U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-254/84-12(DRS)

Docket No. 50-254 License No. DPR-29

Licensee: Commonwealth Edison Company
P.O. Box 767
Chicago, IL 60690

Facility Name: Quad Cities Nuclear Power Station, Unit 1

Inspection At: Cordova, Illinois

Inspection Conducted: July 20-26, 1984

Inspector: S. M. Hare 8/10/84
Date

Approved By: W. G. Guldemond, Chief 8/10/84
Operational Programs Section Date

Inspection Summary

Inspection on July 20-26, 1984 (Report No. 50-254/84-12(DRS)
Areas-Inspected: Routine, announced inspection of the containment integrated leak rate test. The inspection involved 69 inspector hours by one NRC inspector, including 28 inspector hours onsite during off-shifts.
Results: No items of noncompliance or deviations were identified.

DETAILS

1. Persons Contacted

N. Kalivianakis, Station Superintendent
*T. Tamblyn, Assistant Superintendent Operations
*L. Gerner, Assistant Superintendent Administrative and Support Services
*E. Mendenhall, Thermal Engineer
*G. Spedl, Technical Staff Supervisor
J. Schnitzmeyer, Technical Staff Assistant
*R. Rustic, Technical Staff Engineer
P. Todd, Technical Staff Engineer

*Denotes those present at the exit interview on July 26, 1984.

2. Containment Integrated Leak Rate Test (CILRT)

a. Procedure Review

The inspector reviewed Temporary Procedure 2195 "Integrated Primary Containment Leak Rate Test," which consisted of procedures QTS 150-1, Revision 11; QTS 150-S2, Revision 8; QTS 150-S3, Revision 7; QTS 150-S5, Revision 10 and QTS 150-S17, Revision 4; and verified that the procedure was technically adequate and consistent with regulatory requirements.

b. Instrumentation

The inspector reviewed the calibration data for instruments associated with performing the CILRT. A multipoint calibration of all instrumentation was performed. Correction values were generated based on the difference between measurements of resistance from an NBS verified resistance box and actual resistance measured. All corrections were placed as an array or equation into the CILRT computer.

The following instrumentation was used in the CILRT:

Type	Quality	Serial Number
RTDs	30	44209-44231
Flowmeter	1	8405A0348A1
Pressure Gauge	2	PPG-1,2
Dewcells	10	1-10

c. Direct Observation of Valve Lineups

The inspector verified by direct visual observations that valve lineups were completed in accordance with the test procedure.

d. Pretest Requirements

The inspector verified the proper placement of test instrumentation by performing a pretest containment inspection. The inspector also verified the validity of the stabilization period and the conformance of the test prerequisites with the requirements of 10 CFR 50, Appendix J and ANSI N45.4-1972.

e. Test Witnessing

(1) First Attempt

The CILRT was first attempted at 7:14 p.m. on July 24, 1984. Sixteen hours into the test it was determined that the first six RTD's (subvolumes 1, 2, 3) were being improperly scanned by the computer. The first six RTD's were only scanned when the program was reinitialized. At all other times the values remained constant. After consulation with the Region III office, the licensee decided that it would begin a new test starting at the point where all data sets were properly scanned. This first attempt was not considered a failed test.

(2) Second Attempt

Beginning at the first complete data set, a second 24-hour CILRT was started at 2:30 p.m. on July 25, 1984. The test was completed at 2:32 p.m. on July 26, 1984. The inspector independently monitored the test and evaluated leak rate data to verify the licensee's calculations of the leak rate. There was acceptable agreement between the inspector's and licensee's leak rate calculations as indicated in the following summary (units are in weight percent per day):

Measurement	Licensee	Inspector
Leakage rate measured (Lam) during CILRT	0.2297	0.2297
Lam at 95% confidence level	0.2324	0.2325
Lam at 95% confidence level adjusted to reflect penalties	0.3404	0.3405

The following penalties were included in the adjusted Lam at the 95% confidence level.

Unvented volumes	0.073 wt%/day
Drywell equipment and floor drain sump level increase	0.035
Total penalties	0.108 wt%/day

Appendix J acceptance criterion at the 95% confidence level = $0.75(L_A)$ = 0.75 wt%/day. As indicated above, the adjusted Lam at the 95% confidence level was less than the maximum allowable by 10 CFR 50, Appendix J.

f. Supplemental Test Data Evaluation

After the satisfactory completion of the 24 hour test on July 26, 1984, a known leakage of 0.815 weight percent/day was induced. The inspector independently monitored the test and evaluated leak rate data to verify the licensee's calculation of the supplemental leak rate. There was acceptable agreement between the inspector's and licensee's leak rate calculations as indicated in the following summary (units are in weight percent per day):

Measurement	Licensee	Inspector
Measured leakage (Lc) rate during supplemental test	1.0909	1.0909
Lc @ 95% confidence level	1.1028	1.1128
Induced leakage rate (Lo)	6.65 SCFM = .815 wt %/day	

Appendix J Acceptance Criterion: Lo+Lam-0.25La < Lc< Lo+Lam+0.25La. (0.7947<Lc<1.2947). As indicated above, the supplemental test results satisfied the requirements of 10 CFR Part 50, Appendix J.

3. As Found Condtion

The "as found" condition is the condition of the containment at the beginning of the outage prior to any repairs or adjustments (RAs) to the containment boundary. If RAs are made to the containment boundary prior to the Type A test, then local leak rate tests must be performed to determine the leakage rates before and after the RAs. The "as found" Type A test results can then be obtained by adding the difference between the affected path leakages before and after RAs to the overall Type A test results. The following is a summary of the "as found" leakage rates (units are in weight percent/day):

Measurement	
Penalties incurred due to repairs or adjustments prior to the CILRT	2.093
"As Found" Type A test results:	2.433

Appendix J acceptance criteria for the "as found" condition of the containment = 0.75 La = 0.75 wt %/day.

As indicated above, the "as found" condition exceeded that allowable by 10 CFR Part 50, Appendix J. This excessive "as found" condition was due to leakage in the HPCI turbine exhaust valve and the MSIVS. The previous CILRT performed during December 1982 also exceeded the "as found" Appendix J limit due to excessive leakage in the RCIC turbine exhaust valve and drywell head flange. As two consecutive "as found" conditions have failed to meet the acceptance criteria in 10 CFR Part 50, Appendix J, and as required by Section III.A.6.(b), the next Type A test shall be performed at the next plant shutdown for refueling unless exempted by the NRC.

4. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on July 26, 1984 and summarized the scope and findings of the inspection activities. No items of noncompliance or deviations were identified.