REACTOR CONTAINMENT BUILDING INTEGRATED LEAKAGE RATE TEST

TYPES A, B, AND C PERIODIC TEST

FPL

FLORIDA POWER AND LIGHT COMPANY
TURKEY POINT PLANT
UNIT 4

DOCKET No. 50-251
OPERATING LICENSE No. DPR-41

MARCH 1989

Prepared by

STONE & WEBSTER ENGINEERING CORPORATION
BOSTON, MASSACHUSETTS

PAGE

TABLE OF CONTENTS

LIST OF ATTACHMENTS

LIST OF ATTACHMENTS (CONT.)

REFERENCES

1. 10CFR Part 50 , Appendix J, Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors, November 15, 1988.

2. Florida Power & Light Company, Turkey Point 4 Plant Operating Procedure 13100.1, Integrated Leakage Rate Test, and 13100.4, Unit 4 Valve Lineup for ILRT..

3. Florida Power & light Company, Turkey Point 4 Plant Operating Procedure 13404.1, Local Leak Rate Tests.

4. ANSI N45.4, American National Standard, Leakage-Rate Testing of Containment Structures for Nuclear Reactors, March 16, 1972.

5. ANSI/ANS-56.8, Containment System Leakage Testing Requirements, January 20, 1987.[1]

6. Bechtel Corporation's Testing Criteria for Integrated Leakage Rate Testing of Primary Containment Structures for Nuclear Power Plants, BN-TOP-1, Revision 1, November 1, 1972.

[1] This document used only as a guideline and any reference to said document in no way implies compliance.

SECTION 1

PURPOSE

The purpose of this report is to present a description and analysis of the March 1989 Periodic Type A Primary Containment Integrated Leakage Rate Test (ILRT) and a summary of the Periodic Types B and C Local Leakage Rate Tests (LLRT) conducted since March 1986 at the Turkey Point Unit 4 plant. Turkey Point Unit 4 is operated by Florida Power & Light Company (FPL). Specific plant information and technical data is contained in Attachment 1A.

Stone & Webster Engineering Corporation (SWEC) provided engineering consultation services to Florida Power & Light Company during the performance of this test.

This report is submitted as required by 10CFR50, Appendix J, Paragraph V.B.

ATTACHMENT 1A

TEST DATA SUMMARY

A. Plant Information

Operator	Florida Power and Light Company
Plant	Turkey Point Plant - Unit 4
Location	Florida City, FL
Containment Type	PWR
Docket Number	50-251
Operating License No.	DPR-41
Date Test Completed	March 25, 1989

B. Technical Data

Containment Net Free Air Volume as Tested	1,550,000 cu. ft.
Design Pressure	59 psig
Calculated Peak Accident Pressure	49.9 psig
Containment Design Temperature	283 °F

SECTION 2

SUMMARY

2.1 TYPE A TEST

2.1.1 Test Summary

Pressurization for the ILRT began at approximately 2037 hours on March 23, 1989. A pressurization rate of approximately 3.1 psi per hour was achieved. Extensive investigations of all penetration areas were conducted throughout the pressurization and the Type A test. Pressurization was stopped for about 40 minutes at approximately 0513 on March 24, 1989 due to concerns with indication of decreasing level in the "B" steam generator. Pressurization was restarted when it was determined that the indicators showing the decreasing level had been isolated for the ILRT.

Containment pressurization was secured at approximately 1313 hours on March 24, 1989. The pressurization piping system was isolated and vented.

At 2045 hours on March 24, 1989, the thermal stabilization criteria of Reference 2 was satisfied. Pressure, temperature and relative humidity data were continuously recorded throughout the pressurization at 30 minute intervals and throughout the remainder of the test period at 15 minute intervals. During the initial stages of the test, the leakage rate was excessive. Extensive investigations for leaks were conducted but no significant leakage was found. Between 2100 and 2200 hours on March 24, 1989 the leakage rate trend improved. Figure 1 shows the actual test data and the slopes of the mass trends for this period. This type of phenomenon has been observed before on other tests due to the slow pressurization of supposedly sealed volumes. The apparent loss of mass appears to be a leak which stops when the volume is fully pressurized. Consequently the start time was shifted to 2300 hours on March 24, 1989 which, in effect, extended the stabilization time to encompass the volume pressurization. (It was subsequently determined that the cause of the initial high leakage rate was that the pressurizer relief tank was not adequately vented and that air continued to leak into the tank for several hours after completion of pressurization.)

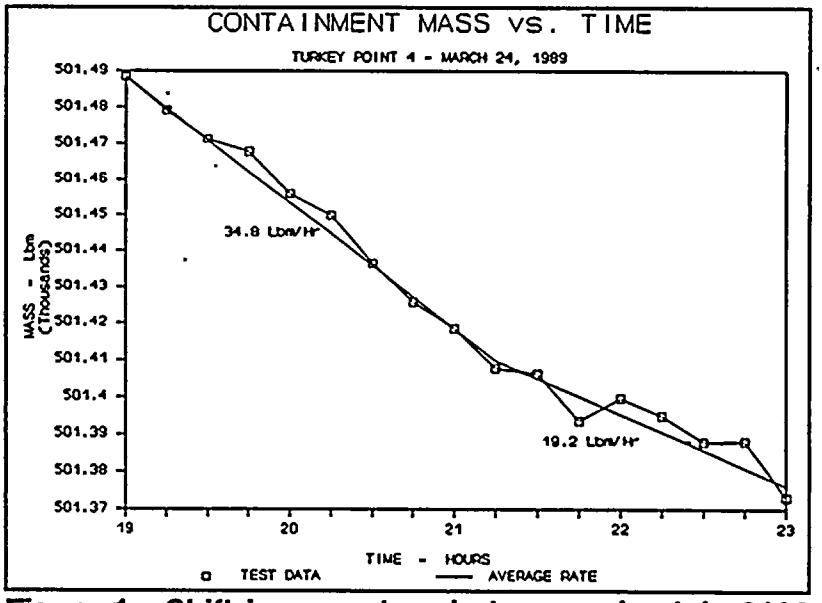


Figure 1 - Shift in mass trend at approximately 2100 hours.

The Type A test was successfully completed after 8 hours at 0700 hours on March 25, 1989 with a Total Time Upper Confidence Limit (UCL-TT) of 0.117702 percent/day and a Mass Point Upper Confidence Limit of 0.066529 percent/day. Both Total Time and Mass Point leakage rates were well below the $0.75L_a$ acceptance criteria of 0.1875 percent/day.

The Superimposed Verification Test was started at 0800 hours on March 25, 1989 and was successfully completed at 1200 hours on March 25, 1989. The results of the verification test satisfied the requirements of Reference 2.

2.2 LOCAL LEAKAGE RATE TESTS (Types B and C)

The Local Leakage Rate Tests (LLRT) of containment isolation valves and other containment penetrations were conducted as required by the methods described in the plant operating procedure, Reference 3, for the Types B and C Tests.

Section 4 of this report summarizes the data for the LLRT conducted since the March 1986 Type A test in accordance with Appendix J, 10CFR50, Paragraph V.B.

SECTION 3

TYPE A TEST

3.1 EDITED LOG OF EVENTS

This log was edited from information contained in the ILRT Test Director's Official Type A Log of Events, and from Reference 2.

March 23, 1989

1745 Final containment walk-down successfully completed.

2037 Commenced pressurization

March 24, 1989

0513 Pressurization secured at the request of PSN due to indication of decreasing level in "B" steam generator.

0553 Pressurization recommenced following notification of PSN that all level transmitters are isolated as part of the ILRT procedure.

1313 Secured compressors - peak pressure at 67.075 psia.

2045 Thermal stabilization criteria satisfied. Start of test declared.

2200 Leakage trend is excessive. Leakage investigations intensified.

2300 Leakage trend has been improving over the last few data sets. Test restarted at 2300.

March 25, 1989

0700 Leakage rate test successfully completed.

0705 Superimposed Leak initiated.

0800 Verification test started.

1200 Superimposed Verification test successfully completed.

1215 Containment depressurization started.

1920 Containment depressurization completed.

3.2 GENERAL TEST DESCRIPTION

3.2.1 Prerequisites

In accordance with Reference 2, the following is a listing of the pertinent prerequisites completed and documented prior to containment pressurization:

a. Site meteorological data recorded during the performance of the ILRT (Attachment 3.2A)

b. All required test instrumentation installed and calibrated within 6 months of the test.

c. Primary containment ventilation system secured.

d. Satisfactory inspection of the primary containment in accordance with Reference 2.

e. Pressurization system lined-up and ready for operation.

f. RCS temperature maintained stable prior to and during the performance of the ILRT.

g. Data acquisition and analysis computer systems used for the test are operational.

h. All required system valve lineups completed.

i. Restricted plant access plan in effect.

j. An Official Type A Log of Events established and maintained by the ILRT Test Director.

k. All pressurized components and systems either removed from the containment or vented.

l. All required Types B and C leakage rate testing completed or that any remaining LLRTs have been evaluated for impact on the test.

m. Instrument Selection Guide (ISG) calculated.

3.2.2 Equipment and Instrumentation

Pressurization of the primary containment was achieved by utilizing a temporary system consisting of 9 temporary air compressors manifolded with aftercoolers and refrigerant air driers. The system included adequate instrumentation and valving to maintain proper monitoring and control of the compressed air quality throughout the pressurization sequence. The total capacity of the pressurization system was approximately 11,000 standard cubic feet per minute (SCFM).

The various containment parameters required to calculate containment leakage during the test, were monitored using instrumentation which consisted of 21 resistance temperature detectors, 10 relative humidity sensors, and 2 absolute pressure indicators. One of the absolute pressure indicators was not used during the test because it was behaving erratically. Pertinent data for the test instrumentation is listed in Attachment 3.2B, and the general locations of the test instrumentation are shown in Attachments 3.2C through 3.2G. Elevations and azimuths are approximate.

A rotameter was used to perform the superimposed leakage verification test.

Instrument Selection Guide (ISG)

Values used for instrument sensitivity and system error were conservatively chosen. Instrument accuracies are used in most cases even though instrument sensitivity is perhaps better by a factor of ten. If the ISG is less than 1/3 of the allowable ($.25L_a$), then the test can be performed in 8 hours.

Sensor Type	No. of Sensors	Sensitivity Error	System Error
Pressure	1	0.007 psi	0.00 psi
Temperature	21	0.10 °F	0.10 °F
Relative Hum. Sensors	10	0.30 °F	0.10 °F

Test Duration	8 hrs.
Test Pressure	64.6 psia
Test Temperature	70 °F = 530 °R
Test Dewpoint Temp.	65 °F

$$ISG = \pm \frac{2400}{t}\left[2\left(\frac{EP}{P}\right)^2 + 2\left(\frac{ET}{T}\right)^2 + 2\left(\frac{EP_v}{P_v}\right)^2\right]^{1/2}$$

ISG $\leq$ 0.25 L_a which equals 0.0625% per day since L_a = 0.25% per day

a. EP = error associated with absolute pressure instruments

$EP = 0.007/\sqrt{1}$

EP = 0.007

b. ET = error associated with temperature instruments

$ET = 0.141421/\sqrt{21}$

$ET = 0.03086$

c. EP_v = error associated with vapor pressure instruments

$EP_v = 0.005218/\sqrt{10}$

$EP_v = 0.00165$

Using values established in a,b and c above, calculate ISG.

$$ISG = \pm \frac{2400}{24}\left[2\left(\frac{0.0070}{64.6}\right)^2 + 2\left(\frac{0.0308}{530}\right)^2 + 2\left(\frac{0.001652}{64.6}\right)^2\right]^{1/2}$$

ISG = ± 0.017553 which is less than 0.0625%/day (25% of L_a)

Minimum Test Duration (0.017553/0.0625) 24 = 6.74 Hours.

Therefore the test can be performed in 8 hours.

3.2.3 Data Acquisition System

A programmable, multichannel data logger was used to scan the data from the 21 resistance temperature detectors and 10 dewpoint temperature sensor input signals. Data readings were recorded every 30 minutes during pressurization and every 15 minutes during the Leakage Rate and Verification tests. The pressure sensor and the verification flow meter readings were recorded manually.

3.2.4 Data Resolution System

The recorded data was manually inputted to a dedicated computer system using Stone & Webster Engineering Corporation's (SWEC) ILRT analysis program for data reduction and leakage rate calculations. The following calculations used the instantaneous values of the ILRT sensors to determine both the Mass Point and Total Time Analysis Method leakage rates.

Absolute Method of Mass Point Analysis

The Absolute Method of Mass Point Analysis consists of calculating the air mass within the containment structure, over the test period using pressure, temperature, and dewpoint temperature observations made during the ILRT. The air mass is computed using the ideal gas law as follows:

$$M = \frac{144V(P-P_v)}{RT} \qquad \text{(Eq. 1)}$$

where:

M = air mass, lbm
P = total pressure, psia
P_v = average vapor pressure, psia
R = 53.35 ft-lbf/lbm°R (for air)
T = average containment temperature, °R
V = containment free volume, ft^3

The leakage rate is then determined by plotting the air mass as a function of time, using a least-squares fit to determine the slope, A = dM/dT. The leakage rate is expressed as a percentage of the air mass lost in 24 hours or symbolically:

$$\text{Leakage Rate} = -2400\ (A/B) \qquad \text{(Eq. 2)}$$

Where A is the slope of the least-squares curve and B is the y-intercept. The sign convention is such that the leakage out of the containment is positive, and the units are in percent/day.

A confidence interval is calculated using a Student's T distribution. The sum of the leakage rate and confidence interval is the Upper Confidence Limit - Mass Point (UCL-MP).

Absolute Method of Total Time Analysis

The Absolute Method of Total Time Analysis consists of calculating air lost from the containment, using pressure, temperature, and dewpoint temperature observations made during the ILRT.

The containment air mass is computed using Equation 1. The measured leakage rate at any time (t) is then determined by subtracting the mass at that time (Mt) from the initial mass (Mi) and dividing by the initial mass. The measured leakage rate is expressed as a percentage of containment mass lost in 24 hours or symbolically:

$$\text{Measured Leakage Rate} = 2400 \frac{(Mi-Mt)}{Mi(\Delta t)} \qquad \text{(Eq. 3)}$$

The sign convention is such that leakage out of the containment is positive, and the units are in percent/day.

The calculated leakage rate is then determined by plotting the measured leakage rate as a function of time and then performing a least-squares curve fit of the measured leakage rate values as follows:

$$\text{Calculated Leakage Rate} = At + B \qquad \text{(Eq. 4)}$$

Where, A is the slope and B is the y-intercept of the least squares curve.

A confidence interval is calculated using the requirements of Bechtel Topical Report BN-TOP-1, Rev. 1.

The sum of the calculated leakage rate and the confidence interval is the Upper Confidence Limit - Total Time (UCL-TT).

ATTACHMENT 3.2A

SITE METEOROLOGY

Date	Time	Barometric Pressure (mm HG)	Ambient Temperature (Deg F)	Wind Direction (Deg)	Wind Speed (Knots)
March 22, 1989	0430	30.015	70	-	0
	0830	30.075	76	140	5
	1230	30.055	81	130	8
	1630	30.030	80	150	6
	2030	30.060	70	130	2
March 23, 1989	0030	30.075	72	110	3
	0430	30.015	74	150	5
	1230	30.050	83	170	6
	1630	30.025	82	190	9
	2030	30.065	74	170	2
	2110	30.080	72	180	2
	2200	30.090	72	-	CALM
	2300	30.095	69	-	CALM
	2400	30.095	70	160	2
March 24, 1989	0100	30.095	71	-	CALM
	0200	30.075	71	-	CALM
	0300	30.065	70	-	CALM
	0400	30.055	70	160	2
	0500	30.075	71	-	CALM
	0600	30.085	71	-	CALM
	0700	30.110	71	-	CALM
	0800	30.125	75	-	CALM
	0900	30.130	77	180	2
	1000	30.130	78	170	4
	1100	30.125	79	150	2
	1200	30.110	78	120	3
	1300	30.100	80	200	8
	1400	30.060	82	180	9
	1500	30.075	77	270	4
	1600	30.060	80	200	8
	1700	30.060	79	190	6
	1800	30.065	77	220	6
	1900	30.075	76	210	4
	2000	30.095	74	190	4
	2100	30.120	74	270	2
	2200	30.130	72	250	1
	2300	30.130	70	290	3
	2400	30.115	68	333	4
March 25,1989	0100	30.115	68	333	4
	0200	30.100	66	340	4
	0300	30.090	65	340	5

ATTACHMENT 3.2A

SITE METEOROLOGY

Date	Time	Barometric Pressure (mm HG)	Ambient Temperature (Deg F)	Wind Direction (Deg)	Wind Speed (Knots)
March 25, 1989	0400	30.095	64	350	6
	0500	30.110	62	330	3
	0600	30.135	61	360	1
	0700	30.155	62	330	3
	0800	30.168	64	350	3
	0900	30.165	69	360	4
	1000	30.175	74	360	3
	1100	30.160	78	180	2
	1200	30.150	79	170	2

ATTACHMENT 3.2B

INSTRUMENTATION LIST

The following instruments were calibrated and functionally verified within 6 months prior to the performance of this test and in accordance with 10CFR50, Appendix J.

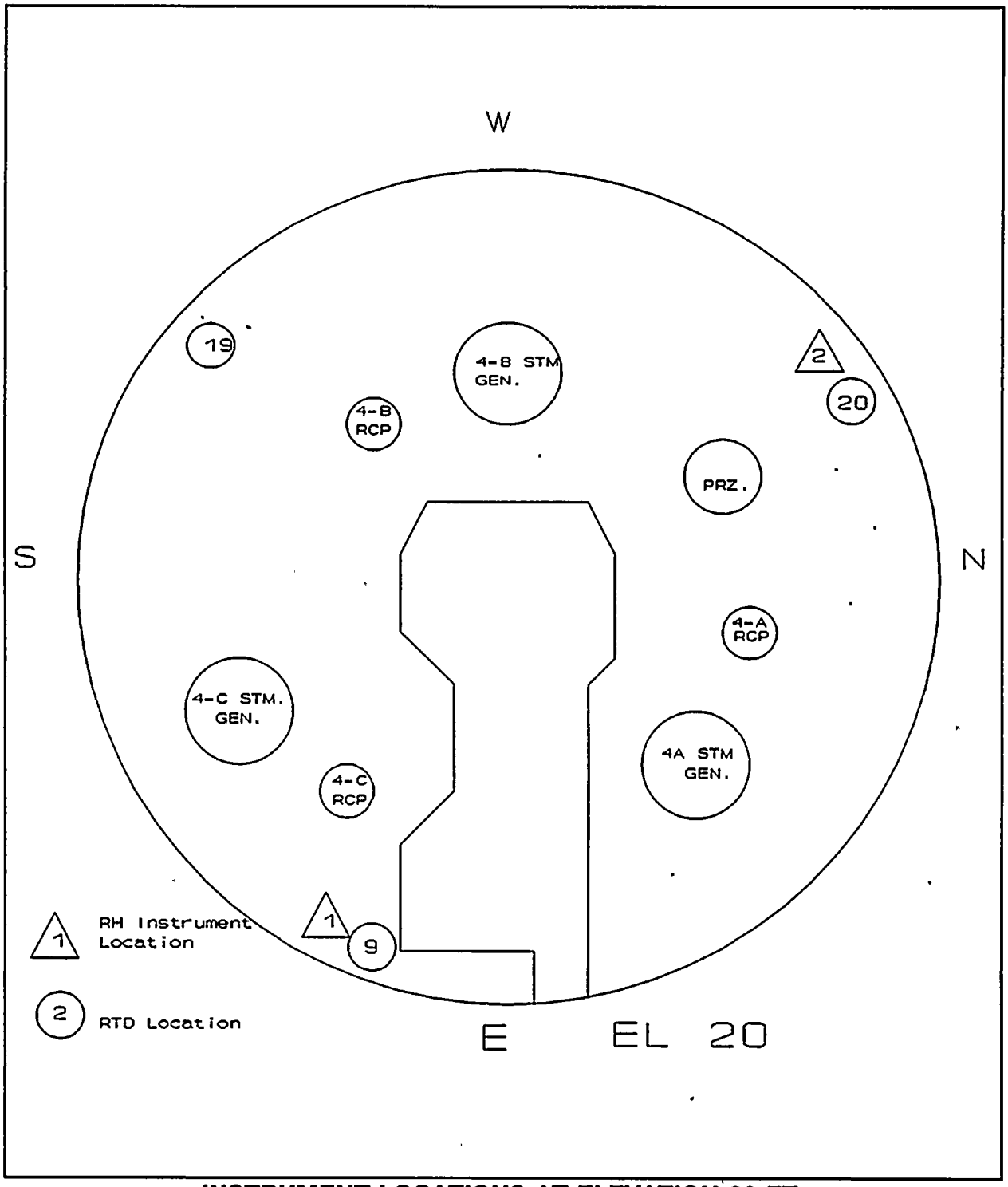
Instrument	Weight Fraction	Computer Point	Elevation	Range	Accuracy
A. Temperature					
T09	0.0330	C09	20	32-150°F	±0.5°F
T19	0.0330	C19	20	32-150°F	±0.5°F
T20	0.0330	C20	20	32-150°F	±0.5°F
T12	0.0330	C12	34	32-150°F	±0.5°F
T14	0.0330	C14	34	32-150°F	±0.5°F
T15	0.0330	C15	34	32-150°F	±0.5°F
T03	0.0400	C03	64	32-150°F	±0.5°F
T04	0.0400	C04	64	32-150°F	±0.5°F
T05	0.0400	C05	64	32-150°F	±0.5°F
T01	0.060334	C01	97	32-150°F	±0.5°F
T02	0.060334	C02	97	32-150°F	±0.5°F
T06	0.060333	C06	97	32-150°F	±0.5°F
T07	0.060333	C07	97	32-150°F	±0.5°F
T08	0.060333	C08	97	32-150°F	±0.5°F
T21	0.060333	C21	97	32-150°F	±0.5°F
T10	0.053334	C10	143	32-150°F	±0.5°F
T11	0.053334	C11	143	32-150°F	±0.5°F
T13	0.053333	C13	143	32-150°F	±0.5°F
T16	0.053333	C16	143	32-150°F	±0.5°F
T17	0.053333	C17	143	32-150°F	±0.5°F
T18	0.053333	C18	143	32-150°F	±0.5°F

ATTACHMENT 3.2B

INSTRUMENTATION LIST

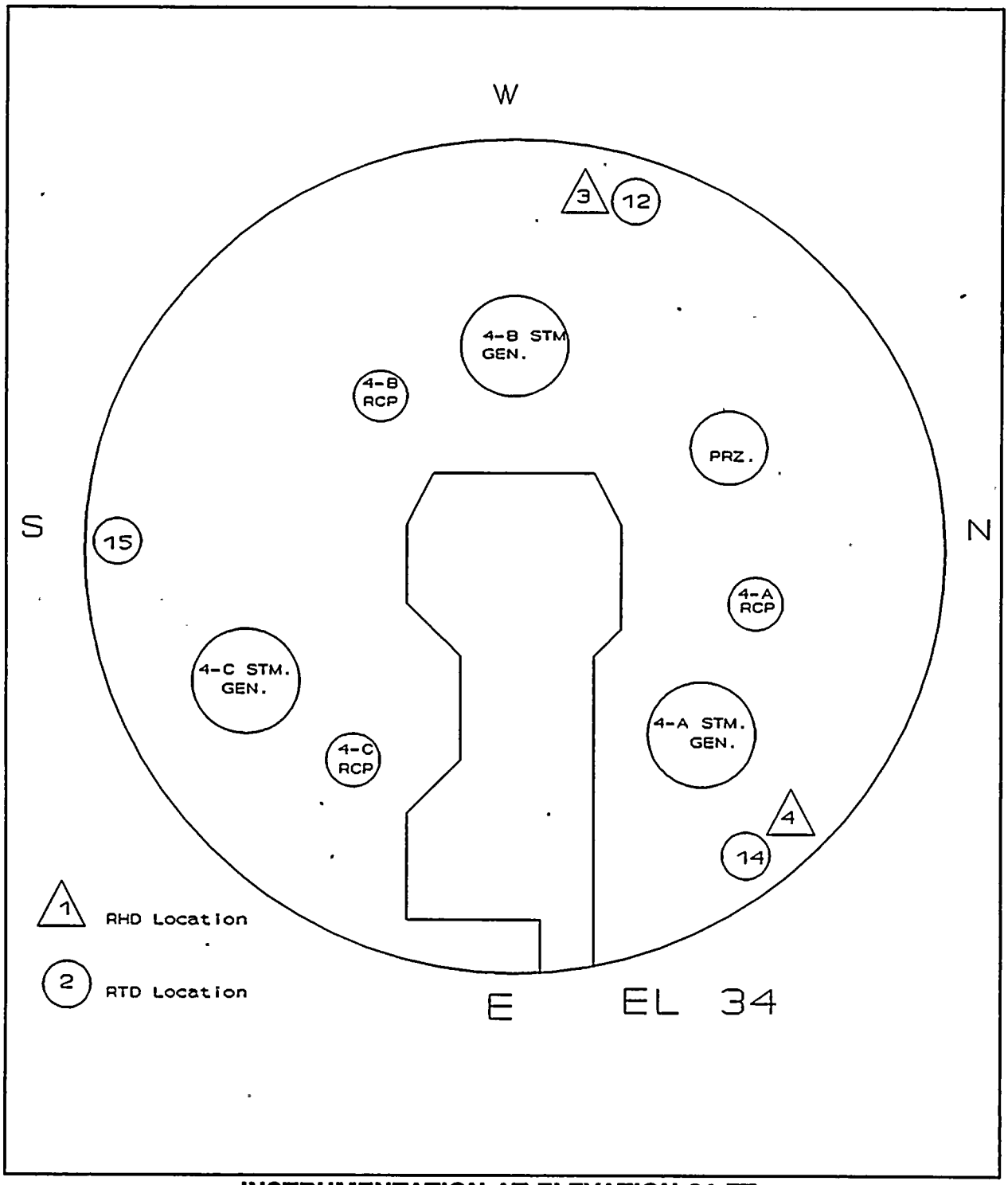
Instrument	Weight Fraction	Computer Point	Elevation	Range	Accuracy
B. Relative Humidity					
M1	0.0495	C50	20	0-100 %RH	±2.5%RH
M2	0.0495	C51	20	0-100 %RH	±2.5%RH
M3	0.0495	C52	34	0-100 %RH	±2.5%RH
M4	0.0495	C53	34	0-100 %RH	±2.5%RH
M5	0.0600	C54	64	0-100 %RH	±2.5%RH
M6	0.0600	C55	64	0-100 %RH	±2.5%RH
M7	0.1810	C56	97	0-100 %RH	±2.5%RH
M8	0.1810	C57	97	0-100 %RH	±2.5%RH
M9	0.1600	C58	143	0-100 %RH	±2.5%RH
M10	0.1600	C59	143	0-100 %RH	±2.5%RH
C. Pressure					
P1	0.000000	Local	-	0-100psia	± 0.02% FS
P2	1.000000	Local	-	0-70psia	± 0.02% FS
D. Superimposed Leakage Verification Test Flow Instrument					
Rotameter	-	Local	-	5-19scfm	±1.0%F.S.

ATTACHMENT 3.2C



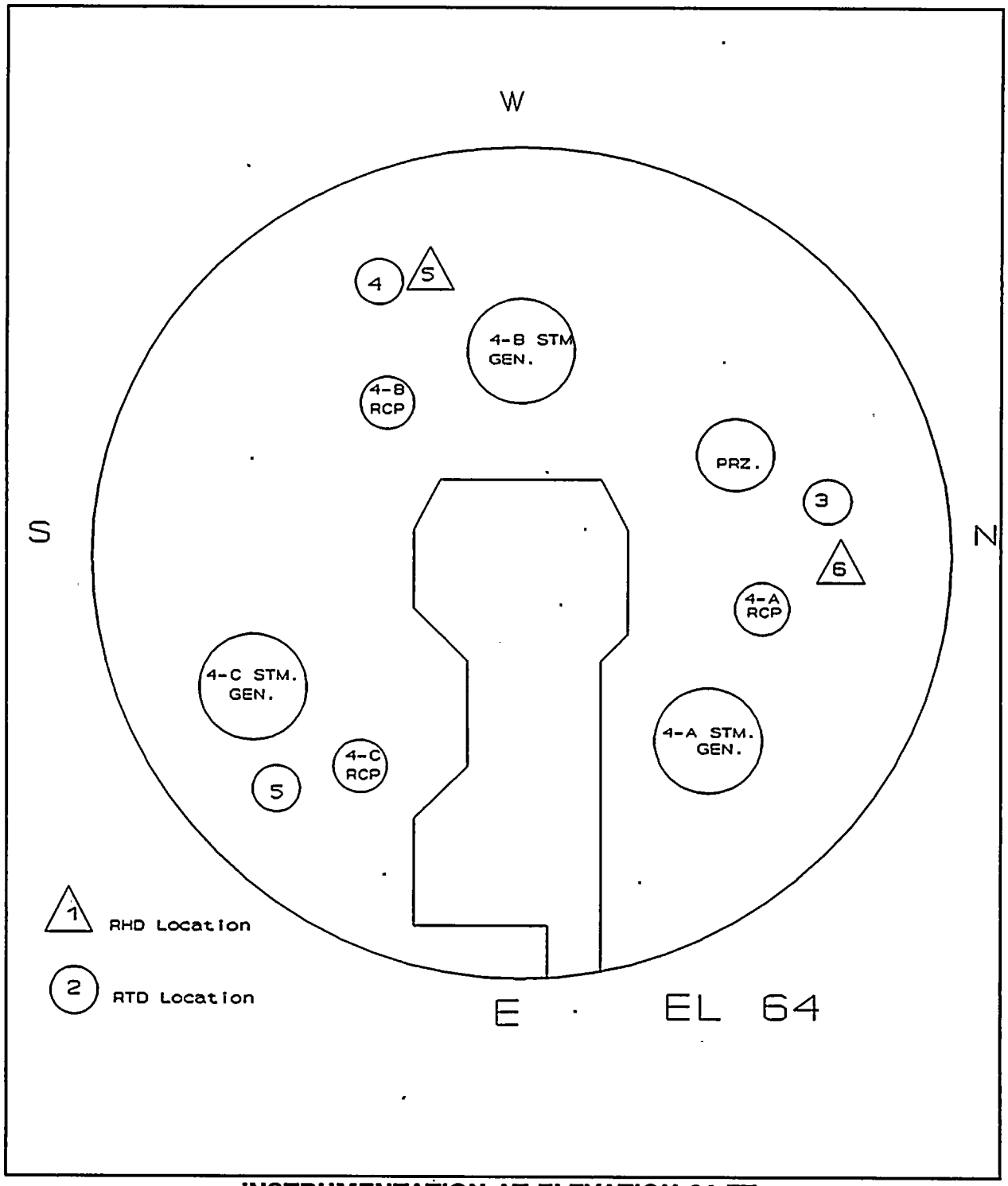
INSTRUMENT LOCATIONS AT ELEVATION 20 FT.

ATTACHMENT 3.2D



INSTRUMENTATION AT ELEVATION 34 FT.

ATTACHMENT 3.2E



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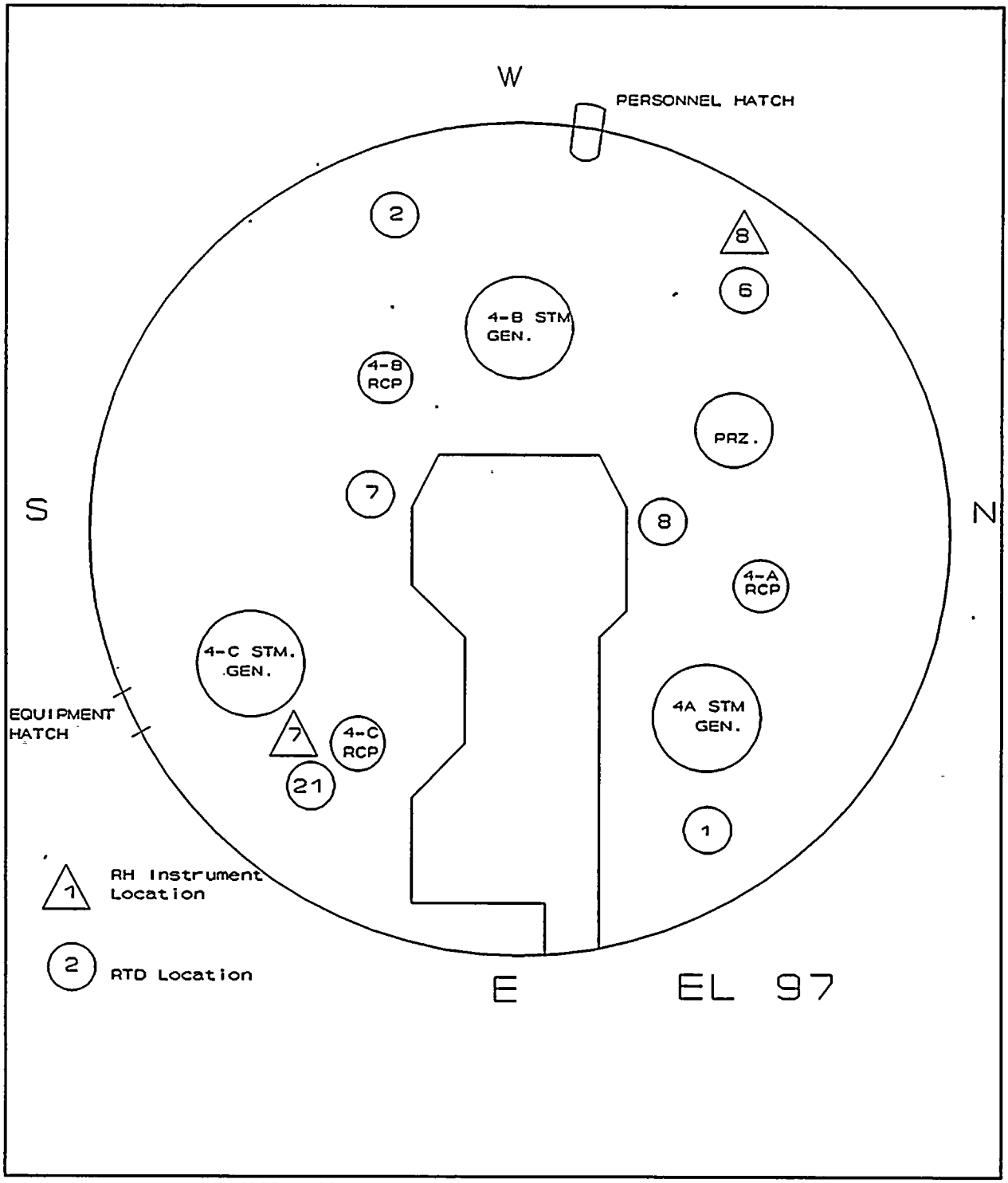
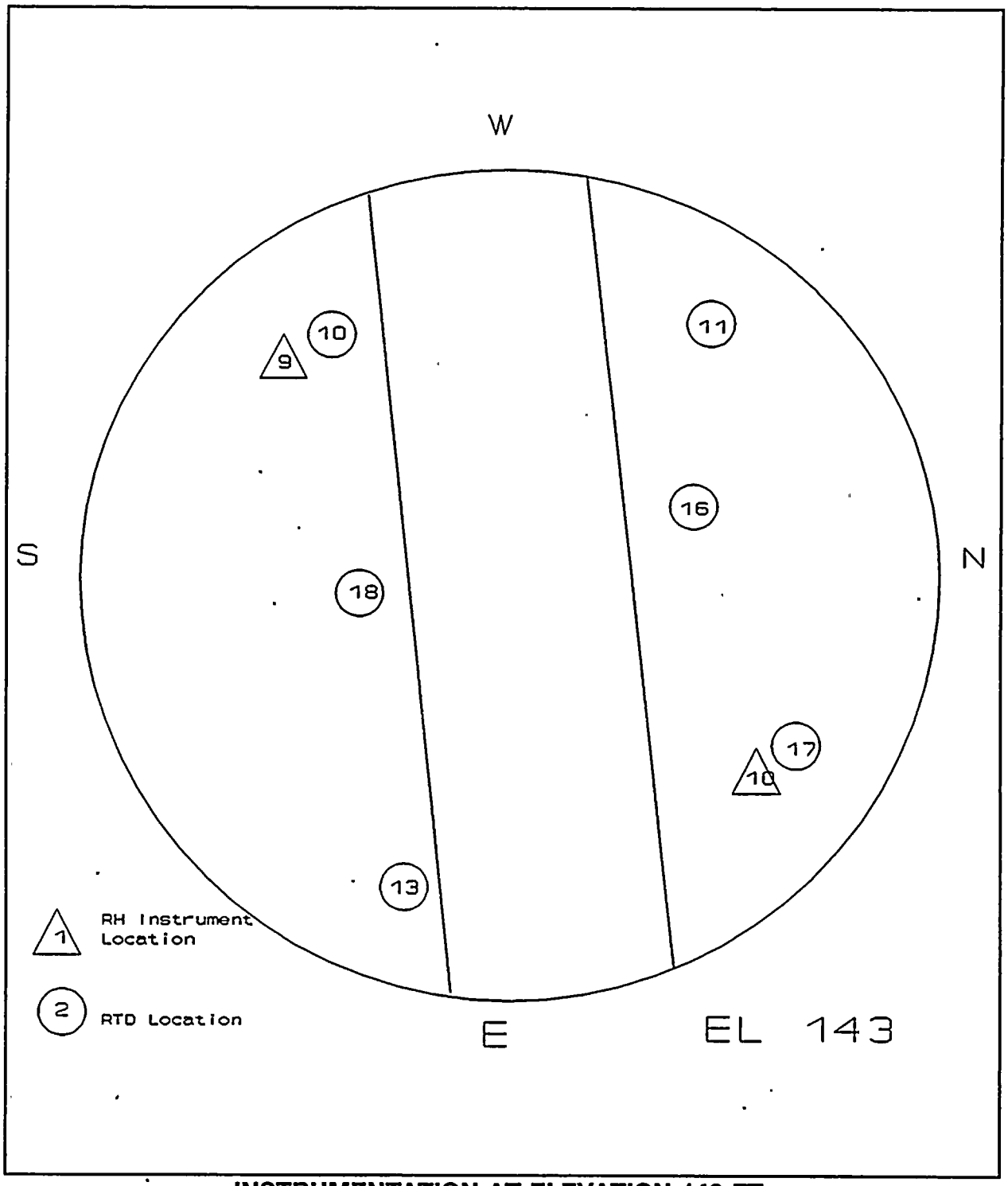
ATTACHMENT 3.2F



INSTRUMENTATION AT ELEVATION 97 FT.

ATTACHMENT 3.2G



INSTRUMENTATION AT ELEVATION 143 FT.

3.3 TEST RESULTS

3.3.1 Presentation of Test Results

The test data for the March 1989 ILRT is based on a 8 hour test period starting at 2300 hours on March 24, 1989. The final test results were determined using SWEC's ILRT computer program. The Measured Input Data, Reduced Input Variables, Mass Point Analysis Test Results, Total Time Analysis Test Results, and representative graphs are contained in Attachments 3.3A through 3.3J.

Both the Mass Point and Total Time Analysis Test Results for the ILRT satisfied the procedural acceptance criteria.

The Type A Test instrumentation was verified by the Superimposed Leakage Verification Test Method. The Measured Input Data, Reduced Input Variables, Mass Point Analysis Test Results, Total Time Analysis Test Results, and representative graphs are contained in Attachments 3.3K through 3.3R.

Both the Mass Point and Total Time Analysis Test Results for the Superimposed Leakage Verification Test satisfied the procedural acceptance criteria.

3.3.2 ILRT Results

The 64.6 psia ILRT was conducted in accordance with Reference 2. The results for the ILRT and for the Supplemental Test are shown below.

3.3.2.1 ILRT Results - Mass Point Analysis

	Item		(Percent/Day)
1.	L_{am}, Leakage Rate Calculated		0.063383
2.	UCL, Upper Confidence Level		0.003146
3.	UCL-MP, L_{am} Leakage Rate plus UCL (1&2)		0.066529
4.	Corrections for: (See Sections 3.3.2.4)		
	i. Type B & C Penalties	0.004835	
	ii. Water Levels	0.000000	
	iii. Total Corrections (i. and ii.)		0.004835
5.	Total Reported Type A Leakage Rate (Items 3&4 iii.)		0.071364

Results were within the acceptable limits of 0.75 L_a or 0.1875 percent/day.

3.3.2.2 ILRT Results - Total Time Analysis

	Item		(Percent/Day)
1.	L_{am}, Leakage Rate Calculated		0.068985
2.	UCL, Upper Confidence Level		0.048717
3.	UCL-TT, L_{am} Leakage Rate plus UCL (1&2)		0.117702
4.	Corrections for: (See Section 3.3.2.4)		
	i. Type B & C Penalties	0.004835	
	ii. Water Levels	0.000000	
	iii. Total Corrections (i. and ii.)		0.004835
5.	Total Reported Type A Leakage Rate (Items 3&4 iii.)		0.122537

Results were within the acceptable limits of 0.75 L_a or 0.1875 percent/day.

3.3.2.3 Supplemental Test Results

The Supplemental Verification Test was performed using the Superimposed Leakage Verification Test Method in accordance with Reference 2. The results for the Superimposed Leakage Verification Test are shown below.

1. The Superimposed Leakage Verification Test is acceptable provided L_c falls within the following range:

$$(L_{am} + L_o - 0.25\ L_a) \leq L_c \leq (L_{am} + L_o + 0.25\ L_a)$$

Where: L_{am} = Type A calculated leakage rate (computer)
(L_{am} - MP = 0.063383 %/day)
(L_{am} - TT = 0.068985 %/day)

L_o = Superimposed leakage rate (rotameter)
(L_o = 0.258191 %/day)

L_a = Maximum allowable leakage rate
(L_a = 0.25 %/day)

L_c = Composite leakage rate (computer)
(L_c - MP = 0.324223 %/day)
(L_c - TT = 0.326885 %/day)

a. Mass Point

$$(0.063383 + 0.258191 - 0.0625) \leq 0.324223 \leq (0.063383 + 0.258191 + 0.0625)$$

$$(0.259074) \leq 0.324223 \leq (0.384074)$$

b. Total Time

$$(0.068985 + 0.258191 - 0.0625) \leq 0.326885 \leq (0.068985 + 0.258191 + 0.0625)$$

$$(0.264676) \leq 0.326885 \leq (0.389676)$$

The Superimposed Leakage Verification Test met the requirements set forth in Réference 2.

3.3.2.4 Leakage Penalties Added to Type A Leakage

Penetration leakage to be added since these penetrations were isolated or could not be vented and drained during the Type A test. The leakage assigned is the recorded value for minimum pathway analysis.

i. Type B & C Penalties

Pen.	Description	CCM	Percent/day
11	Alternate RHR	34	
24A	Seal Water to RCP	34	
24B	Seal Water to RCP	34	
24C	Seal Water to RCP	34	
25	Seal Water Return	34	
29	Instrument Air	1200	
42	Nitrogen to Accumulators	34	
16	PACV	34	
51	PACV	34	
	Total	1472	

(1472 CCM)(14.7+50)/14.7 = 6479 SCCM

Total Type B & C Leakage 6479 SCCM
Total Type B & C Leakage 0.004835

ii. Water Level Corrections

Description	Gallons
Containment Sump	150
Pressurizer	-200

Since the pressurizer level over the entire test duration decreased more than the sump level increased, the total water level correction will conservatively be assigned the value of zero.

Total Water Level Corrections 0 Gallons
Total Water Level Corrections 0.000000

iii Total Corrections

Total Type A Corrections (i. and ii.) 0.004835

ATTACHMENT 3.3A

Turkey Point Unit 4 - 1989 ILRT
FROM 23:00 HOURS ON 03/24/89 TO 07:00 HOURS ON 03/25/89
MEASURED INPUT DATA

03/24/89 23:00

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.996	86.005	86.299	86.788	86.249	86.431	88.904	88.885	89.062	88.688
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
89.370	88.552	89.139	89.190	89.092	89.354	89.225	89.561	89.272	89.045
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
89.000	76.715	78.253	75.403	82.491	68.871	71.982	74.706	75.153	78.578
D0/C-59	P1/C-80	P2/MAN.							
82.596	66.204	66.208							

03/24/89 23:15

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.978	85.987	86.292	86.781	86.242	86.424	88.874	88.856	89.032	88.649
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
89.308	88.491	89.089	89.129	89.030	89.304	89.155	89.490	89.191	88.963
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.939	76.895	78.578	75.664	82.666	69.254	72.220	74.689	75.176	78.428
D0/C-59	P1/C-80	P2/MAN.							
82.485	66.198	66.202							

03/24/89 23:30

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.996	85.993	86.299	86.788	86.249	86.431	88.849	88.831	89.016	88.633
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
89.281	88.454	89.042	89.104	89.003	89.236	89.096	89.431	89.154	88.916
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.892	77.069	78.741	75.879	82.852	69.667	72.598	74.642	75.269	78.306
D0/C-59	P1/C-80	P2/MAN.							
82.382	66.191	66.197							

03/24/89 23:45

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.996	85.993	86.288	86.788	86.238	86.419	88.817	88.808	88.973	88.590
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
89.238	88.411	89.010	89.070	88.971	89.182	89.030	89.366	89.089	88.861
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.848	77.405	79.141	76.086	82.943	70.125	72.963	74.943	75.326	78.351
D0/C-59	P1/C-80	P2/MAN.							
82.229	66.186	66.192							

ATTACHMENT 3.3A

Turkey Point Unit 4 - 1989 ILRT
FROM 23:00 HOURS ON 03/24/89 TO 07:00 HOURS ON 03/25/89
MEASURED INPUT DATA

03/25/89 00:00

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.985	85.982	86.288	86.777	86.238	86.431	88.783	88.776	88.941	88.558
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
89.206	88.380	88.960	89.038	88.917	89.127	88.966	89.311	89.045	88.796
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.805	77.620	79.368	76.284	83.054	70.466	73.207	74.711	75.297	77.828
D0/C-59	P1/C-80	P2/MAN.							
82.096	66.180	66.187							

03/25/89 00:15

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.985	85.993	86.288	86.777	86.238	86.431	88.762	88.754	88.898	88.524
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
89.163	88.334	88.933	89.006	88.885	89.073	88.912	89.268	88.991	88.741
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.762	77.958	79.595	76.477	83.176	70.792	73.684	74.775	75.361	77.928
D0/C-59	P1/C-80	P2/MAN.							
81.963	66.175	66.182							

03/25/89 00:30

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.974	85.982	86.281	86.777	86.238	86.419	88.719	88.722	88.855	88.480
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
89.128	88.291	88.890	88.961	88.845	89.018	88.869	89.204	88.937	88.687
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.719	78.119	79.808	76.661	83.339	71.204	73.997	74.943	75.425	77.672
D0/C-59	P1/C-80	P2/MAN.							
81.875	66.168	66.177							

03/25/89 00:45

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.985	85.993	86.288	86.768	86.238	86.419	88.696	88.690	88.821	88.437
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
89.097	88.248	88.858	88.929	88.797	88.964	88.814	89.150	88.882	88.632
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.665	78.340	79.984	76.825	83.433	71.542	74.288	74.927	75.449	77.632
D0/C-59	P1/C-80	P2/MAN.							
81.777	66.163	66.172							

ATTACHMENT 3.3A

Turkey Point Unit 4 - 1989 ILRT
FROM 23:00 HOURS ON 03/24/89 TO 07:00 HOURS ON 03/25/89
MEASURED INPUT DATA

03/25/89 01:00

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.985	85.993	86.281	86.777	86.238	86.419	88.674	88.656	88.800	88.417
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
89.053	88.216	88.824	88.897	88.758	88.921	88.771	89.095	88.839	88.578
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.622	78.588	80.132	76.985	83.464	72.045	74.977	74.802	75.470	77.438
D0/C-59	P1/C-80	P2/MAN.							
81.600	66.160	66.167							

03/25/89 01:15

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.978	85.975	86.270	86.761	86.231	86.412	88.624	88.617	88.762	88.387
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
89.015	88.177	88.786	88.859	88.727	88.850	88.698	89.034	88.789	88.528
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.572	78.796	80.214	77.101	83.627	72.393	75.192	74.796	75.516	77.421
D0/C-59	P1/C-80	P2/MAN.							
81.455	66.155	66.163							

03/25/89 01:30

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.990	85.998	86.270	86.772	86.242	86.424	88.603	88.597	88.750	88.366
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.992	88.155	88.765	88.836	88.693	88.816	88.676	89.002	88.757	88.496
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.549	79.025	80.540	77.224	83.687	72.638	75.396	74.786	75.558	77.224
D0/C-59	P1/C-80	P2/MAN.							
81.329	66.150	66.159							

03/25/89 01:45

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.978	85.987	86.277	86.761	86.242	86.424	88.580	88.562	88.728	88.332
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.960	88.123	88.731	88.804	88.679	88.762	88.632	88.957	88.712	88.431
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.506	79.460	80.714	77.382	83.676	72.888	75.332	74.879	75.627	77.144
D0/C-59	P1/C-80	P2/MAN.							
81.155	66.146	66.154							

ATTACHMENT 3.3A

Turkey Point Unit 4 - 1989 ILRT
FROM 23:00 HOURS ON 03/24/89 TO 07:00 HOURS ON 03/25/89
MEASURED INPUT DATA

03/25/89 02:00

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.978	85.987	86.270	86.761	86.242	86.424	88.548	88.531	88.696	88.289
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.926	88.080	88.711	88.750	88.650	88.719	88.578	88.905	88.680	88.388
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.463	79.550	80.786	77.546	83.712	73.116	75.311	74.888	75.688	77.030
D0/C-59	P1/C-80	P2/MAN.							
81.007	66.139	66.150							

03/25/89 02:15

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.974	85.984	86.259	86.756	86.240	86.421	88.523	88.494	88.660	88.264
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.892	88.043	88.675	88.713	88.607	88.662	88.533	88.857	88.624	88.351
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.427	79.675	80.923	77.700	83.560	73.346	75.332	74.972	75.634	76.923
D0/C-59	P1/C-80	P2/MAN.							
80.760	66.135	66.146							

03/25/89 02:30

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.974	85.984	86.270	86.745	86.229	86.421	88.501	88.474	88.639	88.264
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.869	88.021	88.643	88.682	88.575	88.607	88.489	88.802	88.590	88.308
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.384	79.902	80.983	77.876	83.677	73.556	75.414	75.054	75.635	76.772
D0/C-59	P1/C-80	P2/MAN.							
80.652	66.130	66.142							

03/25/89 02:45

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.967	85.987	86.259	86.750	86.242	86.412	88.482	88.453	88.609	88.234
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.828	87.991	88.613	88.641	88.529	88.567	88.437	88.761	88.551	88.270
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.354	80.063	81.045	78.026	83.438	73.735	75.315	75.105	75.709	76.453
D0/C-59	P1/C-80	P2/MAN.							
80.615	66.126	66.138							

ATTACHMENT 3.3A

Turkey Point Unit 4 - 1989 ILRT
FROM 23:00 HOURS ON 03/24/89 TO 07:00 HOURS ON 03/25/89
MEASURED INPUT DATA

03/25/89 03:00

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.967	85.975	86.265	86.738	86.242	86.412	88.462	88.421	88.587	88.214
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.808	87.959	88.591	88.609	88.516	88.535	88.405	88.730	88.517	88.227
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.311	80.146	81.075	78.086	83.375	73.871	75.316	75.182	75.775	76.466
D0/C-59	P1/C-80	P2/MAN.							
80.408	66.122	66.133							

03/25/89 03:15

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.967	85.987	86.265	86.738	86.242	86.412	88.439	88.401	88.566	88.180
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.785	87.937	88.559	88.575	88.493	88.492	88.362	88.687	88.465	88.193
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.279	80.261	81.097	78.182	83.461	74.008	75.389	75.187	75.819	76.563
D0/C-59	P1/C-80	P2/MAN.							
80.291	66.117	66.129							

03/25/89 03:30

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.967	85.975	86.256	86.727	86.242	86.403	88.419	88.378	88.532	88.159
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.742	87.927	88.536	88.543	88.473	88.449	88.319	88.655	88.431	88.150
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.257	80.337	81.097	78.281	83.373	74.119	75.326	75.256	75.825	76.470
D0/C-59	P1/C-80	P2/MAN.							
80.192	66.113	66.126							

03/25/89 03:45

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.967	85.975	86.265	86.738	86.242	86.412	88.396	88.355	88.512	88.125
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.721	87.905	88.505	88.520	88.439	88.405	88.276	88.612	88.399	88.107
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.225	80.441	81.138	78.345	83.280	74.222	75.385	75.250	75.878	76.505
D0/C-59	P1/C-80	P2/MAN.							
80.133	66.110	66.122							

ATTACHMENT 3.3A

Turkey Point Unit 4 - 1989 ILRT
FROM 23:00 HOURS ON 03/24/89 TO 07:00 HOURS ON 03/25/89
MEASURED INPUT DATA

03/25/89 04:00

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.953	85.973	86.259	86.725	86.240	86.399	88.371	88.330	88.487	88.091
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.696	87.880	88.480	88.486	88.412	88.369	88.228	88.575	88.363	88.070
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.200	80.492	81.107	78.356	83.226	74.303	75.377	75.278	75.906	76.509
D0/C-59	P1/C-80	P2/MAN.							
80.092	66.106	66.118							

03/25/89 04:15

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.956	85.975	86.256	86.727	86.231	86.403	88.341	88.312	88.468	88.082
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.666	87.850	88.450	88.477	88.384	88.340	88.187	88.534	88.322	88.041
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.171	80.558	81.128	78.369	83.212	74.398	75.344	75.310	75.925	76.482
D0/C-59	P1/C-80	P2/MAN.							
79.995	66.102	66.113							

03/25/89 04:30

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.956	85.966	86.256	86.718	86.231	86.403	88.330	88.292	88.446	88.061
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.644	87.860	88.428	88.445	88.364	88.308	88.167	88.503	88.290	87.998
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.139	80.675	81.128	78.381	83.090	74.462	75.374	75.338	75.938	76.505
D0/C-59	P1/C-80	P2/MAN.							
79.850	66.099	66.111							

03/25/89 04:45

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.942	85.950	86.268	86.713	86.229	86.399	88.316	88.267	88.421	88.025
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.619	87.805	88.403	88.409	88.335	88.260	88.119	88.455	88.265	87.962
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.114	80.707	81.078	78.535	83.070	74.529	75.371	75.336	75.957	76.486
D0/C-59	P1/C-80	P2/MAN.							
79.696	66.095	66.107							

ATTACHMENT 3.3A

Turkey Point Unit 4 - 1989 ILRT
FROM 23:00 HOURS ON 03/24/89 TO 07:00 HOURS ON 03/25/89
MEASURED INPUT DATA

03/25/89 05:00

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.956	85.955	86.238	86.706	86.231	86.392	88.287	88.237	88.402	88.018
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.589	87.775	88.375	88.380	88.303	88.231	88.090	88.437	88.236	87.934
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.084	80.778	80.992	78.490	82.938	74.578	75.425	75.396	75.936	76.581
D0/C-59	P1/C-80	P2/MAN.							
79.617	66.093	66.104							

03/25/89 05:15

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.942	85.941	86.245	86.702	86.240	86.387	88.273	88.212	88.377	87.982
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.564	87.762	88.351	88.355	88.287	88.194	88.044	88.400	88.200	87.909
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.059	80.819	80.994	78.521	82.811	74.636	75.344	75.391	75.978	76.587
D0/C-59	P1/C-80	P2/MAN.							
79.559	66.089	66.100							

03/25/89 05:30

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.942	85.941	86.234	86.702	86.229	86.378	88.250	88.189	88.355	87.959
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.532	87.739	88.328	88.334	88.255	88.151	88.051	88.369	88.179	87.887
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.025	80.847	80.876	78.549	82.863	74.723	75.378	75.437	75.970	76.556
D0/C-59	P1/C-80	P2/MAN.							
79.518	66.086	66.098							

03/25/89 05:45

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.946	85.932	86.245	86.706	86.231	86.381	88.223	88.171	88.337	87.929
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.514	87.698	88.310	88.305	88.233	88.122	87.983	88.339	88.150	87.869
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
88.007	80.900	80.946	78.612	82.827	74.757	75.454	75.414	75.930	76.581
D0/C-59	P1/C-80	P2/MAN.							
79.495	66.083	66.094							

ATTACHMENT 3.3A

Turkey Point Unit 4 - 1989 ILRT
FROM 23:00 HOURS ON 03/24/89 TO 07:00 HOURS ON 03/25/89
MEASURED INPUT DATA

03/25/89 06:00

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.935	85.932	86.227	86.695	86.231	86.392	88.200	88.151	88.325	87.920
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.491	87.678	88.278	88.282	88.205	88.090	87.960	88.319	88.127	87.846
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
87.976	80.975	80.900	78.578	82.758	74.803	75.361	75.431	75.977	76.569
D0/C-59	P1/C-80	P2/MAN.							
79.408	66.079	66.091							

03/25/89 06:15

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.935	85.932	86.227	86.695	86.222	86.381	88.189	88.128	88.293	87.877
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.471	87.678	88.267	88.239	88.183	88.058	87.929	88.285	88.095	87.814
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
87.953	80.988	80.913	78.625	82.736	74.868	75.367	75.483	76.018	76.587
D0/C-59	P1/C-80	P2/MAN.							
79.403	66.076	66.088							

03/25/89 06:30

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.935	85.932	86.222	86.684	86.222	86.381	88.168	88.107	88.282	87.877
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.448	87.655	88.233	88.228	88.167	88.036	87.906	88.253	88.064	87.792
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
87.932	81.045	80.912	78.665	82.589	74.873	75.378	75.454	76.017	76.592
D0/C-59	P1/C-80	P2/MAN.							
79.391	66.073	66.085							

03/25/89 06:45

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.921	85.907	86.215	86.682	86.217	86.367	88.132	88.082	88.257	87.852
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.423	87.630	88.208	88.203	88.151	87.999	87.870	88.216	88.039	87.767
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
87.908	81.034	80.929	78.677	82.566	74.919	75.355	75.477	76.011	76.627
D0/C-59	P1/C-80	P2/MAN.							
79.362	66.071	66.082							

ATTACHMENT 3.3A

Turkey Point Unit 4 - 1989 ILRT
FROM 23:00 HOURS ON 03/24/89 TO 07:00 HOURS ON 03/25/89
MEASURED INPUT DATA

03/25/89 07:00

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.924	85.912	86.222	86.675	86.211	86.369	88.114	88.062	88.250	87.788
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.405	87.600	88.190	88.184	88.135	87.972	87.840	88.187	88.009	87.739
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
87.889	81.061	80.863	78.634	82.576	74.965	75.406	75.481	76.039	76.608
D0/C-59	P1/C-80	P2/MAN.							
79.388	66.067	66.079							

ATTACHMENT 3.3B

Turkey Point Unit 4 - 1989 ILRT
FROM 23:00 HOURS ON 03/24/89 TO 07:00 HOURS ON 03/25/89
REDUCED INPUT VARIABLES

Time (hh:mm)	Press. (PSIA)	V.P. (PSI)	Temp. (R)	Dewpoint (V)	Mass (LbM)
23:00	66.208	0.5113	548.204	0.511	501373.14
23:15	66.202	0.5108	548.156	0.511	501375.32
23:30	66.197	0.5106	548.127	0.511	501364.47
23:45	66.192	0.5110	548.090	0.511	501357.43
00:00	66.187	0.5098	548.054	0.510	501361.31
00:15	66.182	0.5100	548.022	0.510	501351.31
00:30	66.177	0.5098	547.984	0.510	501349.18
00:45	66.172	0.5095	547.950	0.509	501344.35
01:00	66.167	0.5091	547.920	0.509	501336.58
01:15	66.163	0.5087	547.881	0.509	501344.53
01:30	66.159	0.5085	547.863	0.508	501332.19
01:45	66.154	0.5082	547.833	0.508	501324.17
02:00	66.150	0.5077	547.801	0.508	501326.43
02:15	66.146	0.5070	547.769	0.507	501331.02
02:30	66.142	0.5067	547.743	0.507	501326.79
02:45	66.138	0.5060	547.714	0.506	501327.41
03:00	66.133	0.5057	547.690	0.506	501313.09
03:15	66.129	0.5056	547.665	0.506	501306.96
03:30	66.126	0.5051	547.640	0.505	501310.22
03:45	66.122	0.5048	547.616	0.505	501304.02
04:00	66.118	0.5045	547.589	0.504	501300.56
04:15	66.113	0.5041	547.567	0.504	501285.53
04:30	66.111	0.5038	547.548	0.504	501290.21
04:45	66.107	0.5032	547.520	0.503	501290.02
05:00	66.104	0.5028	547.498	0.503	501289.88
05:15	66.100	0.5025	547.475	0.503	501282.42
05:30	66.098	0.5021	547.455	0.502	501288.92
05:45	66.094	0.5018	547.433	0.502	501280.64
06:00	66.091	0.5014	547.413	0.501	501278.68
06:15	66.088	0.5013	547.392	0.501	501276.18
06:30	66.085	0.5010	547.375	0.501	501271.46
06:45	66.082	0.5007	547.351	0.501	501272.93
07:00	66.079	0.5004	547.330	0.500	501270.48

ATTACHMENT 3.3C

Turkey Point Unit 4 - 1989 ILRT
FROM 23:00 HOURS ON 03/24/89 TO 07:00 HOURS ON 03/25/89
ABSOLUTE TEST METHOD, MASS POINT ANALYSIS TEST RESULTS

Time (hh:mm)	Mass (LbM)	Leakage (PCT./DAY)	Confidence (PCT./DAY)	UCL (PCT./DAY)
23:00	501373.14	0.000000	0.000000	0.000000
23:15	501375.32	0.000000	0.000000	0.000000
23:30	501364.47	0.082971	0.615973	0.698943
23:45	501357.43	0.111009	0.106031	0.217040
00:00	501361.31	0.079537	0.065042	0.144579
00:15	501351.31	0.086556	0.039508	0.126064
00:30	501349.18	0.084151	0.026553	0.110704
00:45	501344.35	0.083851	0.019089	0.102941
01:00	501336.58	0.088031	0.015124	0.103155
01:15	501344.53	0.077053	0.016707	0.093761
01:30	501332.19	0.078304	0.013513	0.091816
01:45	501324.17	0.081924	0.011744	0.093668
02:00	501326.43	0.079981	0.010039	0.090020
02:15	501331.02	0.073966	0.010541	0.084507
02:30	501326.79	0.070233	0.009841	0.080074
02:45	501327.41	0.065924	0.009615	0.075539
03:00	501313.09	0.067051	0.008517	0.075568
03:15	501306.96	0.068724	0.007723	0.076447
03:30	501310.22	0.067852	0.006938	0.074790
03:45	501304.02	0.067941	0.006223	0.074164
04:00	501300.56	0.067986	0.005613	0.073599
04:15	501285.53	0.070624	0.005727	0.076352
04:30	501290.21	0.070891	0.005223	0.076113
04:45	501290.02	0.070423	0.004799	0.075222
05:00	501289.88	0.069435	0.004513	0.073948
05:15	501282.42	0.069284	0.004161	0.073445
05:30	501288.92	0.067628	0.004179	0.071807
05:45	501280.64	0.066974	0.003927	0.070901
06:00	501278.68	0.066243	0.003721	0.069964
06:15	501276.18	0.065530	0.003539	0.069068
06:30	501271.46	0.065097	0.003333	0.068430
06:45	501272.93	0.064210	0.003240	0.067450
07:00	501270.48	0.063383	0.003146	0.066529

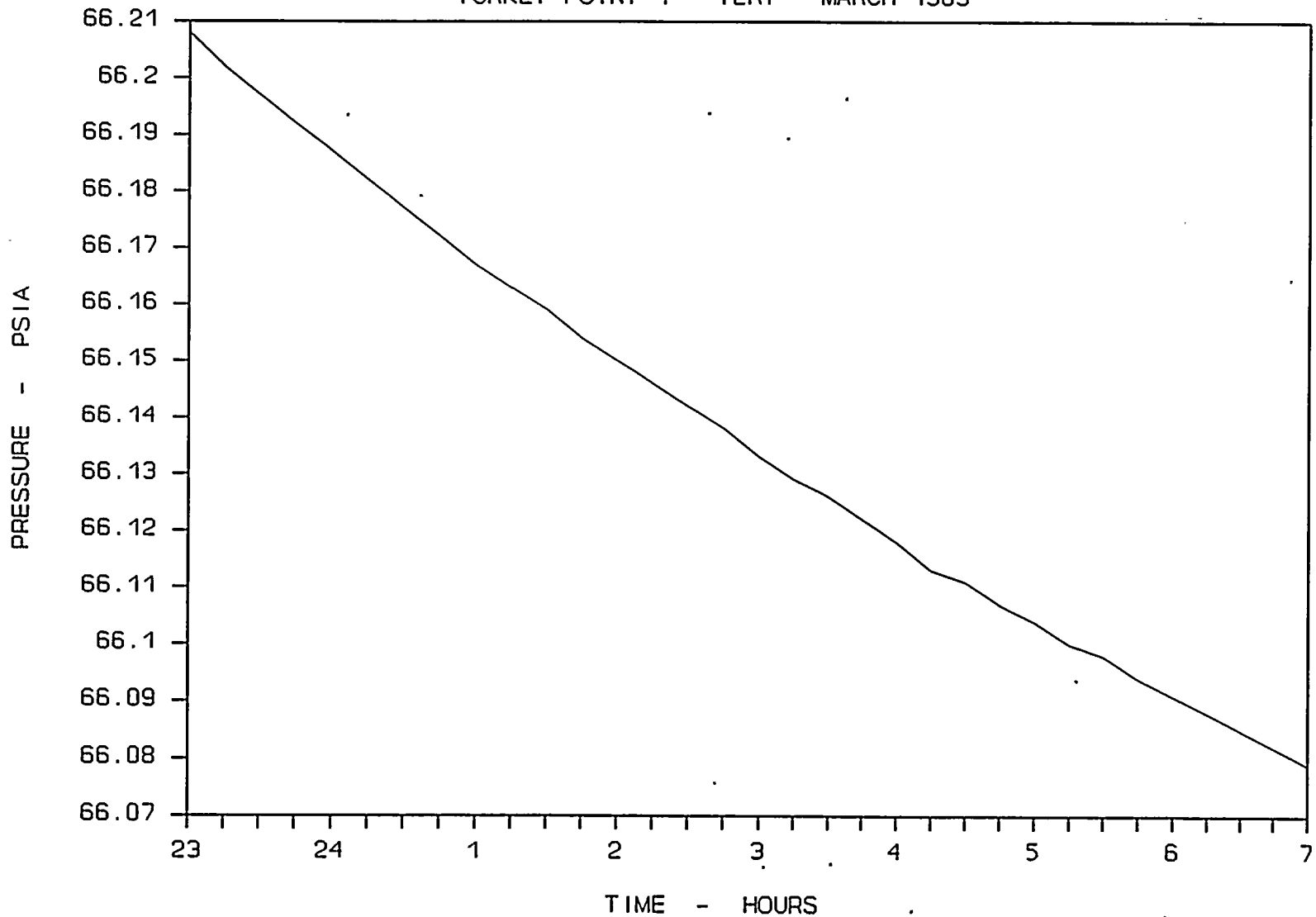
ATTACHMENT 3.3D

Turkey Point Unit 4 - 1989 ILRT
FROM 23:00 HOURS ON 03/24/89 TO 07:00 HOURS ON 03/25/89
ABSOLUTE TEST METHOD, TOTAL TIME ANALYSIS TEST RESULTS

Time (hh:mm)	Mass (LbM)	Meas.Leak. (PCT./DAY)	Calc.Leak. (PCT./DAY)	Confidence (PCT./DAY)	UCL (PCT./DAY)
23:00	501373.14	0.000000	0.000000	0.000000	0.000000
23:15	501375.32	-0.041729	0.000000	0.000000	0.000000
23:30	501364.47	0.082971	0.000000	0.000000	0.000000
23:45	501357.43	0.100270	0.118170	0.424763	0.542933
00:00	501361.31	0.056604	0.096374	0.301208	0.397581
00:15	501351.31	0.083607	0.101206	0.199771	0.300977
00:30	501349.18	0.076457	0.098923	0.160075	0.258998
00:45	501344.35	0.078761	0.097968	0.135889	0.233858
01:00	501336.58	0.087496	0.100517	0.118306	0.218823
01:15	501344.53	0.060859	0.091751	0.112314	0.204065
01:30	501332.19	0.078403	0.091511	0.102506	0.194017
01:45	501324.17	0.085246	0.093327	0.094284	0.187612
02:00	501326.43	0.074527	0.091343	0.088817	0.180160
02:15	501331.02	0.062040	0.086289	0.085715	0.172004
02:30	501326.79	0.063396	0.082652	0.082216	0.164868
02:45	501327.41	0.058379	0.078521	0.079365	0.157886
03:00	501313.09	0.071868	0.078259	0.075655	0.153914
03:15	501306.96	0.074543	0.078588	0.072331	0.150919
03:30	501310.22	0.066935	0.077269	0.069670	0.146939
03:45	501304.02	0.069656	0.076682	0.067136	0.143818
04:00	501300.56	0.069487	0.076140	0.064848	0.140988
04:15	501285.53	0.079878	0.077509	0.062680	0.140189
04:30	501290.21	0.072175	0.077345	0.060761	0.138106
04:45	501290.02	0.069194	0.076704	0.059079	0.135783
05:00	501289.88	0.066428	0.075705	0.057605	0.133309
05:15	501282.42	0.069479	0.075287	0.056130	0.131417
05:30	501288.92	0.062024	0.073831	0.054994	0.128825
05:45	501280.64	0.065599	0.073049	0.053767	0.126816
06:00	501278.68	0.064597	0.072219	0.052629	0.124847
06:15	501276.18	0.064018	0.071404	0.051559	0.122963
06:30	501271.46	0.064898	0.070788	0.050519	0.121307
06:45	501272.93	0.061898	0.069867	0.049597	0.119464
07:00	501270.48	0.061428	0.068985	0.048717	0.117702

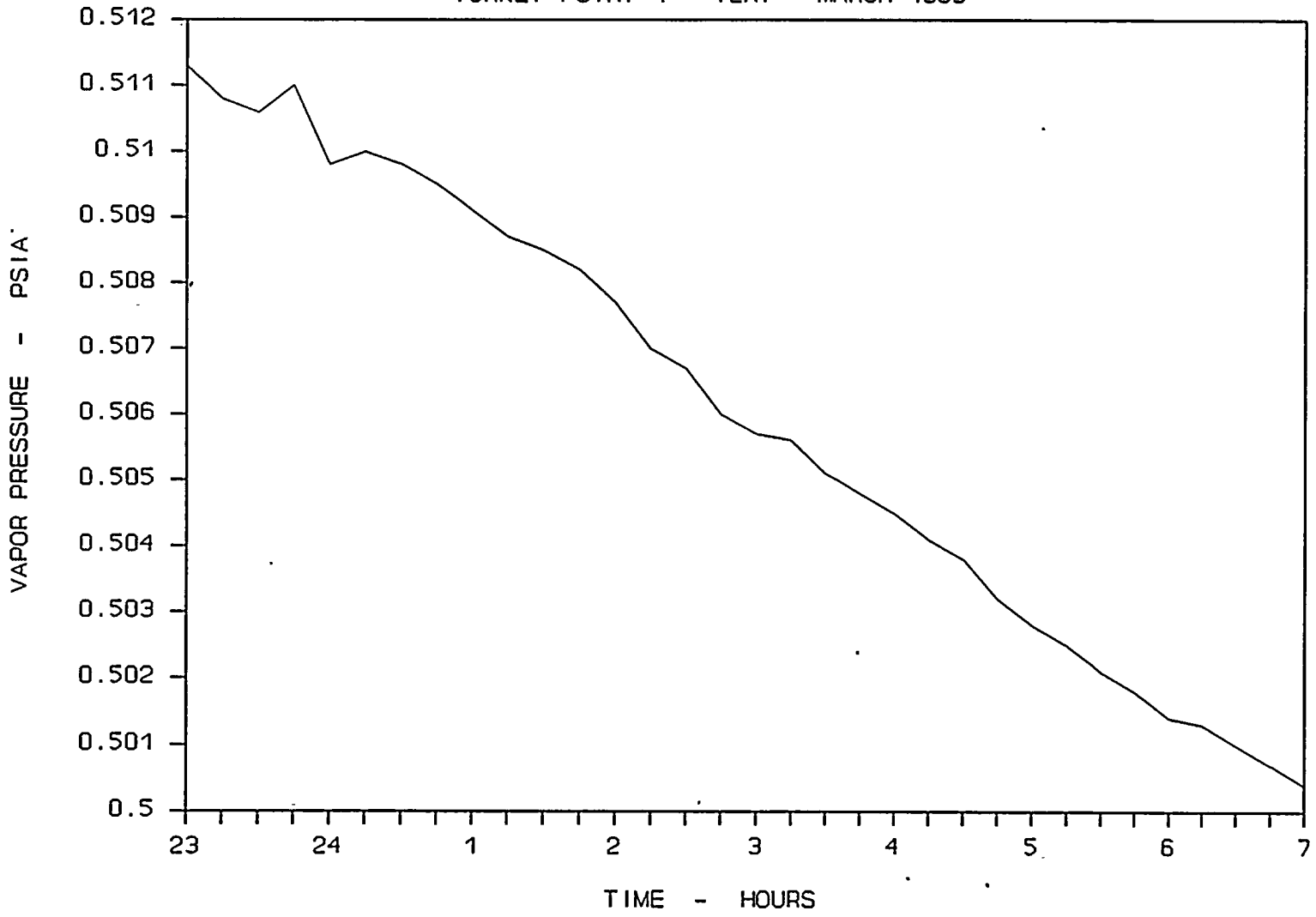
CONTAINMENT PRESSURE vs. TIME

TURKEY POINT 4 - ILRT - MARCH 1989



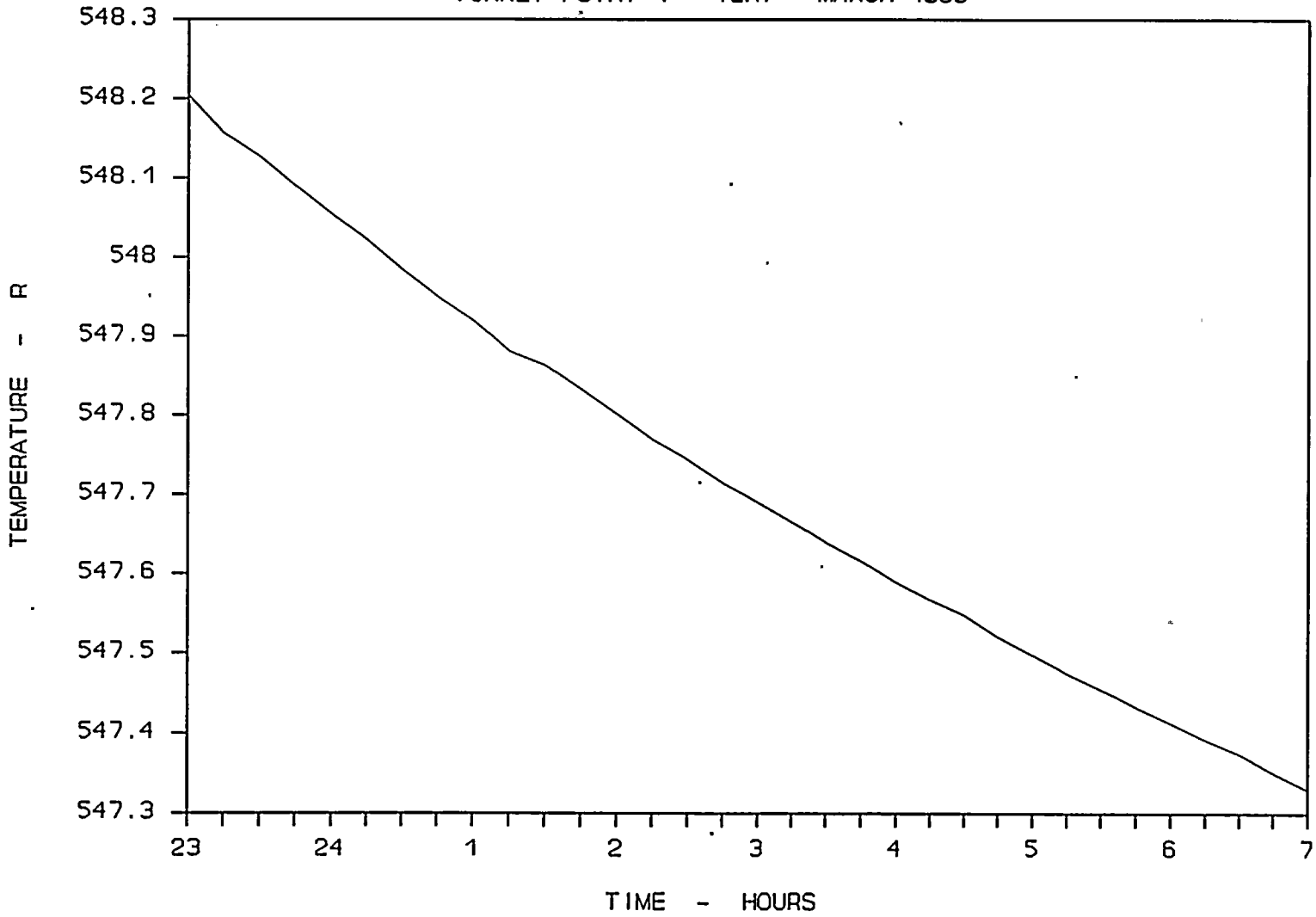
CONTAINMENT VAPOR PRESS. vs. TIME

TURKEY POINT 4 - ILRT - MARCH 1989



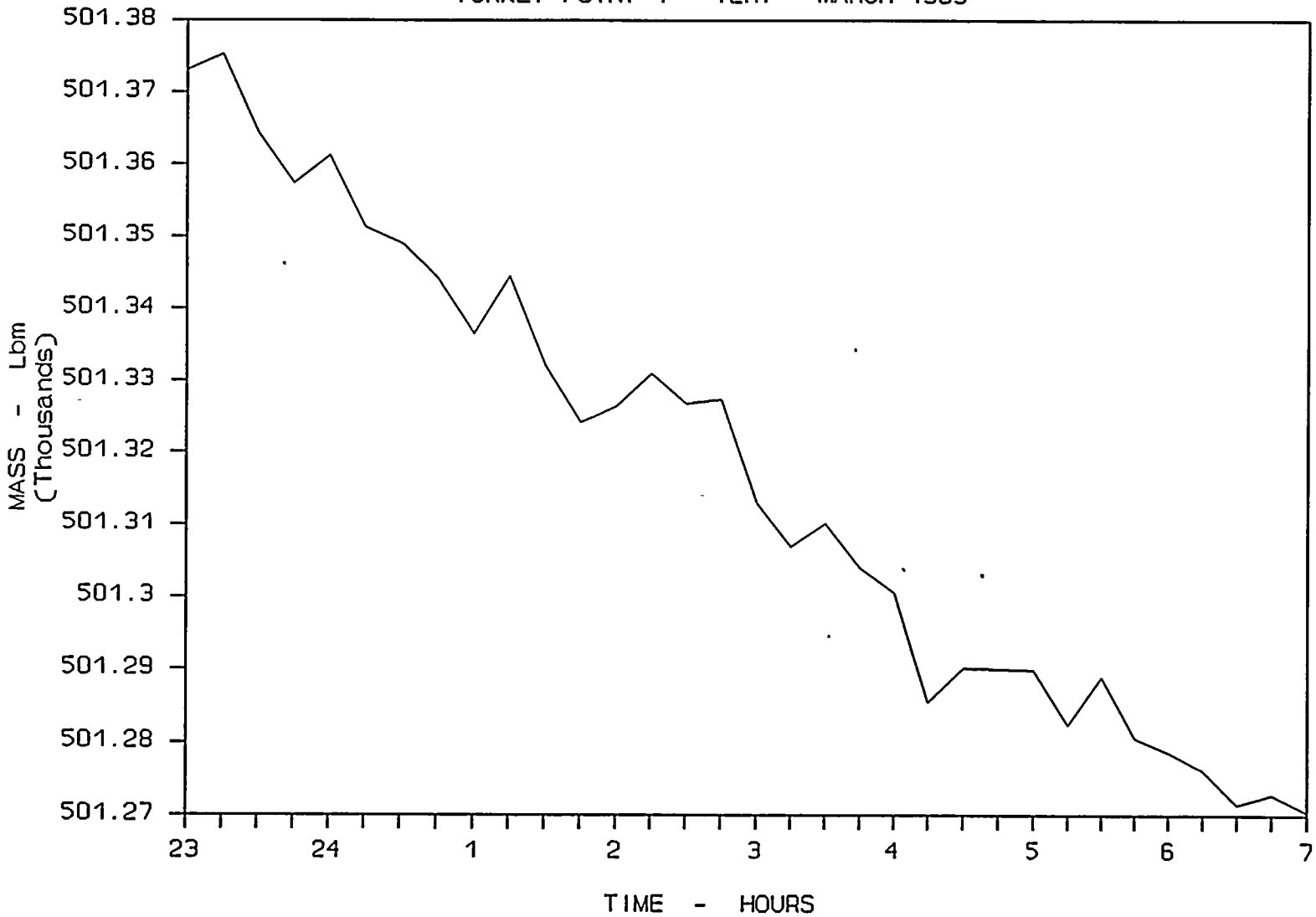
CONTAINMENT TEMPERATURE vs. TIME

TURKEY POINT 4 - ILRT - MARCH 1989



CONTAINMENT MASS vs. TIME

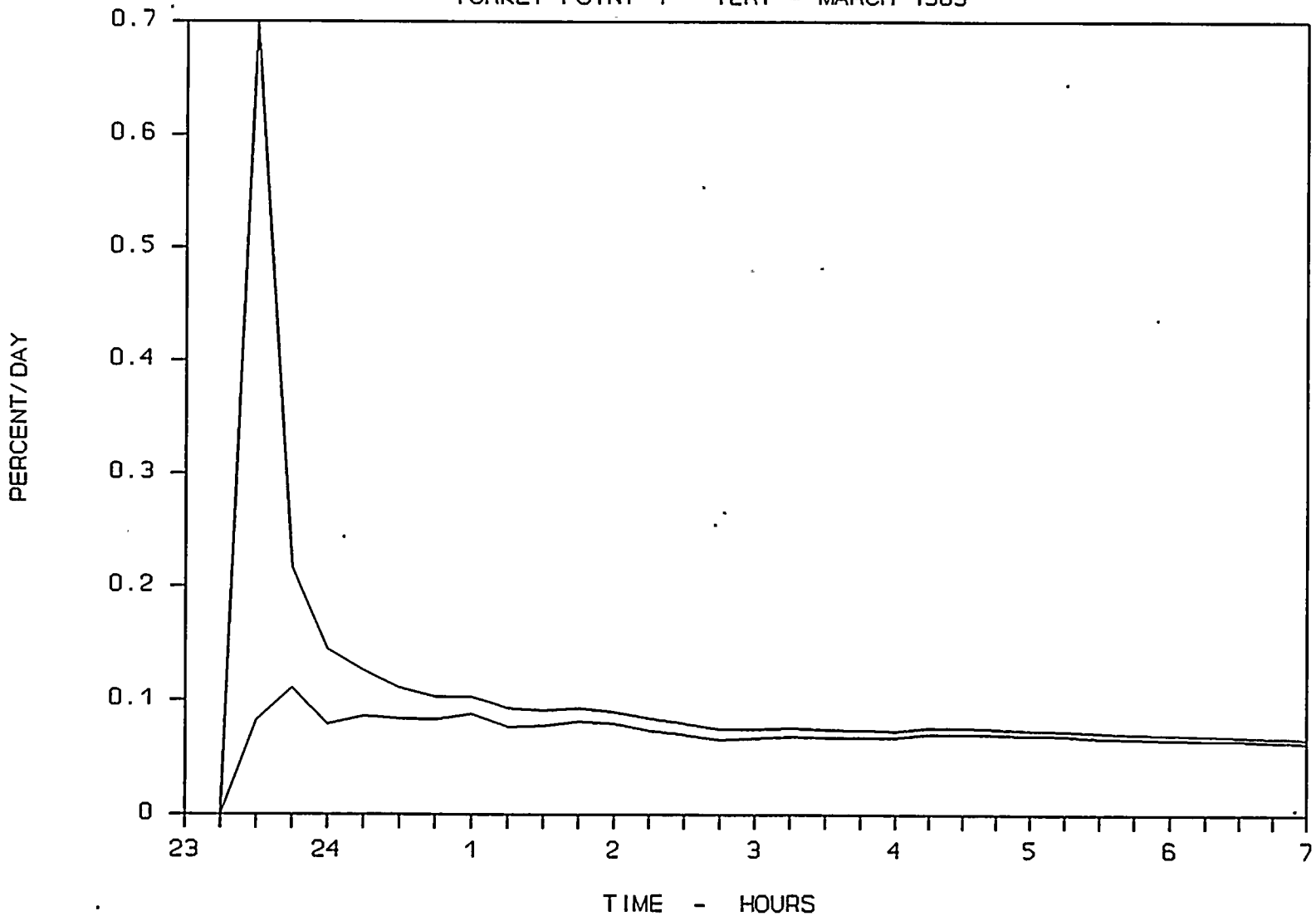
TURKEY POINT 4 - ILRT - MARCH 1989



ATTACHMENT 3.3I
GRAPH 5

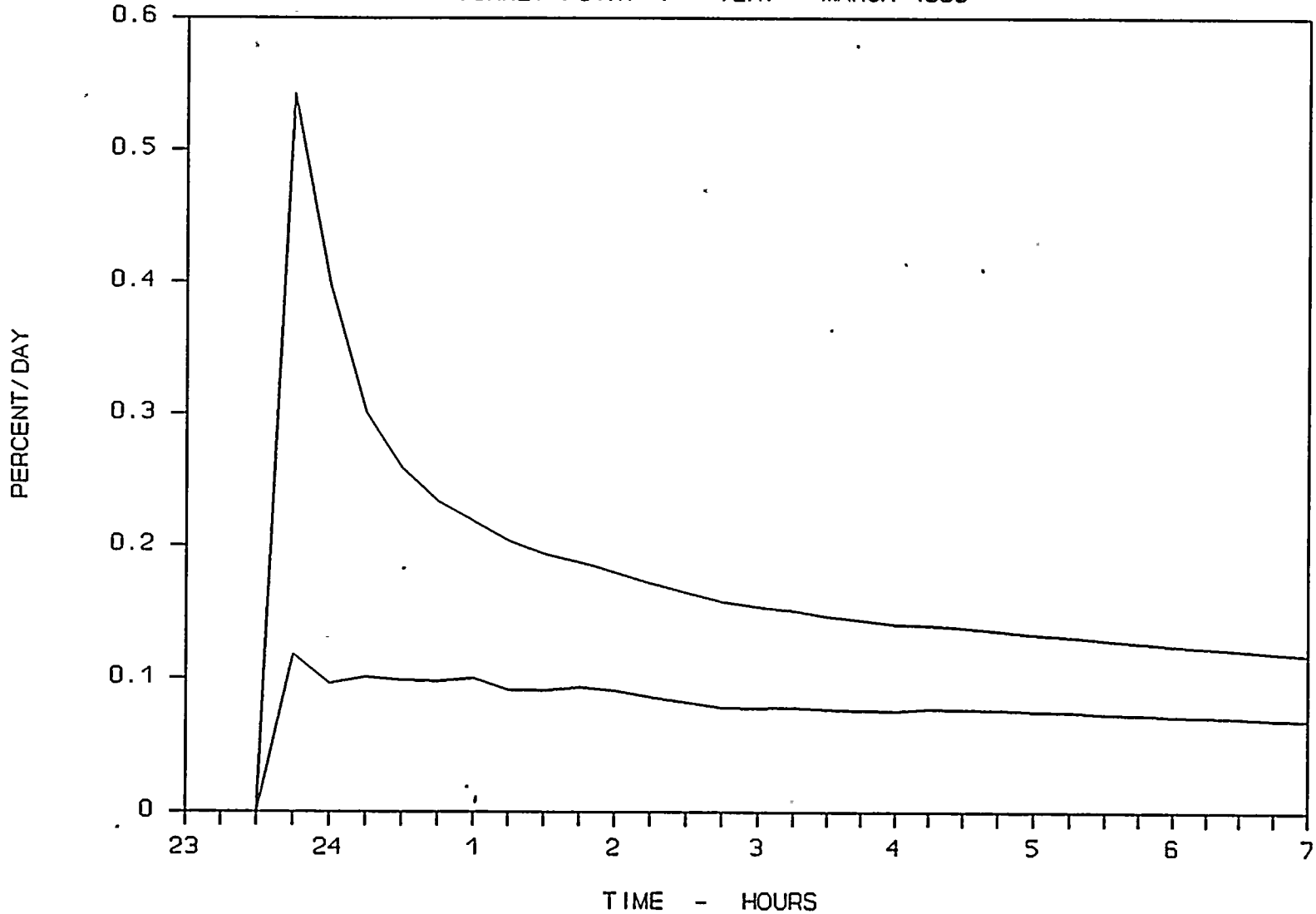
MASS POINT LEAKAGE & UCL

TURKEY POINT 4 - ILRT - MARCH 1989



TOTAL TIME LEAKAGE & UCL

TURKEY POINT 4 - ILRT - MARCH 1989



ATTACHMENT 3.3K

Turkey Point Unit 4 - 1989 ILRT
FROM 08:00 HOURS TO 12:00 HOURS ON 03/25/89
MEASURED INPUT DATA
VERIFICATION TEST

03/25/89 08:00

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.924	85.889	86.202	86.652	86.199	86.358	88.016	87.987	88.164	87.702
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.307	87.525	88.103	88.087	88.049	87.863	87.742	88.089	87.923	87.631
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
87.781	81.034	80.883	78.671	82.578	75.065	75.477	75.558	76.080	76.685
D0/C-59	P1/C-80	P2/MAN.							
79.437	66.052	66.061							

03/25/89 08:15

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.912	85.889	86.195	86.652	86.199	86.358	87.993	87.964	88.130	87.702
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.284	87.491	88.083	88.055	88.020	87.829	87.711	88.058	87.878	87.597
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
87.758	81.058	80.850	78.701	82.504	75.089	75.525	75.571	76.111	76.692
D0/C-59	P1/C-80	P2/MAN.							
79.403	66.047	66.056							

03/25/89 08:30

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.912	85.878	86.202	86.641	86.199	86.358	87.993	87.955	88.109	87.713
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.264	87.503	88.060	88.044	88.006	87.809	87.688	88.035	87.869	87.588
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
87.737	81.028	80.859	78.700	82.380	75.128	75.425	75.627	76.133	76.708
D0/C-59	P1/C-80	P2/MAN.							
79.419	66.043	66.052							

03/25/89 08:45

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.910	85.876	86.195	86.627	86.197	86.356	87.948	87.930	88.096	87.688
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.239	87.466	88.035	88.030	87.965	87.784	87.654	88.010	87.844	87.551
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
87.701	81.017	80.819	78.746	82.352	75.142	75.437	75.612	76.163	76.720
D0/C-59	P1/C-80	P2/MAN.							
79.414	66.039	66.047							

ATTACHMENT 3.3K

Turkey Point Unit 4 - 1989 ILRT
FROM 08:00 HOURS TO 12:00 HOURS ON 03/25/89
MEASURED INPUT DATA
VERIFICATION TEST

03/25/89 09:00

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.924	85.878	86.191	86.629	86.188	86.358	87.929	87.912	88.077	87.690
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.232	87.460	88.029	88.023	87.961	87.765	87.645	87.992	87.826	87.542
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
87.694	80.988	80.831	78.729	82.428	75.153	75.565	75.618	76.128	76.738
D0/C-59	P1/C-80	P2/MAN.							
79.437	66.035	66.043							

03/25/89 09:15

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.924	85.869	86.191	86.629	86.188	86.358	87.918	87.889	88.055	87.670
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.198	87.428	87.995	87.978	87.929	87.731	87.624	87.971	87.814	87.511
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
87.672	81.003	80.806	78.698	82.384	75.173	75.510	75.609	76.155	76.753
D0/C-59	P1/C-80	P2/MAN.							
79.395	66.031	66.039							

03/25/89 09:30

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.924	85.869	86.191	86.620	86.188	86.358	87.895	87.878	88.043	87.615
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.186	87.405	87.986	87.978	87.919	87.711	87.590	87.937	87.792	87.490
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
87.651	80.981	80.801	78.717	82.363	75.222	75.553	75.675	76.145	76.720
D0/C-59	P1/C-80	P2/MAN.							
79.431	66.027	66.034							

03/25/89 09:45

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.935	85.878	86.184	86.620	86.188	86.358	87.875	87.857	88.023	87.592
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.166	87.394	87.963	87.958	87.890	87.688	87.570	87.917	87.760	87.456
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
87.617	80.968	80.804	78.744	82.308	75.226	75.510	75.626	76.160	76.753
D0/C-59	P1/C-80	P2/MAN.							
79.423	66.023	66.029							

ATTACHMENT 3.3K

Turkey Point Unit 4 - 1989 ILRT
FROM 08:00 HOURS TO 12:00 HOURS ON 03/25/89
MEASURED INPUT DATA
VERIFICATION TEST

03/25/89 10:00

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.931	85.876	86.184	86.616	86.186	86.367	87.870	87.832	88.007	87.590
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.141	87.369	87.938	87.933	87.879	87.663	87.545	87.892	87.746	87.420
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
87.604	80.981	80.807	78.787	82.380	75.262	75.471	75.634	76.174	76.790
D0/C-59	P1/C-80	P2/MAN.							
79.471	66.019	66.025							

03/25/89 10:15

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.942	85.876	86.184	86.616	86.186	86.367	87.838	87.809	87.986	87.567
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.129	87.360	87.915	87.933	87.868	87.643	87.522	87.869	87.735	87.411
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
87.581	80.952	80.784	78.770	82.311	75.256	75.541	75.698	76.185	76.771
D0/C-59	P1/C-80	P2/MAN.							
79.460	66.016	66.021							

03/25/89 10:30

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.956	85.878	86.195	86.609	86.188	86.358	87.809	87.803	87.980	87.560
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.111	87.330	87.909	87.903	87.847	87.625	87.484	87.840	87.717	87.393
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
87.563	80.956	80.770	78.826	82.268	75.255	75.574	75.679	76.190	76.770
D0/C-59	P1/C-80	P2/MAN.							
79.412	66.012	66.017							

03/25/89 10:45

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.967	85.878	86.184	86.620	86.188	86.369	87.809	87.780	87.968	87.560
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.088	87.319	87.888	87.892	87.813	87.613	87.484	87.828	87.705	87.393
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
87.554	80.952	80.743	78.850	82.155	75.315	75.518	75.663	76.221	76.771
D0/C-59	P1/C-80	P2/MAN.							
79.437	66.008	66.013							

ATTACHMENT 3.3K

Turkey Point Unit 4 - 1989 ILRT
FROM 08:00 HOURS TO 12:00 HOURS ON 03/25/89
MEASURED INPUT DATA
VERIFICATION TEST

03/25/89 11:00

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.967	85.878	86.191	86.620	86.188	86.369	87.786	87.769	87.945	87.538
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.079	87.307	87.877	87.880	87.809	87.591	87.450	87.808	87.683	87.347
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
87.531	80.959	80.715	78.875	82.178	75.327	75.513	75.664	76.239	76.785
D0/C-59	P1/C-80	P2/MAN.							
79.449	66.003	66.009							

03/25/89 11:15

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.965	85.876	86.184	86.604	86.186	86.367	87.772	87.743	87.920	87.524
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.054	87.271	87.852	87.846	87.793	87.566	87.436	87.783	87.649	87.345
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
87.506	80.951	80.667	78.843	82.123	75.342	75.527	75.668	76.230	76.805
D0/C-59	P1/C-80	P2/MAN.							
79.476	65.999	66.004							

03/25/89 11:30

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.967	85.878	86.191	86.609	86.188	86.381	87.754	87.737	87.902	87.506
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.045	87.264	87.834	87.828	87.777	87.548	87.418	87.765	87.640	87.316
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
87.488	80.970	80.669	78.898	82.224	75.321	75.553	75.728	76.262	76.802
D0/C-59	P1/C-80	P2/MAN.							
79.496	65.994	66.000							

03/25/89 11:45

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.956	85.869	86.191	86.609	86.199	86.381	87.731	87.716	87.902	87.483
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.025	87.244	87.822	87.805	87.754	87.527	87.395	87.753	87.631	87.284
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
87.477	80.956	80.648	78.877	82.106	75.371	75.597	75.702	76.271	76.816
D0/C-59	P1/C-80	P2/MAN.							
79.458	65.990	65.996							

ATTACHMENT 3.3K

Turkey Point Unit 4 - 1989 ILRT
FROM 08:00 HOURS TO 12:00 HOURS ON 03/25/89
MEASURED INPUT DATA
VERIFICATION TEST

03/25/89 12:00

T/C-09	T/C-19	T/C-20	T/C-12	T/C-14	T/C-15	T/C-03	T/C-04	T/C-05	T/C-01
85.956	85.869	86.191	86.609	86.199	86.381	87.722	87.705	87.882	87.474
T/C-02	T/C-06	T/C-07	T/C-08	T/C-21	T/C-10	T/C-11	T/C-13	T/C-16	T/C-17
88.013	87.232	87.800	87.805	87.745	87.516	87.363	87.731	87.619	87.261
T/C-18	D1/C-50	D2/C-51	D3/C-52	D4/C-53	D5/C-54	D6/C-55	D7/C-56	D8/C-57	D9/C-58
87.456	80.946	80.638	78.885	82.189	75.396	75.587	75.715	76.255	76.836
D0/C-59	P1/C-80	P2/MAN.							
79.454	65.985	65.993							

ATTACHMENT 3.3L

Turkey Point Unit 4 - 1989 ILRT
FROM 08:00 HOURS TO 12:00 HOURS ON 03/25/89
VERIFICATION TEST REDUCED INPUT VARIABLES

Time (hh:mm)	Press. (PSIA)	V.P. (PSI)	Temp. (R)	Dewpoint (V)	Mass (LbM)
08:00	66.061	0.4995	547.253	0.500	501210.52
08:15	66.056	0.4992	547.230	0.499	501195.94
08:30	66.052	0.4991	547.220	0.499	501174.78
08:45	66.047	0.4987	547.196	0.499	501161.91
09:00	66.043	0.4986	547.188	0.499	501139.03
09:15	66.039	0.4982	547.166	0.498	501131.76
09:30	66.034	0.4981	547.150	0.498	501109.99
09:45	66.029	0.4977	547.131	0.498	501091.06
10:00	66.025	0.4976	547.115	0.498	501076.29
10:15	66.021	0.4975	547.102	0.497	501058.78
10:30	66.017	0.4972	547.087	0.497	501044.60
10:45	66.013	0.4970	547.078	0.497	501023.56
11:00	66.009	0.4968	547.062	0.497	501008.28
11:15	66.004	0.4966	547.043	0.497	500989.74
11:30	66.000	0.4966	547.031	0.497	500969.93
11:45	65.996	0.4962	547.016	0.496	500955.91
12:00	65.993	0.4961	547.004	0.496	500944.82

ATTACHMENT 3.3M

Turkey Point Unit 4 - 1989 ILRT
FROM 08:00 HOURS TO 12:00 HOURS ON 03/25/89
ABSOLUTE TEST METHOD, MASS POINT ANALYSIS TEST RESULTS
VERIFICATION TEST

Time (hh:mm)	Mass (LbM)	Leakage (PCT./DAY)	Confidence (PCT./DAY)	UCL (PCT./DAY)
08:00	501210.52	0.000000	0.000000	0.000000
08:15	501195.94	0.000000	0.000000	0.000000
08:30	501174.78	0.342303	0.311302	0.653605
08:45	501161.91	0.319847	0.061215	0.381062
09:00	501139.03	0.339023	0.038465	0.377489
09:15	501131.76	0.315963	0.036407	0.352370
09:30	501109.99	0.318559	0.024519	0.343078
09:45	501091.06	0.323311	0.018413	0.341724
10:00	501076.29	0.322833	0.013916	0.336749
10:15	501058.78	0.323273	0.010906	0.334179
10:30	501044.60	0.321168	0.009057	0.330225
10:45	501023.56	0.323098	0.007720	0.330818
11:00	501008.28	0.323262	0.006467	0.329729
11:15	500989.74	0.324273	0.005594	0.329867
11:30	500969.93	0.326310	0.005244	0.331554
11:45	500955.91	0.326396	0.004562	0.330958
12:00	500944.82	0.324223	0.004569	0.328792

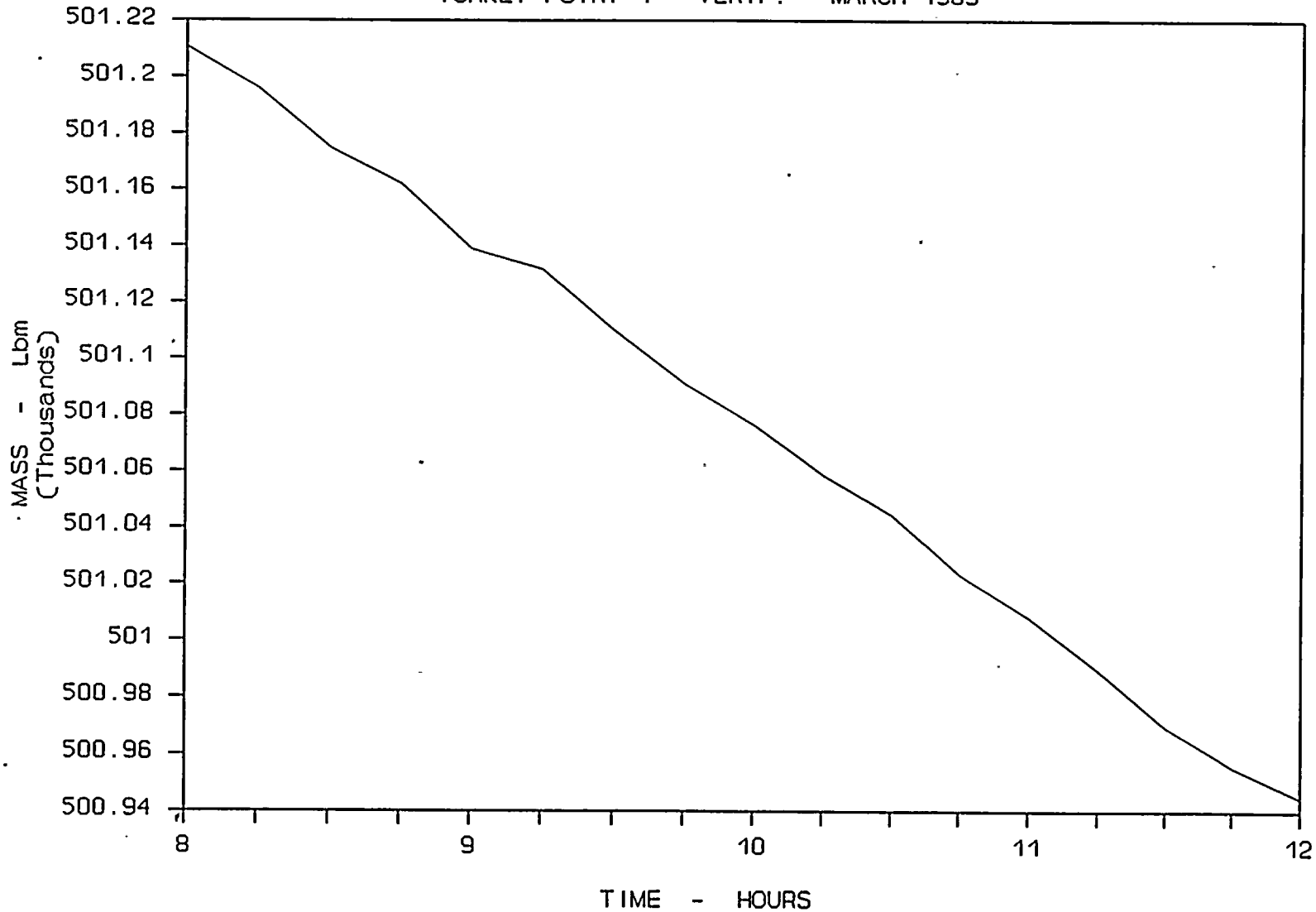
ATTACHMENT 3.3N

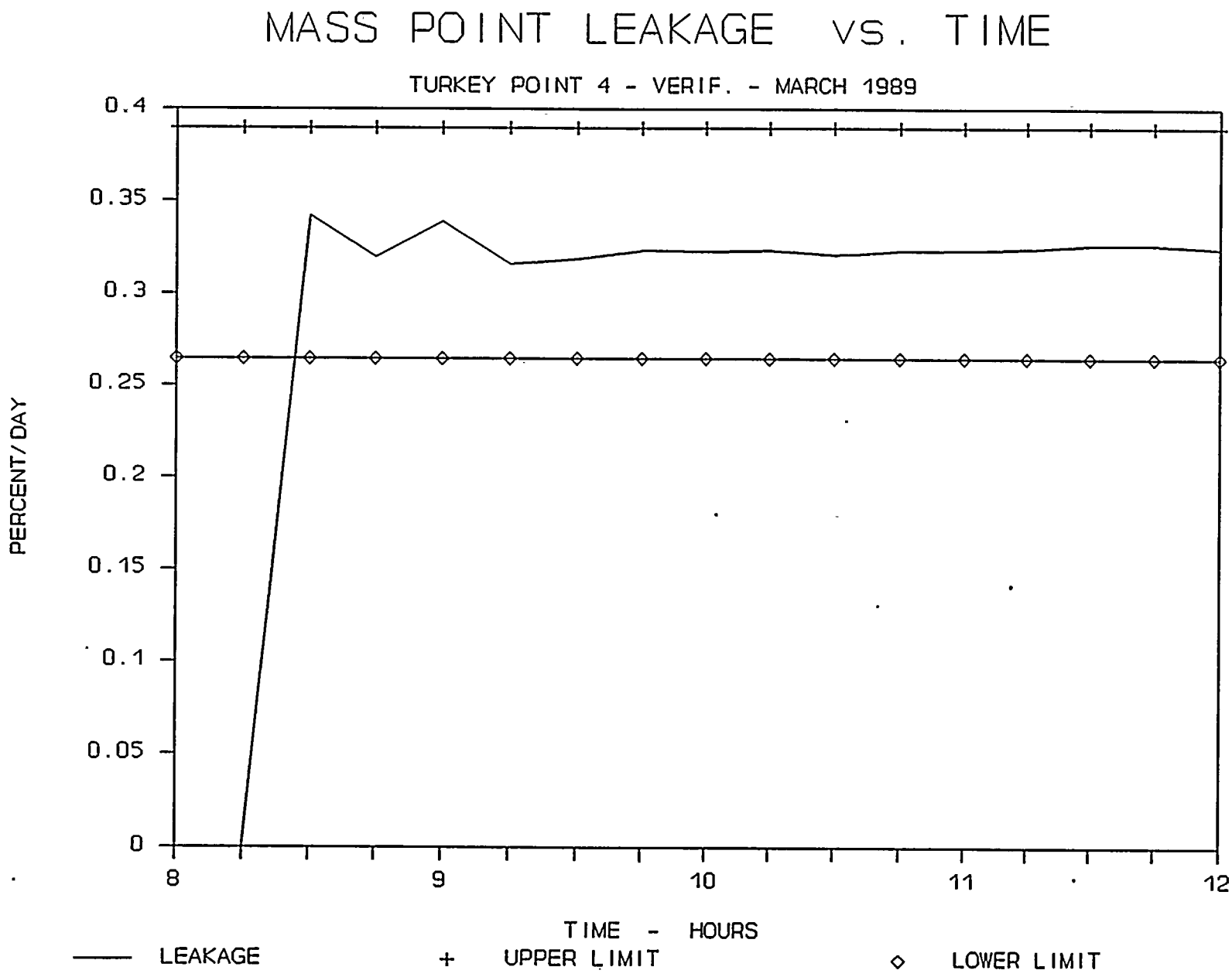
Turkey Point Unit 4 - 1989 ILRT
FROM 08:00 HOURS TO 12:00 HOURS ON 03/25/89
ABSOLUTE TEST METHOD, TOTAL TIME ANALYSIS TEST RESULTS
VERIFICATION TEST

Time (hh:mm)	Mass (LbM)	Meas.Leak. (PCT./DAY)	Calc.Leak. (PCT./DAY)	Confidence (PCT./DAY)	UCL (PCT./DAY)
08:00	501210.52	0.000000	0.000000	0.000000	0.000000
08:15	501195.94	0.279282	0.000000	0.000000	0.000000
08:30	501174.78	0.342304	0.000000	0.000000	0.000000
08:45	501161.91	0.310349	0.326179	0.375621	0.701799
09:00	501139.03	0.342310	0.342130	0.137694	0.479824
09:15	501131.76	0.301696	0.324155	0.117664	0.441819
09:30	501109.99	0.320923	0.324597	0.089029	0.413626
09:45	501091.06	0.326878	0.327468	0.072859	0.400327
10:00	501076.29	0.321379	0.326834	0.063072	0.389906
10:15	501058.78	0.322932	0.326906	0.056006	0.382911
10:30	501044.60	0.317806	0.325109	0.051256	0.376365
10:45	501023.56	0.325545	0.326236	0.046960	0.373196
11:00	501008.28	0.322808	0.326215	0.043631	0.369846
11:15	500989.74	0.325287	0.326843	0.040808	0.367651
11:30	500969.93	0.329155	0.328290	0.038424	0.366714
11:45	500955.91	0.325110	0.328416	0.036471	0.364888
12:00	500944.82	0.318072	0.326885	0.035281	0.362167

CONTAINMENT MASS vs. TIME

TURKEY POINT 4 - VERIF. - MARCH 1989

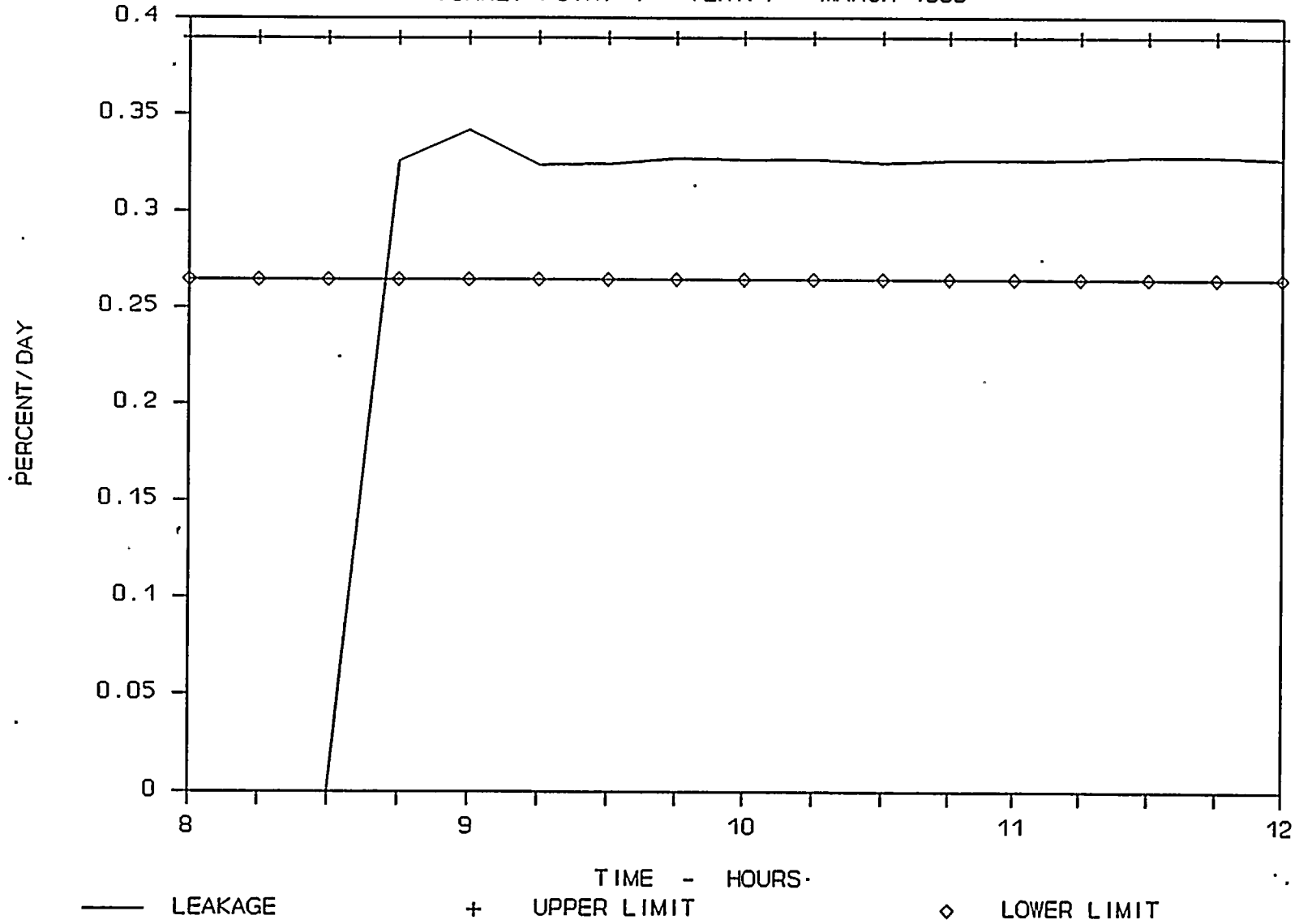




ATTACHMENT 3.3Q
GRAPH 8

TOTAL TIME LEAKAGE vs. TIME

TURKEY POINT 4 - VERIF. - MARCH 1989



SECTION 4

LOCAL LEAKAGE RATE TESTS (TYPES B AND C)

Section 4 summarizes the results of the Local Leakage Rate Test's (LLRT's) data which has been obtained from periodic testing performed since the March 1986 Periodic Type A test. Maintenance data is provided for surveillance testing performed in 1988 and 1989. Each penetration's leakage rate can be obtained from site reference material.

Attachment 4B contains an analysis of the containment penetrations that were repaired during the 1988 Refueling Outage to assess the as found containment condition.

The acceptance criteria for Types B and C testing are in accordance with 10CFR50, Appendix J. The combined as left leakage rate for all penetrations and valves, subject to Types B and C tests in 1988 and 1989, were well below the acceptance criteria of less than $0.60L_a$.

The data contained in this section are summarized below:

Attachment No.	Title
4A	1988-1989 Local Leakage Rate Test Data
4B	1988-1989 Local Leakage Rate Test Summary Analysis.

ATTACHMENT 4A
1988-1989 LOCAL LEAKAGE RATE TEST DATA

Pen No.	System Name	Test Type	Equipment/ Valves (Note 1)	As found leakage (CCM) / date	As left leakage (CCM) / date	Remarks
5	PRT to Gas Analyzer	C	CV-516(OSC)	50/09-28-88	50/09-28-88	
			SV-6385(OSC)	34/09-27-88	34/09-27-88	
6	Nitrogen to PRT	C	CK-518(ISC)	730/09-28-88	290/02-22-89	Repairs to test boundary valve 4-511 only
			STCK-519((ISC)	970/09-28-88	150/02-22-89	Repairs to test boundary valve 4-511 only
7	Pri. Water to PRT and RCP Standpipes	C	CV-519A(OSC)	34/02-21-89	34/02-21-89	
			CV-519B(ISC) CV-522A(ISC) CV-522B(ISC) CV-522C(ISC)	Combination	Combination	
8	Pressurizer Steam Samples	C	CV-951(ISC)	1,600/09-30-88	170/03-10-89	Reworked seat & disk
			CV-956A(OSC)	42/09-29-88	80/03-10-89	
9	Pressurizer Liquid Samples	C	CV-953(ISC)	75/09-29-88	100/03-15-89	Reworked seat & disk
			CV-956B(OSC)	65/09-29-88	34/03-10-89	
10	RCDT and PRT Vent	C	CV-4658B(OSC)	34/02-26-89	34/02-26-89	
			CV-4658A(OSC)	725/02-26-89	725/02-26-89	
			PCV-1014(OSC)	Combination	Combination	
			V-4656(OSC)	34/02-26-89	34/02-26-89	
11	Alternate LHSI to Loops	C	MOV-872(OSC)	15,000/01-02-89	34/02-28-89	Changed seat & disk

ATTACHMENT 4A
1988-1989 LOCAL LEAKAGE RATE TEST DATA

Pen No.	System Name	Test Type	Equipment/ Valves (Note 1)	As found leakage (CCM) / date	As left leakage (CCM) / date	Remarks
14	Letdown Orifice Stop	C	CV-200A(ISC)	4500/11-03-88	34/01-13-89	Reworked seat & disk
			CV-200B(ISC) CV-200C(ISC)	Combination	Combination	
			CV-204(OSC)	34/11-02-88	45/01-13-89	Reworked seat & disk
15	Charging to Regen. HX.	C	CK-312C(ISC)	34/12-18-88	500/01-11-89	Changed disk
			HCV-121(OSC)	190,000/12-18-88	34/01-11-89	Reworked seat & disk
			V-333(OSC)	Combination	Combination	
16	PACVS Stop, Post Accident	C	HV-1(OSC) HV-2(OSC) PAHM-002A(OSC)	34/01-12-89 Combination	34/01-12-89 Combination	
17	SI Test Line	C	V-895V(OSC)	34/01-21-89	34/02-23-89	
19A	Containment Spray Header A	C	CK-890A(OSC)	800/12-04-88	3100/03-16-89	Seats & disk clean & replace
			MOV-880A(OSC)	34/11-19-88	280/03-15-89	Changed motor
19B	Containment Spray Header B	C	CK-890B(OSC)	1000/12-05-88	525/03-18-89	Seats & disk clean & replace
			MOV-880B(OSC)	70/12-06-88	25/04-06-89	Repack
20	A & B Hot Leg Sample	C	SV-6427A(ISC) SV-6427B(ISC) SV-6428(OSC)	34/01-05-89 1250/01-05-89 34/01-05-87	140/03-18-89 34/03-18-89 34/03-01-89	

ATTACHMENT 4A
1988-1989 LOCAL LEAKAGE RATE TEST DATA

Pen No.	System Name	Test Type	Equipment/ Valves (Note 1)	As found leakage (CCM) / date	As left leakage (CCM) / date	Remarks
23	Containment Sump to WHT	C	CV-2821(OSC) CV-2822(OSC)	40/02-27-89 60,000/02-27-89	40/02-27-89 150/03-16-89	Cleaned and replaced, leak problem due to defective solenoid
24A	Seal Water Injection to A RCP	C	CK-298A(ISC)	3,000/10-01-88	34/01-20-89	No repair - blew air through valve and retested
24B	Seal Water Injection to B RCP	C	CK-298B(ISC)	34/01-20-89	34/01-20-89	
24C	Seal Water Injection to C RCP	C	CK-298C(ISC)	34/01-20-89	34/01-20-89	
25	RCP Seal Water Return	C	MOV-6386(ISC)	3,000/09-29-88	34/11-04-88	Torque switch adjusted
			MOV-381(OSC)	34/10-31-88	15/04-04-89	
29	Instrument Air Supply	C	STCK-340A(ISC) CK-336(ISC)	1,400/11-26-88 8,750/11-26-88	1,200/04-16-89 40/03-28-89	Changed out valve Lapped seat
30	Breathing Air	C	CK-201(ISC)	4,500/11-26-88	34/03-14-89	Repairs to test boundary valve 202 only
			CV-6165(OSC)	4,000/11-26-88	34/03-14-89	Repairs to test boundary valve 202 only
31	RCDT to Gas Analyzer	C	CV-4659A(OSC) CV-4659B(OSC)	34/10-01-88 Combination	34/10-01-88 Combination	

ATTACHMENT 4A
1988-1989 LOCAL LEAKAGE RATE TEST DATA

Pen No.	System Name	Test Type	Equipment/ Valves (Note 1)	As found leakage (CCM) / date	As left leakage (CCM) / date	Remarks
32	Containment Air Sample Return	C	CK-11-003(ISC)	1,500/10-01-88	525/03-02-89	Lapped seat & disk
			SV-2912(OSC) PAHM-001A(OSC) PAHM-001B(OSC)	325/10-01-88 Combination	325/10-01-88 Combination	
33	Containment Air Sample	C	SV-2911(OSC) SV-2913(OSC)	80/10-01-88 60/10-01-88	80/10-01-88 60/10-01-88	
34	Service Air	C	CK-205(ISC) V-204(OSC) HV-17(OSC)	1,600/01-05-89 1,700/01-09-89 Combination	400/03-17-89 200/03-12-89 Combination	Lapped seat & disk Lapped seat & disk Lapped seat & disk
35	Containment Purge Inlet	C	PV-2600(OSC) PV-2601(ISC)	1,800/04-24-88 Combination	550/04-06-89 Combination	No rework
36	Containment Purge Outlet	C	PV-2602(OSC) PV-2603(ISC)	1,300/09-24-88 Combination	1,025/03-15-89 Combination	No rework
37	Spare	C C	Cap(ISC) V-10-879(ISC)	34/11-02-88 34/11-02-88	34/11-02-88 34/11-02-88	
38	Electrical Canisters	B	Canisters		374/12-01-88	Tests performed from 9-28 to 12-01-88. Total leakage 374.
39	Fuel Transfer Tube Flange	B	O-Rings	70/02-21-89	70/02-21-89	
40	Equipment Hatch	B	O-Rings	34/05-12-88	15/04-25-89	
41	Personnel Hatch	B	O-Rings	4,200/09-23-88	700/03-12-89	Replaced reach rod O-ring seals

ATTACHMENT 4A
1988-1989 LOCAL LEAKAGE RATE TEST DATA

Pen No.	System Name	Test Type	Equipment/ Valves (Note 1)	As found leakage (CCM) / date	As left leakage (CCM) / date	Remarks
42	Nitrogen to Accumulators	C	STCK-945E(ISC) CV-855(OSC)	2,500/02-27-89 34/02-27-89	1,500/04-15-89 34/02-27-89	
46A	Containment Pressurization	B	PS-2008(OSC) PS-2057(OSC)	34/11-08-88 Combination	34/11-08-88 Combination	
46B	Containment Pressurization	B	PS-2009(OSC) PS-2058(OSC)	34/11-10-88 Combination	34/11-10-88 Combination	
46C	Containment Pressurization	B	PS-2007(OSC) PS-2056(OSC)	34/11-09-88 Combination	34/11-09-88 Combination	
47	Primary Water to Wash Header	C	CK-10-567(OSC) V-10-582(ISC)	120/02-26-89 Combination	120/02-26-89 Combination	
49	Emergency Hatch	B	O-Rings	400/01-31-89	400/01-31-89	
51	PACVS	C	HV-4-3(OSC) HV-4-4(OSC) PAHM-002B(OSC)	34/01-05-89 Combination	34/01-05-89 Combination	
52	RCDT Pump Discharge	C	CV-4668A(OSC) CV-4668B(OSC)	34/11-27-88 Combination	34/02-27-89 Combination	
54A	Cont. Recirc. Sump to RHR A	C	MOV-860A(OSC) MOV-861A(OSC)	34/10-30-88 Combination	500/01-12-89 Combination	

ATTACHMENT 4A
1988-1989 LOCAL LEAKAGE RATE TEST DATA

Pen No.	System Name	Test Type	Equipment/ Valves (Note 1)	As found leakage (CCM) / date	As left leakage (CCM) / date	Remarks
54B	Cont. Recirc. Sump to RHR B	C	MOV-860B(OSC)	55/10-30-88	150/01-12-89	Repacked stem
			MOV-861B(OSC)	Combination	Combination	
55	Accumulator Sample	C	CV-955C(ISC)	34/11-29-88	34/03-10-89	Reworked seat & disk
			CV-955D(ISC)	70,000/11-29-88	34/03-10-89	Reworked seat & disk
			CV-955E(ISC)	1,500/11-29-88	34/03-10-89	Reworked seat & disk
			CV-956D(OSC)	620/11-27-88	420/03-10-89	Reworked seat & disk
56	Spare	C	Cap	34/01-11-89	34/01-11-89	
61A	Spare	C	Cap	34/01-05-89	34/01-05-89	
61B	Spare	C	Cap	34/11-15-88	34/11-15-88	
			V-2024(OSC)	Combination	Combination	
63	Instrument Air Bleed	C	CV-2819(ISC)	235/11-15-88	235/11-15-88	
			CV-2826(OSC)	860/-11-13-88	860/11-13-88	
65A	ILRT Pressurization Pipe	B	Flanges	40/03-15-89	40/04-16-89	
65B	ILRT Sensing Line	C	V-2025(OSC)	34/01-09-89	15/04-16-89	
		B	Flange(ISC)	Combination	Combination	
65C	ILRT Leakage Flow	C	V-2026(OSC)	34/01-09-89	15/04-27-89	
		B	Flanges(ISC)	Combination	Combination	

NOTES:

1. (ISC) - Inside Containment
   (OSC) - Outside Containment

[illegible]

ATTACHMENT 4B
1988-1989 LOCAL LEAKAGE RATE SUMMARY ANALYSIS

The as found ILRT, by analysis, is used to show what the results of performing and ILRT at the beginning of the outage would have been, before any repairs or adjustments were made to the penetrations. The as found LLRT, the repair, and the as left LLRT for each boundary, or penetration, were reviewed. The net leakage contribution for each penetration was determined using the following leakage savings (LS) criteria:

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

2. The net equivalent leakage for the penetration is the lowest of the inside or outside valve grouping (e.g., simulates minimum pathway leakage). The inside barrier may be inside the containment or the innermost barrier of the two barriers outside the containment. See Attachment 4A.

3. If a repair was not performed on a containment isolation valve, a zero leakage equivalent is assessed to the penetration.

4. The leakage equivalent assessed to a penetration may be reduced due to the safety-related service of the system associated with the penetration(s). Justification for this reduction will be provided with the analysis.

5. No leakage savings 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 CIVs are included in this attachment.

6. For series valves tested together (i.e. combination test), 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 (prior to performing another test).

7. 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) shall be analyzed under a failure analysis program.

8. All measured leakage rate values are in CCM at 50 psig.

Based on the above criteria and the values tabulated on the next page, the net equivalent leakage of 0.086696 percent/day, when added to the results of this ILRT (0.122537 Total Time UCL), indicates that the as found ILRT test result, determined by analysis, (0.209233) is below the plant's maximum allowable leakage rate of 0.25 percent/day.

[illegible]

ATTACHMENT 4B
1988 LOCAL LEAKAGE RATE SUMMARY ANALYSIS

Pen Num.	System	As found	As left	LS	Remarks
8	Pressurizer Steam Samples	42	80	0	(Criteria 5)
9	Pressurizer Liquid Sample	65	34	31	
11	Alternate LHSI	15,000	34	14,966	
14	Letdown Orifice Stop	34	34	0	
15	Charging to Regen Hx	34	34	0	
19A	Containment Spray Header	34	280	0	(Criteria 5)
19B	Containment Spray B	70	25	45	
24A	Seal Water Injection	3000	34	2,966	
25	Seal Return	34	15	19	Lower sensitivity of test inst.
29	Instrument Air	1,400	40	1,360	
34	Service Air	1,600	200	1,400	
35	Containment Purge Inlet	1,800	550	1,250	
36	Containment Purge Exhaust	1,300	1025	275	
40	Equipment Hatch	34	15	19	Lower sensitivity of test inst.
41	Personnel Hatch	4,200	700	3,500	
54A	Cont. Sump to RHR A	34	500	0	(Criteria 5)
54B	Cont. Sump to RHR B	55	150	0	(Criteria 5)
55	Accumulator Sample	620	102	518	
65B	ILRT Connection	34	15	19	Lower sensitivity of test inst.
65C	ILRT Connection	34	15	19	Lower sensitivity of test inst.
		TOTAL		26387 CCM	

(26,387 CCM)(14.696+50)/14.696 = 116,163 SCCM = 0.086696 percent/day

NOTE: Criteria refered to in Remarks are those shown on previous page.