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July 6, 1984

Mr. H. R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. NUCLEAR REGULATORY COMMISSION
Washington, D. C. 20555

Attention: Mr. J. R. Miller, Chief
Operating Reactors, Branch 3

Gentlemen:

DOCKET NO. 50-266
SUMMARY TECHNICAL REPORT OF
TYPE "A", "B", AND "C" CONTAINMENT LEAK TESTS
POINT BEACH NUCLEAR PLANT, UNIT 1

In accordance with Section 15.4.4.I.D of the Point Beach Nuclear Plant Technical Specifications and Section V.B of 10 CFR 50 Appendix J, the attached summary technical reports are submitted on type "B" and "C" leak tests during the Unit 1 refueling and maintenance outages of October, 1981, through December, 1981; October, 1982, through December, 1982; October, 1983, through April, 1984; and on the type "A" test performed during the October, 1983, refueling and maintenance outage.

The type "A" test was performed by the Quadrex Corporation, Tulsa, Oklahoma. We are currently reviewing, for approval, the detailed final report. We have enclosed a summary report prepared in accordance with the format specified in ANSI/ANS 56.8-1981. The complete report, including all procedures, equipment calibrations, test data and results will be retained by Wisconsin Electric and will be available for your review.

A routine, announced NRC inspection by Messrs. S. M. Hare and L. A. Ryes was conducted during the performance of this type "A" integrated leak rate test. No items of noncompliance or deviations were identified (inspection report 84-05 dated 04/25/84).

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Summary of Data

The overall as-found leakage of the type "A" test was 0.1892% by weight per day of the containment atmosphere, or 89.3% of the allowable rate. This includes the addition of the local tests of those penetrations which were not vented during the conduct of the type "A" test in accordance with Appendix J to 10 CFR 50, Section III.A.1.d. The leakage contributions to containment from other sources (see attachment for an explanation of these sources) were also added.

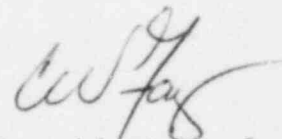
The overall as-found leakage of tye type "B" and "C" tests conducted during the 1981 refueling was 164,542 scc per minute or 71.2% of 0.6 L_a described in Section III.C.3 of Appendix J to 10 CFR 50. After repairs, the overall leakage was 7,053 scc per minute or 3.1% of 0.6 L_a . LER 81-014/01T provides additional information on this item.

The overall as-found leakage of the type "B" and "C" tests conducted during the 1982 refueling was greater than (not quantifiable) 205,455 scc per minute or 88.9% of the 0.6 L_a . After repairs, the overall leakage was 4,276 scc per minute or 1.9% of 0.6 L_a . LER 82-020/01T provides additional information on this item.

The overall as-found leakage of the type "B" and "C" tests conducted during the 1983 refueling was greater than (not quantifiable) 306,080 scc per minute or 132.4% of 0.6 L_a . After repairs, the overall leakage was 8,799 scc per minute or 3.8% of 0.6 L_a . LER 83-009/01T provides additional information on this item.

Also enclosed is the type "B" and "C" leakage testing summary for the period between the October, 1981, type "A" ILRT and the March, 1984, type "A" ILRT. This summary includes all of the test data obtained during and between each of the refueling outages. The summary also contains comments made in regard to all as-found leakage rates which approach or exceed 0.6 L_a .

Very truly yours,



Vice President-Nuclear Power

C. W. Fay

Enclosures

Copy to NRC Resident Inspector

REACTOR CONTAINMENT BUILDING INTEGRATED
LEAKAGE RATE TEST FOR POINT BEACH UNIT 1

I. General Data

- A. Owner - Wisconsin Eleectric Power Company
- B. Docket Number - 50-266
- C. Location - Two Rivers, Wisconsin
- D. Containment Description - 3½ foot pre-stressed post-tensioned concrete cylinder with ¼ inch welded ASTM A-442 steel liner
- E. Date Test Was Completed - April 2, 1984

II. Technical Data

- A. Containment Net Free Volume - 1,000,000 cubic feet
- B. Design Pressure - 60 psig
- C. Design Temperature - 286°F
- D. Calculated Accident Peak Pressure (Pac) - 53 psig
- E. Calculated Accident Peak Temperature (Tac) - 286°F

III. Test Data

- A. Test Method - absolute
- B. Data Analysis Technique - mass point
- C. Test Pressure - 30 psig
- D. Maximum Allowable Leak Rate (La) - 0.4% per 24 hours
- E. Maximum Allowable Operational Leakage Rate at Pressure P_t (L_{to}) - 0.212% per 24 hours
- F. Calculated Leakage Rate at Upper Confidence Limit (UCL) - 0.2001% per 24 hours
- G. Measured Leak Rate (L_{am}) - 0.1845% per 24 hours
- H. Penalties (required additions to measured leakage rate)
 - 1. Isolated Penetrations 0.0004% per 24 hours
 - 2. Primary system leakage to RCDT 0.0027% per 24 hours
 - 3. PORV "backup" nitrogen bottle leakage 0.0016% per 24 hours

I. Adjusted calculated 95% UCL leakage rate - 0.2048% per 24 hours

J. Adjusted measured leakage rate - 0.1892% per 24 hours

IV. Verification Test

A. Calibrated Leak Superimposed - 0.1473% per 24 hours

V. Analysis and Interpretation

The fourth periodic type "A" integrated leakage rate (ILRT) of the Point Beach Nuclear Plant Unit 1 containment was performed during the period between March 30, and April 2, 1984, with satisfactory results. The testing program was conducted in accordance with the requirements of the Point Beach FSAR, Chapter 15, "Technical Specifications," Paragraph 4.4 Containment Tests.

The integrated leakage rate test instrumentation system was designed to provide "absolute" method measurement of containment leakage at a high level of accuracy. Twenty one (21) RTD's and 6 dewcells were located within the containment to provide information on the areas of the contained volume. Two (2) pressure sensing lines were provided from the containment to the test panel for containment pressure, and verification flow instrumentation. The instrument error analysis shows this measurement system to have an accuracy of $\pm 0.0276\%$ leakage rate per day at a 95% confidence limit (UCL).

Data analysis and reduction was accomplished through the use of a mini-computer system. Data was obtained from the test panel, on a 15 minute interval, and manually inserted into the mini-computer system. The test procedure and data analysis computer system were provided by the Quadrex Corporation.

The absolute value of the total measured leakage rate ($L_m = 0.1845$) was 87% of the allowable operational leakage rate ($L_{to} = 0.212$). The calculated leakage rate at a 95% upper confidence limit was 0.2001% per day.

To verify the results, an "induced leakage rate" slightly less than the maximum allowable operational leakage rate, was superimposed on the actual leakage rate at 30 psig. Due to system limitations, the superimposed leakage equaled 75% of the maximum allowable operational leakage rate. The absolute value of the difference between measured leakage from the type "A" test data and measured leakage from the verification test data was 0.0005 at a 95% upper confidence limit.

The elapsed times, the least squares leakage rate, the 95% confidence level rate, total time leakage rate, and the total leakage are tabulated below:

Tabulation of Calculated Parameters			
Test	30 psig CILRT	30 psig verification	
Time	29.75 hours	7.75 hours	
Least Squares Leakage Rate	$L_m = 0.1845\%/day$	$L_c^{**} = 0.2320\%/day$	$L_m = 0.0852\%/day$
95% Confidence Leakage Rate	$= 0.2001\%/day$	$= 0.3465\%/day$	$= 0.1996\%/day$
Total Time Leakage Rate	$= 0.1581\%/day$	$= 0.2756\%/day$	$= 0.1283\%/day$
Total Leakage	0.1960%	0.0890%	= 0.0414%

** This column represents leakage rates based upon the leakage measured during the verification added to the induced leakage rate of .1473%/day.

The duration of the type "A" test phase was affected by an unusual amount of data scatter in the dewcell instrumentation, and an apparent perturbation in containment atmospheric conditions. At approximately 12 hours into the type "A" test, an unexplained perturbation occurred giving a measured rise in containment average temperature without a corresponding increase in pressure. This resulted in a calculated increase in leakage.

Immediate and subsequent investigations did not reveal the cause for the perturbation. It is believed that the event is associated with the instrumentation system and not a result of an actual containment atmospheric perturbation.

Because of the perturbation, acceptable leakage values were not recovered until the 28th test hour. Following an additional 1-3/4 hours of data, the type "A" test was successfully terminated based on Technical Specification requirements.

Prior to the perturbation, the least squares leakage was 0.1016% per day and the 95% UCL leakage value was 0.1562% per day. Reinitializing the data after the perturbation results in leakage values which are consistent with previous tests and more representative of the actual leakage. The reinitialized least squares leakage was 0.0567% per day, and the 95% UCL leakage was 0.0857% per day. Thus, we believe the reported leakage values are greater than actual.

VI. Leakage Value Adjustments

Due to the test configuration of the containment, 11 penetrations were not subjected to the 30 psig type "A" test pressure. These 11 penetrations, justification, and type "C" test results are identified below:

<u>Penetration</u>	<u>Justification</u>	<u>Type "C" Results</u>
CVCS Supply Line (#26)	In use to control primary system pressure	14 sccm
CVCS Letdown Line (#10)	In use to control primary system pressure	18 sccm
RCP "A" Seal Injection Line (#29A)	Maintain flow of clean water through RCP seals	8 sccm
RCP "B" Seal Injection Line (#29B)	Maintain flow of clean water through RCP seals	4 sccm
RCP Seal Return Line (#11)	Maintain flow path for seal leakage	215 sccm
RCDT Drain Line (#9)	Maintain flow path for seal leakage	78 sccm
Service Air Line (#33C)	Modified to allow for containment depressurization	11 sccm (Note 1)
Containment Pressure Sensing Line (#31A)	Modified to provide a pressure point for type "A" test purposes	8 sccm (Note 1)
Reactor Makeup Water Line (#30C)	Proper venting of line is not possible without securing entire reactor makeup water header which would affect Unit 2	9 sccm
Auxiliary Charging Line (#32C)	Proper venting of line is not possible when seal injection lines are in use	10 sccm
Post-Accident Containment Vent Penetration, Portion of Isolation Arrangement Containing H ₂ V ₁₁	Portion of PACVS used to provide verification flow path	3 sccm (Note 2)

- NOTES: 1. Type "C" leakage tests were performed prior to the modification for the type "A" test to assure a true "as-found" condition.
2. H₂V₁₁ is normally isolated during the type "A" test, and a vent path provided through the test panel. This valve was inadvertently opened during the test and the line was isolated at the panel. Thus it was not properly tested during the type "A" test. The type "C" test was performed following the type "A" test.

During the period between the 5 psig containment inspection and the post-depressurization inspection, the backup nitrogen bottle for PORV 1CV-430 leaked 60.44 scf of nitrogen into the containment atmosphere. This represents a leakage of 0.0016% per day which should be added to the type "A" test values.

In addition, primary system leakage to the reactor coolant drain tank also added to the containment volume. This source represents a leakage of 0.0027% which should be added to the type "A" test values.

Thus, the adjusted least squares leakage is 0.1892% per day, and the adjusted 95% UCL leakage is 0.2048% per day.