

REACTOR CONTAINMENT BUILDING

INTEGRATED LEAK RATE TEST

BRAIDWOOD NUCLEAR POWER GENERATING STATION

ComEd/Unicom Company

UNIT 1

November 1st to November 16th, 1995

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BRAIDWOOD UNIT 1 ILRT FINAL REPORT

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INTRODUCTION

This report describes the Third Type A Containment Leakage Rate Test conducted after the initiation of commercial service for the Braidwood Nuclear Power Station Unit 1 Containment Building. This report is prepared pursuant to the requirements of 10CFR50 Appendix J, Section V.B.3. The test was conducted through the performance of Braidwood Procedure 1BWVS 6.1.2.a-1, "Unit 1 Primary Containment Type A Integrated Leakage Rate Test", dated November 1st through November 16th, 1995. Local Leak Rate Testing required to determine the final values of containment leakage were performed between September 11th through November 18th, 1995. Also included in this report is a summary of all the periodic Type B and C Local Leakage Rate Tests that were performed since the last Type A ILRT performed on March 4th through April 22nd, 1994.

The Type A test was performed at the end of the refueling outage and was considered as an "AS FOUND PASS" Type A Test. All local leak rate tests were performed in the beginning of the outage, with the exception of the penetrations isolated during the ILRT. Those penetrations were re-tested to determine the final leak rate of containment. The "AS LEFT" determination for this Type A Test was also considered as a "AS LEFT PASS" Type A Test.

The test was performed in accordance with 10CFR50 Appendix J and Braidwood Station Technical Specifications. The test method that was used was the 24 hour Mass Plot Method.

Pressurization leak checks were conducted for all penetration areas and both Equipment and Emergency hatches. Some leakage was identified from the Emergency Hatch Outer Equalization Valve and at the time considered not to be significant. Once containment test pressure was reached and temperature stabilized, the computer results of the total containment leakage rate exceeded the $0.75L_a$.

The identified leakage from the Emergency Hatch Outer Equalization Valve was determined to be excessive and as a corrective action, the Emergency hatch door position were swapped. The Inner Emergency Hatch door was OPEN and was taken to CLOSED. The Outer Emergency Hatch door was CLOSED, and was taken to OPEN. With the identified leakage path isolated, the total containment leak rate measured below $0.75L_a$. Penetration 41 was inadvertently isolated, when the blocking device for 1CV8149B came off allowing the penetration to become isolated. 1CV8149B is in Containment and has to be blocked OPEN in order for vent valve 1CV214B to be lined up to vent in Containment. Although this penetration was not identified as a leaking penetration, a penalty was taken due to it not being lined up properly.

The test was then successfully continued until completion. The isolated pathways were left isolated during the entire test. A Minimum Pathway As Found penalty was later assessed for each penetration isolated.

Using the Mass Plot Method the total primary containment leak rate was calculated to be less than the allowable leak rate of $0.075\text{wt\%/day}(0.75L_a)$. The leakage rate was calculated to be 0.06174 wt\%/day at a test pressure greater than 44.4 psig (P_a). The associated 95% Upper Confidence Limit (UCL) was 0.06324 wt\%/day .

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The verification induced leak rate test was measured at 0.1456 wt%/day. This value should compare with the sum of the measured leak rate phase of 0.06174 wt%/day and the induced leak rate of 0.09715 wt%/day, the sum being 0.15889 wt%/day. The value measured (0.1456 wt%/day) is within the ± 0.025 wt%/day (.25 La) tolerance band.

*49

Before and after the ILRT, LLRTs were performed. The results from some of these test are added to the final ILRT total as the corrective leak rate. These corrections are added for the systems that were not properly challenged during the ILRT. The "AS FOUND" minpath leakage for all corrections was 4.4 scfh or 0.00095 wt%/day. Adding this leakage to the ILRT 95% UCL yields a total of 0.06419 wt%/day which is less than the 0.075 wt%/day acceptance criteria.

A. TEST PREPARATIONS

A.1 TYPE A TEST PROCEDURE

The ILRT was performed in accordance with Braidwood Procedure 1BwVS 6.1.2.a-1, Revision 3.

A.2 TYPE A TEST PROGRAM AND DATA PROCESSING

The program used for this test is the Duke Power Integrated Leak Rate program, Rev 1.75, software ID# GN09405. Containment parameters were acquired by the program every 10 minutes. This included data set number, time, temperature, relative humidity in degree F and absolute pressure readings. The data was sent to a lap top computer via computer cables. The computer stored the data and every 30 minutes the data was manually stored to disc. Personnel monitored the data either in graph or numerical form. Each data set was recorded in real time, this facilitated the identifications of trends as they developed.

A.3 PRE-TEST CONTAINMENT STRUCTURAL EXAMINATION

Prior to containment pressurization, a visual examination of accessible interior and exterior surfaces was performed. The results of this inspection were compared to the findings of the structural inspection performed during AlR04. No degradation of the containment structure was noticed since the previous inspection.

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A.4 TYPE A TEST INSTRUMENTATION

a. Temperature

Thirty-four thermistors Graftel smart sensor, model 9202 were used throughout the containment. All sensors were calibrated using standards traceable to the National Bureau of Standards (NBS).

b. Pressure

Two Paroscientific Precision absolute pressure monitors, model 760-100-A, range 0-100 psia were used. The monitors were calibrated using standards traceable to the National Bureau of Standards (NBS).

c. Relative Humidity

Twelve relative humidity sensors, Graftel smart sensor model 9203, were used throughout the containment. All sensors were calibrated using standards traceable to the National Bureau of Standards (NBS).

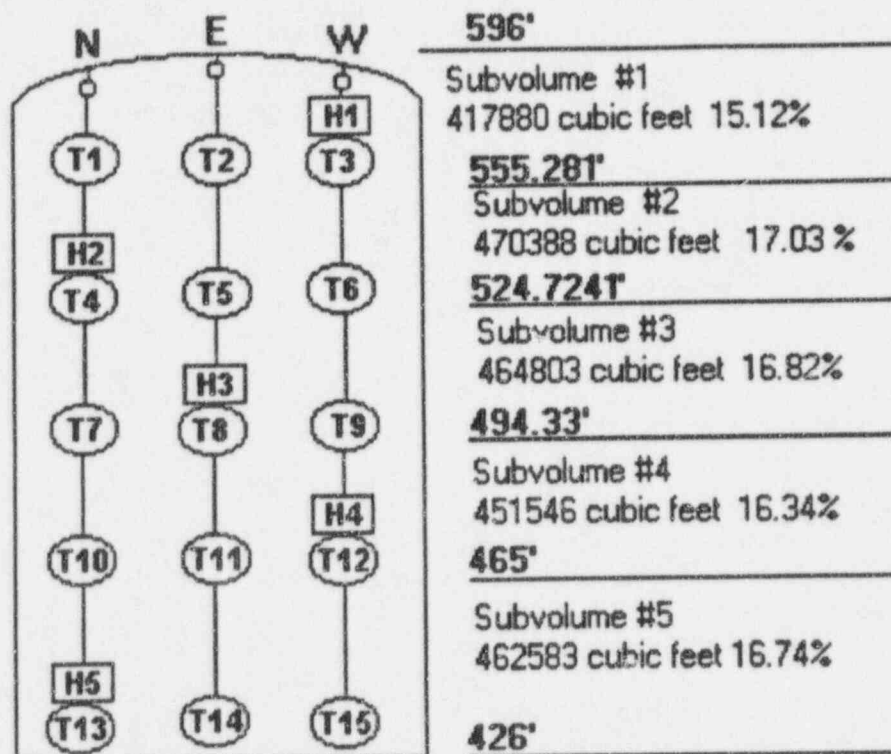
d. Flow

One flowmeter, Fisher-Porter model 10A3555-S, range 0-10.2 scfm, was used for the induced leakage rate test. The flowmeter was calibrated using standards traceable to the National Bureau of Standards (NBS).

A.5 TYPE A TEST SUBVOLUME DETERMINATION

The containment is divided into nine discrete subvolumes. Subvolume demarcation, size, and weighing factors are indicated in Figures A.5.1 through A.5.3. Also shown on the figures are the temperature and relative humidity sensors placed in containment. The pressure monitors and the flowmeter were installed in the auxiliary building.

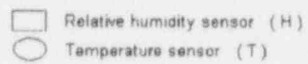
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- ☐ Relative humidity sensor (H)
☐ Temperature sensor (T)

Figure A.5.1 Containment building sensor placement and subvolume identification from elevation 426 to top of containment.

ELEVATION 398.5' TO 426'



5

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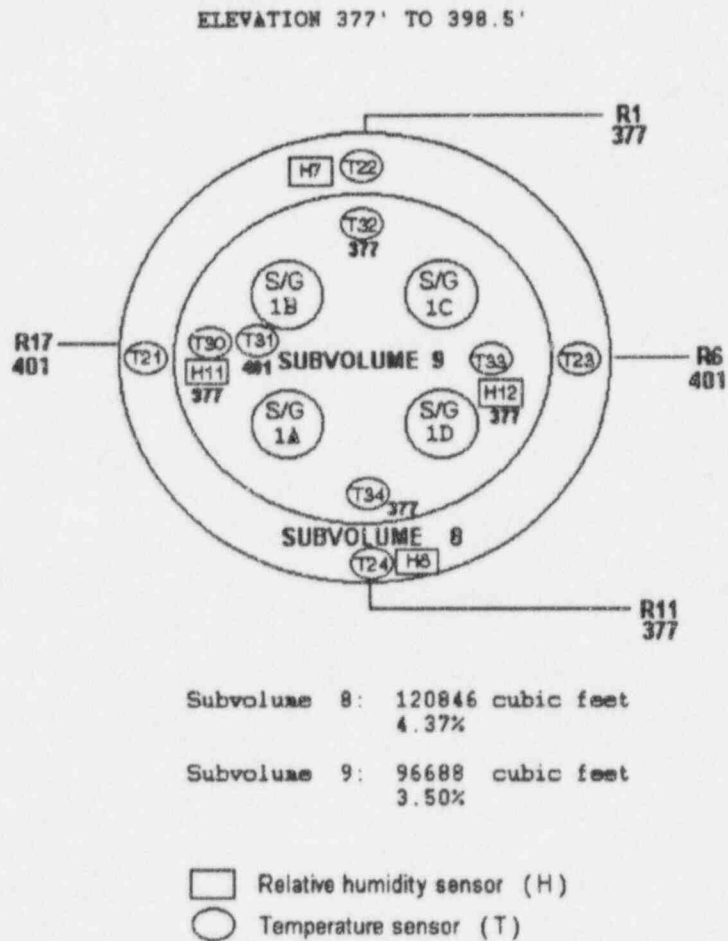


Figure A.5.3 Containment building sensor placement and subvolume identification from elevation 377 to 398.5

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A.6 ILRT PLANT SYSTEM LINEUP

The valve and equipment lineups were detailed and specified by component with individual signoffs and was performed using Braidwood Station Procedure 1BWOS 6.1.2.a-1. This ensured containment integrity conditions as close as possible to those which would exist after a design basis Loss of Coolant Accident (LOCA). This also assured that penetrations were properly drained and vented. Since the ILRT was performed at the end of the outage, 5 penetrations were not properly challenged. This was due to the amount of water and time it would take to properly align the penetrations. A penalty was assessed for these penetrations. Also the penetration mentioned previously (P-41) was also assessed for penalty since the blocking device failed to maintain the valve 1CV8149B open.

A.7 TYPE A TEST PRESSURIZATION

To pressurize containment to full test pressure, a system of 12 diesel driven, oil free compressors were used. The compressors were located outside on the northeast side of the containment building. Pressurization was accomplished through a six inch header which penetrates containment at penetration P-4. Once the containment was pressurized, the pressurization header was isolated and vented.

B. TEST METHOD

B.1 STATISTICAL ANALYSIS TECHNIQUE

The absolute method of leak rate determination was used. The absolute method uses the ideal gas laws to calculate the measured leak rate, as defined in ANSI N45.4-1972. The inputs to the measured leak rate calculation include subvolume weighted containment temperature, subvolume weighted vapor pressure, and total absolute air pressure.

B.2 SUPPLEMENTAL VERIFICATION TEST (Induced Leak Rate)

The supplemental verification test is performed by intentionally inducing a controlled leak of a magnitude approximately equal to L_a (0.1 wt%/day). This induced leak is superimposed on the previously determined leak rate (Statistical Test) and compared with the leak rate calculated during the Statistical leak rate phase. The combined leak rate (calculated leak rate from Statistical Test plus the induced leak rate) provides a basis for resolving any uncertainty associated with the calculated leak rate of the statistical leak rate test. The acceptance criterion for the induced leak rate test shall be, that the Induced average composite Leak Rate is within $\pm 0.25L_a$ of the sum of the statistical leak rate and the flowmeter induced leak rate.

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C. SEQUENCE OF EVENTS

The following narrative describes the sequence of events associated with the ILRT.

C.1 PRETEST PREPARATION

DATE 11/2/95

0800 Operations started system line ups. System engineers started putting ILRT instruments together.

1800 All instruments are hooked up in the AUX Bldg. Have power to them and collecting background data every 60 minutes.

DATE 11/3/95

1934 Had to change 2 RH sensors cause they were more than 5% differential temp. H6 and H12 were the ones changed. H6 QA# was 172923br and now is 172915br, H12 was 172929br and now is 172909br. Cleaned up instrument paper work.

DATE 11/4/95

1652 Compressors are all hooked up. Electricians are working on Air Dryers and Aftercoolers. All ILRT instruments are in Cnmt. Not hooked up yet.

DATE 11/6/95

1400 Hung upper subvolume instruments.

DATE 11/7/95

0800 Hung Lower subvolume instruments.

1500 Performed temperature survey in cnmt.

C.2 CONTAINMENT PRESSURIZATION

1702 Started pressing up cnmt data set 129.

2015 Tom Cole in for Ted Eliakis

DATE 11/8/95

0630 Ted Eliakis in for Tom Cole. Pressure in cnmt was 60.32 psia. Need to get to 62 psia.

0700 Reached test pressure of 62.06 psia. Closed OVQ002 and shutdown all compressors.

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C.3 TEMPERATURE STABILIZATION

0722 Started temperature stabilization, data set 215.

0914 Searched Penetration areas for any leaks. Found 3 slight leakers, will monitor throughout the day.

1431 Was notified that 1CV8149b went close on penetration P-41. This valve was blocked open in order to use 1CV214B as a vent.

1445 Equalization valve on Emergency hatch is leaking. Told personnel to swap doors. Close inner door and open outer door.

1514 Emergency hatch doors are swapped. Hatch is vented.

C.4 STATISTICAL LEAK RATE TEST

1612 Started leak rate test at data set 268

1900 Tom Cole in for Ted Eliakis

2230 Checked Emergency Hatch, no leaks on door or shaft seal, very minor packing leak on PR skid valve. (1PR033C)

DATE 11/9/95

0200 Checked Equipment Hatch, no leaks; possible minor leak on 1PS230B

0330 During check of CWA, found 1CV063 filled with water. This implies piping outside of 1CV8100 is filled. May/Will take penalty on this one. (LLRT values on valves are for 1CV8112 and 1CV8113 .4 scfh and 1CV8100 was 5 scfh.)

0700 Kurt Heinrich in for Tom Cole.

1130 Ted Eliakis in for Kurt Heinrich.

1814 Ended the Statistical leak rate test. Data set 424

C.5 INDUCED LEAK RATE TEST

1824 Started Induced Leak rate stabilization with data set 425. Flow rate from flowmeter 7.5 scfm.

2034 Started Induced leak rate test, flow remained the same. Data set 438

DATE 11/10/95

0130 Ended test Induced leak rate is complete with data set 464.

0200 Notified shift engineer to start depressurization of containment.

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C.6 DEPRESSURIZATION AND POST ACTIVITIES

0430 Started depressurization of containment with one sparger valve open.
0500 Opened 2nd sparger valve.
0530 Opened 3rd sparger valve.
0600 Opened 4th sparger valve.
0630 Opened 5th sparger valve.
0700 Opened 6th sparger valve.
0800 Opened 0VQ001 and 0VQ003
0808 0VQ001 full open. Depressurization rate =7.4 psig/hr
1300 Containment depressurized.
1305 Notified Shift Engineer to start the restoration of systems.

DATE 11/16/95

1100 Signed out of procedure.

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D. ILRT DATA

A temperature survey of the containment was performed prior to the pressurization of containment. Each subvolume was surveyed in three different areas.

<u>SUBVOLUME NUMBER</u>	<u>OBSERVED TEMPERATURE</u>		
1	63.4	63.1	63.5
2	63.0	62.9	63.1
3	63.4	63.0	63.4
4	63.2	63.0	63.2
5	62.4	62.5	62.3
6	62.9	62.5	62.4
7	65.5	64.8	64.8
8	62.4	62.2	62.7
9	62.1	62.8	62.8

The following sections present computer data for the three main sections of the ILRT.

D.1 TEMPERATURE STABILIZATION DATA

The temperature stabilization phase demonstrated proper temperature stability prior to the beginning of the test. The thermal parameters are graphically shown in Figures D.1.1, D.1.2 and D.1.3 with respect to pressure and mass in containment. A summary of the computer data can be found in Appendix B.

D.2 STATISTICAL LEAK RATE TEST DATA

Graphic results of the measured leak rate test are found in Figures D.2.1 through D.2.6. A summary of the computed data using the MASS PLOT METHOD can be found in Appendix C.

D.3 INDUCED LEAK RATE TEST DATA

The calculated leak rate and target value leak rates associated with the induced leakage test are shown in Figure D.3.1. Containment conditions during this phase of the test are shown in Figures D.3.2 through D.3.6. A summary of the Induced Leak Rate data of the ILRT can be found in Appendix D.

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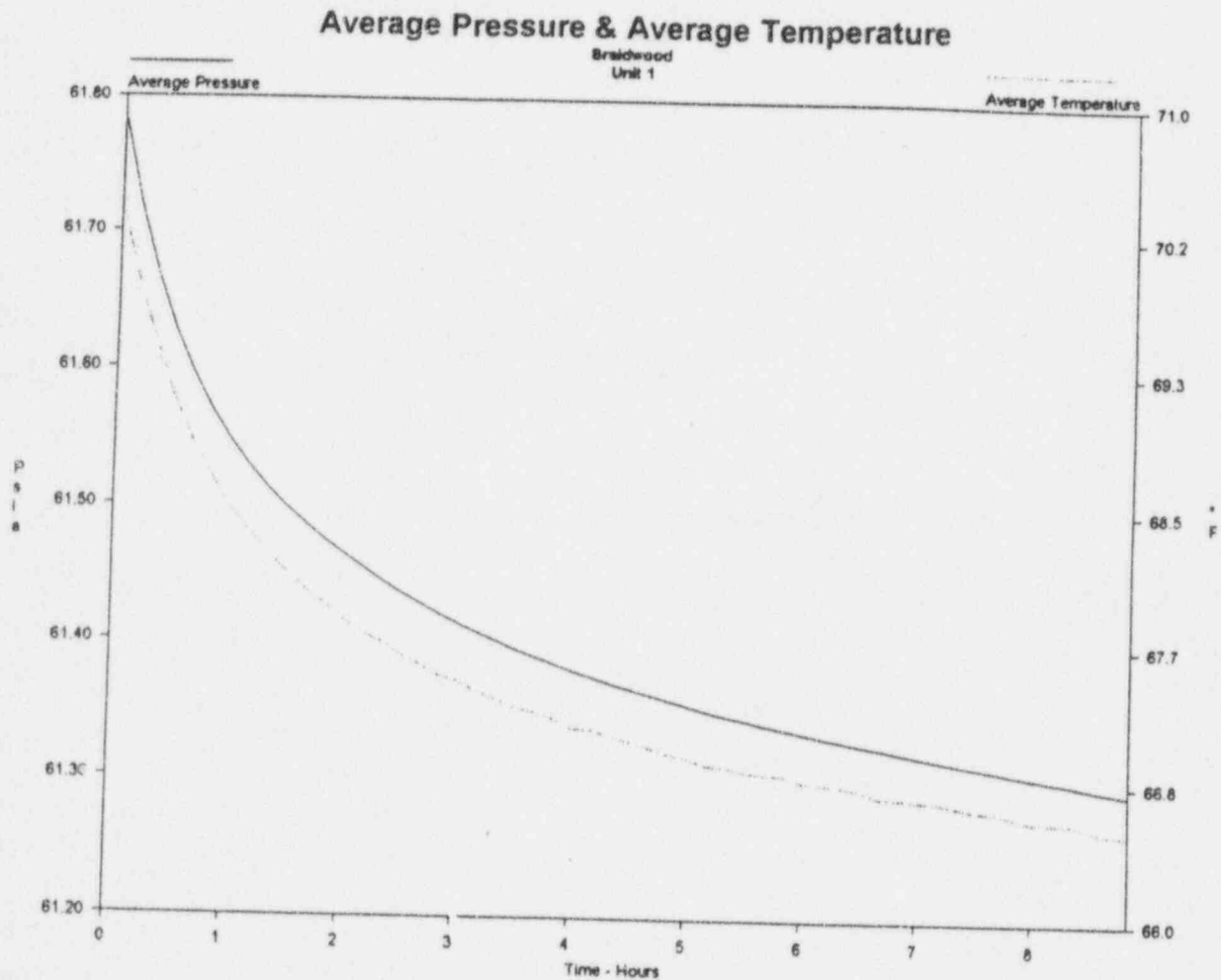


Figure D.1.1 Temperature Stabilization Parameters for Temperature Sensors with respect to Containment Pressure.

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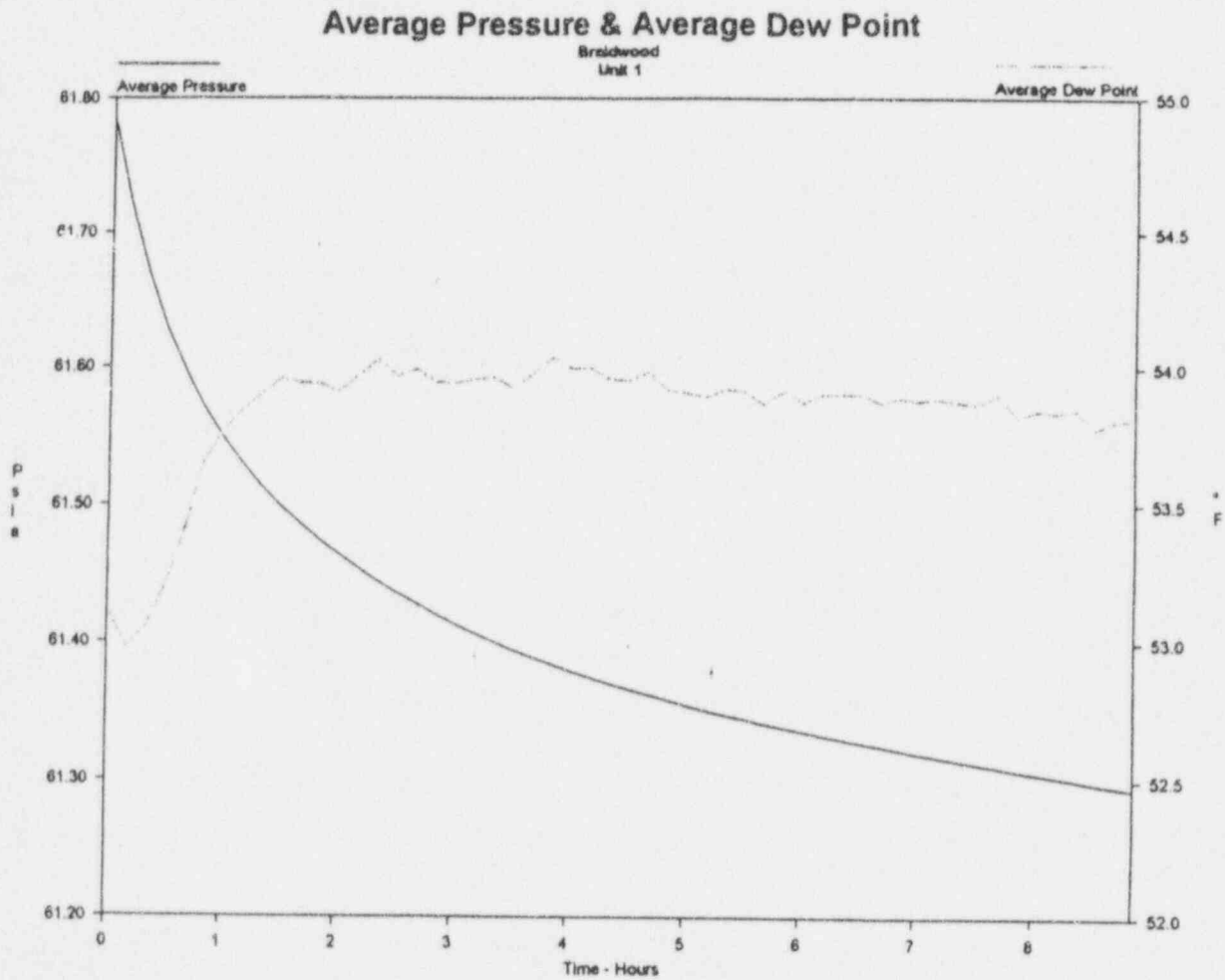


Figure D.1.2 Temperature Stabilization Parameters for RH Sensors with respect to Containment Pressure

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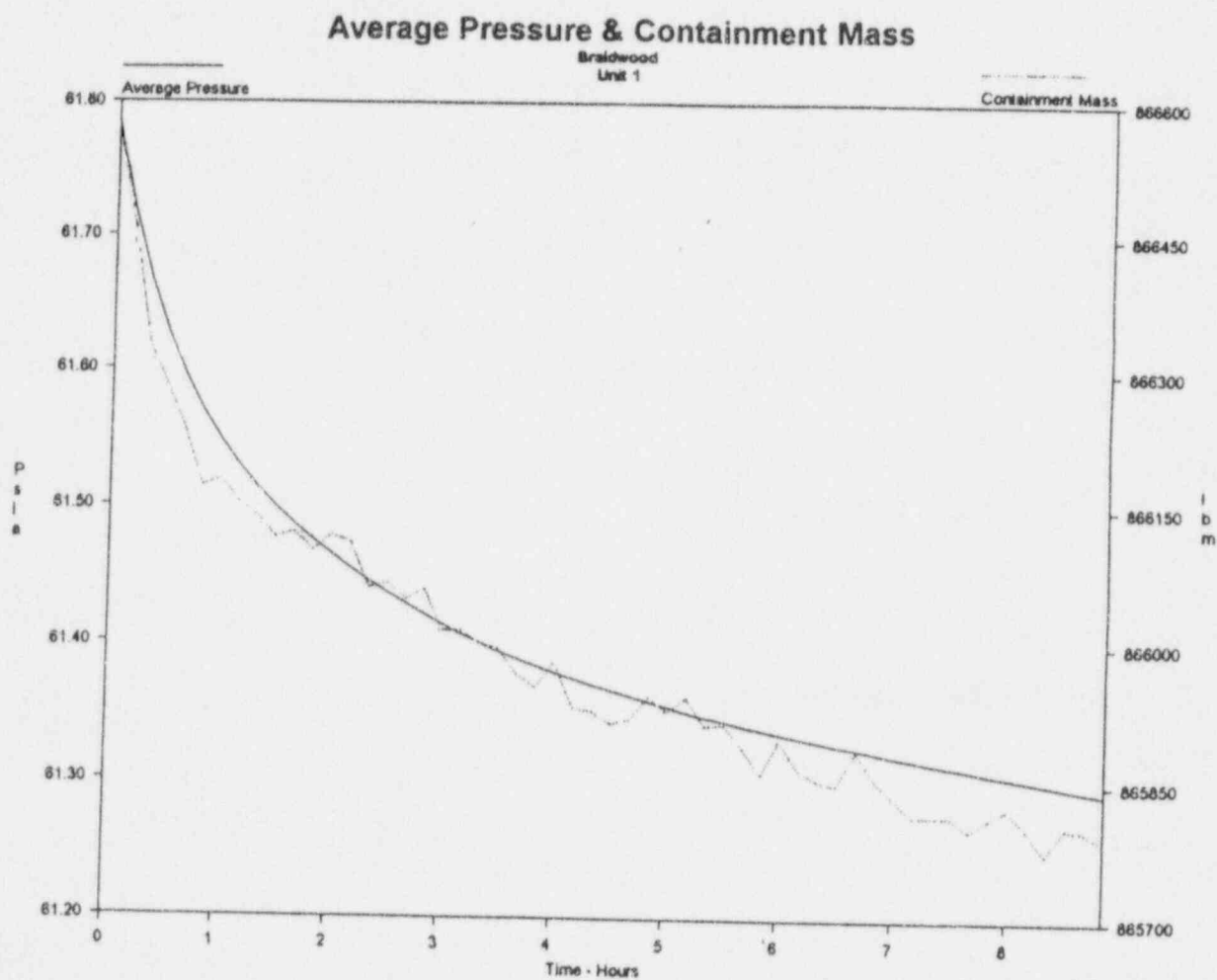


Figure D.1.3 Temperature Stabilization Parameter for Containment Mass with respect to Containment Pressure.

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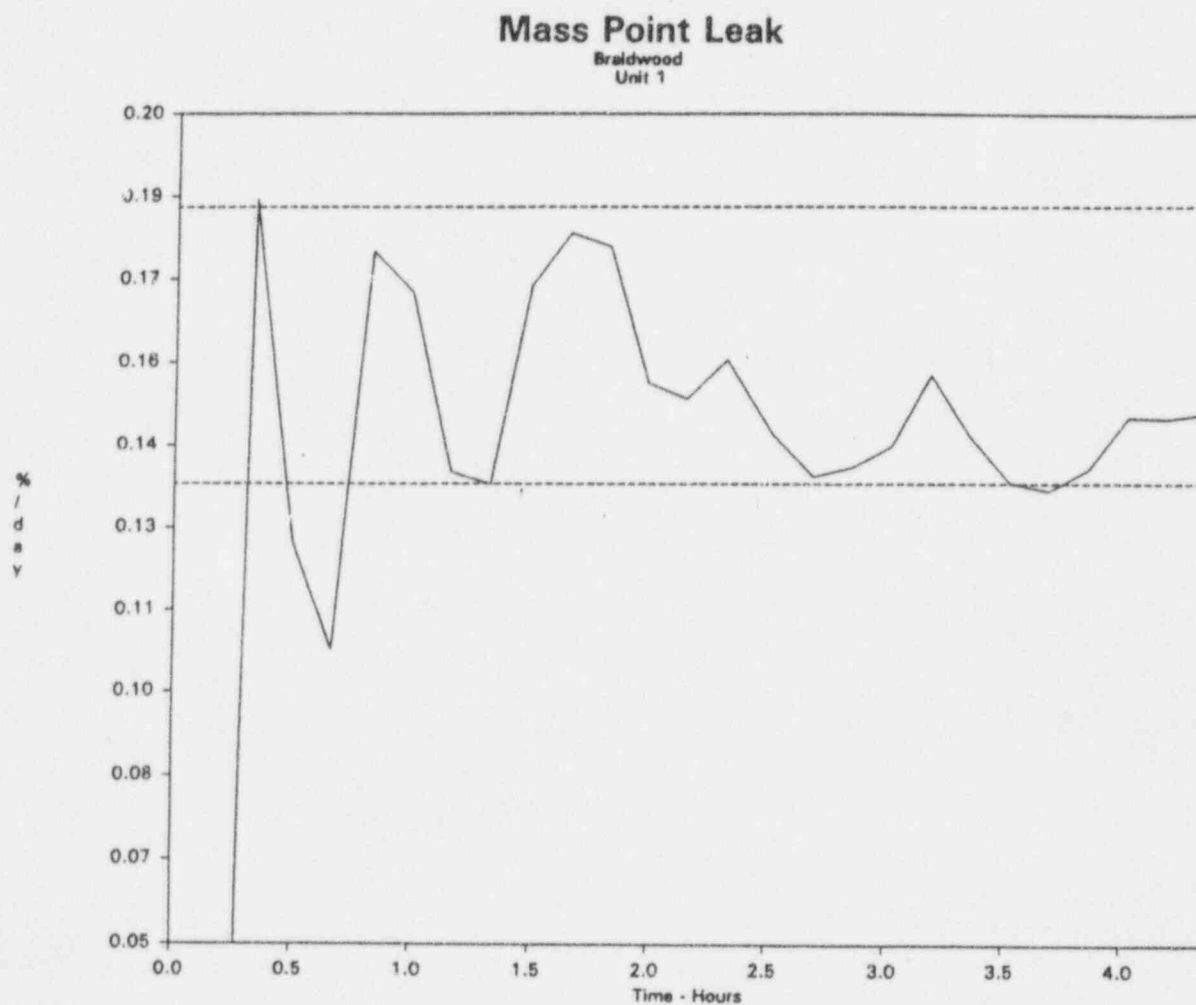


Figure D.2.1 Statistical Leak Rate Mass Point Leak and Mass Point Leak at UCL

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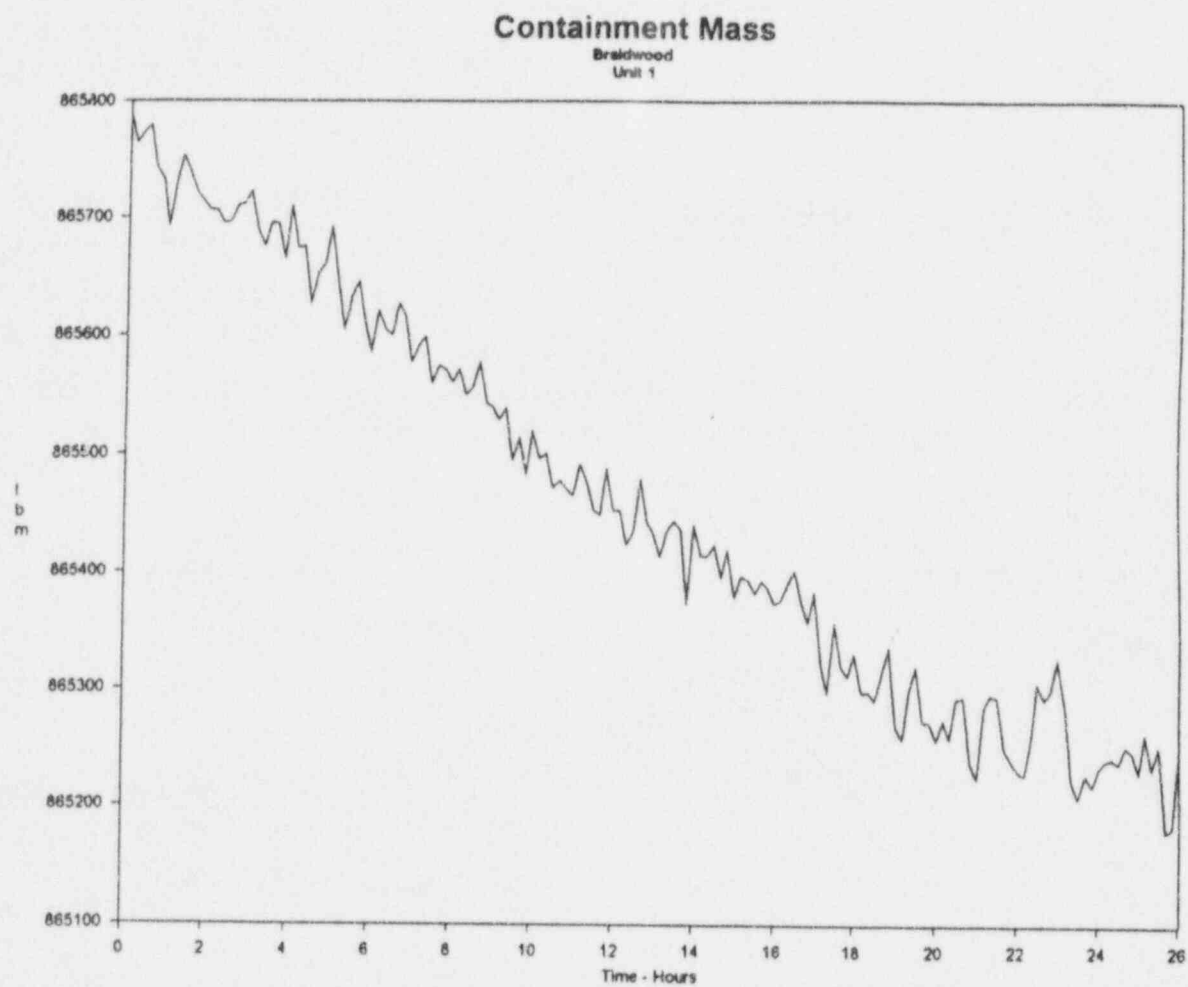


Figure D.2.2 Containment Mass during the Statistical Leak Rate

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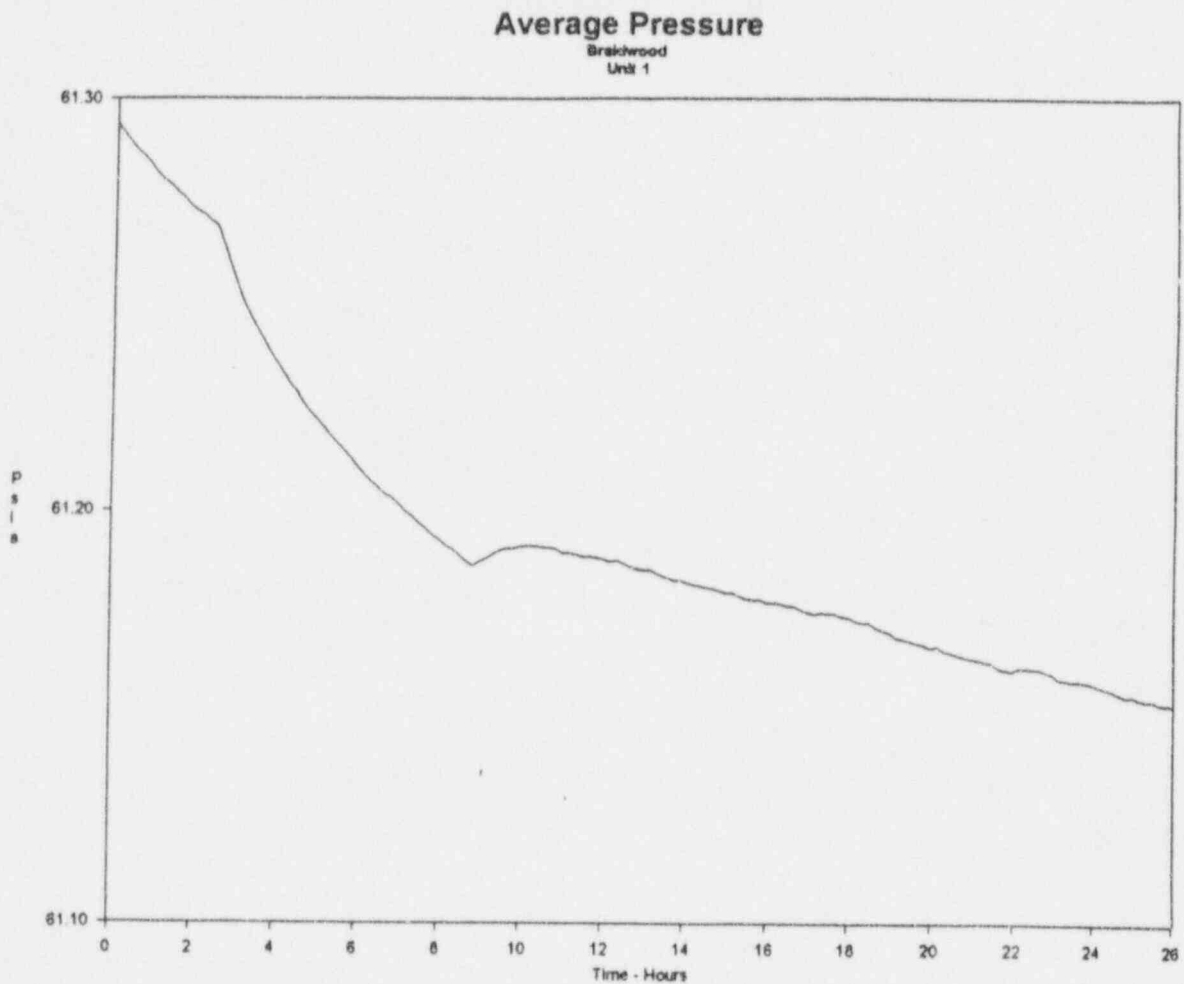


Figure D.2.3 Containment Average Pressure during the Statistical Leak Rate

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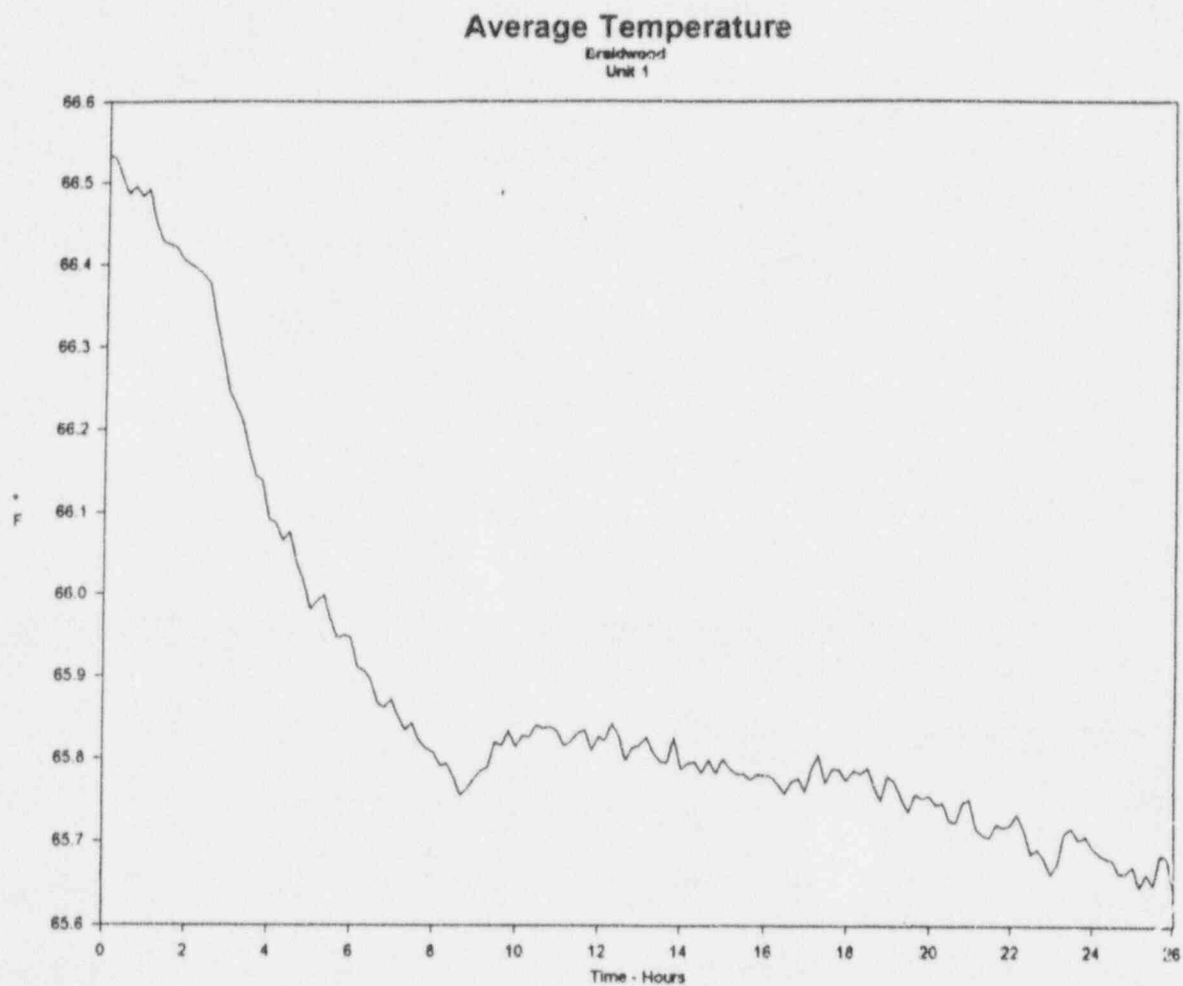


Figure D.2.4 Containment Average Temperature during the Statistical Leak Rate

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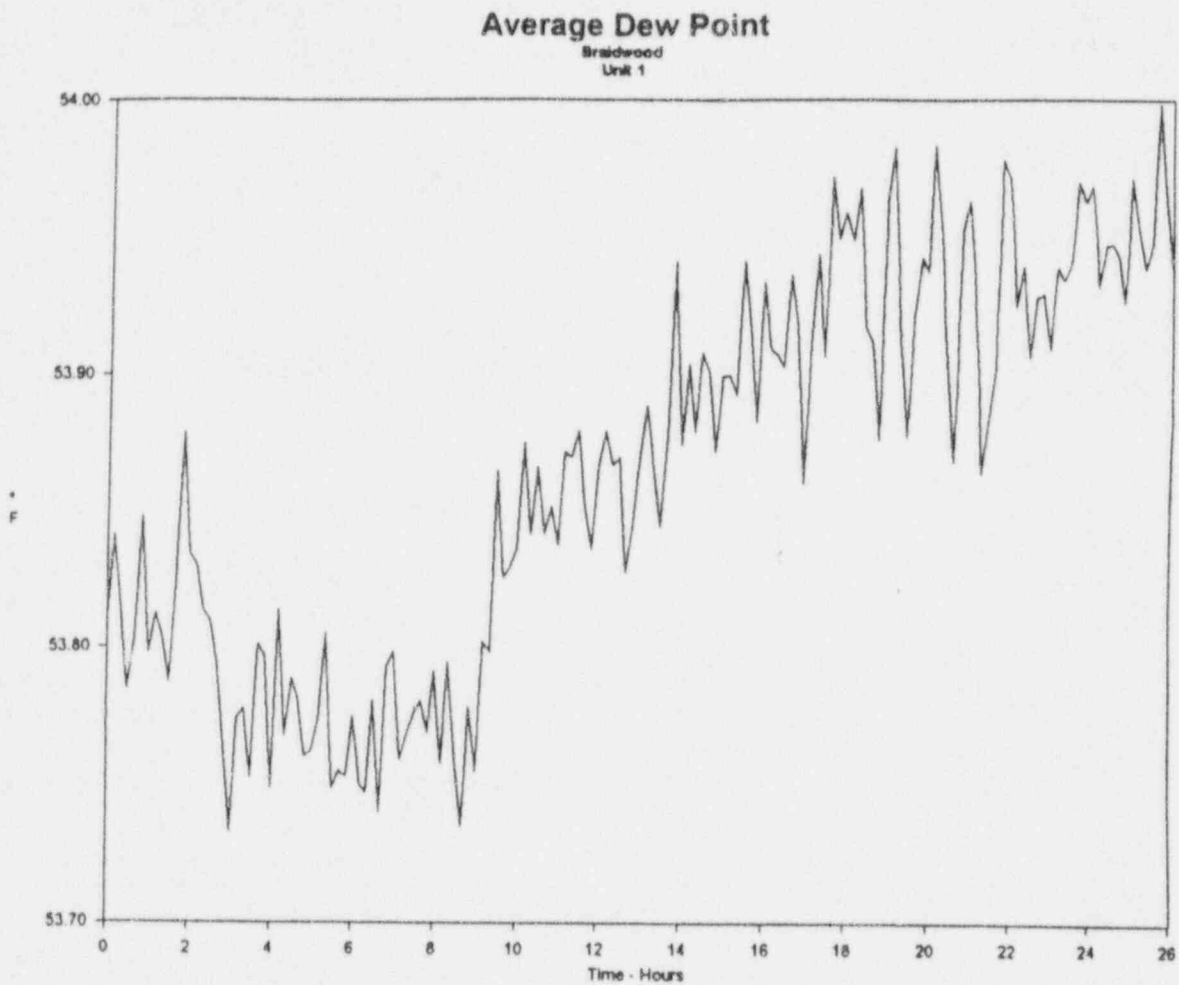


Figure D.2.5 Containment Average Dew Point during the Statistical Leak Rate

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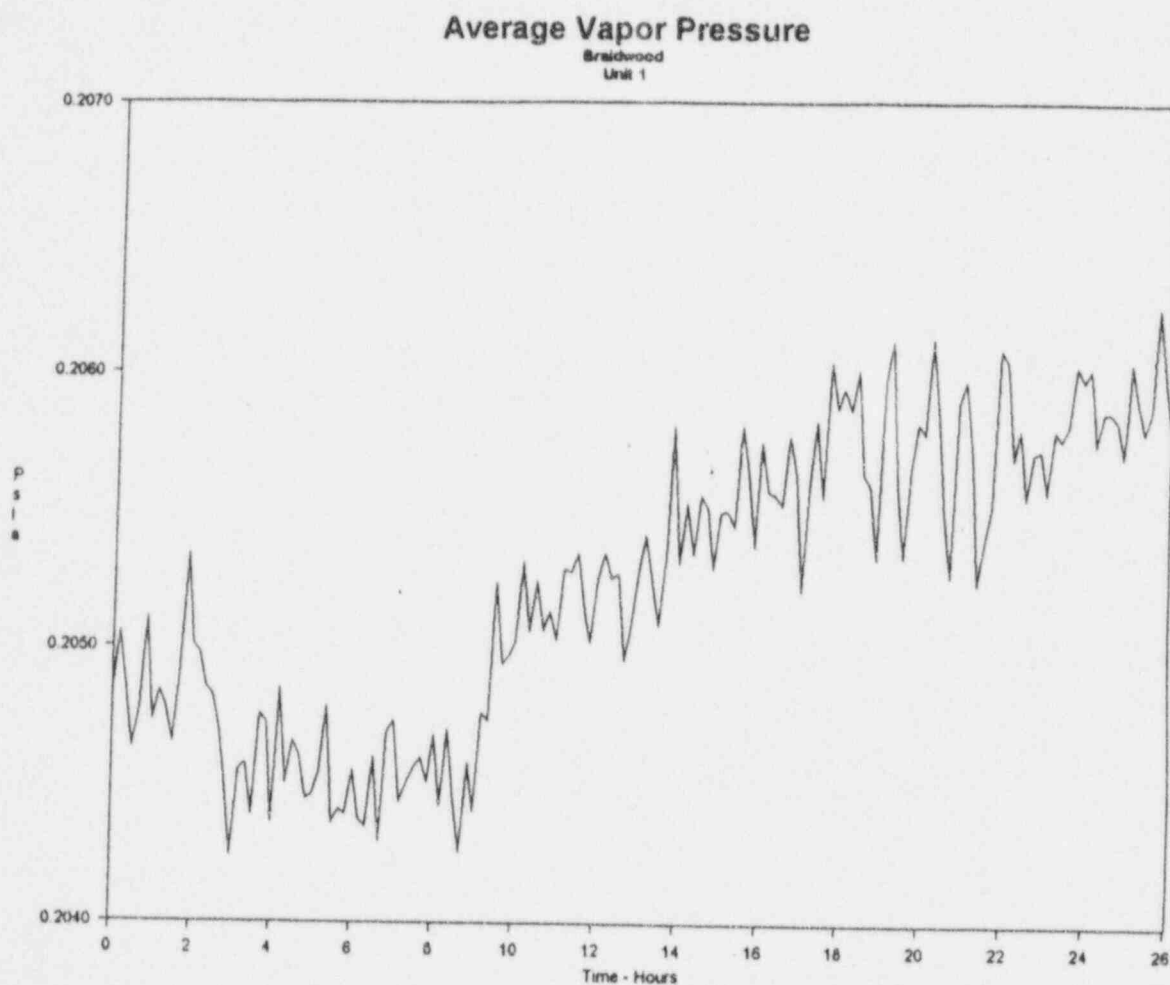


Figure D.2.6 Containment Average Vapor Pressure during the Statistical Leak Rate

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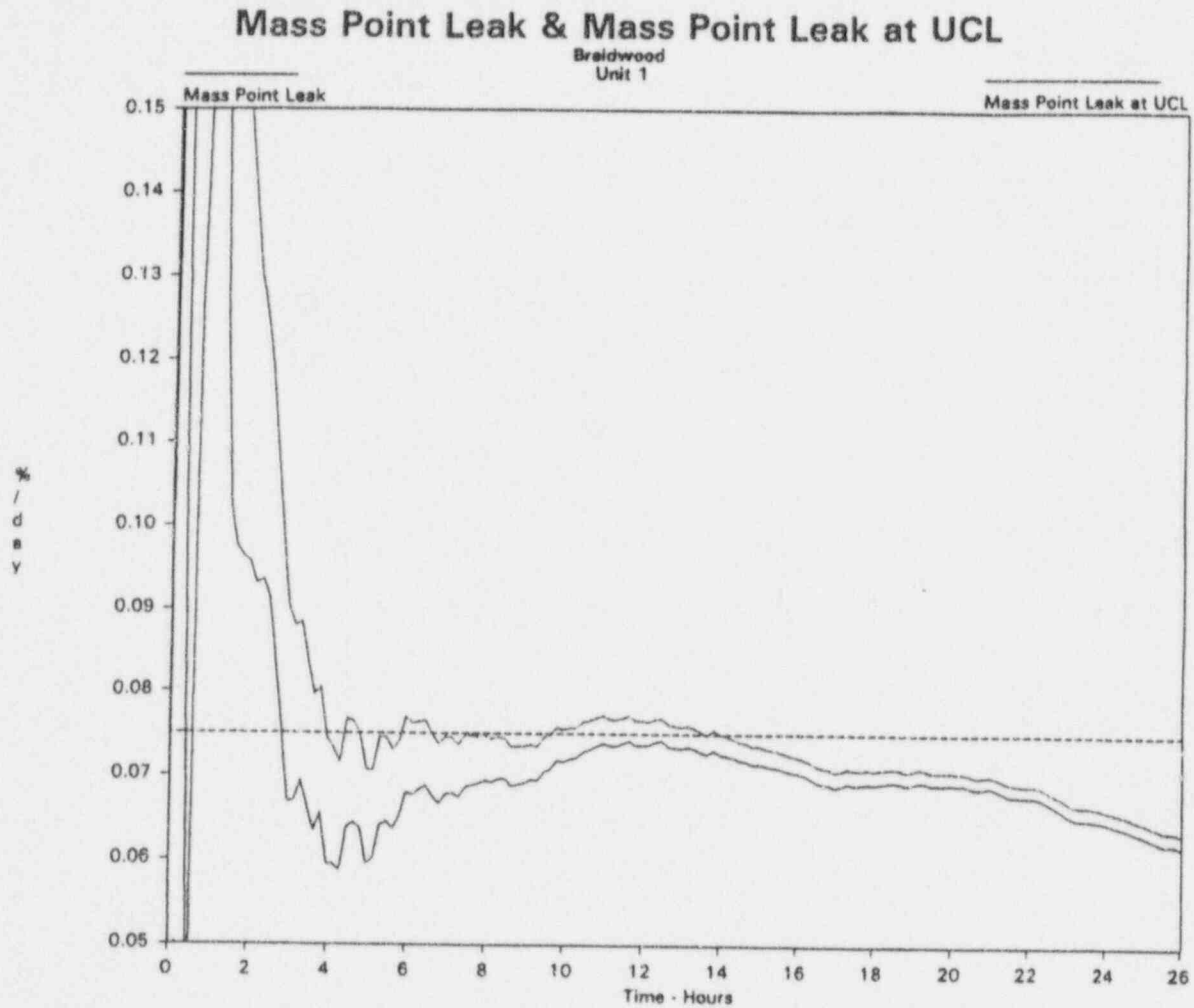


Figure D.3.1 Verification test Mass Point Leak
(Induced Test)

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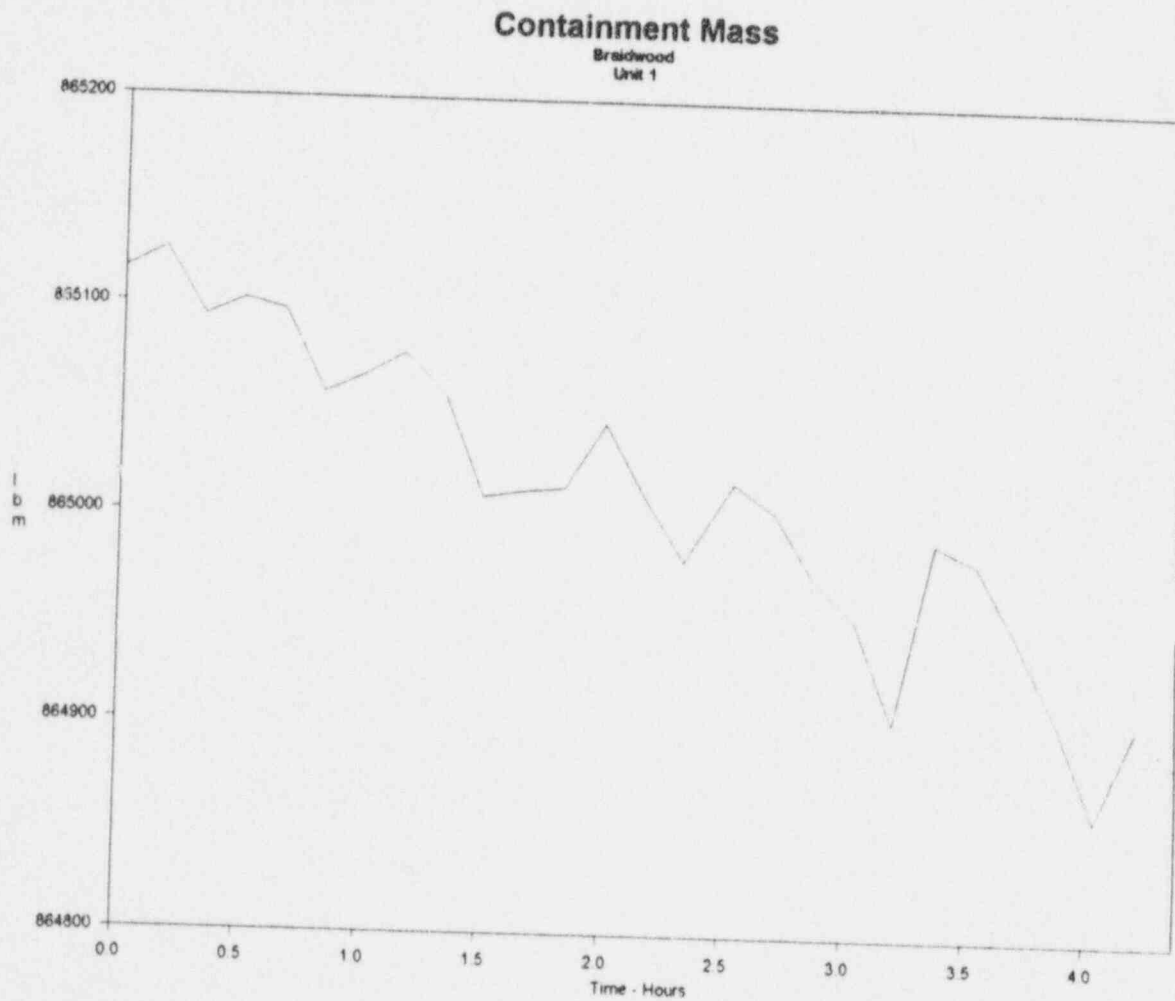


Figure D.3.2 Containment Mass during the Induced Leak Rate

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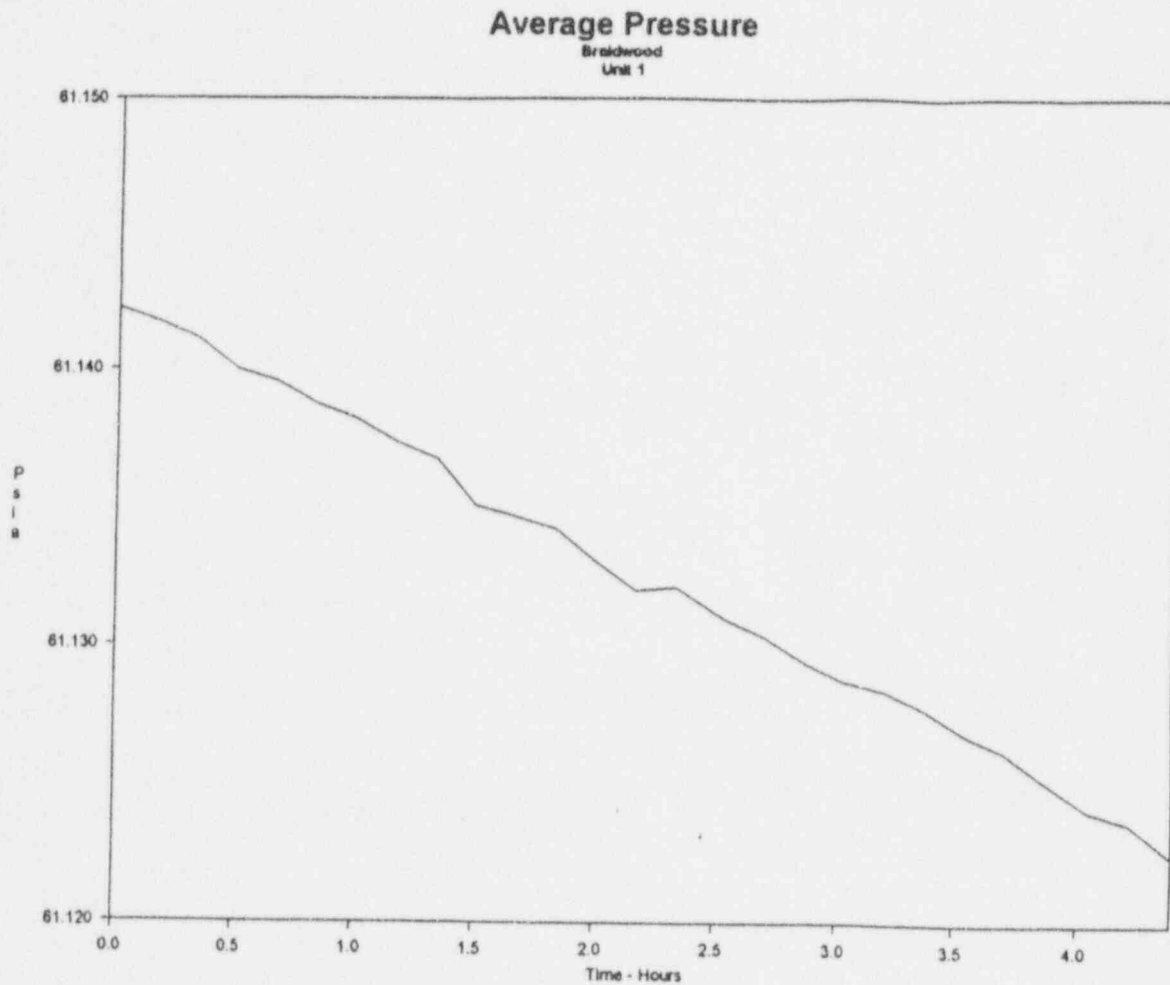


Figure D.3.3 Containment Average Pressure during the Induced Leak Rate

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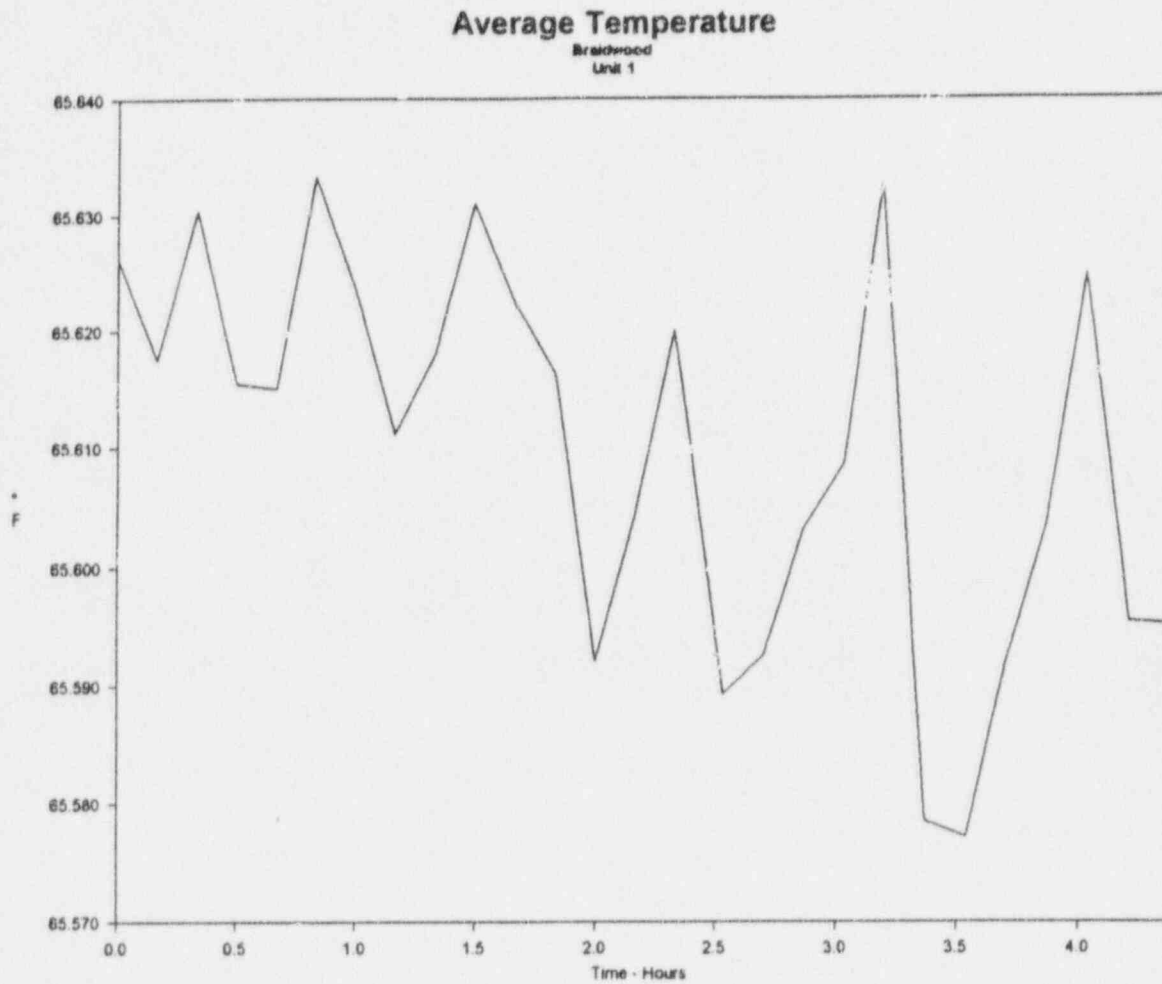


Figure D.3.4 Containment Average Temperature during the Induced Leak Rate

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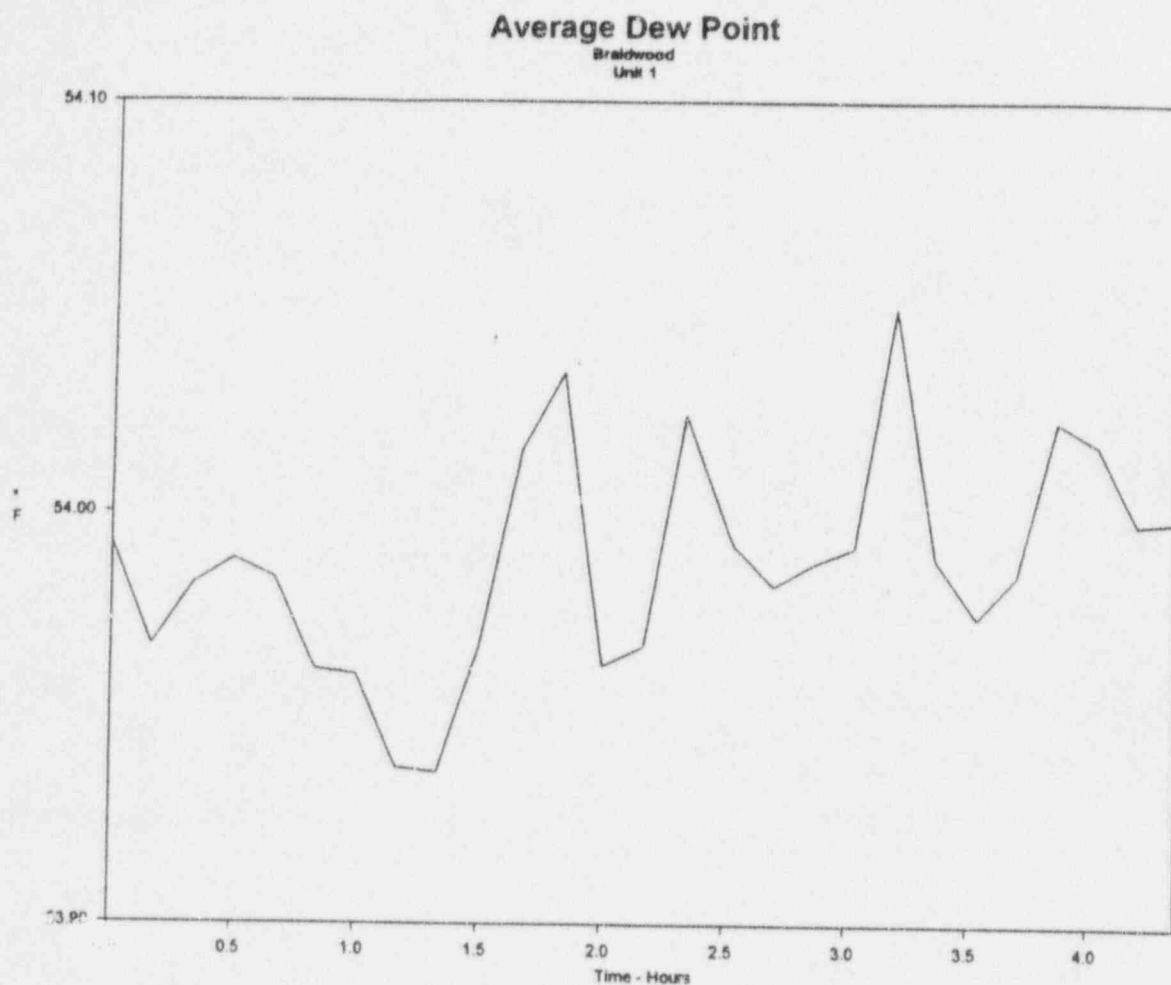


Figure D.3.5 Containment Average Dew Point during the Induced Leak Rate

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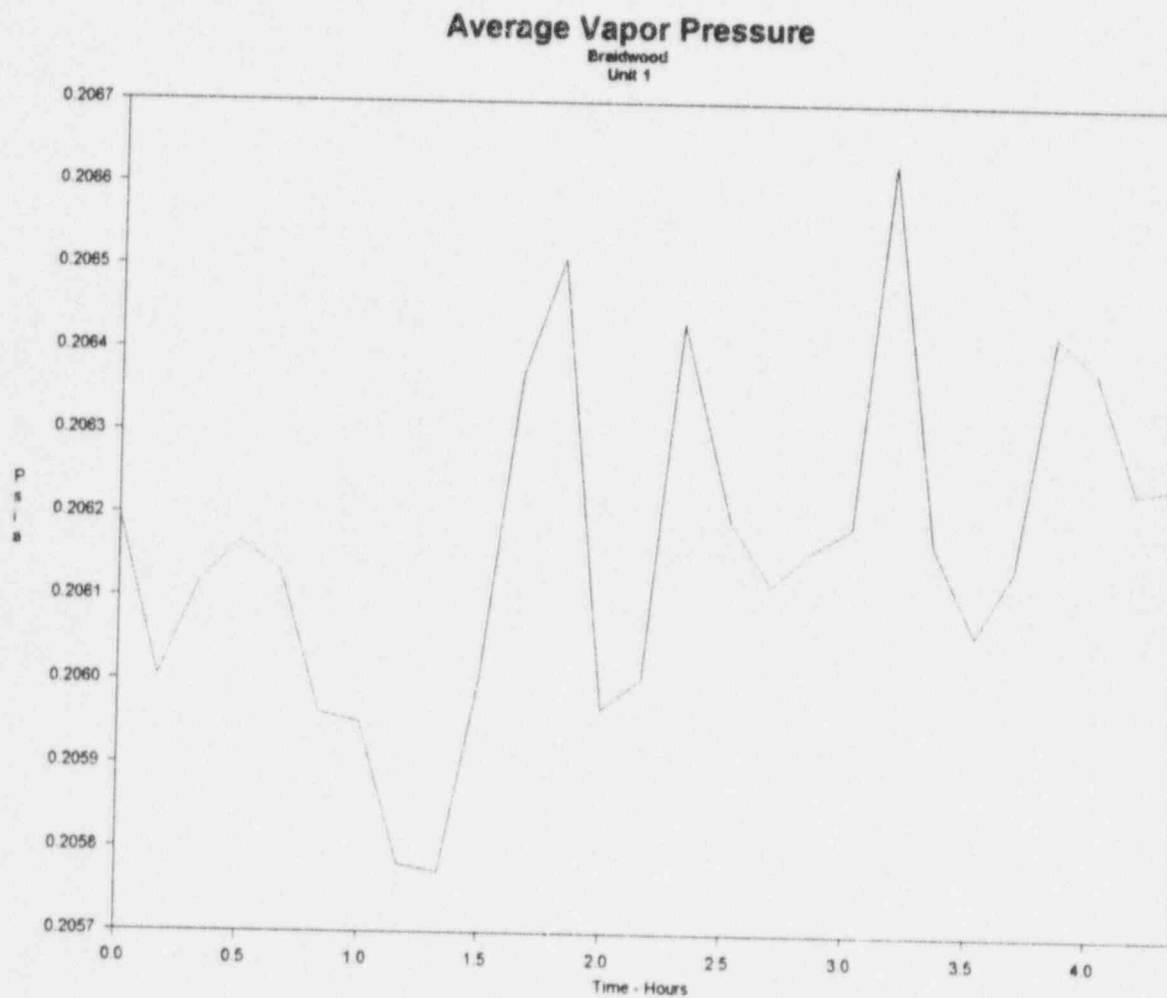


Figure D.3.6 Containment Average Vapor Pressure during the Induced Leak Rate

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E. TEST CALCULATIONS

Calculations for the test were based on Braidwood Station procedure 1BWVS 6.1.2.a-1. Mass Point Analysis Method was used for the calculations of this test. This method is approved in accordance to ANSI/ANS 56.8, 1981 standards and is based upon Linear Regression Techniques. All equations used can be reviewed in Appenbix B of the American National Standard ANSI/ANS 56.8, 1981

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F. TEST RESULTS AND INTERPRETATIONS

F.1 STATISTICAL LEAK RATE TEST RESULTS

The "AS FOUND" statistical average leak rate (95% UCL) before any corrections was 0.06324 wt%/day. The "AS LEFT" statistical average leak rate (95% UCL) after corrections was 0.06419 wt%/day.

Containment dry air temperature and relative humidity trended downward throughout the test. This is indicative of a stable containment with no major heat sources as the reactor coolant was kept reasonably constant throughout the test. Measured tank and containment sump levels were not significantly changed from the beginning to end of test.

This test was performed with out any penetration being isolated during the test, except for the inadvertent one (P-41). 4 penetrations were left isolated before the test started and were left isolated for the duration of the test. Penalties were asessed for these penetrations and added to the 95% UCL.

F.2 INDUCED LEAK RATE TEST

The Induced Test was performed following the Statistical Test. After a 2 hour period for stabilization of the known induced leak (7.5 SCFM) the induced test was started. The Induced test was completed in approximately 4.5 hours with successful results. The sum of the statistical measured leak rate (L_{am}) and the flowmeter induced leak rate (L_o) was verified to be stable and within $\pm 0.25L_a$ of the Measured Composite leak rate (L_c). No abnormal containment response or significant events occurred during this test. The results are listed below:

L_o = Flowmeter Induced leak 7.5 scfm (0.09715 wt%/day)
 L_{am} = Measured statistical leak rate (0.06174 wt%/day)
 L_c = The measured composite Leak rate (0.1456 wt%/day)
 L_a = .1 wt%/day or 7.72 scfm

L_o is between 75% and 125% of L_a . 7.5 scfm was the superimposed leak rate on the flowmeter. L_c is within the acceptance criteria range of $L_o + L_{am} \pm .25L_a$

$$(L_o + L_{am} - .25L_a) \leq L_c \leq (L_o + L_{am} + .25L_a)$$

$$.13389 \leq .1456 \leq .18389$$

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F.3 COMPARISON TO PREVIOUS TEST RESULTS

This was the third ILRT performed at Braidwood Unit 1. The previous test was performed March 4th to April 22nd, 1994 which was the 4th refuel outage for Braidwood Unit 1.

The statistical average containment leakage rate during the 1994 test was 0.04499 wt%/day after a 24 hour Mass Plot test. The 95% upper confidence limit of the containment leakage rate was 0.04574 wt%/day.

The induced leak rate during the 1994 test was .1284 wt%/day after 4 hours. This was within the 0.25 La of the sum of the statistical average leak rate and the induced leak rate.

F.4 TYPE B AND C TEST RESULTS FOR A1R05

Local leak rates performed during A1R05 can be reviewed in Appendix F.

F.5 TYPE B AND C TEST RESULTS FOR A1R04

Local leak rates performed during A1R04 can be reviewed in Appendix F.

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APPENDIX A - INSTRUMENT SPECIFICATION

The computer used is a 486/25ms lap top with a math-co processor.

Instruments used :

- 34 Graftel model 9202 temperature sensors, range 32-150 °F,
accuracy $\pm .5$ degree F
- 12 Graftel model 9203 relative humidity sensors, range 30-90%,
accuracy $\pm 5\%$
- 2 Paroscientific precision pressure monitors model 760-100-A, range
0-100 psia , accuracy $\pm .020\%$ of span
- 1 Fisher Porter flowmeter model 10A3555-S, range 0-10.2 scfm,
accuracy $\pm 1\%$ max flow

BRAIDWOOD UNIT 1 ILRT FINAL REPORT

APPENDIX B TEMPERATURE STABILIZATION DATA

The following tables present the data for the temperature stabilization phase of the ILRT. The temperature stabilization phase is defined as data collected from data sets 215 to 268. The following data is included:

1. Containment Pressure in psia
2. Containment Temperature in deg F
3. Containment Dew point in deg
4. Containmnet Mass

Temperature Stabilization Data

Braidwood
Unit 1

RDG	TIME	Comp 1 Press	Comp 1	Comp 1 DP	Comp 1 Mass
215	Nov 08 07:22:38	61.784	70.329	53.718	866565.932
216	Nov 08 07:32:38	61.720	69.842	52.978	866464.553
217	Nov 08 07:42:38	61.668	69.483	53.050	866325.084
218	Nov 08 07:52:39	61.628	69.150	53.202	866281.746
219	Nov 08 08:02:39	61.595	68.886	53.412	866233.346
220	Nov 08 08:12:39	61.569	68.685	53.656	866170.694
221	Nov 08 08:22:40	61.547	68.486	53.762	866177.581
222	Nov 08 08:32:40	61.529	68.335	53.846	866152.977
223	Nov 08 08:42:40	61.513	68.201	53.901	866137.326
224	Nov 08 08:52:41	61.499	68.092	53.959	866114.150
225	Nov 08 09:02:41	61.486	67.983	53.940	866120.423
226	Nov 08 09:12:41	61.475	67.897	53.939	866100.299
227	Nov 08 09:22:42	61.464	67.799	53.912	866116.854
228	Nov 08 09:32:42	61.455	67.713	53.970	866110.248
229	Nov 08 09:42:42	61.445	67.662	54.029	866060.197
230	Nov 08 09:52:43	61.437	67.589	53.967	866065.305
231	Nov 08 10:02:43	61.429	67.529	53.990	866048.036
232	Nov 08 10:12:43	61.421	67.459	53.945	866058.444
233	Nov 08 10:22:44	61.414	67.426	53.941	866014.534
234	Nov 08 10:32:44	61.408	67.368	53.955	866014.939
235	Nov 08 10:42:44	61.401	67.321	53.963	866001.126
236	Nov 08 10:52:45	61.395	67.275	53.922	865995.900
237	Nov 08 11:02:45	61.390	67.242	53.978	865967.603
238	Nov 08 11:12:45	61.385	67.203	54.034	865952.286
239	Nov 08 11:22:46	61.380	67.145	53.995	865979.794
240	Nov 08 11:32:46	61.375	67.137	53.997	865930.548
241	Nov 08 11:42:46	61.371	67.103	53.957	865927.343
242	Nov 08 11:52:47	61.367	67.076	53.953	865913.957
243	Nov 08 12:02:47	61.363	67.038	53.983	865918.628
244	Nov 08 12:12:47	61.359	66.993	53.918	865943.575
245	Nov 08 12:22:48	61.355	66.971	53.907	865927.466
246	Nov 08 12:32:48	61.351	66.929	53.893	865942.755
247	Nov 08 12:42:48	61.348	66.918	53.922	865912.167
248	Nov 08 12:52:49	61.345	66.892	53.914	865914.433
249	Nov 08 13:02:49	61.341	66.881	53.867	865889.125
250	Nov 08 13:12:49	61.339	66.874	53.916	865859.569
251	Nov 08 13:22:50	61.336	66.831	53.873	865897.703
252	Nov 08 13:32:50	61.333	66.824	53.901	865865.675
253	Nov 08 13:42:50	61.331	66.808	53.902	865853.186
254	Nov 08 13:52:51	61.328	66.784	53.902	865848.585
255	Nov 08 14:02:51	61.325	66.743	53.873	865886.035
256	Nov 08 14:12:51	61.323	66.738	53.888	865854.217
257	Nov 08 14:22:52	61.320	66.730	53.879	865834.849
258	Nov 08 14:32:52	61.318	66.719	53.887	865814.446
259	Nov 08 14:42:52	61.315	66.699	53.875	865815.204
260	Nov 08 14:52:53	61.313	66.677	53.867	865814.761
261	Nov 08 15:02:53	61.310	66.665	53.903	865799.720
262	Nov 08 15:12:53	61.308	66.639	53.818	865812.358
263	Nov 08 15:22:54	61.305	66.611	53.842	865823.689

Temperature Stabilization Data

Braidwood

Unit 1

RDG	TIME	Comp 1 Press	Comp 1	Comp 1 DP	Comp 1 Mass
264	Nov 08 15:32:54	61.303	66.606	53.834	865801.696
265	Nov 08 15:42:54	61.301	66.605	53.843	865774.603
266	Nov 08 15:52:55	61.298	66.568	53.773	865804.275
267	Nov 08 16:02:55	61.296	66.546	53.806	865800.386
268	Nov 08 16:12:55	61.294	66.534	53.811	865787.783

BRAIDWOOD UNIT 1 ILRT FINAL REPORT

APPENDIX C STATISTICAL LEAK RATE TEST DATA

The following tables present the data for the leak test phases of the ILRT using the Mass Plot Method. The measured leak test is defined as the interval between data sets 268 to 424 inclusive. This corresponds to a 26 hour and 2 minute test duration. The following data is included:

1. Containment Mass Point Leak Rate
2. Containment Average Pressure in psia
3. Containment Average Temperature in deg F
4. Containment Average Dew Point in deg F

Mass Point Leak Rate Analysis

Braidwood
Unit 1

RDG	TIME (MINUTES)	NORM. MASS	MEASURED LEAK (WT %/DAY)	UCL LEAK (WT %/DAY)
268	0.00	1.000000	-	-
269	10.02	0.999971	0.410777	-
270	20.02	0.999983	0.120311	1.556721
271	30.02	0.999990	0.025977	0.298998
272	40.03	0.999947	0.125674	0.310777
273	50.03	0.999937	0.157175	0.273545
274	60.03	0.999889	0.225797	0.337271
275	70.05	0.999932	0.183474	0.276605
276	80.05	0.999960	0.124918	0.220052
277	90.05	0.999942	0.102188	0.180576
278	100.07	0.999923	0.097547	0.160829
279	110.07	0.999914	0.096341	0.148417
280	120.07	0.999907	0.095737	0.139352
281	130.08	0.999906	0.093079	0.130246
282	140.08	0.999893	0.093518	0.125504
283	150.08	0.999894	0.091348	0.119254
284	160.10	0.999910	0.083666	0.109365
285	170.10	0.999913	0.076123	0.100102
286	180.10	0.999925	0.066827	0.090148
287	190.12	0.999886	0.067029	0.087946
288	200.12	0.999870	0.069387	0.088400
289	210.12	0.999894	0.066182	0.083712
290	220.13	0.999892	0.063319	0.079536
291	230.13	0.999857	0.065516	0.080506
292	240.13	0.999911	0.059519	0.074507
293	250.15	0.999868	0.059511	0.073320
294	260.15	0.999871	0.058722	0.071510
295	270.15	0.999813	0.063831	0.076710
296	280.17	0.999844	0.064445	0.076433
297	290.17	0.999853	0.063685	0.074884
298	300.17	0.999889	0.059517	0.070751
299	310.18	0.999836	0.060126	0.070662
300	320.18	0.999787	0.064022	0.074619
301	330.18	0.999820	0.064560	0.074538
302	340.20	0.999836	0.063649	0.073090
303	350.20	0.999797	0.065078	0.074095
304	360.20	0.999765	0.067981	0.076961
305	370.22	0.999807	0.067743	0.076247
306	380.22	0.999788	0.068296	0.076376
307	390.22	0.999783	0.068818	0.076505
308	400.23	0.999814	0.067472	0.074896
309	410.23	0.999802	0.066640	0.073752
310	420.23	0.999757	0.067788	0.074657

Mass Point Leak Rate Analysis

Braidwood
Unit 1

RDG	TIME (MINUTES)	NORM. MASS	MEASURED LEAK (WT %/DAY)	UCL LEAK (WT %/DAY)
311	430.25	0.999772	0.067909	0.074462
312	440.25	0.999781	0.067428	0.073704
313	450.25	0.999736	0.068651	0.074767
314	460.27	0.999753	0.068866	0.074723
315	470.47	0.999749	0.069027	0.074639
316	480.47	0.999737	0.069418	0.074811
317	490.48	0.999749	0.069189	0.074369
318	500.48	0.999725	0.069633	0.074626
319	510.48	0.999733	0.069623	0.074422
320	520.50	0.999757	0.068747	0.073440
321	530.50	0.999717	0.068976	0.073499
322	540.50	0.999714	0.069144	0.073504
323	550.52	0.999701	0.069506	0.073724
324	560.52	0.999712	0.069411	0.073479
325	570.52	0.999661	0.070495	0.074559
326	580.53	0.999683	0.070828	0.074767
327	590.53	0.999647	0.071854	0.075787
328	600.53	0.999691	0.071673	0.075480
329	610.55	0.999662	0.072023	0.075721
330	620.55	0.999668	0.072108	0.075689
331	630.55	0.999634	0.072787	0.076316
332	640.57	0.999642	0.073146	0.076583
333	650.57	0.999634	0.073533	0.076886
334	660.57	0.999627	0.073926	0.077200
335	670.58	0.999658	0.073623	0.076814
336	680.58	0.999640	0.073565	0.076663
337	690.58	0.999613	0.073898	0.076923
338	700.60	0.999608	0.074203	0.077158
339	710.60	0.999654	0.073640	0.076563
340	720.60	0.999612	0.073704	0.076547
341	730.62	0.999612	0.073682	0.076448
342	740.62	0.999579	0.074092	0.076812
343	750.62	0.999591	0.074215	0.076865
344	760.63	0.999643	0.073510	0.076179
345	770.63	0.999602	0.073363	0.075967
346	780.63	0.999590	0.073315	0.075853
347	790.65	0.999567	0.073514	0.075995
348	800.65	0.999593	0.073295	0.075724
349	810.65	0.999602	0.072913	0.075310
350	820.67	0.999593	0.072606	0.074964
351	830.67	0.999520	0.073135	0.075492
352	840.67	0.999598	0.072653	0.075000
353	850.68	0.999568	0.072491	0.074789

Mass Point Leak Rate Analysis

Braidwood
Unit 1

RDG	TIME (MINUTES)	NORM. MASS	MEASURED LEAK (WT %/DAY)	UCL LEAK (WT %/DAY)
354	860.68	0.999569	0.072277	0.074531
355	870.68	0.999579	0.071906	0.074137
356	880.70	0.999546	0.071863	0.074044
357	890.70	0.999574	0.071469	0.073634
358	900.70	0.999526	0.071548	0.073668
359	910.72	0.999548	0.071351	0.073433
360	920.72	0.999544	0.071157	0.073202
361	930.72	0.999530	0.071057	0.073061
362	940.73	0.999543	0.070794	0.072772
363	949.95	0.999536	0.070572	0.072520
364	959.95	0.999521	0.070459	0.072369
365	969.97	0.999524	0.070278	0.072158
366	979.97	0.999541	0.069924	0.071797
367	989.97	0.999553	0.069439	0.071332
368	999.98	0.999522	0.069203	0.071072
369	1009.98	0.999502	0.069110	0.070945
370	1019.98	0.999532	0.068736	0.070570
371	1030.00	0.999463	0.068894	0.070700
372	1040.00	0.999432	0.069248	0.071051
373	1050.00	0.999502	0.069013	0.070796
374	1060.02	0.999458	0.069079	0.070830
375	1070.02	0.999449	0.069177	0.070899
376	1079.25	0.999471	0.069075	0.070768
377	1090.55	0.999433	0.069212	0.070879
378	1100.55	0.999434	0.069303	0.070942
379	1110.57	0.999425	0.069418	0.071031
380	1120.57	0.999450	0.069324	0.070911
381	1130.57	0.999477	0.069023	0.070609
382	1140.58	0.999399	0.069212	0.070780
383	1150.58	0.999386	0.069443	0.071000
384	1160.58	0.999431	0.069350	0.070883
385	1170.67	0.999459	0.069063	0.070594
386	1180.60	0.999404	0.069091	0.070597
387	1190.60	0.999403	0.069098	0.070579
388	1200.62	0.999386	0.069179	0.070637
389	1210.62	0.999406	0.069111	0.070546
390	1220.62	0.999386	0.069129	0.070541
391	1230.63	0.999427	0.068891	0.070299
392	1240.63	0.999429	0.068632	0.070040
393	1250.63	0.999364	0.068706	0.070093
394	1260.65	0.999347	0.068843	0.070214
395	1270.65	0.999418	0.068577	0.069950
396	1280.65	0.999431	0.068233	0.069624

Mass Point Leak Rate Analysis

Braidwood
Unit 1

RDG	TIME (MINUTES)	NORM. MASS	MEASURED LEAK (WT %/DAY)	UCL LEAK (WT %/DAY)
397	1290.67	0.999429	0.067891	0.069299
398	1300.67	0.999378	0.067794	0.069183
399	1310.67	0.999366	0.067735	0.069105
400	1320.68	0.999356	0.067707	0.069057
401	1330.68	0.999351	0.067680	0.069009
402	1340.68	0.999385	0.067475	0.068799
403	1350.70	0.999442	0.066991	0.068375
404	1360.70	0.999426	0.066579	0.067999
405	1370.70	0.999436	0.066118	0.067585
406	1380.72	0.999467	0.065519	0.067074
407	1390.72	0.999420	0.065135	0.066711
408	1400.73	0.999347	0.065059	0.066614
409	1410.73	0.999328	0.065049	0.066582
410	1421.73	0.999353	0.064915	0.066433
411	1431.75	0.999340	0.064819	0.066318
412	1441.75	0.999360	0.064628	0.066118
413	1451.75	0.999366	0.064402	0.065887
414	1461.77	0.999369	0.064157	0.065640
415	1471.77	0.999364	0.063924	0.065404
416	1481.77	0.999381	0.063616	0.065105
417	1491.78	0.999374	0.063330	0.064824
418	1501.78	0.999353	0.063118	0.064606
419	1511.78	0.999393	0.062750	0.064260
420	1521.80	0.999357	0.062511	0.064019
421	1531.80	0.999380	0.062182	0.063702
422	1541.80	0.999296	0.062150	0.063652
423	1551.82	0.999300	0.062091	0.063574
424	1561.82	0.999381	0.061737	0.063240

Statistical Leak Rate Test Data

Braidwood
Unit 1

RDG	TIME	Comp 1 Press	Comp 1	Comp 1 DP
268	Nov 08 16:12:55	61.294	66.534	53.811
269	Nov 08 16:22:56	61.292	66.530	53.841
270	Nov 08 16:32:56	61.289	66.506	53.814
271	Nov 08 16:42:56	61.287	66.486	53.784
272	Nov 08 16:52:57	61.286	66.496	53.803
273	Nov 08 17:02:57	61.284	66.484	53.848
274	Nov 08 17:12:57	61.282	66.492	53.798
275	Nov 08 17:22:58	61.280	66.452	53.812
276	Nov 08 17:32:58	61.279	66.429	53.803
277	Nov 08 17:42:58	61.277	66.425	53.787
278	Nov 08 17:52:59	61.276	66.422	53.823
279	Nov 08 18:02:59	61.274	66.407	53.879
280	Nov 08 18:12:59	61.273	66.401	53.835
281	Nov 08 18:23:00	61.272	66.395	53.831
282	Nov 08 18:33:00	61.270	66.388	53.814
283	Nov 08 18:43:00	61.269	66.378	53.810
284	Nov 08 18:53:01	61.264	66.331	53.794
285	Nov 08 19:03:01	61.260	66.289	53.764
286	Nov 08 19:13:01	61.255	66.245	53.732
287	Nov 08 19:23:02	61.251	66.228	53.774
288	Nov 08 19:33:02	61.247	66.207	53.777
289	Nov 08 19:43:02	61.244	66.170	53.752
290	Nov 08 19:53:03	61.242	66.143	53.801
291	Nov 08 20:03:03	61.239	66.138	53.797
292	Nov 08 20:13:03	61.236	66.090	53.748
293	Nov 08 20:23:04	61.234	66.085	53.814
294	Nov 08 20:33:04	61.231	66.065	53.767
295	Nov 08 20:43:04	61.229	66.076	53.788
296	Nov 08 20:53:05	61.226	66.038	53.781
297	Nov 08 21:03:05	61.224	66.015	53.760
298	Nov 08 21:13:05	61.222	65.980	53.762
299	Nov 08 21:23:06	61.220	65.991	53.773
300	Nov 08 21:33:06	61.218	65.998	53.805
301	Nov 08 21:43:06	61.216	65.968	53.748
302	Nov 08 21:53:07	61.215	65.945	53.755
303	Nov 08 22:03:07	61.213	65.949	53.753
304	Nov 08 22:13:07	61.211	65.946	53.774
305	Nov 08 22:23:08	61.209	65.909	53.750
306	Nov 08 22:33:08	61.207	65.906	53.747
307	Nov 08 22:43:08	61.206	65.895	53.780
308	Nov 08 23:03:09	61.204	65.867	53.739
309	Nov 08 23:13:09	61.203	65.861	53.792
310	Nov 08 23:23:09	61.202	65.871	53.798
311	Nov 08 23:33:10	61.200	65.850	53.759
312	Nov 08 23:43:10	61.199	65.833	53.768
313	Nov 08 23:53:11	61.197	65.843	53.775
314	Nov 08 23:53:11	61.196	65.822	53.780
315	Nov 09 00:03:23	61.194	65.811	53.768
316	Nov 09 00:13:23	61.193	65.807	53.791

Statistical Leak Rate Test Data

Braidwood
Unit 1

RDG	TIME	Comp 1 Press	Comp 1	Comp 1 DP
317	Nov 09 00:23:24	61.192	65.791	53.757
318	Nov 09 00:33:24	61.191	65.793	53.794
319	Nov 09 00:43:24	61.189	65.778	53.759
320	Nov 09 00:53:25	61.188	65.754	53.734
321	Nov 09 01:03:25	61.187	65.763	53.778
322	Nov 09 01:13:25	61.188	65.775	53.754
323	Nov 09 01:23:26	61.188	65.786	53.802
324	Nov 09 01:33:26	61.189	65.789	53.798
325	Nov 09 01:43:26	61.190	65.820	53.865
326	Nov 09 01:53:27	61.191	65.814	53.825
327	Nov 09 02:03:27	61.191	65.834	53.830
328	Nov 09 02:13:27	61.191	65.813	53.836
329	Nov 09 02:23:28	61.191	65.827	53.875
330	Nov 09 02:33:28	61.191	65.826	53.841
331	Nov 09 02:43:28	61.191	65.840	53.866
332	Nov 09 02:53:29	61.191	65.836	53.842
333	Nov 09 03:03:29	61.191	65.838	53.851
334	Nov 09 03:13:29	61.190	65.834	53.837
335	Nov 09 03:23:30	61.190	65.815	53.872
336	Nov 09 03:33:30	61.189	65.820	53.870
337	Nov 09 03:43:30	61.189	65.830	53.879
338	Nov 09 03:53:31	61.189	65.834	53.852
339	Nov 09 04:03:31	61.189	65.809	53.836
340	Nov 09 04:13:31	61.188	65.827	53.867
341	Nov 09 04:23:32	61.188	65.821	53.879
342	Nov 09 04:33:32	61.188	65.841	53.867
343	Nov 09 04:43:32	61.187	65.827	53.870
344	Nov 09 04:53:33	61.186	65.796	53.827
345	Nov 09 05:03:33	61.186	65.813	53.843
346	Nov 09 05:13:33	61.186	65.815	53.869
347	Nov 09 05:23:34	61.186	65.826	53.888
348	Nov 09 05:33:34	61.185	65.806	53.866
349	Nov 09 05:43:34	61.184	65.796	53.844
350	Nov 09 05:53:35	61.183	65.794	53.878
351	Nov 09 06:03:35	61.183	65.825	53.941
352	Nov 09 06:13:35	61.183	65.786	53.874
353	Nov 09 06:23:36	61.182	65.794	53.903
354	Nov 09 06:33:36	61.182	65.795	53.879
355	Nov 09 06:43:36	61.181	65.782	53.908
356	Nov 09 06:53:37	61.181	65.798	53.901
357	Nov 09 07:03:37	61.181	65.781	53.872
358	Nov 09 07:13:37	61.180	65.799	53.899
359	Nov 09 07:23:38	61.180	65.788	53.899
360	Nov 09 07:33:38	61.179	65.782	53.892
361	Nov 09 07:43:38	61.179	65.781	53.941
362	Nov 09 07:53:39	61.178	65.774	53.917
363	Nov 09 08:02:52	61.178	65.781	53.883
364	Nov 09 08:12:52	61.178	65.779	53.933
365	Nov 09 08:22:53	61.178	65.778	53.909

Statistical Leak Rate Test Data

Braidwood
Unit 1

RDG	TIME	Comp 1 Press	Comp 1	Comp 1 DP
366	Nov 09 08:32:53	61.178	65.769	53.907
367	Nov 09 08:42:53	61.177	65.757	53.902
368	Nov 09 08:52:54	61.177	65.772	53.936
369	Nov 09 09:02:54	61.176	65.776	53.918
370	Nov 09 09:12:54	61.176	65.759	53.860
371	Nov 09 09:22:55	61.175	65.787	53.911
372	Nov 09 09:32:55	61.175	65.805	53.943
373	Nov 09 09:42:55	61.175	65.769	53.906
374	Nov 09 09:52:56	61.175	65.787	53.972
375	Nov 09 10:02:56	61.174	65.787	53.949
376	Nov 09 10:12:10	61.174	65.773	53.959
377	Nov 09 10:23:28	61.173	65.786	53.949
378	Nov 09 10:33:28	61.173	65.781	53.968
379	Nov 09 10:43:29	61.173	65.788	53.917
380	Nov 09 10:53:29	61.171	65.765	53.912
381	Nov 09 11:03:29	61.171	65.749	53.877
382	Nov 09 11:13:30	61.170	65.779	53.963
383	Nov 09 11:23:30	61.169	65.772	53.983
384	Nov 09 11:33:30	61.169	65.753	53.913
385	Nov 09 11:43:35	61.168	65.735	53.878
386	Nov 09 11:53:31	61.168	65.757	53.921
387	Nov 09 12:03:31	61.168	65.753	53.942
388	Nov 09 12:13:32	61.167	65.756	53.937
389	Nov 09 12:23:32	61.167	65.744	53.983
390	Nov 09 12:33:32	61.166	65.747	53.951
391	Nov 09 12:43:33	61.165	65.726	53.899
392	Nov 09 12:53:33	61.165	65.723	53.869
393	Nov 09 13:03:33	61.165	65.747	53.952
394	Nov 09 13:13:34	61.164	65.752	53.963
395	Nov 09 13:23:34	61.164	65.715	53.927
396	Nov 09 13:33:34	61.163	65.708	53.864
397	Nov 09 13:43:35	61.163	65.706	53.885
398	Nov 09 13:53:35	61.162	65.721	53.902
399	Nov 09 14:03:35	61.161	65.718	53.978
400	Nov 09 14:13:36	61.161	65.720	53.972
401	Nov 09 14:23:36	61.162	65.733	53.925
402	Nov 09 14:33:36	61.162	65.715	53.939
403	Nov 09 14:43:37	61.162	65.685	53.906
404	Nov 09 14:53:37	61.162	65.691	53.928
405	Nov 09 15:03:37	61.161	65.681	53.929
406	Nov 09 15:13:38	61.161	65.661	53.909
407	Nov 09 15:23:38	61.159	65.674	53.939
408	Nov 09 15:33:39	61.159	65.710	53.934
409	Nov 09 15:43:39	61.159	65.717	53.940
410	Nov 09 15:54:39	61.159	65.701	53.970
411	Nov 09 16:04:40	61.159	65.707	53.962
412	Nov 09 16:14:40	61.158	65.693	53.969
413	Nov 09 16:24:40	61.157	65.686	53.932
414	Nov 09 16:34:41	61.157	65.681	53.947

Statistical Leak Rate Test Data

Braidwood
Unit 1

RDG	TIME	Comp 1 Press	Comp 1	Comp 1 DP
415	Nov 09 16:44:41	61.156	65.678	53.947
416	Nov 09 16:54:41	61.156	65.663	53.942
417	Nov 09 17:04:42	61.155	65.662	53.926
418	Nov 09 17:14:42	61.155	65.671	53.972
419	Nov 09 17:24:42	61.154	65.645	53.952
420	Nov 09 17:34:43	61.154	65.661	53.938
421	Nov 09 17:44:43	61.154	65.648	53.948
422	Nov 09 17:54:43	61.153	65.684	53.999
423	Nov 09 18:04:44	61.153	65.682	53.963
424	Nov 09 18:14:44	61.153	65.640	53.934

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APPENDIX D INDUCED LEAK RATE TEST DATA

The following tables present the data for the induced leakage phase of the ILRT. The induced leakage test is defined as the interval between data sets 438 to 464 inclusive. This corresponds to a 4 hours and 23 minute test duration. The following data is included: Data sets 425 through 437 were the stablization period of the Induced Test. The stablization period was approximately 2 hours.

1. Containment Mass Plot Leak Rate
2. Containment Average Pressure in psia
3. Containment Average Temperature in deg F
4. Containment Average Dew point in deg F

Induced Leak Rate Data

Braidwood
Unit 1

RDG	TIME	MP Leak %/day	Comp 1 Press	Comp 1	Comp 1 DP
438	Nov 09 20:34:49	0.000	61.142	65.626	53.992
439	Nov 09 20:44:49	-0.167	61.142	65.618	53.967
440	Nov 09 20:54:49	0.184	61.141	65.630	53.982
441	Nov 09 21:04:50	0.122	61.140	65.615	53.989
442	Nov 09 21:14:50	0.103	61.140	65.615	53.984
443	Nov 09 21:24:50	0.175	61.139	65.633	53.961
444	Nov 09 21:34:51	0.168	61.138	65.624	53.960
445	Nov 09 21:44:51	0.135	61.137	65.611	53.937
446	Nov 09 21:54:51	0.133	61.137	65.618	53.936
447	Nov 09 22:04:52	0.169	61.135	65.631	53.967
448	Nov 09 22:14:52	0.178	61.135	65.622	54.015
449	Nov 09 22:24:52	0.176	61.134	65.616	54.034
450	Nov 09 22:34:53	0.151	61.133	65.592	53.962
451	Nov 09 22:44:53	0.149	61.132	65.604	53.967
452	Nov 09 22:54:54	0.155	61.132	65.620	54.024
453	Nov 09 23:06:54	0.142	61.131	65.589	53.992
454	Nov 09 23:16:54	0.134	61.130	65.593	53.982
455	Nov 09 23:26:55	0.136	61.129	65.603	53.988
456	Nov 09 23:36:55	0.140	61.129	65.609	53.991
457	Nov 09 23:46:55	0.153	61.128	65.633	54.050
458	Nov 09 23:56:56	0.142	61.128	65.579	53.989
459	Nov 10 00:07:08	0.133	61.127	65.577	53.974
460	Nov 10 00:17:08	0.132	61.126	65.592	53.985
461	Nov 10 00:27:09	0.136	61.125	65.604	54.023
462	Nov 10 00:37:09	0.145	61.124	65.625	54.017
463	Nov 10 00:47:09	0.145	61.124	65.595	53.997
464	Nov 10 00:57:10	0.146	61.122	65.595	53.998

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APPENDIX E TYPE A TEST CORRECTIONS

The following table presents the Type A Test corrections for leakage pathways ISOLATED during the ILRT and pathways left isolated and full.

Pen No.	Description	Local Leak Rate Test No.	Minpath Leakrate
21	Component Cooling	1BwVS 6.1.2.d-1.12	0.4 scfh
24	Component Cooling	1BwVS 6.1.2.d-1.12	0.4 scfh
25	Component Cooling	1BwVS 6.1.2.d-1.12	0.4 scfh
16	Cnmt Spray	1BwVS 6.1.2.d-1.14	0.4 scfh
41	Chemical Volume Let Down	1BwVS 6.1.2.d-1.9	1.2 scfh
4	Cnmt Pressurization line	1BwVS 6.1.2.d-1.24	1.6 scfh
Total			<u>4.4 scfh</u>

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APPENDIX F TYPE B AND C LOCAL LEAK RATE DATA

Local leak rate testing has been performed once (A1R05) since the last ILRT performed in 1994 (A1R04), and were performed before and after the ILRT performed in November of 1995 (A1R05). Results indicated for A1R04 and A1R05 are "AS LEFT" LLRT values performed during the outages. Several Containment penetrations, including the containment airlocks and purge valves, are tested at more frequent intervals, as specified by the stations Technical Specifications. The results below represent the periodic Type B and C LLRTs performed at 18 month intervals as specified in 10CFR50 Appendix J.

<u>PENETRATIONS</u>	<u>SYSTEM</u>	<u>LLRT RESULTS</u>	
		A1R04 3/94	A1R05 11/95
		<u>sccm</u>	<u>scfh</u>
ZONE 1	ELEC	12.0	0.4
ZONE 2	ELEC	680.0	0.4
ZONE 3	ELEC	11.9	0.4
ZONE 4	ELEC	108.8	0.4
FUEL X-FER TUBE		20.1	0.4
FUEL X-FER BELLOWS		62.4	0.4
EQUIPMENT HATCH		33.4	0.4
I-3	VQ	3.5	0.4
I-3	VQ	7.8	0.4
P-70	PS	10.0	0.4
P-70	PS	1900.0	2.0
P-70	PS	8.6	0.4
P-70	PS	1200.0	2.1
P-45	PS	35.0	0.7
P-45	PS	640.0	0.5
P-36	PS	28.0	1.6
P-36	PS	74.3	4.6
P-28	CV	60.0	2.5
P-41	CV	108.4	5.0
P-11	RE	600.0	0.8
P-65	RE	27.8	0.4
P-65	RE	8.1	0.4
P-27	RY	151.6	0.6
P-27	RY	3870.0	11.0
P-44	RY	33.2	0.4
I-5	RY	30.0	0.4
P-21	CC	780.0	0.4
P-24	CC	320.0	0.9
P-25	CC	140.0	0.4
P-32	FC	10.1	0.4
P-57	FC	22.2	0.4
P-1	CS	103.3	0.4
P-16	CS	586.0	1.1
P-39	IA	269.0	0.5
P-56	SA	10.0	20.0
P-30	WM	310.0	2.0
P-47	RF	25.5	0.4
P-13	OG	65.0	0.4
P-13	OG	11.0	0.4
P-69	OG	75.0	0.4

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APPENDIX F TYPE B AND C LOCAL LEAK RATE TEST DATA cont.

<u>PENETRATIONS</u>	<u>SYSTEM</u>	<u>LLRT RESULTS</u>	
		AIR04 3/95 (sccm)	AIR05 11/95 (scfh)
P-23	OG	475.0	0.4
P-52	PR	30.0	0.4
P-52	PR	2290.0	0.4
EQUIP. HATCH	PR	3.8	0.4
	PR	39.0	0.4
EMERG. HATCH	PR	30.0	1.1
	PR	633.0	2.6
P-5	WO	241.0	4.0
P-8	WO	280.0	0.8
P-6	WO	620.0	1.4
P-10	WO	1900.0	1.0
P-55	SI	105.0	0.4
P-55	SI	72.0	1.1
P-4	CPP	60.0	1.6
P-63	SPARE	8.9	0.4
P-64	SPARE	7.2	0.4
P-74	SPARE	11.8	0.4
EQUIP HATCH AIRLOCK		4900.0	14.0
FLANGE		1.7	0.4
EMERG HATCH AIRLOCK		3250.0	14.0
FLANGE #1		395.0	0.4
FLANGE #2		390.0	0.4
P-97	VQ	2410.0	4.8
P-95	VQ	475.0	1.5
P-96	VQ	100.0	0.4
P-94	VQ	15.0	2.4

The values in AIR04 are in standard cubic centimeters per minute (sccm). In AIR05 new flow rate instruments were used and the lowest obtainable reading on the flowmeter is .4 scfh. The leakage rate for penetrations with .4 scfh may have been lower, but it is unknown. The value .4 is a conservative value and significantly below acceptance criteria. To convert from sccm to scfh, multiply the sccm value by 0.002119.