REACTOR CONTAINMENT BUILDING
INTEGRATED LEAK RATE TEST REPORT

1992 Turkey Point Unit #3 ILRT

Date of Test Completion: November 14, 1992

Prepared by the Turkey Point Nuclear Plant
Test And Performance Group.
Florida Power And Light Co.

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I. INTRODUCTION AND PURPOSE

On November 12, 1992, an Integrated Leakage Rate Test (ILRT) was successfully conducted on the primary containment structure of the Florida Power and Light's Turkey Point Nuclear Power Plant Unit No.3 Pressurized Water Reactor. This test was performed in accordance with the Code of Federal Regulations, Title 10, Part 50, Appendix J, titled: "Primary Reactor Containment Leakage Testing for Water Cooled Power Reactors". As required by the Turkey Point Plant Technical Specifications, this test was performed within 40±10 months from the previous May, 28, 1989 Integrated Leakrate Rate Test.

This report describes the test method and presents the results of the Type "A" ILRT test, including the Supplemental Test (also known as the Controlled Leakage Rate Test, or CLRT), used for instrumentation verification. Summaries of the Types "B" and "C" Local Leakage Rate Tests (LLRT) performed since the last ILRT are also included. Turkey Point Nuclear Plant Operating Procedures OP 13100.1, Integrated Leakage Rate Test, 13100.3, Unit 3 Valve Line-Up for ILRT, and 13404.1, Local Leak Rate Tests, provided necessary guidance during the performance of these tests.

II. TEST DISCUSSION

A. Description of the Containment

The containment structure completely encloses the reactor and reactor coolant system, and provides the final radiological barrier between fission materials and the environment.

Containment pressure retention is achieved by concrete walls that are post tensioned by a steel tendon system. Leakage prevention is achieved by a 0.25 inch steel liner on the inside of the containment wall.

Under accident conditions, leakage out of containment is not expected to exceed a predetermined amount. A periodic Leak Testing Program of the containment penetrations and structural inspections help assure containment leakage will not exceed the expected amount.

Applicable Containment Specifications:

Inside diameter = 116 ft. Inside height = 169 ft.

Approximate free volume = 1,550,000 cubic feet

Calculated peak accident pressure = 49.9 psig

Analyzed Leakage = La = 0.25 % per day of air mass inside Containment at 49.9 psi.

Acceptance Criteria for the ILRT = 0.75 * La
= 0.1875 % per day of air mass inside Containment at 49.9 psi.

During the performance of the ILRT, the containment penetrations and isolation valves were aligned per OP-13100.3 to simulate as closely as possible the post Accident Containment Configuration. Adjustments to the Test's results were made for any valve lineups not representative of post LOCA configuration, and for any level increases noted during the test for vessels located inside Containment.

B. Description of the ILRT Instrumentation

The Containment Building was instrumented to permit leakage rate determination in accordance with the Code of Federal Regulations, Title 10, Part 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water Cooled Power Reactors".

The ILRT instrumentation provided a sufficient quantity of sensors of each type to accommodate instrument failures during the test without jeopardizing acceptability of the test's results. The instrumentation allowed leakage rate determination by the Mass Point Analysis and the Total Time Analysis method. Air Mass (M) is calculated according to the Ideal Gas Law as follows:

$$M = 144 * ((P-P_v)*V)/R*T$$

M = Containment Air Mass (Lbs)
P = Containment Total Absolute Pressure, Psia
T = Containment Absolute Temperature, Deg R
P_v= Containment Vapor Pressure, Psia, at Temp. T.
V = Containment Net Free Volume, Ft^3
R = Universal Gas Constant (Ft*Lbf/Lbm*Deg R)
(P_v and T are weighted average values.)

The Mass Point Analysis Method calculates the actual mass of dry air within the Containment. The leakage rate becomes the time rate of change of the calculated air mass. The Total Time Analysis examines the difference in the Containment air mass between a given time (t) and the initial air mass. The leakage rate becomes the difference in masses divided by the initial mass. Both these methods are expressed as a percentage of mass lost in a 24 hour period. Additionally, the BN-TOP-1 method is a shortened (minimum eight hours) version of the Total Time Analysis method, but utilizes more stringent statistical criteria.

The primary measurement variables required for the calculation of Containment air mass are absolute pressure, relative humidity and temperature as a function of time. During the Supplemental Test, a controlled containment bleed off flow is also a measured variable. The average containment absolute temperature is determined by measuring specific local temperatures throughout the containment and applying a mass and volume weighted averaging technique. The volume fraction for each temperature sensor is determined based upon geometrical calculations. Average containment water vapor pressure is determined by measuring specific local relative humidities throughout the containment. This is converted to local vapor pressure using local group temperatures, a steam table, and a mass and volume weighted averaging technique. The volume fractions for the relative humidity sensors are determined in the same manner as for the temperature sensors. Wherever possible, temperature and relative humidity sensors were placed adjacent to each other.

1. Temperature Instrumentation

Twenty (20) Platinum Resistance Temperature Detectors (RTDs) located throughout the Containment allowed measurement of the weighted average air temperature. Figures 1A through 1E depict the location of the RTDs in the containment. Each RTD sensor has a calibrated resistance versus temperature curve accurate to less than $\pm 0.5°F$. The sensitivity and repeatability of each RTD sensor is less than ± 0.054 °F.

2. Humidity Instrumentation

Nine(9) Phys-Chem Relative Humidity Detectors (RHDs) located throughout the Containment allow measurement of the weighted average Containment vapor pressure. Figures 1A through 1E depict the location of the RHDs in the containment. The RHDs connect to two, five channel Humeter amplifiers located outside the containment. The calibrated accuracy of the RHDs is ± 2.0 % °F, the repeatability of the RHDs is ± 0.25 % RH and the sensitivity of the RHDs is ± 0.5 % °F. (During the stabilization period, RHD No.2 malfunctioned, and was subsequently deleted from the test calculations. See Description of Test Sequence for more detail).

3. Pressure Instrumentation

Two(2) direct read out, Texas Instruments precision pressure monitors measured Containment absolute pressure. Figure 2 depicts the arrangement of the tubing connections between the monitors and the Containment. Only one pressure monitor was used for leakage rate calculations, with the second monitor as back-up in the event of failure. The monitors had a repeatability of ± 0.002 Psia.

4. Flow Instrumentation

A variable area float-type rotometer is used to superimpose a leakage during the Supplemental Test. Figure 5 depicts the piping configuration between the rotometer and the Containment. The rotometer has a ± 1.0% accuracy, and a ± 0.5% repeatability.

Two other instruments were used during the Supplemental Test. A local pressure gauge was installed in the Containment vent piping and a contact pyrometer was placed on the inlet piping leading to the Rotometer. These instruments were monitored to allow for compensation in the event of substantial pressure or temperature deviation from the Rotometer's calibration point.

5. Atmospheric conditions

Ambient atmospheric conditions were monitored during the course of the test. Temperature, wind speed and wind direction were obtained from the Turkey Point Unit 3&4 Control Room. Barometric pressure was obtained from Turkey Point Unit 1&2 Control Room. A summary of the information is contained in Appendix C.

6. Instrument Selection Guide (ISG) Calculation

The Instrument Selection Guide (ISG) evaluates the equipment's ability to detect leakage in the required range by compiling instrument sensitivity and resolution for each process variable. The ISG for the operable instrumentation during this test (20 temperature sensors, 8 relative humidity sensors, and 1 pressure sensor) was calculated to be 0.0054 % per day. The calculation was performed by the ILRT computer program, a description of which is detailed below. This ISG was verified to be less than 0.25 La, as required in ANSI/ANS 56.8-1987, Containment System Leakage Testing Requirements.

C. Description of the Computer Program

The leakage rate calculations were determined by a computer software program developed by Ebasco Plant Services, Incorporated. The Program is an interactive program written specifically for ease of use during all phases of the ILRT and Supplemental Test. The program is written in a high level, compiled, structured language and operates on a MS-DOS personal microcomputer. The program offers the flexibility of calculating leakage rates and the 95 % Upper Confidence Levels for Total Time, Mass Point, and Bn-TOP Analysis Methods, and provides extensive data verification routines. Ancillary portions of the computer program assist in determining whether temperature stabilization, ILRT, and Supplemental Test termination criteria are met. The Program also allows the user to monitor instrument repeatability error, which aids in the identification of any malfunctioning sensors.

The ILRT software is controlled in accordance with appropriate quality instructions and plant procedures. Prior to the Test, the Program underwent verification testing, in accordance with OP-13100.1, Appendix O. This test ensures the validity of the software version by comparing the software's calculations against known results from a previous test.

The program provides for deletion of a given instrument from the calculations if a sensor malfunctions. The deletion of a given instrument is performed on all samples in the data base. Volume fractions for the remaining instruments of that type are then recalculated based upon the placement and the amount of Containment volume sensed by these instruments.

During the test, data was recorded on magnetic media. In addition, two hard copies of the data were also made throughout the test by a printer attached to the test computer, and by the Datalogger's built in printer. During the test, temperature, pressure and humidity data were automatically transmitted from the ILRT instrumentation system to the computer at approximately 20 minute intervals. Figure 3 illustrates the connection between the ILRT instrumentation system and the computer analysis system.

D. Containment Pressurization equipment.

The equipment used to pressurize the Containment is shown in Figure 4. The eight oil-free industrial diesel-driven air compressors had a total nominal capacity of 12,000 SCFM. The compressed air was processed by a water cooled after-cooler, a moisture separator and a refrigerant air dryer.

E. Description of the Testing Sequence.

Preparations to pressurize the Containment for the conduct of the ILRT included internal and external inspections of the Containment structure; installation and check-out of the temporary ILRT instrumentation system; Types "B" and "C" Local Leakage Rate Testing of the Containment penetrations; alignment of the necessary valves and breakers for test conditions; installation and check-out of the temporary Containment pressurization facilities; removal of plant instrumentation that could be damaged by the test pressure; venting of any permanently installed tanks that could be damaged by the test pressure; and the removal or depressurization of any pressurized gas sources inside Containment. During the Containment inspection, no evidence of structual deterioration was identified which would have affected the Containment's structual integrity or leak-tightness.

Containment pressurization started at 08:24 Hrs, on 11/12/92, and was secured at 17:02 Hrs on 11/12/92 at a peak pressure of 67.602 psia. Appendix A1 illustrates the test sequence.

The temperature stabilization phase began at 17:10 Hrs on 11/12/92. External leakage surveys were initiated with no significant leakage found. At 00:40 Hrs, on 11/13/92, it was noted that RHD No.2, located on the 143' elevation of containment, read in excess of 100%. This sensor was subsequently deleted and the volume fractions for relative humidity were recalculated. At 01:59 Hrs, on 11/13/92, the BN-TOP-1 temperature stabilization criteria was met in accordance with plant procedure OP-13100.1, and ILRT measurements were intitiated. During the ensuing period, the relative humidity readings in the upper region of the containment began a downward trend, indicating mixing within the containment atmosphere. It was decided to extend the stabilization period, and at 04:40 Hrs, on 11/13/92, ILRT measurements once again were initiated. Appendix A2 contains the temperature stabilization results. At 12:40 Hrs, on 11/13/92, the acceptance criteria was met for the short (8 hour) duration test as described in Bechtel Corporation's Topical Report BN-TOP-1, Revision 1, "Testing Criteria for Integrated Leakage Rate Testing of Primary Containment Structures for Nuclear Power Plants." The Total Time fitted leakage rate was 0.0871% per day, and the BN-TOP Upper Confidence Limit was 0.1319% per day. These values are well below the test acceptance criteria of 0.1875% per day. Appendix A3 contains the ILRT data and test results.

At 12:40 Hrs, on 11/13/92, the Supplemental Test(CLRT) was started with a superimposed leakage rate of 14 SCFM. At 15:00 Hrs, on 11/13/92, the relative humidity readings from RHD No. 7, located on the 143' elevation, began to drop dramatically. At 17:00 Hrs, on 11/13/92, the RHD readings began to stabilize, and the CLRT measurements were re-started.

The Supplemental Test was completed at 21:00 Hrs on 11/13/92 with all acceptance criteria satisfied. The fitted Supplemental Test leakage rate was 0.396 % per day. Data analysis showed that the humidity and temperature sensors did not exhibit any unusual behavior and the tests results remained satisfactory for all calculated values. Appendix A4 contains the Supplemental Test data, results and acceptance criteria.

Containment depressurization was initiated at 21:15 Hrs, on 11/13/92, and was completed at 05:00 Hrs on 11/14/92. Figure 6 illustrates the depressurization piping configuration. Containment entry for post-test inspection was at 06:00 Hrs, 11/14/92. The post-test inspection detected no major anomalies or damage to the equipment or structures of the Containment.

III. TEST RESULTS

A. Temperature Stabilization Phase Summary.

The temperature stabilization criteria was met in approximately seven hours. The results and acceptance criteria of the temperature stabilization phase are presented in Appendix A2.

B. Integrated Leakage Rate Test Summary.

At the start of the testing sequence, the intent was to use the short duration method contained in Bechtel's Topical Report BN-TOP-1. The data trend and analysis proved this to be an acceptable approach, and conversion to a 24 hour Mass Point Test was not necessary. Appendix A3 contains detailed ILRT data.

Corrections were made to the ILRT results to account for any penetrations that could not be aligned to simulate the post Accident Containment Configuration and for any level increases noted during the test for the vessels located inside Containment. The following is a summary of these corrections and the final ILRT results.

Penetrations in service during ILRT

The following penetration leakage is required to be added to the results of the ILRT since the penetrations were isolated or could not be vented or drained during the Type A Test. The leakage assigned is the recorded as-left value using minimum pathway analysis.

		Leakage (CCM):
10	N_2 to RCDT	25
10	RCDT/PRT to Vent Hdr.	18
15	Charging	180
16	PACV's	15
24A	RCP Seal Inj.	600
24B	RCP Seal Inj.	18
24C	RCP Seal Inj.	95
53	PACV's	18

Correction to ILRT results = 969 CC/MIN

Summary of Containment levels

The following is a tabulation of various levels throughout Containment for which any unexplained increase must be accounted for in the results of the ILRT.

	START	END	DELTA	CORRECTION
DATE:	11/13	11/13		
TIME:	04:40	12:40		
RCDT LEVEL (%)	21	15	-6	0
PRT LEVEL (%)	76.5	78	1.5	150gal
PRESSURIZER LEVEL (%)	79	78	-1	0
CONTAINMENT SUMP LEVEL (INCHES) .	28	28	0	0

(No credit will be taken for decrease in levels)

TOTAL CORRECTION = 150 gal

ILRT Results - BN-TOP-1 Analysis

1. Lam, Leakage Rate Calculated (Total Time) . 0.087 % / Day
2. UCL, Upper Confidence Level ..... 0.045 % / Day
3. Lam + UCL ..... 0.132 % / Day
4. Corrections for

   a- Penetrations not isolated or drained, (Type B & C Tests) ..... 0.003 % / Day
   b- Water Levels ..... 0.004 % / Day

5. Total Reported Type A Leakage Rate, (Items 3 + 4a + 4b) ..... 0.139 % / Day

Results were within the acceptable limit of 0.75 La or 0.1875 % per day

ILRT Results - Mass Point Analysis

1. Lam, Leakage Rate Calculated (Mass Point) . 0.098 % / Day
2. UCL, Upper Confidence Level ..... 0.007 % / Day
3. Lam + UCL ..... 0.106 % / Day
4. Corrections for

   a- Penetrations not isolated or drained, (Type B & C Tests) ..... 0.003 % / Day
   b- Water Levels ..... 0.004 % / Day

5. Total Reported Type A Leakage Rate, (Items 3 + 4a + 4b) ..... 0.113 % / Day

Results were within the acceptable limit of 0.75 La or 0.1875 % per day

C. Supplemental Leakage Rate Test Summary.

Following the acceptance of the ILRT results, a four hour Supplemental Test was added to the existing Containment leakage rate using the variable area rotometer.

Results are presented in Appendix A4. The test met the acceptance criteria for the verification phase. A summary follows:

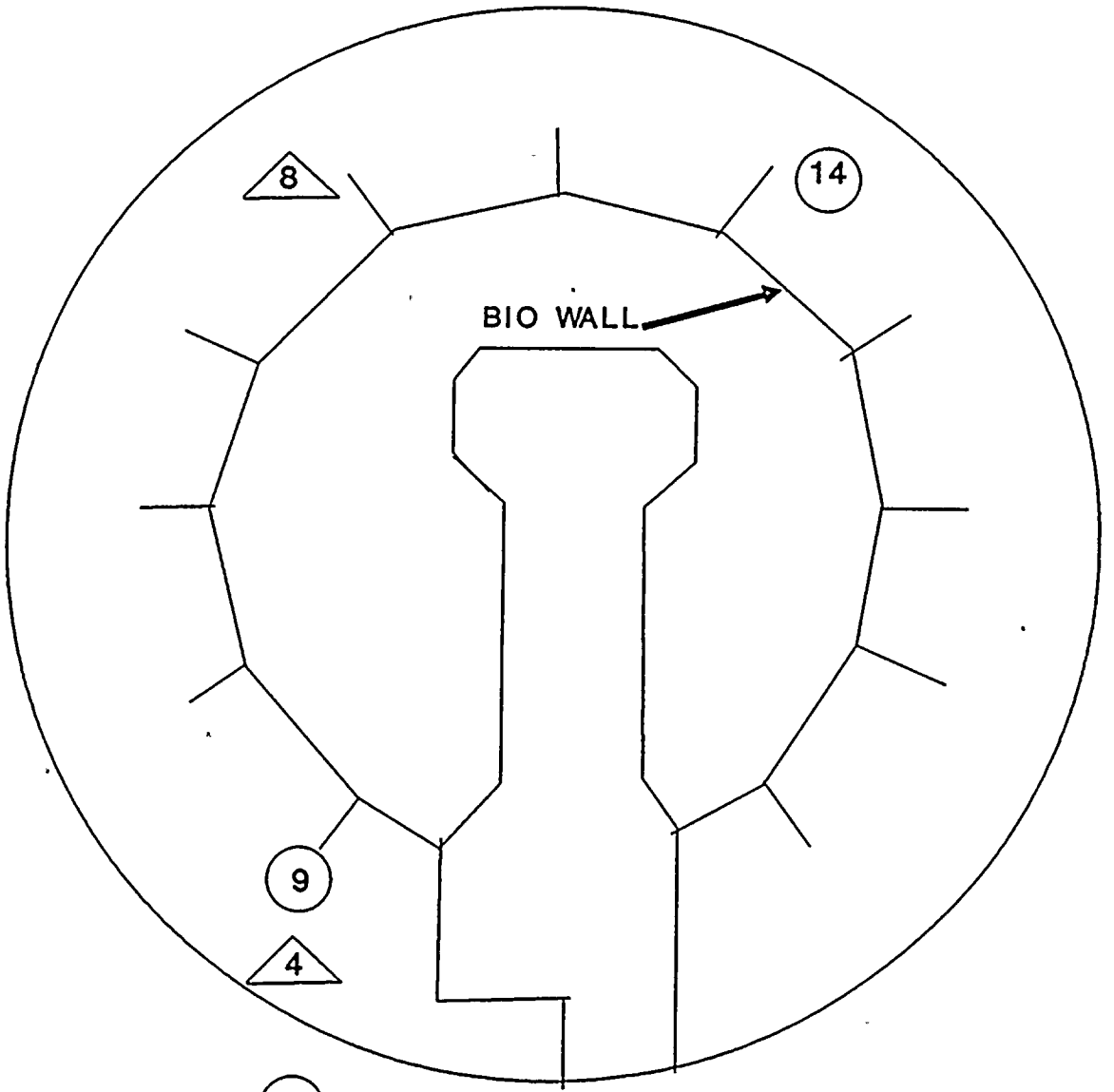
$$Lo + Lam - La/4 <= Lc <= Lo + Lam + La/4$$

Lo =	Supplemental Test Leakage Rate	= 0.290 % Per Day
Lc =	Fitted Supplemental Test Measured Leakage Rate	= 0.396 % Per Day
La =	Containment Design Leakage Rate	= 0.250 % Per Day
Lam =	Fitted BN-TOP ILRT Measured Leakage Rate	= 0.087 % Per Day

The acceptance criteria for this test is leakage between 0.314 % per day and 0.439 % per day.

SECTION IV.
FIGURES

1992 TURKEY POINT UNIT 3 ILRT
RTD/ RH SENSORS LOCATIONS
INSIDE CONTAINMENT - TOP VIEW



RTD LOCATIONS

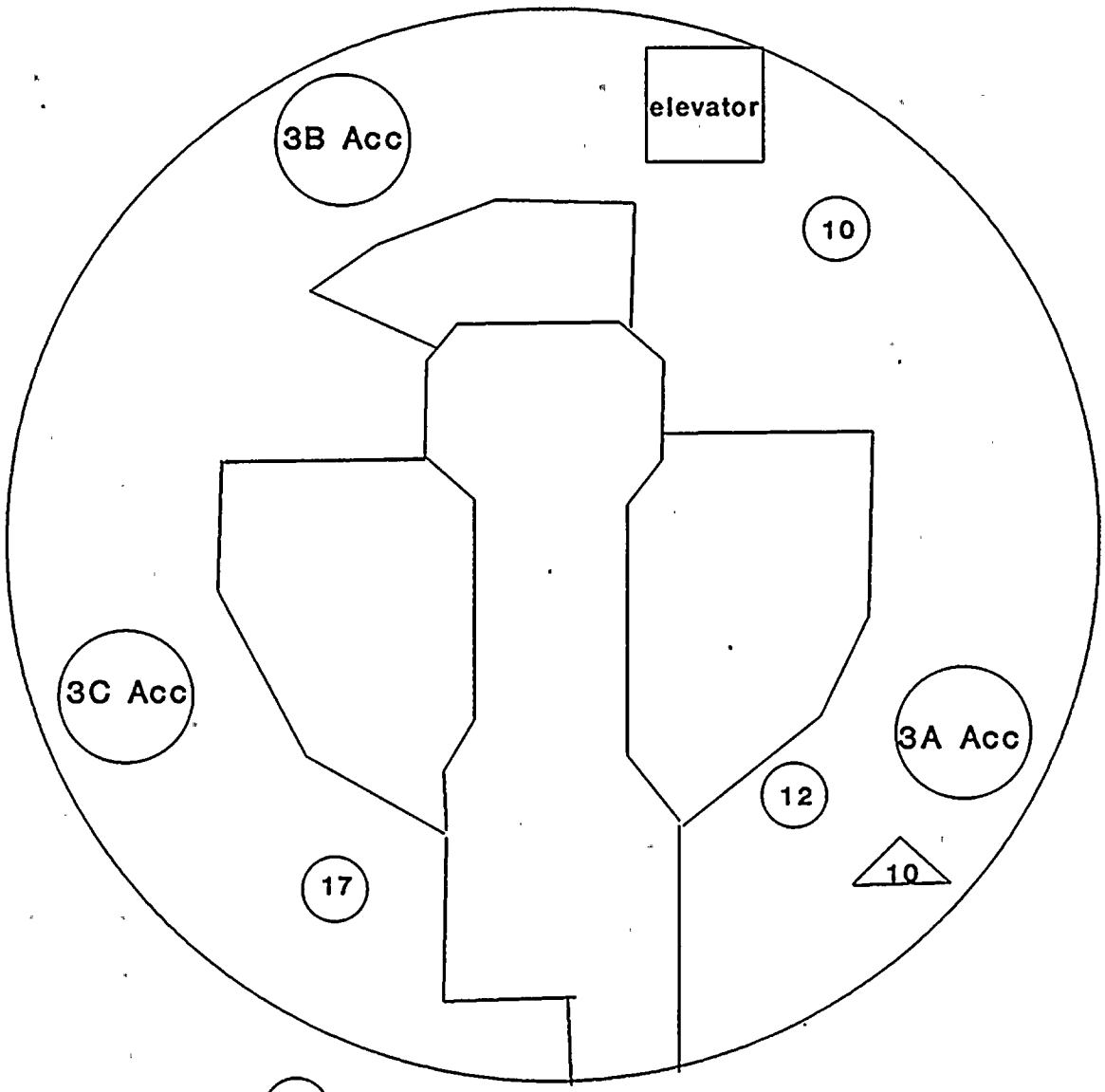
RH LOCATIONS

HQ\USFIGURE1A

UNIT 3 - 20 Ft LEVEL

FIGURE 1A

1992 TURKEY POINT UNIT 3 ILRT
RTD/ RH SENSORS LOCATIONS
INSIDE CONTAINMENT - TOP VIEW



RTD LOCATIONS ○

RH LOCATIONS △

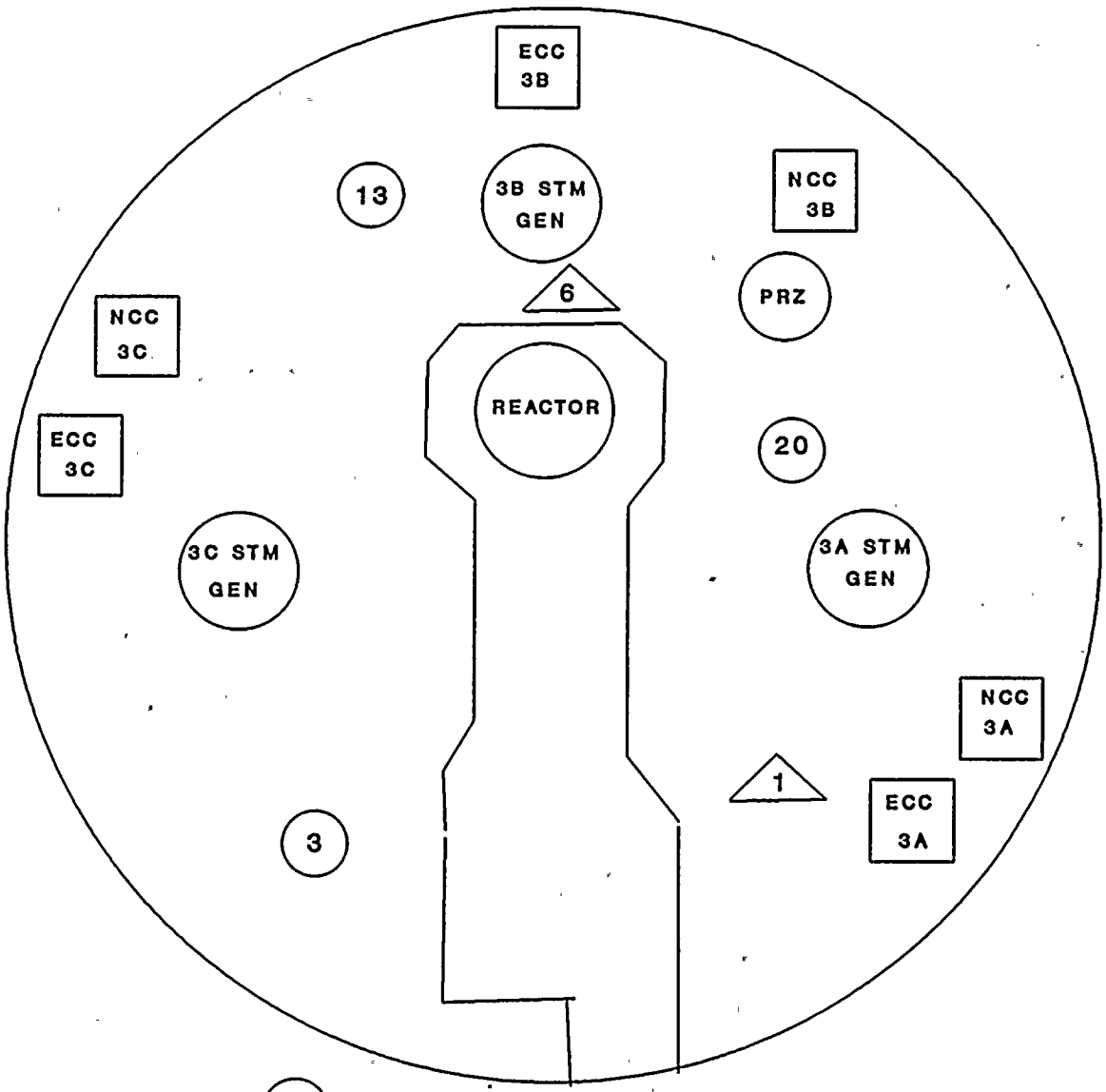
Acc.= Accumulator

HQ\U3F101B

UNIT 3 - 34 Ft LEVEL

FIGURE 1B

1992 TURKEY POINT UNIT 3 ILRT
RTD /RH SENSORS LOCATIONS
INSIDE CONTAINMENT - TOP VIEW



RTD LOCATIONS ○

RH LOCATIONS △

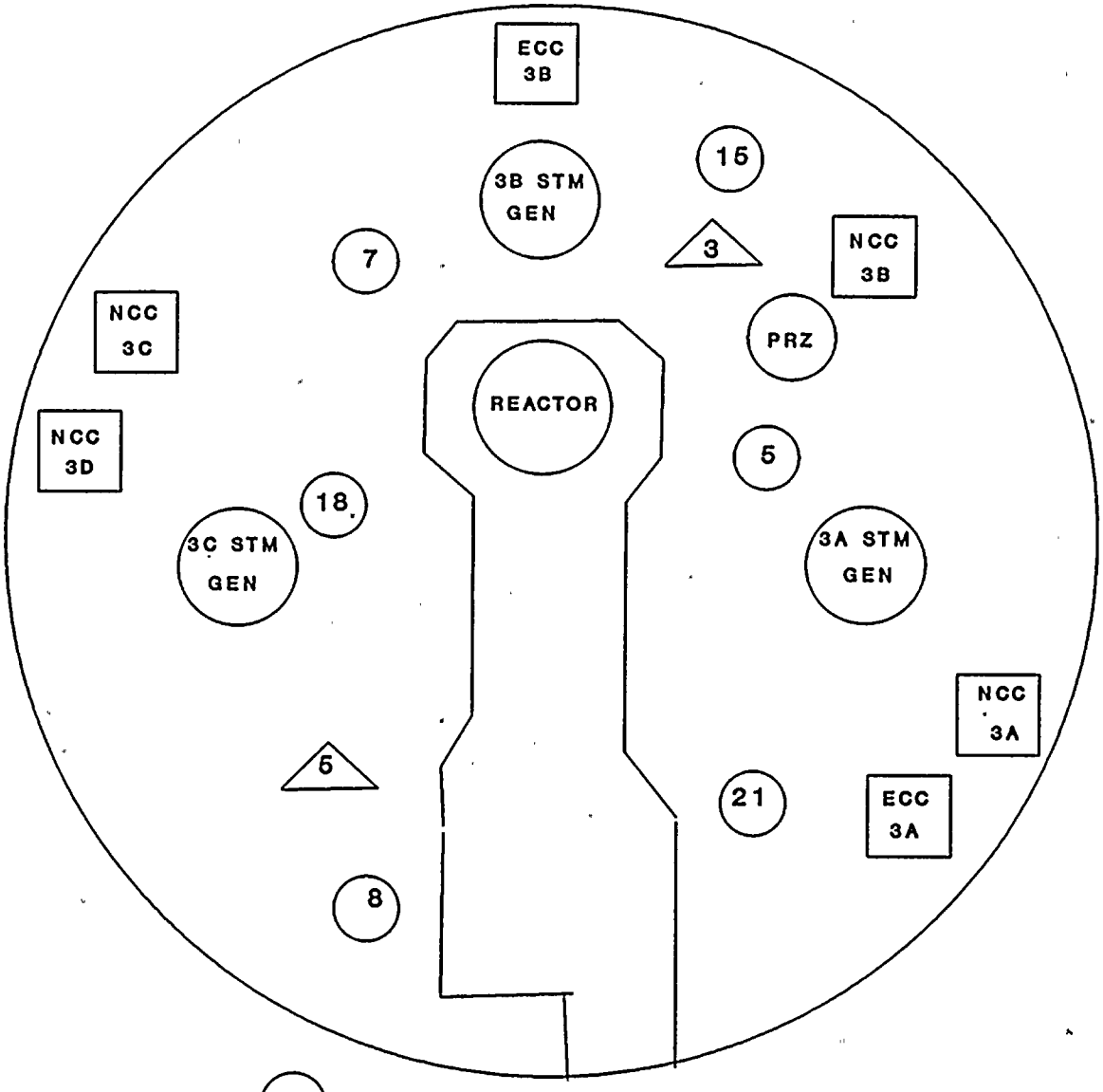
PRESSURIZER = PRZ

HQ\U3FIG1C

UNIT 3 - 64 Ft LEVEL

FIGURE 1C

TURKEY POINT UNIT 3 ILRT
RTD / RH SENSORS LOCATIONS
INSIDE CONTAINMENT - TOP VIEW



RTD LOCATIONS ○

RH LOCATIONS △

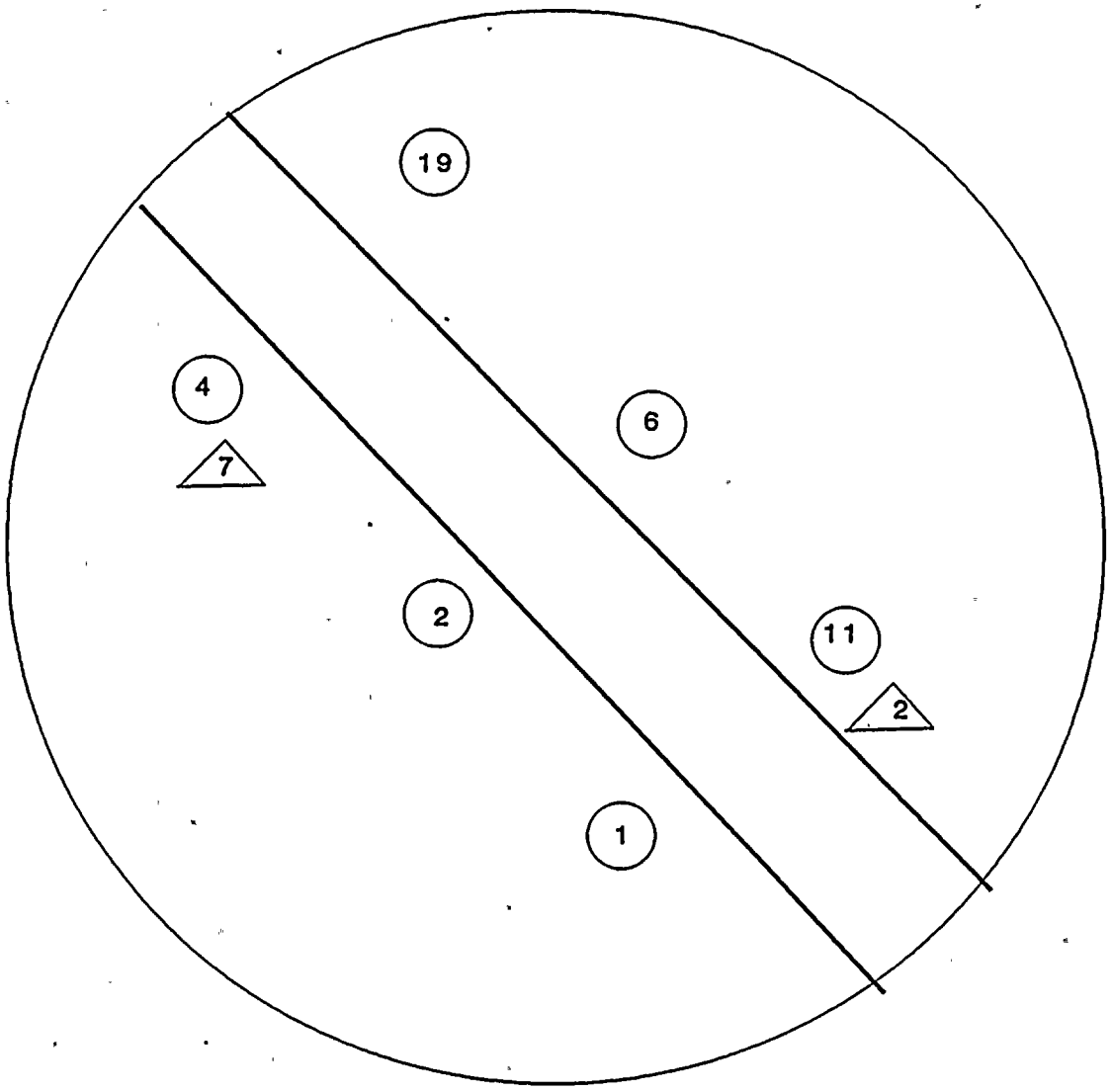
PRESSURIZER = PRZ

HQ\U3FIG1D

UNIT 3 - 97 Ft LEVEL

FIGURE 1D

1992 TURKEY POINT UNIT 3 ILRT
RTD /RH SENSORS LOCATIONS
INSIDE CONTAINMENT - TOP VIEW



RTD LOCATIONS ○

RH LOCATIONS △

HG\U3FIG1E

UNIT 3 - 143 Ft LEVEL

FIGURE 1E

ILRT CONTAINMENT PRESSURE SENSOR PIPING
1992 TURKEY POINT UNIT 3 ILRT

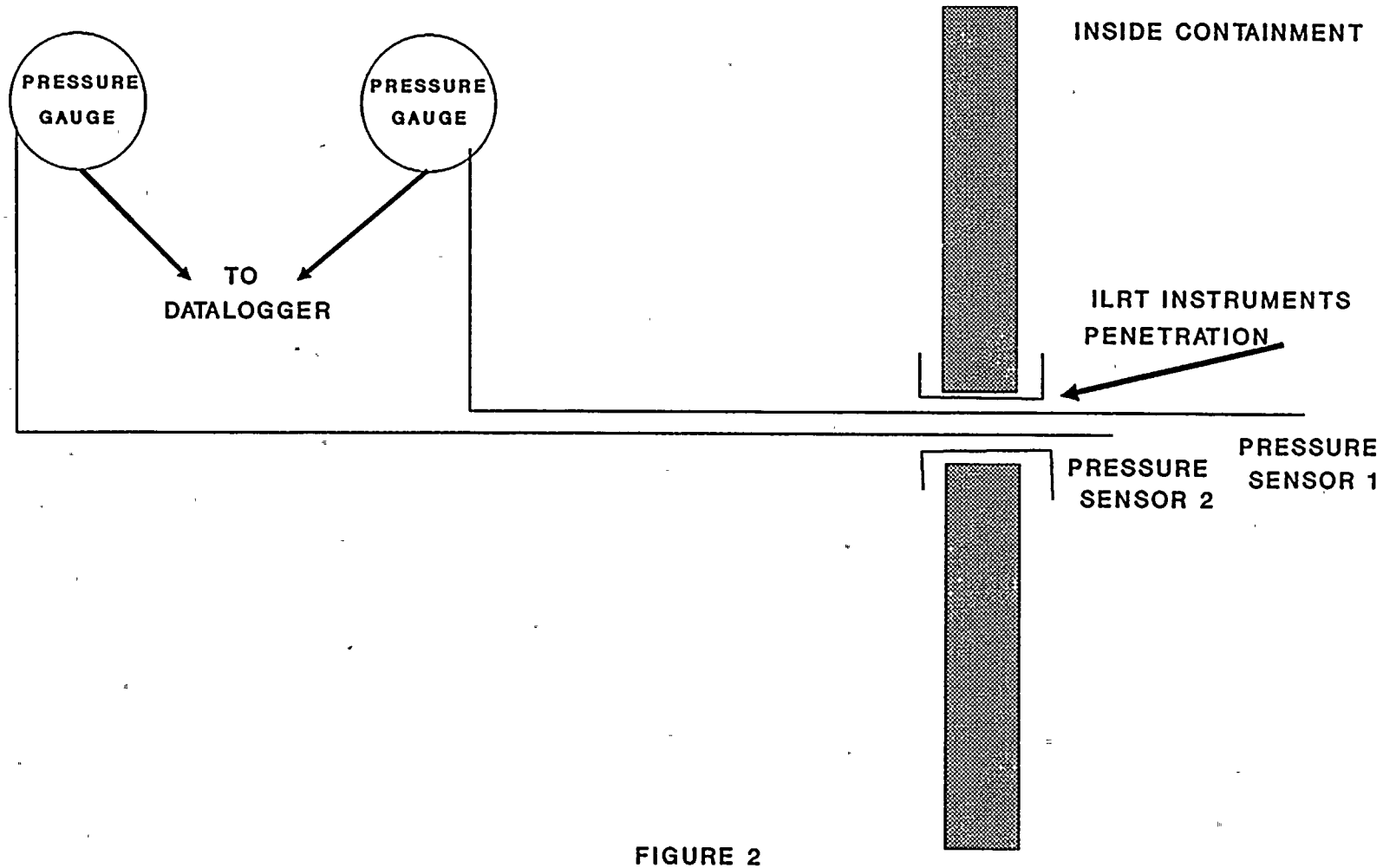


FIGURE 2

HQ\U3FIG8

DATA COLLECTION, STORAGE AND ANALYSIS
1992 TURKEY POINT UNIT 3 ILRT

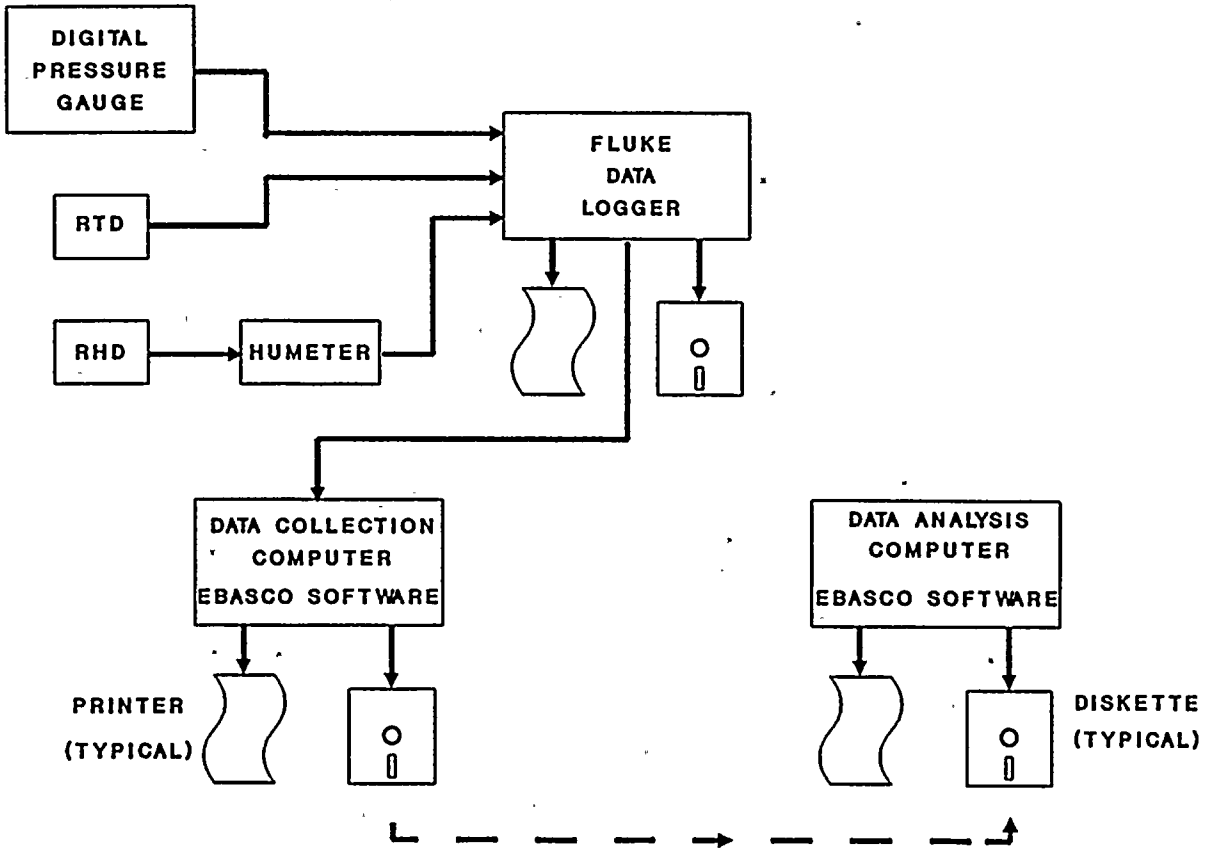


FIGURE 3

HG\U3FIG4A

CONTAINMENT PRESSURIZATION SYSTEM
1992 TURKEY POINT UNIT 3 ILRT

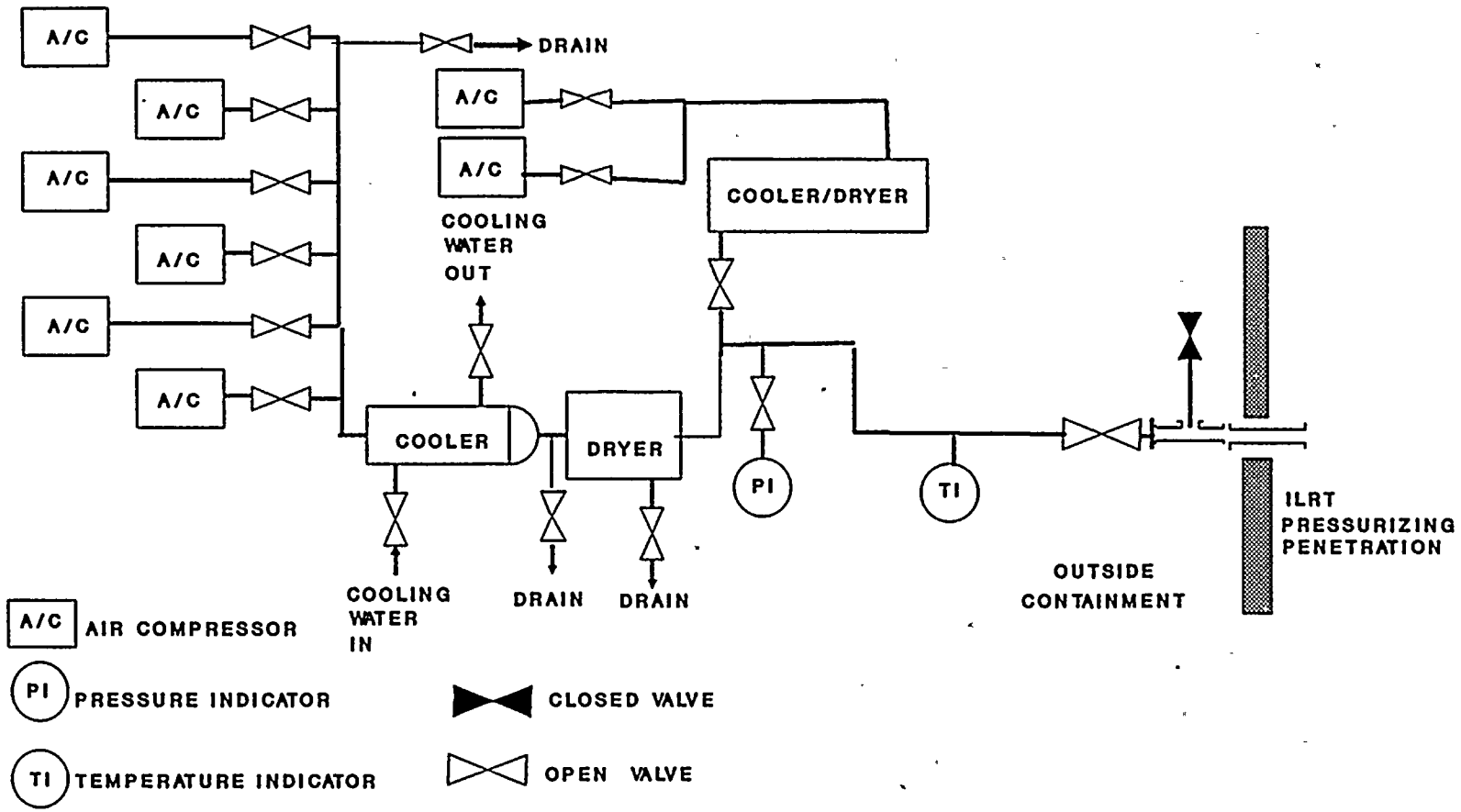


FIGURE 4

HQ\USFIG6B

CONTROLLED LEAKAGE TEST PIPING
1992 TURKEY POINT UNIT 3 ILRT

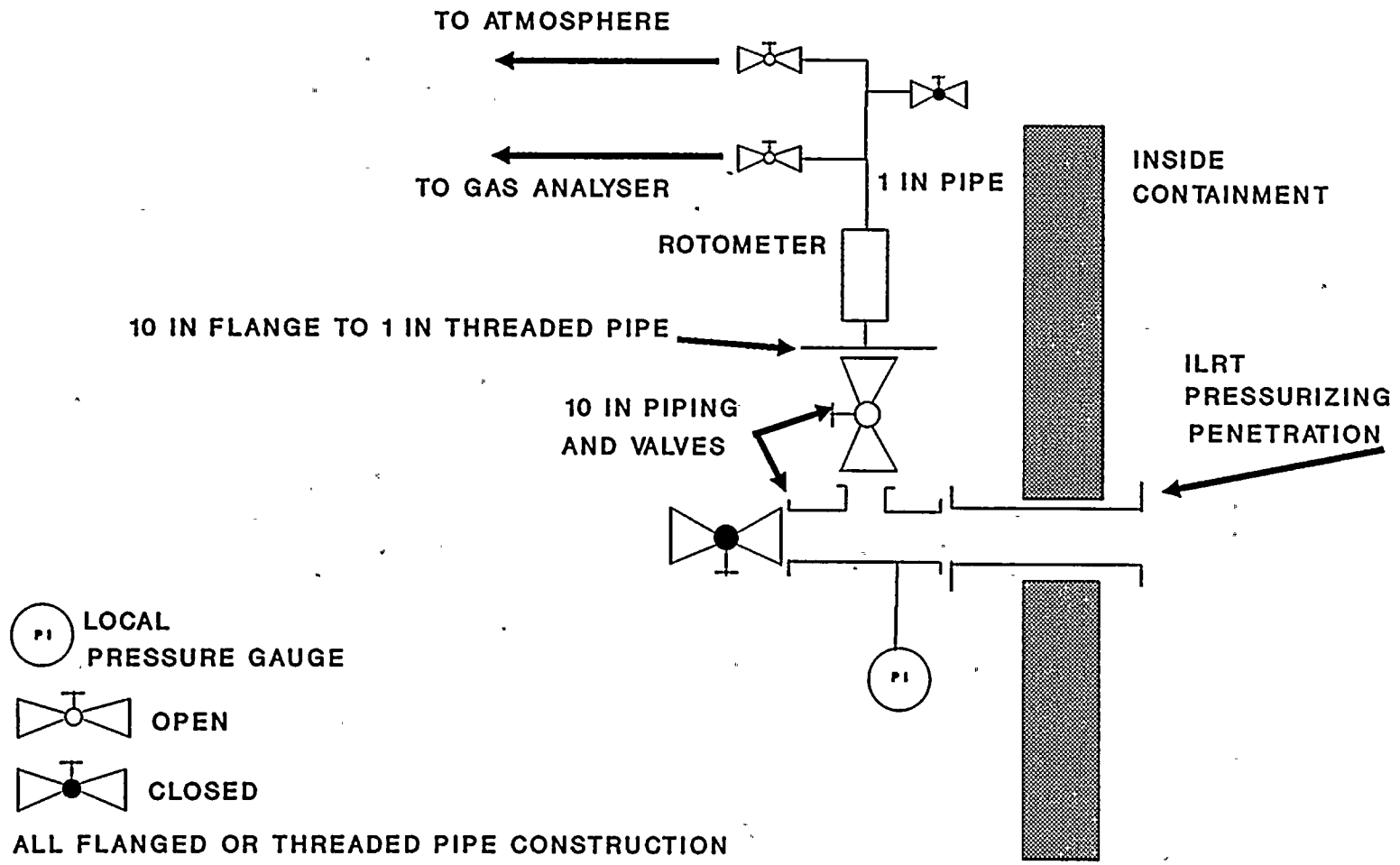
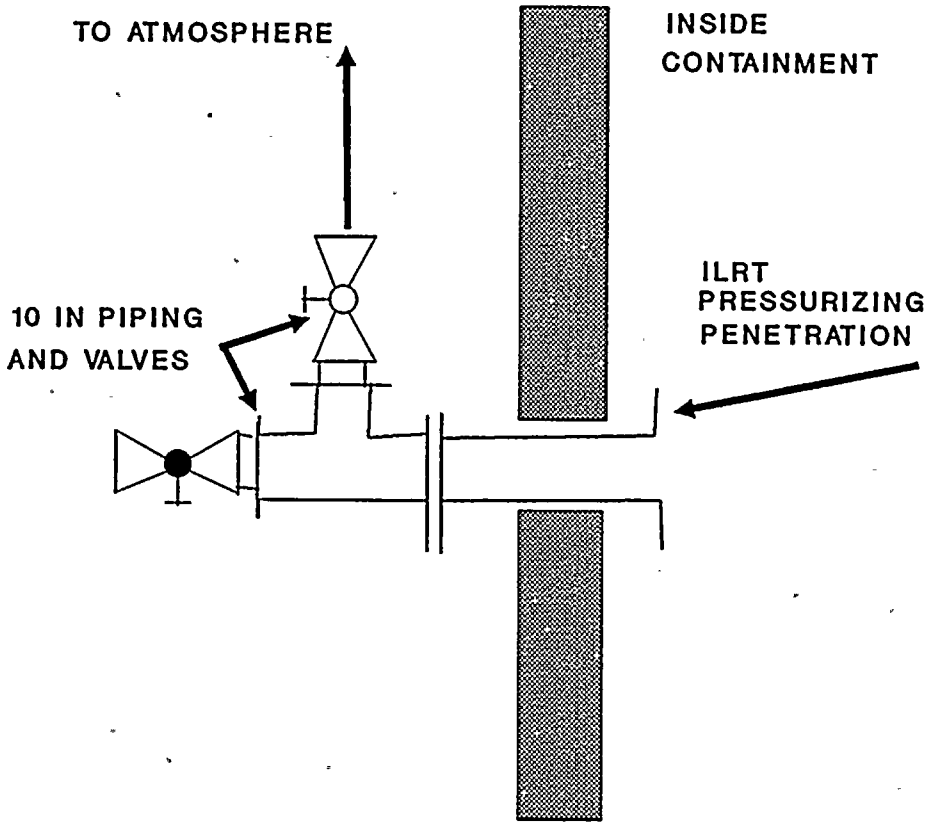


FIGURE 5

H0\U3F10

ILRT VENT PIPING
1992 TURKEY POINT UNIT 3 ILRT



OPEN

CLOSED

ALL FLANGED CONSTRUCTION

FIGURE 6

HQ\USFIG7

APPENDIX A1
TEST SEQUENCE

CONTAINMENT INTEGRATED LEAKAGE RATE
FINAL TEST REPORT

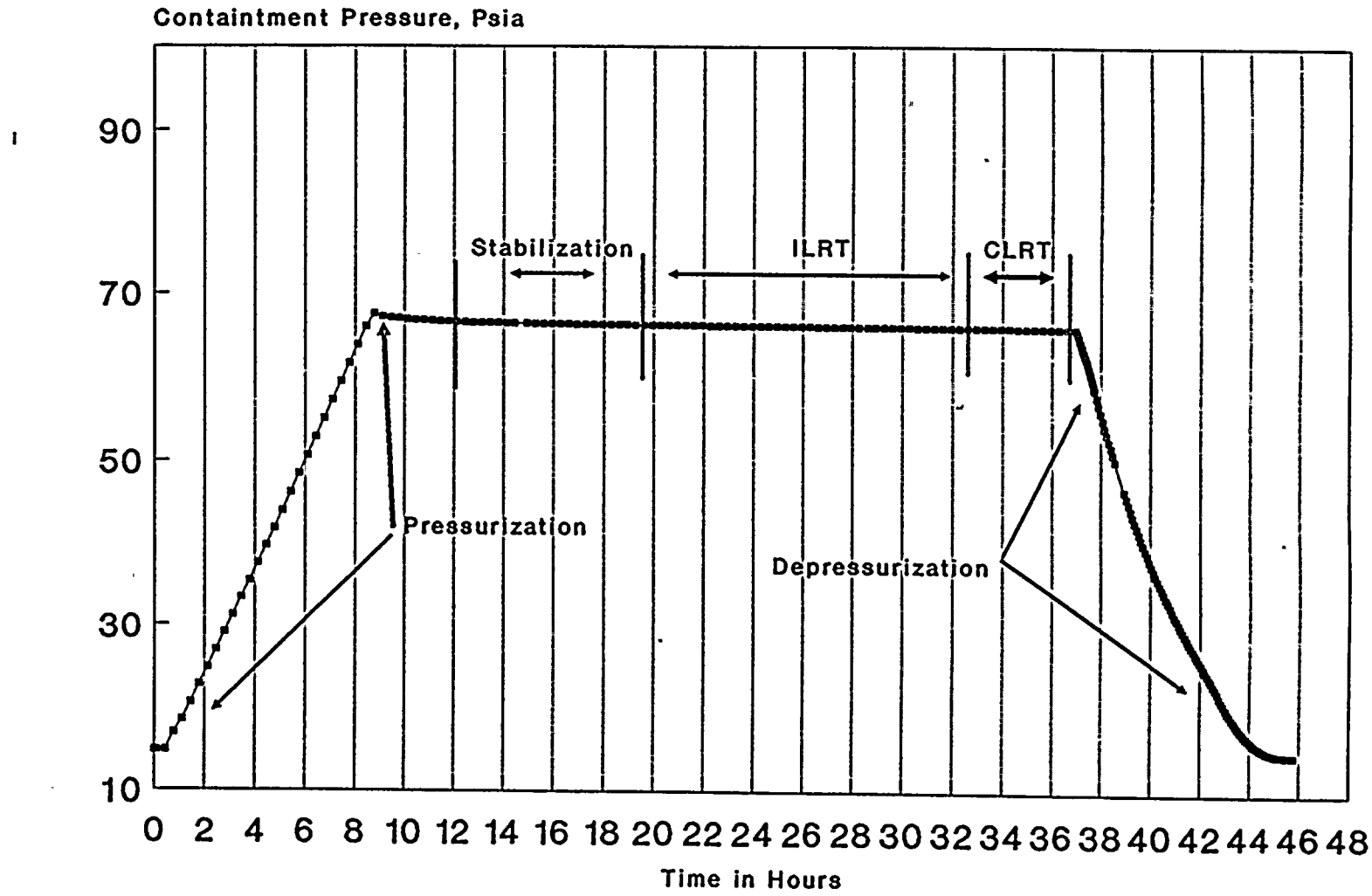
1992 Turkey Point Unit 3 ILRT

ILRT TEST SEQUENCE

1992 Turkey Point Unit 3 ILRT

Sequence Started 08:24 11/12/92
Sequence Ended 06:10 11/14/92

ILRT TESTING SEQUENCE
1992 TURKEY POINT UNIT 3 ILRT



U3ILRT30

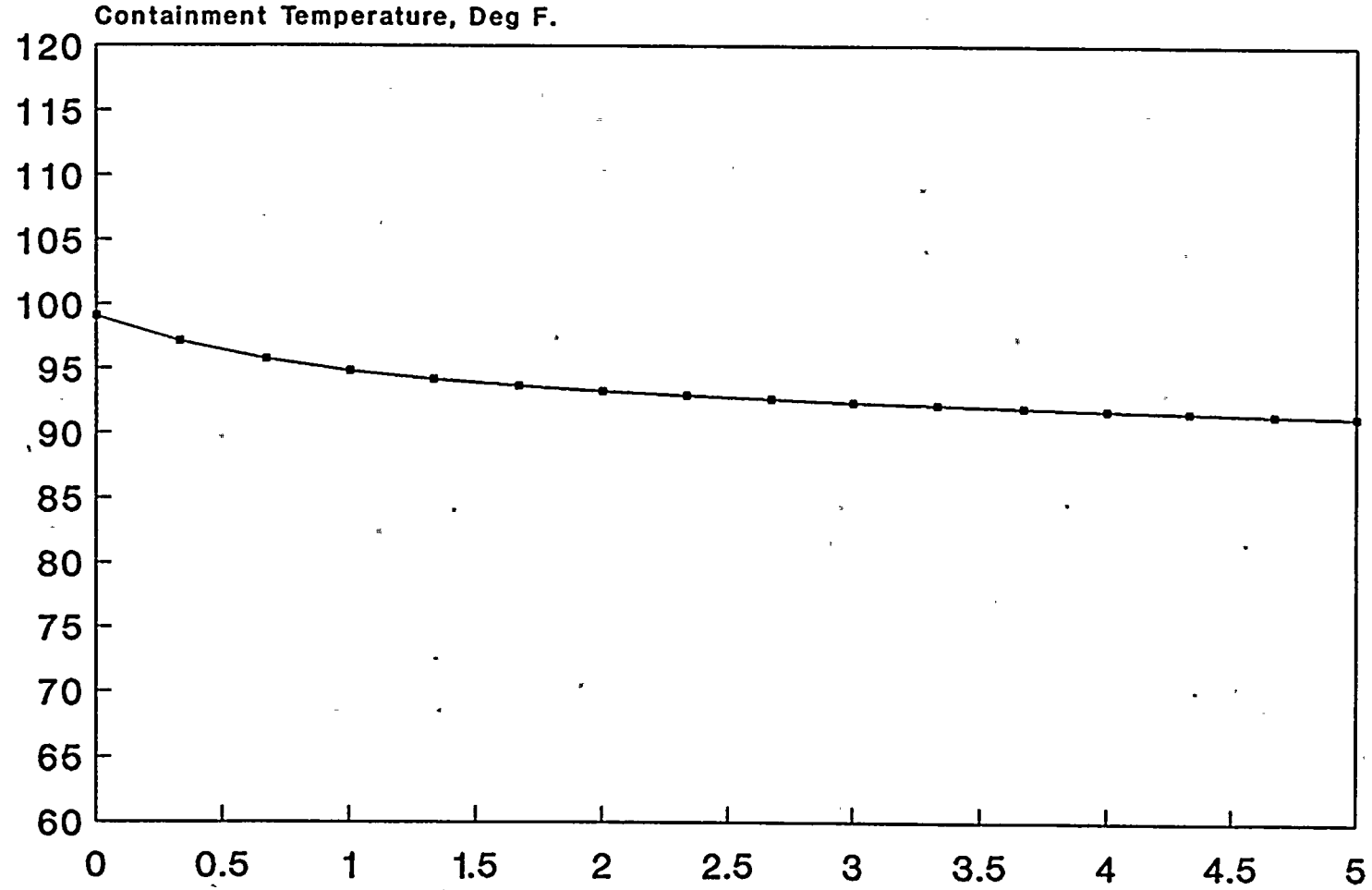
APPENDIX A2
TEMPERATURE STABILIZATION

TEMPERATURE STABILIZATION MODE

1992 Turkey Point Unit 3 ILRT

Sequence Started 17:10 11/12/92
Sequence Ended 04:40 11/13/92

TEMPERATURE STABILIZATION
1992 TURKEY POINT UNIT 3 ILRT



U3ILRT7

1992 Turkey Point Unit 3 ILRT
STABILIZATION PERIOD STARTED AT 17:10 ON 11/12/92

TEMPERATURE STABILIZATION

SAMPLE NUMBER	TIME HOURS	AVE TEMP	DEL T/2HR	
1	0	99.08	0	
2	0.33	97.164	0	
3	0.67	95.757	0	
4	1	94.812	0	
5	1.33	94.163	0	
6	1.67	93.667	0	
7	2	93.275	-5.805	
8	2.33	92.936	-4.228	
9	2.67	92.654	-3.103	
10	3	92.394	-2.418	
11	3.33	92.17	-1.993	
12	3.67	91.972	-1.695	
13	4	91.789	-1.486	
14	4.33	91.631	-1.305	
15	4.67	91.471	-1.183	
16	5	91.311	-1.083	
17	5.33	91.185	-0.985	
18	5.67	91.047	-0.925	
19	6.17	90.889	-0.82949	
20	6.5	90.796	-0.76958	
21	6.83	90.69	-0.72314	
22	7.17	90.594	-0.66082	
23	7.5	90.516	-0.61658	
24	7.83	90.426	-0.575	
25	8.17	90.346	-0.543	
26	8.5	90.275	-0.521	
27	8.83	90.209	-0.481	*
28	9.17	90.132	-0.462	*
29	9.5	90.07	-0.446	*
30	9.83	90.013	-0.413	*
31	10.17	89.953	-0.393	*
32	10.5	89.902	-0.373	*
33	10.83	89.845	-0.364	*
34	11.17	89.79	-0.342	*
35	11.5	89.741	-0.329	*

NOTES

1) THE 2 HOUR TEMPERATURE VARIATION IS NOT VALID UNTIL 2 HOURS HAVE PASSED INTO THE STABILIZATION PERIOD.

2) THE STABILIZATION CRITERIA IS MET WHEN:

   -THE AVERAGE TEMPERATURE DOES NOT VARY BY MORE THAN 0.5 DEGREES F. FOR THE LAST TWO HOURS.

   -THE STABILIZATION PERIOD IS A MINIMUM OF 4 HOURS

3) THE "*" INDICATES THAT THE STABILIZATION CRITERIA HAS BEEN MET.

APPENDIX A3
INTEGRATED LEAKAGE RATE TEST

ILRT TEST MODE

1992 Turkey Point Unit 3 ILRT

Sequence Started 04:40 11/13/92
Sequence Ended 12:40 11/13/92

CONTAINMENT INTEGRATED LEAKAGE RATE TEST

LEAKAGE RATE IS MEASURED USING THE ABSOLUTE METHOD AND IS COMPUTED USING THE TOTAL TIME METHOD IN ACCORDANCE WITH TOPICAL REPORT BN-TOP-1 (REV 1)

TEST PERIOD STARTED AT 04:40 HOURS ON 11/13/92
TEST CONDUCTED FOR 8 HOURS

FREESPACE VOLUME OF CONTAINMENT IS 1550000 CU FT
CONTAINMENT WAS PRESSURIZED TO 66.23 PSIA

FITTED TOTAL TIME ILRT LEAKAGE RATE	Lam	= 0.087 % /DAY
UPPER LIMIT OF 95% CONFIDENCE LEVEL	UCL	= 0.132 % /DAY
CONTAINMENT DESIGN LEAKAGE RATE	La	= 0.250 % /DAY
ILRT ACCEPTANCE CRITERIA	75% La	= 0.188 % /DAY

BN-TOP REDUCED DURATION ILRT TERMINATION CRITERIA

-THE TREND OF THE TOTAL TIME CALCULATED LEAKAGE RATE SHALL INDICATE THAT THE MAGNITUDE OF THE LEAKAGE RATE IS TENDING TO STABILIZE AT A VALUE LESS THAN OR EQUAL TO 75% OF La.

La = 0.250 % /DAY
75% La = 0.188 % /DAY
Lam = 0.087 % /DAY with a Negative Skew

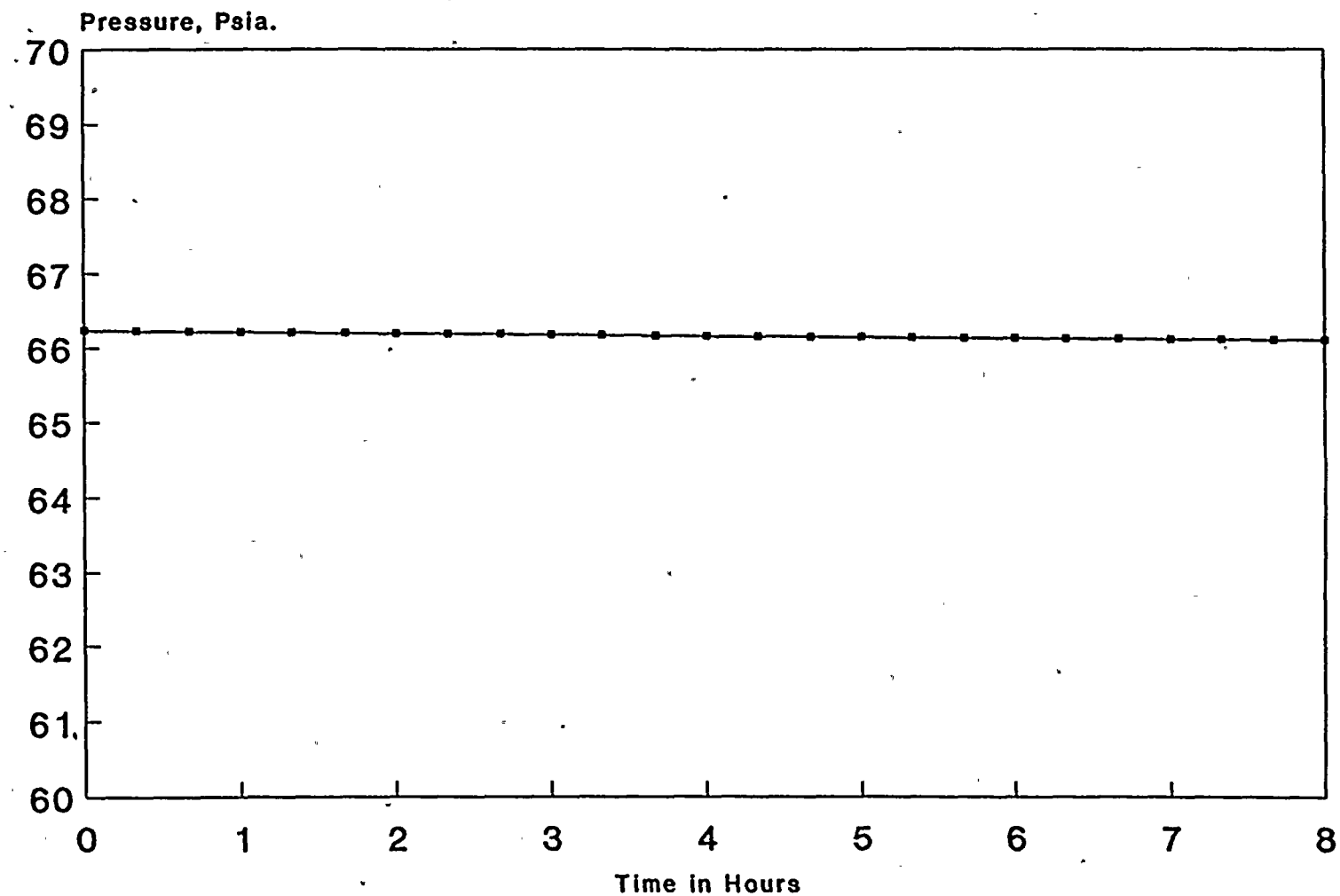
-AT THE END OF THE ILRT THE UPPER LIMIT OF THE 95% CONFIDENCE LEVEL SHALL BE LESS THAN OR EQUAL TO 75% OF La.

UCL = 0.132 % /DAY

-THE MEAN OF THE MEASURED LEAKAGE RATES OVER THE LAST 5 HOURS OR 20 DATA SETS, WHICHEVER PROVIDES THE MOST POINTS, SHALL BE LESS THAN OR EQUAL TO 75% OF La.

MEAN OF SIMPLE LEAKAGE FOR SAMPLES = 0.132 % /DAY

ILRT CONTAINMENT ABSOLUTE PRESSURE
1992 TURKEY POINT UNIT 3 ILRT



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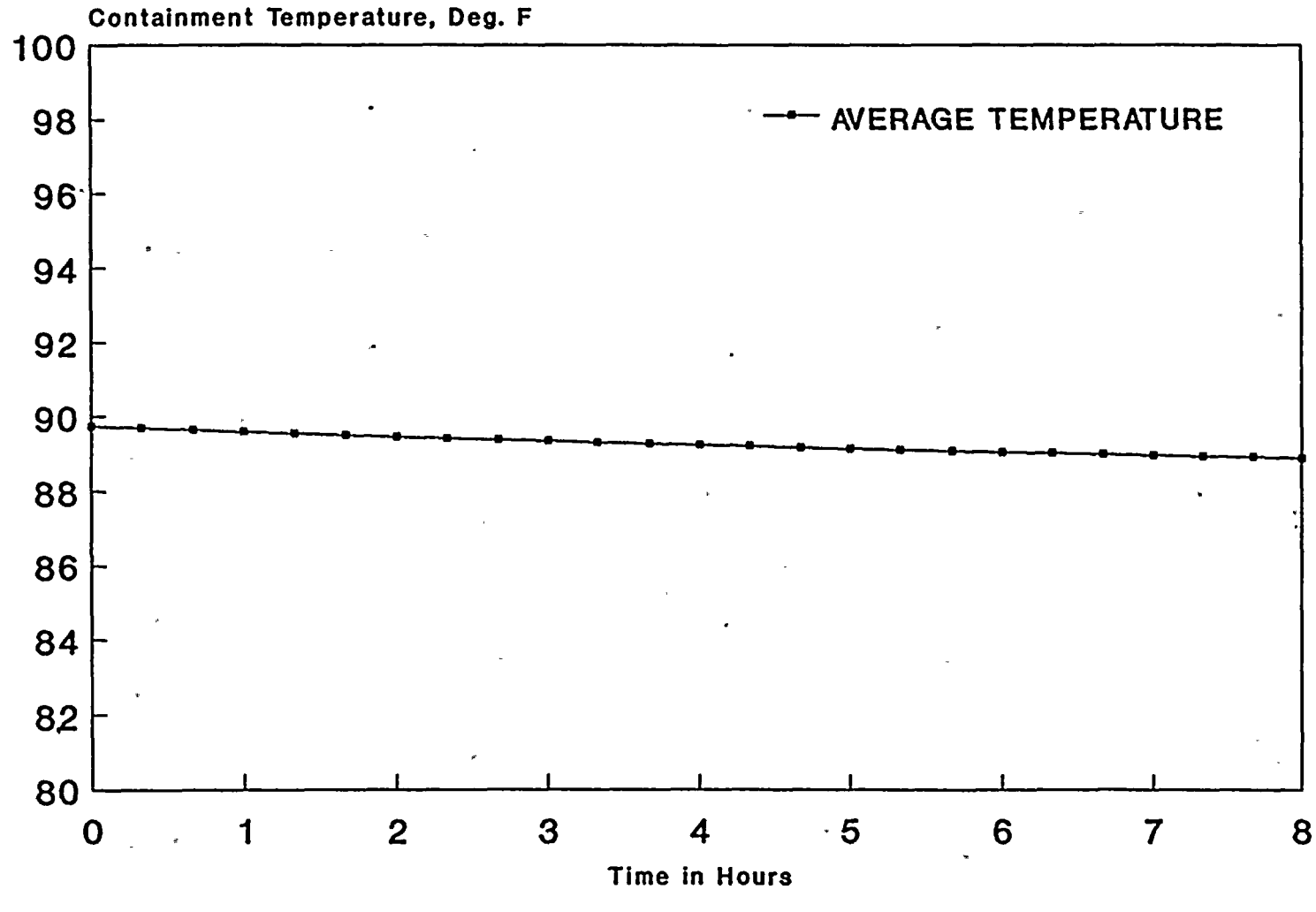
ILRT WEIGHTED AVERAGE TEMPERATURE
1992 TURKEY POINT UNIT 3 ILRT



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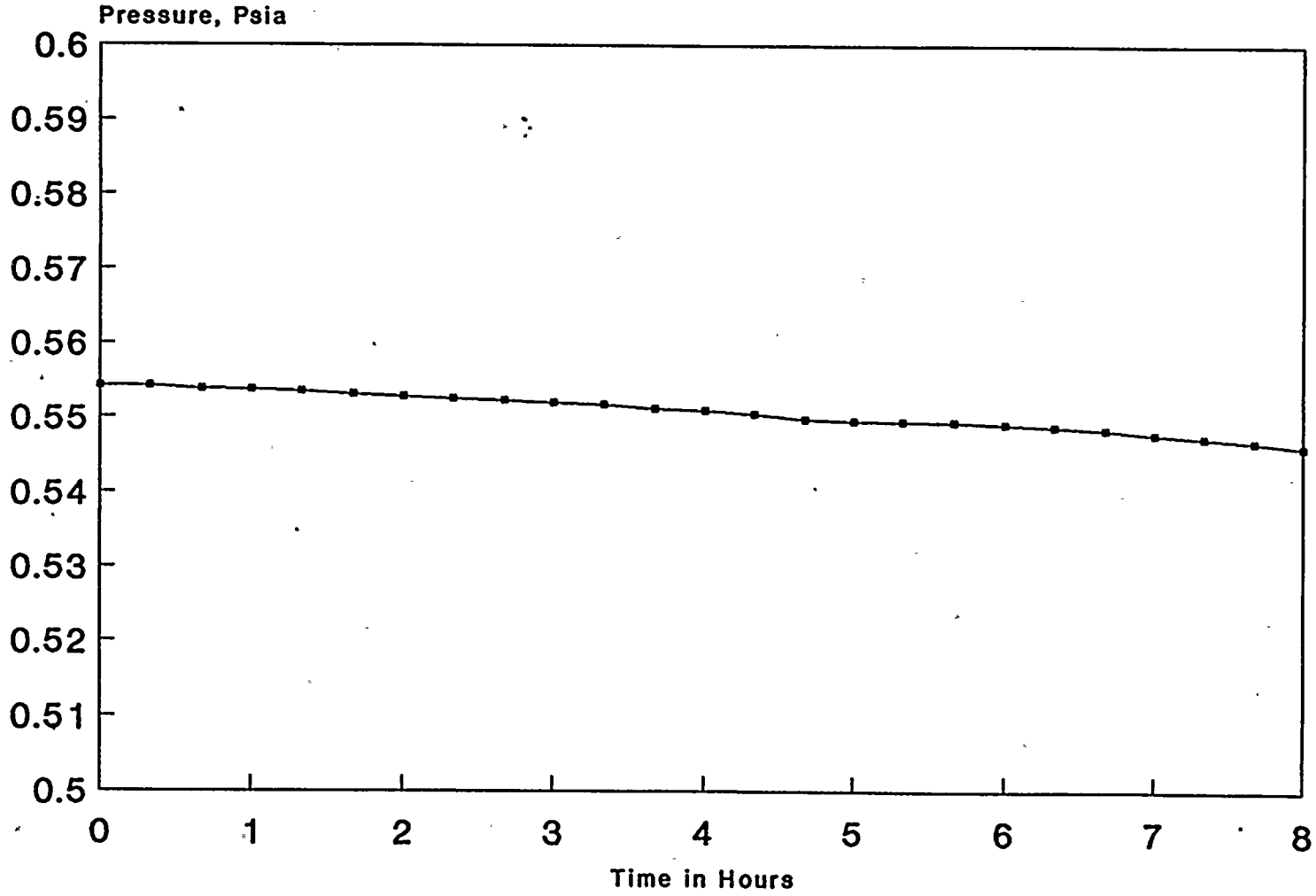
ILRT WEIGHTED AVERAGE VAPOR PRESSURE
1992 TURKEY POINT UNIT 3 ILRT



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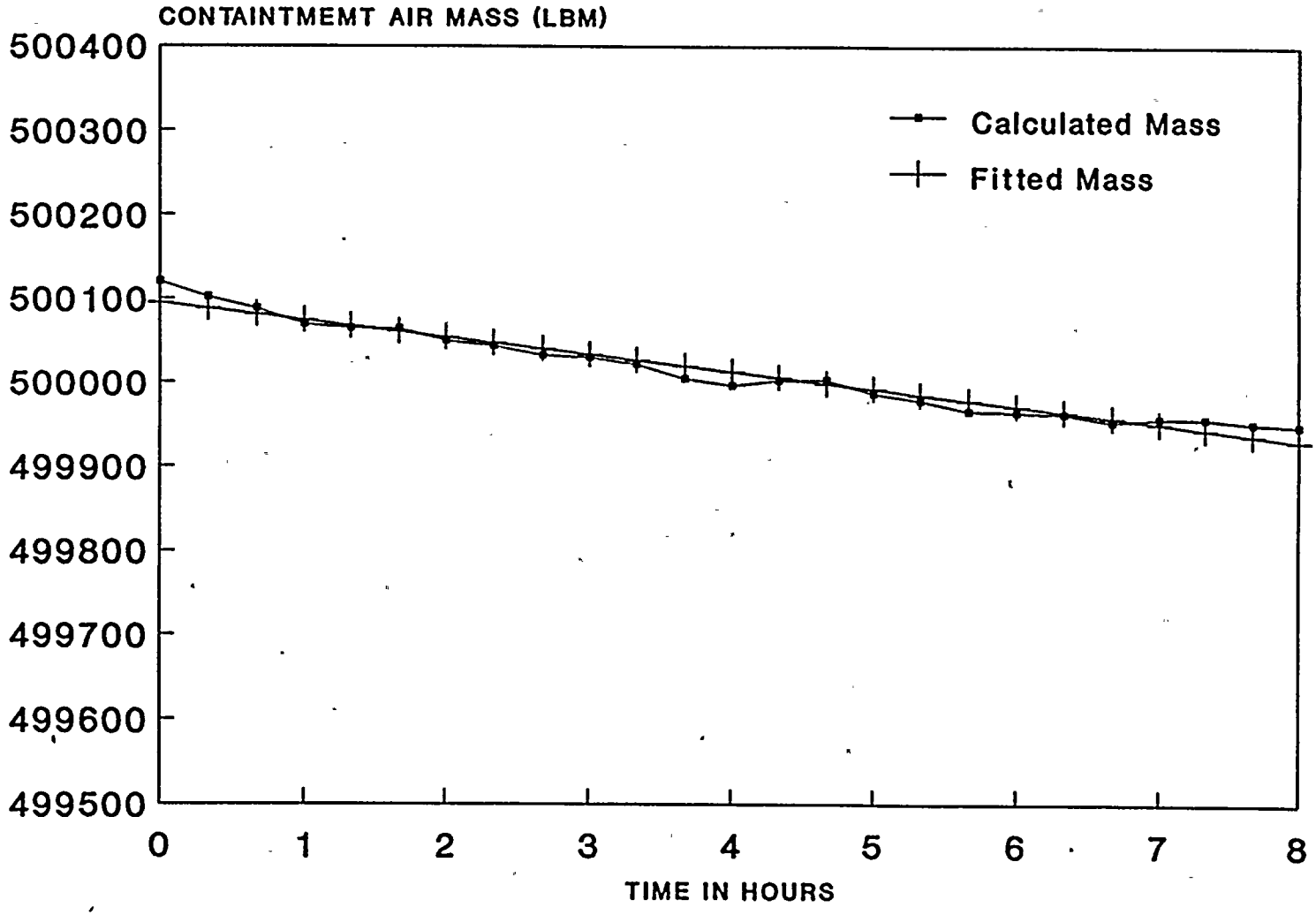
ILRT AIR MASS
1992 TURKEY POINT UNIT 3 ILRT



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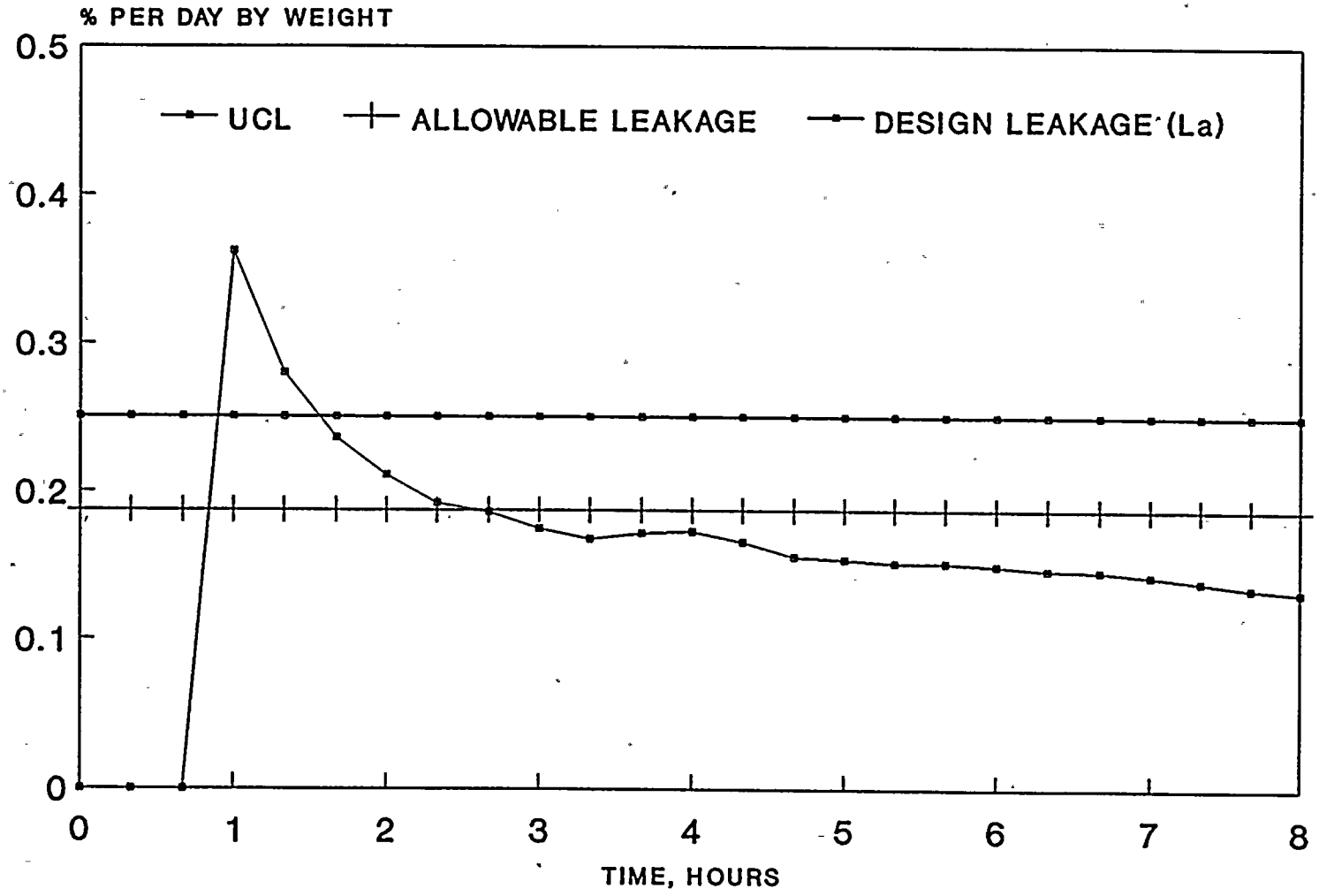
ILRT LEAKAGE RATES RELATIVE TO LIMITS
1992 TURKEY POINT UNIT 3 ILRT



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ILRT VARIABLE TABLE SUMMARY

AM NO	TIME HOURS	AVE TEMP DEG F	PRESSURE PSIA	VAP PRES PSIA	LEAK SIM %/DAY	LEAK FIT %/DAY	UCL %/DAY	AIR MASS LBS
1	0.00	89.741	66.235	0.5542	0.000	0.000	0.000	500120
2	0.33	89.694	66.227	0.5542	0.254	0.000	0.000	500102
3	0.67	89.646	66.219	0.5538	0.231	0.000	0.000	500088
4	1.00	89.608	66.212	0.5537	0.240	0.235	0.362	500070
5	1.33	89.557	66.205	0.5535	0.198	0.207	0.280	500065
6	1.67	89.511	66.199	0.5531	0.160	0.172	0.236	500064
7	2.00	89.470	66.192	0.5528	0.167	0.159	0.211	500050
8	2.33	89.428	66.186	0.5525	0.155	0.146	0.192	500044
9	2.67	89.392	66.180	0.5523	0.156	0.140	0.186	500033
10	3.00	89.356	66.175	0.5520	0.143	0.131	0.175	500030
11	3.33	89.317	66.169	0.5517	0.140	0.125	0.168	500022
12	3.67	89.281	66.162	0.5512	0.150	0.124	0.172	500005
13	4.00	89.250	66.157	0.5510	0.147	0.123	0.173	499997
14	4.33	89.215	66.153	0.5505	0.129	0.117	0.166	500003
15	4.67	89.176	66.148	0.5498	0.118	0.110	0.156	500004
16	5.00	89.147	66.142	0.5496	0.127	0.107	0.154	499987
17	5.33	89.115	66.137	0.5495	0.126	0.105	0.152	499979
18	5.67	89.088	66.132	0.5494	0.130	0.104	0.152	499966
19	6.00	89.058	66.128	0.5491	0.123	0.102	0.150	499965
20	6.33	89.030	66.124	0.5488	0.119	0.100	0.147	499963
21	6.67	89.003	66.119	0.5484	0.120	0.098	0.146	499953
22	7.00	88.977	66.116	0.5478	0.111	0.096	0.143	499957
23	7.33	88.948	66.112	0.5473	0.106	0.092	0.139	499957
24	7.67	88.925	66.108	0.5468	0.105	0.090	0.135	499952
25	8.00	88.900	66.104	0.5461	0.102	0.087	0.132	499949

SENSOR VOLUME FRACTIONS

TEMPERATURE SENSORS

1 to 5	0.053333	0.053333	0.040000	0.053333	0.060333
6 to 10	0.053333	0.060333	0.060333	0.049500	0.033000
11 to 15	0.053333	0.033000	0.040000	0.049500	0.060333
16 to 20	0.060333	0.033000	0.060333	0.053333	0.040000

HUMIDITY/DP SENSORS

1 to 5	0.120500	0.000000	0.120500	0.049500	0.120500
6 to 9	0.120500	0.320000	0.049500	0.099000	

NOTE: VALUE OF ZERO INDICATES A DELETED SENSOR.

ILRT VARIABLE SUMMARY

SAMPLE NUMBER	DELTA HOURS	TEMP 1 DEG F	TEMP 2 DEG F	TEMP 3 DEG F	TEMP 4 DEG F	TEMP 5 DEG F	TEMP 6 DEG F
1	0.00	91.083	90.564	89.634	90.964	89.492	91.558
2	0.33	90.995	90.489	89.600	90.878	89.438	91.472
3	0.67	90.920	90.380	89.568	90.823	89.384	91.374
4	1.00	90.841	90.312	89.564	90.744	89.347	91.293
5	1.33	90.757	90.228	89.525	90.659	89.307	91.211
6	1.67	90.660	90.142	89.502	90.573	89.264	91.125
7	2.00	90.594	90.077	89.470	90.507	89.232	91.048
8	2.33	90.531	90.013	89.459	90.432	89.178	90.974
9	2.67	90.465	89.936	89.439	90.354	89.135	90.908
10	3.00	90.391	89.882	89.416	90.311	89.092	90.833
11	3.33	90.325	89.807	89.396	90.247	89.058	90.756
12	3.67	90.259	89.730	89.373	90.181	89.026	90.702
13	4.00	90.205	89.687	89.350	90.138	88.995	90.648
14	4.33	90.153	89.633	89.318	90.061	88.961	90.573
15	4.67	90.083	89.574	89.302	89.981	88.925	90.514
16	5.00	90.029	89.522	89.282	89.958	88.893	90.460
17	5.33	89.963	89.456	89.259	89.906	88.870	90.396
18	5.67	89.911	89.402	89.250	89.872	88.839	90.342
19	6.00	89.866	89.347	89.227	89.785	88.816	90.265
20	6.33	89.823	89.293	89.205	89.742	88.796	90.233
21	6.67	89.759	89.261	89.184	89.664	88.764	90.179
22	7.00	89.714	89.218	89.173	89.621	88.741	90.125
23	7.33	89.662	89.152	89.152	89.566	88.710	90.070
24	7.67	89.617	89.109	89.141	89.503	88.687	90.007
25	8.00	89.574	89.066	89.130	89.460	88.676	89.953

ILRT VARIABLE SUMMARY

SAMPLE NUMBER	DELTA HOURS	TEMP 7 DEG F	TEMP 8 DEG F	TEMP 9 DEG F	TEMP 10 DEG F	TEMP 11 DEG F	TEMP 12 DEG F
1	0.00	89.388	89.786	87.729	88.018	91.628	87.909
2	0.33	89.357	89.732	87.729	88.007	91.542	87.900
3	0.67	89.303	89.700	87.729	88.018	91.454	87.900
4	1.00	89.266	89.664	87.736	88.002	91.375	87.905
5	1.33	89.237	89.614	87.741	87.996	91.271	87.889
6	1.67	89.205	89.560	87.729	87.996	91.197	87.889
7	2.00	89.151	89.528	87.741	87.996	91.132	87.889
8	2.33	89.119	89.485	87.729	87.996	91.057	87.878
9	2.67	89.088	89.440	87.741	87.987	91.003	87.878
10	3.00	89.054	89.408	87.741	87.996	90.915	87.878
11	3.33	89.022	89.376	87.741	88.018	90.852	87.878
12	3.67	89.000	89.342	87.741	87.996	90.786	87.878
13	4.00	88.979	89.311	87.741	88.007	90.721	87.866
14	4.33	88.945	89.290	87.741	87.996	90.658	87.866
15	4.67	88.920	89.252	87.725	87.993	90.599	87.862
16	5.00	88.898	89.220	87.736	88.002	90.525	87.853
17	5.33	88.877	89.188	87.725	88.014	90.470	87.853
18	5.67	88.855	89.166	87.725	88.002	90.416	87.853
19	6.00	88.834	89.145	87.725	88.014	90.362	87.853
20	6.33	88.812	89.111	87.736	87.993	90.297	87.841
21	6.67	88.791	89.091	87.736	88.002	90.254	87.841
22	7.00	88.769	89.080	87.736	88.002	90.200	87.841
23	7.33	88.748	89.048	87.725	87.993	90.157	87.841
24	7.67	88.737	89.025	87.736	87.993	90.134	87.830
25	8.00	88.715	89.003	87.725	88.002	90.082	87.841

ILRT VARIABLE SUMMARY

SAMPLE NUMBER	DELTA HOURS	TEMP 13 DEG F	TEMP 14 DEG F	TEMP 15 DEG F	TEMP 16 DEG F	TEMP 17 DEG F	TEMP 18 DEG F
1	0.00	89.584	86.993	89.955	89.884	87.677	89.952
2	0.33	89.573	87.002	89.912	89.841	87.677	89.897
3	0.67	89.539	86.982	89.869	89.798	87.689	89.854
4	1.00	89.526	87.009	89.821	89.762	87.673	89.829
5	1.33	89.507	87.002	89.771	89.701	87.677	89.757
6	1.67	89.487	86.993	89.728	89.646	87.666	89.725
7	2.00	89.465	86.982	89.683	89.592	87.646	89.682
8	2.33	89.433	86.993	89.640	89.549	87.657	89.647
9	2.67	89.410	87.002	89.597	89.517	87.677	89.616
10	3.00	89.388	87.002	89.565	89.483	87.666	89.584
11	3.33	89.367	87.002	89.522	89.429	87.646	89.550
12	3.67	89.336	87.025	89.488	89.397	87.634	89.518
13	4.00	89.313	87.036	89.445	89.354	87.614	89.486
14	4.33	89.290	87.036	89.402	89.322	87.623	89.452
15	4.67	89.265	87.032	89.366	89.284	87.609	89.416
16	5.00	89.245	87.052	89.334	89.252	87.598	89.384
17	5.33	89.222	87.052	89.300	89.220	87.575	89.352
18	5.67	89.211	87.063	89.268	89.197	87.587	89.341
19	6.00	89.191	87.052	89.237	89.186	87.575	89.307
20	6.33	89.168	87.052	89.214	89.143	87.566	89.286
21	6.67	89.157	87.075	89.182	89.123	87.575	89.263
22	7.00	89.137	87.063	89.160	89.111	87.566	89.243
23	7.33	89.125	87.075	89.139	89.068	87.566	89.209
24	7.67	89.103	87.086	89.117	89.036	87.566	89.200
25	8.00	89.082	87.097	89.094	89.002	87.555	89.177

ILRT VARIABLE SUMMARY

SAMPLE NUMBER	DELTA HOURS	TEMP 19 DEG F	TEMP 20 DEG F
1	0.00	91.201	89.195
2	0.33	91.114	89.160
3	0.67	91.016	89.128
4	1.00	90.934	89.117
5	1.33	90.852	89.074
6	1.67	90.777	89.053
7	2.00	90.700	89.042
8	2.33	90.613	89.007
9	2.67	90.547	88.998
10	3.00	90.484	88.975
11	3.33	90.406	88.955
12	3.67	90.331	88.932
13	4.00	90.276	88.920
14	4.33	90.210	88.900
15	4.67	90.142	88.866
16	5.00	90.076	88.854
17	5.33	90.022	88.845
18	5.67	89.956	88.822
19	6.00	89.912	88.811
20	6.33	89.858	88.802
21	6.67	89.803	88.779
22	7.00	89.748	88.756
23	7.33	89.705	88.747
24	7.67	89.673	88.735
25	8.00	89.619	88.724

ILRT VARIABLE SUMMARY

SAMPLE NUMBER	DELTA HOURS	PRES 1 PSIA	PRES 2 PSIA	HUM 1 % RH	HUM 2 % RH	HUM 3 % RH	HUM 4 % RH
1	0.00	66.235	66.235	76.495	DELETED	76.169	73.958
2	0.33	66.227	66.228	76.338	DELETED	76.100	74.178
3	0.67	66.219	66.221	76.244	DELETED	76.023	74.357
4	1.00	66.212	66.214	76.113	DELETED	76.141	74.591
5	1.33	66.205	66.208	76.116	DELETED	76.168	74.792
6	1.67	66.199	66.199	76.094	DELETED	76.199	74.916
7	2.00	66.192	66.193	76.095	DELETED	76.263	75.085
8	2.33	66.186	66.188	76.117	DELETED	76.285	75.240
9	2.67	66.180	66.182	76.160	DELETED	76.305	75.341
10	3.00	66.175	66.176	76.210	DELETED	76.251	75.443
11	3.33	66.169	66.171	76.235	DELETED	76.252	75.521
12	3.67	66.162	66.163	76.206	DELETED	76.252	75.562
13	4.00	66.157	66.158	76.212	DELETED	76.171	75.579
14	4.33	66.153	66.154	76.112	DELETED	76.176	75.624
15	4.67	66.148	66.149	76.135	DELETED	76.152	75.588
16	5.00	66.142	66.144	76.163	DELETED	76.140	75.618
17	5.33	66.137	66.140	76.187	DELETED	76.152	75.612
18	5.67	66.132	66.135	76.210	DELETED	76.146	75.624
19	6.00	66.128	66.131	76.210	DELETED	76.168	75.629
20	6.33	66.124	66.124	76.221	DELETED	76.187	75.599
21	6.67	66.119	66.119	76.228	DELETED	76.188	75.590
22	7.00	66.116	66.116	76.251	DELETED	76.205	75.612
23	7.33	66.112	66.111	76.251	DELETED	76.228	75.588
24	7.67	66.108	66.108	76.274	DELETED	76.245	75.601
25	8.00	66.104	66.104	76.257	DELETED	76.257	75.607

ILRT VARIABLE SUMMARY

SAMPLE NUMBER	DELTA HOURS	HUM 5 % RH	HUM 6 % RH	HUM 7 % RH	HUM 8 % RH	HUM 9 % RH
1	0.00	71.333	69.469	92.579	74.823	75.264
2	0.33	71.554	69.789	92.708	74.979	75.479
3	0.67	71.523	70.055	92.816	75.117	75.675
4	1.00	71.636	70.364	92.854	75.259	75.787
5	1.33	71.837	70.559	92.897	75.344	75.907
6	1.67	71.908	70.792	92.904	75.455	76.024
7	2.00	72.036	70.939	92.928	75.538	76.107
8	2.33	72.180	71.147	92.927	75.658	76.187
9	2.67	72.211	71.282	92.975	75.753	76.270
10	3.00	72.222	71.414	93.043	75.850	76.321
11	3.33	72.263	71.560	93.097	75.898	76.345
12	3.67	72.333	71.688	93.092	75.991	76.362
13	4.00	72.391	71.781	93.225	75.997	76.356
14	4.33	72.412	71.885	93.235	76.024	76.384
15	4.67	72.448	71.959	93.224	76.077	76.373
16	5.00	72.488	72.058	93.287	76.100	76.355
17	5.33	72.517	72.117	93.467	76.094	76.355
18	5.67	72.570	72.146	93.578	76.135	76.373
19	6.00	72.627	72.202	93.663	76.145	76.372
20	6.33	72.655	72.250	93.710	76.128	76.378
21	6.67	72.686	72.268	93.694	76.176	76.390
22	7.00	72.721	72.349	93.595	76.146	76.367
23	7.33	72.755	72.401	93.566	76.216	76.390
24	7.67	72.802	72.437	93.456	76.182	76.407
25	8.00	72.826	72.489	93.311	76.205	76.403

APPENDIX A4
SUPPLEMENTAL LEAKAGE RATE TEST

CLRT TEST MODE

1992 Turkey Point Unit 3 ILRT

Sequence Started 17:00 11/13/92
Sequence Ended 21:00 11/13/92

1992 Turkey Point Unit 3 ILRT

CONTAINMENT INTEGRATED LEAKAGE RATE TEST
SUPPLEMENTAL VERIFICATION TEST

LEAKAGE RATE IS MEASURED USING THE ABSOLUTE METHOD AND IS COMPUTED USING THE TOTAL TIME METHOD IN ACCORDANCE WITH TOPICAL REPORT BN-TOP-1 (REV 1)

TEST PERIOD STARTED AT 17:00 HOURS ON 11/13/92
TEST CONDUCTED FOR 4 HOURS

FREESPACE VOLUME OF CONTAINMENT IS 1550000 CU FT
CONTAINMENT WAS PRESSURIZED TO 66.03 PSIA

FITTED TOTAL TIME ILRT LEAKAGE RATE	Lam	= 0.087 % /DAY
CONTAINMENT DESIGN LEAKAGE RATE	La	= 0.250 % /DAY
SUPERIMPOSED CLRT LEAKAGE RATE	Lo	= 0.286 % /DAY
FITTED CLRT TOTAL TIME LEAKAGE RATE	Lc	= 0.396 % /DAY

$$Lo + Lam - La/4 <= Lc <= Lo + Lam + La/4$$

$$0.286 + 0.087 - 0.063 <= 0.396 <= 0.286 + 0.087 + 0.063$$

$$0.310 <= 0.396 <= 0.435$$

DESCRIPTION OF VARIABLES

AVE TEMP - CONTAINMENT MEAN TEMPERATURE CALCULATED FROM VOLUMETRICALLY WEIGHTED RTD SENSOR INDICATIONS.

PRESSURE - PRIMARY CONTAINMENT PRESSURE INDICATION.

VAPOR PRES - CONTAINMENT VAPOR PRESSURE CALCULATED FROM VOLUMETRICALLY WEIGHTED HUMIDITY/DEWPOINT SENSOR INDICATIONS.

LEAK SIM - SIMPLE TOTAL TIME MEASURED LEAKAGE RATE.

LEAK FIT - LEAKAGE RATE CALCULATED FROM FIRST ORDER REGRESSION OF SIMPLE TOTAL TIME LEAKAGE RATE DATA.

95% UCL - UPPER LIMIT OF THE 95% CONFIDENCE LEVEL OF FITTED LEAKAGE RATE DATA.

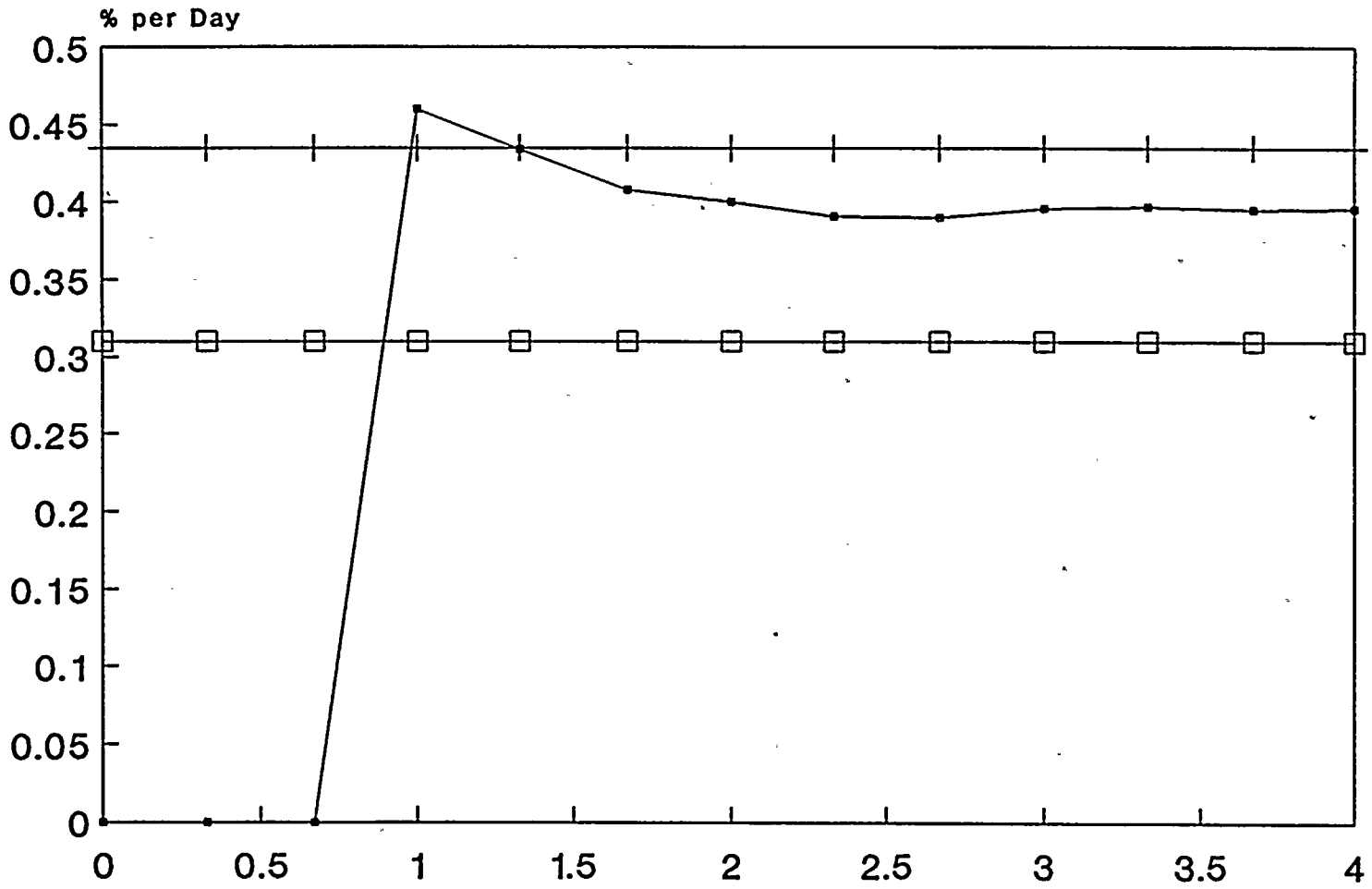
AIR MASS - CONTAINMENT AIR MASS.

NOTES FOR TABULAR DATA -

1. TABLE VALUES OF ZERO SIGNIFY THE DATA IS NOT APPLICABLE TO THE CALCULATION.

2. "DELETED" SIGNIFIES THE SENSOR WAS DELETED.

CLRT LEAKAGE RATES RELATIVE TO LIMITS
1992 TURKEY POINT UNIT 3 ILRT



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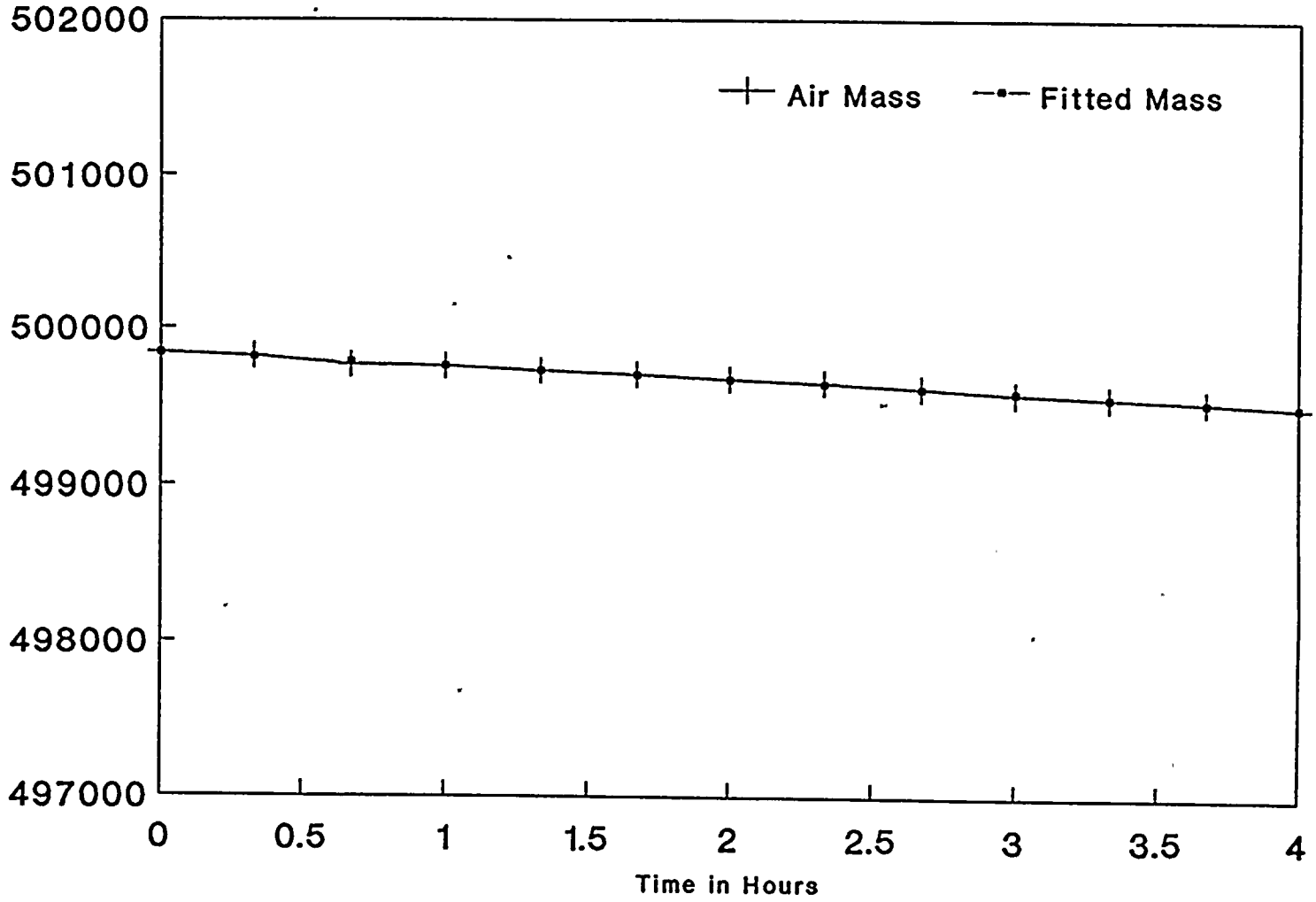
CLRT AIR MASS
1992 TURKEY POINT UNIT 3 ILRT



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CLRT VARIABLE TABLE SUMMARY

SAM NO	TIME HOURS	AVE TEMP DEG F	PRESSURE PSIA	VAP PRES PSIA	LEAK SIM %/DAY	LEAK FIT %/DAY	UCL %/DAY	AIR MASS LBS
1	0.00	88.607	66.027	0.5187	0.000	0.000	0.000	499838
2	0.33	88.588	66.021	0.5179	0.321	0.000	0.000	499816
3	0.67	88.572	66.012	0.5179	0.553	0.000	0.000	499761
4	1.00	88.552	66.009	0.5180	0.395	0.460	1.996	499756
5	1.33	88.538	66.004	0.5187	0.407	0.434	1.024	499725
6	1.67	88.519	65.999	0.5187	0.384	0.408	0.789	499705
7	2.00	88.503	65.993	0.5186	0.395	0.400	0.687	499674
8	2.33	88.486	65.988	0.5186	0.384	0.391	0.626	499652
9	2.67	88.469	65.982	0.5191	0.397	0.390	0.593	499618
10	3.00	88.458	65.976	0.5192	0.412	0.396	0.576	499581
11	3.33	88.439	65.971	0.5195	0.404	0.397	0.560	499558
12	3.67	88.423	65.967	0.5200	0.394	0.395	0.544	499538
13	4.00	88.410	65.961	0.5201	0.402	0.396	0.534	499504

SENSOR VOLUME FRACTIONS

TEMPERATURE SENSORS

1 to 5	0.053333	0.053333	0.040000	0.053333	0.060333
6 to 10	0.053333	0.060333	0.060333	0.049500	0.033000
11 to 15	0.053333	0.033000	0.040000	0.049500	0.060333
16 to 20	0.060333	0.033000	0.060333	0.053333	0.040000

HUMIDITY/DP SENSORS

1 to 5	0.120500	0.000000	0.120500	0.049500	0.120500
6 to 9	0.120500	0.320000	0.049500	0.099000	

NOTE: VALUE OF ZERO INDICATES A DELETED SENSOR.

% day

14 SCFM

$\left(\frac{.25}{100}\right) 1{,}550{,}000 \left(\frac{14.96 + 24.9}{14.96}\right) = 1.55 \times 10^6 \times$

68,129.96 SCFD

.25 17,032.39 SCFD

11.5 709.687 SCFH

= .25% day 11.8281 SCFM

1% day $= \frac{11.8281}{.25}$ SCFM

$= 47.31$

1 SCFM $= \frac{.25}{11.8281}$

CLRT VARIABLE SUMMARY

SAMPLE NUMBER	DELTA HOURS	TEMP 1 DEG F	TEMP 2 DEG F	TEMP 3 DEG F	TEMP 4 DEG F	TEMP 5 DEG F	TEMP 6 DEG F
1	0.00	88.983	88.475	88.916	89.016	88.420	89.350
2	0.33	88.940	88.432	88.896	88.995	88.400	89.319
3	0.67	88.920	88.409	88.905	88.961	88.400	89.285
4	1.00	88.886	88.378	88.873	88.929	88.389	89.242
5	1.33	88.854	88.355	88.873	88.909	88.377	89.253
6	1.67	88.823	88.335	88.862	88.874	88.357	89.221
7	2.00	88.800	88.323	88.853	88.854	88.346	89.176
8	2.33	88.777	88.312	88.841	88.831	88.335	89.133
9	2.67	88.795	88.296	88.837	88.806	88.321	89.086
10	3.00	88.764	88.287	88.825	88.772	88.310	89.077
11	3.33	88.741	88.265	88.814	88.752	88.287	89.022
12	3.67	88.709	88.233	88.794	88.729	88.276	89.000
13	4.00	88.698	88.222	88.794	88.697	88.267	88.957

CLRT VARIABLE SUMMARY

SAMPLE NUMBER	DELTA HOURS	TEMP 7 DEG F	TEMP 8 DEG F	TEMP 9 DEG F	TEMP 10 DEG F	TEMP 11 DEG F	TEMP 12 DEG F
1	0.00	88.482	88.758	87.741	87.975	89.482	87.812
2	0.33	88.459	88.749	87.750	87.975	89.439	87.812
3	0.67	88.439	88.726	87.750	87.987	89.417	87.803
4	1.00	88.439	88.704	87.750	87.952	89.385	87.812
5	1.33	88.427	88.695	87.750	87.964	89.342	87.803
6	1.67	88.405	88.672	87.761	87.975	89.288	87.803
7	2.00	88.396	88.652	87.761	87.952	89.266	87.803
8	2.33	88.384	88.629	87.750	87.964	89.212	87.803
9	2.67	88.357	88.613	87.757	87.939	89.175	87.798
10	3.00	88.348	88.604	87.757	87.959	89.153	87.787
11	3.33	88.326	88.593	87.748	87.939	89.121	87.798
12	3.67	88.314	88.581	87.757	87.927	89.079	87.787
13	4.00	88.305	88.570	87.757	87.939	89.024	87.787

CLRT VARIABLE SUMMARY

SAMPLE NUMBER	DELTA HOURS	TEMP 13 DEG F	TEMP 14 DEG F	TEMP 15 DEG F	TEMP 16 DEG F	TEMP 17 DEG F	TEMP 18 DEG F
1	0.00	88.901	87.090	88.849	88.746	87.537	88.943
2	0.33	88.892	87.099	88.829	88.737	87.537	88.920
3	0.67	88.881	87.099	88.817	88.703	87.525	88.909
4	1.00	88.858	87.099	88.795	88.692	87.525	88.900
5	1.33	88.847	87.079	88.774	88.671	87.537	88.877
6	1.67	88.838	87.090	88.763	88.649	87.525	88.866
7	2.00	88.815	87.090	88.743	88.628	87.537	88.855
8	2.33	88.804	87.090	88.731	88.617	87.537	88.834
9	2.67	88.791	87.075	88.716	88.581	87.544	88.818
10	3.00	88.779	87.106	88.695	88.569	87.544	88.809
11	3.33	88.779	87.097	88.684	88.558	87.532	88.786
12	3.67	88.757	87.086	88.684	88.547	87.532	88.775
13	4.00	88.748	87.097	88.661	88.538	87.532	88.764

CLRT VARIABLE SUMMARY

SAMPLE NUMBER	DELTA HOURS	TEMP 19 DEG F	TEMP 20 DEG F
1	0.00	89.068	88.539
2	0.33	89.025	88.528
3	0.67	88.993	88.516
4	1.00	88.938	88.505
5	1.33	88.916	88.496
6	1.67	88.861	88.484
7	2.00	88.829	88.473
8	2.33	88.786	88.461
9	2.67	88.761	88.450
10	3.00	88.727	88.441
11	3.33	88.683	88.429
12	3.67	88.652	88.429
13	4.00	88.629	88.418

CLRT VARIABLE SUMMARY

SAMPLE NUMBER	DELTA HOURS	PRES 1 PSIA	PRES 2 PSIA	HUM 1 % RH	HUM 2 % RH	HUM 3 % RH	HUM 4 % RH
1	0.00	66.027	66.018	76.721	DELETED	76.686	75.734
2	0.33	66.021	66.013	76.774	DELETED	76.721	75.764
3	0.67	66.012	66.007	76.808	DELETED	76.743	75.785
4	1.00	66.009	66.004	76.868	DELETED	76.851	75.800
5	1.33	66.004	65.998	76.930	DELETED	76.913	75.845
6	1.67	65.999	65.993	76.976	DELETED	76.989	75.868
7	2.00	65.993	65.987	77.045	DELETED	77.045	75.913
8	2.33	65.988	65.982	77.094	DELETED	77.134	75.967
9	2.67	65.982	65.977	77.162	DELETED	77.214	75.984
10	3.00	65.976	65.972	77.198	DELETED	77.303	76.049
11	3.33	65.971	65.966	77.296	DELETED	77.395	76.041
12	3.67	65.967	65.961	77.388	DELETED	77.445	76.063
13	4.00	65.961	65.956	77.457	DELETED	77.527	76.105

CLRT VARIABLE SUMMARY

SAMPLE NUMBER	DELTA HOURS	HUM 5 % RH	HUM 6 % RH	HUM 7 % RH	HUM 8 % RH	HUM 9 % RH
1	0.00	73.429	73.214	82.191	76.414	76.622
2	0.33	73.470	73.290	81.860	76.455	76.658
3	0.67	73.527	73.335	81.893	76.482	76.703
4	1.00	73.575	73.390	82.001	76.520	76.746
5	1.33	73.655	73.463	82.301	76.547	76.774
6	1.67	73.713	73.522	82.295	76.599	76.820
7	2.00	73.788	73.601	82.264	76.661	76.870
8	2.33	73.801	73.673	82.273	76.704	76.902
9	2.67	73.882	73.749	82.458	76.768	76.995
10	3.00	73.947	73.801	82.523	76.810	76.984
11	3.33	74.004	73.870	82.650	76.884	77.052
12	3.67	74.066	73.921	82.909	76.923	77.068
13	4.00	74.148	73.979	82.898	77.004	77.108

APPENDIX B1
LOCAL LEAK RATE TESTS/SUMMARY ANALYSIS - 1992 OUTAGE

LOCAL LEAKAGE RATE SUMMARY ANALYSIS

By analysis, an as-found ILRT can be computed to determine the total containment leakage rate prior to the start of the refueling outage, i.e. before any repairs or adjustments to the containment penetrations. This determination consists of reviewing the minimum pathway leakage for the as-found vs. the as-left values following maintenance. The net leakage contribution for each penetration is determined utilizing the following criteria:

1. A leakage rate add-on equivalent to the repair improvement is assigned to each penetration.

2. The net equivalent leakage assigned to the penetration is the lowest leakage of the valve grouping (i.e. minimum pathway leakage).

3. If a repair was not performed on a containment isolation valve, and a reduction in leakage is noted between the as found and as left test, no penalty is assessed.

4. No leakage credit is taken if the as-left leakage rate is higher than the as found leakage rate. Only those penetrations where repairs were made to the isolation valves are included in this attachment.

5. For series isolation valves tested together (i.e. combination tests), the penetration net equivalent leakage is half the difference between the as-found and the as-left leakage rates when both valves are repaired at the same time. If only one valve is repaired or both valves are repaired at different times, subsequent analysis of test results may be performed to determine the penalty to be assessed.

6. When the summation of the leakage equivalent and the leakage measured during a successful Type A test is greater than L_a, the penetration(s) with excessive leakage(s) will be analyzed to determine the cause of the failure and/or corrective action taken to prevent recurrence.

7. All measured leakage rate values are in units of cubic centimeters per minute (CCM) at 50 psig.

Based on the foregoing criteria and the values tabulated on the following page, the **net equivalent leakage** of 0.020 percent/day, when added to the results of this ILRT of 0.139 percent/day (BN-TOP UCL plus corrections), indicates that the as-found ILRT test result, determined by analysis (0.159 percent/day) is below the maximum allowable leakage rate of 0.25 percent/day.

TYPE 'B' AND 'C' LOCAL LEAK RATE (LLRT)
AS-FOUND SUMMARY ANALYSIS

PEN. NO.	DESCRIPTION	AS FOUND LEAKAGE	AS LEFT LEAKAGE	MIN. PATH LEAKAGE	PENALTY ASSESSED	NOTES
10	RCDT AND PRT VENT	80	25	75	50	
11	ALT LHSI TO LOOP	15	500	N/A	0	CRITERION 4
16	PACVS STOP,POST ACC	2000	15	N/A	1985	
19A	CONT SPRAY HDR "A"	32500	1800	250	0	CRITERION 2
23	CONT SUMP TO WHT	8500	15	1400	1385	
24A	SEAL WATER TO "A" RCP	1600	600	1600	1000	
29	INST AIR SUPPLY	2400	1100	660	0	CRITERION 2
34	SERVICE AIR	8750	420	260	0	CRITERION 2
36	CONT PURGE EXHAUST	800	800	800	0	CRITERION 5, NOTE 1
41	PERSONNEL HATCH	900	250	N/A	650	
42	NITROGEN TO ACC.	1200	550	1200	650	
53	PACVS STOP,POST ACC	460	18	N/A	442	
55	"A" ACC SAMPLE	7400	70	18	0	CRITERION 2

TYPE 'B' AND 'C' LOCAL LEAK RATE (LLRT)
AS-FOUND SUMMARY ANALYSIS

PEN. NO.	DESCRIPTION	AS FOUND LEAKAGE	AS LEFT LEAKAGE	MIN. PATH LEAKAGE	PENALTY ASSESSED	NOTES
62A	CONT. PRESS	160	18	160	0	NOTE 2
62C	CONT. PRESS	980	18	980	18	NOTE 2
				TOTAL =	6162 CC/MIN	
				=	0.020 % /DAY	

NOTE 1 PENETRATION 36 WAS RETESTED FOLLOWING INSTALLATION OF A SPACER TO INCREASE THE SPRING FORCE ON POV-3-2602. NO MAINTENANCE WAS PERFORMED ON POV-3-2603.

NOTE 2 TIGHTENED DOWN ON BOUNDARY VALVE. NO MAINTENANCE PERFORMED.

TYPE 'B' AND 'C' LOCAL LEAK RATE (LLRT) SUMMARY

SEPT. '92 OUTAGE

PEN. NO.	COMPONENT	DESCRIPTION	ACCEPT. CRITER.	AS FOUND LEAKAGE	DATE	AS LEFT LEAKAGE	DATE	NOTE
5	SV-3-6385	PRT TO GAS ANALYZER	1000	15	10/09/92	15	10/09/92	
5	CV-3-516	PRT TO GAS ANALYZER	1000	60	10/09/92	60	10/09/92	
6	CK-3-518	NITROGEN TO PRT	2500	125	10/18/92	125	10/18/92	
6	STCK-3-519	NITROGEN TO PRT	2500	1500	10/18/92	1500	10/18/92	
7	CV-519A,B,522A,B,C	PW TO RCP STANDPIPE	2000	18	10/03/92	18	10/03/92	
8	CV-3-951	PZR STEAM SAMPLE	1000	18	10/02/92	18	10/02/92	
8	CV-3-956A	PZR STEAM SAMPLE	1000	35	10/02/92	35	10/02/92	
9	CV-3-953	PZR LIQ SAMPLE	1000	18	11/04/92	18	11/04/92	
9	CV-3-956B	PZR LIQ SAMPLE	1000	18	10/29/92	18	10/29/92	
10	CV-3-4658A	RCDT AND PRT VENT	2000	130	10/18/92	130	10/18/92	
10	CV-3-4658B	RCDT AND PRT VENT	2000	18	10/19/92	18	10/19/92	
10	PCV-3-1014	RCDT AND PRT VENT	2000	75	10/17/92	75	10/17/92	
10	3-4656	RCDT AND PRT VENT	2000	80	10/18/92	25	11/03/92	NOTE 1
11	MOV-3-872	ALT LHSI TO LOOP	8000	15	10/10/92	500	11/11/92	NOTE 2
14	CV-3-200A,B,C	LETDOWN ORIFICE STO	3000	380	10/30/92	380	10/30/92	
14	CV-3-204	LETDOWN ISOLATION	3000	70	11/04/92	70	11/04/92	
15	HCV-3-121,V-333	CHARGING ISOLATION	2000	180	10/17/92	180	10/17/92	
15	CK-3-312C	CHARGING LINE CHECK	4000	275	10/18/92	275	10/18/92	
16	HV-3-1,2,PAHM-002A	PACVS STOP,POST ACC	3000	2000	10/03/92	15	11/05/92	NOTE 3

TYPE 'B' AND 'C' LOCAL LEAK RATE (LLRT) SUMMARY

SEPT. '92 OUTAGE

PEN. NO.	COMPONENT	DESCRIPTION	ACCEPT. CRITER.	AS FOUND LEAKAGE	DATE	AS LEFT LEAKAGE	DATE	NOTE
17	3-895V	ACC TEST LINE	500	18	11/05/92	18	11/05/92	
19A	CK-3-890A	CONT SPRAY HDR "A"	6000	32500	09/29/92	1800	10/13/92	NOTE 4
19A	MOV-3-880A	CONT SPRAY HDR "A"	5000	250	09/29/92	250	09/29/92	
19B	CK-3-890B	CONT SPRAY HDR "B"	6000	3600	09/29/92	2400	10/13/92	
19B	MOV-3-880B	CONT SPRAY HDR "B"	5000	660	09/29/92	660	09/29/92	
20	SV-3-6427A	"A" HOT LEG SAMPLE	1000	18	10/02/92	18	10/02/92	
20	SV-3-6427B	"B" HOT LEG SAMPLE	1000	30	10/02/92	30	10/02/92	
20	SV-3-6428	COMBINED SAMPLE ST	1000	440	10/02/92	440	10/02/92	
23	CV-3-2821	CONT SUMP TO WHT	2000	1400	09/21/92	1400	09/21/92	
23	CV-3-2822	CONT SUMP TO WHT	2000	8500	09/21/92	15	11/09/92	NOTE 5
24A	CK-3-298A	SEAL WATER TO "A"RC	2000	1600	11/03/92	600	11/03/92	NOTE 6
24B	CK-3-298B	SEAL WATER TO "B"RC	2000	18	11/03/92	18	11/03/92	
24C	CK-3-298C	SEAL WATER TO "C"RC	2000	95	11/03/92	95	11/03/92	
25	MOV-3-6386	RCP SEAL RETURN	2000	35	10/01/92	18	11/04/92	
25	MOV-3-381	RCP SEAL RETURN	2000	15	10/01/92	15	10/01/92	
29	STCK-3-40-340A	INST AIR SUPPLY	4000	660	11/04/92	660	11/04/92	
29	CK-3-40-336	INST AIR SUPPLY	4000	2400	11/04/92	1100	11/08/92	NOTE 7
30	BA-3-201	BREATHING AIR	3000	35	11/03/92	35	11/03/92	
30	CV-3-6165	BREATHING AIR	3000	120	10/29/92	120	10/29/92	

TYPE 'B' AND 'C' LOCAL LEAK RATE (LLRT) SUMMARY

SEPT. '92 OUTAGE

PEN. NO.	COMPONENT	DESCRIPTION	ACCEPT. CRITER.	AS FOUND LEAKAGE	DATE	AS LEFT LEAKAGE	DATE	NOTE
31	CV-3-4659A,B	RCDT TO G.A.	500	15	11/04/92	15	11/04/92	
32	CK-3-11-003	CONT AIR SAMPLE SUC	2000	18	10/14/92	18	10/14/92	
32	SV-3-2912,PAHM-001A	CNT AIR SUC,POST ACC	3000	300	10/10/92	300	10/10/92	
33	SV-3-2911	CONT AIR SAMPLE RET	3000	30	10/10/92	30	10/10/92	
33	SV-3-2913	CONT AIR SAMPLE RET	3000	160	10/10/92	160	10/10/92	
34	CK-3-40-205	SERVICE AIR	2000	8750	11/03/92	420	11/06/92	NOTE 8
34	3-40-204,HV-3-17	SERVICE AIR	2000	260	10/29/92	260	10/29/92	
35	PV-3-2600,2601	CONT PURGE SUPPLY	3750	1150	10/16/92	1150	10/16/92	
36	PV-3-2602,2603	CONT PURGE EXHAUST	3750	800	11/07/92	800	11/07/92	NOTE 9
37	3-10-879	SPARE		18	10/01/92	18	10/01/92	
38	ELECT.CANISTERS/ALL	ELECTRICAL PEN(S)		166	10/09/92	166	10/09/92	
39	"O"-RINGS	FUEL TRANS. FLANGE		18	09/30/92	18	11/07/92	
40	"O"-RINGS	EQUIPMENT HATCH		18	09/22/92	18	11/11/92	
41	"O"-RINGS	PERSONNEL HATCH	3750	900	03/09/92	250	11/06/92	NOTE 10
42	STCK-3-945E	NITROGEN TO ACC.	3000	1500	10/18/92	1500	10/18/92	
42	CV-3-855	NITROGEN TO ACC.	500	1200	10/17/92	550	11/05/92	NOTE 11
47	3-10-582,CK-10-567	PW TO CONT	4000	65	10/03/92	65	10/03/92	

TYPE 'B' AND 'C' LOCAL LEAK RATE (LLRT) SUMMARY

SEPT. '92 OUTAGE

PEN. NO.	COMPONENT	DESCRIPTION	ACCEPT. CRITER.	AS FOUND LEAKAGE	DATE	AS LEFT LEAKAGE	DATE	NOTE
48	4KVRCP.CANISTRS/ALL	ELECTRICAL PEN(S)		54	10/16/92	54	10/16/92	
49	"O"-RINGS	EMERGENCY HATCH	3750	125	07/28/92	250	11/11/92	
52	CV-3-4668A,B	RCDT PUMP DISCH	2000	18	11/05/92	18	11/05/92	
53	HV-3-3,4,PAHM-002B	PACVS STOP,POST ACC		460	09/18/92	18	11/04/92	NOTE 12
54A	MOV-3-860A,861A	"A" RECIRC SUMP	7000	350	10/16/92	350	10/16/92	
54B	MOV-3-860B,861B	"B" RECIRC SUMP	7000	15	10/16/92	15	10/16/92	
55	CV-955C	"A" ACC SAMPLE	1000	7400	10/19/92	70	11/05/92	NOTE 13
55	CV-955D	"B" ACC SAMPLE	1000	18	10/20/92	18	10/20/92	
55	CV-955E	"C" ACC SAMPLE	1000	18	10/20/92	18	10/20/92	
55	CV-956D	ACC SAMPLE STOP	1000	18	10/20/92	18	10/20/92	
61B	3-3-2024 & CAP	SPARE	1000	18	11/05/92	18	11/05/92	
62A	PS2008,2057 & PT'S	CONT. PRESS		160	10/03/92	18	11/06/92	NOTE 14
62B	PS2009,2058	CONT. PRESS		18	10/09/92	18	10/09/92	
62C	PS2007,2056 & PT'S	CONT. PRESS		980	11/05/92	18	11/05/92	NOTE 15
63	CV-3-2819	INST AIR BLEED	2000	170	10/12/92	170	10/12/92	
63	CV-3-2826	INST AIR BLEED	2000	300	10/12/92	300	10/12/92	
65A	FLANGES	ILRT PRESS. PIPE		15	09/18/92	250	11/20/92	
65B	3-2025	ILRT TEST SENSE LINE	2000	18	10/01/92	15	11/17/92	
65C	3-2026	ILRT TEST SENSE LINE	2000	18	10/01/92	15	11/17/92	

TYPE 'B' AND 'C' LOCAL LEAK RATE (LLRT) SUMMARY

SEPT. '92 OUTAGE

PEN. NO.	COMPONENT	DESCRIPTION	ACCEPT. CRITER.	AS FOUND LEAKAGE	DATE	AS LEFT LEAKAGE	DATE	NOTE

NOTES:

NOTE 1	REPLACED DIAPHRAGM
NOTE 2	DRILLED HOLE IN DISC TO RELIEVE THERMAL BINDING
NOTE 3	REPLACED GATE VALVE WITH DIAPHRAGM VALVE
NOTE 4	LAPPED SEAT
NOTE 5	REPLACED VALVE INTERNALS
NOTE 6	BLEW AIR THROUGH VALVE
NOTE 7	LAPPED SEAT
NOTE 8	LAPPED SEAT
NOTE 9	INCREASED SPRING FORCE ON PV-3-2602. NO MAINT. PERFORMED ON PV-3-2603.
NOTE 10	REPLACED VENT VALVE
NOTE 11	LAPPED SEAT
NOTE 12	REPLACED GATE VALVE WITH DIAPHRAGM VALVE
NOTE 13	LAPPED SEAT
NOTE 14	TIGHTENED DOWN ON BOUNDARY VALVE
NOTE 15	TIGHTENED DOWN ON BOUNDARY VALVE

APPENDIX B2
LOCAL LEAK RATE TESTS - 1991 OUTAGE

TYPE 'B' AND 'C' LOCAL LEAK RATE (LLRT) SUMMARY

DUAL UNIT OUTAGE 1991

PEN NO.	COMPONENT	DESCRIPTION	ACCEPT. CRITERIA	AS FOUND	DATE	AS LEFT	DATE	NOTES
5	SV-3-6385	PRT TO GAS ANALYZER	1000	18	02/16/90	35	05/16/91	
	CV-3-516	PRT TO GAS ANALYZER	1000	55	02/16/90	230	05/02/91	
6	CK-3-518	NITROGEN TO PRT	2500	680	01/16/91	650	06/03/91	
	STCK-3-519	NITROGEN TO PRT	2500	1350	01/18/91	800	06/03/91	
7	CV-519A,B,522A,B,C	PW TO RCP STANDPIPE	2000	75	01/31/91	18	09/17/91	
8	CV-3-951	PZR STEAM SAMPLE	1000	1300	01/13/91	18	05/03/91	NOTE 1
	CV-3-956A	PZR STEAM SAMPLE	1000	18	01/11/91	40	05/03/91	
9	CV-3-953	PZR LIQ SAMPLE	1000	18	01/14/91	18	05/06/91	
	CV-3-956B	PZR LIQ SAMPLE	1000	900	01/15/91	70	01/15/91	NOTE 2
10	CV-3-4658A	RCDT AND PRT VENT	2000	800	01/08/91	18	07/11/91	NOTE 3
	CV-3-4658B	RCDT AND PRT VENT	2000	50	01/11/91	20	07/04/91	
	PCV-3-1014	RCDT AND PRT VENT	2000	2500	01/15/91	570	08/22/91	NOTE 4
	3-4656	RCDT AND PRT VENT	2000	55	01/11/91	20	07/11/91	
11	MOV-3-872	ALT LHSI TO LOOP	8000	18	01/18/91	18	07/04/91	
14	CV-3-200A,B,C	LETDOWN ORIFICE STO	3000	1400	01/03/91	1400	06/29/91	
	CV-3-204	LETDOWN ISOLATION	3000	18	01/02/91	18	06/03/91	
15	HCV-3-121,V-333	CHARGING ISOLATION	2000	90	01/03/91	90	07/19/91	
	CK-3-312C	CHARGING LINE CHECK	4000	160	01/04/91	180	07/31/91	
16	HV-3-1,2,PAHM-002A	PACVS STOP,POST ACC	3000	90	03/14/90	480	08/02/91	

TYPE 'B' AND 'C' LOCAL LEAK RATE (LLRT) SUMMARY

DUAL UNIT OUTAGE 1991

PEN NO.	COMPONENT	DESCRIPTION	ACCEPT. CRITERIA	AS FOUND	DATE	AS LEFT	DATE	NOTES
17	3-895V	ACC TEST LINE	500	18	01/09/91	18	05/24/91	
19A	CK-3-890A	CONT SPRAY HDR "A"	6000	160	01/23/91	350	05/08/91	
	MOV-3-880A	CONT SPRAY HDR "A"	5000	15	01/23/91	18	05/08/91	
19B	CK-3-890B	CONT SPRAY HDR "B"	6000	35	01/23/91	80	05/09/91	
	MOV-3-880B	CONT SPRAY HDR "B"	5000	25	01/23/91	25	05/09/91	
20	SV-3-6427A	"A" HOT LEG SAMPLE	1000	2000	01/05/91	18	05/13/91	NOTE 5
	SV-3-6427B	"B" HOT LEG SAMPLE	1000	18	01/05/91	18	05/13/91	
	SV-3-6428	COMBINED SAMPLE ST	1000	45	01/05/91	330	05/13/91	
23	CV-3-2821	CONT SUMP TO WHT	2000	18	09/01/91	18	09/01/91	
	CV-3-2822	CONT SUMP TO WHT	2000	18	09/02/91	95	09/02/91	
24A	CK-3-298A	SEAL WATER TO "A"RC	2000	110000	01/05/91	200	09/01/91	NOTE 6
24B	CK-3-298B	SEAL WATER TO "B"RC	2000	110000	01/05/91	70	09/01/91	NOTE 7
24C	CK-3-298C	SEAL WATER TO "C"RC	2000	100000	01/07/91	90	09/06/91	NOTE 8
25	MOV-3-6386	RCP SEAL RETURN	2000	18	01/11/91	90	07/13/91	
	MOV-3-381	RCP SEAL RETURN	2000	18	01/11/91	60	07/13/91	
29	STCK-3-40-340A	INST AIR SUPPLY	4000	700	01/26/91	750	06/28/91	
	CK-3-40-336	INST AIR SUPPLY	4000	750	01/26/91	680	06/28/91	
30	BA-3-201	BREATHING AIR	3000	400	12/15/90	18	08/31/91	NOTE 9
	CV-3-6165	BREATHING AIR	3000	18	12/15/90	190	06/28/91	

TYPE 'B' AND 'C' LOCAL LEAK RATE (LLRT) SUMMARY

DUAL UNIT OUTAGE 1991

PEN NO.	COMPONENT	DESCRIPTION	ACCEPT. CRITERIA	AS FOUND	DATE	AS LEFT	DATE	NOTES
31	CV-3-4659A,B	RCDT TO G.A.	500	18	02/04/91	18	05/29/91	
32	CK-3-11-003	CONT AIR SAMPLE SUC	2000	35	01/29/91	18	05/20/91	
	SV-3-2912,PAHM-001A	CNT AIR SUC,POST ACC	3000	145	01/29/91	110	05/20/91	
33	SV-3-2911	CONT AIR SAMPLE RET	3000	70	01/29/91	60	05/15/91	
	SV-3-2913	CONT AIR SAMPLE RET	3000	350	01/29/91	160	05/15/91	
34	CK-3-40-205	SERVICE AIR	2000	1030	01/22/91	240	07/20/91	
	3-40-204,HV-3-17	SERVICE AIR	2000	1500	01/22/91	360	09/02/91	NOTE 10 & 11
35	PV-3-2600,2601	CONT PURGE SUPPLY	3750	2000	01/24/91	600	09/10/91	NOTE 12
36	PV-3-2602,2603	CONT PURGE EXHAUST	3750	80000	01/25/91	350	09/16/91	NOTE 13
37	3-10-879	SPARE		18	03/19/90	18	05/30/91	
38	ELECT.CANISTERS/ALL	ELECTRICAL PEN(S)		185	07/21/91	144	05/02/91	
39	"O"-RINGS	FUEL TRANS. FLANGE		18	12/17/90	130	09/04/91	
40	"O"-RINGS	EQUIPMENT HATCH		18	08/30/90	15	09/19/91	
41	"O"-RINGS	PERSONNEL HATCH	3750	4400	08/07/90	600	09/18/91	
42	STCK-3-945E	NITROGEN TO ACC.	3000	18	01/22/91	18	05/30/91	
	CV-3-855	NITROGEN TO ACC.	500	18	01/23/91	18	05/30/91	

TYPE 'B' AND 'C' LOCAL LEAK RATE (LLRT) SUMMARY

DUAL UNIT OUTAGE 1991

PEN NO.	COMPONENT	DESCRIPTION	ACCEPT. CRITERIA	AS FOUND	DATE	AS LEFT	DATE	NOTES
47	3-10-582,CK-10-567	PW TO CONT	4000	45	01/30/91	18	06/06/91	
48	4KVRCP.CANISTRS/ALL	ELECTRICAL PEN(S)		73	01/05/91	36	06/13/91	
49	"O"-RINGS	EMERGENCY HATCH	3750	700	03/21/91	750	09/08/91	
52	CV-3-4668A,B	RCDT PUMP DISCH	2000	18	12/03/90	18	09/11/91	
53	HV-4-3,4,PAHM-002B	PACVS STOP,POST ACC		18	01/09/91	260	05/24/91	
54A	MOV-3-860A,861A	"A" RECIRC SUMP	7000	120	01/19/91	18	07/09/91	
54B	MOV-3-860B,861B	"B" RECIRC SUMP	7000	15	01/14/91	220	07/05/91	
55	CV-955C	"A" ACC SAMPLE	1000	650	01/18/91	460	05/21/91	NOTE 14
	CV-955D	"B" ACC SAMPLE	1000	18	01/18/91	18	05/21/91	
	CV-955E	"C" ACC SAMPLE	1000	18	01/19/91	18	05/21/91	
	CV-956D	ACC SAMPLE STOP	1000	620	01/19/91	35	05/22/91	
61B	3-3-2024 & CAP	SPARE	1000	18	03/07/90	18	05/17/91	
62A	PS2008,2057 & PT'S	CONT. PRESS		18	03/05/91	18	06/07/91	
62B	PS2009,2058	CONT. PRESS		18	03/05/91	18	06/10/91	
62C	PS2007,2056 & PT'S	CONT. PRESS		18	03/05/91	18	06/11/91	
63	CV-3-2819	INST AIR BLEED	2000	70	03/20/91	70	05/28/91	
	CV-3-2826	INST AIR BLEED	2000	110	03/20/91	160	05/28/91	

TYPE 'B' AND 'C' LOCAL LEAK RATE (LLRT) SUMMARY

DUAL UNIT OUTAGE 1991

PEN NO.	COMPONENT	DESCRIPTION	ACCEPT. CRITERIA	AS FOUND	DATE	AS LEFT	DATE	NOTES
65A	FLANGES	ILRT PRESS. PIPE		50	01/03/91	18	09/03/91	
65B	3-2025	ILRT TEST SENSE LINE	2000	18	01/28/91	18	05/28/91	
65C	3-2026	ILRT TEST SENSE LINE	2000	18	01/29/91	18	05/28/91	

NOTES:

NOTE 1	CLEANED SEAT AND DISC
NOTE 2	REBUILT VALVE
NOTE 3	REPLACED TEST CONNECTION VALVE
NOTE 4	REBUILT VALVE
NOTE 5	REPLACED VALVE
NOTE 6	REPLACED VALVE AND LAPPED VALVE SEATS
NOTE 7	REPLACED VALVE AND LAPPED VALVE SEATS
NOTE 8	REPLACED VALVE AND LAPPED VALVE SEATS
NOTE 9	REPLACED O-RING GASKET
NOTE 10	REPLACED 204 AND LAPPED VALVE SEAT
NOTE 11	REPACKED VALVE
NOTE 12	WIPED SEAT AND DISC
NOTE 13	WIPED SEAT AND DISC INCREASED SPRING FORCE ON POV-2602 OPERATOR
NOTE 14	LAPPED SEAT

APPENDIX B3
LOCAL LEAK RATE TESTS - 1990 OUTAGE

TYPE 'B' AND 'C' LOCAL LEAK RATE (LLRT) SUMMARY

MARCH '90 OUTAGE

PEN NO.	COMPONENT	DESCRIPTION	ACCEPT. CRITERIA	AS FOUND	DATE	AS LEFT	DATE	NOTES
5	SV-3-6385	PRT TO GAS ANALYZER	1000	18	02/25/90	18	02/25/90	
	CV-3-516	PRT TO GAS ANALYZER	1000	55	02/16/90	55	02/16/90	
6	CK-3-518	NITROGEN TO PRT	2500	900	02/12/90	900	02/12/90	
	STCK-3-519	NITROGEN TO PRT	2500	960	02/15/90	960	02/15/90	
7	CV-519A,B,522A,B,C	PW TO RCP STANDPIPE	2000	18	02/13/90	18	04/06/90	
8	CV-3-951	PZR STEAM SAMPLE	1000	225	02/07/90	18	04/03/90	NOTE 1
	CV-3-956A	PZR STEAM SAMPLE	1000	18	02/07/90	18	04/04/90	
9	CV-3-953	PZR LIQ SAMPLE	1000	18	02/07/90	30	04/03/90	
	CV-3-956B	PZR LIQ SAMPLE	1000	840	02/07/90	240	04/16/90	NOTE 2
10	CV-3-4658A	RCDT AND PRT VENT	2000	1800	03/01/90	1800	03/01/90	
	CV-3-4658B	RCDT AND PRT VENT	2000	18	02/26/90	18	02/26/90	
	PCV-3-1014	RCDT AND PRT VENT	2000	860	02/26/90	860	02/26/90	
	3-4656	RCDT AND PRT VENT	2000	18	03/01/90	18	03/01/90	
11	MOV-3-872	ALT LHSI TO LOOP	8000	1120	3/1/90	1600	03/17/90	
14	CV-3-200A,B,C	LETDOWN ORIFICE STO	3000	45000	02/15/90	50	04/01/90	NOTE 3
	CV-3-204	LETDOWN ISOLATION	3000	18	02/15/90	140	03/27/90	
15	HCV-3-121,V-333	CHARGING ISOLATION	2000	18	02/23/90	150	03/28/90	
	CK-3-312C	CHARGING LINE CHECK	4000	150	02/23/90	150	02/23/90	
16	HV-3-1,2,PAHM-002A	PACVS STOP,POST ACC	3000	18	02/26/90	90	03/14/90	

TYPE 'B' AND 'C' LOCAL LEAK RATE (LLRT) SUMMARY

MARCH '90 OUTAGE

PEN NO.	COMPONENT	DESCRIPTION	ACCEPT. CRITERIA	AS FOUND	DATE	AS LEFT	DATE	NOTES
17	3-895V	ACC TEST LINE	500	18	02/07/90	18	04/09/90	
19A	CK-3-890A	CONT SPRAY HDR "A"	6000	82000	02/09/90	640	03/28/90	NOTE 4
	MOV-3-880A	CONT SPRAY HDR "A"	5000	18	02/09/90	18	03/28/90	
19B	CK-3-890B	CONT SPRAY HDR "B"	6000	100	02/08/90	600	03/28/90	
	MOV-3-880B	CONT SPRAY HDR "B"	5000	40	02/08/90	165	03/28/90	
20	SV-3-6427A	"A" HOT LEG SAMPLE	1000	30	02/15/90	30	02/15/90	
	SV-3-6427B	"B" HOT LEG SAMPLE	1000	55	02/15/90	55	02/15/90	
	SV-3-6428	COMBINED SAMPLE ST	1000	540	02/15/90	540	02/15/90	
23	CV-3-2821	CONT SUMP TO WHT	2000	18	02/13/90	18	02/13/90	
	CV-3-2822	CONT SUMP TO WHT	2000	18	02/13/90	18	02/13/90	
24A	CK-3-298A	SEAL WATER TO "A"RC	2000	18	02/16/90	18	02/13/90	
24B	CK-3-298B	SEAL WATER TO "B"RC	2000	50	02/16/90	50	02/16/90	
24C	CK-3-298C	SEAL WATER TO "C"RC	2000	18	02/16/90	18	02/16/90	
25	MOV-3-6386	RCP SEAL RETURN	2000	18	02/09/90	18	04/06/90	NOTE 5
	MOV-3-381	RCP SEAL RETURN	2000	180	02/09/90	18	04/06/90	
29	STCK-3-40-340A	INST AIR SUPPLY	4000	800	02/25/90	800	02/25/90	
	CK-3-40-336	INST AIR SUPPLY	4000	700	02/25/90	700	02/25/90	
30	BA-3-201	BREATHING AIR	3000	320	02/05/90	320	02/05/90	
	CV-3-6165	BREATHING AIR	3000	40	02/05/90	40	02/05/90	

TYPE 'B' AND 'C' LOCAL LEAK RATE (LLRT) SUMMARY

MARCH '90 OUTAGE

PEN NO.	COMPONENT	DESCRIPTION	ACCEPT. CRITERIA	AS FOUND	DATE	AS LEFT	DATE	NOTES
31	CV-3-4659A,B	RCDT TO G.A.	500	18	03/06/90	18	03/06/90	
32	CK-3-11-003	CONT AIR SAMPLE SUC	2000	120	02/25/90	120	02/25/90	
	SV-3-2912,PAHM-001A	CNT AIR SUC,POST ACC	3000	85	02/25/90	85	02/25/90	
33	SV-3-2911	CONT AIR SAMPLE RET	3000	65	02/25/90	65	02/25/90	
	SV-3-2913	CONT AIR SAMPLE RET	3000	60	02/25/90	60	02/25/90	
34	CK-3-40-205	SERVICE AIR	2000	950	03/06/90	950	03/07/90	
	3-40-204,HV-3-17	SERVICE AIR	2000	30	03/06/90	30	03/06/90	
35	PV-3-2600,2601	CONT PURGE SUPPLY	3750	500	03/12/90	900	04/17/90	
36	PV-3-2602,2603	CONT PURGE EXHAUST	3750	350	03/26/90	1100	04/17/90	
37	3-10-879	SPARE		18	03/19/90	18	03/19/90	
38	ELECT.CANISTERS/ALL	ELECTRICAL PEN(S)		871	03/08/90	493	04/13/90	
39	"O"-RINGS	FUEL TRANS. FLANGE		20	02/09/90	25	04/17/90	
40	"O"-RINGS	EQUIPMENT HATCH		15	05/26/89	18	04/20/90	
41	"O"-RINGS	PERSONNEL HATCH	3750	9000	02/13/90	150	04/17/90	
42	STCK-3-945E	NITROGEN TO ACC.	3000	90	02/14/90	90	02/14/90	
	CV-3-855	NITROGEN TO ACC.	500	110	02/14/90	110	02/14/90	

TYPE 'B' AND 'C' LOCAL LEAK RATE (LLRT) SUMMARY

MARCH '90 OUTAGE

PEN NO.	COMPONENT	DESCRIPTION	ACCEPT. CRITERIA	AS FOUND	DATE	AS LEFT	DATE	NOTES
47	3-10-582,CK-10-567	PW TO CONT	4000	70	02/13/90	70	02/13/90	
48	4KVRCP.CANISTRS/ALL	ELECTRICAL PEN(S)		543	02/06/90	111	04/23/90	
49	"O"-RINGS	EMERGENCY HATCH	3750	1600	01/09/90	1600	04/19/90	
52	CV-3-4668A,B	RCDT PUMP DISCH	2000	18	02/14/90	18	04/20/90	
53	HV-4-3,4,PAHM-002B	PACVS STOP,POST ACC		115	03/12/90	115	03/12/90	
54A	MOV-3-860A,861A	"A" RECIRC SUMP	7000	260	02/28/90	800	03/18/90	
54B	MOV-3-860B,861B	"B" RECIRC SUMP	7000	940	02/28/90	860	03/18/90	
55	CV-955C	"A" ACC SAMPLE	1000	800	02/07/90	18	04/04/90	NOTE 6
	CV-955D	"B" ACC SAMPLE	1000	18	02/07/90	18	04/04/90	
	CV-955E	"C" ACC SAMPLE	1000	18	02/07/90	140	04/04/90	
	CV-956D	ACC SAMPLE STOP	1000	1030	02/07/90	18	04/04/90	NOTE 7
61B	3-3-2024 & CAP	SPARE	1000	18	03/07/90	18	03/07/90	
62A	PS2008,2057 & PT'S	CONT. PRESS		18	03/13/90	18	03/13/90	
62B	PS2009,2058	CONT. PRESS		18	03/13/90	18	03/13/90	
62C	PS2007,2056 & PT'S	CONT. PRESS		18	03/13/90	18	03/13/90	
63	CV-3-2819	INST AIR BLEED	2000	65	02/06/90	65	02/06/90	
	CV-3-2826	INST AIR BLEED	2000	70	02/06/90	70	02/06/90	

TYPE 'B' AND 'C' LOCAL LEAK RATE (LLRT) SUMMARY

MARCH '90 OUTAGE

PEN NO.	COMPONENT	DESCRIPTION	ACCEPT. CRITERIA	AS FOUND	DATE	AS LEFT	DATE	NOTES
65A	FLANGES	ILRT PRESS. PIPE		45	02/05/90	60	04/21/90	
65B	3-2025	ILRT TEST SENSE LINE	2000	18	03/09/90	18	03/09/90	
65C	3-2026	ILRT TEST SENSE LINE	2000	18	03/09/90	18	03/09/90	

NOTES:

NOTE 1	VALVE OVERHAULED
NOTE 2	VALVE OVERHAULED
NOTE 3	VALVE OVERHAULED
NOTE 4	SEAT AND DISC CLEANED
NOTE 5	VALVE REPACKED
NOTE 6	VALVE OVERHAULED
NOTE 7	VALVE OVERHAULED

APPENDIX C
METEOROLOGICAL DATA

1992 TURKEY POINT UNIT 3 ILRT
METEORLOGICAL DATA

DATE	TIME	PRESSURE IN. HG	TEMP	WIND DIRECTION	WIND SPEED
11-12-92	0400	30.11	76.0	144	15.1
11-12-92	0800	30.14	80.1	148	15.1
11-12-92	0910	30.14	80.2	159	16.1
11-12-92	1000	30.15	81.1	159	14.9
11-12-92	1100	30.13	78.8	156	15.9
11-12-92	1200	30.12	80.0	168	13.4
11-12-92	1300	30.12	81.6	169	13.9
11-12-92	1400	30.08	84.0	163	13.2
11-12-92	1500	30.07	85.7	160	10.5
11-12-92	1600	30.06	84.3	159	9.7
11-12-92	1700	30.07	81.9	163	7.8
11-12-92	1800	30.07	81.5	155	6.8
11-12-92	1900	30.08	80.6	171	4.8
11-12-92	2000	30.08	81.6	151	5.6
11-12-92	2100	30.1	80.9	155	6.3
11-12-92	2200	30.1	80.5	156	4.8
11-12-92	2300	30.11	79.5	154	4.3
11-12-92	2400	30.09	79.6	133	2.4
11-13-92	0100	30.08	77.9	161	4.6
11-13-92	0200	30.06	78.6	160	4.6
11-13-92	0300	30.04	77.6	179	4.4
11-13-92	0400	30.01	77.2	191	4.4
11-13-92	0500	30.03	77.6	172	4.6
11-13-92	0600	30.04	78.5	196	4.4
11-13-92	0700	30.06	77.0	204	6.1
11-13-92	0800	30.08	77.9	103	4.4
11-13-92	0900	30.09	77.4	100	7.5
11-13-92	1000	30.1	78.4	286	8.5
11-13-92	1100	30.09	77.0	219	8.0
11-13-92	1200	30.07	78.8	200	9.7
11-13-92	1300	30.04	79.4	206	9.0
11-13-92	1400	30.03	81.6	220	7.0
11-13-92	1500	30.02	82.1	202	10.0
11-13-92	1600	30.01	82.3	240	6.9
11-13-92	1700	30.03	78.6	306	7.8
11-13-92	1800	30.03	79.4	210	4.3
11-13-92	1900	30.05	79.8	234	4.2
11-13-92	2000	30.08	81.0	280	6.8
11-13-92	2100	30.08	80.6	292	8.5

DESCRIPTION OF VARIABLES

AVE TEMP - CONTAINMENT MEAN TEMPERATURE CALCULATED FROM VOLUMETRICALLY WEIGHTED RTD SENSOR INDICATIONS.

PRESSURE - PRIMARY CONTAINMENT PRESSURE INDICATION.

VAPOR PRES - CONTAINMENT VAPOR PRESSURE CALCULATED FROM VOLUMETRICALLY WEIGHTED HUMIDITY/DEWPOINT SENSOR INDICATIONS.

LEAK SIM - SIMPLE TOTAL TIME MEASURED LEAKAGE RATE.

LEAK FIT - LEAKAGE RATE CALCULATED FROM FIRST ORDER REGRESSION OF SIMPLE TOTAL TIME LEAKAGE RATE DATA.

95% UCL - UPPER LIMIT OF THE 95% CONFIDENCE LEVEL OF FITTED LEAKAGE RATE DATA.

AIR MASS - CONTAINMENT AIR MASS.

NOTES FOR TABULAR DATA -

1. TABLE VALUES OF ZERO SIGNIFY THE DATA IS NOT APPLICABLE TO THE CALCULATION.

2. "DELETED" SIGNIFIES THE SENSOR WAS DELETED.

TS 92-12-010

CORRECTIVE ACTION COMPLETION FORM

TO: CORRECTIVE ACTION TRACKER

FROM: Garrett Clark

CTRAC NUMBER: 92-0726-34

SOURCE DOCUMENTS: 10CFR50, Appendix J

ACTION TAKEN: Generated ILRT Report

IMPLEMENTING DOCUMENTS: 1992 Unit 3 ILRT

The above listed action has been satisfactorily completed and documented.

K-NQ 2/8/93
Implementer Signature Date

2/9/93
Department Head Signature Date

TO BE COMPLETED BY LICENSING

The above listed actions are satisfactory for closeout of this item.

Signature Date