was then prepared, approved and installed to place the disconnected zone back in service for monitoring the associated containment liner welds and continues to meet the requirements of TS Section 3.3.D.

During the June 10, 2002 telephone conference, the NRC staff requested ENO to provide an evaluation of the effect that this additional amount of leakage would have on the previous Integrated Leakage Rate Test, if added to the final test results (Request No. 1). During the June 11, 2002 telephone conference, the NRC requested that ENO provide an evaluation of the effect that this additional leakage would have on the running total of the Type B and Type C Containment Leakage Tests required by Section 4.4 of the IP2 Technical Specifications (Request No. 2). Additionally, the NRC staff requested an evaluation of the cost benefits to address a one-time extension of the required ILRT frequency from the existing frequency of one in ten years to an ILRT frequency of one in thirteen years. This would assume that the next ILRT would be performed during the scheduled refueling outage of Fall 2004. (Request No. 3)

Response to Request No. 1

On June 7, 2002, weld channel pressurization zone W11 was tested with 52 psig of service air and the flow rate to the zone was recorded as 2000 standard cc/min (0.0706 SCFM). The source of the leakage was not directly located, however, there are 12 mechanical joints in the test setup and the flow through test station. These joints, which are the most likely source of leakage, were tested using a liquid leak detector without visually identifying any leaks.

Since the leakage could not directly be located, an evaluation of considering this leakage as exiting the containment directly to the environment is provided. This evaluation quantifies the impact of the measured leakage from zone W-11 on the ILRT results of 1991 by adding the leakage to provide for the above conservative assumption.

The tested leakage flow rate through zone W11 can conservatively be added to the containment leak rate determined by test in 1991 (References No. 1 and 2): The 0.0706 SCFM leakage equates to a leakage per day on a mass basis of 7.64 lb_m/day [(0.0706 SCFM)(60 min/hr)(24 hr/day)(0.07517 lb_m/cubic feet of dry air)].

The leakage documented in the Stone & Webster report for the June 1991 ILRT (Ref. 2, Pages 63 & 64), as determined on the basis of the mass difference for the 24-hour time frame, is 380.26 lb_m/day (Starting ILRT Air Mass 781249 lb_m - Ending Air Mass 780868.74 lb_m for 24 hour duration). On a percent weight basis, considering the Upper Confidence Levels, the ILRT leakage rate in 1991 was 0.047791 weight % per day (Ref. 2, Page 64). IP2 Technical Specifications, Section 4.4.A.2. provides the ILRT acceptance criterion as less than or equal to 0.75L_a or 0.075 weight % per day.

The net result of adding the measured leakage rate from the recent test on weld channel zone W-11 to the integrated leakage rate measured during previous ILRT will increase the total leakage rate from 380.26 lb_m/day to 387.90 lb_m/day or approximately a 2% increase in leakage rate [(380.26 + 7.64)/380.26]. This marginally insignificant increase results in an increase of the ILRT leakage rate from 0.047791 weight % per day to 0.048746 weight % per day which is still well below the acceptance criterion of 0.075 weight % per day.

Response to Request No. 2

The following calculation is taken from the Indian Point Unit 2, "Containment Leakage Rate Testing Program," Revision 0.

**Table 4-2
General Data**

Parameter	Value
Containment Net Free Volume (V)	2,610,000 ft ³
Design Basis Accident Pressure (P _a)	47.0 psig (61.7 psia)
Maximum Allowable Leakage (L _a) at P _a	0.10 % wt./day
Containment Dry Bulb Standard Temperature (ANSI/ANS 56.8-1994)	68° F (527.67° R)
Ideal Gas Constant for Air (R)	53.35 ft.-lb _f /lb _m -°R
Density of air at standard conditions (ANSI/ANS 56.8-1994)	0.07517 lb _m /ft ³
Specific volume of air at standard conditions	13.3 ft ³ /lb _m
Conversion factor (square inches to square foot)	144
Conversion factor (SCC per SCF)	28,316.7 SCC/SCF

4.12.2 Calculation

The calculation is performed using the ideal gas law to calculate the weight of air inside the containment at the design basis accident pressure and standard dry bulb temperature. The ideal gas law equation requires the use of absolute values for pressure and temperature (i.e., psia, °R). This value is then multiplied by the maximum allowable containment leakage rate in percent by weight per day to determine the maximum allowable containment leakage rate in pounds mass per day. Conversions are made to the time base (i.e., day to hours to minutes) and to standard volume units (i.e., SCFM and SCCM).

$$W = PV(144)/RT$$

$$W = [(61.7 \text{ lb}_f/\text{in}^2) (2,610,000 \text{ ft}^3) (144 \text{ in}^2/\text{ft}^2)] / [(53.35 \text{ lb}_f\text{-ft.}/\text{lb}_m \text{ }^\circ\text{R}) (527.67 \text{ }^\circ\text{R})]$$

$$W = 823,742.24 \text{ lb}_m$$

$$L_a = (0.0010/\text{day}) (823,742.24 \text{ lb}_m) (1 \text{ day}/24 \text{ hours})$$

$$L_a = 34.32 \text{ lb}_m/\text{hour}$$

$$L_a = (34.32 \text{ lb}_m/\text{hour}) (13.3 \text{ SCF}/\text{lb}_m) (1 \text{ hour}/60 \text{ min})$$

$$L_a = 7.61 \text{ SCFM}$$

5.17.2 Calculation

The maximum allowable local leakage rate in percent by weight per day is 0.60 L_a . The values for L_a were previously determined in Section 4.12. To determine the maximum allowable local leakage rate in standard volume units (i.e., SCFM and SCCM), the previously determined values for L_a are multiplied by 0.60.

$$0.60 L_a = (0.60)(7.61 \text{ SCFM}) = 4.566 \text{ SCFM}$$

The acceptance criteria for the combined leakage rate for the Type B and the Type C containment leakage tests are specified in IP2 Technical Specifications, Section 4.4.D.2.a. as less than $0.6L_a$. This equates to a gas flow rate of 4.5655 SCFM. The current running total of the combined Type B and Type C leakage is 1.8275 SCFM, which equates to 197.82 lb_m per day $[(1.8275 \text{ SCFM})(60 \text{ min}/\text{hr})(24\text{hrs}/\text{day})(0.07517 \text{ lb}_m/\text{cubic feet of dry air})]$. If the 7.64 lb_m per day leakage measured during the test on weld channel zone W-11 were assumed to be through a containment penetration and were added to the running total of the Type B and Type C, the running total would increase to 205.46 lb_m per day (197.82 lb_m per day + 7.64 lb_m per day). The increased running total would be 1.8981 SCFM (well below the acceptance criteria of 4.566 SCFM specified by the IP2 Technical Specifications).

Response to Request No. 3

The original submittal (Reference 3) presented the substantial cost savings of not performing the ILRT during a scheduled operating cycle outage or during the next refueling outage (RFO15). These cost savings and the minimal safety benefit obtained from performing the ILRT at a once-per-10 years, vice once-per-15 years, frequency were the basis for the submittal. The savings were stated to be:

- Cost by not performing the ILRT at the next RFO. Cost savings have been estimated for the next outage at \$200,000 for actually performing the ILRT and eliminating from schedule up to 100 hours of critical path outage time at a net savings of approximately \$21,000 per hour. The total cost, if the ILRT is performed during a scheduled RFO, is thus estimated to exceed \$2,000,000.
- Cost by not having to shut down during the current operating cycle to perform the ILRT. Cost savings have been estimated to be an additional 150 hours of critical path outage time to remove the plant from service prior to the ILRT and then return the plant to service following the ILRT. The total cost, if the ILRT is performed during a scheduled operating cycle outage, is thus estimated to exceed \$4,000,000.
- Dose by not performing the ILRT at the next RFO. The dose savings are estimated to be approximately one person-rem and would be substantially greater if the ILRT were performed before the scheduled RFO.

References

1. Consolidated Edison Company of New York, Inc. letter to the NRC (NL-91-117), "Reactor Containment Building Integrated Leakage Rate Test Report, dated September 20, 1991
2. Reactor Containment Building Integrated Leakage Rate Test, Consolidated Edison Company Indian Point 2 Station, Docket No. 50-247 Operating License No. DPR-26, June 1991, prepared by Stone & Webster Engineering Corp.
3. Consolidated Edison Company of New York, Inc. letter to the NRC (NL-01-093), "Indian Point 2 License Amendment Request: Containment Integrated Leakage Rate Testing Frequency," dated July 13, 2001