

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-316/84-13(DRS)

Docket No. 50-316

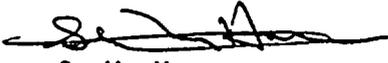
License No. DPR-74

Licensee: American Electric Power Service Corporation
Indiana & Michigan Power Company
2 Broadway
New York, New York 10004

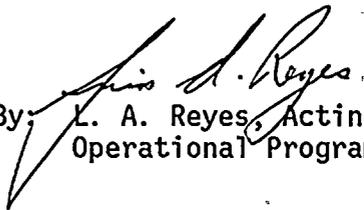
Facility Name: D. C. Cook Nuclear Plant, Unit 2

Inspection At: D. C. Cook Site, Bridgman, Michigan

Inspection Conducted: May 29-31, August 13-14 and September 28, 1984

Inspector:  S. M. Hare

10/18/84
Date

Approved By:  L. A. Reyes, Acting Chief
Operational Programs Section

10/18/84
Date

Inspection Summary

Inspection on May 29-31, August 13-14 and September 28, 1984 (Report No. 50-316/84-13(DRS))

Areas Inspected: Routine announced inspection by a region based inspector of procedures used to perform the containment integrated leak rate test and the results generated after the test. The inspection involved 43 inspector-hours onsite by one NRC inspector, including four inspector-hours onsite during off-shifts.

Results: One item of noncompliance was identified (Inadequate Procedure, resulting in failure to perform the supplemental test in accordance with 10 CFR 50, Appendix J requirements Paragraph III.A.3.(b)).

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DETAILS

1. Persons Contacted

#*W. G. Smith, Jr., Plant Manager
#+*E. C. Townley, Assistant Plant Manager
#+*B. A. Svensson, Assistant Plant Manager
#+*J. F. Stietzel, Quality Control Supervisor
#+*A. Blind, Technical Supervisor - Engineering
#+*K. S. Chapman, Performance Engineer
*M. L. Horvath, Senior QA Auditor
#+*C. Flis, Responsible ILRT Engineer
#+*P. Barret, Licensing Engineer
*E. R. Swanson, NRC Senior Resident Inspector
#J. K. Heller, NRC Resident Inspector

The inspector also interviewed other licensee employees including members of the technical and operating staff.

*Denotes those attending the exit interview of May 31, 1984.

+Denotes those attending the exit interview of August 14, 1984.

#Denotes those attending the exit interview of September 28, 1984.

2. Containment Integrated Leak Rate Test (CILRT)

a. Procedure Review

The inspector reviewed procedure 12-THP-4030-STP-202, "Containment Integrated Leak Rate Surveillance Test," for technical adequacy and conformance with regulatory requirements. With the exception of the below open item and item of noncompliance the inspector has no further questions.

(1) Data Rejection

The inspector noted after the completion of the CILRT, individual redundant data points had been rejected for various reasons. The inspector stated that data points should be rejected using a definitive data rejection criteria. The licensee's procedure contains no such criteria.

The inspector stated that ANSI 56.8-1981 contains an acceptable method for data rejection. This is considered an open item (316/84-13-01(DRS)) pending the inspectors review of the revised CILRT procedure prior to the next ILRT.

(2) Restart of Supplemental Test

10 CFR 50, Appendix B, Section V requires that activities affecting quality shall be prescribed by adequate procedures.

10 CFR 50, Appendix J, paragraph III.A.3.(b) requires that "...the differences between the supplemental test data and the Type A test data is within 0.25 La. If results are not within 0.25 La, the reason shall be determined, corrective action taken, and a successful supplemental test performed."

Contrary to the above, Section 5.7 in the CILRT procedure allows the licensee, if a supplemental test is not passing, to arbitrarily move the starting point of the supplemental test "to a later point in time; as in some cases this aids the convergence of test data to a solution in the linear regression program." This type of data manipulation invalidates the statistical nature of the test and can allow a test that is failing, to pass. See paragraph 2.d in this report for details.

Failure of the procedure to properly reflect the requirements of 10 CFR 50, Appendix J, paragraph III.A.3.(b), is considered an item of noncompliance (316/84-13-02(DRS)).

b. Instrumentation

The inspector reviewed the calibration data 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.

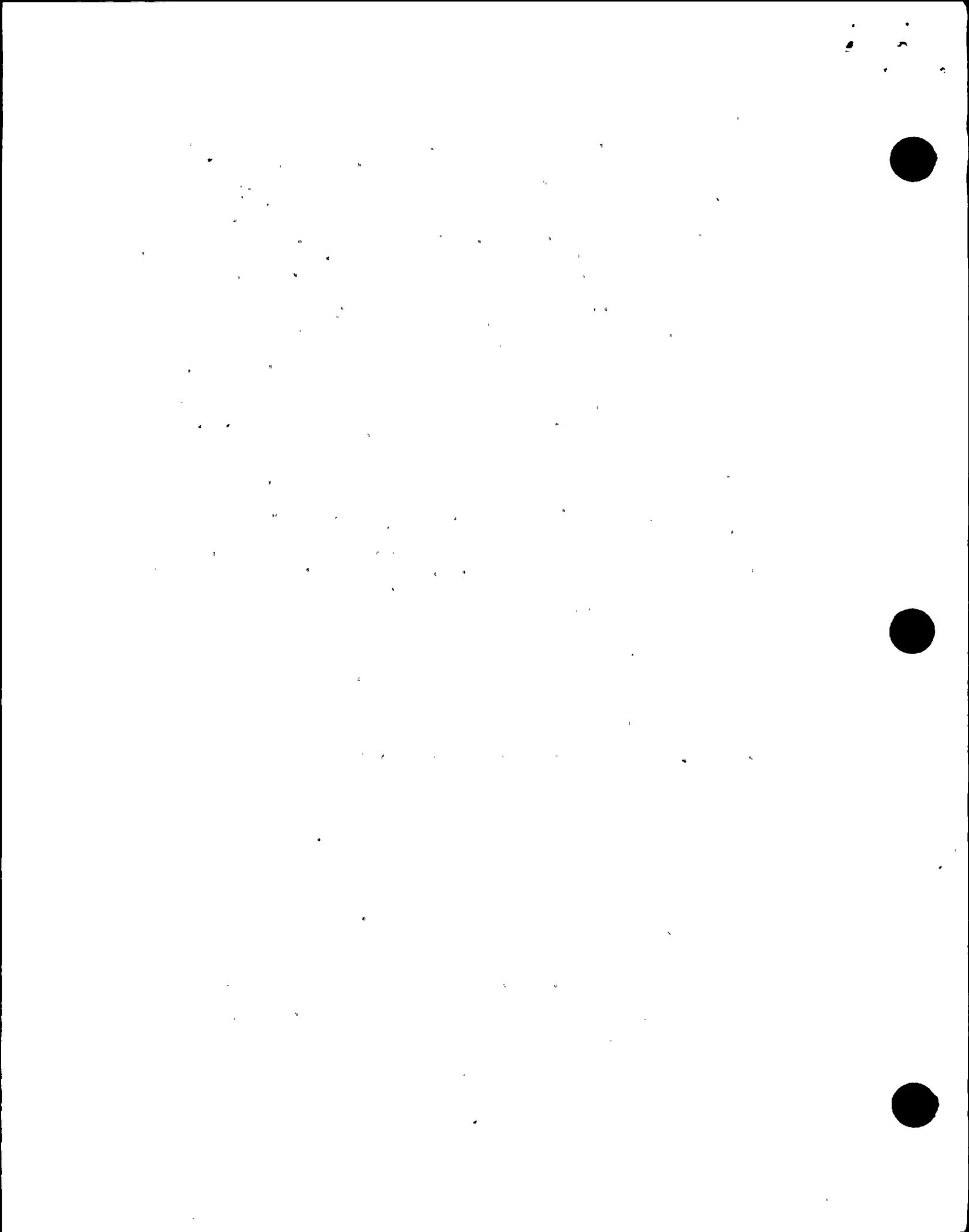
c. Type A Test Review

The inspector performed a post test review of the test log and of the licensee's data and calculations of the leak rate. The inspector verified by the log review that the test was performed in accordance with the procedure and all regulatory requirements. 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):

<u>Measurement</u>	<u>Licensee</u>	<u>Inspector</u>
Leakage rate measured (Lam) during CILRT	0.039	0.038
Lam at 95% confidence level	0.045	0.044
Lam at 95% confidence level adjusted to reflect penalties	0.047	0.046

The following penalty was included in the adjusted Lam at the 95% confidence level.

Unvented Volumes 0.002 wt %/day



Appendix J acceptance criterion at the 95% confidence level = 0.75 (L_A) = 0.188 wt%/day. As indicated above, the adjusted L_{am} at the 95% confidence level was less than the maximum allowable by 10 CFR 50, Appendix J.

d. Supplemental Test Review

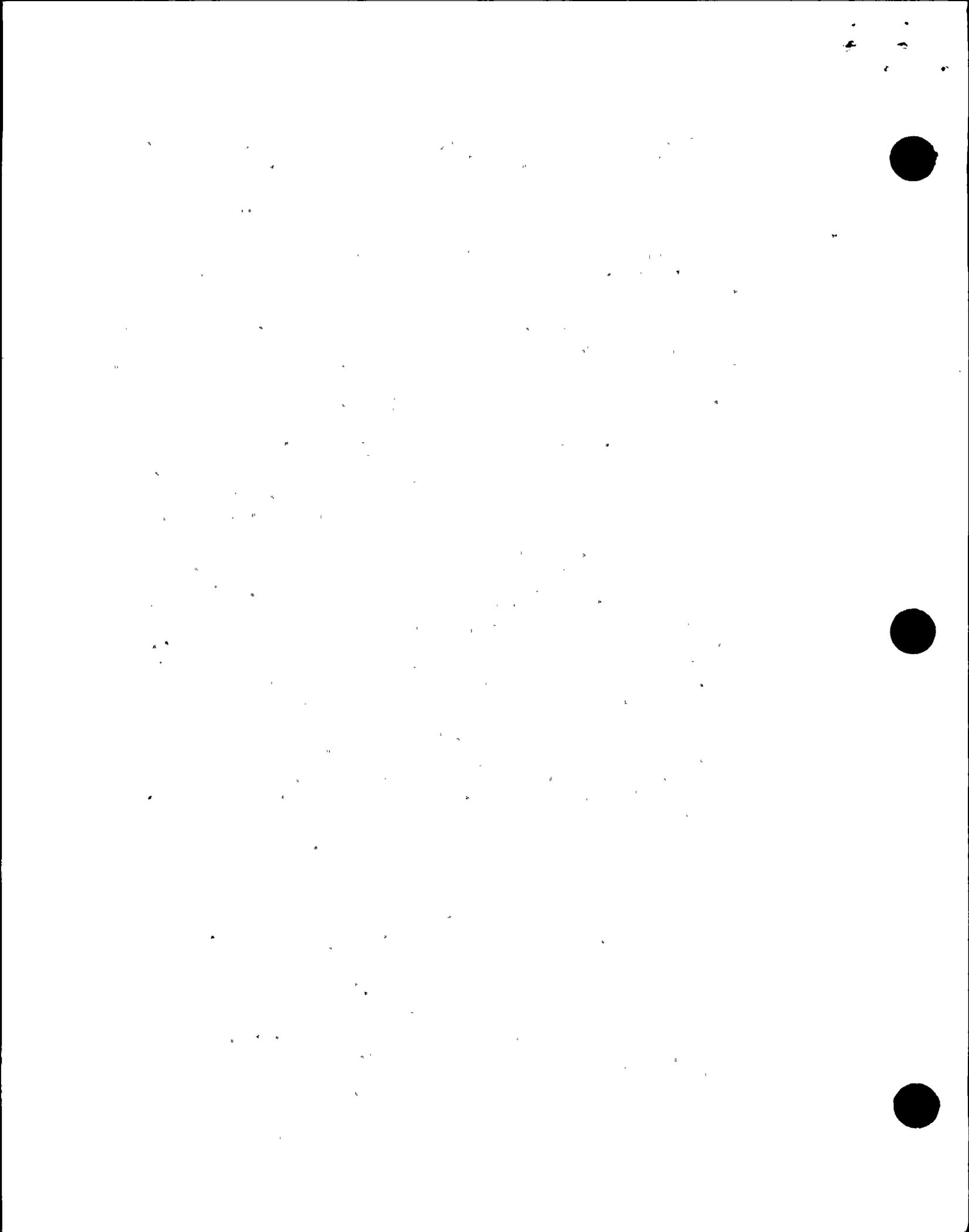
The inspector performed a post test review of the test log and of the licensee's data and calculation of the leak rate. The inspector discovered that, after 14 hours into a failing supplemental test, the licensee reinitialized the CILRT program arbitrarily dropping out the first seven sets of data (3.5 hours). This reinitialization allowed the supplemental test to pass by lowering the calculated leak rate into the acceptance band. The licensee, at the time of the inspection, had no written justification for dropping the first seven data points. The licensee's verbal justification, prompted by the inspector's inquiry, was that the containment was unstable because of the imposition of the known leak required for the test, thus creating an artificially high leak rate. With the absence of a written justification, the inspector analyzed the rejected data for instability, comparing it to the data taken throughout the Type A and Supplemental tests. The inspector found these rejected data points as stable as the other data taken throughout the test. At this point the licensee was asked to provide written justification for the deletion of the first seven data points. The licensee's response after much deliberation and reanalysis of data was that an incorrect conversion factor had been used to calculate the supplemental leak. The inspector reviewed the new calculations and found them to be correct and confirmed that the supplemental test was now within the acceptance criteria. The licensee's procedure which allowed them to arbitrarily eliminate data points is inadequate in that it did not implement all Appendix J requirements (see Section 2.a.).

After the licensee's final calculation of the imposed leak and supplemental leak rate the inspector reviewed their results. There was acceptable agreement between the inspector and licensee's leak rate calculations as indicated in the following summary (units are in weight percent per day):

<u>Measurement</u>	<u>Licensee</u>	<u>Inspector</u>
Measured leakage (L_c) rate during supplemental test	0.288	0.289
L_c @ 95% confidence level	0.299	0.298

Induced leak rate (L_o) = 4.07 SCFM = 0.261 wt %/day

Appendix J Acceptance Criterion: $L_o + L_{am} - 0.25 L_a < L_c < L_o + L_{am} + 0.25 L_a$. (0.199 < L_c < 0.34). As indicated above, the supplemental test results satisfied the requirements of 10 CFR Part 50, Appendix J.



e. As Found Condition

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. 10 CFR 50, Appendix J paragraph III.A.1 requires that "During the period between the initiation of the containment inspection and the performance of the Type A test, no repairs or adjustments shall be made so that the containment can be tested in as close to the "as is" condition as practical." ANSI N45.4 paragraph 4.2 requires "For retesting, an initial record proof test shall be conducted at time periods and pressures established by the responsible organization, before any preparatory repairs are made. This will disclose the normal state of repair of the containment structure and a record of the results shall be retained." The NRC's position on the "initial record proof test" requirement is that it may be waived, provided the Type A test results are back corrected for all RAs to the containment boundary made prior to the performance of the Type A test.

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. These "as found" leakage rate results are required and carry the same reporting requirements as the other Type A and supplemental test results.

The licensee disagrees with the NRC's method of calculating the "as found" leakage penalty. The point of contention deals with the method for calculating the penetration through leakage when the isolation valve leakage is measured in a single test by pressurizing between the two isolation valves.

The NRC's position is that when conducting a normal Type A test, where test pressure is applied through the two shut isolation valves in series, the actual leakage through the penetration will be no greater than the lower of the leakage rates of the two valves taken individually. Therefore, when leak testing by pressurizing between the isolation valves during a local leak rate test, the assumption that the two valves leak equally is a conservative assumption for the purpose of correcting a Type A test. The penetration through leakage in this case would simply be calculated by multiplying the measured leakage by one half.

The licensee's position is that the worst case series through leakage would be 33.4 percent of the leakage measured by pressurizing between the two valves. For the licensee's methodology to be used in lieu of the NRC approved methodology it must be submitted and accepted by the Office of Nuclear Reactor Regulations.

The following is a summary of the inspector's calculation of "as found" leakage rates (units are in weight percent/day):

Measurement

Penalties incurred due to repairs
or adjustments prior to the CILRT 0.133

"As Found" Type A test results: 0.180

Appendix J acceptance criteria for the "as found" condition of the
containment = 1.0 La = 0.250 wt %/day.

4. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involve some action on the part of the NRC or licensee or both. An open item disclosed during this inspection is discussed in Paragraph 2.a.(1).

5. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on September 28, 1984 and summarized the scope and findings of the inspection activities.

