ENCLOSURE

TENNESSEE VALLEY AUTHORITY
DIVISION OF NUCLEAR POWER

REACTOR BUILDING CONTAINMENT INTEGRATED LEAK RATE TEST SEQUOYAH NUCLEAR PLANT UNIT 2 CONDUCTED MARCH 18-19, 1989

Submitted to
The United States Nuclear Regulatory Commission
Pursuant to
Facility Operating License

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DEFINITION OF SYMBOLS AND ABBREVIATIONS

AF	As Found
AL	As Left
CILRT	Containment Integrated Leak Rate Test
E	Repeatability Error
e	Absolute Error
u	Measurement System Error
°F	Temperature, degrees Fahrenheit
ISG	Instrument Selection Guide
L_A	Full-Pressure Design Basis Leakage
L_{AM}	Containment Leak Rate During Full-Pressure CILRT
L_R	Imposed Leak Rate for Verification
L_{RN}	Containment Leak Rate During Verification
LLRT	Local Leak Rate Test
P	Pressure
P_a	Design Accident Pressure
psia	Absolute Pressure
psig	Gauge Pressure
°R	Temperature, degrees Rankine
T	Temperature
T_{dp}	Dewpoint Temperature
t	Time
UCL	Upper Confidence Limit
V	Containment Volume, Cubic Feet
MLR	Mass Leak Rate
TTLR	Total Time Rate Leak

1.0 SUMMARY

A reactor building containment integrated leak rate test (CILRT) was successfully conducted at Sequoyah Nuclear Plant (SQN) unit 2 March 19, 1989, in conjunction with the cycle 3 outage. The CILRT was concluded in 10 hours and 40 minutes and included 65 samples. The measured total time leak rate was 0.011326 percent per day.

The "as-found" condition of the reactor building primary containment (the condition of the containment at the end of the operating cycle) proved to be leak-tight and demonstrated the leak-tight integrity of unit 2. The "as-found" reportable 95 percent UCL, including the addition of the local leak rate test (LLRT) "leakage savings", was only 0.079 percent/day and is less than half of the allowable 0.1875 percent per day. This improvement over the previous leakages recorded for unit 2 is attributed to improved maintenance and expansion of the LLRT program.

The initial CILRT attempt after 23 samples taken at 12:04 March 17, 1989 measured a leakage rate of approximately 6.24 percentage of containment air mass per day (percent per day) as calculated by the total time leak rate (TTLR) method procedure outlined in Bechtel's topical report, "Testing Criteria for Integrated Leakage Rate Testing of Primary Containment Structures for Nuclear Power Plants" (BN-TOP-1, Revision 1). Operations and Test personnel discovered two penetrations causing the excessive leakage problem and had operations personnel isolate them. First, the Reactor Coolant Drain Tank (RCDT) outboard FCV, 3-77-10, on penetration number X-46 was found in the open position. The CILRT procedure listed this valve in the closed position except when draining the RCDT. The total time leakage rate dropped from 6.24 percent per day to 0.20191 percent per day after operations isolated 2-FCV-77-10. Secondly, the lower Essential Raw Cooling Water (ERCW) penetration number X-59 was found to be leaking though the outboard vents 67-693A and 67-693C. The total time leakage rate dropped from 0.20191 percent per day to 0.011326 percent per day after operations closed these outboard vents.

The CILRT was then successfully completed on SQN unit 2. The final reportable leakage rate was .011326 percentage of containment air mass per day as calculated by the TTLR method, and the observed 95 percent upper confidence limit (UCL) was 0.0620 percent per day. The above mentioned 95 percent UCL includes leakage measured from type B&C tests for testable lines that were in service during the test. The reportable leak rate was only 33 percent of the allowable 0 1875 percent per day ($0.75L_A$). The March 18, 1989 "as-left" CILRT leakage rate also shows a vast improvement over the previous leakages recorded for unit 2, proving the "as-left" condition of the reactor building primary containment to be leak-tight.

Appendix D shows a complete summary of the LLRT performed on SQN unit 2 since the cycle 2 CILRT performed in November 1984.

2.0 INTRODUCTION

As prescribed in Sequoyah Nuclear Plant (SQN) unit 2 Technical Specification 4.6.1.2, the leakage of air from the boundary forming the reactor building primary containment is limited to 0.25 percent by weight of the containment air mass per day at a pressure of P_a, 12.0 psig. In conformance with Title 10, Code of Federal Regulations, Part 50, Appendix J, SQN Technical Specifications require that a reactor building CILRT be performed as part of the surveillance programs to demonstrate the continuing leak-tight integrity of the reactor building primary containment.

The second inservice reactor building CILRT was successfully completed on SQN unit 2 by personnel of the Tennessee Valley Authority (TVA) on March 19, 1989. This test was conducted in accordance with a plant-approved surveillance instruction (SI), SQN SI-156, which is on file at the plant site. This SI implements the requirements of SQN unit 2 Technical Specifications and 10 CFR 50, Appendix J. The American National Standard for Containment Testing, ANSI 45.4-1972; the proposed American Nuclear Society for Containment Testing, ANS 56.8; and the procedure outlined in Bechtel's topical report, "Testing Criteria for Integrated Leakage Rate Testing of Primary Containment Structures for Nuclear Power Plants" (BN-TOP-1, Revision 1), provided guidance for the procedure implemented by the SI.

SQN unit 2 is a 3,411-megawatt thermal, pressurized-water reactor employing an ice condenser pressure suppression containment. The Final Safety Analysis Report defines the calculated peak accident pressure, P_a, to be 12.0 psig. The reactor building containment is divided into four major compartments for the CILRT analysis--the lower ice condenser compartment which houses the energy-absorbing ice beds, the upper ice condenser compartment which encloses the support equipment for the ice condenser system, the lower compartment which contains the reactor and the main piping systems, and the upper compartment which provides for a large work area within containment and also can accommodate the displaced air mass from the other compartments in the unlikely event of a loss-of-coolant accident (LOCA). These four compartments are connected by means of blowout panels located between the lower compartment and the lower ice condenser compartment and between the upper and upper ice condenser compartments. In the event of a LOCA, steam flows from the lower compartment through the ice condenser compartments and into upper containment. The upper compartment is sealed from the lower compartment to ensure that any steam released in an accident will be forced through energy-absorbing ice beds. For the performance of the CILRT, the lower and upper compartments were not sealed from each other to promote the free flow of air in containment.

This report outlines the objectives, principal events, special equipment used, and analysis of the test results for the CILRT completed on March 19, 1989, on SQN unit 2.

3.0 TEST PURPOSE

The objective of the inservice CILRT was to demonstrate the leak-tight integrity of the unit 2 reactor building containment for return-to-power operation.

For SQN unit 2, the leak-tight integrity is defined in Technical Specification 4.6.1.2 to be that the leakage of air from containment is not to exceed 0.1875 percent per day (0.0078 percent per hour) at peak accident pressure, P_a.

4.0 CONDUCT OF TEST

In compliance with Surveillance Instruction SNP SI-157, LLRTs were performed on containment closures (hatches and resilient seals), bellows, and electrical penetrations. LLRTs were also performed on valves forming the boundary of the primary containment in accordance with surveillance instruction SNP SI-158.1. The above mentioned surveillance instructions were performed prior to the CILRT. All valves and penetrations satisfactorily met leakage requirements prior to the performance of the CILRT.

The initial pressurization of primary containment to 12.534 psig was completed at 08:19 on March 17, and the pressurization penetration (X-54) was isolated.

The stabilization period began at 08:20 on March 17, during which the primary containment boundary was tested for previously undetected leakage using a soap solution. The initial CILRT attempt after 23 samples taken at 12:04 March 17, 1989, measured a leakage rate of approximately 6.24 percentage of containment air mass per day (percent per day) as calculated by the TTLR method procedure outlined in Bechtel's topical report, "Testing Criteria for Integrated Leakage Rate Testing of Primary Containment Structures for Nuclear Power Plants" (BN-TOP-1, Revision 1). Operations and Test personnel discovered two penetrations causing the excessive leakage problem and had operations personnel isolate them. First, the Reactor Coolant Drain Tank (RCDT) outboard FCV, 2-77-10, on penetration number X-46 was found in the open position. The CILRT procedure listed this valve in the closed position except when draining the RCDT. The total time leakage rate dropped from 6.24 percent per day to 0.20191 percent per day after operations isolated 2-FCV-77-10. Secondly, the lower Essential Raw Cooling Water (ERCW) penetration number X-59 was found to be leaking though the outboard vents 67-693A and 67-693C. The total time leakage rate dropped from 0.20191 percent per day to 0.011326 percent per day after operations closed these outboard vents.

Reverification of stabilization criteria was successfully completed at 08:15 on March 18. The temperature and pressure data taken during the stabilization period are shown graphically in figures 10 and 11.

The CILRT sampling period began at 08:41 and was conducted for 10 hours and 40 minutes with 65 data samples collected.

After the completion of the CILRT, a supplemental imposed leakage verification test was conducted to check the results of the CILRT. The imposed leakage was measured using a mass flow meter technique, utilizing a Hastings Mass Flowmeter. A leakage rate (L_R) of 1.046 L_A was imposed on the containment building. Agreement, as shown in Appendix B using TTLR, between the CILRT and the verification test was found to be -0.03871 L_A which is clearly within the $\pm$ 0.25 L_A required by 10 CFR 50, Appendix J.

Figure 1 depicts the sequence of events for the CILRT and its verification conducted March 16-19, 1989. The following is an accounting of significant events occurring during the test program.

03/10/89	17:45	RCS pressurizer water level sensing line connected to CILRT equipment.
03/15/89	04:00	Received ADMIN control of containment.
03/16/89	14:40	Lower airlock door seals tested.
03/16/89	15:01	Upper door seals complete, tested airlocks configured.
03/16/89	15:45	RTD location 14-channel 14 was reading erratic while channel 114 was reading good. Removed from data base and rebased. DPE location 9-7/PE for this location could not be located. Removed from data base and rebased.
03/16/89	20:50	Pressure in containment is approximately 4 PSIG.
03/16/89	21:15	Containment entry to check electrical connections.
03/17/89	01:41	Pressurizer water level verified and okay.
03/17/89	01:58	Compressors unloaded for 5 minutes and then brought back on.
03/17/89	01:54	Channel 234 jumped from 22.44 to 24.99 while channel 235 continued with steady rise. Started watching gauge closely for any additional abnormal jumps.
03/17/89	02:29	No change in pressure rate after cycling compressor.
03/17/89	02:43	Compartment 3 pressure reading is lower than other compartment readings. Watched it closely.
03/17/89	02:43	Pressure is approximately 8.6 PSIG.

03/17/89	03:27	Channel 234 is about 1.5 psi higher than redundant channel.
03/17/89	03:55	RTD channel 201, local RTD 002 is reading erroneously.
03/17/89	04:23	Channel 234 is about 0.9 psi higher than redundant channel 235.
03/17/89	04:34	Pressure inside containment = 10.16 psig.
03/17/89	05:27	E04356 mensor temperature reading is high.
03/17/89	07:40	Failed instrument ID local 2 due to erratic readings. Absolute pressure at 26.87 psia.
03/17/89	08:19	Reached test pressure at 27.023 psia.
03/17/89	08:20	Began stabilization phase (sample No. 1).
03/17/89	11:00	Isolated 2-67-693A which is vent for 67-87/88.
03/17/89	12:00	Stabilization data indicates MLR of approximately 6 percent per day. ERCW is suspect.
03/17/89	12:30	After 4 hours of stabilization data, the temperature stabilization criteria was met with a value of .1138 of/hr. Made containment entry to isolate ERCW valves so stabilization phase will continue.
03/17/89	13:30	Floor drain backed up. Identified water leaking from 62-637, isolated 62-637.
03/17/89	13:54	Point to point leak rate dropped from 5.73 percent/day to 0.35 percent/day.
03/17/89	14:35	2-67-563A was closed.
03/17/89	14:50	Rebased backup computer to sample No. 34. MLR dropped to 0.30 percent per day after one hour and five minutes of data.
03/17/89	15:04	Completed containment entry.
03/17/89	15:30	(Approximately). During containment entry, ASE detected flow through RCDT; had unit operator close 77-10.
03/17/89	15:40	Changed sample frequency from 10 to 15 minute intervals during stabilization period.

03/17/89	17:15	MLR at 0.38 percent per day with 3.22 hrs. of data. 2nd containment entry to let operations pump sumps down to zero levels.
03/17/89	18:00	Aligned non-essential control air to containment to drain sump.
03/17/89	18:10	Started draining sump.
03/17/89	18:40	Sump drained.
03/17/89	19:30	Containment exit for crew that drained sump.
03/17/89	20:00	CVCS seal return realigned for ILRT; individual block valves for RCPs isolated.
03/17/89	20:30	Fitters enter airlock to blank off 2A ERCW cooler.
03/17/89	20:57	2A lower containment vent cooler + 2A CRDM vent cooler blanked off.
03/17/89	22:35	Cooler still gurgling after blanking outlet.
03/17/89	23:15	Ultrasonic leak detector taken inside to help leak check.
03/18/89	01:18	Coolers isolated but still leak.
03/18/89	01:30	Fitters exit containment.
03/18/89	01:56	67-576A + 67-576C capped closed.
03/18/89	01:57	67-693A closed (had been reopened to prevent water leakage in annulus earlier.)
03/18/89	02:01	67-693C closed.
03/18/89	03:08	Reverified pressurizer level is tracking correctly.
03/18/89	03:41	Containment exit with ultrasonics.
03/18/89	04:04	MLR at 1.07 percent per day when rebased data is sample No. 87 (taken at 02:15).
03/18/89	04:10	Rebased stabilization phase to 03:45.
03/18/89	04:33	MLR at 0.228 percent per day.
03/18/89	04:44	MLR at 0.57 percent per day.
03/18/89	04:58	Turning off lights inside.

03/18/89	05:07	MLR at 0.072 percent per day.
03/18/89	05:47	Containment entry to check 67-777 and 67-574C. No water.
03/18/89	06:02	Lights turned out in No. 1 fan room.
03/18/89	06:20	Exited containment. Verified door configurations are correct.
03/18/89	08:15	Rebased stabilization to look at last 6 hours of data. Stabilization phase will contain sample Nos. 87-111. CILRT phase will begin with sample No. 113 at 08:41 on 3/18/89. The temperature criteria was excellent for the stabilization period. Sample frequencies changed to 10 minute intervals for test phase.
03/18/89	13:00	MLR at 0.0246 percent/day with 4:13 hrs. data.
03/18/89	15:50	MLR at 0.0182 percent/day with 7:11 hrs. data.
03/18/89	16:50	Sample No. 159 showed an abnormal drop in pressure occurred for gauge No. 1, therefore, gauge was deleted from data base and data recalculated.
03/18/89	16:55	With sample No. 162 MLR at 0.0247 percent per day with gauge No. 1 removed, 8:17 hours of data. Average pressure at 12.309 psig.
03/18/89	17:11	Completed CILRT at sample No. 164. Began taking verification sample No. 1.
03/18/89	18:11	Waiting on operations to resolve problem of how to open verification flow path.
03/18/89	19:29	Established verification flow. Will rebase start of verification to sample No. 178 and include samples 165-177 in the ILRT phase.
03/18/89	19:35	Verification flow established at 113267.4 SCCM.
03/18/89	21:00	Rebased verification phase to sample No. 181 (at 20:02).
03/19/89	01:25	Verification completed, samples 181-213.
03/19/89	02:26	Began depressurization of containment.
03/19/89	08:30	Depressurization complete. HP says o.k. to go in.
03/19/89	09:00	Post-test calibration started.
03/19/89	14:30	Post-test calibration complete.
03/19/89	16:00	Return ADMIN control of reactor building.

The CILRT and subsequent verification tests were completed at 01:25 on March 19, 1989, and administrative control of the reactor building was released at 16:00 hours. Test personnel then immediately began investigation of the excessive leakage problems associated with penetration numbers X-46 and X-59.

The excessive leakage from penetration X-46 was found to have occurred because the RCDT outboard FCV, 2-77-10, on penetration number X-46 was incorrectly lined up in the open position. The inboard FCV, 2-77-9, was correctly blocked open during the CILRT to allow draining of the RCDT. FCV-2-77-9 must be blocked open during the CILRT because it is an air-operated valve which fails closed when control air is isolated from the containment building. Since both the inboard FCV (2-77-9) and the outboard FCV (2-77-10) were open, a direct leakage path from containment occurred via the refuel canal drain lines, which are isolated during normal operation and usually isolated during mode 5. After FCV-2-77-10 was isolated during the initial CILRT attempt, the leakage rate dropped from 6.24% per day to 0.20191% per day. CAQR SQP 890195 was initiated to investigate the CILRT valve line-up problem and the results required a revision to the CILRT procedure to add additional instructions for tagging the handswitch for FCV-2-77-10.

The excessive leakage from penetration X-59 was also thoroughly investigated and showed the following results.

Penetration X-59 had been tested per SI-158.1 on 3/3/89, and based on test results, an "as-left" path leakage rate of 0.3266 SCFH was anticipated. During the performance of SI-156 on 3/17/89, the path leakage rate appeared to be considerably higher. The 3/3/89 SI-158.1 local leak rate data for penetration X-59 showed that 67-88 leaked 0.4338 SCFH and 67-87/575A leaked 0.3266 SCFH. A unit action plan was initiated on 3/18/89 to measure post-CILRT leakage and, if different from the SI-158.1 "as-left" data, to determine the cause. The valves were tested in place after conclusion of the CILRT. The post-CILRT leakage rate data showed that 67-88 leaked 570.4995 SCFH and 67-87/575A leaked 171.6762 SCFH. CAQR 890169 was initiated 3/19/89 to determine the cause for the excessive leakage through penetration X-59. Maintenance was performed to inspect and repair these valves. The results showed that the valve disc on 67-88 was traveling past the normal seating position and a 0.016" clearance between the disc and seat had opened. Next, it was found that the valve disc on 67-87 was traveling just slightly into the seating area. Maintenance personnel removed the check valve bonnet and found that 67-575A had dirty seats from residue after evaporation of ERCW. All valves were inspected in the closed position. Each valve was cleaned or adjusted and reassembled for final "as-left" local leak rate testing per SI-158.1. The final "as-left" SI-158.1 leak rate data taken 3/22/89 showed that 67-88 leaked 0.0000 SCFH and 67-87/575A leaked 0.0000 SCFH.

The CAQR investigation evaluated the historical record of these valves for generic implications per SQN AI-12 Part III paragraph 2.9.4.B.7 to avoid recurring CAQRs. The "as-found" SI-158.1 leak rate data showed that eleven of the seventeen lower ERCW tests had 0.0000 SCFH leakage. Four more of these ERCW inboard isolation valves showed a leakage of 0.0000 SCFH following maintenance on the associated inboard check

valves. During the performance of SI-156, only penetration X-59 showed leakage in excess of the expected amount. Therefore, the excessive leakage associated with penetration X-59 certainly appears to be an isolated incident and not a recurring problem or a programmatic deficiency.

The investigation researched the cause for penetration X-59 to exhibit a path leakage rate higher than what was expected following the 3/3/89 "as-left" SI-158.1 test. Pertinent event records were reviewed to gather information on all maintenance, modifications, inspections, and testing activities conducted on the lower ERCW system from 3/1/89 to 3/17/89. This included: operations configuration control logs; work control group records; MOVAT maintenance records; mechanical maintenance records; modifications work plans; SI-158.1 chronological log sheets; and the SI-156 log book. The local leak rate procedure SI-158.1 used to perform the 3/3/89 "as-left" leak rate tests was thoroughly reviewed and personnel interviews were conducted with the leak rate testers involved.

MOVATS records for the 2/15/89 testing of 67-87 showed an open to close stroke time of 57.45 seconds and a close to open stroke time of 57.25 seconds. The 3/20/89 post-CILRT MOVAT test was made without adjustments and showed an open to close stroke time of 57.5 seconds along with a close to open stroke time of 57.54 seconds. However, the fact that the 2/15/89 and 3/20/89 MOVAT tests are virtually identical only indicates that the valve operator was performing as expected. The MOVAT stroke time test does not indicate valve position because there are no internal travel stops inside this type of butterfly valve. The travel stop limits for this type of valve are set in the valve operator itself. The operator limits were adjusted 3/22/89, and the subsequent MOVAT test data showed an open to close time of 59.96 seconds and a close to open time of 59.92 seconds. The final "as-left" SI-158.1 leak rate test on 3/22/89 showed that 67-87/575A leaked 0.0000 SCFH.

Mechanical Maintenance used WRB 753972 to remove 67-88 from the X-59 line on 2/4/89 for inspection and repairs. The valve body and the operator were physically separated during the maintenance process. The valve seating surfaces were inspected and cleaned, and on 2/5/89, 67-88 was reinstalled in the line. Then the valve operator was attached to the valve body. This sequence of installing the valve body without the operator attached precludes the visual confirmation of valve disc position when setting the travel stop limits. The MOVAT records for the 3/1/89 testing of 67-88 showed an open to close stroke time of 29.5 seconds and a close to open stroke time of 29.46 seconds. The 3/29/89 post-CILRT MOVAT tests were made without adjustments and showed an open to close stroke time of 29.5 seconds and a close to open stroke time of 29.44 seconds. However, the fact that the 3/1/89 and 3/20/89 MOVAT tests are virtually identical only indicates that the valve operator was performing as expected. The MOVAT stroke time test does not indicate valve position because there are no internal travel stops inside this type of butterfly valve. The travel stop limits for this type of valve are set in the valve operator itself. The operator limits were adjusted 3/21/89 and the subsequent MOVAT test data showed an open to close stroke time of 27.85 seconds and a close to open stroke time of 27.77 seconds. The final "as-left" leak rate test on 3/22/89 showed that 67-88 leaked 0.000 SCFH.

There was no evidence that any undocumented maintenance or modifications was performed on these valves that could have accounted for their unexpected failure during SI-156. Similarly, there was no evidence that any non-documented maintenance or modification activities were performed on the lower ERCW system. The test personnel involved with the 3/3/89 SI-158.1 leak rate test were qualified per ASNT-TC-1A. The apparent cause for the incorrect SI-158.1 leak rate tests recorded 3/3/89 for valves 67-88 and 67-87/575A has been determined to be personnel error during the conduct of the local leak rate tests. The root cause apparently stems from inattention to detail in properly connecting the hose from test equipment to the test connection for the valves being tested. The test hose passed over a sharp edge which probably crimped the hose flat enough to hinder the flow rate. The pre-test "free-flow" verification step was performed with enough pressure to overcome this flow restriction in the hose and indicate that a clear flow path existed. However, when the relatively low test pressure and flow rate was applied, the hose restriction masked the correct leakage rate.

CAQR 890169 recommended that the local leak rate procedure be revised to include additional instructions to check the routing of the test hose as part of properly connecting the test equipment. It also recommends that the Maintenance Department investigate setting the travel stop limits for these type of butterfly valves while the valve is removed from the line prior to reinstallation.

5.0 TEST RESULTS

The "as-found" condition of the reactor building primary containment (the condition of the containment at the end of the operating cycle) demonstrated the leak-tight integrity of unit 2. For Sequoyah unit 2, the leak-tight integrity is defined in Technical Specification 4.6.1.2 to be that the leakage of air from containment is not to exceed 0.1875 percent per day (0.0078 percent per hour) at peak accident pressure, P_a. The "as-found" reportable 95% UCL, including the addition of the local leak rate test "leakage savings", was only 0.079 percent/day, and shows a vast improvement over the previous leakages recorded for unit 2. This improvement is attributed to improved maintenance, expansion of the local leak rate test program, and the replacement of 5 isolation valves with chronic leakage histories.

The CILRT sampling period began at 08:41 after stabilization was reached at 08:15 on the 18th.

The CILRT was conducted for 10 hours and 40 minutes and 65 data samples were collected. The calculated leak rate reported by the total time leak rate method (TTLR) was 0.011326 percentage of containment air mass per day (0.00047 percent per hour), and is shown graphically in figure 12. The observed 95 percent upper confidence limit for the measured mass leak rate was 0.06194 percent per day (0.0026 percent per hour). This reportable leak rate represents 33 percent of the allowed 0.18750 percentage of containment air mass per day ($0.75L_A$) as described in Technical Specification 4.6.1.2. The mass leak rate (MLR) was 0.02785 percent per day and is shown graphically in figure 13, with a 95 percent upper confidence limit of 0.03158 percent per day. The higher TTLR confidence limit is due primarily to the different calculation technique used to determine confidence limits in the total time analysis as defined in BN-TOP-1, Revision 1.

After the completion of the CILRT, a supplemental imposed leakage verification test was conducted to check the results of the CILRT. The imposed leakage was measured using a mass flow meter technique, utilizing a Hastings Mass Flowmeter. A leakage rate (L_R) of 1.046 L_A was imposed on the containment building.

The calculated TTLR during the 5 hours and 20 minutes verification test was 0.26575 percentage of containment air mass per day and is shown graphically in figure 19. Agreement, as shown in Appendix B using TTLR, between the CILRT and the verification test was found to be -0.03871 L_A which is clearly within the $\pm$ 0.25 L_A required by 10 CFR 50, Appendix J.

The calculated containment mass leak rate (L_{RM}) during the 5 hours and 20 minutes verification test was 0.27232 percentage of containment air mass per day shown graphically in figure 20. Agreement, as shown in Appendix B using MLR, between the CILRT and the verification test was also achieved and was found to be -0.07819 L_A.

The CILRT and subsequent verification test were completed at 01:25 on March 19, 1989. The final reportable leakage rate was .011326 percentage of containment air mass per day as calculated by the TTLR method, and the observed 95 percent upper confidence limit (UCL) was 0.0620 percent per day. The above mentioned 95 percent UCL includes leakage measured from type B&C tests for testable lines that were in service during the test. The reportable leak rate was only 33 percent of the allowable 0.1875 percent per day (0.75L_A). The March 18, 1989 "as-left" CILRT leakage rate also shows a vast improvement over the previous leakages recorded for unit 2, proving the "as-left" condition of the reactor building primary containment to be leak-tight.

6.0 MEASUREMENTS AND CALIBRATIONS

6.1 Test Equipment

Table 1 lists the range, accuracy, and repeatability of the special test equipment used in the unit 2, cycle 3 CILRT. Prior to the start of the CILRT, all test equipment was calibrated by the TVA Central Laboratories or other facilities with standards traceable to the National Bureau of Standards. After installation of all special test equipment inside containment, each sensor was checked for functional operation. The special test instrumentation interfaces with a portable minicomputer which produces highly accurate remote scanning of temperature, pressure, and dewpoint sensors. Upon test completion and depressurization each sensor was again functionally checked to ensure adherence to calibration.

Pressurization for the CILRT was achieved using portable high-capacity air compressors. The compressors were rated at 3,500 SCFM of dry, oil-free air, and brought containment to test pressure in approximately 17 hours, including final "topping off" stages of pressurization.

The leak-tight integrity of Sequoyah Nuclear Plant unit 2 was accurately measured and recorded by computer-based instrumentation. The computer-based data acquisition system provided reliable, immediate calculations of test data, which allowed test engineers to more easily monitor important test parameters.

6.2 Sensor Location

Table 2 lists the final volumetric weighing factor for each temperature and dewpoint sensor based on the 4-compartment model. Figures 3 through 8 indicate sensor locations. The pressure sensors were divided so that initially two sensors measured each of the four compartments through penetrations X-27C, X-87D, X-87A, and X-98. Utilizing two pressure sensors per compartment allows the removal of any one malfunctioning pressure gauge during the test and continue to accurately monitor containment pressure. An additional pressure gauge measured barometric pressure at the test station.

6.3 Computer-Based Data Acquisition and Data Reduction

The raw test data measured by the special test instrumentation during the Sequoyah Nuclear Plant unit 2 CILRT was scanned and collected by a new microprocessor based data acquisition system. This raw test data was automatically presented to a portable multi-tasking minicomputer system for correction to calibration curves and reduction to containment leak rate. The minicomputer produced immediate statistical and graphical results of the containment test parameters, including temperature, pressure, vapor pressure, mass, mass leak rate, and total time leak rate plots.

These calculated results were reported automatically to the test director as the data was collected. Figure 2 depicts the functional relationship between the special test instrumentation and the data acquisition and analysis system.

All calculations performed by the minicomputer system were in conformance with the procedures outlined in ANS 56.8, ANSI 45.4 and Bechtel Topical Report (BN-TOP-1, Revision 1).

Source listings for all computer programs are on file with the Computer Engineering Group, in Chattanooga, Tennessee.

6.4 Reactor Building Containment Model

An ice condenser pressure suppression containment presents special problems not normally encountered in the leak testing of dry containment structures. The pressure suppression design feature requires the reactor building containment to be divided into distinct compartments, where vastly different temperatures and vapor pressures may exist. While each compartment is vented to the containment atmosphere during the performance of the CILRT, the direct circulation of air is limited.

Since an ice condenser containment typically exhibits a 40°F temperature differential between the ice compartments and others, it is necessary to compensate by compartmentalization so the leak rate is accurately measured. For Sequoyah unit 2 CILRT, a four-compartment containment model was used to measure the leak rate. The free air mass is calculated individually for each compartment, and containment leak rate is calculated for the sum of the compartmental masses. Each sensor within a compartment is volume weighted for the calculation of compartment average temperature and vapor pressure. Figure 9 depicts the four compartments used in the Sequoyah unit 2 reactor building containment model.

The Reactor Coolant System (RCS) Pressurizer water level was continuously monitored by the CILRT data acquisition system throughout the CILRT period so that adjustments could be accurately made to the containment "free-air" volume calculations. Other component levels in the RCS were monitored via plant instrumentation by plant personnel during the CILRT to account for other "free-air" volume changes not reflected by the pressurizer. With the exception of the RCS, all other components exposed to CILRT pressure were at 100 percent level for the duration of the CILRT and subsequent verification test. Thus, no additional "free-air" volume adjustments were necessary. Test engineers requested that operations control the water level in the primary system so that no abrupt level changes would occur.

7.0 ANALYSIS OF TEST DATA

The previous sections of this report have discussed the general test conduct, calibration methods, and test equipment. In this section events and problems that influenced the test results are discussed and are used to formulate conclusions on the performance of the Sequoyah unit 2, cycle 3 CILRT.

7.1 Instrument Check

The data presented in this section reflects the test results following recalibration and deletion, if necessary, of the special test equipment used during the test.

Temperature sensor at location three (shown in Figure 3) was found to be out of tolerance at the 120°F range only. This did not affect the outcome of the CILRT because the range of temperature for location three was between 72°F and 77°F during the entire test.

The corrections made to the final CILRT and verification test data did not effect the success of the CILRT performed on unit 2. In additional, all final test results and reported data in this report reflect the above mentioned corrections.

The instrumentation error analysis of Appendix A indicates that the instrumentation used in the unit 2, cycle 3 CILRT was accurate to 0.0130 L_A in determining the containment leak rate for unit 2, far surpassing the recommendations of ANS 56.8 which states that the measuring system be capable of detecting 0.25 L_A.

7.2 Discussion of Graphical and Tabular Results

The March 18-19, 1989 CILRT that was performed on unit 2 at Sequoyah Nuclear Plant was concluded after 65 samples were taken in 10 hours and forty minutes of testing. Figure 12 is a graphical representation of the TTLR and figure 13 is a graphical representation of the MLR, expressed as a percentage of containment air mass per day, during the CILRT. Tabulated data accumulated during the CILRT is shown in Table 3.

The temperature trends in the upper-ice compartment were cyclic in nature (see Figure 14). The reason for the trends is directly related to the defrost cycles of the ice condenser air handling units. These temperature trends resulted in corresponding mass trends in the upper-ice compartment as shown in figure 15.

Figures 16 through 18 show graphical representations of average temperatures, pressures, and masses during the 10 hours and 40 minutes CILRT. Table 3 is a tabular listing of important measured parameters and corresponding results for the unit 2 CILRT.

Final results indicate a TTLR of 0.011326 percent per day and a MLR of 0.027854 percent per day. The associated 95 percent upper confidence limits for the Sequoyah unit 2, cycle 3 CILRT were 0.062008 percent per day for TTLR and 0.031579 percent per day for MLR.

After instrumentation received post-test calibrations, the calibration reports indicated that all instrumentation used in the unit 2 CILRT and subsequent verification test was in proper tolerance, with the exception of items already mentioned.

7.3 Discussion of Agreement (Verification Test)

Appendix J to 10 CFR 50 specifies the technique for the calculation of agreement between the CILRT and its subsequent verification.

Appendix J requires the absolute value of the difference between the measured containment leak rate with a superimposed leak and the sum of the imposed leak and the measured containment leak rate be less than 0.25 L_A.

The verification test was concluded at 01:25 on March 19, 1989.

After collecting 32 samples in approximately 5 hours and 20 minutes, agreement, as prescribed by Appendix J of 10 CFR 50, between the CILRT (L_{AM}) and the imposed leak rate (L_R) was reached at -0.03871 L_A using TTLR, which is well within the $\pm$ 0.25 L_A allowable limit.

Agreement was also reached using MLR and was found to be -0.07819 L_A. Appendix B details the methods of agreement calculations.

Tabulated data collected during the 5 hour and 20 minute verification test is shown in Table 4.

Figures 19 and 20 show the mass and total time leak rate plots during the 5 hour and 20 minute hour verification test, while Figures 21 through 23 show graphical representations of average temperature and pressure and mass.

8.0 CONCLUSIONS

The reactor building containment integrated leak rate test performed on Sequoyah Nuclear Plant unit 2, cycle 3, was successfully completed on March 18-19, 1989. The final reportable leakage rate was .011326 percentage of containment air mass per day as calculated by the TTLR method, and the observed 95% upper confidence limit (UCL) was 0.06194% per day. This 95% UCL includes leakage measured from Type B&C tests for testable lines that were in service during the test. The reportable leak rate was only 33% of the allowable 0.1875% per day (0.75LA), demonstrating that the "as-left" condition of the unit 2 reactor building primary containment was leak-tight. Therefore, the leak-tight integrity of the unit 2 containment was in conformance at the end of cycle 3 and continues for the beginning of cycle 4.

As mentioned earlier, the local leak rate procedure will be revised to include additional instructions to check the routing of the test hose as part of properly connecting the test equipment. Also, the ERCW valves are rubber lined butterfly valves which do not have internal travel stops. The travel stops are set in the operator, usually with the valve installed in-line and, therefore, the valve position cannot be guaranteed. Therefore, whenever maintenance has removed one of these type of valves from the line, it would be best to reinstall it with the operator attached and the limits adjusted. It has been recommended that the Maintenance department investigate setting the travel stop limits for these type of butterfly valves while the valve is removed from the line prior to reinstallation.

Modes 1, 2, 3 and 4 require that containment leakage rates shall be determined to be in conformance with the criteria specified in Appendix J of 10CFR50 and SQN L.C.O. 3.6.1.2. The allowable leakage (La) for Sequoyah Nuclear Plant unit 2 is currently defined in the Technical Specifications as 0.25% per day of the containment free air volume at a calculated peak accident pressure (Pa) of 12.0 psig, or 225.2 SCFH. Technical Specifications also define the acceptance criteria for the Containment Integrated Leak Rate Test (CILRT) as 75% La, or 0.1875 percent per day. The condition of the Sequoyah Nuclear Plant unit 2 containment at the end of the operating cycle proved to be leak-tight, with the "as-found" leakage rate less than half of the allowable limit (0.1875 percent per day). The excessive leakage encountered during the initial CILRT attempt resulted from isolated incidents occurring only during the cycle 3 maintenance outage, and were not a reoccurring containment problem or programmatic deficiency. Subsequent to operations personnel isolating FCV-2-77-10, the leakage rate was initially measured at 0.20191 percent per day. While this initially measured leakage rate exceeded the SQN unit 2 technical specification limit of 0.1875 percentage of containment air mass per day, it was still below the La allowable limit of 0.25 percent per day. The draft version of Appendix J to 10 CFR 50 dated October 29, 1986, under section III.A.7.b states that the "as-found" leakage rate must not exceed La. The unit 2 "as-found" CILRT leakage rate would have been acceptable under this philosophy. The "as-left" reportable 95% UCL leak rate measured 0.0620 percent per day, which is only 33 percent of the allowable limit (0.1875 percent per day). Therefore, the leak-tight integrity of the unit 2 containment was in conformance at the end of cycle 3 and continues for the beginnning of cycle 4, with the excessive leakage occuring only during the cycle 3 maintenance outage.

T A B L E S

The technique of multicompartment modeling coupled with a computer-based data acquisition system yielded immediate results that accurately measured and displayed the unit 2 containment leak rate.

In summary, the "as-found" and "as-left" condition of the unit 2 reactor building primary containment has improved dramatically, problem valves have been replaced, LLRT and CILRT procedures have been expanded and improved, and past CILRT leakage problems have been specifically identified and positive corrective actions have been taken to prevent recurrence. The specific cause of the excess leakage during the cycle 2 and cycle 3 CILRTs have been directly addressed through the local leak rate test program. Test results and problem identification have demonstrated that a general containment leakage problem does not exist. We conclude that the conditions which caused the leakage to exceed the leakage limit set forth in the technical specifications can best be addressed through local leak rate testing.

TABLE 1

Measured Parameter	Manufacturer and Model No.	Number Used		Instrument Specification
Containment Temperature	Leeds & Northrup Model No. 178055	48	Range: Accuracy: Repeatability:	0-250°F ±0.1°F ±0.001°F
Containment Pressure	Mensor Corporation Model No. 10100-001	7	Range: Accuracy: Repeatability:	0-30 psia, 400,000 counts F.S. ±0.015 percent reading ±0.0005 percent reading
Containment Dewpoint	Foxboro Corporation Model No. 2701 RG	12	Range: Accuracy: Repeatability:	-50 to +142°F ±1°F dewpoint ±0.10°F
Analog to Digital Converter	Acurex Corporation Autodate Ten/10	1	Accuracy:	±0.001°F dewpoint ±0.001°F temperature ±1 count pressure
Verification Flow	Teledyne-Hastings Mass Flow Meter Model AHL25 with H-3M Transducer TVA No. 4699.36	1	Range: Accuracy: Repeatability:	0-5 SCFM ±2% of range ±1/2% of range
Mensor Chamber Temperature	Princo ASTM 19L	7	Range: Accuracy:	49° to 57°C ±0.12°C
Atmospheric Pressure	Mensor Corporation Model No. 10100-001	1	Range: Accuracy:	0-30 psia ±0.015% reading
RCS Pressurizer Water Level	Plant Process Transmitter Model LT-68-321	1	Range: Accuracy:	0-100 level ±5% F.S.

TABLE 2

VOLUMETRIC WEIGHTING GROUPS

Temperature	Number of Transducers	Segment Volume	Volumetric Weight Per Sensor by Compartment (Percent)
I. Upper compartment	13	651,000	7.6923
II. Lower compartment	25	383,720	4.0000
III. Ice-upper compartment	6	47,000	16.6666
IV. Ice-lower compartment	4	110,500	25.0000
	48		
Dewpoint			
I. Upper compartment	3	651,000	33.3333
II. Lower compartment	3	383,720	33.3333
III. Ice-upper compartment	4	47,000	25.0000
IV. Ice-lower compartment	2	110,500	50.0000
	12		

TENNESSEE VALLEY AUTHORITY
CONTAINMENT LEAKAGE MEASUREMENT
TEST SUMMARY
CILRT
ALL COMPARTMENTS

SAMPLE NO.	ELASPED TIME	AVERAGE TEMPERATURE (DEG F.)	CORRECTED PRESSURE (PSIA)	TOTAL MASS OF AIR (LBM)	P-T-P LEAK RATE (% PER DAY)	TOTAL TIME LEAK RATE (% PER DAY)	MASS LEAK RATE (% PER DAY)
113	00:00	66.68105	26.63448	163232.0	0.0000000	0.0000000	0.0000000
114	00:10	66.68250	26.63456	163231.4	0.5237943E-01	0.5237943E-01	0.5169022E-01
115	00:20	66.68476	26.63415	163227.8	0.3239266	0.1881524	0.1860843
116	00:30	66.67175	26.63270	163223.0	0.4218033	0.2660324	0.2712684
117	00:40	66.66084	26.63256	163225.8	-0.2481268	0.1374960	0.1852576
118	00:50	66.64754	26.63143	163223.2	0.2274457	0.1554842	0.1654088
119	01:00	66.63561	26.63166	163228.7	-0.4852251	0.4870368E-01	0.8861267E-01
120	01:10	66.63024	26.63098	163226.1	0.2260632	0.7404010E-01	0.6773965E-01
121	01:20	66.62674	26.63070	163225.7	0.3997521E-01	0.6978181E-01	0.5789387E-01
122	01:30	66.61054	26.63018	163227.8	-0.1888490	0.4104587E-01	0.3849580E-01
123	01:40	66.61613	26.62948	163221.9	0.5251862	0.8945855E-01	0.4992414E-01
124	01:50	66.60377	26.62921	163223.8	-0.1681760	0.6603818E-01	0.4811965E-01
125	02:00	66.60336	26.63000	163228.4	-0.4052718	0.2676405E-01	0.3199176E-01
126	02:10	66.60152	26.63002	163228.9	-0.4273154E-01	0.2141831E-01	0.1977680E-01
127	02:20	66.60828	26.62994	163225.8	0.2660375	0.3889075E-01	0.1795909E-01
128	02:30	66.59515	26.62891	163223.7	0.1874703	0.4879557E-01	0.2062791E-01
129	02:40	66.58121	26.62809	163223.2	0.4548971E-01	0.4858882E-01	0.2270366E-01
130	02:50	66.56755	26.62792	163226.5	-0.2936164	0.2846003E-01	0.1657265E-01
131	03:00	66.56998	26.62772	163224.3	0.1943618	0.3767643E-01	0.1857265E-01
132	03:10	66.56234	26.62779	163227.3	-0.2577741	0.2212705E-01	0.1432750E-01
133	03:20	66.54591	26.62721	163229.0	-0.1543860	0.1330162E-01	0.9624044E-02
134	03:30	66.54472	26.62577	163221.1	0.6933511	0.4568432E-01	0.1404749E-01
135	03:40	66.52807	26.62541	163224.2	-0.2674286	0.3145272E-01	0.1438373E-01
136	03:50	66.53697	26.62563	163222.8	0.1240625	0.3547897E-01	0.1541935E-01
137	04:00	66.53260	26.62496	163220.0	0.2426132	0.4410899E-01	0.1832262E-01
138	04:10	66.51775	26.62397	163218.7	0.1144161	0.4692094E-01	0.2135374E-01
139	04:20	66.51086	26.62349	163218.5	0.2067778E-01	0.4591152E-01	0.2391304E-01
140	04:30	66.51039	26.62349	163218.9	-0.3308449E-01	0.4298585E-01	0.2549534E-01
141	04:40	66.50433	26.62239	163214.4	0.3970129	0.5562853E-01	0.2946442E-01
142	04:50	66.48901	26.62210	163217.9	-0.3087963	0.4306331E-01	0.3061674E-01
143	05:00	66.47761	26.62271	163225.8	-0.7002910	0.1828685E-01	0.2710617E-01
144	05:10	66.47294	26.62324	163231.0	-0.4576482	0.2934671E-02	0.2134352E-01
145	05:20	66.47371	26.62177	163221.8	0.8091295	0.2812810E-01	0.2105248E-01
146	05:30	66.46498	26.62168	163223.3	-0.1350922	0.2318228E-01	0.1989499E-01
147	05:40	66.46571	26.62183	163224.0	-0.5789613E-01	0.2079772E-01	0.1823709E-01
148	05:50	66.45609	26.62230	163229.3	-0.4700595	0.6773881E-02	0.1498724E-01
149	06:00	66.45975	26.62090	163219.4	0.8725454	0.3082269E-01	0.1606286E-01
150	06:10	66.45715	26.62029	163215.9	0.3101653	0.3837185E-01	0.1783902E-01
151	06:20	66.45340	26.62081	163219.8	-0.3446355	0.2829360E-01	0.1821548E-01
152	06:30	66.45371	26.62067	163219.0	0.7168247E-01	0.2940600E-01	0.1827298E-01
153	06:40	66.43597	26.61990	163219.7	-0.6065470E-01	0.2715460E-01	0.1825880E-01
154	06:50	66.43666	26.61968	163218.2	0.1037155	0.2975340E-01	0.1870056E-01
155	07:00	66.42530	26.61890	163216.7	0.1282026	0.3209717E-01	0.1918406E-01
156	07:10	66.42489	26.61754	163208.3	0.7416519	0.4859683E-01	0.2223213E-01
157	07:20	66.40408	26.61765	163215.1	-0.5955578	0.3395891E-01	0.2259541E-01
158	07:30	66.40321	26.61656	163208.6	0.5679622	0.4582434E-01	0.2493977E-01
159	07:40	66.40406	26.61676	163209.4	-0.6617297E-01	0.4338983E-01	0.2656375E-01
160	07:50	66.40655	26.61708	163211.1	-0.1488885	0.3929924E-01	0.2746558E-01

TENNESSEE VALLEY AUTHORITY
CONTAINMENT LEAKAGE MEASUREMENT
TEST SUMMARY
CILRT
ALL COMPARTMENTS

SAMPLE NO.	ELASPED TIME	AVERAGE TEMPERATURE (DEG F.)	CORRECTED PRESSURE (PSIA)	TOTAL MASS OF AIR (LBM)	P-T-P LEAK RATE (% PER DAY)	TOTAL TIME LEAK RATE (% PER DAY)	MASS LEAK RATE (% PER DAY)
161	08:00	66.39442	26.61786	163219.5	-0.7402990	0.2305959E-01	0.2635780E-01
162	08:10	66.38064	26.61770	163223.0	-0.3115437	0.1623143E-01	0.2470572E-01
163	08:20	66.39119	26.61766	163219.2	0.3363497	0.2263343E-01	0.2395103E-01
164	08:30	66.38277	26.61707	163217.8	0.1240663	0.2462212E-01	0.2313763E-01
165	08:40	66.37816	26.61638	163214.7	0.2701911	0.2934414E-01	0.2338868E-01
166	08:50	66.37674	26.61569	163211.0	0.3294740	0.3500631E-01	0.2404981E-01
167	09:00	66.36373	26.61572	163215.3	-0.3846248	0.2723628E-01	0.2367801E-01
168	09:10	66.36335	26.61478	163209.9	0.4824914	0.3551275E-01	0.2445786E-01
169	09:20	66.34389	26.61341	163207.7	0.1902459	0.3827539E-01	0.2538854E-01
170	09:30	66.33795	26.61226	163202.6	0.4508059	0.4551158E-01	0.2709346E-01
171	09:40	66.33400	26.61342	163211.1	-0.7472307	0.3184593E-01	0.2709997E-01
172	09:50	66.33671	26.61381	163212.4	-0.1199367	0.2927361E-01	0.2694377E-01
173	10:00	66.32437	26.61282	163210.0	0.2123000	0.3232362E-01	0.2698362E-01
174	10:10	66.30803	26.61237	163212.6	-0.2288462	0.2804265E-01	0.2676503E-01
175	10:20	66.30570	26.61143	163207.7	0.4370067	0.3463801E-01	0.2733983E-01
176	10:30	66.29581	26.61042	163204.5	0.2826154	0.3857349E-01	0.2791991E-01
177	10:40	66.28872	26.61090	163209.6	-0.4494362	0.3094952E-01	0.2785381E-01

Table 4

TENNESSEE VALLEY AUTHORITY
CONTAINMENT LEAKAGE MEASUREMENT
TEST SUMMARY
VERIFICATION
ALL COMPARTMENTS

SAMPLE NO.	ELASPED TIME	AVERAGE TEMPERATURE (DEG F.)	CORRECTED PRESSURE (PSIA)	TOTAL MASS OF AIR (LBM)	P-T-P LEAK RATE (% PER DAY)	TOTAL TIME LEAK RATE (% PER DAY)	MASS LEAK RATE (% PER DAY)
181	00:00	66.26093	26.60782	163199.6	0.0000000	0.0000000	0.0000000
182	00:10	66.25742	26.60667	163193.2	0.5680160	0.5680160	0.5687053
183	00:20	66.26037	26.60675	163192.5	0.5790683E-01	0.3129602	0.3143407
184	00:30	66.25172	26.60669	163195.2	-0.2302495	0.1318937	0.1240830
185	00:40	66.24039	26.60590	163193.7	0.1295994	0.1313192	0.8768555E-01
186	00:50	66.24051	26.60477	163186.1	0.6659265	0.2382358	0.1588256
187	01:00	66.24598	26.60436	163181.7	0.3957138	0.2644767	0.2091664
188	01:10	66.24433	26.60270	163172.0	0.8507391	0.3482151	0.2836135
189	01:20	66.23264	26.60233	163173.4	-0.1199654	0.2896950	0.2917266
190	01:30	66.22803	26.60119	163168.1	0.4674476	0.3094370	0.3056128
191	01:40	66.21466	26.60089	163170.5	-0.2164945	0.2568480	0.2899722
192	01:50	66.20840	26.59911	163161.5	0.8011557	0.3063175	0.2994120
193	02:00	66.20995	26.59866	163157.9	0.3116545	0.3067562	0.3068818
194	02:10	66.19772	26.59732	163153.2	0.4178467	0.3152934	0.3147349
195	02:20	66.19502	26.59662	163149.5	0.3295982	0.3163085	0.3195340
196	02:30	66.19219	26.59612	163147.2	0.1999700	0.3085485	0.3207573
197	02:40	66.19636	26.59643	163147.7	-0.4826930E-01	0.2862484	0.3133620
198	02:50	66.18601	26.59666	163152.5	-0.4247684	0.2444318	0.2961200
199	03:00	66.18644	26.59539	163144.7	0.6964341	0.2695318	0.2902474
200	03:10	66.16929	26.59418	163142.7	0.1751513	0.2645613	0.2834149
201	03:20	66.15916	26.59331	163140.6	0.1792909	0.2602947	0.2781141
202	03:30	66.16090	26.59217	163133.0	0.6716598	0.2798719	0.2780095
203	03:40	66.15820	26.59214	163133.3	-0.2402636E-01	0.2660225	0.2749086
204	03:50	66.14680	26.59107	163130.8	0.2220577	0.2641070	0.2720735
205	04:00	66.13937	26.58973	163125.4	0.4758452	0.2729211	0.2716309
206	04:10	66.12601	26.58888	163124.7	0.5931020E-01	0.2643756	0.2696855
207	04:20	66.12476	26.58804	163119.9	0.4275869	0.2706454	0.2689099
208	04:30	66.11378	26.58747	163119.7	0.2069030E-01	0.2613874	0.2665921
209	04:40	66.12084	26.58684	163113.4	0.5489835	0.2716491	0.2667948
210	04:50	66.11080	26.58524	163107.0	0.5710750	0.2819637	0.2690071
211	05:00	66.10344	26.58403	163102.5	0.3959059	0.2857543	0.2715388
212	05:10	66.08980	26.58333	163101.8	0.6483654E-01	0.2786267	0.2726641
213	05:20	66.07590	26.58262	163101.4	0.3034915E-01	0.2708674	0.2723159

TABLE 5

TESTABLE PENETRATIONS REQUIRED TO BE IN SERVICE DURING TEST PERFORMANCE

Penetration	Description	Justification	Leakage Rate Added to 95% UCL
X-27(C)	Integrated Leak Rate System Pressure	Isolation valves required to be open to monitor containment pressure.	0.0000 SCFH
X-47A	Ice Condenser System	Glycol cooling supply to air handling units in ice condenser required to ensure ice condition is maintained.	0.0000 SCFH
X-47B	Ice Condenser System	Same as X-47A.	0.0000 SCFH
X-54	Thimble Renewal	Used as pressurization point for air compressors.	0.0000 SCFH
X-98	Integrated Leak Rate System Pressure	Same as X-27(C).	0.0000 SCFH
X-114	Ice Condenser System	Glycol return from air handling units required to ensure ice condition is maintained.	0.0000 SCFH
X-115	Ice Condenser System	Same as X-114.	
X-118	Hatch	Used as source for verification flow and post test depressurization.	0.0000 SCFH
X-46	Waste Disposal	Used to provide leak-off for RCP seals.	0.0000 SCFH

TABLE 5
(Continued)

TESTABLE PENETRATIONS REQUIRED TO BE IN SERVICE DURING TEST PERFORMANCE

Penetration	Description	Justification	Leakage Rate Added to 95% UCL
X-110	UHI	Required since reactor coolant pressure will exceed test pressure.	0.0000 SCFH
X-87A	Integrated Leak Rate System Pressure	Same as X-27C.	0.0000 SCFH
X-87D	Integrated Leak Rate System Pressure	Same as X-27C	0.0000 SCFH

Table 6

TEMPERATURE STABILIZATION SUMMARY

SAMPLE NO	ELAPSED TIME	AVG TEMPERATURE	RATE OF CHANGE OF CONTAINMENT TEMP (DEGF/HR)
87	000:00	67.01125	0.0000000
88	000:15	67.00425	0.2804630E-01
89	000:30	66.98392	0.8132935E-01
90	000:45	67.00351	0.7836914E-01
91	001:00	66.99210	0.4562378E-01
92	001:15	66.98641	0.2276611E-01
93	001:30	66.98363	0.1113892E-01
94	001:45	66.98505	0.5706787E-02
95	002:00	66.97722	0.3134155E-01
96	002:15	66.97774	0.2075195E-02
97	002:30	66.96729	0.4177856E-01
98	002:45	66.95893	0.3344727E-01
99	003:00	66.96375	0.1928711E-01
100	003:15	66.95111	0.5056763E-01
101	003:30	66.95617	0.2023315E-01
102	003:45	66.93069	0.1018982
103	004:00	66.86127	0.2777100
104	004:15	66.82450	0.1470642
105	004:30	66.80250	0.8801270E-01
106	004:45	66.77982	0.9072876E-01
107	005:00	66.76488	0.5972290E-01
108	005:15	66.74461	0.8108521E-01
109	005:30	66.72932	0.6115723E-01
110	005:45	66.70804	0.8193970E-01
111	006:00	66.69815	0.4275513E-01

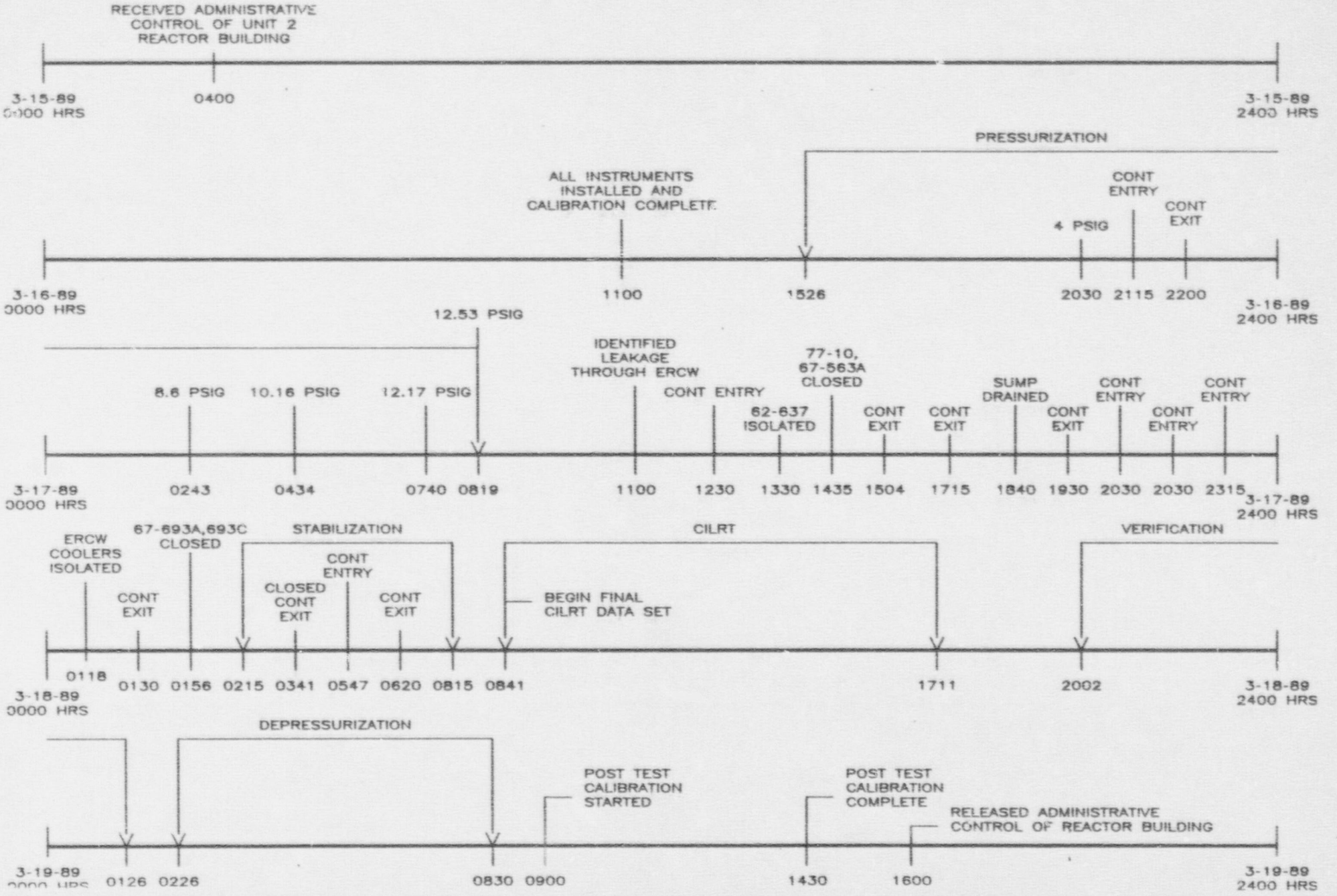
THE AVG. RATE OF TEMP CHANGE FOR THE LAST 4 HOURS = 0.7440026E-01DEGF/HR,
THE AVG. RATE OF TEMP CHANGE FOR THE LAST HOUR = 0.6533203E-01DEGF/HR,
THE TEMP. STABILIZATION CHECK INDICATED A VALUE OF 0.7068232E-02DEGF/HR,
WHICH IS ONLY 1.413646 % OF THE RECOMMENDED 0.5 DEGF/HR

STABILITY CHECK INDICATES CONDITIONS ARE FAVORABLE TO PROCEED WITH CILRT.

F I G U R E S

Figure 1

CILRT
SQN U2 CYCLE 3
SEQUENCE OF EVENTS



COMPUTER BASE ACQUISITION AND DATA REDUCTION SYSTEM

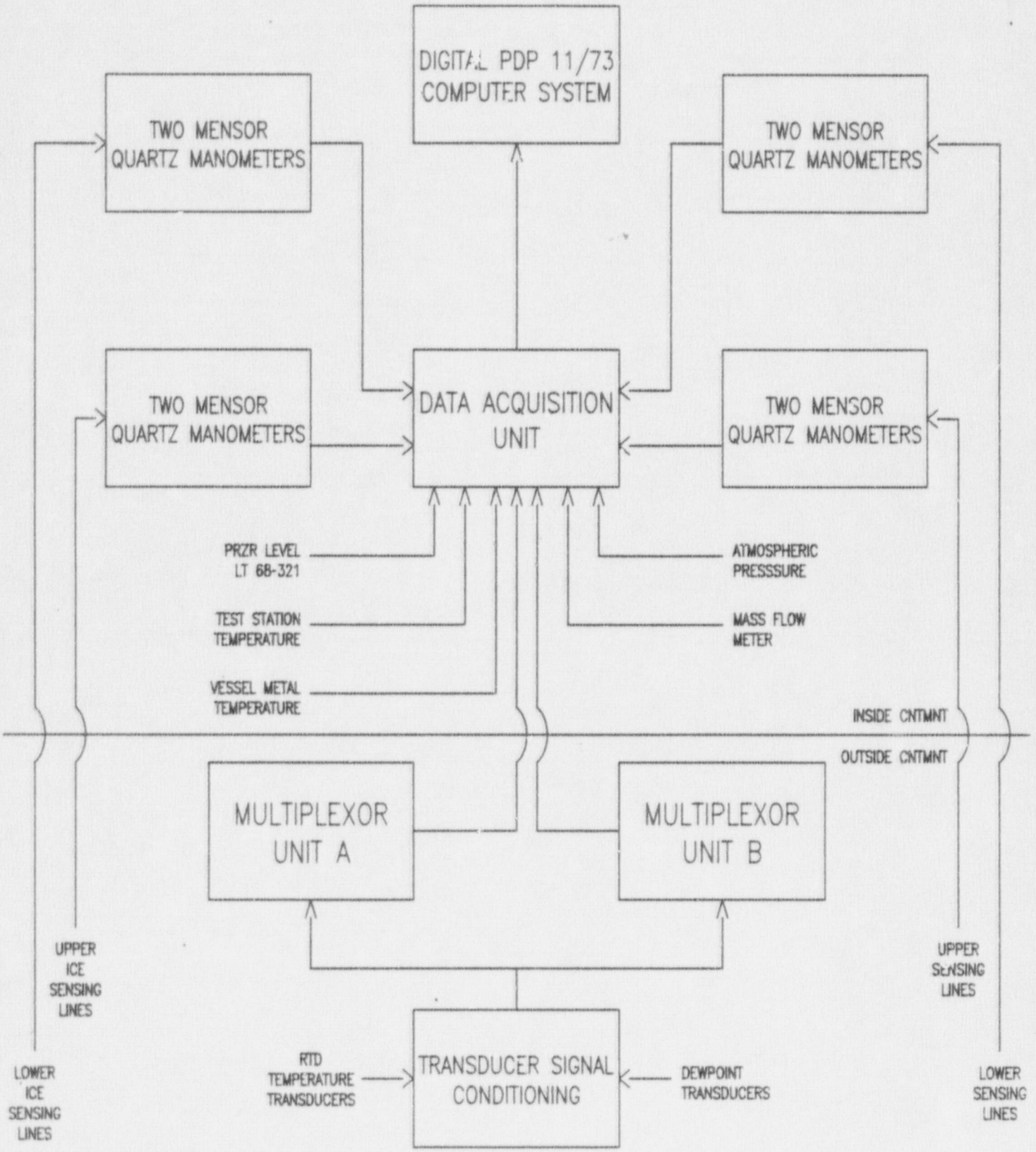


Figure 2

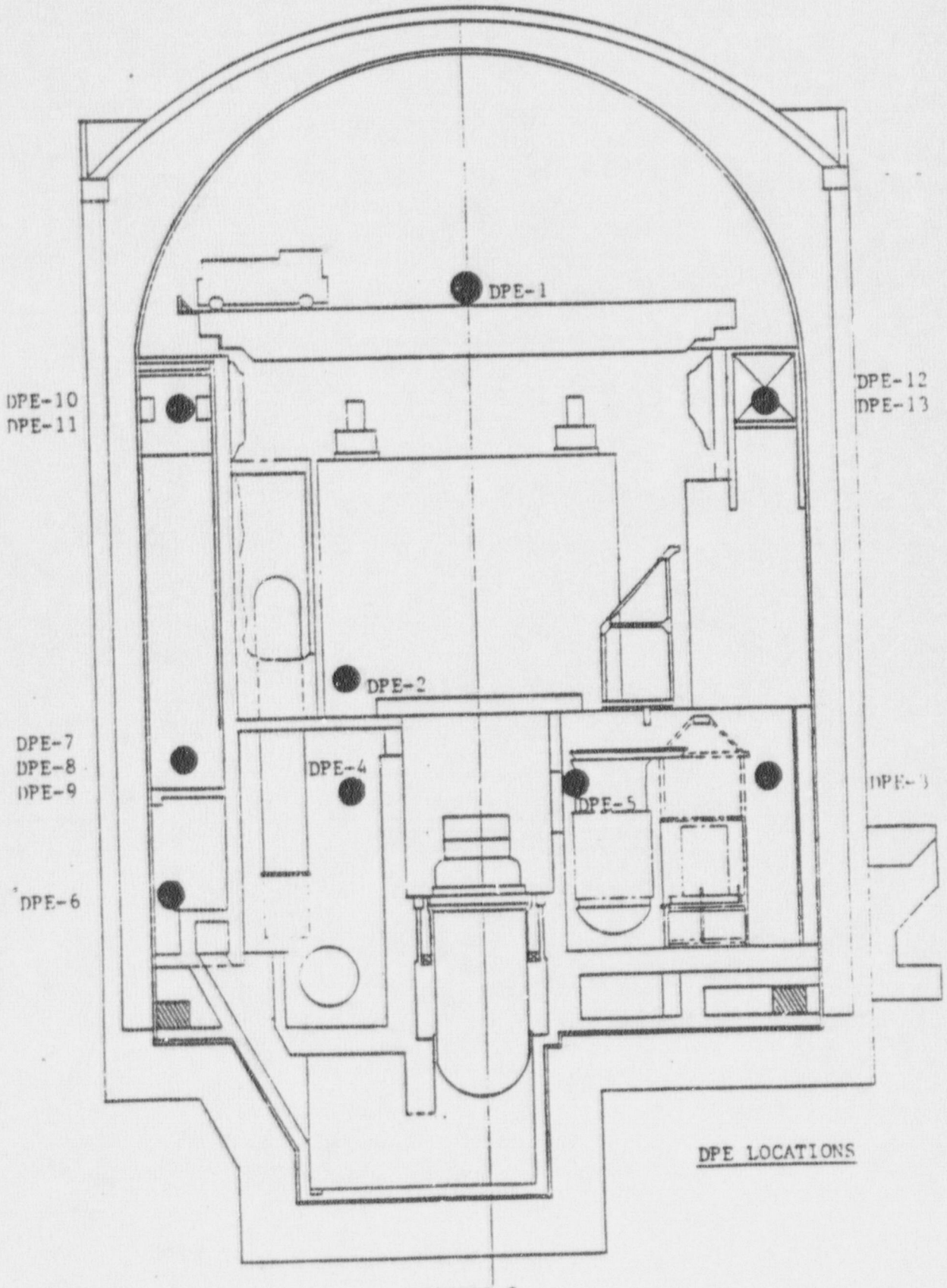

DPE-1
DPE-10
DPE-11
DPE-12
DPE-13
DPE-2
DPE-7
DPE-8
DPE-9
DPE-4
DPE-5
DPE-3
DPE-6
DPE LOCATIONS

FIGURE 3

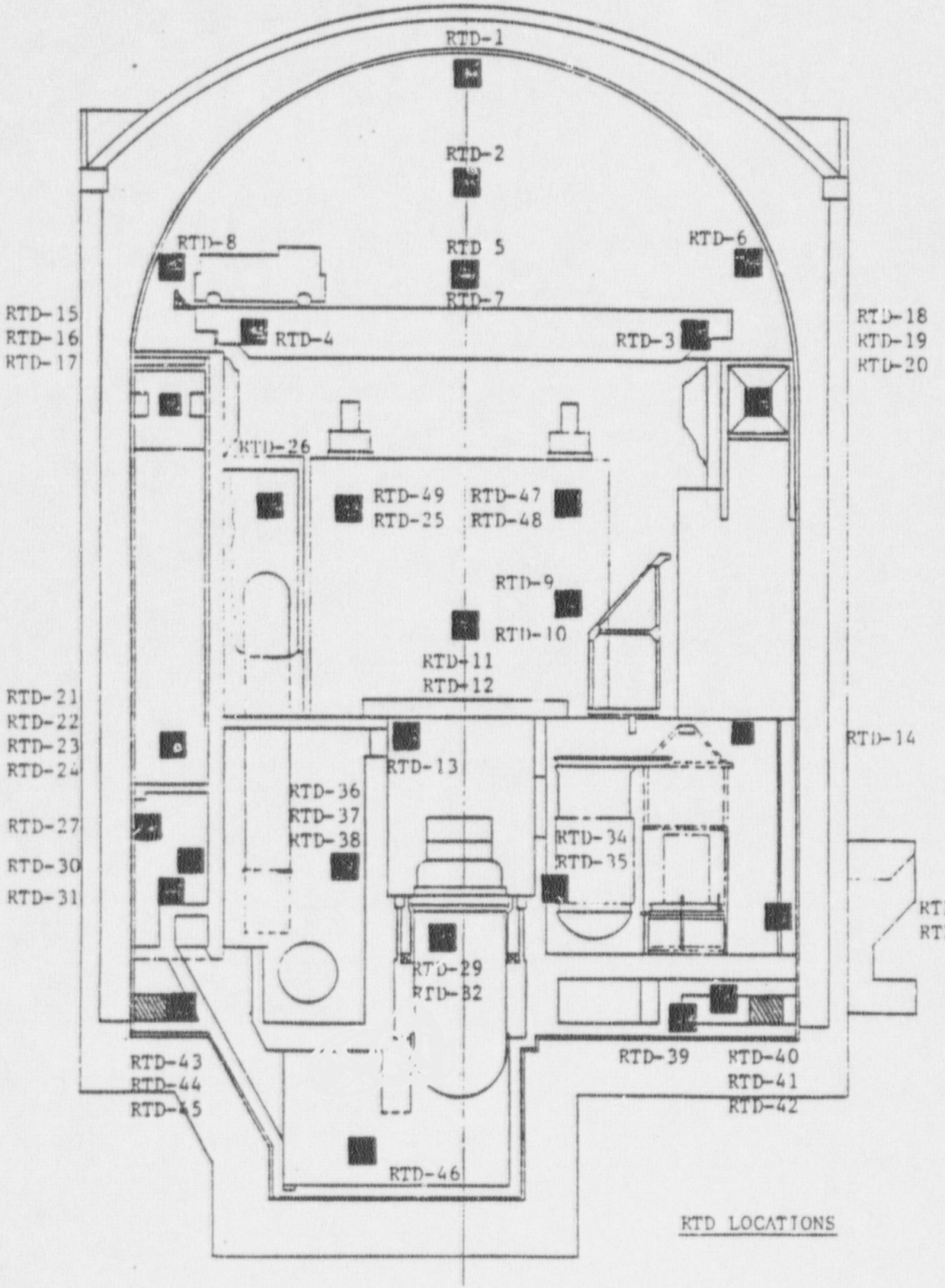
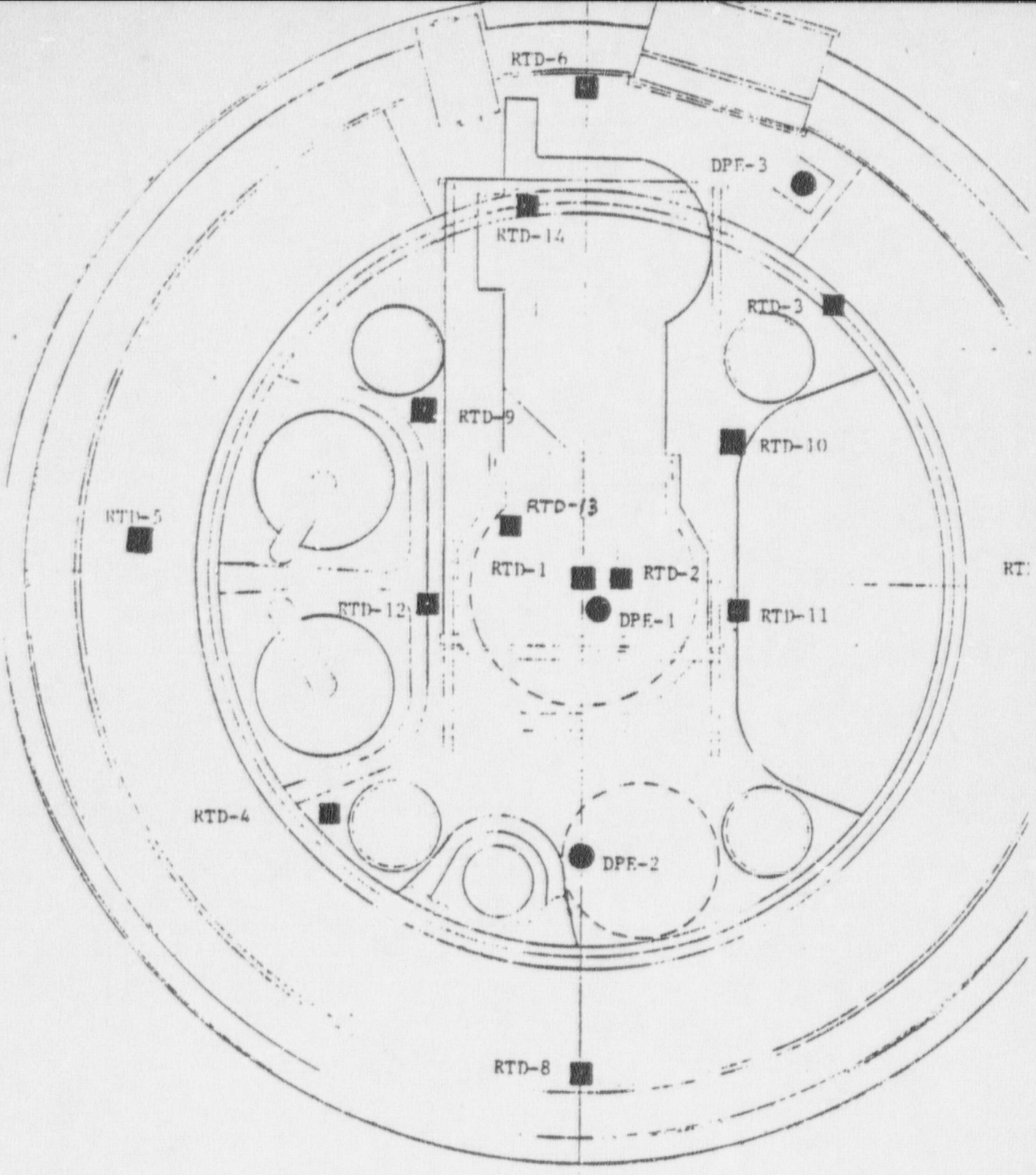
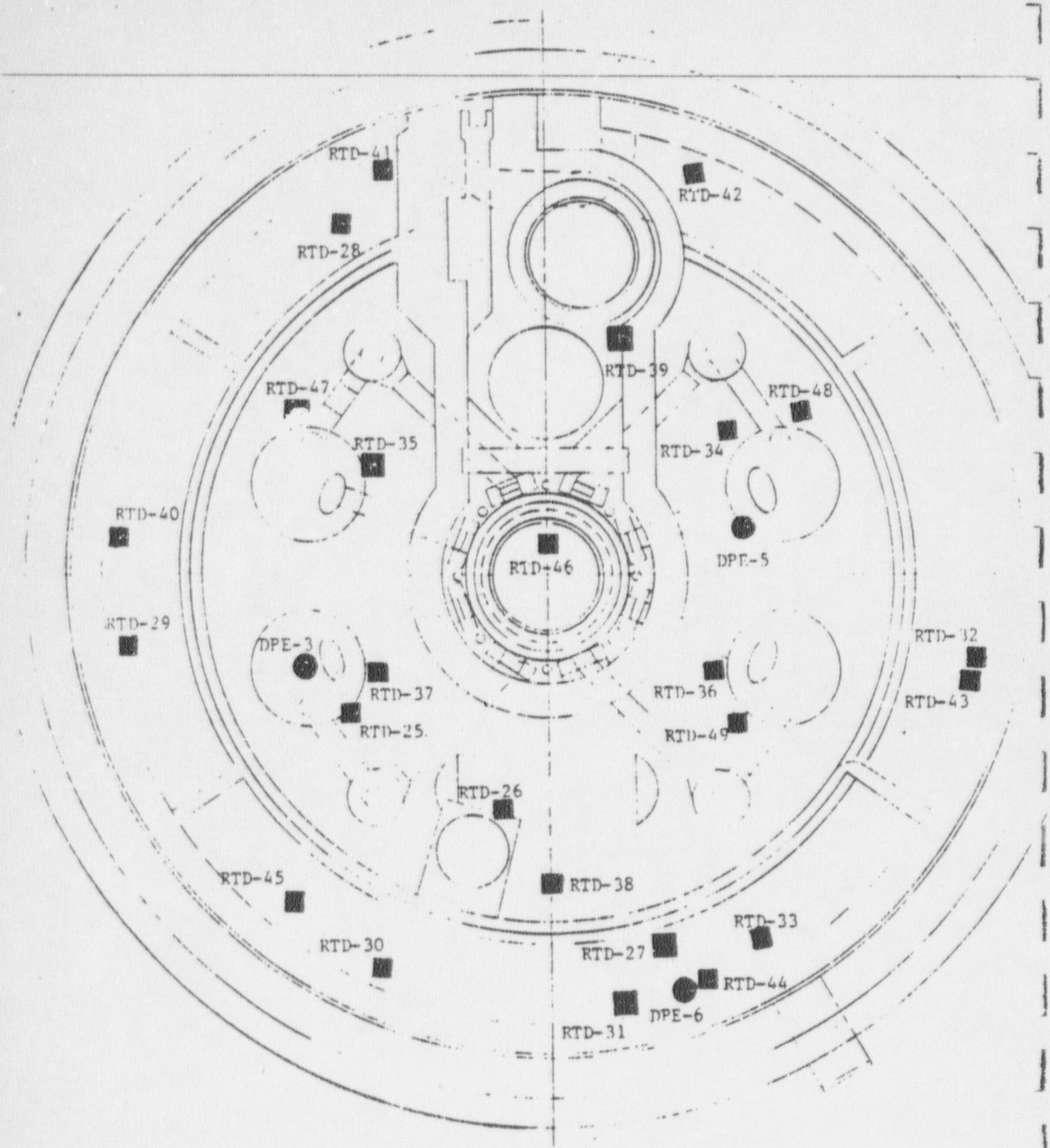

RTD-1
RTD-2
RTD-8
RTD 5
RTD-6
RTD-7
RTD-15
RTD-16
RTD-17
RTD-4
RTD-3
RTD-18
RTD-19
RTD-20
RTD-26
RTD-49
RTD-25
RTD-47
RTD-48
RTD-9
RTD-10
RTD-11
RTD-12
RTD-21
RTD-22
RTD-23
RTD-24
RTD-13
RTD-14
RTD-36
RTD-37
RTD-38
RTD-34
RTD-35
RTD-27
RTD-30
RTD-31
RTD-28
RTD-29
RTD-32
RTD-39
RTD-40
RTD-41
RTD-42
RTD-43
RTD-44
RTD-45
RTD-46
RTD LOCATIONS

FIGURE 4



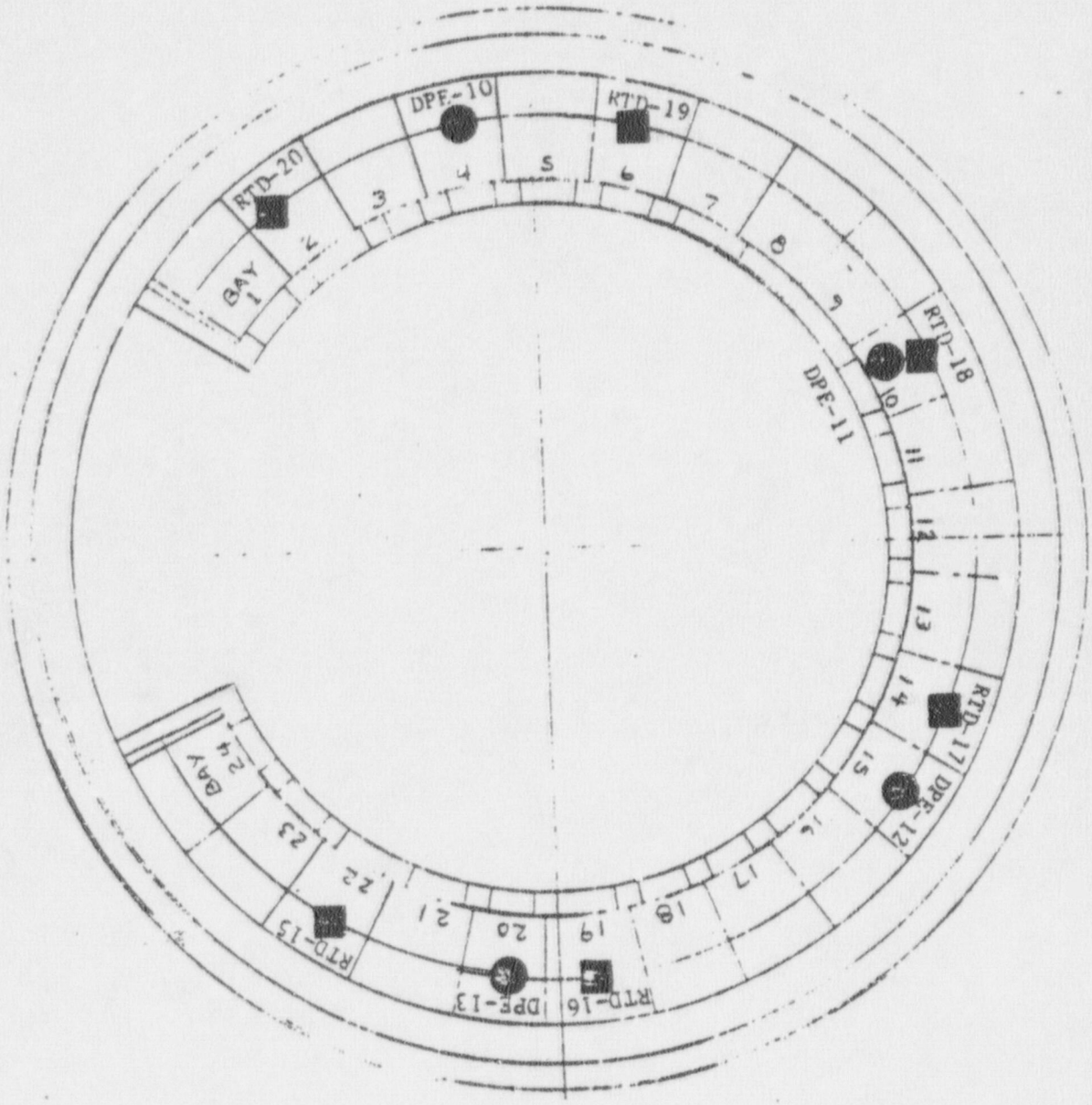
PLAN-UPPER COMPARTMENT
SENSOR LOCATIONS

FIGURE 5



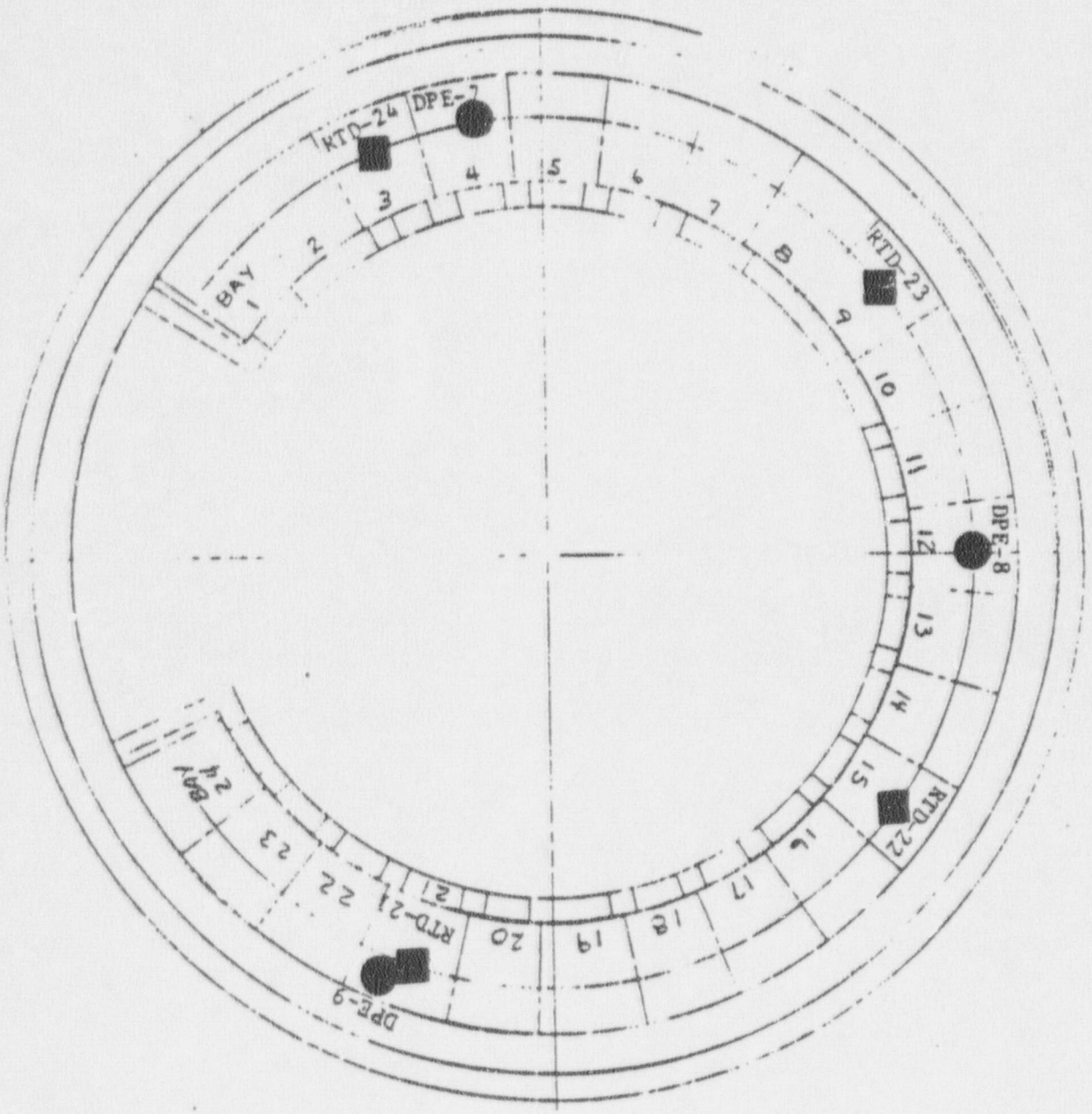
PLAN-LOWER COMPARTMENT
SENSOR LOCATIONS

FIGURE 6



UPPER ICE COMPARTMENT

FIGURE 7



LOWER ICE COMPARTMENT

FIGURE 8

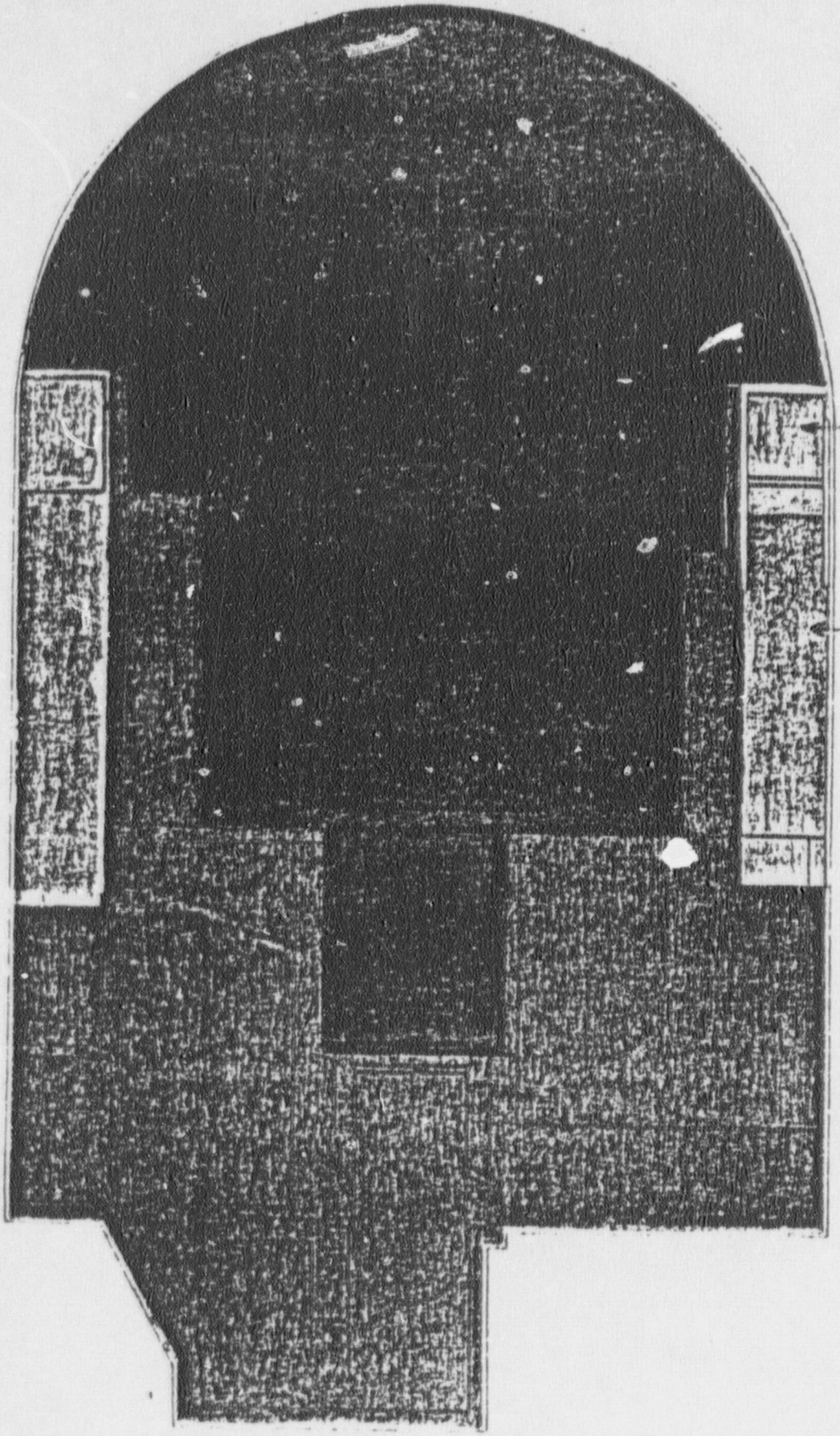
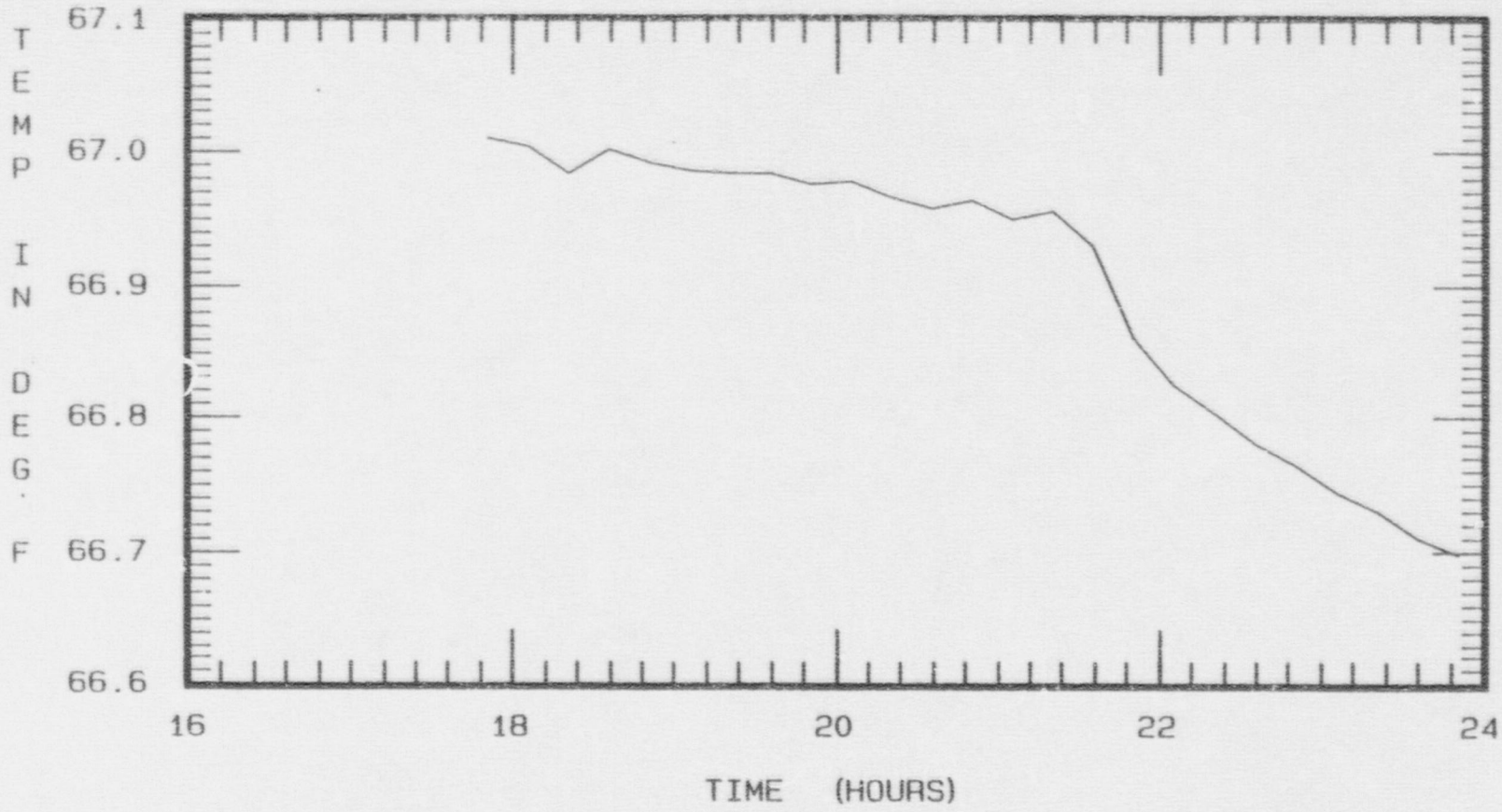
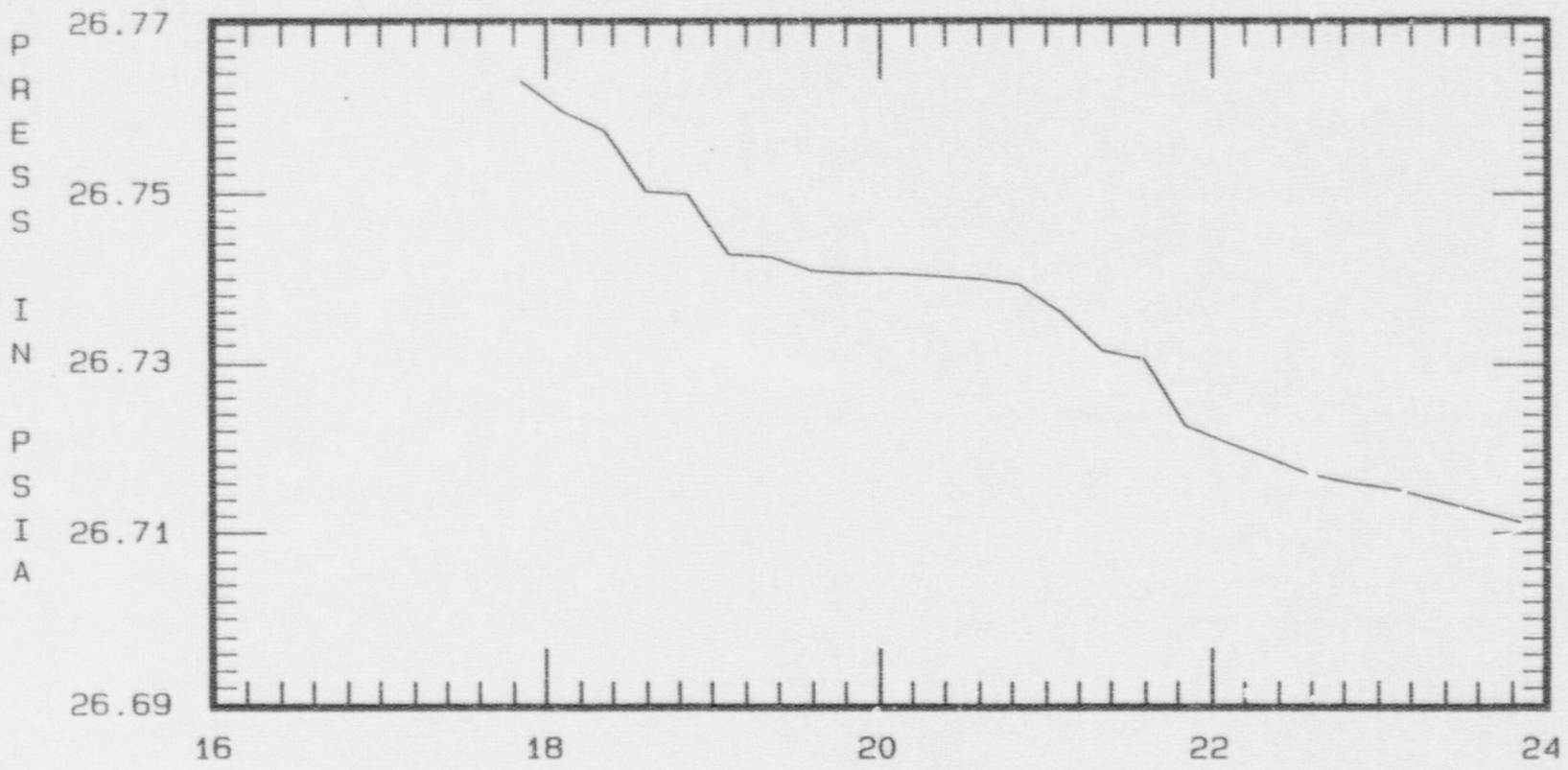

ICE CONDENSER
UPPER COMPARTME
ICE CONDENSER
LOWER COMPARTME

Figure 9



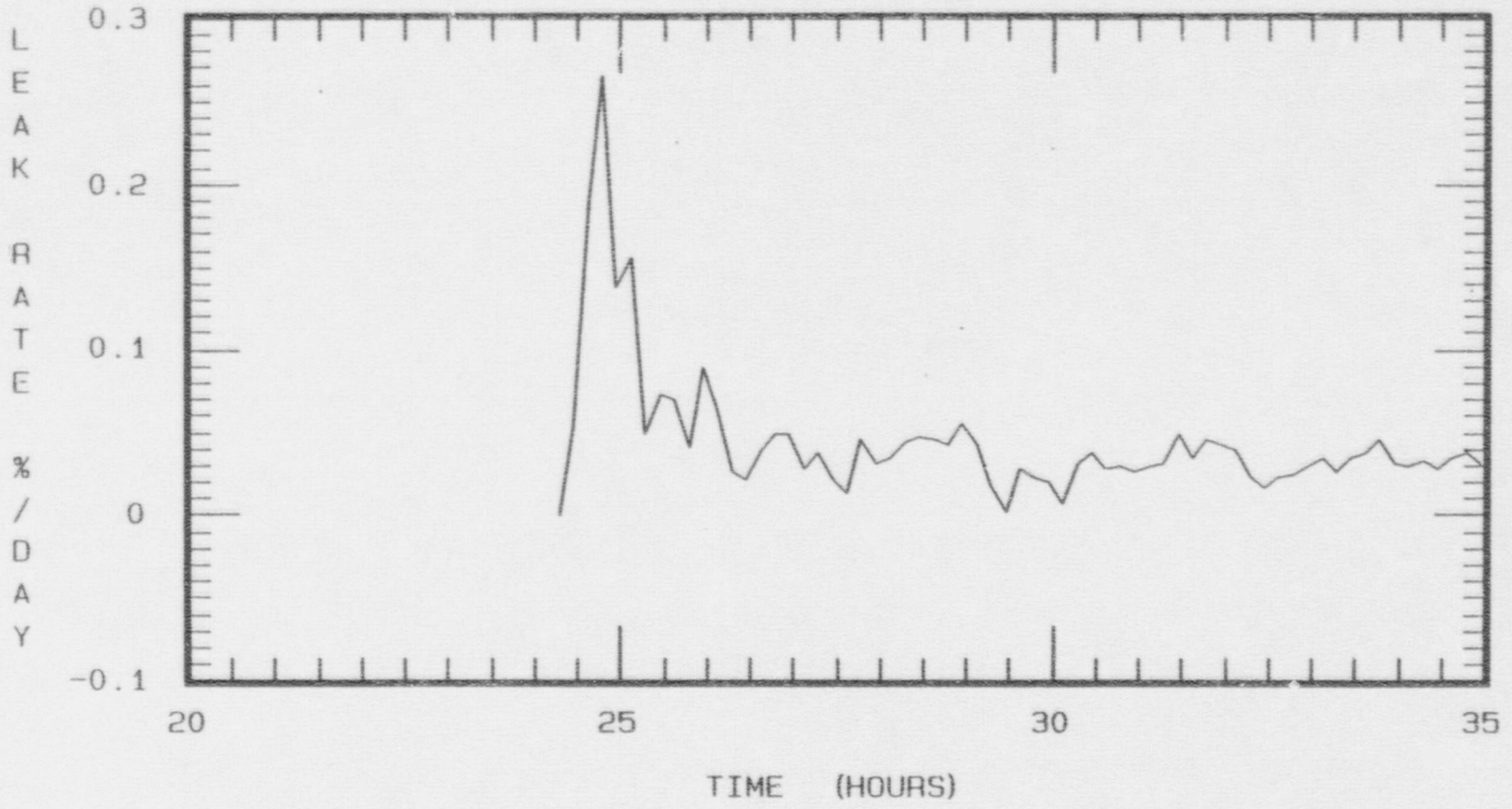
CONTAINMENT TEMPERATURE
TEMPERATURE STABILITY PHASE

Figure 10



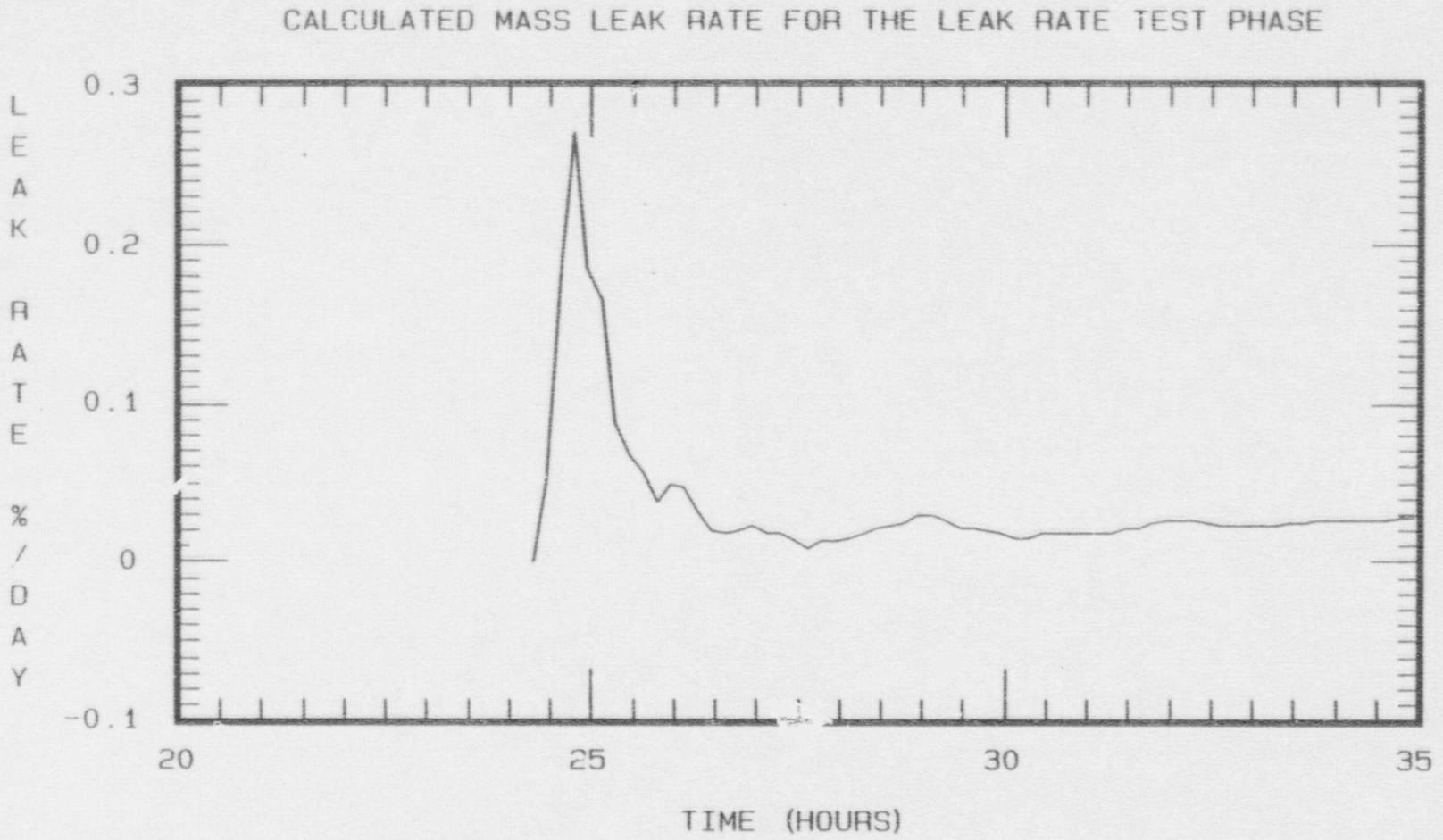
CONTAINMENT PRESSURE
TEMPERATURE STABILITY PHASE

Figure 11



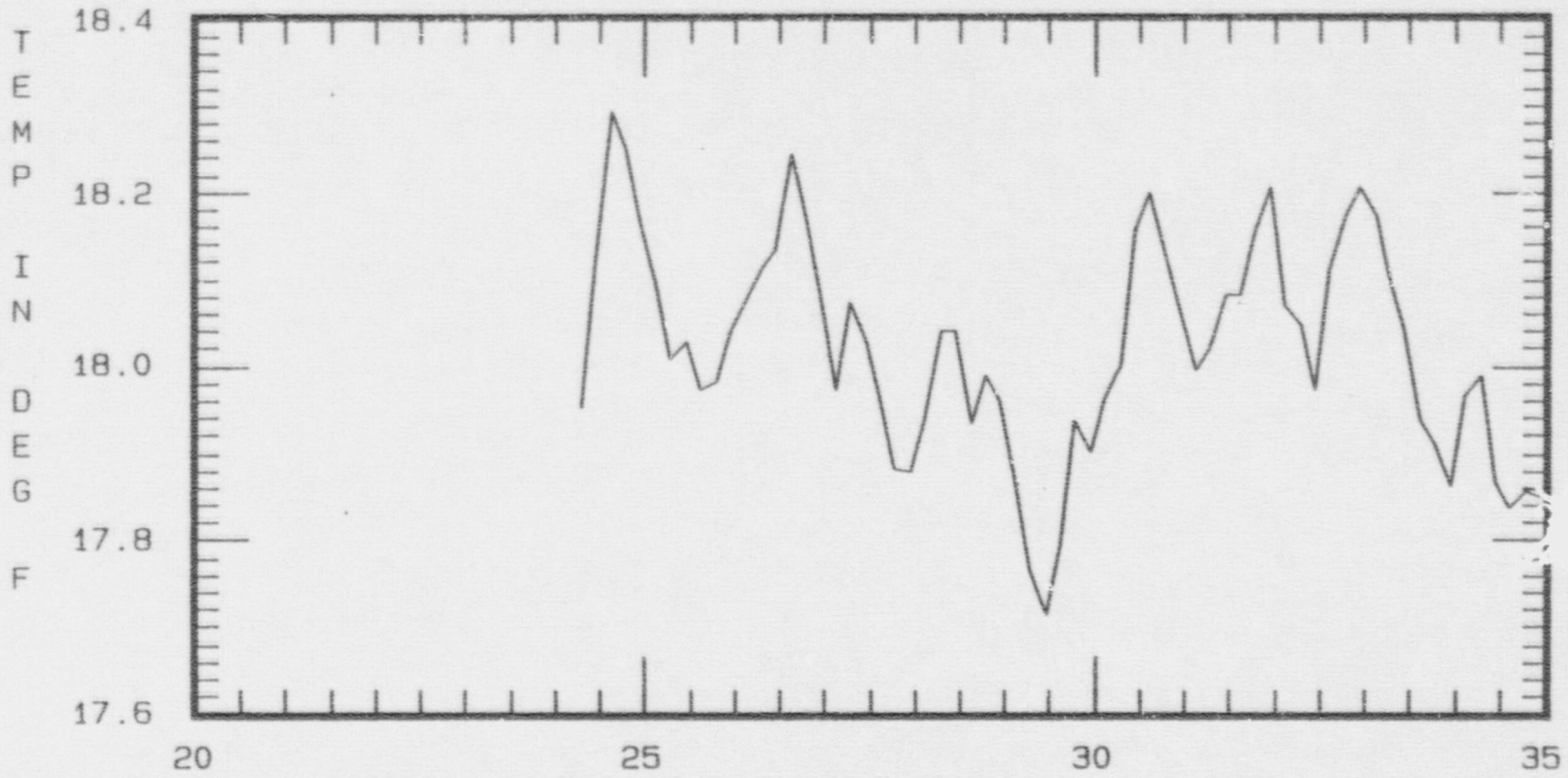
TOTAL TIME LEAK RATE
TEST PHASE

Figure 12



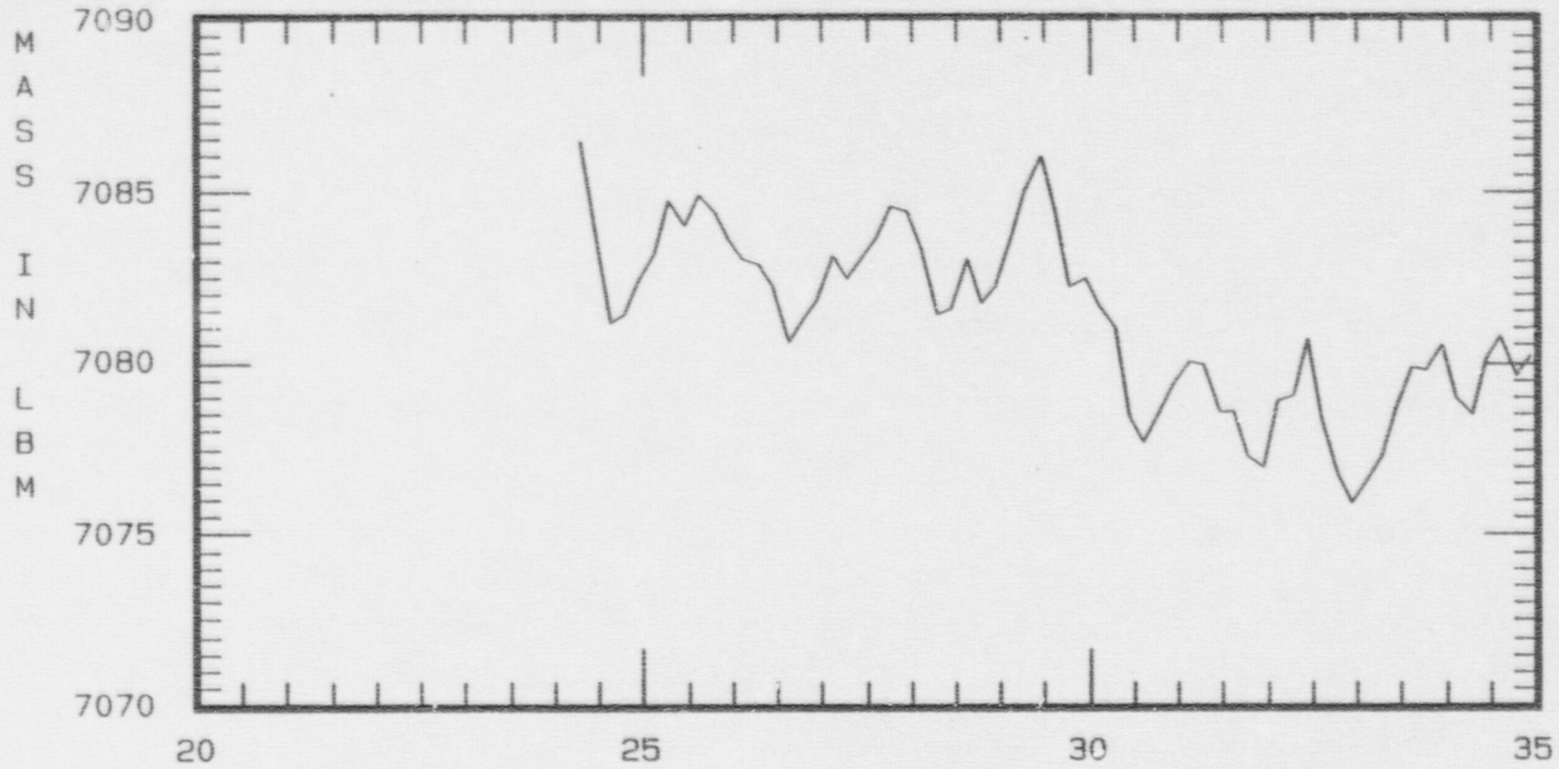
CALCULATED MASS LEAK RATE
TEST PHASE

Figure 13



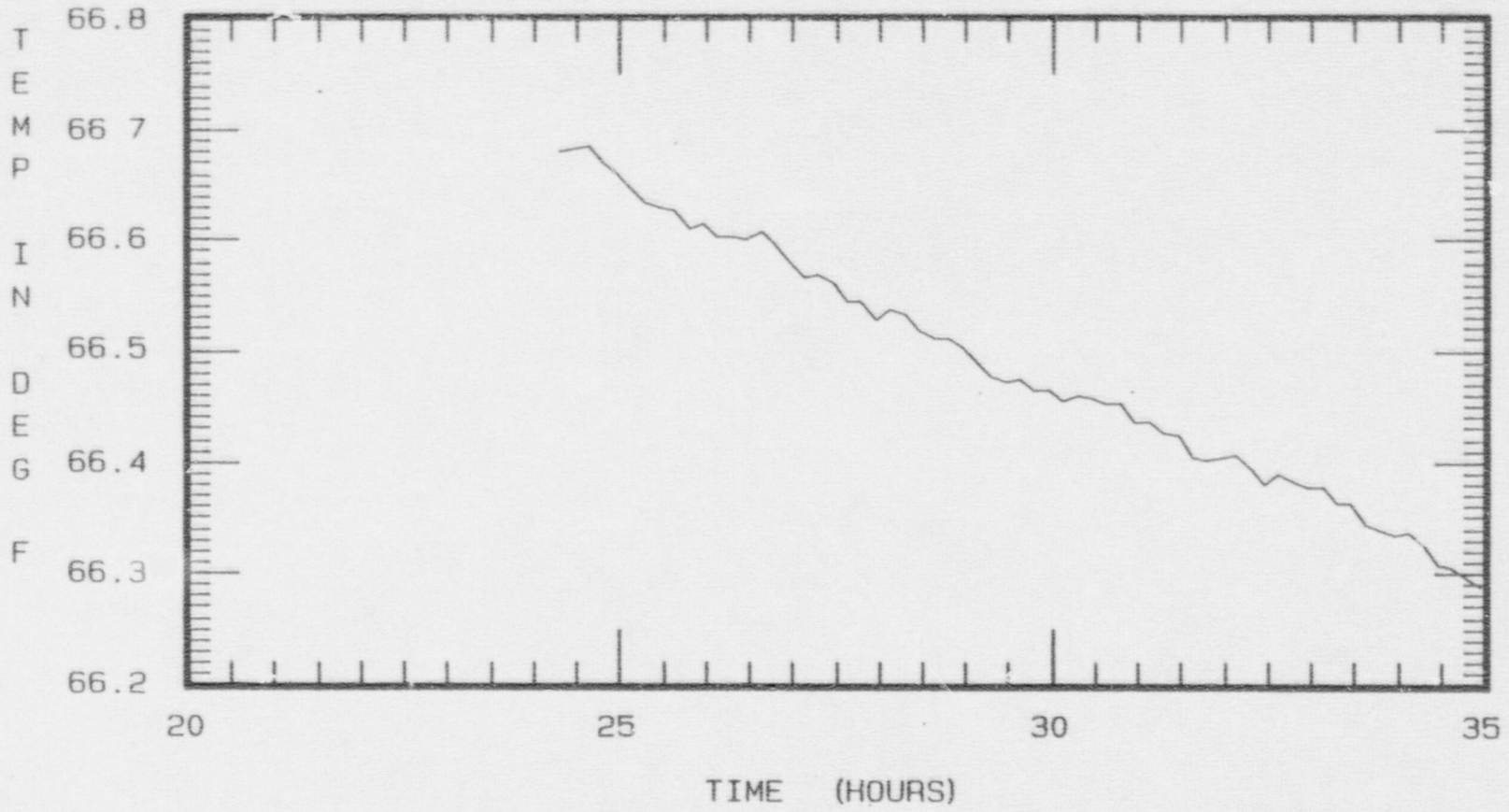
UPPER ICE
COMPARTMENT TEMPERATURE
TEST PHASE

Figure 14



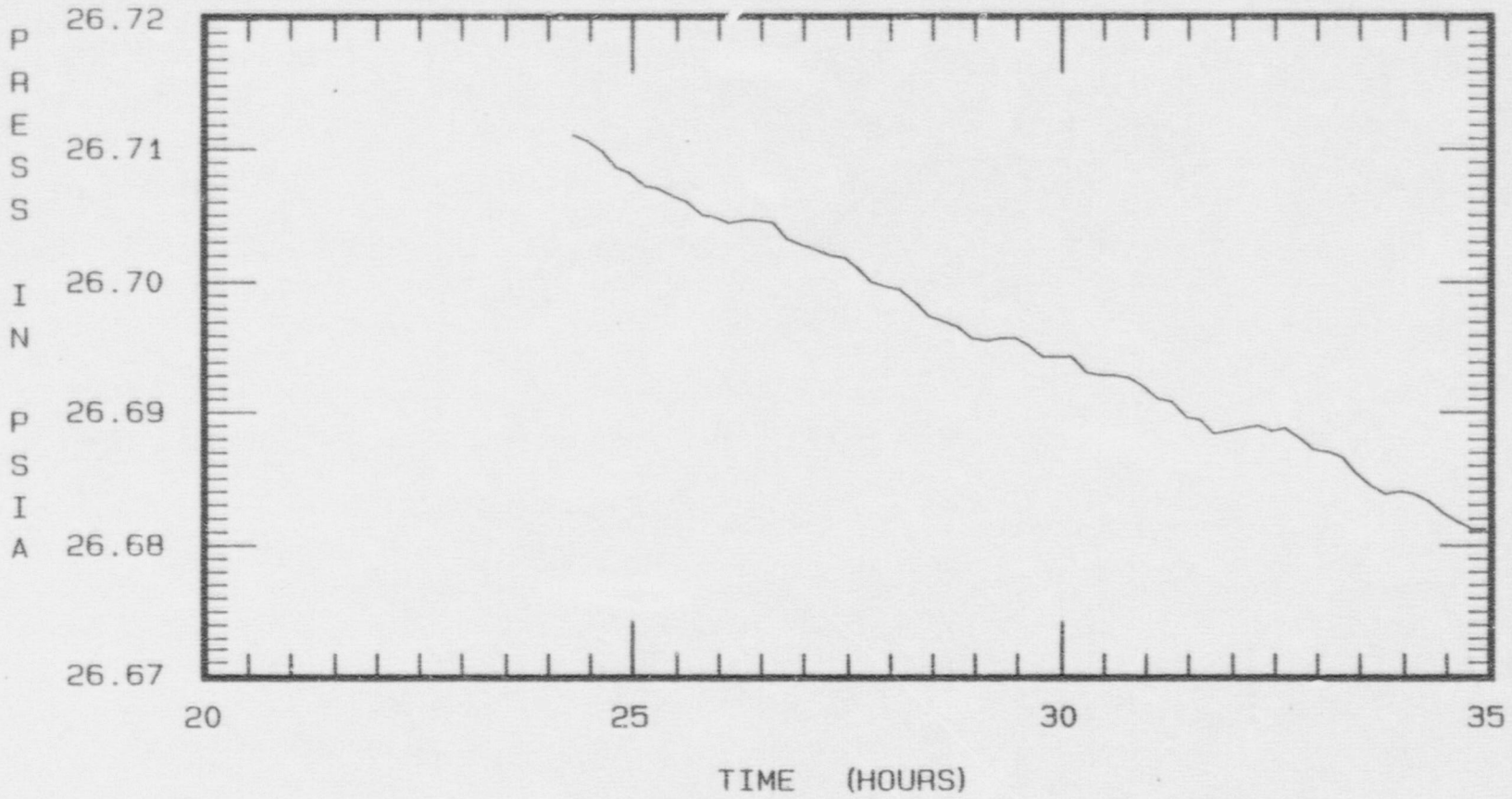
UPPER ICE
COMPARTMENT MASS
TEST PHASE

Figure 15



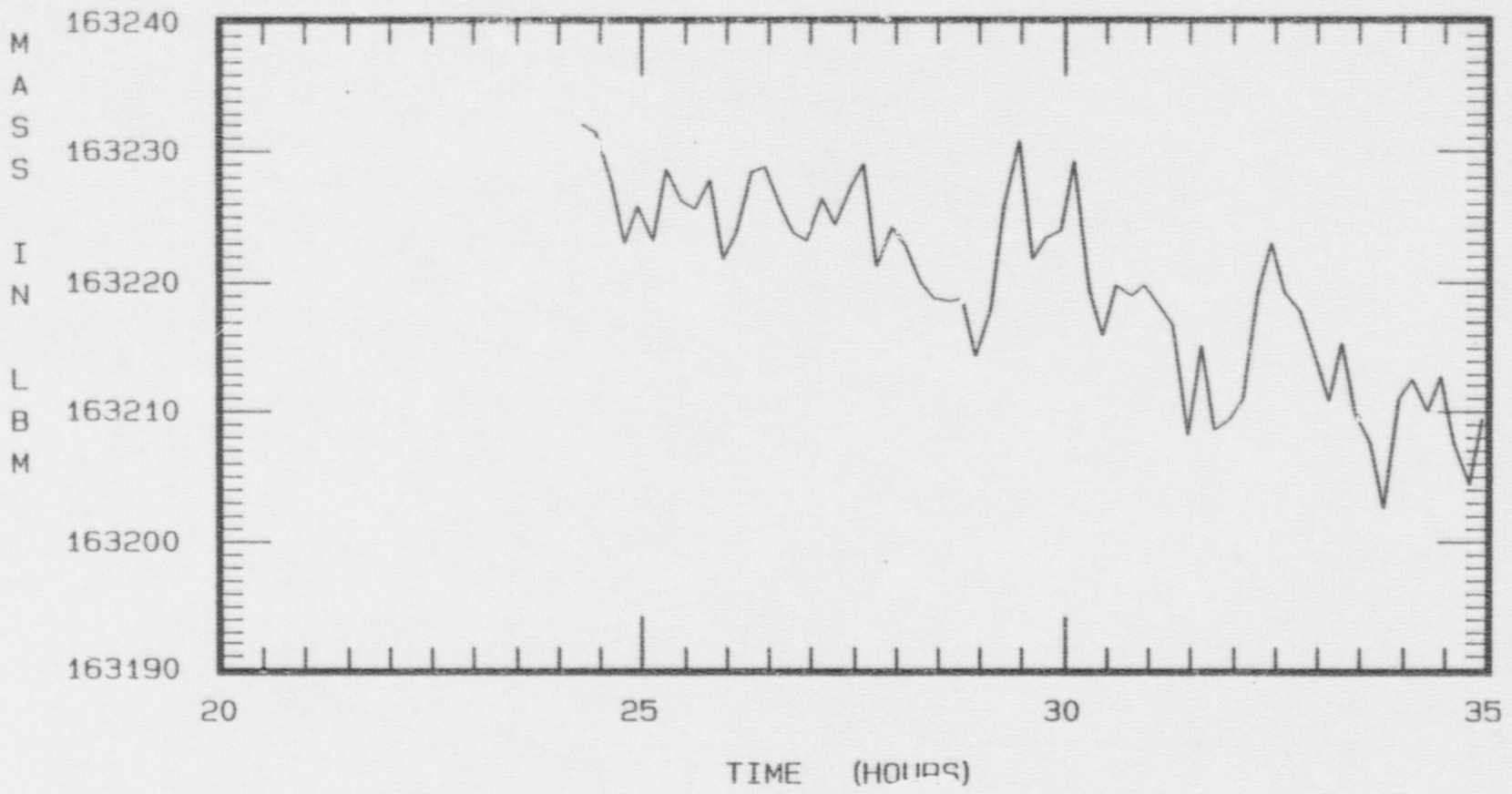
CONTAINMENT TEMPERATURE
TEST PHASE

Figure 16



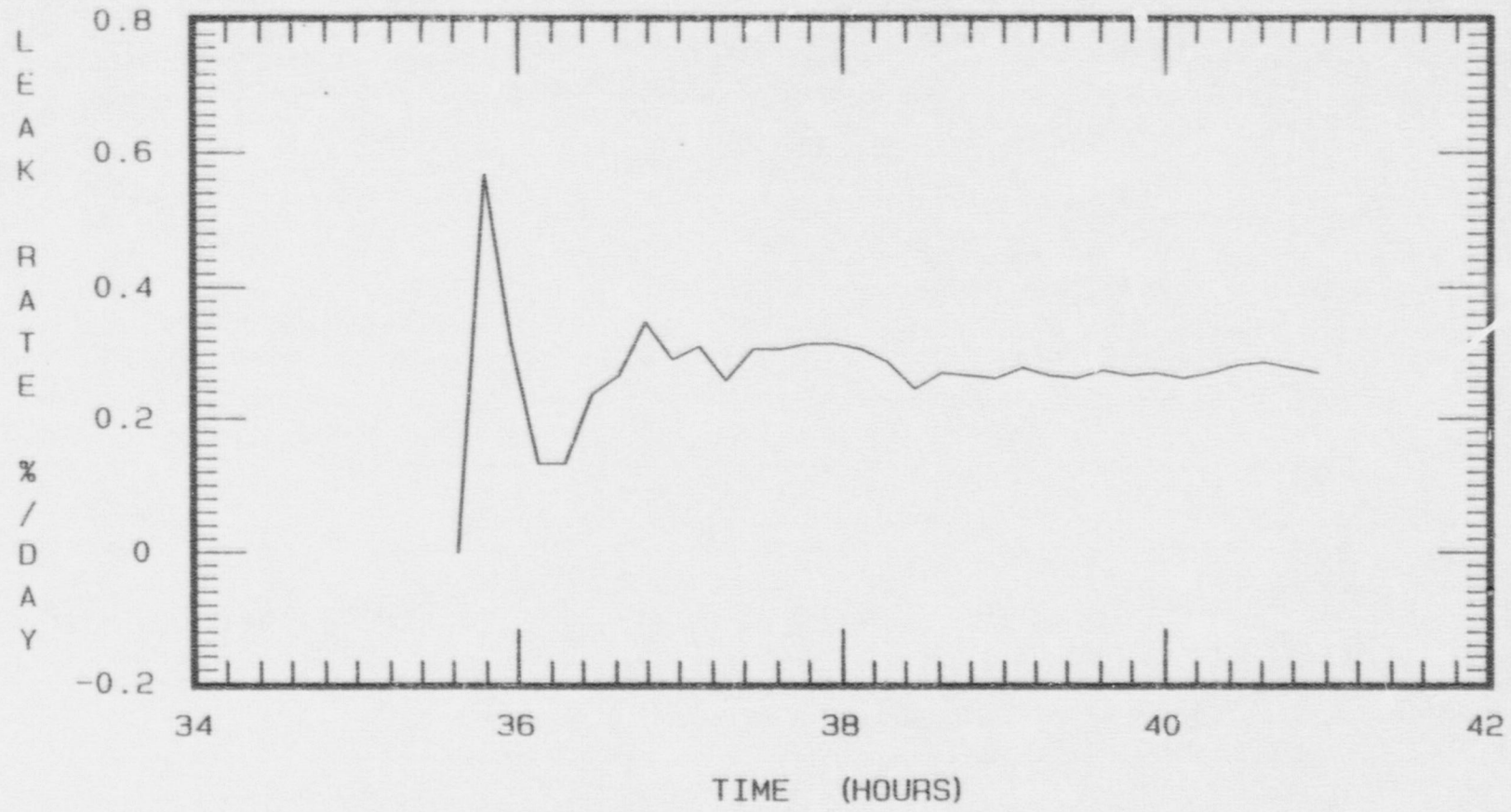
CONTAINMENT PRESSURE
TEST PHASE

Figure 17



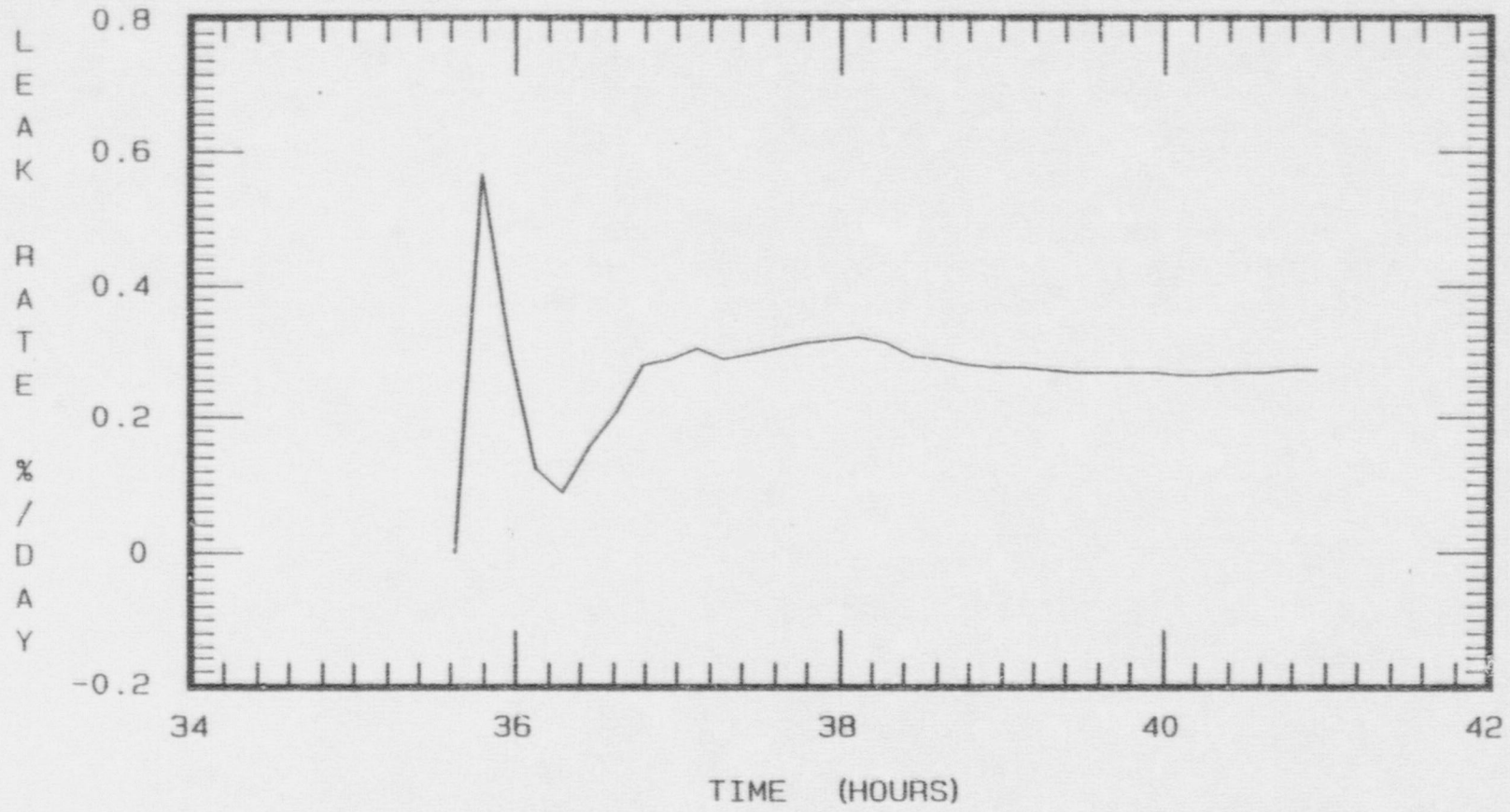
CONTAINMENT MASS
TEST PHASE

Figure 18



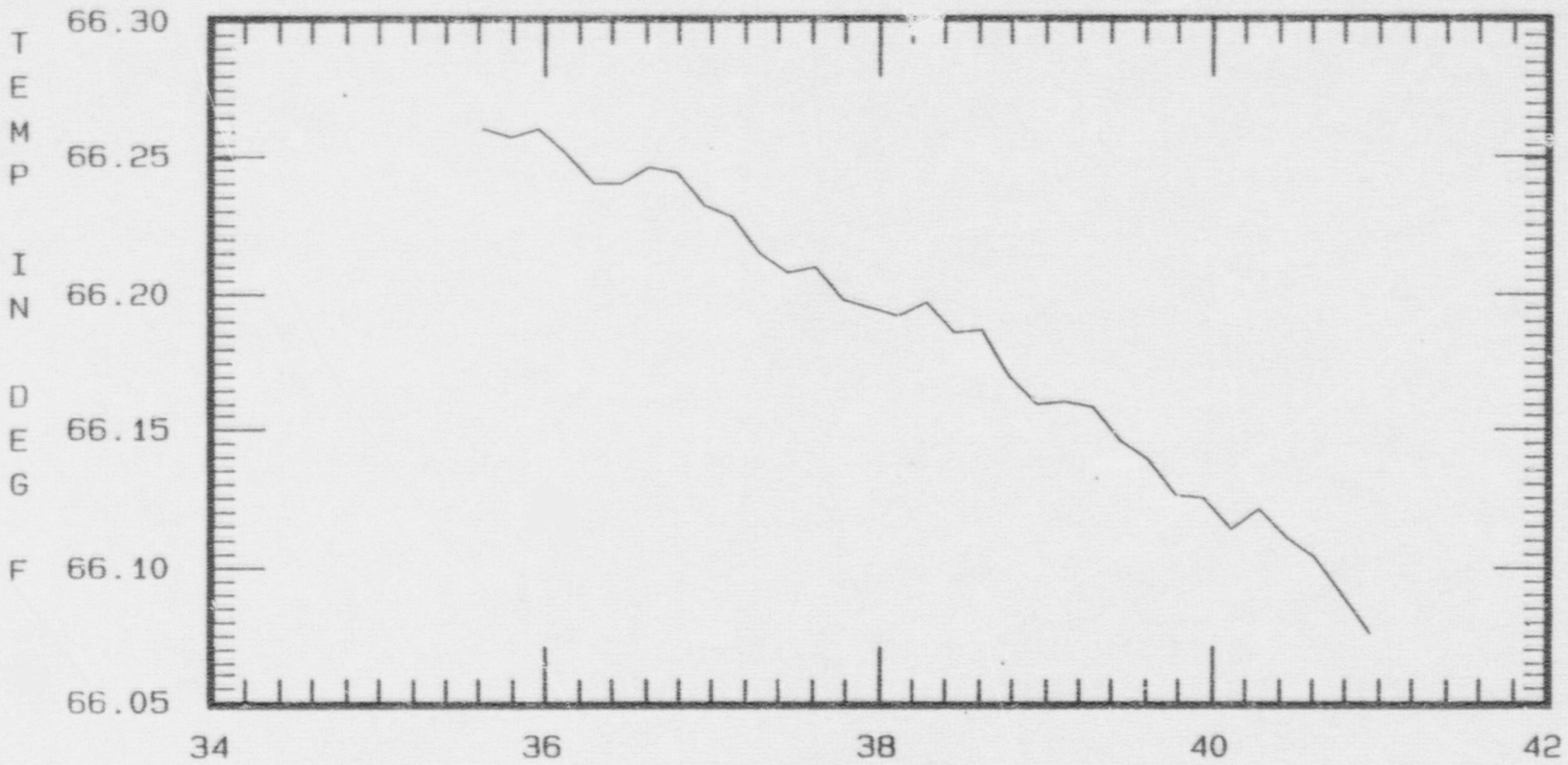
TOTAL TIME LEAK RATE
VERIFICATION PHASE

Figure 19



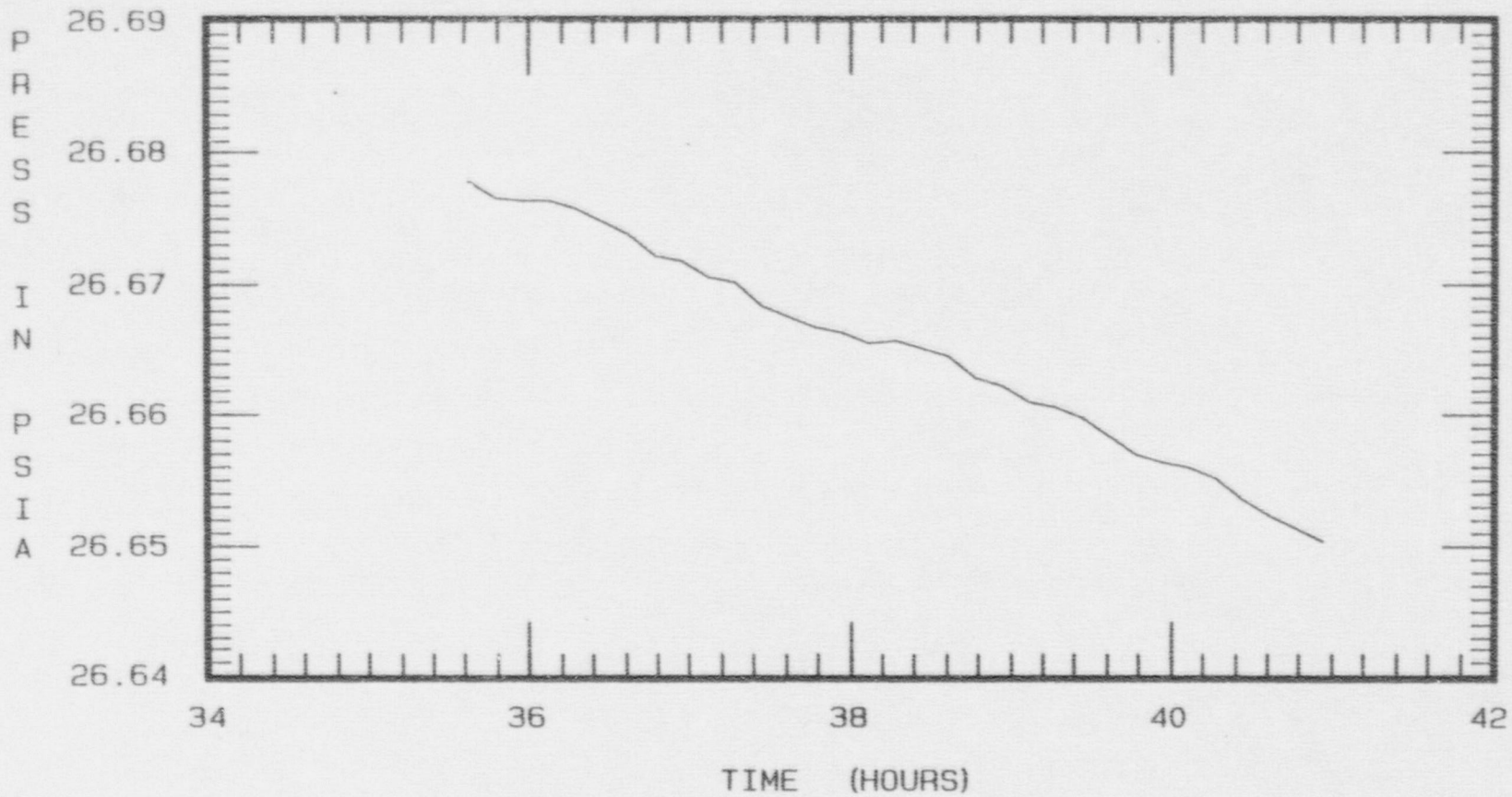
MASS LEAK RATE
VERIFICATION PHASE

Figure 20



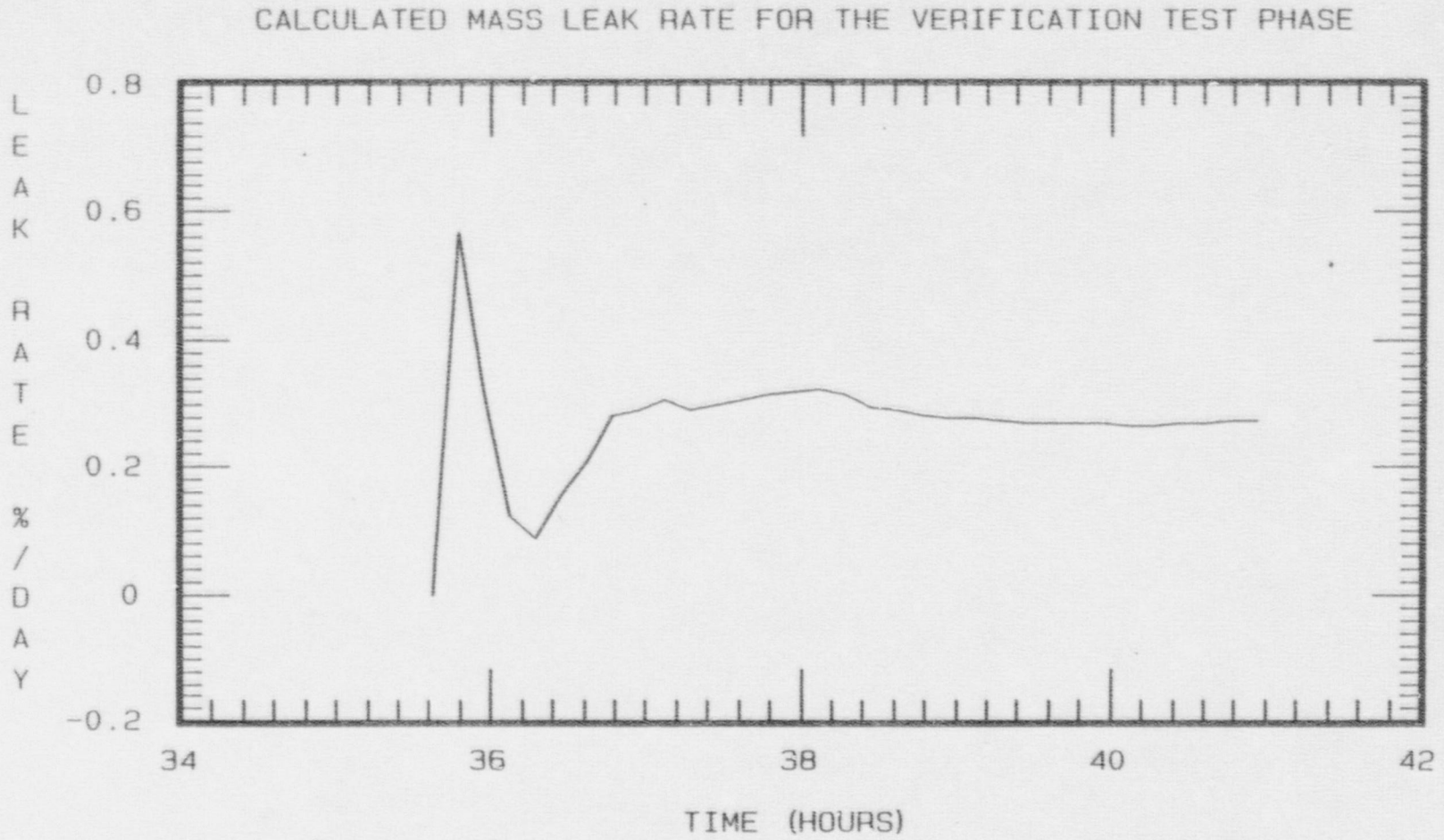
CONTAINMENT TEMPERATURE
VERIFICATION PHASE

Figure 21



CONTAINMENT PRESSURE
VERIFICATION PHASE

Figure 22



CALCULATED MASS LEAK RATE
VERIFICATION PHASE

Figure 23

A P P E N D I C E S

APPENDIX A

```
ASSUMED CONDITIONS AT THE TIME OF TEST: PA =  26.6960 PSIA T =  66.2800 DEG F
 RESULTS USING 065 SAMPLES (SAMPLES T-113 - T-177)   ELAPSED TIME    010:40
  1. TOTAL ABSOLUTE PRESSURE METHOD: NUMBER OF SENSORS: 07 RANGE: 0 -  30.0 PSIA
      ERROR IN PRESSURE = 0.5786920E-04 PSIA (USING REPEATABILITY)
      ERROR IN PRESSURE = 0.1513786E-02 PSIA (USING ACCURACY)
  2. WATER VAPOR PRESSURE: NUMBER OF SENSORS: 12
      ERROR IN VAPOR PRESSURE = 0.2655944E-03 PSIA (USING REPEATABILITY)
      ERROR IN VAPOR PRESSURE = 0.2655811E-02 PSIA (USING ACCURACY)
  3. TEMPERATURE : NUMBER OF SENSORS: 48
      ERROR IN TEMPERATURE = 0.2041242E-03 DEG R (USING REPEATABILITY)
      ERROR IN TEMPERATURE = 0.1443448E-01 DEG R (USING ACCURACY)

  4. ISG (USING REPEATABILITY)
      ISG =2400/TM*SQRT(2*((EPR/P)**2)+2*((ERVR/P)**2)+2*((ETR/T)**2))
      ISG = 0.3242329E-02    PERCENT/DAY = 0.1303015E-01 LA
  5. ISG (USING ACCURACY)
      ISG =2400/TM*SQRT(2*((EPA/P)**2)+2*((ERVA/P)**2)+2*((ETA/T)**2))
      ISG = 0.3746853E-01    PERCENT/DAY = 0.1505771     LA
```

APPENDIX B

CALCULATION OF AGREEMENT (USING TTLR)

Where: $\frac{L_{RM} - L_R - L_{AM}}{L_A} \leq \pm .25$

Where: L_{RM} = containment leak rate measured during verification

L_R = imposed leak rate for verification

L_{AM} = containment leak rate measured during CILRT

L_A = full pressure design basis leakage

L_{RM} = 113847.4 SCCM

L_R = 113181.2 SCCM

L_{AM} = 4854.258 SCCM

L_A = 108188.19 SCCM

$$\frac{L_{RM} - L_R - L_{AM}}{L_A} = \frac{113847.4 - 113181.2 - 4854.258}{108188.19} = -0.03871$$

Agreement: $-0.03871\ L_A < \pm 0.25\ L_A$ Therefore, compliance with Appendix J using the TTLR, has easily been met.

APPENDIX B

CALCULATION OF AGREEMENT (USING MLR)

Agreement: $\frac{L_{RM} - L_R - L_{AM} \leq \pm .25}{L_A}$

Where: L_{RM} = containment leak rate measured during verification

L_R = imposed leak rate for verification

L_{AM} = containment leak rate measured during CILRT

L_A = full pressure design basis leakage

L_{RM} = 116659.3 SCCM

L_R = 113181.2 SCCM

L_{AM} = 11937.61 SCCM

L_A = 108188.19 SCCM

$$\frac{L_{RM} - L_R - L_{AM}}{L_A} = \frac{116659.3 - 113181.2 - 11937.61}{108188.19} = -0.07819$$

Agreement: $-0.07819\ L_A < \pm 0.25\ L_A$ Therefore, compliance with Appendix J using the MLR, has also been met.

APPENDIX C

SPECIAL TEST INSTRUMENTATION

I. Pressure Measurement: (8 total)

Two Mensor Quartz Manometers Per Compartment

II. Temperature Measure (48 total)

Upper Compartment (13 total) V = 651,000 cubic feet

RTD -1
RTD -2
RTD -3
RTD -4
RTD -5
RTD -6
RTD -7
RTD -8
RTD - 9
RTD -10
RTD -11
RTD -12
RTD -13

Lower Compartment (25 total) V = 383,720 cubic feet

RTD -25
RTD -26
RTD -27
RTD -28
RTD -29
RTD -30
RTD -31
RTD -32
RTD -34
RTD -35
RTD -36
RTD -37
RTD -38
RTD -38
RTD -39
RTD -40
RTD -41
RTD -42
RTD -43
RTD -43
RTD -44
RTD -45
RTD -46
RTD -47
RTD -48
RTD -49

Ice Condenser (10 total)

Upper Volume
V = 47,000 cubic feet

RTD -15
RTD -16
RTD -17
RTD -18
RTD -19
RTD -20

Lower Volume
V = 110,500 cubic feet

RTD -21
RTD -22
RTD -23
RTD -24

SPECIAL TEST INSTRUMENTATION
(Continued)

III. Vapor Pressure Measurement: (11 total)

Upper Compartment (3 total)

DPE -1
DPE -2
DPE -3

Lower Compartment (3 total)

DPE -4
DPE -5
DPE -6

Ice Condenser (6 total)

Upper Volume	Lower Volume
DPE -10	DPE - 7
DPE -11	DPE - 8
DPE -12	
DPE -13	

IV. Test Station Equipment

Temperature: 1 RTD

Barometric Pressure: 1 Pressure Gauge

APPENDIX D

LOCAL LEAK RATE TEST SUMMARY

A. Type B Tests

Two methods were used to perform the type B tests -- the absolute method (pressure decay) and the volumetrics mass flowmeter method. Both methods use air or nitrogen as the test medium, with the testable volume pressurized to a designated test pressure. The absolute method determines the leakage rate by a measured pressure drop during a set time specified in Sequoyah's surveillance instruction, SNP SI-157, for testable penetrations and SNP SI-159 for the personnel air lock test. The volumetrics mass flowmeter makes a direct mass flow measurement with readings given in standard cubic centimeters per minute (SCCM).

All testable penetrations were tested prior to the performance of the CILRT.

Any penetrations or hatch covers opened after the completion of the CILRT will be tested prior to unit startup under the applicable plant-approved surveillance instructions.

A summary of all type B test data since the unit 2 cycle 2 CILRT conducted in November 1984 is included in this appendix (see Table D-2).

B. Type C Tests

Three methods were used to perform the type C tests -- an airflow method, a water displacement method, and the volumetrics mass flowmeter method. The airflow method consists of a rotameter flow facility in line with the testable valve through a test connection. An air supply is connected to the rotameter facility, which measures the flow of air necessary to replace the air leakage past the valve being tested. From this, a leakage rate is determined.

The water displacement method consists of a calibrated water test tank equipped with a sight glass. A timed water level drop is measured to calculate the leakage past the valve(s) being tested. A separate air source is used to maintain the water pressure at the prescribed test pressure. A special "water inventory test" is conducted on containment spray, applicable only to valves FCV-72-2 and FCV-72-39 and the remainder of test utilizing the water displacement method are the ERCW discharge isolation valves.

The volumetrics mass flowmeter is also used to conduct type C tests.

All testable containment isolation valves were tested prior to the performance of the CILRT. The results of these tests are noted in the summary of type C data in this appendix (see Table D-1).

Any maintenance action or repairs on containment isolation valve subject to type C tests which would affect leakage from primary containment will be retested under the applicable plant-approved surveillance instruction before unit startup.

A summary of the data for all type C tests since the unit 2 cycle 2 CILRT is included in this appendix. Penetrations in water-sealed systems subject to inventory restrictions and penetrations whose leakage might bypass the shield building emergency gas treatment system are identified in Table D-1 of this appendix.

APPENDIX D

SUMMARY OF LOCAL LEAKAGE RATES

Unit 2, Cycle 3

Type B Leakage	As Left
A. Penetration Leakage	1.2089
B. Air Lock Doors	2.6061
Total Type B Leakage	3.815
Total C Leakage	1.6987

	As Left	Maximum Allowable
Total (Types B and C):	5.5137	141.9 SCFH
Penetrations defined as potential bypass leakage paths:	4.3048	59.1250 SCFH
Penetrations water sealed to at least 1.1 P_a subject to inventory restrictions:		
Containment Spray	0.06 CFH	0.08 CFH
RHR Spray	0.02 CFH	0.11 CFH

TABLE B-1

Type C Test Summary

Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-4	Ventilation	30-56/57	0.0000	0.0000	0.0000	0.0000	04/04/86
			0.0000	0.0000	0.0000	0.0000	08/18/87
			0.0000	0.0000	0.0000	0.0000	01/24/88
			0.0000	0.0000	0.0000	0.0000	01/29/88
			0.0000	0.0000	0.0000	0.0000	02/01/88
			0.0000	0.0000	0.0000	0.0000	02/03/88
			0.0000	0.0000	0.0000	0.0000	02/05/88
			0.0000	0.0000	0.0000	0.0000	02/08/88
			0.0000	0.0000	0.0000	0.0000	02/10/88
			0.0000	0.0000	0.0000	0.0000	02/12/88
			0.0000	0.0000	0.0000	0.0000	02/15/88
			0.0000	0.0000	0.0000	0.0000	02/17/88
			0.0000	0.0000	0.0000	0.0000	02/19/88
			0.0000	0.0000	0.0000	0.0000	02/20/88
			0.0000	0.0000	0.0000	0.0000	02/22/88
			0.0000	0.0000	0.0000	0.0000	02/24/88
			0.0000	0.0000	0.0000	0.0000	02/26/88
			0.0000	0.0000	0.0000	0.0000	02/27/88
			0.0000	0.0000	0.0000	0.0000	02/29/88
			0.0000	0.0000	0.0000	0.0000	03/02/88
			0.0000	0.0000	0.0000	0.0000	03/04/88
			0.0000	0.0000	0.0000	0.0000	03/05/88
			0.0000	0.0000	0.0000	0.0000	03/07/88
			0.0000	0.0000	0.0000	0.0000	03/09/88
			0.0000	0.0000	0.0000	0.0000	03/11/88
			0.0000	0.0000	0.0000	0.0000	03/12/88
			0.0000	0.0000	0.0000	0.0000	03/14/88

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-4	Ventilation	30-56/57	0.0000	0.0000	0.0000	0.0000	03/16/88
			0.0000	0.0000	0.0000	0.0000	03/18/88
			0.0000	0.0000	0.0000	0.0000	03/19/88
			0.0000	0.0000	0.0000	0.0000	03/21/88
			0.0000	0.0000	0.0000	0.0000	03/23/88
			0.0000	0.0000	0.0000	0.0000	03/25/88
			0.0000	0.0000	0.0000	0.0000	03/26/88
			0.0000	0.0000	0.0000	0.0000	03/28/88
			0.0000	0.0000	0.0000	0.0000	03/30/88
			0.0000	0.0000	0.0000	0.0000	04/01/88
			0.0000	0.0000	0.0000	0.0000	04/02/88
			0.0000	0.0000	0.0000	0.0000	04/04/88
			0.0000	0.0000	0.0000	0.0000	04/06/88
			0.0000	0.0000	0.0000	0.0000	04/08/88
			0.0000	0.0000	0.0000	0.0000	05/03/88
			0.0000	0.0000	0.0000	0.0000	05/04/88
			0.0000	0.0000	0.0000	0.0000	05/07/88
			0.0000	0.0000	0.0000	0.0000	05/09/88
			0.0000	0.0000	0.0000	0.0000	05/11/88
			0.0000	0.0000	0.0000	0.0000	05/13/88
			0.0000	0.0000	0.0000	0.0000	05/14/88
			0.0000	0.0000	0.0000	0.0000	05/16/88
			0.0000	0.0000	0.0000	0.0000	05/18/88
			0.0000	0.0000	0.0000	0.0000	05/20/88
			0.0000	0.0000	0.0000	0.0000	05/21/88
			0.0000	0.0000	0.0000	0.0000	05/23/88
			0.0000	0.0000	0.0000	0.0000	05/25/88

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-4	Ventilation	30-56/57	0.0000	0.0000	0.0000	0.0000	05/27/88
			0.0000	0.0000	0.0000	0.0000	05/28/88
			0.0000	0.0000	0.0000	0.0000	05/30/88
			0.0000	0.0000	0.0000	0.0000	06/01/88
			0.1046	0.1046	0.1046	0.1046	06/03/88
			0.0000	0.0000	0.0000	0.0000	06/04/88
			0.0000	0.0000	0.0000	0.0000	06/06/88
			0.0000	0.0000	0.0000	0.0000	06/08/88
			0.0000	0.0000	0.0000	0.0000	06/10/88
			0.0000	0.0000	0.0000	0.0000	06/13/88
			0.0000	0.0000	0.0000	0.0000	06/15/88
			0.0000	0.0000	0.0000	0.0000	06/17/88
			0.0000	0.0000	0.0000	0.0000	06/20/88
			0.0000	0.0000	0.0000	0.0000	06/22/88
			0.0000	0.0000	0.0000	0.0000	06/24/88
			0.0000	0.0000	0.0000	0.0000	06/27/88
			0.0000	0.0000	0.0000	0.0000	06/29/88
			0.0000	0.0000	0.0000	0.0000	07/01/88
			0.0000	0.0000	0.0000	0.0000	07/04/88
			0.0000	0.0000	0.0000	0.0000	07/06/88
			0.0000	0.0000	0.0000	0.0000	07/08/88
			0.0000	0.0000	0.0000	0.0000	07/11/88
			0.0000	0.0000	0.0000	0.0000	07/13/88
			0.0000	0.0000	0.0000	0.0000	07/15/88
			0.0000	0.0000	0.0000	0.0000	07/18/88
			0.0000	0.0000	0.0000	0.0000	07/20/88

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As found Valve Leak Rate SCFH	As found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Date
X-4	Ventilation	30-56/57	0.0000	0.0000	0.0000	0.0000	07/22/88
			0.0000	0.0000	0.0000	0.0000	07/25/88
			0.0000	0.0000	0.0000	0.0000	07/27/88
			0.0000	0.0000	0.0000	0.0000	07/29/88
			0.0000	0.0000	0.0000	0.0000	08/01/88
			0.0000	0.0000	0.0000	0.0000	08/03/88
			0.0000	0.0000	0.0000	0.0000	08/05/88
			0.0000	0.0000	0.0000	0.0000	08/08/88
			0.0000	0.0000	0.0000	0.0000	08/10/88
			0.0000	0.0000	0.0000	0.0000	08/12/88
			0.0000	0.0000	0.0000	0.0000	08/15/88
			0.0000	0.0000	0.0000	0.0000	08/17/88
			0.0000	0.0000	0.0000	0.0000	08/19/88
			0.0000	0.0000	0.0000	0.0000	08/22/88
			0.0000	0.0000	0.0000	0.0000	08/24/88
			0.0000	0.0000	0.0000	0.0000	08/26/88
			0.0000	0.0000	0.0000	0.0000	08/29/88
			0.0000	0.0000	0.0000	0.0000	08/31/88
			0.0000	0.0000	0.0000	0.0000	09/02/88
			0.0000	0.0000	0.0000	0.0000	09/05/88
			0.0000	0.0000	0.0000	0.0000	09/07/88
			0.0000	0.0000	0.0000	0.0000	09/09/88
			0.0000	0.0000	0.0000	0.0000	09/12/88
			0.0000	0.0000	0.0000	0.0000	09/14/88
			0.0000	0.0000	0.0000	0.0000	09/16/88
			0.0000	0.0000	0.0000	0.0000	09/19/88
			0.0000	0.0000	0.0000	0.0000	09/21/88

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-4	Ventilation	30-56/57	0.0000	0.0000	0.0000	0.0000	09/23/88
			0.0000	0.0000	0.0000	0.0000	09/26/88
			0.0000	0.0000	0.0000	0.0000	09/28/88
			0.0000	0.0000	0.0000	0.0000	09/30/88
			0.0000	0.0000	0.0000	0.0000	10/03/88
			0.0000	0.0000	0.0000	0.0000	10/05/88
			0.0000	0.0000	0.0000	0.0000	10/07/88
			0.0000	0.0000	0.0000	0.0000	10/10/88
			0.0000	0.0000	0.0000	0.0000	10/12/88
			0.0000	0.0000	0.0000	0.0000	10/14/88
			0.0000	0.0000	0.0000	0.0000	10/17/88
			0.0000	0.0000	0.0000	0.0000	10/19/88
			0.0000	0.0000	0.0000	0.0000	10/21/88
			0.0000	0.0000	0.0000	0.0000	10/24/88
			0.0000	0.0000	0.0000	0.0000	10/26/88
			0.0000	0.0000	0.0000	0.0000	10/28/88
			0.0000	0.0000	0.0000	0.0000	10/31/88
			0.0000	0.0000	0.0000	0.0000	11/02/88
			0.0000	0.0000	0.0000	0.0000	11/04/88
			0.0000	0.0000	0.0000	0.0000	11/07/88
			0.0000	0.0000	0.0000	0.0000	11/09/88
			0.0000	0.0000	0.0000	0.0000	11/11/88
			0.0000	0.0000	0.0000	0.0000	11/14/88
			0.0000	0.0000	0.0000	0.0000	11/16/88
			0.0000	0.0000	0.0000	0.0000	11/18/88
			0.0000	0.0000	0.0000	0.0000	11/21/88
			0.0000	0.0000	0.0000	0.0000	11/23/88

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-4	Ventilation	30-56/57	0.0000	0.0000	0.0000	0.0000	11/25/88
			0.0000	0.0000	0.0000	0.0000	11/28/88
			0.0000	0.0000	0.0000	0.0000	11/30/88
			0.0000	0.0000	0.0000	0.0000	12/02/88
			0.0000	0.0000	0.0000	0.0000	12/05/88
			0.0000	0.0000	0.0000	0.0000	12/07/88
			0.0000	0.0000	0.0000	0.0000	12/09/88
			0.0000	0.0000	0.0000	0.0000	12/12/88
			0.0000	0.0000	0.0000	0.0000	12/14/88
			0.0000	0.0000	0.0000	0.0000	12/16/88
			0.0000	0.0000	0.0000	0.0000	12/19/88
			0.0000	0.0000	0.0000	0.0000	12/21/88
			0.0000	0.0000	0.0000	0.0000	12/23/88
			0.0000	0.0000	0.0000	0.0000	12/25/88
			0.0000	0.0000	0.0000	0.0000	12/28/88
			0.0000	0.0000	0.0000	0.0000	12/30/88
			0.0000	0.0000	0.0000	0.0000	01/02/89
			0.0000	0.0000	0.0000	0.0000	01/04/89
			0.0000	0.0000	0.0000	0.0000	01/07/89
			0.0000	0.0000	0.0000	0.0000	01/09/89
			0.0000	0.0000	0.0000	0.0000	01/11/89
			0.0000	0.0000	0.0000	0.0000	01/13/89
			0.0000	0.0000	0.0000	0.0000	01/16/89
			0.0000	0.0000	0.0000	0.0000	01/18/89
			0.0000	0.0000	0.0000	0.0000	01/21/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-5	Ventilation	30-58/59	0.0000	0.0000	0.0000	0.0000	04/04/86
			0.0000	0.0000	0.0000	0.0000	08/18/87
			0.0000	0.0000	0.0000	0.0000	01/24/88
			0.0000	0.0000	0.0000	0.0000	02/03/88
			0.0000	0.0000	0.0000	0.0000	03/09/88
			0.0000	0.0000	0.0000	0.0000	03/23/88
			0.0000	0.0000	0.0000	0.0000	04/06/88
			0.0000	0.0000	0.0000	0.0000	05/03/88
			0.0000	0.0000	0.0000	0.0000	06/27/88
			0.0000	0.0000	0.0000	0.0000	09/13/88
			0.0000	0.0000	0.0000	0.0000	12/05/88
			0.0000	0.0000	0.0000	0.0000	02/21/89
X-6	Ventilation	30-50/51	0.0000	0.0000	0.0000	0.0000	04/04/86
			0.0000	0.0000	0.0000	0.0000	08/18/87
			0.0000	0.0000	0.0000	0.0000	01/24/88
			0.0000	0.0000	0.0000	0.0000	02/03/88
			0.0000	0.0000	0.0000	0.0000	03/09/88
			0.0000	0.0000	0.0000	0.0000	03/23/88
			0.0000	0.0000	0.0000	0.0000	04/06/88
			0.0000	0.0000	0.0000	0.0000	05/03/88
			0.0000	0.0000	0.0000	0.0000	05/04/88
			0.0000	0.0000	0.0000	0.0000	05/07/88
			0.0000	0.0000	0.0000	0.0000	06/27/88
			0.0000	0.0000	0.0000	0.0000	08/04/89
			0.0000	0.0000	0.0000	0.0000	08/05/88
			0.0000	0.0000	0.0000	0.0000	09/02/88

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-6	Ventilation	30-50/51	0.0000	0.0000	0.0000	0.0000	09/13/88
			0.0000	0.0000	0.0000	0.0000	10/03/88
			0.0000	0.0000	0.0000	0.0000	12/05/88
			0.0000	0.0000	0.0000	0.0000	12/14/88
			0.0000	0.0000	0.0000	0.0000	02/21/89
X-7	Ventilation	30-52/53	0.0000	0.0000	0.0000	0.0000	04/04/86
			0.0000	0.0000	0.0000	0.0000	08/18/87
			0.0000	0.0000	0.0000	0.0000	01/24/88
			0.0000	0.0000	0.0000	0.0000	01/29/89
			0.0000	0.0000	0.0000	0.0000	03/23/88
			0.0000	0.0000	0.0000	0.0000	05/03/88
			0.0000	0.0000	0.0000	0.0000	06/27/88
X-6	Ventilation	30-50/51	0.0000	0.0000	0.0000	0.0000	08/05/88
			0.0000	0.0000	0.0000	0.0000	09/13/88
			0.0000	0.0000	0.0000	0.0000	12/05/88
			0.0000	0.0000	0.0000	0.0000	02/21/89
X-9A	Ventilation	30-7/8	0.0000	0.0000	0.0000	0.0000	03/03/86
			0.0000	0.0000	0.0000	0.0000	03/25/86
			0.0000	0.0000	0.0000	0.0000	08/18/87
			0.0000	0.0000	0.0000	0.0000	10/16/87
			0.0000	0.0000	0.0000	0.0000	01/24/88
			0.0000	0.0000	0.0000	0.0000	02/03/88
			0.0000	0.0000	0.0000	0.0000	03/09/88
			0.0000	0.0000	0.0000	0.0000	03/23/88
			0.0000	0.0000	0.0000	0.0000	04/06/88
			0.0000	0.0000	0.0000	0.0000	05/03/88

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-9A	Ventilation	30-7/8	0.0000	0.0000	0.0000	0.0000	05/04/88
			0.0000	0.0000	0.0000	0.0000	05/07/88
			0.0000	0.0000	0.0000	0.0000	06/27/88
			0.0000	0.0000	0.0000	0.0000	08/04/88
			0.0000	0.0000	0.0000	0.0000	08/05/88
			0.0000	0.0000	0.0000	0.0000	09/02/88
			0.0000	0.0000	0.0000	0.0000	09/13/88
			0.0000	0.0000	0.0000	0.0000	10/03/88
			0.0000	0.0000	0.0000	0.0000	12/05/88
			0.0000	0.0000	0.0000	0.0000	12/14/88
			0.0000	0.0000	0.0000	0.0000	02/21/89
X-9B	Ventilation	30-9/10	0.0000	0.0000	0.0000	0.0000	04/04/86
			0.0000	0.0000	0.0000	0.0000	08/18/87
			0.0000	0.0000	0.0000	0.0000	01/24/88
			0.0000	0.0000	0.0000	0.0000	01/29/88
			0.0000	0.0000	0.0000	0.0000	03/23/88
			0.0000	0.0000	0.0000	0.0000	05/03/88
			0.0000	0.0000	0.0000	0.0000	06/27/88
			0.0000	0.0000	0.0000	0.0000	08/05/88
			0.0000	0.0000	0.0000	0.0000	09/13/88
			0.0000	0.0000	0.0000	0.0000	12/05/88
			0.0000	0.0000	0.0000	0.0000	02/21/89
X-10A	Ventilation	30-14/15	0.0000	0.0000	0.0000	0.0000	04/04/86
			0.0000	0.0000	0.0000	0.0000	08/18/87
			0.0000	0.0000	0.0000	0.0000	12/17/87
			0.0000	0.0000	0.0000	0.0000	01/24/88

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-10A	Ventilation	30-14/15	0.0000	0.0000	0.0000	0.0000	01/29/88
			0.0000	0.0000	0.0000	0.0000	02/01/88
			0.0000	0.0000	0.0000	0.0000	02/03/88
			0.0000	0.0000	0.0000	0.0000	02/05/88
			0.0000	0.0000	0.0000	0.0000	02/08/88
			0.0000	0.0000	0.0000	0.0000	02/10/88
			0.0000	0.0000	0.0000	0.0000	02/12/88
			0.0000	0.0000	0.0000	0.0000	02/15/88
			0.0000	0.0000	0.0000	0.0000	02/17/88
			0.0000	0.0000	0.0000	0.0000	02/19/88
			0.0000	0.0000	0.0000	0.0000	02/20/88
			0.0000	0.0000	0.0000	0.0000	02/22/88
			0.0000	0.0000	0.0000	0.0000	02/24/88
			0.0000	0.0000	0.0000	0.0000	02/26/88
			0.0000	0.0000	0.0000	0.0000	02/27/88
			0.0000	0.0000	0.0000	0.0000	02/29/88
			0.0000	0.0000	0.0000	0.0000	03/02/88
			0.0000	0.0000	0.0000	0.0000	03/04/88
			0.0000	0.0000	0.0000	0.0000	03/05/88
			0.0000	0.0000	0.0000	0.0000	03/07/88
			0.0000	0.0000	0.0000	0.0000	03/09/88
			0.0000	0.0000	0.0000	0.0000	03/11/88
			0.0000	0.0000	0.0000	0.0000	03/12/88
			0.0000	0.0000	0.0000	0.0000	03/14/88
			0.0000	0.0000	0.0000	0.0000	03/16/88
			0.0000	0.0000	0.0000	0.0000	03/18/88

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-10A	Ventilation	30-14/15	0.0000	0.0000	0.0000	0.0000	03/19/88
			0.0000	0.0000	0.0000	0.0000	03/21/88
			0.0000	0.0000	0.0000	0.0000	03/23/88
			0.0000	0.0000	0.0000	0.0000	03/25/88
			0.0000	0.0000	0.0000	0.0000	03/26/88
			0.0000	0.0000	0.0000	0.0000	03/28/88
			0.0000	0.0000	0.0000	0.0000	03/30/88
			0.0000	0.0000	0.0000	0.0000	04/01/88
			0.0000	0.0000	0.0000	0.0000	04/02/88
			0.0000	0.0000	0.0000	0.0000	04/04/88
			0.0000	0.0000	0.0000	0.0000	04/06/88
			0.0000	0.0000	0.0000	0.0000	04/08/88
			0.0000	0.0000	0.0000	0.0000	05/03/88
			0.0000	0.0000	0.0000	0.0000	05/04/88
			0.0000	0.0000	0.0000	0.0000	05/07/88
			0.0000	0.0000	0.0000	0.0000	05/09/88
			0.0000	0.0000	0.0000	0.0000	05/11/88
			0.0000	0.0000	0.0000	0.0000	05/13/88
			0.0000	0.0000	0.0000	0.0000	05/14/88
			0.0000	0.0000	0.0000	0.0000	05/16/88
			0.0000	0.0000	0.0000	0.0000	05/18/88
			0.0000	0.0000	0.0000	0.0000	05/20/88
			0.0000	0.0000	0.0000	0.0000	05/21/88
			0.0000	0.0000	0.0000	0.0000	05/23/88
			0.0000	0.0000	0.0000	0.0000	05/25/88
			0.0000	0.0000	0.0000	0.0000	05/27/88
			0.0000	0.0000	0.0000	0.0000	05/28/88

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-10A	Ventilation	30-14/15	0.0000	0.0000	0.0000	0.0000	05/30/88
			0.0000	0.0000	0.0000	0.0000	06/01/88
			0.0000	0.0000	0.0000	0.0000	06/03/88
			0.0000	0.0000	0.0000	0.0000	06/04/88
			0.0000	0.0000	0.0000	0.0000	06/06/88
			0.0000	0.0000	0.0000	0.0000	06/08/88
			0.0000	0.0000	0.0000	0.0000	06/10/88
			0.0000	0.0000	0.0000	0.0000	06/13/88
			0.0000	0.0000	0.0000	0.0000	06/15/88
			0.0000	0.0000	0.0000	0.0000	06/17/88
			0.0000	0.0000	0.0000	0.0000	06/20/88
			0.0000	0.0000	0.0000	0.0000	06/22/88
			0.0409	0.0409	0.0409	0.0409	06/24/88
			0.0000	0.0000	0.0000	0.0000	06/27/88
			0.0000	0.0000	0.0000	0.0000	06/29/88
			0.0000	0.0000	0.0000	0.0000	07/01/88
			0.0000	0.0000	0.0000	0.0000	07/04/88
			0.0000	0.0000	0.0000	0.0000	07/06/88
			0.0000	0.0000	0.0000	0.0000	07/08/88
			0.0000	0.0000	0.0000	0.0000	07/11/88
			0.0000	0.0000	0.0000	0.0000	07/13/88
			0.0000	0.0000	0.0000	0.0000	07/15/88
			0.0000	0.0000	0.0000	0.0000	07/18/88
			0.0000	0.0000	0.0000	0.0000	07/20/88
			0.0000	0.0000	0.0000	0.0000	07/22/88
			0.0000	0.0000	0.0000	0.0000	07/25/88
			0.0000	0.0000	0.0000	0.0000	07/27/88

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-10A	Ventilation	30-14/15	0.0000	0.0000	0.0000	0.0000	07/29/88
			0.0000	0.0000	0.0000	0.0000	08/01/88
			0.0000	0.0000	0.0000	0.0000	08/03/88
			0.0000	0.0000	0.0000	0.0000	08/05/88
			0.0000	0.0000	0.0000	0.0000	08/08/88
			0.0000	0.0000	0.0000	0.0000	08/10/88
			0.0000	0.0000	0.0000	0.0000	08/12/88
			0.0000	0.0000	0.0000	0.0000	08/15/88
			0.0000	0.0000	0.0000	0.0000	08/17/88
			0.0000	0.0000	0.0000	0.0000	08/19/88
			0.0000	0.0000	0.0000	0.0000	08/22/88
			0.0000	0.0000	0.0000	0.0000	08/24/88
			0.0000	0.0000	0.0000	0.0000	08/26/88
			0.0000	0.0000	0.0000	0.0000	08/29/88
			0.0000	0.0000	0.0000	0.0000	08/31/88
			0.0000	0.0000	0.0000	0.0000	09/02/88
			0.0000	0.0000	0.0000	0.0000	09/05/88
			0.0000	0.0000	0.0000	0.0000	09/07/88
			0.0000	0.0000	0.0000	0.0000	09/09/88
			0.0000	0.0000	0.0000	0.0000	09/12/88
			0.0000	0.0000	0.0000	0.0000	09/14/88
			0.0000	0.0000	0.0000	0.0000	09/16/88
			0.0000	0.0000	0.0000	0.0000	09/19/88
			0.0000	0.0000	0.0000	0.0000	09/21/88
			0.0000	0.0000	0.0000	0.0000	09/23/88
			0.0000	0.0000	0.0000	0.0000	09/26/88

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-10A	Ventilation	30-14/15	0.0000	0.0000	0.0000	0.0000	09/28/88
			0.0000	0.0000	0.0000	0.0000	09/30/88
			0.0000	0.0000	0.0000	0.0000	10/03/88
			0.0000	0.0000	0.0000	0.0000	10/05/88
			0.0000	0.0000	0.0000	0.0000	10/07/88
			0.0000	0.0000	0.0000	0.0000	10/10/88
			0.0000	0.0000	0.0000	0.0000	10/12/88
			0.0000	0.0000	0.0000	0.0000	10/14/88
			0.0000	0.0000	0.0000	0.0000	10/17/88
			0.0000	0.0000	0.0000	0.0000	10/19/88
			0.0000	0.0000	0.0000	0.0000	10/21/88
			0.0000	0.0000	0.0000	0.0000	10/24/88
			0.0000	0.0000	0.0000	0.0000	10/26/88
			0.0000	0.0000	0.0000	0.0000	10/28/88
			0.0000	0.0000	0.0000	0.0000	10/31/88
			0.0000	0.0000	0.0000	0.0000	11/02/88
			0.0000	0.0000	0.0000	0.0000	11/04/88
			0.0000	0.0000	0.0000	0.0000	11/07/88
			0.0000	0.0000	0.0000	0.0000	11/09/88
			0.0000	0.0000	0.0000	0.0000	11/11/88
			0.0000	0.0000	0.0000	0.0000	11/14/88
			0.0000	0.0000	0.0000	0.0000	11/16/88
			0.0000	0.0000	0.0000	0.0000	11/18/88
			0.0000	0.0000	0.0000	0.0000	11/21/88
			0.0000	0.0000	0.0000	0.0000	11/23/88
			0.0000	0.0000	0.0000	0.0000	11/25/88

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-10A	Ventilation	30-14/15	0.0000	0.0000	0.0000	0.0000	11/28/88
			0.0000	0.0000	0.0000	0.0000	11/30/88
			0.0000	0.0000	0.0000	0.0000	12/02/88
			0.0000	0.0000	0.0000	0.0000	12/05/88
			0.0000	0.0000	0.0000	0.0000	12/07/88
			0.0000	0.0000	0.0000	0.0000	12/09/88
			0.0000	0.0000	0.0000	0.0000	12/12/88
			0.0000	0.0000	0.0000	0.0000	12/14/88
			0.0000	0.0000	0.0000	0.0000	12/16/88
			0.0000	0.0000	0.0000	0.0000	12/19/88
			0.0000	0.0000	0.0000	0.0000	12/21/88
			0.0000	0.0000	0.0000	0.0000	12/23/88
			0.0000	0.0000	0.0000	0.0000	12/25/88
			0.0000	0.0000	0.0000	0.0000	12/28/88
			0.0000	0.0000	0.0000	0.0000	12/30/88
			0.0000	0.0000	0.0000	0.0000	01/02/89
			0.0000	0.0000	0.0000	0.0000	01/04/89
			0.0000	0.0000	0.0000	0.0000	01/07/89
			0.0000	0.0000	0.0000	0.0000	01/09/89
			0.0000	0.0000	0.0000	0.0000	01/11/89
			0.0000	0.0000	0.0000	0.0000	01/13/89
			0.0000	0.0000	0.0000	0.0000	01/16/89
			0.0000	0.0000	0.0000	0.0000	01/18/89
			0.0000	0.0000	0.0000	0.0000	01/21/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-10B	Ventilation	30-16/17	0.0000	0.0000	0.0000	0.0000	04/04/86
			0.0000	0.0000	0.0000	0.0000	08/18/87
			0.0000	0.0000	0.0000	0.0000	01/24/88
			0.0000	0.0000	0.0000	0.0000	03/18/88
			0.0000	0.0000	0.0000	0.0000	03/23/88
			0.0000	0.0000	0.0000	0.0000	05/03/88
			0.0000	0.0000	0.0000	0.0000	05/08/88
			0.0000	0.0000	0.0000	0.0000	06/03/88
			0.0000	0.0000	0.0000	0.0000	06/27/88
			0.0000	0.0000	0.0000	0.0000	08/05/88
			0.0000	0.0000	0.0000	0.0000	09/13/88
			0.0000	0.0000	0.0000	0.0000	12/05/88
			0.0000	0.0000	0.0000	0.0000	02/21/89
X-11	Ventilation	30-19/20	0.0000	0.0000	0.0000	0.0000	04/04/86
			0.0000	0.0000	0.0000	0.0000	08/18/87
			0.0000	0.0000	0.0000	0.0000	01/24/88
			0.0000	0.0000	0.0000	0.0000	02/03/88
			0.0000	0.0000	0.0000	0.0000	03/09/88
			0.0000	0.0000	0.0000	0.0000	03/23/88
			0.0000	0.0000	0.0000	0.0000	04/06/88
			0.0000	0.0000	0.0000	0.0000	05/03/88
			0.0000	0.0000	0.0000	0.0000	06/27/88
			0.0000	0.0000	0.0000	0.0000	09/13/88
			0.0000	0.0000	0.0000	0.0000	12/05/88
			0.0000	0.0000	0.0000	0.0000	02/21/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-80	Ventilation	30-37/40	0.0000	0.0000	0.0000	0.0000	04/04/86
			0.0000	0.0000	0.0000	0.0000	08/18/87
			0.0000	0.0000	0.0000	0.0000	01/24/88
			0.0000	0.0000	0.0000	0.0000	03/23/88
			0.0000	0.0000	0.0000	0.0000	03/25/88
			0.0000	0.0000	0.0000	0.0000	05/03/88
			0.0000	0.0000	0.0000	0.0000	06/27/88
			0.0000	0.0000	0.0000	0.0000	09/13/88
			0.0000	0.0000	0.0000	0.0000	12/05/88
			0.0000	0.0000	0.0000	0.0000	02/21/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-15	CVCS	62-72/73/74	24.7982		2/13/86	0.0000		5/13/86
		62-77/662	0.0000	24.7982	2/5/86	0.0000	0.0000	2/13/86
		62-72/73/74	0.0000		3/2/87	0.0000		3/2/87
		62-72/662	0.0470	0.0470	3/11/87	0.0470	0.0470	3/11/87
		62-72/73/74	0.0000		1/27/89	0.0000		3/8/89
		62-77/662	0.0413	0.0413	1/27/89	0.0411	0.0411	2/5/89
X-23	PASF	43-309	0.0000		3/26/86	0.0000		3/26/86
		43-310	0.0000	0.0000	3/26/86	0.0000	0.0000	3/26/86
		43-309	0.2439		7/1/87	0.0000		10/7/87
		43-310	2.8149	2.8149	7/1/87	0.0000	0.0000	10/7/87
		43-309	0.0000		1/29/89	0.0000		1/29/89
		43-310	0.0000	0.0000	1/29/89	0.0000	0.0000	1/29/89

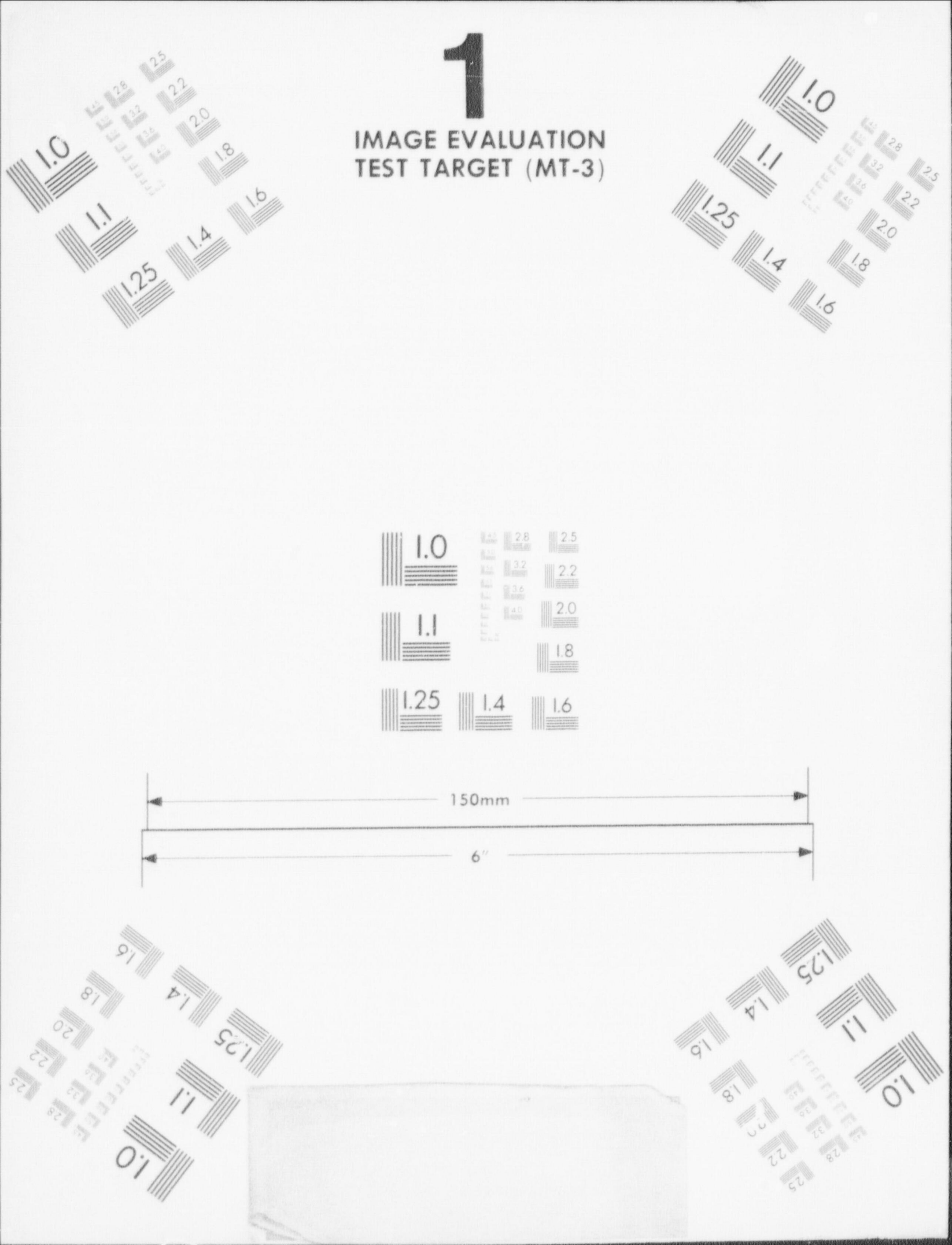

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IMAGE EVALUATION
TEST TARGET (MT-3)
1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
150mm
6"

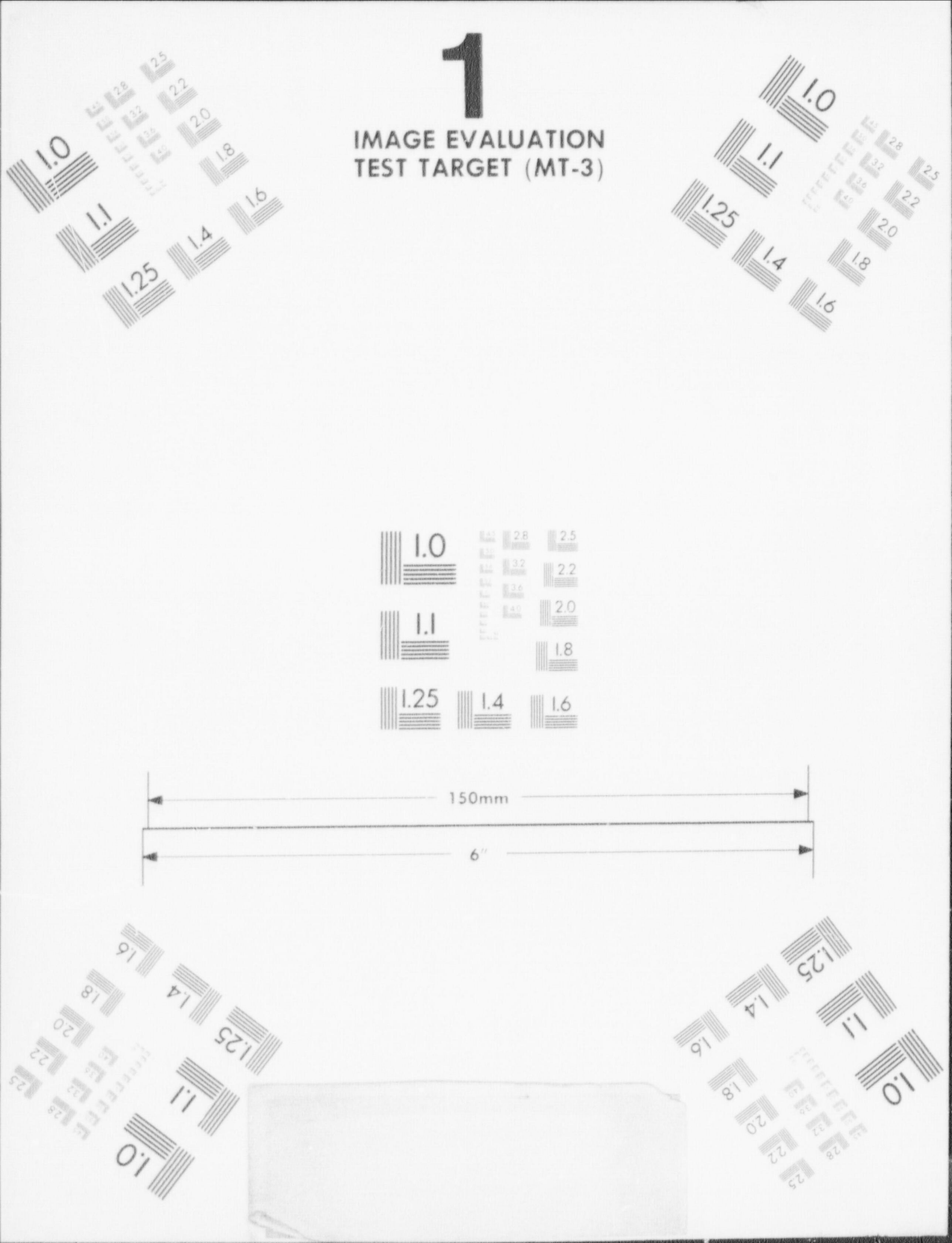
1
IMAGE EVALUATION
TEST TARGET (MT-3)
1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
150mm
6"

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-25A	Sampling	43-2	0.0000		3/4/86	0.0000		3/4/86
		43-3	0.0000	0.0000	3/4/86	0.0000	0.0000	3/4/86
		43-2	0.0000		7/15/87	0.0000		7/15/87
		43-3	0.0000	0.0000	7/15/87	0.0000	0.0000	7/15/87
					2/4/89	0.0000		2/4/89
		43-2	0.0000	0.0000	2/4/89	0.0000	0.0000	2/4/89
		43-3	0.0000					
X-25B	Containment Pressure Instrumentation	30-311X	0.0000		10/27/87	0.0000		10/27/87
		30-311Y	0.0000	0.0000	10/27/87	0.0000	0.0000	10/27/87
		30-311X	0.0000		2/1/89	0.0000		2/1/89
		30-311Y	0.0000	0.0000	2/1/89	0.0000	0.0000	2/1/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-25B	Containment Pressure Instrumentation	30-44X	0.0000		10/27/87	0.0000		10/27/87
		30-44Y	0.0000	0.0000	10/27/87	0.0000	0.0000	10/27/87
		30-44X	0.0000		2/1/89	0.0000		2/1/89
		30-44Y	0.0000	0.0000	2/1/89	0.0000	0.0000	2/1/89
X-25D	Sampling	43-11	0.0000		3/4/86	0.0000		3/4/86
		43-12	0.0000	0.0000	3/4/86	0.0000	0.0000	3/4/86
		43-11	0.0000		7/15/87	0.0000		7/15/87
		43-12	0.0000	0.0000	7/15/87	0.0000	0.0000	7/15/87
		43-11	0.0000		2/4/89	0.0000		2/4/89
		43-12	0.0000	0.0000	2/4/89	0.0000	0.0000	2/4/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-26A	Containment Pressure Instrumentation	30-43X			10/27/87	0.0000		10/27/87
		30-43Y			10/27/87	0.0000		10/27/87
		30-310X			10/27/87	0.0000		10/27/87
		30-310Y	0.0000	0.0000	10/27/87	0.0000	0.0000	10/27/87
		30-43X	0.0000		2/1/89	0.0000		2/1/89
		30-43Y	0.0000		2/1/89	0.0000		2/1/89
		30-310X	0.0000		2/1/89	0.0000		2/1/89
		30-310Y	0.0000	0.0000	2/1/89	0.0000	0.0000	2/1/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-26B	Containment Pressure Instrumentation	32-348	0.8220		9/8/85	0.0000		3/24/86
		32-103/341	0.0548	0.8220	2/18/85	0.0548	0.0548	2/18/86
		32-348	0.0000		6/29/87	0.0000		9/22/87
		32-103/341	0.0000	0.0000	6/29/87	0.0000	0.0000	9/9/87
		32-348	0.0000		2/8/89	0.0000		2/8/89
		32-103/341	0.0000	0.0000	2/8/89	0.0000	0.0000	2/8/89
X-27A	Containment Pressure Instrumentation	30-30CX	0.0000		10/27/87	0.0000		10/27/87
		30-30C	0.0000	0.0000	10/27/87	0.0000	0.0000	10/27/87
		30-30CX	0.0000		2/1/89	0.0000		2/1/89
		30-30CY	0.0000	0.0000	2/1/89	0.0000	0.0000	2/1/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-27B	Containment Pressure Instrumentation	30-42X	0.0000		10/27/87	0.0000		10/27/87
		30-42Y	0.0000	0.0000	10/27/87	0.0000	0.0000	10/27/87
		30-42X	0.0000		2/1/89	0.0000		2/1/89
		30-42Y	0.0000	0.0000	2/1/89	0.0000	0.0000	2/1/89
X-27C	ILRT	52-504	0.0000		7/2/87	0.0000		7/2/87
		52-505	0.0000	0.0000	7/2/87	0.0000	0.0000	7/2/87
		52-504	0.0000		1/28/89	0.0000		1/28/89
		52-505	0.0000	0.0000	1/28/89	0.0000	0.0000	1/28/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-29	Component Cooling	70-89/698	0.0000		1/21/86	0.0000		1/21/86
		70-92	524.8123	524.8123	12/17/85	0.0000	0.0000	5/5/86
		70-89/698	0.0000		6/28/87	0.0000		6/28/87
		70-92	0.0000	0.0000	6/28/87	0.0000	0.0000	6/28/87
		70-89/698	0.0000		1/27/89	0.0000		1/27/89
		70-92	0.0000	0.0000	1/26/89	0.0000	0.0000	1/26/89
X-30	SIS	63-84/23/344E	7.8270		10/23/85	0.0552		11/4/85
		63-71	1.3923	7.8270	5/17/86	0.0000	0.0522	6/11/86
		63-84/23/344E	1.4173		8/26/87	0.0000		8/26/87
		63-71	11.3999	11.3999	7/24/87	11.3999	11.3999	7/24/87
		63-84/23/344E	0.0000		3/30/88	0.0000		4/21/88
		63-84/23/344E	0.0000		2/10/89	0.0000		2/10/89
		63-71	0.0661	0.0661	2/10/89	0.0661	0.0661	2/10/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-34	Control Air	32-111/385	0.0000		1/4/86	0.0000		1/11/86
		32-387	1.7965	1.7965	6/5/86	0.0000	0.0000	6/20/86
		32-111/385	0.0000		7/6/87	0.0000		8/15/87
		32-387	288.6677	288.6677	7/6/87	0.0000	0.0000	8/15/87
		32-111/385	0.0000		3/9/89	0.0000		3/9/89
		32-387	0.0000	0.0000	3/9/89	0.0000	0.0000	3/9/89
X-35/53	Component Cooling	70-85/143/703	0.0000	0.0000	12/14/85	0.0000	0.0000	1/21/86
		70-85/143/703	0.0000	0.0000	7/3/87	0.0000	0.0000	7/3/87
		70-85/143/703	0.0000	0.0000	1/27/89	0.0000	0.0000	3/11/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-39A	Waste Disposal	63-64	0.3346		2/20/86	0.3346		2/20/86
		77-868	0.0000	0.3346	2/20/86	0.0000	0.3346	2/20/86
		63-64	0.0000		6/26/87	0.0000		6/26/87
		77-868	0.0000	0.0000	6/26/87	0.0000	0.0000	6/26/87
		63-64	0.0000		1/25/89	0.0000		1/25/89
		77-868	0.1214	0.1214	1/25/89	0.0000	0.0000	2/14/89
X-39B	Waste Disposal	68-305	2.5623		2/20/86	0.0000		3/31/86
		77-849	0.0000	2.56[illegible]	2/20/86	0.0000	0.0000	2/20/86
		68-305	0.0000		6/26/87	0.0000		6/25/87
		77-849	1.2888	1.2888	6/26/87	0.0000	0.0000	7/30/87
		68-305	0.0000		1/25/89	0.0000		1/25/89
		77-849	9.5386	9.5386	1/25/89	0.0000	0.0000	2/10/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-41	Waste Disposal	77-127	0.1578		2/15/86	0.0000		3/5/86
		77-128	0.0938	0.1578	2/15/86	0.0938	0.0938	2/15/86
		77-127	0.0000		6/27/87	0.0000		6/27/87
		77-128	0.0000	0.0000	6/27/87	0.0000	0.0000	6/27/87
		77-127	0.0000		2/9/89	0.0000		2/9/89
		77-128	0.0000	0.0000	2/9/89	0.0000	0.0000	2/9/89
X-42	Primary Water	81-12	0.0000		6/27/87	0.0000		6/27/87
		81-502	0.0000	0.0000	6/27/87	0.0000	0.0000	6/27/87
		81-12	0.0000		1/29/89	0.0000		1/29/89
		81-502	0.0000	0.0000	1/29/89	0.0000	0.0000	1/29/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-44	CVCS	62-61/639	0.0000		2/26/86	0.0000		2/26/86
		62-63	0.0000	0.0000	2/26/86	0.0000	0.0000	2/26/86
		62-61/639	0.0000		7/3/87	0.0000		7/3/87
		62-63	0.0000		7/22/86	0.0000		7/22/86
		62-63	0.0000	0.0000	7/3/87	0.0000	0.0000	7/3/87
		62-61/639	0.0000		2/4/89	0.0000		2/15/89
		62-63	0.0000	0.0000	2/4/89	0.1636	0.1636	2/15/89
X-45	Waste Disposal	77-18	0.0000		2/15/86	0.0000		5/8/86
		77-19/20	0.0000	0.0000	2/15/86	0.0000	0.0000	2/15/86
		77-18	0.0000		2/13/87	0.0000		10/19/87
		77-19/20	0.0000	0.0000	2/13/87	0.0000	0.0000	2/13/87
		77-18	0.0000		1/29/89	0.0000		1/29/89
		77-19/20	0.0000	0.0000	1/29/89	0.0753	0.0753	3/12/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-46	Waste Disposal	77-9	0.0000		4/1/86	0.0000		4/1/86
		77-10/84-511	0.0000	0.0000	4/1/86	0.0000	0.0000	4/1/86
		77-9	0.0000		2/13/87	0.0000		2/13/87
		77-9	0.0000		10/9/87	0.0000		10/9/87
		77-10/84-511	0.0000	0.0000	2/13/87	0.0000	0.0000	2/13/87
		77-9	0.0000		2/4/89	0.0000		2/4/89
		77-10/84-511	0.0000	0.0000	2/4/89	0.0000	0.0000	2/4/89
X-47A	Ice Condenser	61-191	0.0000		4/23/86	0.0000		4/23/86
		61-192/193	540.4079	540.4079	4/23/86	0.0000	0.0000	4/23/86
		61-191	0.0000		1/29/87	0.0000		1/29/87
		61-192/193	0.0000	0.0000	1/29/87	0.0000	0.0000	1/29/87
		61-191	0.0000		1/22/89	0.0000		1/22/89
		61-192/193	0.0000	0.0000	1/27/89	0.0000	0.0000	3/14/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-47B	Ice Condenser	61-193	0.0000		4/23/86	0.0000		4/23/86
		61-194/680	450.2144	450.2144	4/23/86	0.0000	0.0000	4/23/86
		61-193	0.0000		1/29/87	0.0000		1/29/87
		61-194/680	0.0000	0.0000	1/29/87	0.0000	0.0000	1/29/87
		61-193	0.0000		1/27/89	0.0000		1/27/89
		61-194/680	0.0000	0.0000	1/27/89	0.0000	0.0000	1/27/89
X-48A	Containment Spray	72-39	0.0359	0.0359	2/12/86	0.0359	0.0359	2/12/86
		72-39	0.0359	0.0359	8/3/86	0.0359	0.0359	11/6/86
		72-39	0.0513	0.0513	8/29/87	0.0513	0.0513	8/29/87
		72-39	0.0252	0.0252	1/26/89	0.0306	0.0306	3/10/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-48B	Containment Spray	72-2	0.0718	0.0718	12/31/85	0.0718	0.0718	2/6/86
		72-2	0.0359	0.0359	8/3/86	0.0359	0.0359	11/5/86
		72-2	0.0492	0.0492	8/29/87	0.0492	0.0492	8/29/87
		72-2	0.0252	0.0252	1/26/89	0.0252	0.0252	1/26/89
X-49A	RHR Spray	72-40	0.0458	0.0458	9/10/87	0.0458	0.0458	9/10/87
		72-40	0.0109	0.0109	2/21/89	0.0109	0.0109	2/21/89
X-49B	RHR Spray	72-41	0.0113	0.0113	8/29/87	0.0113	0.0113	8/29/87
		72-41	0.0109	0.0109	2/21/89	0.0136	0.0136	2/27/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-50A	Component Cooling	70-87/867	123.5525		2/12/86	0.0000		10/25/87
		70-90	0.0000	123.5525	2/12	0.0000	0.0000	2/12/86
		70-87/867	0.0000		1/27/89	0.0000		1/27/89
		70-90	1.0641		8/5/86	0.0000		9/5/87
		70-90	0.0000	0.0000	1/27/89	0.0000	0.0000	1/27/89
X-50B	Component Cooling	70-134	0.0000		2/12/86	0.0000		2/12/86
		70-679	0.0000	0.0000	2/11/87	0.0000	0.0000	2/11/87
		70-134	0.3692		8/15/86	0.0000		6/28/87
		70-679	180.3603	180.3603	6/28/87	0.0000	0.0000	10/27/87
		70-134	0.0000		1/27/89	0.0000		2/22/89
		70-679	0.0000	0.0000	1/26/89	0.0000	0.0000	1/26/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-51	Fire Protection	26-240	0.5497		2/20/86	0.0000		7/17/86
		26-1260	2.8593	2.8593	2/20/86	0.0000	0.0000	7/10/86
		26-240	2.8036		7/8/87	0.2922		10/5/87
		26-1260	0.0986	2.8036	7/8/87	0.0986	0.2922	7/8/87
		26-240	0.0000		2/6/89	0.0000		2/6/89
		26-1260	0.0000	0.0000	2/6/89	0.0000	0.0000	2/6/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-52	Component Cooling	70-140	0.0000		12/17/85	0.0000		12/17/85
		70-140	0.0000		2/10/86	0.0000		2/10/86
		70-692	526.2772	526.2772	2/12/86	0.0000	0.0000	3/18/87
		70-140	0.0000		6/28/87	0.0000		6/28/87
		70-692	135.6114	135.6114	6/28/87	0.9894	0.9894	8/19/87
		70-140	0.0000		6/28/87	0.0000		6/28/87
		70-692	424.1690	424.1690	9/30/87	0.0000	0.0000	1/5/88
		70-140	0.0000		1/26/89	0.0000		1/26/89
		70-692	0.0000	0.0000	1/26/89	0.0000	0.0000	1/26/89
	*70-692 was replaced with 70-141/791	70-140	0.0000		1/26/89	0.0000		1/26/89
		70-141/791	0.0000	0.0000	3/15/89	0.0000	0.0000	3/15/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-56	ERCW	67-107	0.0549		12/12/85	0.0000		1/8/86
		67-562D	266.5127	266.5127	2/11/86	0.0000	0.0000	3/17/86
		67-107	0.0324		7/10/87	0.0324		7/10/87
		67-562D	168.6893	168.6893	7/21/86	0.0000	0.0324	9/16/87
		67-107	0.0324		7/10/87	0.0324		7/10/87
		67-562D	566.3882	566.3882	9/30/87	0.0000	0.0324	10/5/87
		67-107	0.0324		7/10/87	0.0324		7/10/87
		67-562D	0.0000		10/20/87	0.0324		10/20/87
		67-562D	0.0000		11/24/87	0.0324		11/24/87
		67-562D	0.0000		12/22/87	0.0324		12/22/87
		67-562D	0.0000	0.0324	1/5/88	0.0324	0.0324	1/5/88

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-56	ERCW (Cont) * *67-562 was replaced with 67-89/1523D. 67-107 was renamed 67-83.	67-107	0.0324		7/10/87	0.0324		7/10/87
		67-562D	4.8661	4.8661	1/25/89	4.8661	4.8661	1/25/89
		67-83	2.5599		3/4/89	0.9379		3/8/89
		67-89/1523D	5.3361	5.3361	3/4/89	0.0000	.09379	3/7/89
X-57		67-111/575D	0.0003		12/13/85	0.0003		1/28/86
		67-112	0.0000	0.0003	12/13/85	0.0114	0.0114	1/8/86
		67-111/575D	0.0000		9/21/86	0.0000		9/21/86
		67-112	0.0000	0.0000	9/21/86	0.0000	0.0000	9/21/86
		67-111/575D	161.2088		7/10/87	0.04546		9/4/87
		67-112	0.0000	161.2088	7/10/87	0.0000	0.04546	7/10/87
		67-111/575D	0.0000		1/25/89	0.0000		1/25/89
		67-112	0.0000	0.0000	1/25/89	0.0000	0.0000	1/25/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-58	ERCW	67-83	0.0000		12/10/85	0.0000		1/11/86
		67-562A	126.712	126.712	2/11/86	0.0000	0.0000	3/10/86
		67-83	0.0000		8/28/86	0.0000		8/28/86
		67-83	0.0000		8/11/87	0.0000		8/11/87
		67-562A	2.166	2.166	8/11/87	0.0000	0.0000	8/11/87
		67-83	0.0000		8/28/86	0.0000		8/28/86
		67-562A	0.0000		11/30/87	0.0000		11/30/87
		67-562A	0.0000		12/24/87	0.0000		12/24/87
		67-562A	0.0000	0.0000	1/5/88	0.0000	0.0000	1/5/88
		67-83	0.0000		4/27/88	0.0000		4/23/88
		67-562A	507.8974	507.8974	4/22/88	0.0000	0.0000	4/23/88
		67-83	0.0000		4/27/88	0.0000		4/27/88
		67-562A	0.0000	0.0000	4/27/88	0.0000	0.0000	4/27/88

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-58	ERCW (Cont)	67-83	0.0000		4/27/88	0.0000		4/27/88
		67-562A	732.3391	732.3391	1/25/89	732.3391	732.3391	1/25/89
	* *67-562 was replaced with 67-106/1523A. 67-83 was renamed 67-107.	67-107	0.0847		3/4/89	0.0847		3/4/89
		67-106/1523A	0.5336	0.5336	3/4/89	0.0000	0.0847	3/7/89
X-59	ERCW	67-87/575A	0.1080		2/11/85	0.0024		1/11/86
		67-88	0.0009	0.1080	2/10/85	0.0000	0.0024	1/11/86
		67-87/575A	0.0000		9/21/86	0.0000		9/21/86
		67-88	0.0000	0.0000	9/21/86	0.0000	0.0000	9/21/86
		67-87/575A	27.3948		8/11/87	0.0000		9/24/87
		67-88	0.0000	27.3948	8/11/87	0.0000	27.3948	8/11/87
		67-87/575A	8.9609		1/27/89	0.3266		3/3/89
		67-88	20.0050	20.0050	1/27/89	0.4338	0.4338	3/3/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-59	ERCW (Cont)	67-87/575A	0.0000		3/22/89	0.0000		3/22/89
		67-88	0.0000	0.0000	3/22/89	0.0000	0.0000	3/22/89
X-60	ERCW	67-562B	0.1146		2/11/86	0.1146		2/11/86
		67-99	0.0000	0.1146	12/12/85	0.0000	0.1146	1/7/86
		67-562B	2.3051		7/10/87	0.0000		9/16/87
		67-99	0.0000	2.3051	7/10/87	0.0000	0.0000	7/10/87
		67-562B	0.0000		9/30/87	0.0000		9/30/87
		67-99	0.0000	0.0000	7/10/87	0.0000	0.0000	7/10/87
		67-562B	582.2726		11/24/87	582.2726		11/24/87
		67-99	0.0000	582.2726	7/10/87	0.0000	582.2726	7/10/87
		67-562B	585.6243		12/12/87	0.0000		12/22/87
		67-99	0.0000	585.6243	7/10/87	0.0000	0.0(	7/10/87

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-60	ERCW (Cont)	67-562B	0.0000		1/5/88	0.0000		1/5/88
		67-99	0.0000	0.0000	7/10/87	0.0000	0.0000	7/10/87
		67-562B	24.1089		1/25/89	24.1089		1/25/89
		67-99	0.0000	24.1089	1/25/89	0.0000	24.1089	1/25/89
	*67-562B was replaced with 67-90/1523B. 67-99 was re-named 67-91.	67-90/1523B	8.1144		3/4/89	0.0000		3/7/89
		67-91	0.0000	8.1144	3/4/89	0.0000	0.0000	3/4/89
X-61	ERCW	67-103/575B	0.0000		12/13/85	0.0024		1/7/86
		67-104	0.0000	0.0000	12/13/85	0.0000	0.0024	1/7/86
		67-103/575B	0.3442		9/24/86	0.3442		9/24/86
		67-104	0.0000	0.3442	9/24/86	0.0000	.03442	9/24/86
		67-103/575B	15.7429		7/10/87	0.1674		9/7/87
		67-104	0.0000	15.7429	7/10/87	0.0000	0.1674	7/10/87

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-61	ERCW (Cont)	67-103/575B	0.0000		1/25/89	0.0000		1/25/89
		67-104	0.0000	0.0000	1/25/89	0.0000	0.0000	1/25/89
X-62	ERCW	67-91	0.0000		12/10/85	0.0000		12/10/85
		67-91	2.2651		1/12/86	0.0000		1/27/86
		67-562C	216.6375	216.6375	2/11/86	0.0000	0.0000	3/10/86
		67-91	0.0000		7/14/87	0.0000		7/14/87
		67-562C	30.3295	30.3295	7/14/87	0.0000	0.0000	12/22/87
		67-91	0.0000		7/14/87	0.0000		7/14/87
		67-562C	0.0000	0.0000	1/5/88	0.0000	0.0000	1/5/88
		67-91	0.0000		7/14/87	0.0000		7/14/87
		67-562C	507.8974	507.8974	4/22/88	0.0000	0.0000	4/23/88
		67-91	0.0000		7/14/87	0.0000		7/14/87
		67-562C	0.0000	0.0000	4/27/88	0.0000	0.0000	7/14/87

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-62	ERCW (Cont)	67-91	0.0000		1/27/89	0.0000		1/27/89
		67-562C	583.1139	0.0000	1/25/89	583.1139	583.1139	1/25/89
	* *67-562 was replaced with 67-105/1523C. 67-91 was re-named 67-99.	67-99	0.0000		3/4/89	0.0000		3/4/89
		67-105/1523C	0.0000	0.0000	3/4/89	0.0000	0.0000	3/4.89
X-63	ERCW	67-95/575C	0.0012		12/11/85	0.0000		1/12/86
		67-96	0.0038	0.0038	12/11/85	0.0000	0.0000	1/12/86
		67-95/575C	0.0000		9/21/86	0.0000		9/21/86
		67-96	0.0000	0.0000	9/21/86	0.0000	0.0000	9/21/86
		67-95/575C	0.0000		7/14/87	0.0000		7/14/87
		67-96	0.0000	0.0000	7/14/87	0.0000	0.0000	7/14/87
		67-95/575C	0.0000		1/27/89	0.0000		1/27/89
		67-96	0.0000	0.0000	1/27/89	0.0000	0.0000	1/27/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-64	Chilled Water	31C-222	0.0000		11/2/85	0.0000		12/24/85
		31C-223/752	0.0000	0.0000	11/2/85	0.0000	0.0000	12/24/85
		31C-222	0.0000		6/25/87	0.0000		6/25/87
		31C-223/752	0.0000	0.0000	6/25/87	0.0000	0.0000	6/25/87
		31C-222	0.0000		1/28/89	0.0000		1/28/89
		31C-223/752	0.0000	0.0000	1/28/89	0.0000	0.0000	1/28/89
X-65	Chilled Water	31C-224	165.8361		11/2/85	0.0000		12/24/85
		31C-225/734	0.0000	165.8361	11/2/85	0.0000	0.0000	11/2/85
		31C-224	0.0000		1/4/86	0.0000		1/4/86
		31C-225/734	0.0000	0.0000	3/12/86	0.0000	0.0000	3/12/86
		31C-224	0.0000		8/29/86	0.0000		8/29/86
		31C-225/734	0.0000	0.0000	3/12/86	0.0000	0.0000	3/12/86

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-65	Chilled Water (Cont)	31C-224	0.0000		6/25/87	0.0000		6/25/87
		31C-225/734	0.0000	0.0000	6/25/87	0.0000	0.0000	6/25/87
		31C-224	0.0000		1/28/89	0.0000		1/28/89
		31C-225/734	0.0000	0.0000	1/28/89	0.0000	0.0000	1/28/89
X-66	Chilled Water	31C-229	0.7187		1/4/86	0.0000		1/22/86
		31C-230/715	1.3231	1.3231	1/4/86	0.0000	0.0000	1/22/86
		31C-229	0.0000		6/25/87	0.0000		6/25/87
		31C-230/715	0.0000		6/26/87	0.0000		7/29/87
		31C-230/715	0.0000	0.0000	10/23/87	0.0000	0.0000	10/23/87
		31C-299	0.0000		7/7/88	0.0000		7/7/88
		31C-230/715	621.3074	621.3074	7/7/88	0.0000	0.0000	7/7/88
		31C-229	0.0000		1/28/89	0.0000		1/28/89
		31C-230/715	0.0000	0.0000	1/28/89	0.0000	0.0000	1/28/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-67	Chilled Water	31C-231	0.0000		2/29/85	0.0000		4/4/85
		31C-231	0.0000		6/22/85	0.0000		6/22/85
		31C-231	0.7187		1/4/86	0.0000		1/22/86
		31C-232/697	0.0000	0.7187	1/4/86	0.0000	0.0000	1/22/86
		31C-231	0.0000		5/16/86	0.0000		6/26/86
		31C-231	0.0000		6/25/87	0.0000		6/26/86
		31C-232/697	0.0000	0.0000	6/25/87	0.0000	0.0000	6/26/86
		31C-231	0.0000		1/28/89	0.0000		1/28/89
		31C-232/697	0.0000	0.0000	1/28/89	0.0000	0.0000	1/28/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-68	ERCW	67-580D	305.8645		7/11/85	0.5383		7/15/85
		67-141	0.0000	305.8645	1/3/86	0.0000	0.5383	1/31/86
		67-580D	269.9893		10/21/85	0.0000		12/18/85
		67-141	0.0000	269.9893	1/3/86	0.0000	0.0000	1/31/86
		67-580D	0.0000		6/30/87	0.0000		6/30/87
		67-141	0.0000	0.0000	6/30/87	0.0000	0.0000	6/30/87
		67-580D	541.9500		9/17/87	0.0000		9/17/87
		67-141	0.0000	541.9500	6/30/87	0.0000	0.0000	6/30/87
		67-580D	0.0000		12/2/87	0.0000		12/2/87
		67-141	0.0000	0.0000	6/30/87	0.0000	0.0000	6/30/87
		67-580D	0.0000		2/2/89	0.0000		2/2/89
		67-141	0.0000	0.0000	2/2/89	0.0000	0.0000	2/21/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-69	ERCW	67-130	0.0000		1/2/86	0.0000		2/4/86
		67-580A	144.4600	144.4600	10/29/85	0.0000	0.0000	12/18/85
		67-130	0.0000		7/13/87	0.0000		7/13/87
		67-580A	0.0000	0.0000	7/13/87	0.0000	0.0000	7/13/87
		67-130	0.0000		10/23/87	0.0000		10/23/87
		67-580A	0.0000	0.0000	12/2/87	0.0000	0.0000	12/2/87
		67-130	0.0000		2/3/89	0.0000		2/3/89
		67-580A	0.0000	0.0000	2/3/89	0.0000	0.0000	2/3/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-70	ERCW	67-139	0.3157		1/3/86	0.0095		2/3/86
		67-297/585B	0.0000	0.3157	2/10/86	0.0000	0.0095	2/10/86
		67-139	0.0000		10/21/86	0.0000		10/21/86
		57-297/585B	0.0000	0.0000	10/21/86	0.0000	0.0000	10/21/86
		67-139	0.0000		6/30/87	0.0000		6/30/87
		67-297/585B	0.0000	0.0000	6/30/87	0.0000	0.0000	6/30/87
		67-139	0.0000		2/2/89	0.0000		2/2/89
		67-297/585B	5.1251	5.1251	2/2/89	0.0000	0.0000	3/15/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-71	ERCW	67-134	0.0000		1/2/86	0.0000		1/30/86
		67-296/585C	0.0085	0.0085	2/10/86	0.0024	0.0024	2/25/86
		67-134	1.3574		10/19/86	0.0000		11/22/86
		67-296/585C	15.6336	15.6336	10/19/86	0.0919	0.0919	11/22/86
		67-134	0.0000		7/13/87	0.0000		7/13/87
		67-296/585C	0.0000	0.0000	7/13/87	0.0000	0.0000	7/13/87
		67-134	0.0000		2/3/89	0000		2/3/89
		67-296/585C	0.0000	0.0000	2/3/89	0.0000	0.0000	2/18/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-72	ERCW	67-142	1.3680		1/3/86	0.0029		2/3/86
		67-298/585D	0.0015	1.3680	2/11/86	0.0015	0.0029	2/11/86
		67-142	0.3184		10/21/86	0.0000		11/10/86
		67-298/585D	0.4111	0.4111	10/21/86	0.0000	0.0000	11/9/86
		67-142	0.0540		6/30/87	0.0540		6/30/87
		67-298/585D	0.0000	0.0540	6/30/87	0.0000	0.0540	6/30/87
		67-142	0.0000		2/2/89	0.0000		2/2/89
		67-298/585D	0.0000	0.0000	2/2/89	0.0000	0.0000	0.0000

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-73	ERCW	67-131	0.0019		1/2/86	0.0000		1/30/86
		67-295/585A	0.0008	0.0019	2/10/86	0.0008	0.0008	2/10/86
		67-131	0.0000		10/19/86	0.0000		10/19/86
		67-295/585A	0.0000	0.0000	10/19/86	0.0000	0.0000	10/19/86
		67-131	0.0000		7/13/87	0.0000		7/13/87
		67-295/585A	0.0000	0.0000	7/13/87	0.0000	0.0000	7/13/87
		67-131	0.0000		2/3/89	0.0000		2/3/89
		67-295/585A	0.0000	0.0000	2/3/89	0.0000	0.0000	2/18/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-74	ERCW	67-138	0.0000		1/3/86	0.0000		1/3/86
		67-580B	209.4796	209.4796	10/21/85	0.0000	0.0000	12/18/85
		67-138	0.0000		6/30/87	0.0000		6/30/87
		67-580B	0.0000	0.0000	6/30/87	0.0000		6/30/87
		67-138	0.0000		6/30/87	0.0000		6/30/87
		67-580B	0.0000	0.0000	12/2/87	0.0000	0.0000	12/2/87
		67-138	0.0000		2/2/89	0.0000		2/2/89
		67-580B	0.0000	0.0000	2/2/89	0.0000	0.0000	2/2/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-75	ERCW	67-133	0.0000		1/2/86	0.0000		1/29/86
		67-580C	202.6062	0.0000	10/29/85	0.0000	0.0000	12/18/85
		67-133	0.0000		7/13/87	0.0000		7/13/87
		67-580C	0.0000	0.0000	7/13/87	0.0000	0.0000	7/13/87
		67-133	0.0000		7/13/87	0.0000		7/13/87
		67-580C	620.4900	0.0000	9/17/87	0.0000	0.0000	9/17/87
		67-133	0.0000		7/13/87	0.0000		7/13/87
		67-580C	0.0000	0.0000	12/2/87	0.0000	0.0000	12/2/87
		67-133	0.0000		2/3/89	0.0000		3/11/89
		67-580C	0.0000	0.0000	2/3/89	0.0000	0.0000	2/3/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-76	Service Air	33-722	0.1604		2/13/86	0.0000		7/14/87
		33-739	0.1472	0.1604	2/13/86	0.0000	0.0000	7/14/87
		33-722	0.0000		1/21/89	0.0000		1/21/89
		33-739	0.0000	0.0000	1/21/89	0.0000	0.0000	1/21/89
X-77	Demineralized Water	59-522/529	0.0000		2/13/86	0.0000		2/13/86
		59-633	0.0000	0.0000	2/13/86	0.0000	0.0000	2/13/86
		59-522/529	0.0000		9/13/86	0.0000		9/13/86
		59-522/529	0.0000		6/25/87	0.0000		6/25/87
		59-633	0.0000	0.0000	6/25/87	0.0000	0.0000	6/25/87
		59-522/529	0.0000		1/21/89	0.0000		1/21/89
		59-633	0.0000	0.0000	1/21/89	0.0000		1/21/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-78	Fire Protection	26-243	0.0000		2/19/86	0.0000		12/5/86
		26-1296	0.8319	0.8319	2/19/86	0.0000	0.0000	5/5/86
		26-243	0.0000		7/8/87	0.0000		7/8/87
		26-1296	0.0000	0.0000	7/8/87	0.0000	0.0000	7/8/87
		26-243	0.0000		2/7/89	0.0000		3/14/89
		26-1296	0.0000	0.0000	2/7/89	0.0000	0.0000	2/7/89
X-81	Waste Disposal	77-16	0.0000		2/14/86	0.0000		2/14/86
		77-17	0.0000	0.0000	2/14/86	0.0000	0.0000	2/14/86
		77-16	0.0000		2/13/87	0.0000		2/13/87
		77-16	0.0000		10/19/87	0.0000		10/19/87
		77-17	0.0000	0.0000	2/13/87	0.0000	0.0000	2/13/87
		77-16	0.0000		2/10/89	0.0000		2/10/89
		77-17	0.0000	0.0000	2/10/89	0.0000	0.0000	2/10/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-82	Fuel Pool Cooling	78-560	0.0000		2/17/86	0.0000		2/17/86
		78-560	0.0000		7/7/87	0.0000		7/7/87
		78-561	0.0000	0.0000	7/7/87	0.0000	0.0000	7/7/87
		78-560	0.0000		1/24/89	0.0000		1/24/89
		78-561	0.0000	0.0000	1/25/89	0.0000	0.0000	1/25/89
X-83	Fuel Pool Cooling	78-557	0.0000		2/17/86	0.0000		2/17/86
		78-558	0.0000	0.0000	2/17/86	0.0000	0.0000	2/17/86
		78-557	0.0000		2/17/86	0.0000		2/17/86
		78-558	0.0000	0.0000	2/17/86	0.0000	0.0000	2/17/86
		78-557	0.0000		1/25/89	0.0000		1/25/89
		78-558	0.0000	0.0000	1/24/89	0.0000	0.0000	1/24/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-84	Reactor Coolant to Gas Analyzer	68-307	0.0000		2/14/86	0.0000		2/14/86
		68-308	0.0652	0.0652	2/14/86	0.0000	0.0000	3/7/86
		68-307	0.0000		8/21/87	0.0000		8/21/87
		68-308	0.0000	0.0000	8/21/87	0.0000	0.0000	8/21/87
		68-307	0.0000		2/13/89	0.0000		2/13/89
		68-308	0.0000	0.0000	2/13/89	0.0000	0.0000	2/13/89
X-85A	Sample System	43-75	0.0000		3/4/86	0.0000		3/4/86
		43-77	0.0000	0.0000	3/4/86	0.0000	0.0000	3/4/86
		43-75	0.0000		7/15/86	0.0000		7/5/87
		43-77	18.3700	18.3700	7/15/86	0.0000	0.0000	9/12/87
		43-75	0.0000		2/3/89	0.0000		2/3/89
		43-77	0.0000	0.0000	2/3/89	0.0000	0.0000	2/3/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-85B	Containment Pressure Instrumentation	30-45X	0.0000		10/27/87	0.0000		10/27/87
		30-45Y	0.0000	0.0000	10/27/87	0.0000	0.0000	10/27/87
		30-45X	0.0000		2/1/89	0.0000		2/1/89
		30-45Y	0.0000	0.0000	2/1/89	0.0000	0.0000	2/1/89
X-87B	ILRT	52-502	0.0000		2/10/86	0.0000		2/10/86
		52-503	0.0000	0.0000	2/10/86	0.0000	0.0000	2/10/86
		52-502	0.0000		7/2/87	0.0000		7/2/87
		52-503	0.0000	0.0000	7/2/87	0.0000	0.0000	7/2/87
		52-502	0.0000		1/28/89	0.0000		1/28/89
		52-503	0.0000	0.0000	1/28/89	0.0000	0.0000	1/28/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-87D	ILRT	52-500	0.0000		2/10/86	0.0000		2/10/86
		52-501	0.0000	0.0000	2/10/86	0.0000	0.0000	2/10/86
		52-500	0.0000		7/2/87	0.0000		7/2/87
		52-501	0.0000	0.0000	7/2/87	0.0000	0.0000	7/2/87
		52-500	0.0000		1/28/89	0.0000		1/28/89
		52-501	0.0000	0.0000	1/28/89	0.0000	0.0000	1/28/89
X-90	Control Air	32-81/353	0.2706		2/17/86	0.0000		5/2/86
		32-358	0.3945	0.3945	9/8/85	0.3945	0.3945	5/2/86
		32-81/353	0.2706		2/17/86	0.0000		5/2/86
		32-358	0.0000	0.2706	2/17/86	0.0000	0.0000	5/2/86

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-90	Control Air (Cont)	32-81/353	0.0000		6/29/87	0.0000		9/8/87
		32-358	381.2277	381.2277	6/29/87	0.0000	0.0000	9/22/87
		32-81/353	0.0000		2/8/89	0.0000		2/8/89
		32-358	0.0000	0.0000	2/8/89	0.0000	0.0000	2/8/89
X-91	PASF	43-250	0.0000		3/26/86	0.0000		3/26/86
		43-251	0.0000	0.0000	3/26/86	0.0000	0.0000	3/26/86
		43-250	0.1057		7/1/87	0.0000		10/7/87
		43-251	0.2918	0.2918	7/1/87	0.0000	0.0000	10/7/87
		43-250	0.0000		1/29/89	0.0000		1/29/89
		43-251	0.0000	0.0000	1/29/89	0.0000	0.0000	1/29/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-92	Sampling System	43-207	0.0000		2/25/86	0.0000		2/25/86
		43-208	0.0000	0.0000	2/25/86	0.0000	0.0000	2/25/86
		43-207	0.0000		8/28/87	0.0000		8/28/87
		43-208	0.0000	0.0000	8/28/87	0.0000	0.0000	8/28/87
		43-207	0.4857		2/5/89	0.1092		3/15/89
		43-208	0.1659	0.4857	2/5/89	0.1092	0.1092	3/15/89
X-92A & X-92B	Sampling System	43-210A	0.0000	0.0000	2/22/88	0.0000	0.0000	2/25/88
		43-210A	0.0000	0.0000	2/4/89	0.0000	0.0000	2/4/89
		43-210I	0.0000	0.0000	2/22/88	0.0000	0.0000	2/25/88
		43-210I	0.0000	0.0000	2/4/89	0.0000	0.0000	2/4/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-93	Sampling System	43-34	0.0000		3/4/86	0.0000		3/4/86
		43-35	0.0000	0.0000	3/4/86	0.0000	0.0000	3/4/86
		43-34	0.0000		7/15/87	0.0000		7/15/87
		43-35	0.0000	0.000	7/15/87	0.0000	0.0000	7/15/87
		43-34			2/4/89	0.0000		2/4/89
		43-35	0.0000	0.0000	2/4/89	0.0000	0.0000	2/4/89
X-94A/B	Radiation Monitoring	90-107	0.0000		7/16/87	0.0000		7/16/87
		90-108/109	0.0000	0.0000	7/16/87	0.0000	0.0000	7/16/87
		90-107	0.0000		2/22/89	0.0000		2/22/89
		90-108/109	0.0000	0.0000	2/22/89	0.0000	0.0000	2/22/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-94C	Radiation Monitoring	90-110	0.0000		7/16/87	0.0000		7/16/87
		90-111	0.0000	0.0000	7/16/87	0.0000	0.0000	7/16/87
		90-110	0.0000		2/22/89	0.0000		2/22/89
		90-111	0.0000	0.0000	2/22/89	0.0000	0 [illegible]	2/22/89
X-95A/B	Radiation Monitoring	90-113	0.0000		7/20/87	0.0000		7/20/87
		90-114/115	0.0000	0.0000	7/20/87	0.0000	0.0000	7/20/87
		90-113	0.0000		2/24/89	0.0000		2/24/89
		90-114/115	0.0000	0.0000	2/24/89	0.0000	0.0000	2/24/89
X-95C	Radiation Monitoring	90-116	0.0000		7/20/87	0.0000		7/20/87
		90-117	0.0000	0.0000	7/20/87	0.0000	0.0000	7/20/87
		90-116	0.0000		2/24/89	0.0000		2/24/89
		90-117	0.0000	0.0000	2/24/89	0.0000	0.0000	2/24/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-96C	Radiation Monitoring	43-22	0.0000		10/23/85	0.0000		12/17/85
		43-23	0.0000	0.0000	3/4/86	0.0000	0.0000	3/4/86
		43-22	38.8310		7/15/87	0.0000		9/12/87
		43-23	39.2427	39.2427	7/15/87	0.0000	0.0000	9/12/87
		43-22	0.0000		2/3/89	0.0000		2/3/89
		43-23	0.0000	0.0000	2/3/89	0.0000	0.0000	2/3/89
X-97	Ve tilation	30-134	0.0000		2/12/86	0.0000		2/12/86
		30-135	0.0000	0.0000	2/21/86	0.0000	0.0000	2/21/86
		30-134	0.0000		8/4/87	0.0000		8/4/87
		30-134	0.0000		2/3/89	0.0000		2/3/89
		30-135	0.0000	0.0000	2/3/89	0.0000	0.0000	2/3/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-98	ILRT	52-506	0.0000		7/3/87	0.0000		7/3/87
		52-507	0.0000	0.0000	7/3/87	0.0000	0.0000	7/3/87
		52-506	0.0000		1/28/89	0.0000		1/28/89
		52-507	0.0000	0.0000	1/28/89	0.0000	0.0000	1/28/89
X-99 & X-100		43-200A	2.1112	2.1112	2/22/88	0.0000	0.0000	2/25/88
		43-200A	0.0000	0.0000	2/4/89	0.0000	0.0000	2/4/89
		43-200I	0.0000	0.0000	2/22/88	0.0000	0.0000	2/25/88
		43-200I	0.0000	0.0000	2/4/89	0.0000	0.0000	2/4/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-99	Sampling System	43-202	0.0000	0.0000	2/25/86	0.0000	0.0000	2/25/86
		43-202	0.0000	0.0000	8/31/87	0.0000	0.0000	8/31/87
		43-202	0.0000	0.0000	2/5/89	0.0000	0.0000	2/5/89
X-100	Sampling System	43-201	0.0000	0.0000	2/25/86	0.0000	0.0000	2/25/86
		43-201	0.0000	0.0000	8/31/87	0.0000	0.0000	8/31/87
		43-201	0.0000	0.0000	2/5/89	0.0000	0.0000	2/5/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-101	PASF	43-318	0.0000		3/26/86	0.0000		3/26/86
		43-319	0.0000	0.0000	3/26/86	0.0000	0.0000	3/26/86
		43-318	0.1591		7/1/87	0.0889		10/7/87
		43-319	0.0324	0.1591	7/1/87	0.0000	0.0889	10/7/87
		43-318	0.0000		1/22/89	0.0000		1/22/89
		43-319	0.0000	0.0000	1/22/89	0.0000	0.0000	1/22/89
X-103	PASF	43-461	0.0000		3/26/86	0.0000		3/26/86
		43-317/341	0.0000	0.0000	3/26/86	0.0000	0.0000	3/26/86
		43-461	45.1031		7/1/87	35.2516		7/27/87
		43-317/341	0.0000	45.1031	7/1/87	0.0000	35.2516	7/1/87
		43-461	0.0699		8/10/87	0.0699		8/10/87
		43-317/341	0.0000	0.0699	7/1/87	0.0000	0.0699	7/1/87

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-103	PASF (Cont)	43-461	0.3022		10/21/87	0.3022		10/21/87
		43-317/341	0.0000	0.3022	7/1/87	0.0000	0.3022	7/1/87
		43-461	0.0000		1/29/89	0.0000		1/29/89
		43-317/341	0.0000	0.0000	1/29/89	0.0000	0.0000	1/29/89
X-106	PASF	43-460	41.3358		3/27/86	0.0000		6/2/86
		43-307/325	33.2098	33.2098	3/27/86	0.0000	0.0000	6/2/86
		43-460	23.7156		7/1/87	0.0325		7/17/87
		43-307/325	0.7546	23.7156	7/1/87	0.0000	0.0325	10/7/87
		43-460	0.0325		7/17/87	0.0325		7/17/87
		43-307/325	0.0000	0.0325	12/9/87	0.0000	0.0325	12/9/87
		43-460	0.0413		1/29/89	0.0413		1/29/89
		43-307/325	0.0000	0.0413	1/29/89	0.0000	0.0000	1/29/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-108	UHI	87-10	252.3243	252.3243	8/13/87	1.5633	1.5633	8/18/87
		87-10	0.0000	0.0000	2/9/89	0.0000	0.0000	2/9/89
X-109	UHI	87-11	15.3894	15.3894	8/13/87	1.5633	1.5633	8/18/87
		87-11	0.0000	0.0000	2/9/89	0.0000	0.0000	2/9/89
X-110	UHI	87-7/8/9	0.0000	0.0000	7/30/87	0.0000	0.0000	7/30/87
		87-7/8/9	0.0000	0.0000	2/9/89	0.0000	0.0000	3/9/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-111	Ventilation	30-46/571	400.6548	400.6548	10/25/85	0.9538	0.9538	7/30/86
		30-46/571	16.7325		6/27/87	0.2126		8/25/87
		30-46/AX	0.0000		10/28/87	0.0000		10/28/87
		30-46/AY	0.0000	16.7325	10/28/87	0.0000	0.2126	10/28/87
		30-46/571	0.0000		1/31/89	0.0000		1/31/89
		30-46/AX	0.0000		1/31/89	0.0000		1/31/89
		30-46/AY	0.0000	0.0000	1/31/89	0.0000	0.0000	1/31/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-112	Ventilation	30-47/572	0.0000	0.0000	10/25/85	0.3999	0.3999	11/7/85
		30-47/572	0.2653		6/27/87	0.2653		6/27/87
		30-47AX	0.0000		10/28/87	0.0000		10/28/87
		30-47AY	0.0000	0.2653	10/28/87	0.0000	0.2653	10/28/87
		30-47/572	0.0000		1/31/89	0.0000		1/31/89
		30-47AX	0.0000		1/31/89	0.0000		1/31/89
		30-47AY	0.0000	9.0000	1/31/89	0.0000	0.0000	1/31/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-113	Ventilation	30-48/573	0.3031	0.3031	10/25/85	0.0000	0.0000	11/7/85
		30-48/573	0.3290		6/27/87	0.3290		6/27/87
		30-48AX	0.0000		10/28/87	0.0000		10/28/87
		30-48AX	0.0000	0.3290	10/28/87	0.0000	0.3290	10/28/87
		30-48/573	0.0000		1/31/89	0.0000		1/31/89
		30-48AX	0.0000		1/31/89	0.0000		1/31/89
		30-48AY	0.0000	0.0000	1/31/89	0.0000	0.0000	1/31/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-114	Ice Condenser	61-110	0.0000		4/23/86	0.0000		4/23/86
		61-122/745	0.0614	0.0614	4/23/86	0.0000	0.0000	1/29/87
		61-110	0.0000		1/29/87	0.0000		1/29/87
		61-122/745	0.0544	0.0544	5/21/87	0.0544	0.0544	5/21/87
		61-110	0.0000		1/31/89	0.0000		1/31/89
		61-122/745	1.9733	1.9733	1/31/89	0.0000	0.0000	2/2/89
X-115	Ice Condenser	61-96	0.0000		4/23/86	0.0000		4/23/86
		61-97/692	197.411	197.411	4/34/86	0.0000	0.0000	4/23/86
		61-96	0.0000		1/29/87	0.0000		1/29/87
		61-97/692	0.9215	0.9215	1/29/87	0.0000	0.0000	7/10/87
		61-96	0.0000		1/31/89	0.0000		1/21/89
		61-97/692	7.3075	7.3075	1/31/89	0.0000	0.0000	2/2/89

TABLE D-1
Type C Test Summary
Cycle 3 - Unit 2

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate CCFH	As Found Path Leak Rate SCFH	As Found Date Tested	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	As Left Date Tested
X-116	PASF	43-287	3.7201		3/27/86	0.0000		6/2/87
		43-288	2.8728	3.7201	3/27/86	0.0000	0.0000	6/2/87
		43-287	0.0000		7/1/87	0.0000		7/1/87
		43-288	0.0000	0.0000	7/1/87	0.0000	0.0000	7/1/87
		43-287	0.8729		10/25/87	0.0000		11/4/87
		43-288	0.0000	0.8729	7/1/87	0.0000	0.0000	7/1/87
		43-287	0.0000		1/29/89	0.0000		1/29/89
		43-288	0.0000	0.0000	1/29/89	0.0000	0.0000	1/29/89

TABLE D-2

TYPE B TEST SUMMARY

CYCLE 3 UNIT 2

I. Airlock Door Test (overall)

Penetration	Date Tested	Leak Rate (SCFH)
X-2A	04/09/85 AF/AL	1.4047
X-2B	04/10/85 AF/AL	0.6956
X-2B	10/17/85 AF/AL	2.6800
X-2A	10/16/85 AF/AL	3.3663
X-2A	09/23/87 AF	474.6750
X-2B	09/23/87 AF/AL	0.3731
X-2A	10/18/87 AL	4.5500
X-2B	03/08/88 AF/AL	2.0044
X-2A	03/10/88 AF/AL	2.6314
X-2B	02/11/89 AF/AL	2.3837
X-2A	03/14/89 AF	23.4420
X-2A	03/15/89 AL	0.2224

II. Bellows

Penetration	Date Tested	Leak Rate (SCFH)
X-12A Inboard	08/07/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-12A Outboard	08/07/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-12B I	08/14/87 AF/AL	0.0011
	01/22/89 AF/AL	0.0000
X-12B O	08/14/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-12C I	08/14/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-12C O	08/14/87 AF/AL	0.0000
	01/21/89 AF/AL	0.0000
X-12D I	08/06/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-12D O	08/06/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-13A I	08/07/87 AF/AL	0.0000
	01/28/89 AF/AL	0.0000
X-13A O	08/07/87 AF/AL	0.0000
	01/28/89 AF/AL	0.0000
X-13B I	08/14/87 AF/AL	0.0110
	01/28/89 AF/AL	0.0000
X-13B O	08/14/87 AF/AL	0.0000
	01/28/89 AF/AL	0.0000
X-13C I	08/14/87 AF/AL	0.0000
	01/28/89 AF/AL	0.0000

TABLE D-2
(Continued)

II. Bellows (Continued)

Penetration	Date Tested	Leak Rate (SCFH)
X-13C O	08/14/87 AF/AL	0.0000
	01/28/89 AF/AL	0.0000
X-13D I	08/06/87 AF/AL	0.0000
	01/28/89 AF/AL	0.0000
X-13D O	08/06/87 AF/AL	0.0000
	01/28/89 AF/AL	0.0000
X-14A	08/07/87 AF/AL	0.0000
	01/21/89 AF/AL	0.0000
X-14B	08/06/87 AF/AL	0.0000
	01/21/89 AF/AL	0.0000
X-14C	08/07/87 AF/AL	0.0000
	01/21/89 AF/AL	0.0000
X-14D	08/06/87 AF/AL	0.0000
	01/21/89 AF/AL	0.0000
X-15	08/10/87 AF/AL	0.0000
	01/21/89 AF/AL	0.0000
X-17	08/15/87 AF/AL	0.0000
	01/21/89 AF/AL	0.0000
X-20A	08/10/87 AF/AL	0.0000
	01/21/89 AF/AL	0.0000
X-20B	08/15/87 AF/AL	0.0000
	01/21/89 AF/AL	0.0000
X-21	08/10/87 AF/AL	0.0000
	01/21/89 AF/AL	0.0000
X-22	08/10/87 AF/AL	0.0000
	01/21/89 AF/AL	0.0000
X-24	08/10/87 AF/AL	0.0000
	01/21/89 AF/AL	0.0000
X-30	08/15/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-32	08/16/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-33	08/16/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-45	08/16/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-46	08/16/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-47A I	08/17/87 AF/AL	0.0000
	01/28/89 AF/AL	0.0000
X-47A O	08/17/87 AF/AL	0.0000
	01/28/89 AF/AL	0.0000
X-47B I	08/17/87 AF/AL	0.0000
	01/28/89 AF/AL	0.0000

TABLE D-2
(Continued)

II. Bellows (Continued)

Penetration	Date Tested	Leak Rate (SCFH)
X-47B O	08/17/87 AF/AL	0.0000
	01/28/89 AF/AL	0.0000
X-81	08/15/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-107	08/16/87 AF/AL	0.0008
	01/22/89 AF/AL	0.0000
X-108	08/17/87 AF/AL	0.0000
	01/28/89 AF/AL	0.0000
X-109	08/17/87 AF/AL	0.0000
	01/28/89 AF/AL	0.0000

III. Electrical

Penetration	Date Tested	Leak Rate (SCFH)
X-120E	07/25/87 AF/AL	0.0000
	01/22/89 AF/AL	0.5536
X-121E	07/12/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-122E	07/17/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-123E	07/22/87 AF/AL	0.0000
	01/23/89 AF/AL	0.0000
X-124E	07/25/87 AF/AL	0.0000
	01/21/89 AF/AL	0.0000
X-126E	07/12/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-127E	07/21/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-128E	07/21/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-129E	07/23/87 AF/AL	0.0013
	01/22/89 AF/AL	0.0000
X-131E	07/25/87 AF/AL	0.0006
	01/23/89 AF/AL	0.0000
X-132E	07/22/87 AF/AL	0.0000
	01/23/89 AF/AL	0.0000
X-133E	07/22/87 AF/AL	0.0206
	01/23/89 AF/AL	0.0000
X-134E	07/17/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-135E	07/17/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000

TABLE D-2
(Continued)

III. Electrical (Continued)

Penetration	Date Tested	Leak Rate (SCFH)
X-136E	07/17/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-137E	07/17/87 AF/AL	0.0030
	01/23/89 AF/AL	0.0000
X-138E	07/17/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-139E	07/12/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-140E	07/17/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-141E	07/22/87 AF/AL	0.0000
	01/23/89 AF/AL	0.0000
X-142E	07/17/87 AF/AL	0.0000
	01/23/89 AF/AL	0.0000
X-143E	07/22/87 AF/AL	0.0000
	01/23/89 AF/AL	0.0000
X-144E	07/22/87 AF/AL	0.0000
	01/23/89 AF/AL	0.0000
X-145E	07/25/87 AF/AL	0.0008
	01/23/89 AF/AL	0.0000
X-146E	07/25/87 AF/AL	0.0019
	01/23/89 AF/AL	0.0000
X-147E	07/12/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-148E	07/12/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-149E	07/12/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-150E	07/11/87 AF/AL	0.0000
	07/12/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-151E	07/11/87 AF/AL	0.0000
	07/12/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0507
X-152E	07/11/87 AF/AL	0.0000
	07/12/87 AF/AL	0.0011
	01/22/89 AF/AL	0.0486
X-153E	07/21/87 AF/AL	0.0000
	01/23/89 AF/AL	0.0000
X-154E	07/21/87 AF/AL	0.0000
	01/23/89 AF/AL	0.0000
X-156E	07/21/87 AF/AL	0.0000
	01/23/89 AF/AL	0.0000

III. Electrical (Continued)

Penetration	Date Tested	Leak Rate (SCFH)
X-157E	07/21/87 AF/AL	0.0000
	01/23/89 AF/AL	0.0000
X-158E	07/21/87 AF/AL	0.0000
	01/23/89 AF/AL	0.0000
X-159E	07/22/87 AF/AL	0.0000
	01/23/89 AF/AL	0.0000
X-160E	07/22/87 AF/AL	0.0000
	01/23/89 AF/AL	0.0000
X-161E	07/22/87 AF/AL	0.0000
	01/23/89 AF/AL	0.0000
X-163E	07/22/87 AF/AL	0.0112
	01/23/89 AF/AL	0.3760
X-164E	07/22/87 AF/AL	0.0000
	01/23/89 AF/AL	0.0000
X-165E	07/21/87 AF/AL	0.0102
	01/23/89 AF/AL	0.0000
X-166E	07/21/87 AF/AL	0.0000
	01/23/89 AF/AL	0.0000
X-167E	07/23/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-168E	07/23/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-169E	07/23/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
X-170E	07/23/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000

IV. H_2 Analyzers

Penetration	Date Tested	Leak Rate (SCFH)
H_2 Train A	08/28/87 AF	0.4583
H_2 Train A	10/29/87 AF	0.2807
H_2 Train B	10/29/87 AF/AL	0.0000
H_2 Train A	11/15/87 AL	0.0000
H_2 Train B	01/18/88 AF/AL	0.0000
H_2 Train A	01/18/88 AF/AL	0.0000
H_2 Train A	02/22/88 AF	2.1112
H_2 Train B	02/22/88 AF	0.0000
H_2 Train A	02/26/88 AL	0.0000
H_2 Train B	02/26/88 AL	0.0000
H_2 Train A	03/16/89 AF	4.4812
H_2 Train B	03/16/89 AF	1.7777
H_2 Train A	03/22/89 AL	0.0000
H_2 Train A	03/22/89 AL	0.0000

TABLE D-2
(Continued)

V. Pressure Differential Transmitters

Penetration	Date Tested	Leak Rate (SCFH)
PDT-30-42	02/03/86 AF/AL	0.0000
PDT-30-43	02/03/86 AF/AL	0.0000
PDT-30-44	02/03/86 AF/AL	0.0000
PDT-30-45	02/03/86 AF/AL	0.0000
PDT-30-43	02/19/86 AF/AL	0.0000
PS-30-46A	10/18/87 AF/AL	0.0000
PS-30-46B	10/18/87 AF/AL	0.0000
PS-30-47A	10/18/87 AF/AL	0.0000
PS-30-47B	10/18/87 AF/AL	0.0000
PS-30-48A	10/18/87 AF/AL	0.0000
PS-30-48B	10/18/87 AF/AL	0.0000
PT-30-30C	10/18/87 AF/AL	0.0000
PT-30-310	10/18/87 AF/AL	0.0000
PT-30-311	10/18/87 AF/AL	0.0000
PDT-30-42	11/05/87 AF/AL	0.0000
PDT-30-43	11/05/87 AF/AL	0.0000
PDT-30-44	11/05/87 AF/AL	0.0000
PDT-30-45	11/05/87 AF/AL	0.0000
PS-30-46A	03/15/89 AF/AL	0.0000
PS-30-46B	03/15/89 AF/AL	0.0000
PS-30-47A	03/15/89 AF/AL	0.0000
PS-30-47B	03/15/89 AF/AL	0.0000
PS-30-48A	03/15/89 AF/AL	0.0000
PS-30-48B	03/15/89 AF/AL	0.0000
PDT-30-30C	03/15/89 AF/AL	0.0000
PT-30-310	03/15/89 AF/AL	0.0000
PT-30-311	03/15/89 AF/AL	0.0000
PDT-30-42	03/15/89 AF/AL	0.0000
PDT-30-43	03/15/89 AF/AL	0.0000
PDT-30-44	03/15/89 AF/AL	0.0000
PDT-30-45	03/15/89 AF/AL	0.0000

VI. Resilient Seals

Penetration	Date Tested	Leak Rate (SCFH)
X-1	10/30/87 AF/AL	0.0000
	04/08/88 AF	0.0000
	05/02/88 AL	0.0000
	01/19/89 AF	0.0000
	03/16/89 AF	0.0000
	03/24/89 AL	0.0000

TABLE D-2
(Continued)

VI. Resilient Seals (Continued)

Penetration	Date Tested	Leak Rate (SCFH)
X-3	10/01/87 AF/AL	0.0008
	01/22/89 AF	0.0000
	03/12/89 AL	0.0000
X-40D	07/27/87 AF/AL	0.0000
	01/21/89 AF/AL	0.0000
X-54	07/27/87 AF/AL	0.0000
	04/08/88 AF	0.0000
	04/26/88 AL	0.0000
	01/19/89 AF	0.0000
	03/23/89 AL	0.0000
X-79A	10/14/87 AF	2.4536
	10/16/87 AL	0.0015
	01/21/89 AF	0.0000
	03/12/89 AL	0.0000
X-79B	10/14/87 AF/AL	0.0000
	01/21/89 AF	0.0000
	03/12/89 AL	0.0000
X-111	07/26/87 AF/AL	0.0672
	01/30/89 AF/AL	0.0000
X-112	07/26/87 AF/AL	0.0000
	01/30/89 AF/AL	0.0000
X-113	07/26/87 AF/AL	0.0000
	01/30/89 AF/AL	0.0000
X-88	07/27/87 AF/AL	0.0000
	01/21/89 AF/AL	0.0000
X-117	07/26/87 AF/AL	0.0000
	01/21/89 AF/AL	0.0000
X-118	07/27/87 AF/AL	0.0000
	01/22/89 AF/AL	0.0000
	03/23/89 AF/AL	0.0000

TABLE D-3

Type B and C Tests
Cycle 3 - Unit 2

Path Leakage Tabulation

Summary

	As Found	As Left
A. Type B Leakage		
I. Penetrations	0.1331 SCFH	1.2089 SCFH
I. Air Lock Doors	1.5779 SCFH	2.6061 SCFH
A. Type C Leakage	5.5099 SCFH	1.6987 SCFH

APPENDIX E

References

1. 10 CFR 50, Appendix J. "Reactor Containment Leakage Testing for Water-Cooled Power Reactors"

2. ANSI N45.4-1972, American National Standard, "Leakage Rate Testing of Containment Structures of Nuclear Service"

3. ANS 56.8, American Nuclear Society, "Containment System Leakage Testing Requirements"

4. Sequoyah Nuclear Plant FSAR Chapters 6.2 and 6.3

5. Sequoyah Nuclear Plant Technical Specification 4.6.1.2

6. Bechtel Topical Report, "Testing Criteria for Integrated Leakage Rate Testing of Primary Containment Structures for Nuclear Power Plants" - BN-TOP-1, Revision 1