UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30303

Report No.: 50-281/85-11

Licensee: Virginia Electric and Power Company
Richmond, VA 23261

Docket No.: 50-281 License No.: DPR-37

Facility Name: Surry

Inspection Conducted: April 8 - 12, 1985

Inspectors: H. L. Whitener — 5-21-85
H. L. Whitener — Date Signed

for Frank Jape — 5/21/85
L. S. Mellen — Date Signed

John B Macdonald — 5/21/85
J. B. Macdonald — Date Signed

Accompanying Personnel: F. Jape, April 11 - 12, 1985

Approved by: Frank Jape — 5/21/85
F. Jape, Section Chief — Date Signed
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope: This routine, announced inspection entailed 100 inspector-hours on site in the areas of independent analysis of integrated leak rate test results; review of local and integrated leak rate test procedures, data, data analysis; and test reports.

Results: Multiple examples of one violation were identified: Violation (281/85-11-01) - Failure to follow the requirements of Appendix J to 10 CFR 50 (paragraphs 6.a, 9.a, and 9.c).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*H. L. Miller, Assistant Station Manager (NS&L)
*D. L. Benson, Assistant Station Manager (O&M)
L. Curfman, Corporate Office
*R. H. Blount, II, Supervisor Performance and Technical
*E. J. Turko, Engineer

Other Organization

Stone and Webster
*R. I. Samson, Engineer

NRC Resident Inspector

*D. Burke, Senior Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on April 12, 1985, with those persons indicated in paragraph 1 above. The inspectors described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee. The following new items were identified during this inspection.

a. Violation

Violation (281/85-11-01) - Failure to follow the requirements of Appendix J to 10 CFR 50. The following examples were identified:

(1) Contrary to the requirements of paragraph III.A.1.(d), the licensee failed to vent and drain certain penetrations which in a post accident condition are potential air leakage paths (paragraph 6.a.).

(2) Contrary to the requirements of paragraph III.A.1.(a), the licensee failed to restart the Type A test after the isolation of excessive leakage which prevented meeting the acceptance limit of paragraph III.A.5.(b) (paragraph 9.a).

(3) Contrary to the requirements of paragraph III.A.3.(b), the licensee failed to determine the reason, take corrective action, and perform a successful supplemental test when the supplemental test result did not agree with the Type A test result within the allowable tolerance of ± 0.25 La (paragraph 9.c).

b. Inspector Followup Items (IFI)

(1) IFI (281/85-11-02): Review revision of CILRT procedure, PT 16.3 for proper vent and drain requirements (paragraph 6.a).

(2) IFI (281/85-11-03): Review licensee action with regard to measuring local leakage downstream (low pressure side) of isolation valves (paragraph 6.b.).

c. Unresolved Item (UNR)

- UNR (281/85-11-04): Review licensee action to qualify the secondary system as a containment leakage barrier or to locate and repair the source of containment leakage into the secondary system (paragraph 10).

The licensee did not identify as proprietary any of the material provided to or reviewed by the inspectors during this inspection.

3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations. One new unresolved item identified during this inspection is discussed in paragraph 10.

5. Review of Surry Leak Rate Program (61719) (61720)

This inspection was conducted to review certain issues that developed from the September 11 - 14, 1983, Unit 2 containment integrated leak rate test (CILRT) and to review the overall leak rate test program.

a. Issues Addressed During This Inspection

(1) Pass or fail "as-found" status of the September 1983 Unit 2 CILRT (Type A test).

(2) NRC position on leakage from the containment to the secondary system.

(3) Manipulations performed to isolate leakage paths during the CILRT.

(4) Type A and Type C leak rate test procedure valve alignments.

(5) Method used in performing Type C leakage measurements on the low pressure side of the isolation valve.

(6) Method used in performing the Type A supplemental (verification) test.

(7) Application of Bechtel Topical Report, BN-TOP-1, Revision 1, test criteria to termination of the CILRT.

(8) Method of establishing test start time.

(9) Analysis of CILRT data.

b. Regulatory and Licensee Referenced Documents

(1) Appendix J to 10 CFR 50

(2) ANSI N45.4 - 1972

(3) Bechtel Topical Report, BN-TOP-1, Revision 1, November 1, 1972

(4) NRC Letter dated January 15, 1973, "Evaluation of Bechtel Topical Report..." which determines that the criteria and procedure described in BN-TOP-1, Rev. 1, November 1, 1972 are acceptable for termination of a Type A test in less than 24 hours.

(5) Surry Unit 2 Type A, B, and C Periodic Test Report transmitted to Harold R. Denton from W. L. Stewart by letter dated December 13, 1983

(6) Attachment to the licensee's letter of December 13, 1983, (item (5) above) providing analysis of the as-found Type A leak rate

(7) Surry 2 Technical Specification Section 4.4

(8) Surry FSAR Section 5.5, "Containment Tests and Inspections"

(9) CILRT data

c. Plant Status

At the time of this inspection Unit 2 was in cold shutdown preparing to go into a refueling outage. A Type A test is scheduled to be performed during this outage.

d. Summary of Inspection Findings

Based on review of the above documents and analysis of test data the inspectors concluded:

(1) The as-found Type A leakage rate represents a failed test in that the licensee did not quantify the corrected leakages and demonstrate that the leak rate would meet the acceptance criteria of 0.75 La.

(2) The CILRT was not restarted after isolation of excessive leakage which caused the Type A leak rate to exceed the allowable leakage of 0.75 La.

(3) The acceptance criteria of BN-TOP-1, Rev. 1, were not correctly applied to determine an acceptable termination time for the short duration test and to determine an acceptable verification test time.

(4) Verification test analysis was a two point mass determination which failed to meet the 0.25 La limit when the limit is applied as a 24-hour allowable limit.

(5) The origin of isolated leakage from the containment to the secondary system could not be located and repaired subsequent to the Type A test. The potential for leakage through this path has not been evaluated.

(6) Certain potential leakage paths were not properly vented or drained during the Type A test.

(7) Certain Type C tests are performed in a nonconservative manner.

The above items are discussed in detail in subsequent paragraphs of this report.

6. Procedure Review (61719) (61720)

a. Type A Test Procedure

During the review of the licensee Type A test procedure, PT 16.3, the inspector noted several penetrations which were not vented or drained in accordance with Appendix J to 10 CFR 50, paragraph III.A.1.(d) as amplified in ANSI 56.8, paragraph 3.2.1.5. Appendix J, paragraph III.A.1.(d) requires that those portions of fluid systems that penetrate containment and rupture as a result of a LOCA must be vented and drained. ANSI 56.8, paragraph 3.2.1.5 further clarifies the intent of Appendix J, paragraph III.A.1.(d) in that those lines which are normally fluid filled and which may be drained or have the fluid driven

off by the accident shall be drained to the extent necessary to expose the containment isolation valve seats to the containment atmosphere. Contrary to this, penetrations 47, 56A, 56B, 56D, 89, 103 and 104 were not vented or drained during the September 1983 Unit 2 test. The licensee has agreed to vent and drain these penetrations during subsequent Type A tests. In addition, the licensee has agreed to review the Unit 1 1983 Type A test to determine the effect on the final Type A test results.

Failure to properly vent and drain penetrations for the Type A test is contrary to the requirements of paragraph III.A.1.(d) of Appendix J and was identified as an example of Violation 281/85-11-01 - Failure to follow the requirements of Appendix J to 10 CFR 50.

The licensee agreed to review the Type A test procedure (PT-16.3) an make appropriate changes to the procedure. This matter was identified for inspector followup as Inspector Followup Item (IFI) 281/85-11-02: Review revision of PT 16.3 for proper vent and draining requirements.

b. Type C Test Procedure

The conclusion reached as a result of the review of the licensee's Type C test procedure was that the downstream method, as performed by the licensee, was not conservative. It would not measure packing, stem or flange leakage. In addition, if the seat leakage was relatively small, and the down stream volume sufficiently large, the test duration (nominally 15 minutes) was not long enough to accurately measure seat leakage.

The licensee agreed to review the downstream test method and evaluate the use of a more conservative test method. This is identified as IFI (281/85-11-03): Review of downstream test method.

7. As-Found Type A Leak Rate (61719) (90713)

An analysis of the as-found Type A leakage rate was submitted as an attachment to the CILRT Report (Reference 5.b.6). Three leakage paths were identified as greater than 40 standard cubic feet per hour (scfh) which is the limit of measurement capability for the flowmeters used in the 1983 local leak rate test program. These leakage paths were through penetrations 38, Aerated Drains; 46, Charging to main loops; and, 69, Recirculation Spray system. The inspectors reviewed plant drawings and safety classifications of these systems and agreed with the licensee's contention that under post-accident conditions penetrations 46 and 69 do not represent probable leakage paths to the atmosphere.

The drain system, penetration 38, does represent a potential air leakage path post accident. In that the leakage through this penetration is not quantified, the as-found Type A leak rate is indeterminate. Based on 40 scfh leakage from penetration 38, the licensee's analysis shows an as-found leak rate of 0.047 wt% per day from mass point analysis and 0.079 wt% per day from total-time analysis. The latter exceeds the allowable limit of 0.075 wt% per day. The inspectors' calculations were in agreement with the values reported by the licensee.

Based on the analysis discussed above and the failure to quantify the corrected leakage, the inspectors concluded that the licensee did not demonstrate that the as-found containment leakage meets the Appendix J leakage limit of 0.075 wt% per day. At the exit interview licensee management was informed that the September 1983, containment integrated leak rate on Unit 2 is considered a failure in the as-found condition. The previous Unit 2 CILRT in December 1981, was also a failed test in the as-found condition (IE Inspection Report 50-280/81-34 and 50-281/81-34). In accordance with Paragraph III.A.6.(b) of Appendix J to 10 CFR 50, Surry Unit 2 will be required to perform additional integrated leakage rate tests at each plant shutdown for refueling or approximately every 18 months whichever occurs first until two consecutive tests meet the acceptance criteria.

The regulatory basis for the Region II position incorporates the following requirements. Surry Unit 2 Technical Specification 4.4 states that the Type A test will be performed in accordance with the requirements of Appendix J to 10 CFR 50. Appendix J, Paragraph III.A.3.(a)., specifies that Type A tests will be conducted in accordance with the provisions of ANSI N45.4. ANSI N45.4, paragraph 4.2, requires that periodic containment leak rate tests be conducted before any preparatory repairs are made in order to disclose the normal state of repair of the containment structure, (i.e., as-found leakage rate condition). It further requires that if the containment leak rate exceeds the specified maximum, local and integral tests may be performed and any necessary work done to bring the leakage rate within the specified limits. Then another CILRT is performed to demonstrate that the maximum allowable leakage rate is not exceeded. Thus, if leakage has been corrected as a result of Type B and Type C testing prior to the Type A test, the amount of corrected local leakage must be applied to the as-left Type A test result to determine the containment leakage rate prior to making these repairs.

8. Test Sequence and Description (61719) (90713)

Pressurization of containment was started at 1620 hours on September 10, 1983. After resolving problems with the air dryers and mechanical chillers, containment pressure of 61.55 psia was achieved at 1549 hours on September 11. Temperature stabilization criterion was met at 2008 hours. In the ensuing 14 hours, the leak rate decreased and in the last six hours appeared to be within the limit. This trend reversed and over the next

seven hours the leak rate increased and indicated a mass loss of about 35 pounds per hour. The allowable mass loss to meet the 0.75 La limit is about 17.4 pounds per hour. In the period from 1724 hours on September 12 to 1300 hours on September 13 the secondary system out to the steam line non-return valves was filled with water and the lines in this system isolated by closing double valves in potential leak paths. Test start time was declared at 1300 hours on September 13. However, leakage isolation proved ineffective and further isolation manipulations were performed at 1800 hours on September 13. The test was terminated at 0500 hours on September 14. The licensee provided the following table derived from the test log which provides a brief summary of the test sequence and events.

SYNOPSIS OF UNIT 2

TYPE A TEST - SEPTEMBER 1983

1549 (9/11)	Pressurization was secured.
2008 (9/11)	Temperature stabilization criterion was met.
2008 (9/11)-1023 (9/12)	Average leak rate for time period was 18.8 lbm/hr.
1023 (9/12)-1724 (9/12)	Leak rate increased to 35.4 lbm/hr.
1724 (9/12)-0530 (9/13)	Filled steam lines with water. Average loss for this time period was 4 lbm/hr.
0530 (9/13)-1132 (9/13)	Average loss was 33.3 lbm/hr. At 1000 hours started double valving the secondary side in safeguards.
1300 (9/13)	Start of Type A leak rate period.
1800 (9/13)	NRVs manually torqued closed and open isolation valve to PORV closed.
0204 (9/14)	Removed manometer U0963 from program. Failed at 0100 (9/14).
0500 (9/14)	Completion of Type A Leakage period (16 hours).

9. Test Performance, Results, and Analysis (61719) (90713)

a. Test Start Time

Manipulations performed to block containment leakage into the secondary system were completed and time zero for the test was declared at 1300 hours on September 13. However, isolation of the leakage proved ineffective. At 1800 hours on September 13, the steam line non-return valves were retorqued and a manual valve in line with the steam line power operated relief valve was closed. These manipulations resulted in a significant reduction in loss of containment air mass through the secondary system. The licensee failed to reset the test start time at or about 1800 hours and did not analyze test data to determine the impact of this leakage correction on test results. The official test time reported to the NRC for the 16-hour test was 1300 hours on September 13 to 0500 hours on September 14. Results of data analysis over these 16 hours are actually results of the composite leak rates from 1300 hours to 1800 hours and from 1800 hours, September 13 to 0500 hours, September 14. Results of this composite leak rate lead the licensee to terminate the Type A test in 16 hours in that the total time upper confidence limit (UCL) appeared to meet the acceptance limit of 0.075 wt % per day required for termination of the test in less than 24 hours. Since the exact time that isolation of the excessive leakage from the secondary system became effective is not known and to allow some time for the secondary system to come into equilibrium with the containment, the inspector selected 1900 hours, September 13 as a reasonable starting time for the test. Using 1900 hours as time zero, termination of the Type A test at 0500 hours, September 14 yields a 10 hour test. The total time UCL for this test period was 0.106 wt % per day which does not meet the acceptance limit for termination of the test in less than 24 hours.

Based on review of the test log, test data, and discussions with licensee personnel the inspectors concluded that there was no intent to select a starting time which would allow early termination of the test. Selection of 1300 hours, September 13 as the starting time was a valid selection based on the expectation that subsequent to filling the secondary system and double isolating associated systems an acceptable leak rate would be obtained. However, failure to restart the Type A test after further isolation of leakage was necessary at about 1800 hours, September 13 was an error which indicates a lack of attention to Appendix J requirements.

Paragraph III.A.1.(a) of Appendix J requires that if excessive leakage is identified which prevents meeting the Type A test acceptance limit, the Type A test will be terminated, repairs made, and then a Type A test will be performed. An NRR staff position issued October 25, 1977, has determined that under the appropriate conditions, isolation of a leakage path and subsequent adjustment of the Type A leakage rate based

on local leakage measurements is within the intent of this regulation. Consequently, failure to reset time zero and perform a Type A test subsequent to the isolation of excessive leakage at 1800 hours, September 13, 1983, which prevented meeting the Type A test acceptance criteria is contrary to the requirements of paragraph III.A.1.(a) of Appendix J. This item was identified as an example of Violation 281/85-11-01 - Failure to follow the requirements of Appendix J to 10 CFR 50.

b. Type A Test Results and Analysis

As discussed above, the licensee analyzed a composit of two distinct leak rates to determine the containment leakage status. As a result, an incorrect containment leakage status was accepted by the licensee and reported to the NRC. Further, acceptance of the incorrect leakage rates lead the licensee to an unauthorized termination of the Type A test in 16 hours when the total time UCL did not meet the acceptance criteria. These errors, which are considered to be a direct result of using an incorrect test start time, raise a concern as to the actual leakage status of the containment. The inspectors performed an independent analysis of the data to determine the as-left containment leakage rate. The composite leakage rate calculated by the licensee and leakage rates calculated by the inspectors for several time spans are shown in Table 1 below. The numbers are in wt.% per day; LSQF is the leak rate obtained from a least square fit to the data; UCL is the upper confidence limit leak rate calculated in accordance with ANS 56.8 for mass point analysis and in accordance with BN-TOP-1, Revision 1 for total time analysis.

TABLE 1

Mass Point Analysis		Total Time Analysis
1300 - 0500 hours		
LSQF	0.023	0.023
UCL	0.028	0.0596
1300 - 1800 hours		
LSQF	0.109	0.100
UCL	0.129	0.159
1800 - 0500 hours		
LSQF	0.005	0.046
UCL	0.011	0.205
1900 - 0500 hours		
LSQF	0.009	0.020
UCL	0.015	0.106

Although the numbers differ for the latter two calculations, the end result is the same: the total time UCL does not meet the acceptance criteria and the test should have been continued. The inspectors considered the most appropriate starting time as 1900 hours. To observe the effect of the starting time the inspectors also calculated leakage rate results at 0500 hours when the start time was advanced at 20 minute intervals in the period from 1300 hours, September 13 to 0300 hours, September 14. These data showed that for 43 calculations the total time upper confidence limit was met in only 11 instances or about 25% of the possible start times. Further, the grouping of the 11 successful start times indicates cyclic behavior (see table 2). A trend analysis of the total time UCL leakage rate was performed by calculating the leakage rate for a fixed time span as the time span is advanced through the test data at preselected intervals. Time spans of two, four, six and eight hours all confirmed the oscillatory behavior of the total time UCL. At the low points of the oscillations the total time UCL came within the acceptable limit but never stabilized within the limit. It was observed that the oscillations were trending downward and decreasing in frequency. The total time UCL may have stabilized within the limit had the test been continued.

TABLE 2

LEAK RATE CALCULATIONS ENDING AT 0500 HOURS SEPTEMBER 14

WITH VARYING START TIMES

START TIME	MASS POINT ANALYSIS (wt%/day)		TOTAL TIME ANALYSIS (wt%/day)		
	Leak RATE	UCL	Leak RATE	UCL	
1300 - Septemer 13	.023	.028	.023	.06	*
1320	.022	.027	.02	.061	*
1340	.020	.026	.017	.071	*
1400	.019	.024	.028	.099	
1420	.017	.023	.013	.082	
1440	.016	.021	.027	.127	
1500	.014	.020	.018	.135	
1520	.013	.018	-.02	.079	
1540	.01	.015	-.017	.072	*
1600	.007	.012	-.013	.064	*
1620					
1640	.005	.010	-.007	.082	
1700	.004	.01	-.01	.119	
1720					
1740	.003	.009	.014	.107	
1800	.005	.011	.046	.205	
1820					

START TIME	MASS POINT ANALYSIS (wt%/day)		TOTAL TIME ANALYSIS (wt%/day)		
	Leak RATE	UCL	Leak RATE	UCL	
1840	.009	.015	.015	.076	
1900	.009	.015	.020	.106	
1920	.009	.016	.009	.098	
1940	.009	.016	-.016	.091	
2000	.007	.014	-.023	.127	
2020	.006	.014	-.001	.139	
2040	.007	.016	.052	.263	
2100	.011	.019	.004	.043	*
2120	.011	.019	.005	.054	*
2140	.010	.020	-.007	.063	*
2200	.009	.020	.0004	.053	*
2220	.010	.021	.0002	.074	*
2240	.012	.024	.023	.097	
2300	.015	.029	.013	.071	*
2320	.017	.032	.003	.091	
2340	.018	.034	.020	.091	
2400 (0000) Sept. 14	.022	.040	.029	.132	
0020	.026	.047	.011	.179	
0040	.028	.051	.060	.220	
0100	.037	.062	.056	.209	
0120	.039	.069	.076	.349	
0140	.038	.075	.011	.162	
0200	.016	.051	-.010	.178	
0220	.003	.044	-.044	.299	
0240	.003	.051	.019	.194	
0300	.036	.079	.031	.127	

* Indicates total time UCL leakage rates which meet the 0.75 La requirement for terminating a test short of 24 hours.

From an overall evaluation of the data, it appears that subsequent to isolation of the leakage into the secondary system at 1800 hours the test data exhibited cyclic behavior around a reasonably low leakage rate. The cyclic behavior is to some extent averaged by the mass point analysis. From Table 2, the mass point analysis leak rate appears to be stabilizing at about 0.01 wt.% per day with an upper confidence limit of about 0.02 wt.% per day. Due to the dependence of total time analysis on the initial data point, the cyclic behavior causes wide variations in the leak rate results depending on whether the initial point is at the top or bottom of a cycle. For these reasons the inspectors concluded that, excluding the leakage to the secondary system, the test data indicate that the containment leakage is within acceptable limits.

c. Supplemental Test

The verification (supplemental) test was performed using a pump back method to inject air into containment. In conjunction with the pump back technique, the acceptance criteria is based on a two point mass step change. Mass pumped into containment (approximately equal to La) is metered. The metered value is then compared with the difference between starting and final mass calculated from the CILRT instrument system. The metered and calculated values must agree within ±0.25 La.

In August 1984, the NRC evaluated the technique of the mass step change supplemental test and concluded that it does not meet the requirements of Appendix J to 10 CFR 50, Paragraph III.A.3.(b) (See IE Inspection Report 50-338/84-29). Since this evaluation occurred subsequent to the 1983 Surry CILRT the test was evaluated only for meeting the required Appendix J limits. The test results are shown below:

TABLE 3

		(LBM)
1.	Metered air pumped into containment in 1.66 hours	597.50
2.	Difference in starting and final mass as measured by the CILRT instrument system	572.62
3.	Difference in metered and calculated mass (1-2)	24.88
4.	Allowable error of ±0.25 La	±138.00

The inspectors identified two deficiencies in the test. First, BN-TOP-1, Revision 1, requires that for a test less than 24 hours, the supplemental test duration shall be about 1/2 of the Type A test duration or in this case eight hours. The mass was pumped into containment in 1.66 hours.

The second problem relates to the misapplication of the allowable error. The tolerance is specified as ±0.25La. La is defined as wt.% per day. Therefore, the allowable error band in terms of pounds is ±0.25 (550 lbs) per day which is ±138 pounds per day or ±5.75 pounds per hour. The test error of 24.88 pounds reduces to 15 pounds per hour which does not meet the acceptance limit of 5.75 pounds per hour. The Type A test is not considered completed or successful until a successful supplemental test is completed. Due to misinterpretation of the Appendix J limits the licensee did not recognize that the supplemental test was not acceptable; consequently, the reason was not determined, corrective action was not taken and a successful supplemental test was not performed. This condition contributed to the conclusion that the 1983 CILRT was not an acceptable test.

Appendix J to 10 CFR 50, Paragraph III.A.3.(b) states that, "If results are not within ±0.25La, the reason shall be determined, corrective action taken, and a successful supplemental test performed. This item was identified as an example of Violation 281/85-11-01 - Failure to meet the requirements of Appendix J.

During discussions of acceptable methods for performing the supplemental test, the licensee pointed out that Technical Specification 4.4 states that the makeup air method will be used for the supplemental test. The Technical Specification further states that the leak rate test will be performed in accordance with Appendix J to 10 CFR 50 which recommends that the imposed leak rate method specified in ANSI N45.4 be used for the supplemental test. In a case where regulations conflict with Technical Specifications the regulations being a higher level document will govern unless the Technical Specification is identified as an exemption to the regulation. The inspectors concluded that the licensee's Technical Specification will permit the use of the imposed leak rate method for performing the supplemental test.

10. Review Of Leakage To Secondary System (61719) (90713)

In the review of an application for a plant, NRC considers the secondary system a qualified closed system. As such the steam generators and associated piping become an extension of the containment boundary. While it is recognized that there will be steam pressure in the secondary system immediately post accident, the system is essentially an unregulated system and there has been no generic review to qualify this system as a containment leakage seal system. Consequently, in the absence of a plant specific evaluation of the secondary system as a containment leakage seal system which is acceptable to the NRC staff, leakage from containment into the secondary system is considered as Type A containment leakage and must be included in the Type A test leak rate measurement. Further, Appendix J, Paragraph III.A.1.(a) requires that if the leakage exceeds acceptable Type A leakage limits, the Type A test is terminated, corrective action is taken, and the Type A test is performed. Relative to this requirement, the NRC staff issued a position October 25, 1977, which states that isolation of a leakage path in order to pass the Type A test is within the intent of Appendix J, Paragraph III.A.1.(a) if the isolated leakage can be measured by local test methods after the Type A test and is used to appropriately adjust the Type A test result.

As discussed previously excessive loss of air mass from containment into and out of the secondary system occurred during the CILRT. To isolate the leakage the secondary system was filled with water out to the mainsteam non-return valves and all piping connected with the system was double isolated. This effected a water seal which reduced the containment leakage and allowed the licensee to perform the CILRT. After the CILRT the licensee attempted to locate the leakage path. Since the secondary system would not hold air, a hydro was performed at 100 psi. No leakage was detected. Further, no steam leaks were detected during a subsequent plant heatup.

The inspector reviewed with licensee personnel, the action taken to isolate the leakage path and tests performed after the Type A test to identify and repair the leakage path. In that no leakage could be identified, no adjustment was made to the Type A test result. Due to the concern that the leakage path may tend to open under containment pressure and to seal under secondary system water pressure, the licensee agreed to take the necessary steps to perform an air test on secondary system during the current outage before any maintenance is performed on the system. The fact that the Type A leakage exceeded acceptance limits contributed to the decision that the 1983 CILRT is considered a failed test. During this outage the Type A test will be repeated. If the leakage path is shown to be corrected there will be no impact on plant operations.

This matter was identified as an unresolved item (UNR) 281/85-11-04 - Review licensee action to obtain approval of the secondary system as a containment leakage limiting system or locate and repair source of leakage into the secondary system.