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LWP-96-047

June 13, 1996

U.S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Quad Cities Station Units 1 and 2
Secondary Containment Capability
Test Summary Technical Report
NRC Docket Nos. 50-254 and 50-265

Attached, in accordance with Section 6.6.B.4 and Table 6.6-1 of Appendix A to DPR-29 and DPR-30, is a summary of the Secondary Containment Leak Rate Tests performed for the Quad Cities Station Units 1 and 2 Reactor Buildings on May 18 and June 9, 1996. These tests were performed in accordance with Section 4.7.C.1. of Quad Cities Units 1 and 2 Technical Specifications.

Very truly yours,

L. W. Pearce
Station Manager
Quad Cities Nuclear Power Station

LWP/RR/mdh

Enclosure: Secondary Containment Test Summary

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Quad Cities Nuclear Power Station

Units 1 and 2

Secondary Containment Leak Rate Test Summary

Introduction

On May 10, 1996 a tornado hit the Quad Cities Reactor Building refuel floor siding, removing outer sheet metal and loosening some of the blowout panels on the East side of the Reactor Building. Reactor Building to atmosphere D/P was verified negative after the tornado passed. The immediate corrective actions were to initiate a shutdown of Unit 2 due to the unknown status of Secondary Containment.

Repairs were made to the blowout panel's inner wall during the following week and a Secondary Containment Leak Rate Test was performed on the combined volume of the Reactor Building. The test was performed to demonstrate the ability of the Standby Gas Treatment System (SBGTS) to maintain a quarter of an inch of water vacuum in the common Reactor Building simultaneously with a filter train flow rate of not more than 4000 cubic feet per minute (cfm). The test was conducted with a local filter train flow rate of 3975 cfm.

On June 9, 1996, the final repairs to the Reactor Building siding were completed. At this time another test was conducted to verify that the repairs did not effect secondary containment.

Secondary Containment Capability Tests

The tests were initiated at 1803 hours on May 18, 1996 and 1741 hours on June 9, 1996. By simulating a "HI" radiation signal in the Reactor Building Ventilation Monitors, with the 'B' SBGTS train selected as the primary. This action isolated the Reactor Building Ventilation systems, stopping all operating supply and exhaust fans, and starting 'B' SBGTS train. When equilibrium conditions were reached, differential pressure readings were taken.

Test Results

Data on wind speed, wind direction, building inside and outside temperatures, and differential building pressures were obtained for SBGTS flow rate of approximately 3975 cfm on May 18 and 3950 cfm on June 9. See attached data sheets for each test.

A 4 inch hole (leak) in the Secondary Containment was induced during the test. The purpose was to obtain data in order to quantify the performance of the Secondary Containment in a degraded condition. The leak was induced by opening a four inch fire header from outside to the Reactor Building.

Test Results (cont'd)

Corrections for the Reactor Building to atmosphere differential temperatures were not performed, due to the very small differential temperatures of +3.4°F on May 18 and -10.2°F on June 9. These small differential temperatures correspond to +0.004" H_2O and -0.006 H_2O differential pressures respectively. The temperature correction data is shown on the attached Summary of Test Data sheets for reference only.

SUMMARY OF TEST DATA

May 18, 1996

Quad Cities 1 & 2 Reactor Building Leak Rate

'B' SBGTS Train

	Differential Wall Pressure (inches of water)				
Flow (cfm)	North	South	East	West	Average
3975	-0.390	-0.420	-0.390	-0.390	-0.398

Differential Reactor Building to Atmosphere Temperature = +3.4 F

Temperature Correction (inches of water) = +0.004

Temperature Corrected Average
Differential Pressure (inches of water) = -0.394

Induced Leak Rate Results

	Differential Wall Pressure (inches of water)				
Flow (cfm)	North	South	East	West	Average
3975	-0.360	-0.390	-0.380	-0.360	-0.373

Temperature Corrected Average
Differential Pressure (inches of water) = -0.369

Summary of Wind and Temperature Conditions

Temperature (deg. F): Indoor 81.6° F

Outdoor 85.0° F

Wind Velocity (MPH): 12.4 - 18.2

Wind Direction: South (175.4 deg.)

Elevation Above Grade Level (feet): 196

The results of the test indicate that the SBGTS is capable of maintaining a quarter of an inch of water vacuum under calm wind conditions with a filter train flow rate of no more than 4000 cfm. Average reactor building differential pressure for the train results in -0.398 inches of water (without correction for building to atmosphere differential temperature), indicating adequate performance of the Secondary Containment and Standby Gas Treatment System.

SUMMARY OF TEST DATA

June 9, 1996

Quad Cities 1 & 2 Reactor Building Leak Rate

'B' SBGTS Train

	Differential Wall Pressure (inches of water)				
Flow (cfm)	North	South	East	West	Average
3950	-0.340	-0.290	-0.285	-0.270	-0.296

Differential Reactor Building to Atmosphere Temperature = -10.2F

Temperature Correction (inches of water) = -0.006

Temperature Corrected Average
Differential Pressure (inches of water) = -0.302

Induced Leak Rate Results

	Differential Wall Pressure (inches of water)				
Flow (cfm)	North	South	East	West	Average
3950	-0.320	-0.290	-0.290	-0.280	-0.295

Temperature Corrected Average
Differential Pressure (inches of water) = -0.301

Summary of Wind and Temperature Conditions

Temperature (deg. F): Indoor 73.8° F

Outdoor 63.6° F

Wind Velocity (MPH): 9.3 - 10.7

Wind Direction: West (278.3 deg.)

Elevation Above Grade Level (feet): 196

The results of the test indicate that the SBGTS is capable of maintaining a quarter of an inch of water vacuum under calm wind conditions with a filter train flow rate of no more than 4000 cfm. Average reactor building differential pressure for the train results in -0.296 inches of water (without correction for building to atmosphere differential temperature), indicating adequate performance of the Secondary Containment and Standby Gas Treatment System.