



Northern States Power Company

Prairie Island Nuclear Generating Plant

1717 Wakonade Dr. East  
Welch, Minnesota 55089

September 15, 1994

10 CFR Part 50  
Appendix J

U S Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

PRAIRIE ISLAND NUCLEAR GENERATING PLANT  
Docket Nos. 50-282 License Nos. DPR-42  
50-306 DPR-60

Reactor Containment Building  
Integrated Leak Rate Test Report

Attached, for the information of the NRC staff, is a summary technical report describing the integrated containment leakage test conducted on Prairie Island Nuclear Generating Plant Unit 1 at the conclusion of the last refueling outage.

This report is being submitted to meet the requirements of Appendix J to 10 CFR Part 50.

Please contact us if you have any questions related to the attached report.

*Jack Leville*

for Roger O Anderson  
Director  
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c: Regional Administrator - Region III, NRC  
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Attachment

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# PRAIRIE ISLAND NUCLEAR GENERATING PLANT

Red Wing, Minnesota

UNITS 1 AND 2



UNIT 1

REACTOR CONTAINMENT BUILDING

INTEGRATE TANK RATE TEST

JUNE 1994

NORTHERN STATES POWER COMPANY  
MINNEAPOLIS, MINNESOTA

NORTHERN STATES POWER COMPANY  
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

UNIT 1

REACTOR CONTAINMENT BUILDING  
INTEGRATED LEAK RATE TEST

JUNE, 1994

PREPARED BY: M. E. GRUBER  
PRAIRIE ISLAND NUCLEAR  
GENERATING PLANT

DATE: AUGUST 20, 1994

## 1.0 SUMMARY

The periodic Integrated Leak Rate Test (ILRT) of Prairie Island Unit 1 Containment was completed June 24, 1994. This leakage rate test was performed in accordance with Prairie Island Technical Specification 4.4.A, 10CFR50 Appendix J, and ANSI N45.4-1972. In addition, ANSI 56.8-1981 Mass Point calculation technique was used to analyze the data.

The test was performed at reduced pressure,  $P_1$ , of 23 psig. Containment was pressurized and allowed to stabilize for 4.5 hours. An acceptable leakage rate was measured 24 hours later using the mass point method. The verification test was begun immediately. Four hours into the verification test, the containment leakage rate decreased. As a result of the decreased leakage rate, the verification test was declared unacceptable eleven hours after it was begun. The verification leakage rate went below the minimum acceptance limit of -25%.

A second ILRT was initiated immediately after securing the induced leak of the first verification test. The containment leakage rate was measured over the next six hours using the reduced test duration method as described by the Bechtel Topical Report, BN-TOP-1. The leakage rate was also calculated with the mass point method. Again, a verification test was begun. After five hours, the verification leakage rate was stable and within the acceptance band of  $\pm 25\%$ . This was true using both calculation methods, BN-TOP-1 and the mass point method.

The first leakage rate measured is the leakage rate being reported for Unit 1 containment. Because the leakage rate changed (decreased) it was necessary to measure the containment leakage rate a second time in order to demonstrate that the leakage rate could be measured accurately. That is to say, the second ILRT was used as a new base line for the verification test.

The personnel airlock is believed to be the cause of the anomaly. Pressure was found in the airlock at the conclusion of testing. The decrease in the leakage rate occurred once the airlock had reached equilibrium with Containment.

For a reduced pressure test,  $0.75 L_1$  as determined during preoperational testing, is 0.11569 wt%/day. The 1994 ILRT on Unit 1 containment yielded a least squares curve fit  $L_{tm}$  of 0.659 wt%/day and a corresponding 95 percent upper confidence level  $L_{tm}$  of 0.0685 wt%/day. A valve lineup penalty of 0.00074 wt%/day must be added to  $L_{tm}$  95% UCL. The final "AS LEFT" leakage rate at UCL including all penalties is 0.0772 wt%/day while the "AS FOUND" leakage rate is 0.0998 wt%/day (reference Appendix C).



## 2.0 DESIGN INFORMATION

### 2.1 Containment Vessel Design

The design parameters of the Unit 1 containment vessel have previously been described in references 6.1 and 6.2.

### 2.2 ILRT Instrumentation System

The Integrated Leakage Rate Test Instrumentation System is designed to monitor containment parameters and calculate a leakage rate using the absolute method. Data read from the transducers is entered directly into a Hewlett Packard Model 1000 computer for reduction and analysis. Details of the test system are described in reference 6.5. For the leakage rate test twenty-six resistance temperature detectors (RTD), ten humiters, one precision pressure gauge and one flow meter were used.

### 2.3 ILRT Pressurization System

The containment was pressurized using Atlas Copco air compressors, after coolers and air dryers connected to Prairie Island's pressurization line. All air released from containment for the leakage rate test was vented to the Auxiliary Building and hence monitored by the Auxiliary Building ventilation radiation monitoring system. In addition, continuous air monitors (CAM) were positioned at the localized release path.

## 3.0 PRE-TEST CONSIDERATIONS

### 3.1 ILRT Instrumentation

All instrumentation utilized during the ILRT was calibrated by vendors whose Quality Assurance Programs were verified by Northern States Power Company.

These instruments, all calibrated within six months of the test date, have calibration certification traceable to the National Institute of Standards and Technology. Sensor calibration correction factors were then derived from the calibration curves.

Though not required by Technical Specifications, the containment fire detection system was temporarily modified by installing 12 photoelectric fire detectors in place of the existing ionization type. This was performed to avoid spurious fire alarms during periods when the containment was pressurized. No fire alarms were received during the duration of the test.

During the ILRT containment pressure was monitored by Control Room personnel via the containment wide range pressure channels. The six safeguards containment pressure channels were defeated by opening the test jack switches in the analog protection racks.

### 3.2 Venting and Draining Criteria

The following criteria was used to determine the ILRT valve lineup:

A. From 10CFR50 Appendix J:

1. "Those portions of the fluid systems that are part of the reactor coolant pressure boundary and are open directly to the containment atmosphere under post-accident conditions and become an extension of the boundary of the containment **SHALL** be opened or vented to the containment atmosphere prior to and during the test."
2. "Portions of closed systems inside containment that penetrate containment and rupture as a result of a loss of coolant accident **SHALL** be vented to the containment atmosphere."
3. "All vented systems **SHALL** be drained of water or other fluids to the extent necessary to assure exposure of the system containment isolation valves to containment air test pressure and to assure they will be subjected to the post-accident differential pressure."
4. "Systems that are required to maintain the plant in safe condition during the test **SHALL** be operable in their normal mode, and need not be vented."
5. "Systems that are normally filled with water and operating under post-accident conditions, such as the containment heat removal system, need not be vented."

B. Other Criteria:

1. All isolation valves which shut automatically on a safeguards signal, which are shut manually as a part of the post-accident safeguards sequence, or which are normally shut during power operation (except venting lineups) **SHALL** be shut during the ILRT.
2. Lines penetrating containment are to be vented to the outside atmosphere if, they are normally or potentially vented during power operation or if they could be vented after some phase of the safeguards sequence. Normally closed systems outside of the containment **SHALL** also be vented unless they are Seismic Class 1.

C. Pressure vessels inside containment vented to containment atmosphere during the ILRT:

1. RCS via Pressurizer Vent
2. Reactor Coolant Drain Tank
3. Pressurizer Relief Tank
4. Power Operated Relief Valve Accumulators (2 trains)
5. No. 11 & 12 SI Accumulators
6. No. 11 & 12 Steam Generator Snubber Accumulators
7. Containment H<sub>2</sub> Monitor Calibration Gas Bottles

D. Electrical penetration venting

The electrical penetrations were depressurized to  $10 \pm 5$  psig prior to the ILRT. Any penetration indicating greater than 15 psig would require investigation. During the ILRT, no electrical penetrations were observed to be greater than 15 psig. The nitrogen supply to the electrical penetrations and the airlock electrical penetrations were isolated and vented to atmosphere.

E. Water level in the following equipment is recorded before and after the ILRT:

1. Reactor Coolant Drain Tank
2. Pressurizer Relief Tank
3. Containment Sump A
4. Containment Sump B
5. 11 & 12 Steam Generator
6. Pressurizer

During performance of the June ILRT the level in Sump A increased 5 inches. The pressurizer level increased 1.2%, and the Pressurizer Relief Tank Level decreased 1.2%. This change in volume (0.00131 wt%) will be included as an added penalty in the final leak rate reported.

### 3.3 Local Leak Rate Testing Program

The local leak rate test program was performed during each refueling outage as required by 10CFR50, Appendix J and Prairie Island Technical Specification 4.4.A. A summary of Type B and C test results, obtained since the last ILRT report was submitted, are in Appendices A, and B. The 1994 final results reflect the as-left conditions of containment after the 1994 Unit 1 Type A test. Local leak rate valve repairs are summarized in Appendix C.

The acceptance criteria for type B & C test are as follows:

- A. If the total leakage of all local leakage testing exceeds 60% of  $L_a$ , repairs and retests **SHALL** be performed to reduce leakage below that value.

- B. Total leakage past isolation valves in systems in the Auxiliary Building Special Ventilation Zone (ABSVZ) **SHALL** be less than 0.1 wt%/day at  $P_a$ .
- C. Total leakage past isolation valves in systems exterior to both the ABSVZ and the Shield Building **SHALL** be less than 0.01 wt%/day at  $P_a$ .
- D. Airlock leakage **SHALL** be less than 1% of the  $L_a$  at 10 psig for the door inner gasket tests and less than 5% of the  $L_a$  at 46 psig for overall airlock tests.

### 3.4 Containment Inspection

A general inspection of the accessible interior and exterior surfaces of the containment and related components was performed prior to the ILRT as required by 10CFR50, Appendix J, Section V. There was no evidence of structural degradation. The inspection revealed no pressurized containers, fire hazards or containment wall growth interferences. In general, the containment was very clean. The annulus area was also inspected for wall growth interferences; none were found.

## 4.0 CONDUCT OF ILRT

### 4.1 Acceptance Criteria of Type A Test

The leakage rate,  $L_t$  at reduced pressure  $P_t$ , is calculated as follows:

$$L_t = 0.25 \frac{L_{tm}}{L_{am}} \quad \text{if} \quad \frac{L_{tm}}{L_{am}} \leq 0.7$$

$$L_t = 0.25 \frac{P_t}{P_a}^{1/2} \quad \text{if} \quad \frac{L_{tm}}{L_{am}} > 0.7$$

For acceptable ILRT, the measured leak rate,  $L_{tm}$  **SHALL** be less than  $0.75L_t$ .

Based upon preoperational test data (reference 6.2):

$$\begin{aligned} L_{tm} &= 0.0087 \text{ wt\%/day} \\ L_{am} &= 0.0141 \text{ wt\%/day} \end{aligned}$$

$$\text{Therefore, } \frac{L_{tm}}{L_{am}} = \frac{0.0087}{0.0141} = 0.6170$$

$$\text{Since } 0.6170 < 0.7, L_t = 0.25 \text{ wt\%/day} \frac{L_{tm}}{L_{am}}$$

$$\text{or } L_t = 0.25 \text{ wt\%/day} (0.6170) = 0.15426 \text{ wt\%/day}$$

$$\text{Then } L_{tm} \text{ **SHALL** be less than } 0.75 (0.15426) = 0.11569 \text{ wt\%/day}$$



#### 4.2 Type A Test and Verification Test Results and Conclusions

The Unit 1 Type A test was performed using the Mass Point Computational Technique. The test data displayed acceptable results after five hours of testing using the Mass Point Technique. The least squares leakage rate,  $L_{tm}$ , at the final data point after 24 hours of data collection was 0.0659 wt%/day with a corresponding  $L_{tm}$  at the 95 percent upper confidence level equal to 0.0685 wt%/day.

Upon completion of the Type A test, a supplemental test was performed to verify the validity of the Type A test. For the verification test, a leak of 1.20  $L_t$  was introduced through a calibrated flow meter. Four hours into the verification test, the leakage rate began decreasing. This continued until the measured leakage rate went below the minimum acceptance criteria. After 11 hours, the verification test failed when the measured leakage rate went below 75% of the calculated leak (see Figures 5 – 8 and Table 2).

Immediately after the induced leak of the first verification test was isolated, a second Type A test was initiated. The second Type A test was a short duration test using the method described in BN-TOP-1. The leakage rate was also measured using the Mass Point method as a check on the BN-TOP-1 method. After six hours, a stable leakage rate was measured: 0.0056 wt%/day (95% Upper Confidence Level), see Figures 9 – 13 and Tables 3 and 4.

At the conclusion of the second Type A test, a second verification test was initiated. To verify that the flow meter used to measure the induced leak was accurate, a second calibrated flow meter was installed in series with the first meter. Because this second meter did not have the range of the first, the induced leak was chosen at 0.86  $L_t$ . Both flow meters displayed the same flow. After five hours the composite leakage rate exhibited very good correlation to the acceptance band (see Figures 14 – 18 and Tables 5 and 6):

$$0.0896 \text{ wt\%/day} \leq L_c \leq 0.1547 \text{ wt\%/day}$$

Once the second verification test was over, depressurization of the containment was begun. At this time, the two airlocks were vented. A significant amount of pressure was found in the personnel airlock. It is believed that the higher than usual leakage rate measured by the first Type A test was caused by the personnel airlock slowly pressurizing. The airlock finally reached equilibrium with containment at four hours into the first verification test. Once the airlock was at equilibrium the containment leakage rate decreased. This caused the failure of the first verification test.

With the exception of the failure of the first verification test, as explained above, review of the test data shows smooth and stable trends. No instruments failed. Ambient weather conditions were favorable. It was a successful Type A test.



## 5.0 SPECIAL TESTING

### 5.1 Shield Building Testing

Section IV, paragraph B of 10CFR50, Appendix J, "Special Testing Requirements" and Technical Specification 4.4.A.6 require testing of multiple barrier containments. Unit 1 Shield Building is functionally tested at monthly intervals according to NSP Surveillance Procedure SP 1073. The Shield Building is functionally tested when each redundant train of the special ventilation system is tested to determine if it meets drawdown performance computed for the test condition with 75% of the Shield Building inleakage specified in Technical Specification Figure TS 4.4.1. None of these monthly tests on Unit 1 Shield Building have failed to meet the acceptance criteria due to Shield Building degradation.

### 5.2 Auxiliary Building Testing

Technical Specification 4.4.A.6 requires retesting of the Auxiliary Building Special Ventilation Zone (ABSVZ). Leak tightness of the ABSVZ is verified at quarterly intervals when each redundant train is run to determine if it can produce an acceptable negative pressure in the zone within six minutes with an opening in the boundary of at least ten square feet. None of these quarterly tests have failed to meet the acceptance criteria.

## 6.0 REFERENCES

### 6.1 Unit 1 Reactor Containment Building Integrated Leak Rate Test, July, 1973

Transmitted by letter dated October 4, 1973, from Mr. L.O. Mayer, NSP, to Mr. J.F. O'Leary, Directorate of Licensing, USAEC.

### 6.2 Supplement No. 1 to Unit 1 Reactor Containment Building Integrated Leak Rate Test, July 1973

Transmitted by letter dated June 6, 1974, from Mr. L.O. Mayer, NSP, to Mr. J.F. O'Leary, Directorate of Licensing, USAEC.

### 6.3 Unit 1 Reactor Containment Building Integrated Leak Rate Test, October, 1980

Transmitted by letter dated December 22, 1981, from Mr. L.O. Mayer, NSP, to Director, NRR.

6.4 Unit 1 Reactor Containment Building Integrated Leak Rate Test,  
February 1985

Transmitted by letter dated June 11, 1985, from Mr. D. Musolf, NSP, to Director, NRR.

6.5 Unit 1 Reactor Containment Building Integrated Leak Rate Test,  
September 1988

Transmitted by letter dated December 1988 from Mr. D. Musolf, NSP, to Director, NRR.

## APPENDIX A - TYPE B AND C TEST RESULTS - 1992 REFUELING OUTAGE

Each penetration listed below is tested according to Surveillance Procedure 1072. The combined leakage for all components subject to Type B and C tests **SHALL** be less than 0.60 wt% / day. The combined leakage for components in the ABSVZ **SHALL** be less than 0.10 wt% / day. The combined leakage for components designated EXTERIOR **SHALL** be less than 0.01 wt% / day. The values listed are as left leakage rates in SCCM. Values in brackets indicate as found leakage rates in SCCM prior to maintenance. See Appendix C for repair Summary.

### ABSVZ PENETRATIONS

Pen. No.	Penetration	Type	Inside	Outside	Max
1	Pressurizer Relief Tank Sample to GA	C	3	1	3
4	Primary Vent Header	C	2	7	7
5	Reactor Coolant Drain Tank Pump Discharge	C	0	0	0
11	Letdown Line	C	3400	0	3400
12	Charging Line	C	57	115 [18]	57 [115]
13A	No. 11 RCP Seal Water Supply	C	55 [225,000]	380	380 [225,000]
13B	No. 12 RCP Seal Water Supply	C	4	12	12
14	RCP Seal Water Return	C	245	95	245
15	Pressurizer Stm Sample	C	110	110	110
16	Pressurizer Liquid Smpl	C	3	8	8
17	Loop B Hot Leg Sample	C	0	0	0
18	Fuel Transfer Tube	B	30		30
19	Service Air	B	10	9	10
21	Reactor Coolant Drain Tank Gas to GA	C	30	0	30
22	Cntmt Air Sample In	C	3	8	8
23	Cntmt Air Sample Out	C	3	5	5
25A	Cntmt Purge Exhaust	B	1		1
25B	Cntmt Purge Supply	B	1		1
26	Cntmt Sump "A" Disch	C	0	12	12

## ABSVZ PENETRATIONS

Pen. No.	Penetration	Type	Inside	Outside	Max
27B	Fire Protection	B	10	3	10
27 C-1	ILRT Pressure Instrument	B		21	21
27 C-1	ILRT Pressure Instrument	B		1	1
29A	Internal Containment Spray	C	12,000	140	12,000
29B	Internal Containment Spray	C	1,000	400	1,000
30A	Containment Sump B Suction Line	C		4,800	4,800
30B	Containment Sump B Suction Line	C		565	565
42C	Containment Heating Steam	B	2	2	2
42F	Containment Heating Condensate	B	8	0	8
42F	Containment Heating Condensate	B	1	1	1
44	ILRT Pressurization	B	0	95	95
45	Reactor Make Up to Pressurizer Relief Tank	C	310	2	310
49B	Demin Water	B	0	2	2

## EXTERIOR PENETRATIONS

Pen. No.	Penetration	Type	Inside	Outside	Max
2	Pressurizer Relief Tank N <sub>2</sub> Supply	C	5	10	10
20	Instrument Air	C	55	11	55
31	N <sub>2</sub> to Accumulator	C		205	205
42A	Post LOCA HYD Control Air Supply	C	8	4	8
50	Post LOCA HYD Control Air Supply	C	4	0	4



## ANNULUS PENETRATIONS

Pen. No.	Penetration	Type	Inside	Outside	Max
34	Electrical Penetrations	B	1130		1130
41A	Containment Vacuum Breaker	C	8	320	320
41B	Containment Vacuum Breaker	C	2	1	2
42A-1	Post LOCA Hydrogen Air Vent	C	35	45	45
42A-2	Post LOCA Hydrogen Air Vent	C	8	10	10
42B	In Service Purge Supply	C		6	6
43A	In Service Purge Exhaust	B		8	8
50-1	Post LOCA Hydrogen Air Vent	C	55	60	60
50-2	Post LOCA Hydrogen Air Vent	C	4	6	6
6A	11 Steam Line Bellows	B	10	10	10
6B	12 Steam Line Bellows	B	1	1	1
7A	11 Feedwater Line Bellows	B	2	1	2
7B	12 Feedwater Line Bellows	B	2	1	2
8A	11 Steam Generator Blowdown Bellows	B	1	15	15
8B	12 Steam Generator Blowdown Bellows	B	1	2	2
9	Residual Heat Out Bellows	B	2	2	2
10	Residual Heat In Bellows	B	1	3	3
11	Letdown Line Bellows	B	1	100	100
18	Fuel Transfer Tube Bellows	B	1	4	4
	Equipment Hatch	B	7		7
	Personnel Airlock	B	1900 [2775]		1900 [2775]
	Maintenance Airlock	B	1762 [9688]		1762 [9688]



## APPENDIX B – TYPE B AND C TEST RESULTS – 1994 REFUELING OUTAGE

Each penetration listed below is tested according to Surveillance Procedure 1072. The values listed are as left leakage rates in SCCM. Values in brackets indicate as found leakage rates in SCCM prior to maintenance. See Appendix C for repair Summary.

### ABSVZ PENETRATIONS

Pen. No.	Penetration	Type	Inside	Outside	Max	Min Pathway	Penalty
1	Pressurizer Relief Tank Sample to GA	C	3	3	3	3	0
4	Primary Vent Header	C 23 psig	0 [1] 2 [5]	3 [2] 2 [1]	3 [2] 2 [5]	0 [1] 2 [1]	2*
5	Reactor Coolant Drn Tnk Pump Discharge	C 23 psig	2 [1] 0 [0]	0 [0] 0 [1]	2 [1] 0 [1]	0 [0] 0 [0]	0
11	Letdown Line	C	5200	0	5200	0	0
12	Charging Line	C	25	720	720	25	0
13A	No. 11 RCP Seal Water Supply	C 23 psig	30	3 [13,000] 0 [7,500]	30 0 [7500]	3 0 [7500]	7500
13B	No. 12 RCP Seal Water Supply	C	60	100	100	60	0
14	RCP Seal Water Return	C 23 psig	250 [9] 8 [50]	125 [26] 26 [170]	250 [26] 26 [170]	125 [9] 8 [50]	42
15	Pressurizer Stm Sample	C 23 psig	0 [10] 1 [0]	2 [16] 0 [0]	2 [16] 1 [1]	0 [10] 0 [0]	0
16	Pressurizer Liquid Smpl	C 23 psig	2 [2] 1 [0]	2 [0] 1 [1]	2 [2] 1 [1]	2 [0] 1 [0]	0
17	Loop B Hot Leg Sample	C 23 psig	70 [2] 7 [1]	175 [3] 150 [1]	175 [3] 150 [1]	70 [2] 7 [1]	0
18	Fuel Transfer Tube	B	13		13	13	0
19	Service Air	B	2	0	2	0	0
21	Reactor Coolant Drn Tank Gas to GA	C	25	0	25	0	0
22	Cntmt Air Sample In	C	8	2	8	2	0
23	Cntmt Air Sample Out	C	5	1	5	1	0
25A	Cntmt Purge Exhaust	B	5		5	5	0
25B	Cntmt Purge Supply	B	0		0	0	0

# **ABSVZ PENETRATIONS**

Pen. No.	Penetration	Type	Inside	Outside	Max	Min Pathway	Penalty
26	Cntmt Sump "A" Disch	C 23 psig	0 [0] 0 [0]	0	0 [0] 0 [0]	0 [0] 0 [0]	0
27B	Fire Protection	B	0	0	0	0	0
27 C-1	ILRT Pressure Instrument	B 23 psig		0 0	0 0	0 0	0
27 C-1	ILRT Pressure Instrument	B 23 psig		20 0	20 0	20 0	0
29A	Internal Containment Spray	C 23 psig	3100	65 [1] 65 [0]	3100 65 [0]	65 [1] 65 [0]	65*
29B	Internal Containment Spray	C 23 psig	1300 [1900] 0 [1700]	1050 [0] 125 [0]	1300 [1900] 125 [1700]	1050 [0] 0 [0]	125*
30A	Containment Sump B Suction Line	C 23 psig		150 [3] 15 [35]	150 [3] 15 [35]	150 [3] 15 [35]	20
30B	Containment Sump B Suction Line	C 23 psig	-	2950 [140] 900 [15]	2950 [140] 900 [15]	2950 [140] 900 [15]	0
42A	Post LOCA H <sub>2</sub> Control	C 23 psig	1 [30] 1 [2]	0 [0]	1 [30] 1 [2]	0 [0] 1 [2]	1
42C	Containment Heating Steam	B	10	2	10	2	0
42F-1	Containment Heating Condensate	B	0	0	0	0	0
42F-2	Containment Heating Condensate	B	0	0	0	0	0
44	ILRT Pressurization	B 23 psig	0 0	220 76	220 76	0 0	0
45	Reactor Make Up to Pressurizer Relief Tnk	C	300	4	300	4	0
49B	Demin Water	B	1	1	1	1	0
50	Post LOCA H <sub>2</sub> Control	C 23 psig	8 [0] 0 [2]	0 [0]	8 [0] 0 [2]	0 [0] 0 [2]	2

## EXTERIOR PENETRATIONS

Pen. No.	Penetration	Type	Inside	Outside	Max	Min Pathway	Penalty
2	Pressurizer Relief Tank N <sub>2</sub> Supply	C	7	1	7	1	0
20	Instrument Air	C	360	30	360	30	0
31	N <sub>2</sub> to Accumulator	C 23 psig		100 [115] 0 [25]	100 [115] 0 [25]	100 [115] 0 [25]	25
42A	Post LOCA HYD Control Air Supply	C 23 psig	1 [30] 1 [2]	0 [0]	1 [30] 1 [2]	0 [0] 1 [2]	1
50	Post LOCA HYD Control Air Supply	C 23 psig	8 [0] 0 [2]	0 [0]	8 [0] 0 [2]	0 [0] 0 [2]	2

## ANNULUS PENETRATIONS

Pen. No.	Penetration	Type	Inside	Outside	Max	Min Pathway	Penalty
34	Electrical Penetrations	B	552		552	552	0
41A	Containment Vacuum Breaker	C	6	335	335	6	0
41B	Containment Vacuum Breaker	C	0	210	210	0	0
42A-1	Post LOCA Hydrogen Air Vent	C	50	60	60	50	0
42A-2	Post LOCA Hydrogen Air Vent	C 23 psig	1 [30] 1 [2]	2	2 [30] 1 [2]	1 [2] 1 [2]	1
42B	In Service Purge Supply	B		3	3	3	0
43A	In Service Purge Exhaust	B		0	0	0	0
50-1	Post LOCA Hydrogen Air Vent	C	165	145	165	145	0
50-2	Post LOCA Hydrogen Air Vent	C 23 psig	8 [0] 0 [2]	2 [4200]	8 [4200] 0 [2]	2 [0] 0 [2]	2
6A	11 Steam Line Bellows	B	0	0	0	0	0
6B	12 Steam Line Bellows	B	1	1	1	1	0
7A	11 Feedwater Line Bellows	B	0	0	0	0	0
7B	12 Feedwater Line Bellows	B	0	0	0	0	0
8A	11 Steam Generator Blowdown Bellows	B	1	18	18	1	0

## ANNULUS PENETRATIONS

Pen. No.	Penetration	Type	Inside	Outside	Max	Min Pathway	Penalty
8B	12 Steam Generator Blowdown Bellows	B	0	1	1	0	0
9	Residual Heat Out Bellows	B	1	2	2	1	0
10	Residual Heat In Bellows	B	2	0	2	0	0
11	Letdown Line Bellows	B	0	170	170	0	0
18	Fuel Transfer Tube Bellows	B	0	0	0	0	0
	Equipment Hatch	B	8		8	8	0
	Personnel Airlock	B 23 psig	9050 [2265] 3025 [1275]		9050 [2265] 3025 [1275]	9050 [2265] 3025 [1275]	0
	Maintenance Airlock	B 23 psig	1725 [5300] 3385 [725]		1725 [5300] 3385 [725]	1725 [5300] 3385 [725]	0

\* B + C Total Penalty = 192 SCCM @ 23 psig

Total Repair Penalty = 7596 SCCM @ 23 psig

B + C Penalty Calculations:

$$192 \frac{\text{cc}}{\text{min}} \times \frac{1 \text{ Ft}^3}{28317 \text{ cc}} \times \frac{100 \text{ wt}\%}{1.32 \times 10^6 \text{ ft}^3} \times \frac{60 \text{ min}}{\text{Hr}} \times \frac{24 \text{ Hr}}{\text{day}} = 0.00074 \frac{\text{wt}\%}{\text{day}} @ 23 \text{ psig}$$

Total Repair Penalty Calculations:

$$7596 \frac{\text{cc}}{\text{min}} \times \frac{1 \text{ Ft}^3}{28317 \text{ cc}} \times \frac{100 \text{ wt}\%}{1.32 \times 10^6 \text{ ft}^3} \times \frac{60 \text{ min}}{\text{Hr}} \times \frac{24 \text{ Hr}}{\text{day}} = 0.0293 \frac{\text{wt}\%}{\text{day}} @ 23 \text{ psig}$$

Pressurizer and Sump A Level Increase Penalty = 0.00131 wt%/day

Using the above penalties the 1994 as found type A UCL leakage rate =

$$(0.0685 + 0.00074 + 0.0293 + 0.00131) \text{ wt\%/day} = 0.0998 \text{ wt\%/day} < 0.11569 \text{ wt\%/day} = 0.75 \text{ Lt @ Pt}$$



# APPENDIX C – TYPE B AND C TEST SUMMARY

REFUELING OUTAGE	PEN NO.	PENETRATION	SUMMARY
1992	12	Charging Line	Perform corrective maintenance on air operated valves.
1992	13A	No. 11 RCP Seal Water Supply	Replace check valve.
1994	4	Primary Vent Header	Perform preventative maintenance on air operated valves.
1994	5	Reactor Coolant Drain Tank Pump Discharge	Perform corrective maintenance on air operated valves.
1994	13A	No. 11 RCP Seal Water Supply	Replace outside Containment isolation valve
1994	14	RCP Seal Water Return	Performed preventative maintenance on the motor actuators.
1994	15	Pressurizer Stm Sample	Performed preventative maintenance on the motor actuators.
1994	16	Pressurizer Liquid Smpl	Performed preventative maintenance on the motor actuators.
1994	17	Loop B Hot Leg Sample	Performed preventative maintenance on the motor actuators.
1994	26	Containment Sump A Discharge	Perform corrective maintenance on inside air operated valve.
1994	29A	Internal Containment Spray	Perform preventative maintenance on the motor actuator.
1994	29B	Internal Containment Spray	Perform preventative maintenance on the check valve and on the motor actuator.

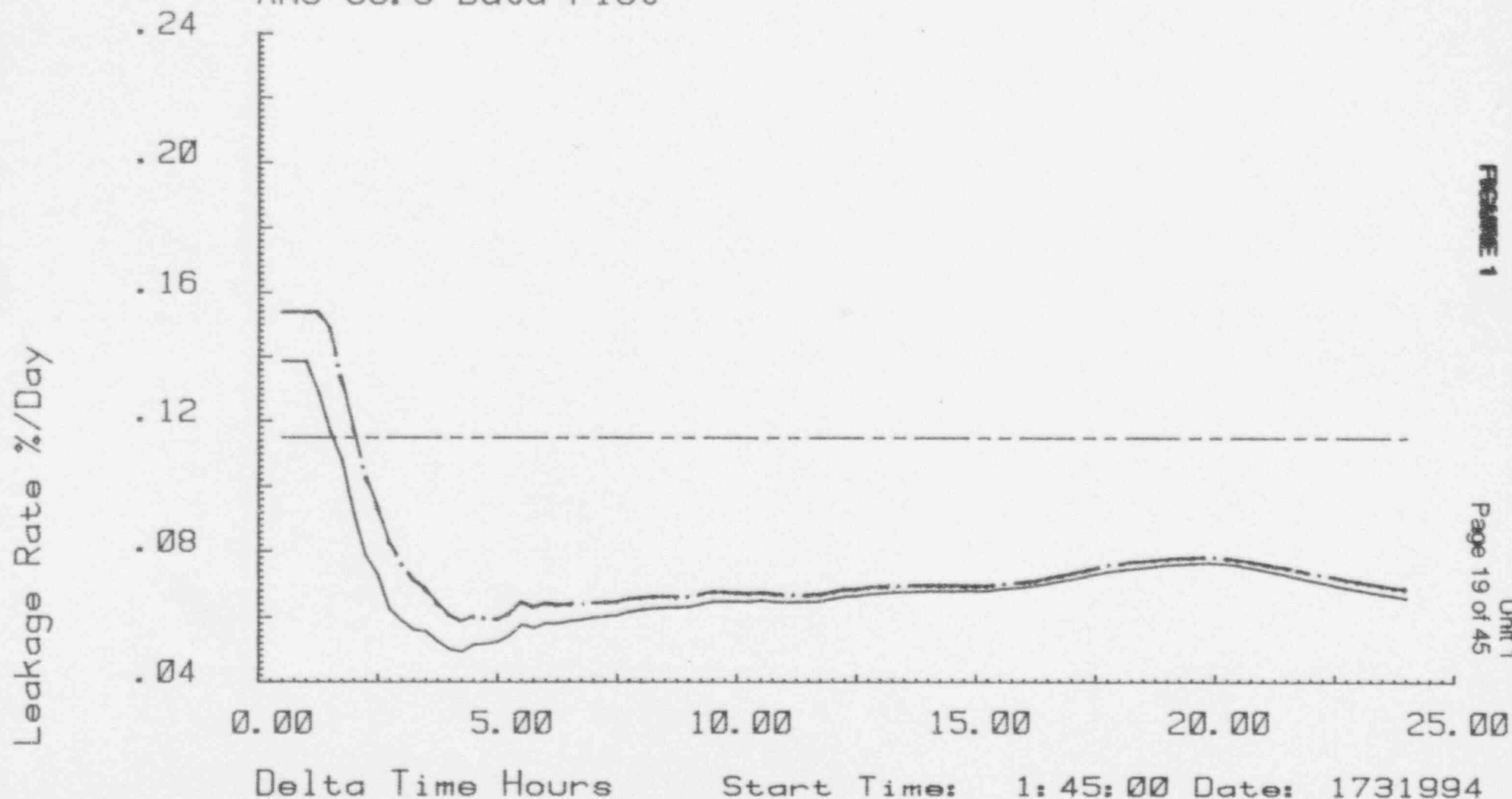


REFUELING OUTAGE	PEN NO.	PENETRATION	SUMMARY
1994	30A	Containment Sump B Suction Line	Performed preventative maintenance on the motor actuator.
1994	30B	Containment Sump B Suction Line	Performed preventative maintenance on the motor actuator.
1994	42A	Post LOCA HYD Control Air Supply	Performed preventative maintenance on the motor actuator.
1994	50	Post LOCA HYD Control Air Supply	Performed preventative maintenance on the motor actuator.

NSP PINGP Unit-1, ILRT 1994  
Data Frequency 900 seconds  
ANS 56.8 Data Plot

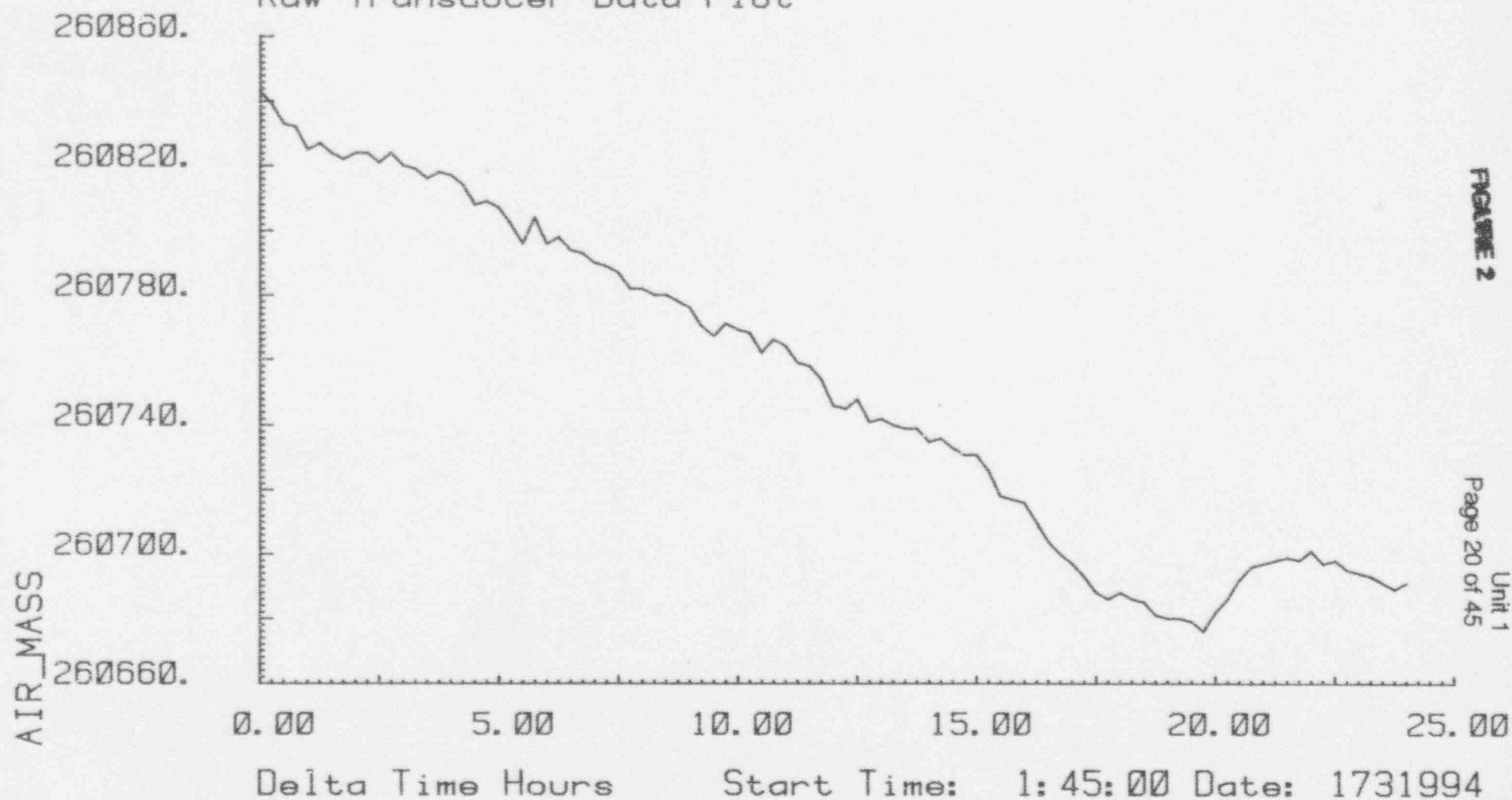
Graph Legend

———— Lam %/day  
- - - - - 95% UCL  
- - - - - 75% La



Start Time: 1:45:00 Date: 1731994  
End Time: 1:45:00 Date: 1741994

NSP PINGP Unit-1, ILRT 1994  
Data Frequency 900 seconds  
Raw Transducer Data Plot

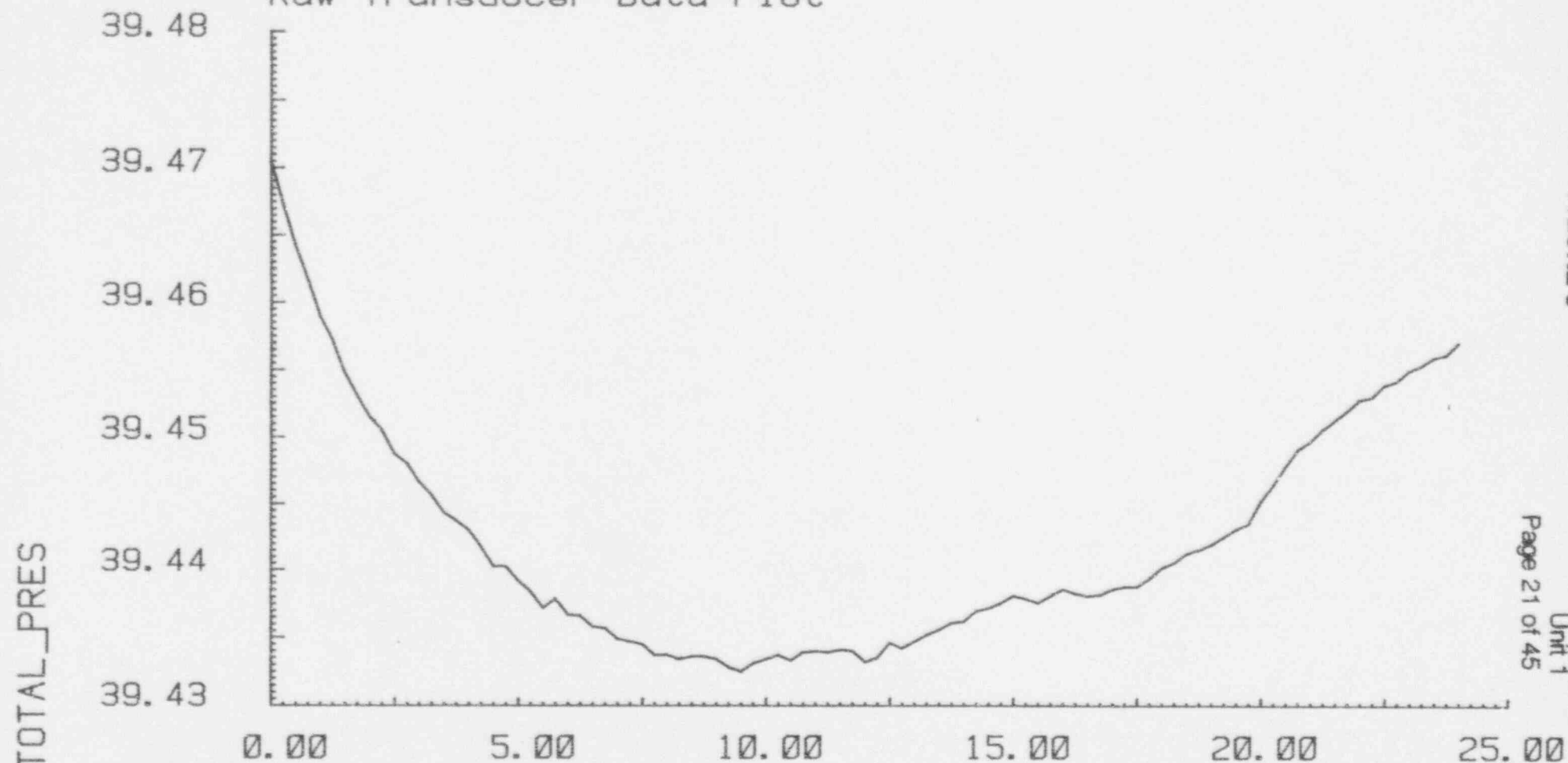


Delta Time Hours

Start Time: 1: 45: 00 Date: 1731994

End Time: 1: 45: 00 Date: 1741994

NSP PINGP Unit-1, ILRT 1994  
Data Frequency 900 seconds  
Raw Transducer Data Plot



Delta Time Hours

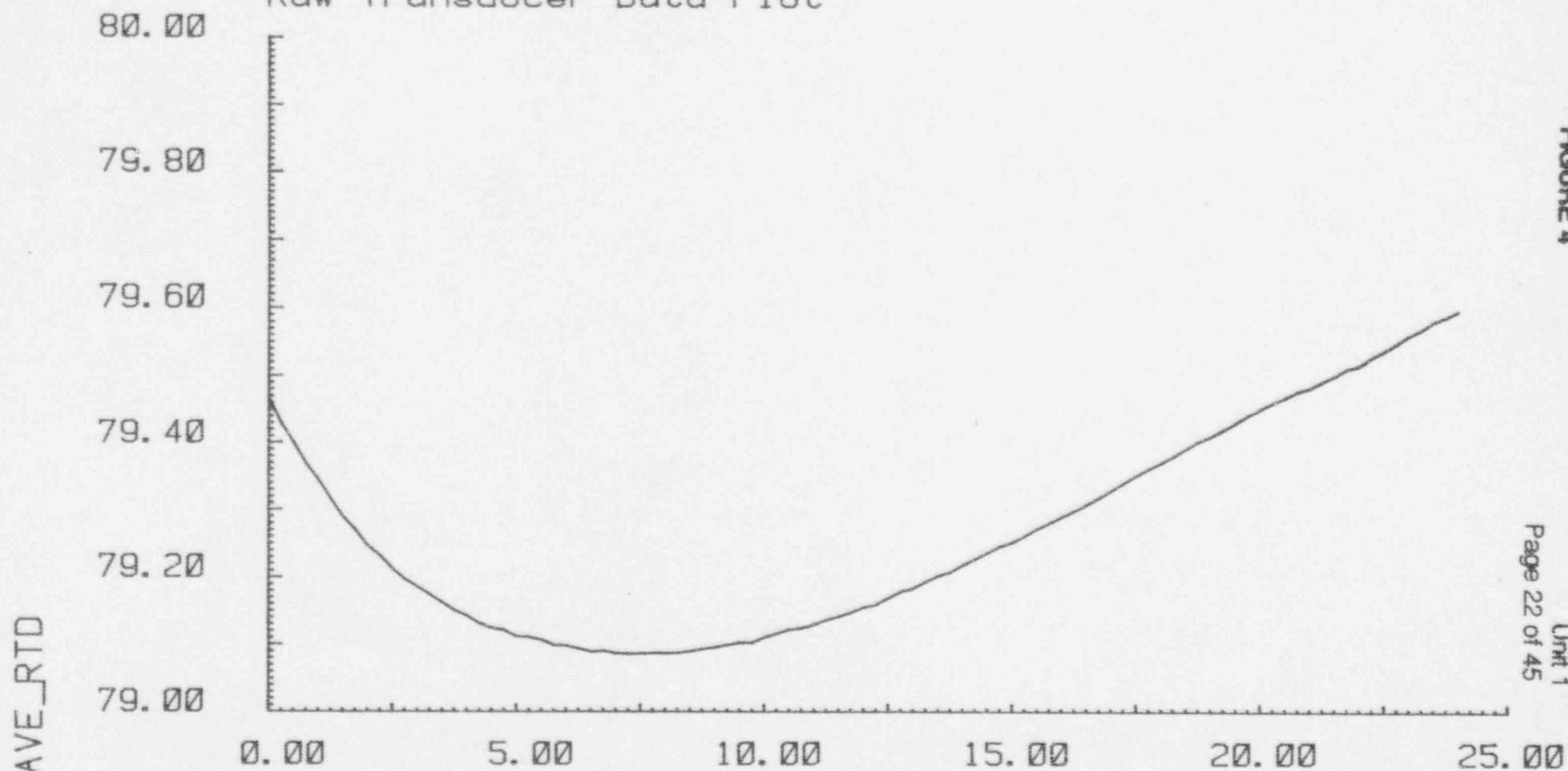
Start Time: 1:45:00 Date: 1731994

End Time: 1:45:00 Date: 1741994

FIGURE 3

ILRT  
Unit 1  
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NSP PINGP Unit-1, ILRT 1994  
Data Frequency 900 seconds  
Raw Transducer Data Plot



Delta Time Hours

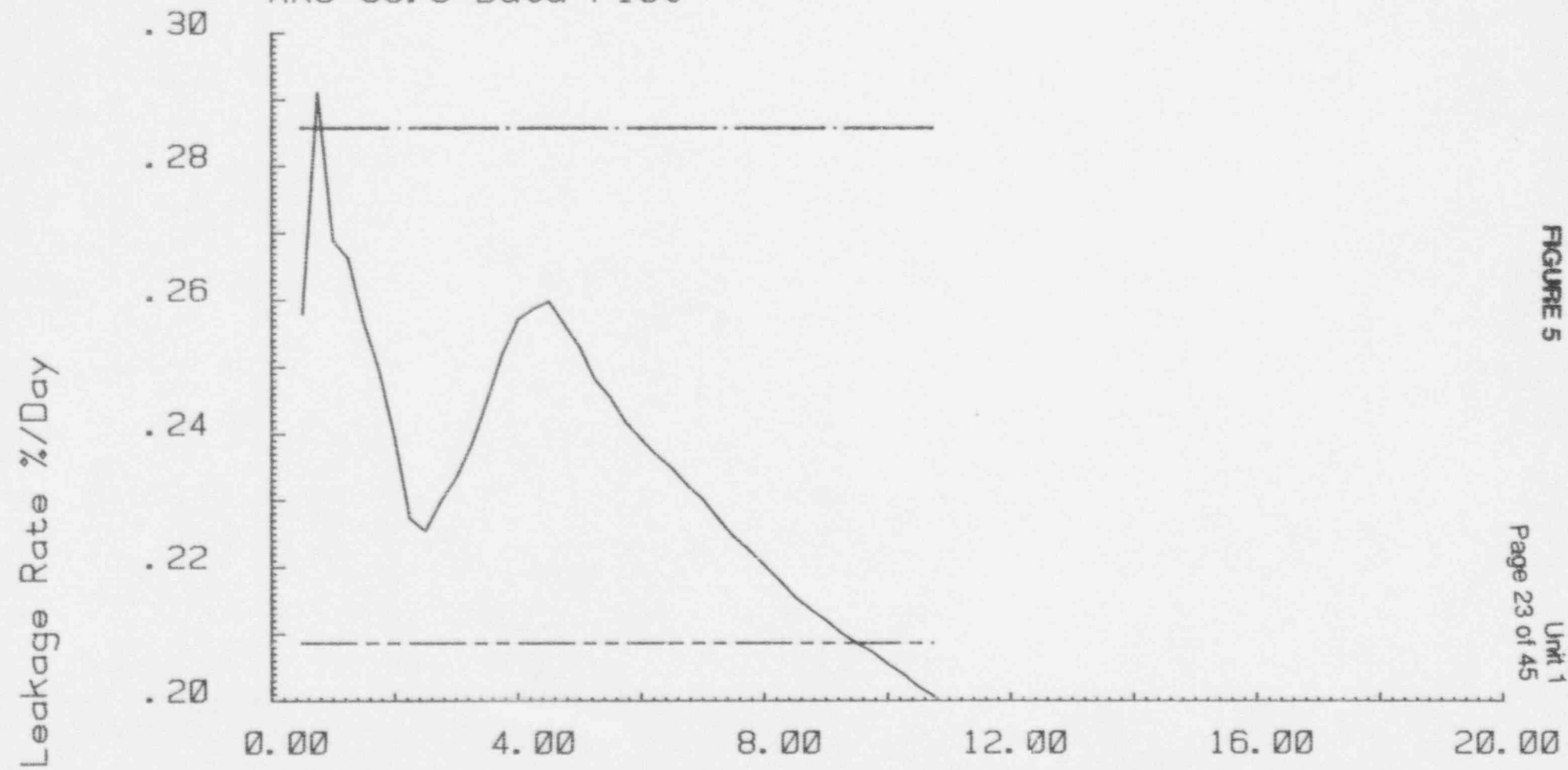
Start Time: 1:45:00 Date: 1731994

End Time: 1:45:00 Date: 1741994



NSP PINGP Unit-1, ILRT 1994  
 Data Frequency 900 seconds  
 ANS 56.8 Data Plot

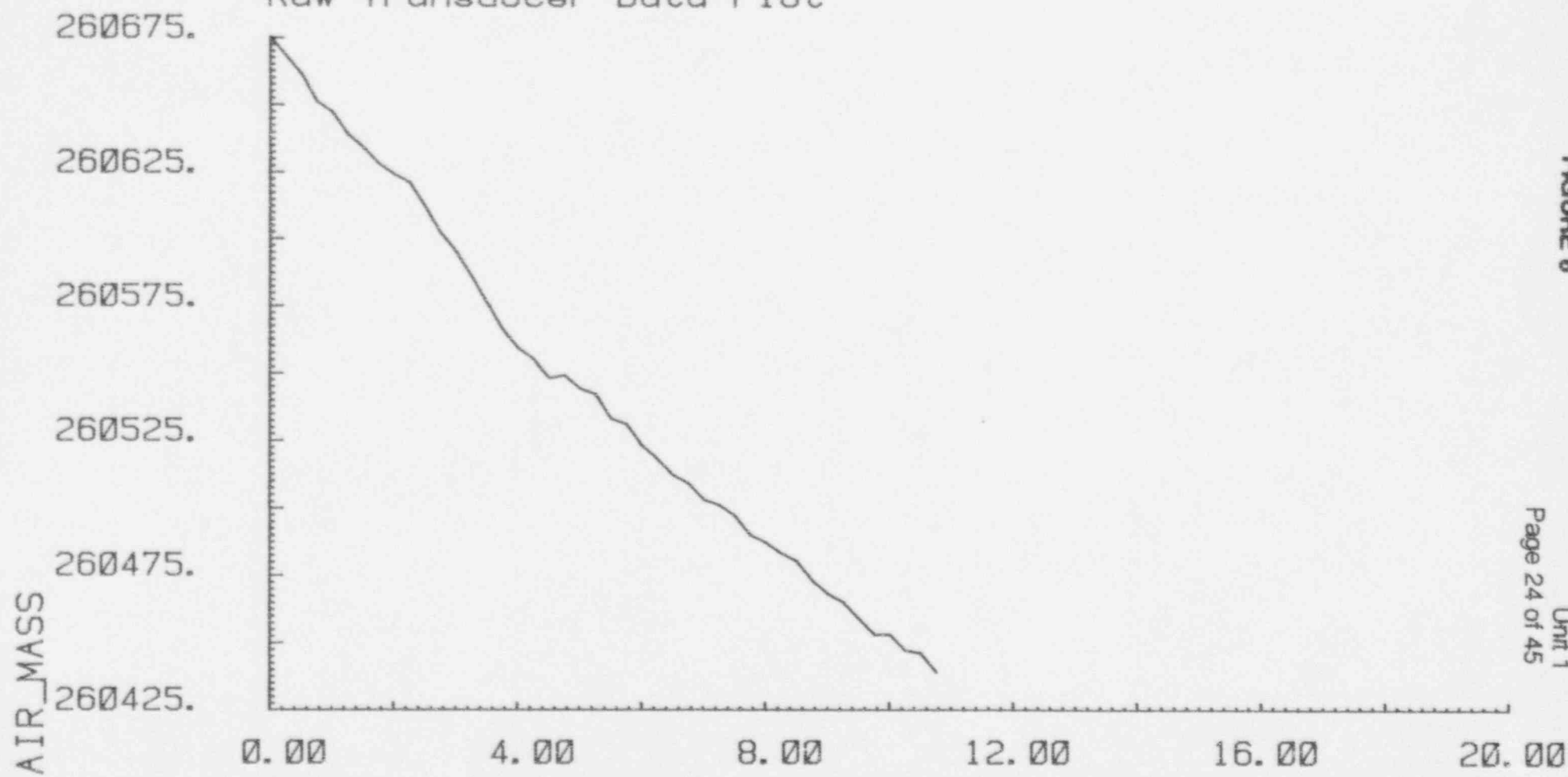
Graph Legend  
 \_\_\_\_\_ Lam %/day  
 - - - - - Upper Limit  
 - - - - - Lower Limit



Delta Time Hours

Start Time: 2:30:00 Date: 1741994  
 End Time: 13:15:00 Date: 1741994

NSP PINGP Unit-1, ILRT 1994  
Data Frequency 900 seconds  
Raw Transducer Data Plot

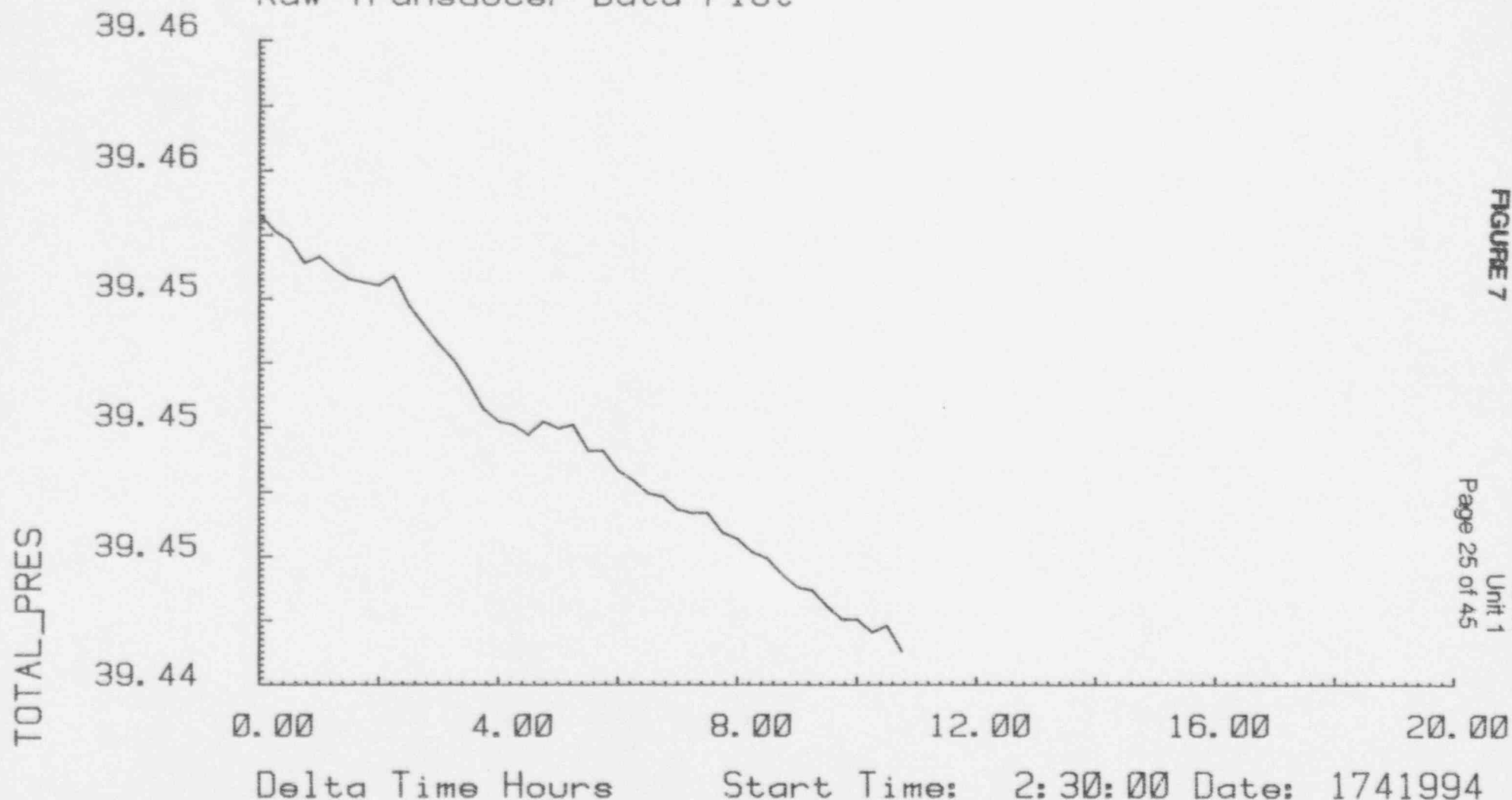


Delta Time Hours

Start Time: 2:30:00 Date: 1741994

End Time: 13:15:00 Date: 1741994

NSP PINGP Unit-1, ILRT 1994  
Data Frequency 900 seconds  
Raw Transducer Data Plot

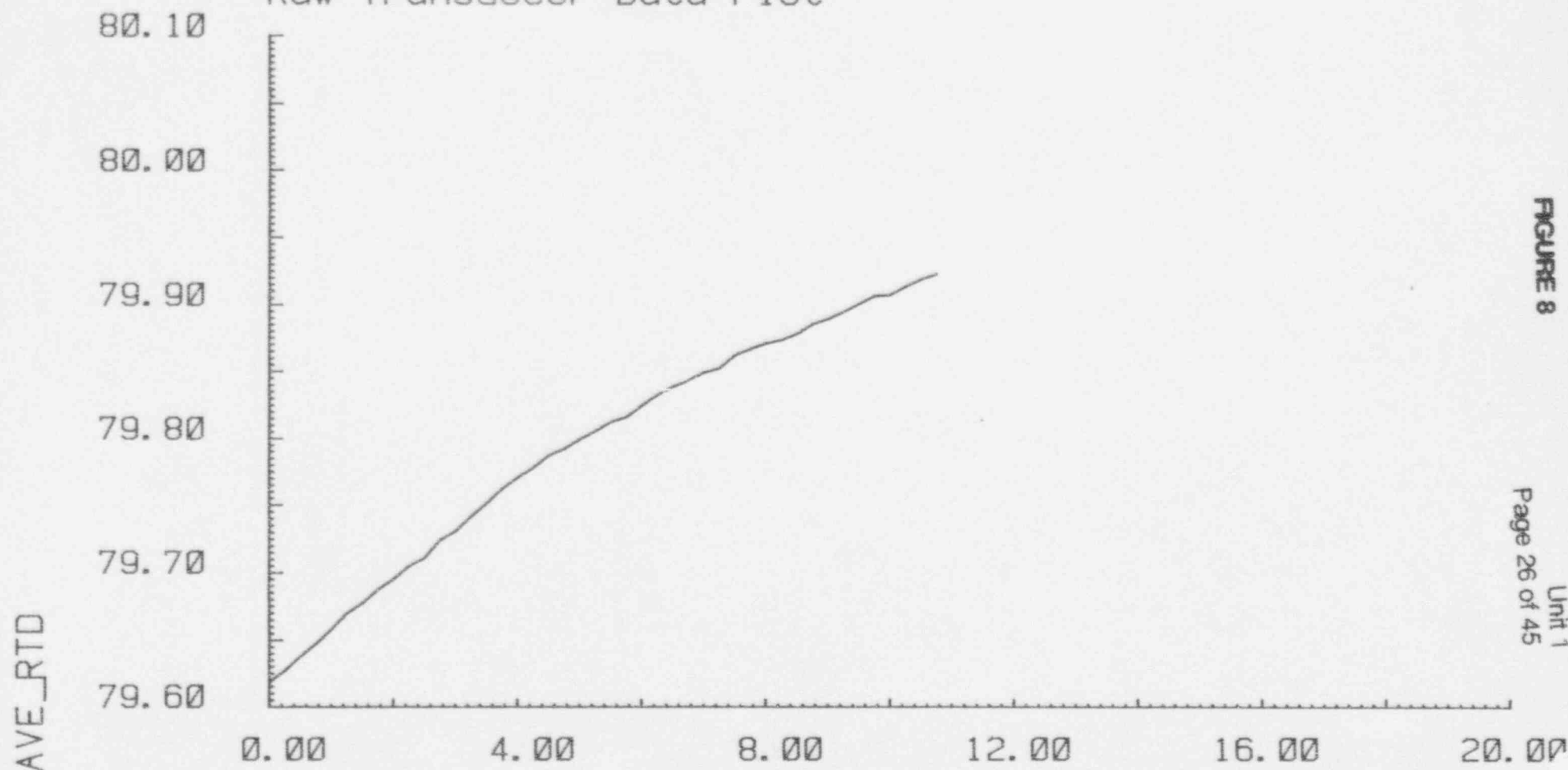


Start Time: 2:30:00 Date: 1741994  
End Time: 13:15:00 Date: 1741994

FIGURE 7

ILRT  
Unit 1  
Page 25 of 45

NSP PINGP Unit-1, ILRT 1994  
Data Frequency 900 seconds  
Raw Transducer Data Plot



Delta Time Hours

Start Time: 2:30:00 Date: 1741994

End Time: 13:15:00 Date: 1741994

FIGURE 8

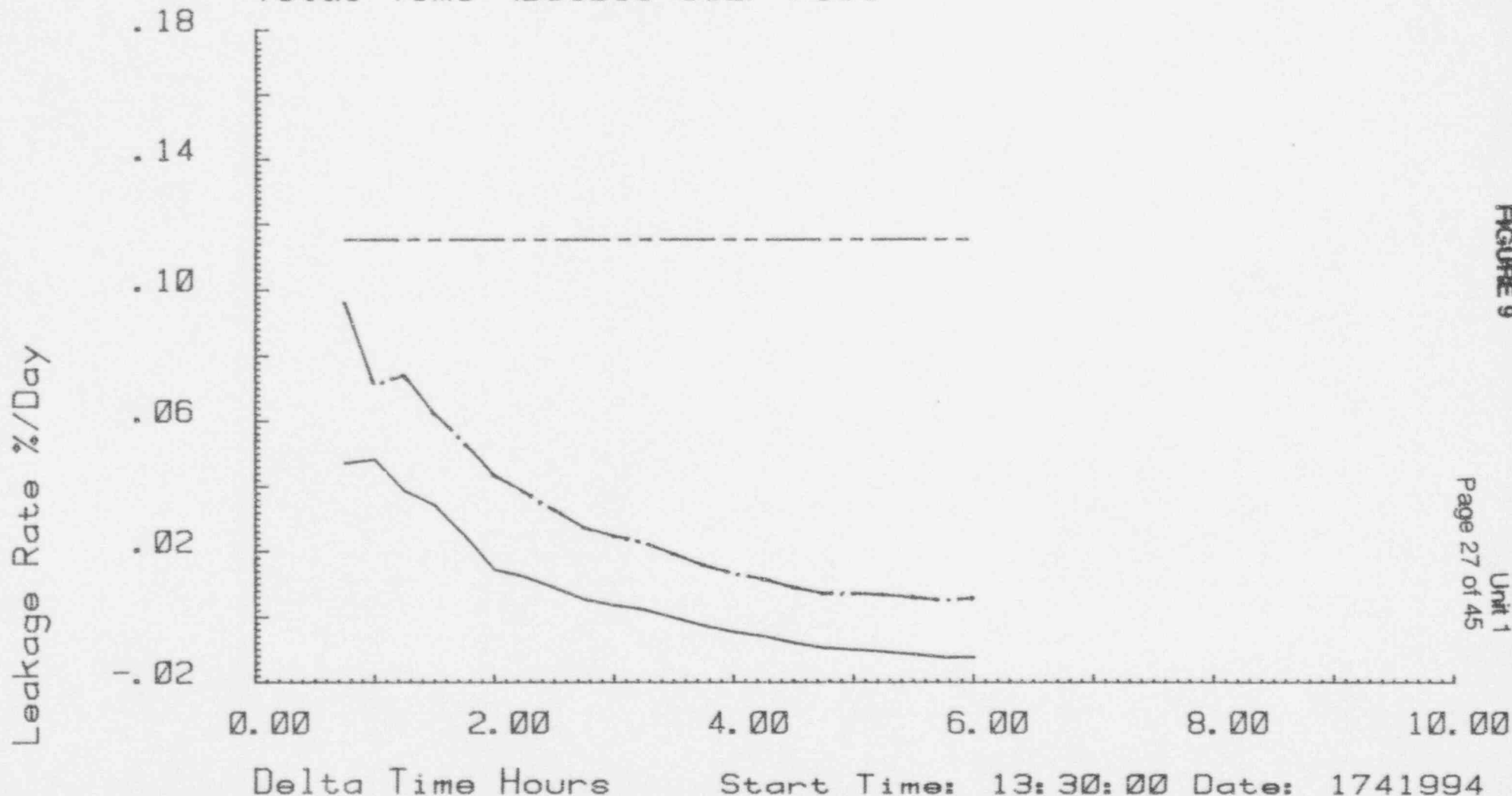
ILRT  
Unit 1  
Page 26 of 45



NSP PINGP Unit-1, ILRT 1994  
 Data Frequency 900 seconds  
 Total Time (Double UCL) Plot

Graph Legend

\_\_\_\_\_ LSF Leak  
 - - - - - 95% UCL  
 - - - - - 75% La



Start Time: 13:30:00 Date: 1741994  
 End Time: 19:30:00 Date: 1741994

NSP PINGP Unit-1, ILRT 1994  
 Data Frequency 900 seconds  
 ANS 56.8 Data Plot

Graph Legend

———— Lam %/day  
 ———— 95% UCL  
 - - - - 75% La

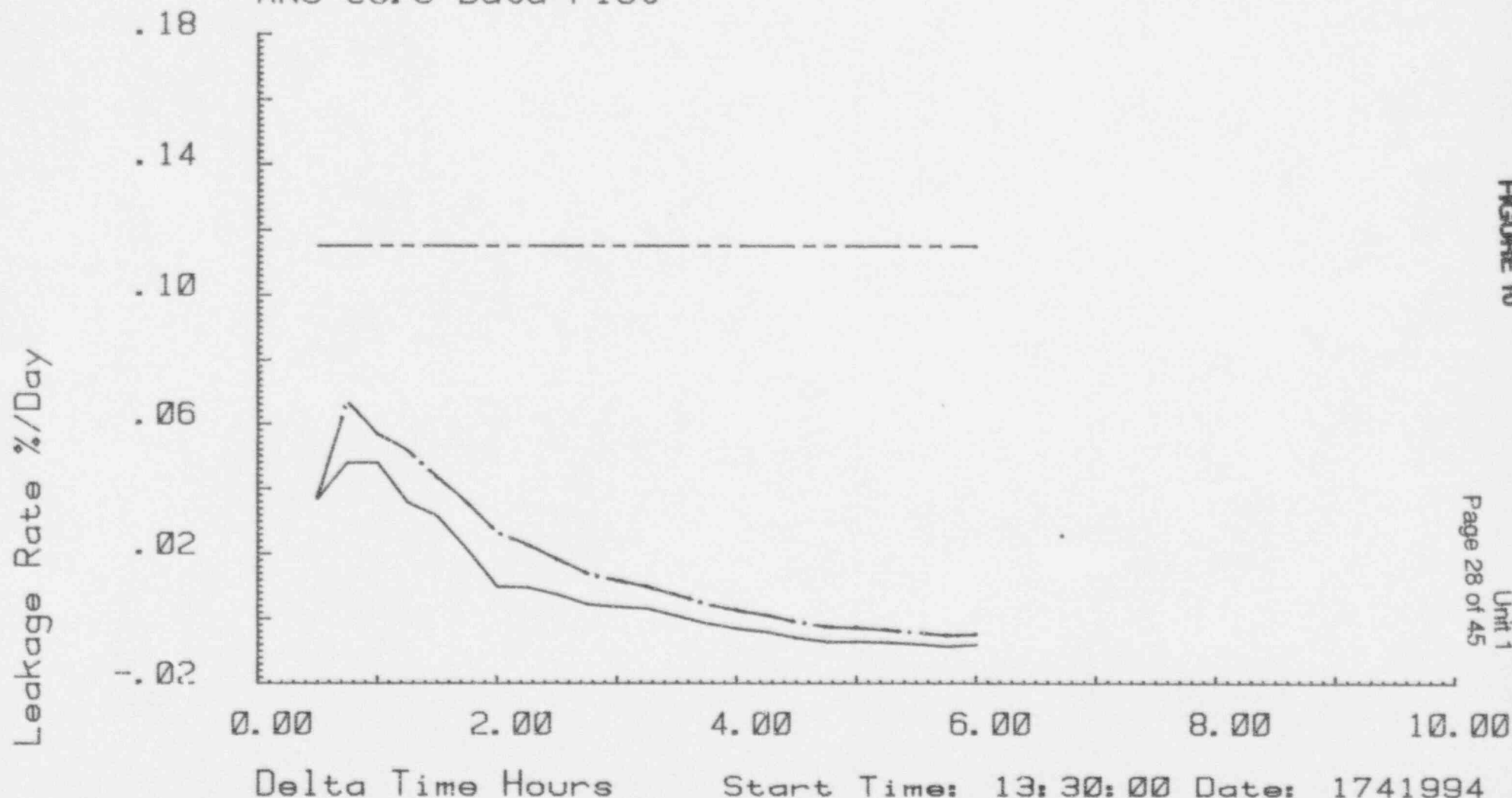
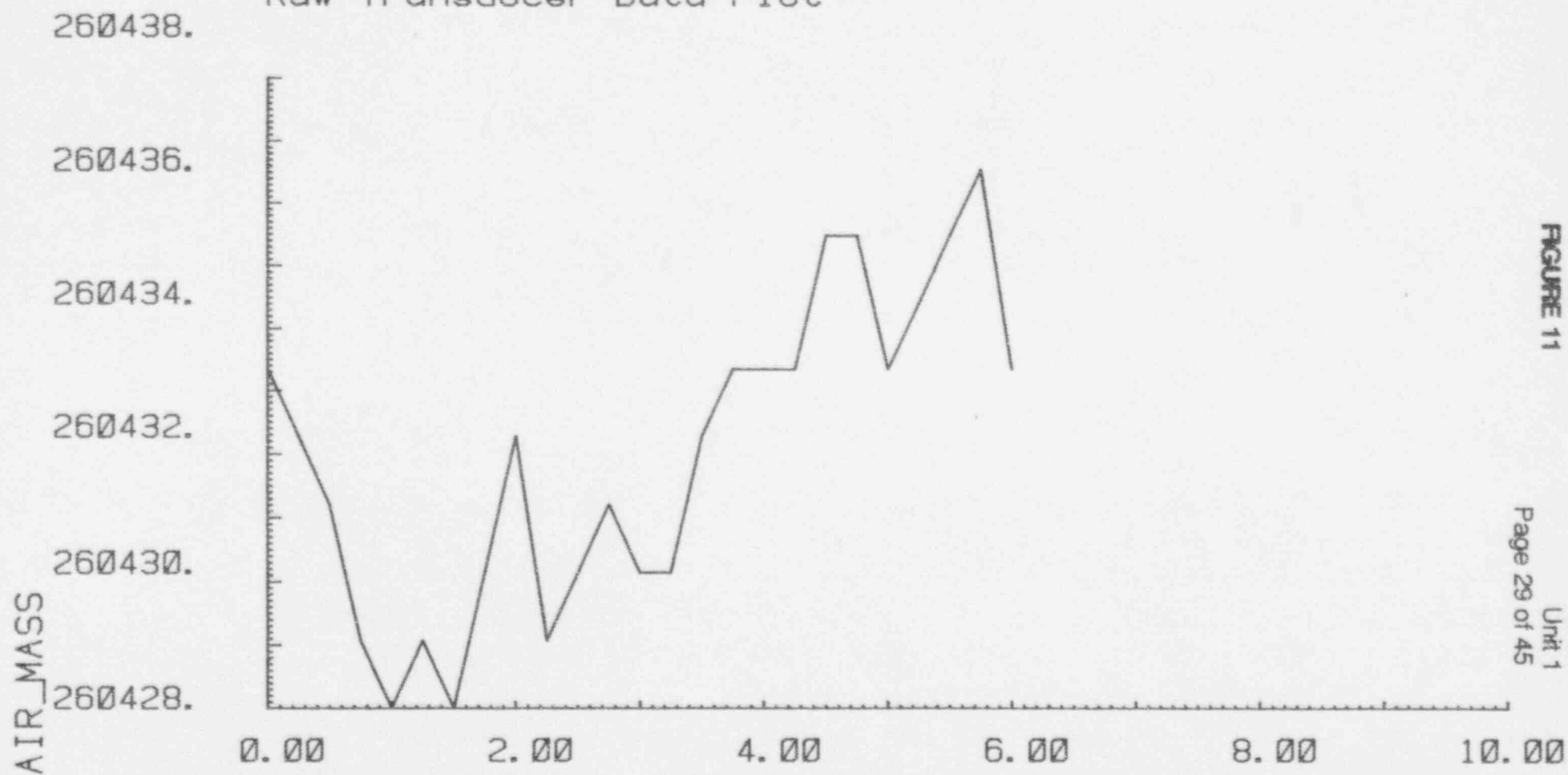


FIGURE 10

ILRT  
 Unit 1  
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Start Time: 13:30:00 Date: 1741994  
 End Time: 19:30:00 Date: 1741994

NSP PINGP Unit-1, ILRT 1994  
Data Frequency 900 seconds  
Raw Transducer Data Plot

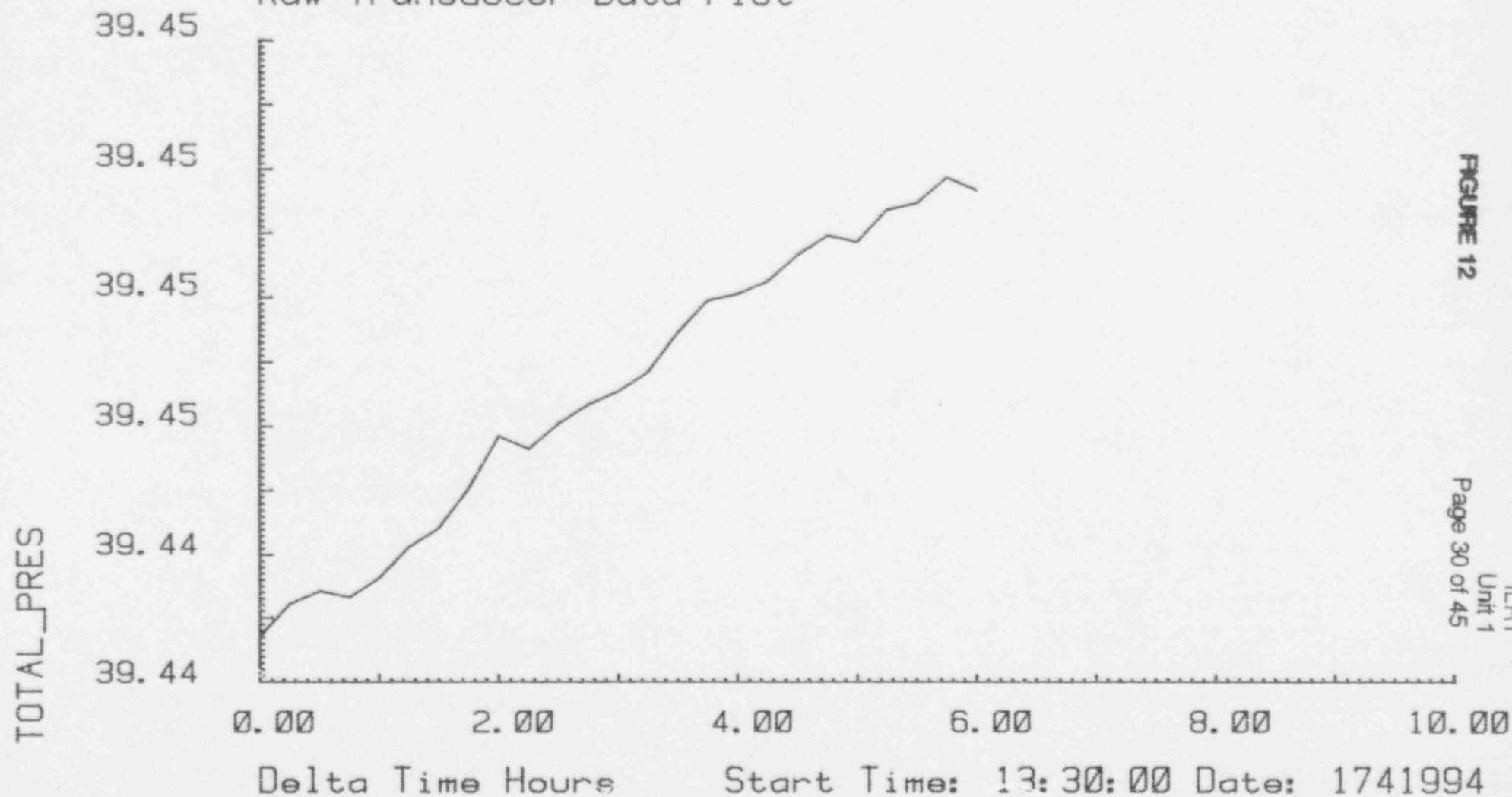


Delta Time Hours

Start Time: 13:30:00 Date: 1741994

End Time: 19:30:00 Date: 1741994

NSP PINGP Unit-1, ILRT 1994  
Data Frequency 900 seconds  
Raw Transducer Data Plot



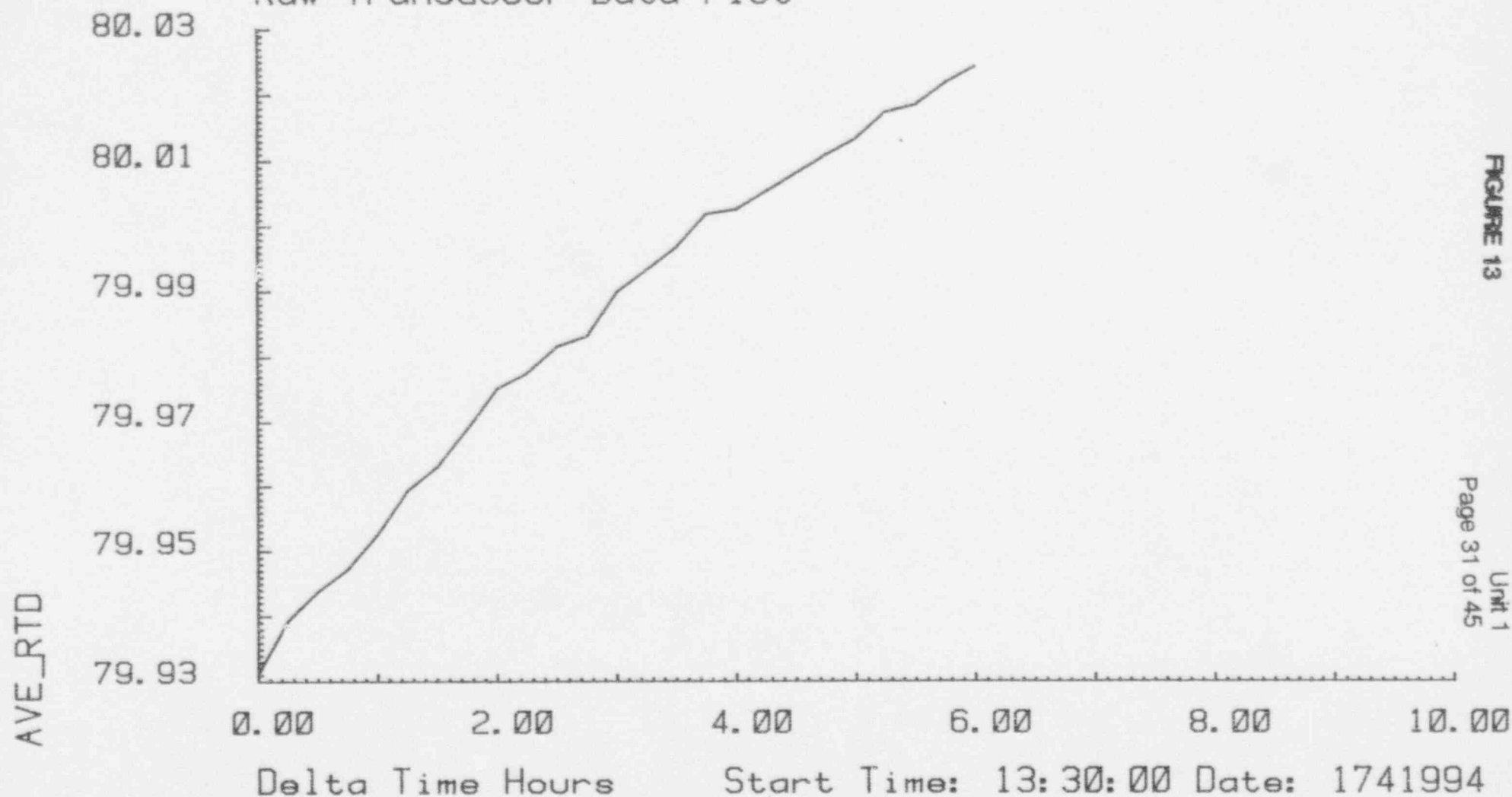
Start Time: 13:30:00 Date: 1741994  
End Time: 19:30:00 Date: 1741994

FIGURE 12

ILRT  
Unit 1  
Page 30 of 45



NSP PINGP Unit-1, ILRT 1994  
Data Frequency 900 seconds  
Raw Transducer Data Plot



Start Time: 13:30:00 Date: 1741994  
End Time: 19:30:00 Date: 1741994

NSP PINGP Unit-1, ILRT 1994  
 Data Frequency 900 seconds  
 Total Time (Double UCL) Plot

Graph Legend

———— LSF Leak  
 - - - - - Upper Limit  
 - - - - - Lower Limit

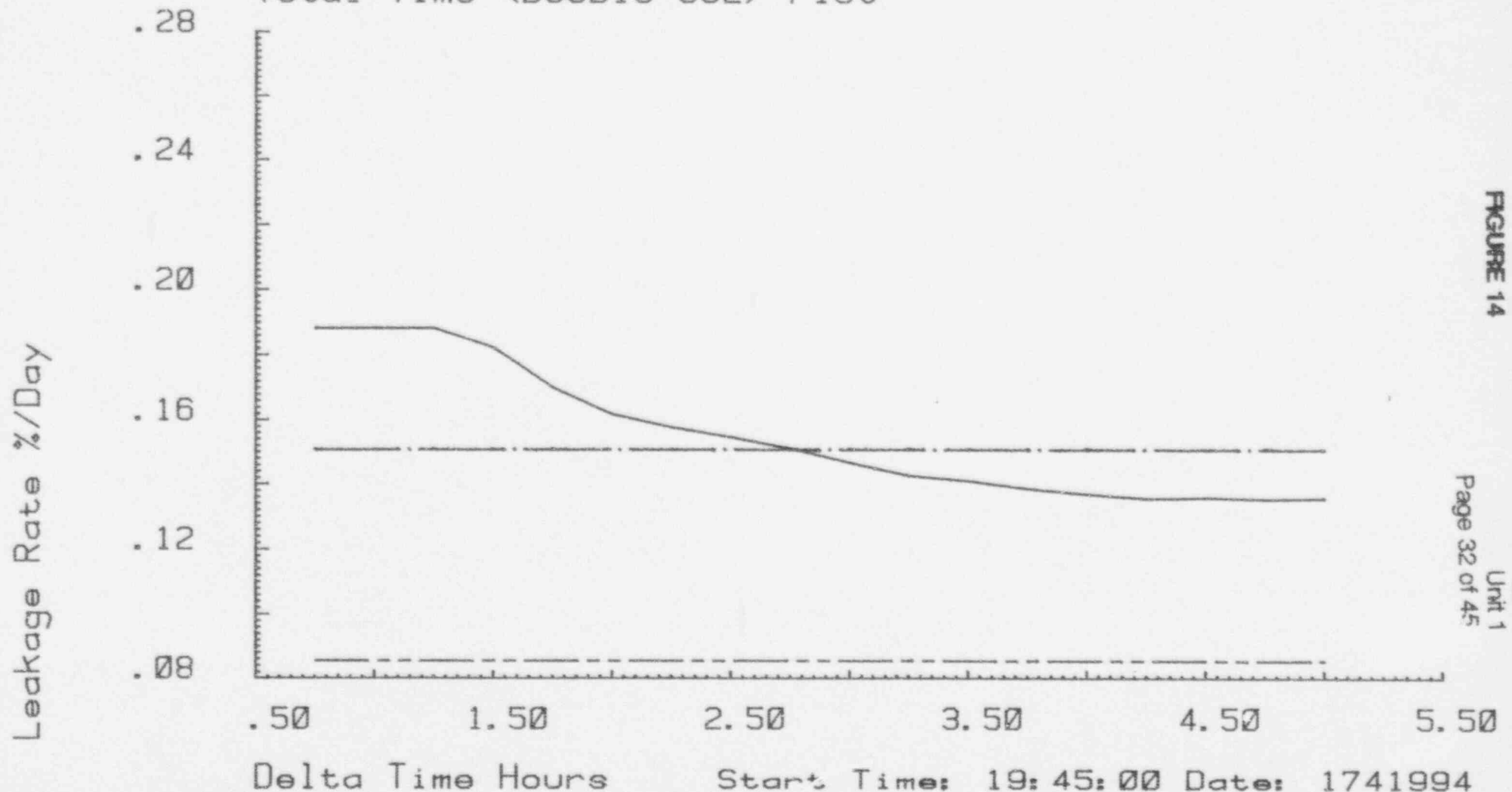


FIGURE 14

ILRT  
 Unit 1  
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Delta Time Hours

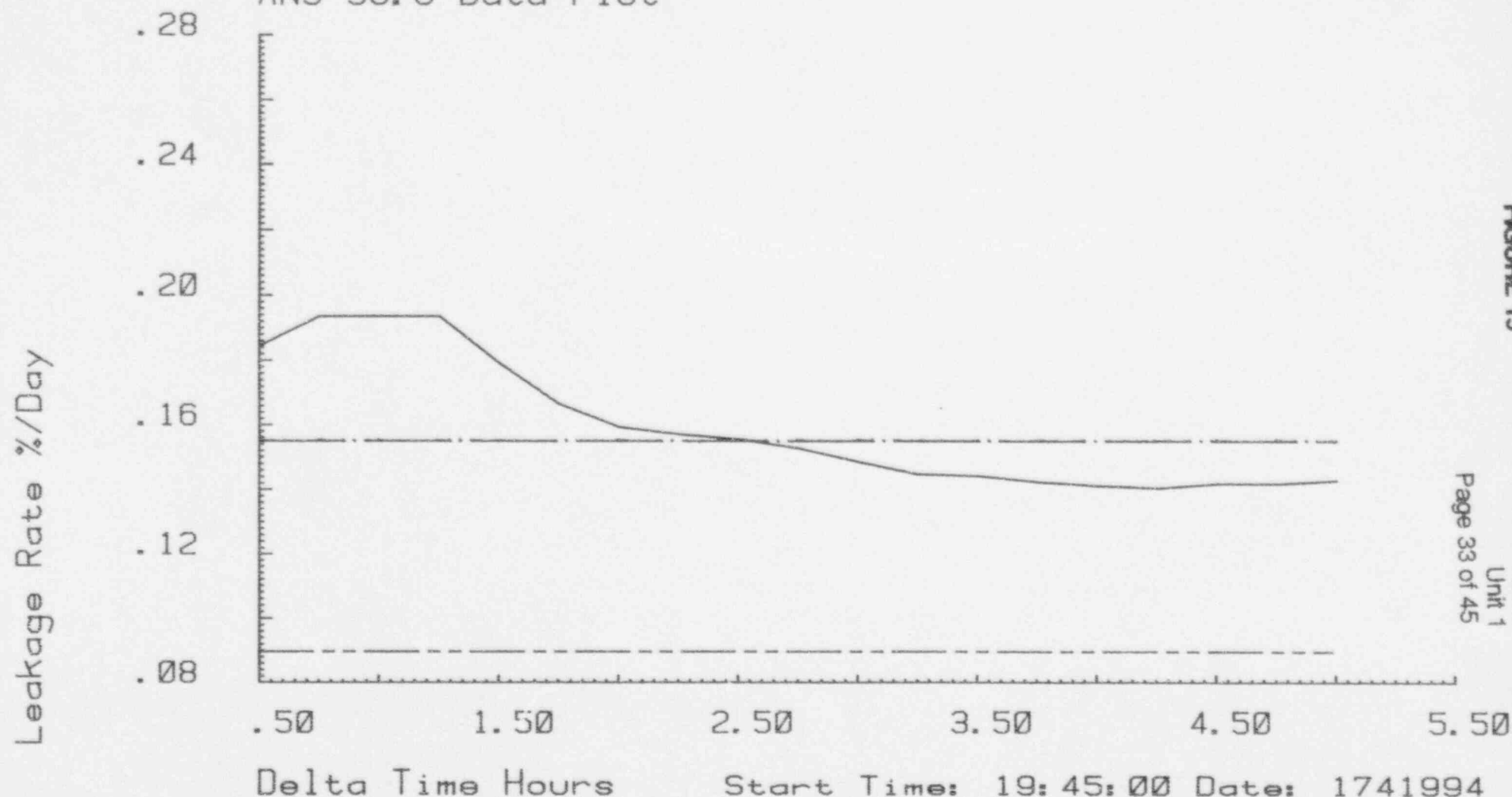
Start Time: 19:45:00 Date: 1741994

End Time: 0:45:00 Date: 1751994

NSP PINGP Unit-1, ILRT 1994  
Data Frequency 900 seconds  
ANS 56.8 Data Plot

Graph Legend

———— Lam %/day  
- - - - - Upper Limit  
- - - - - Lower Limit

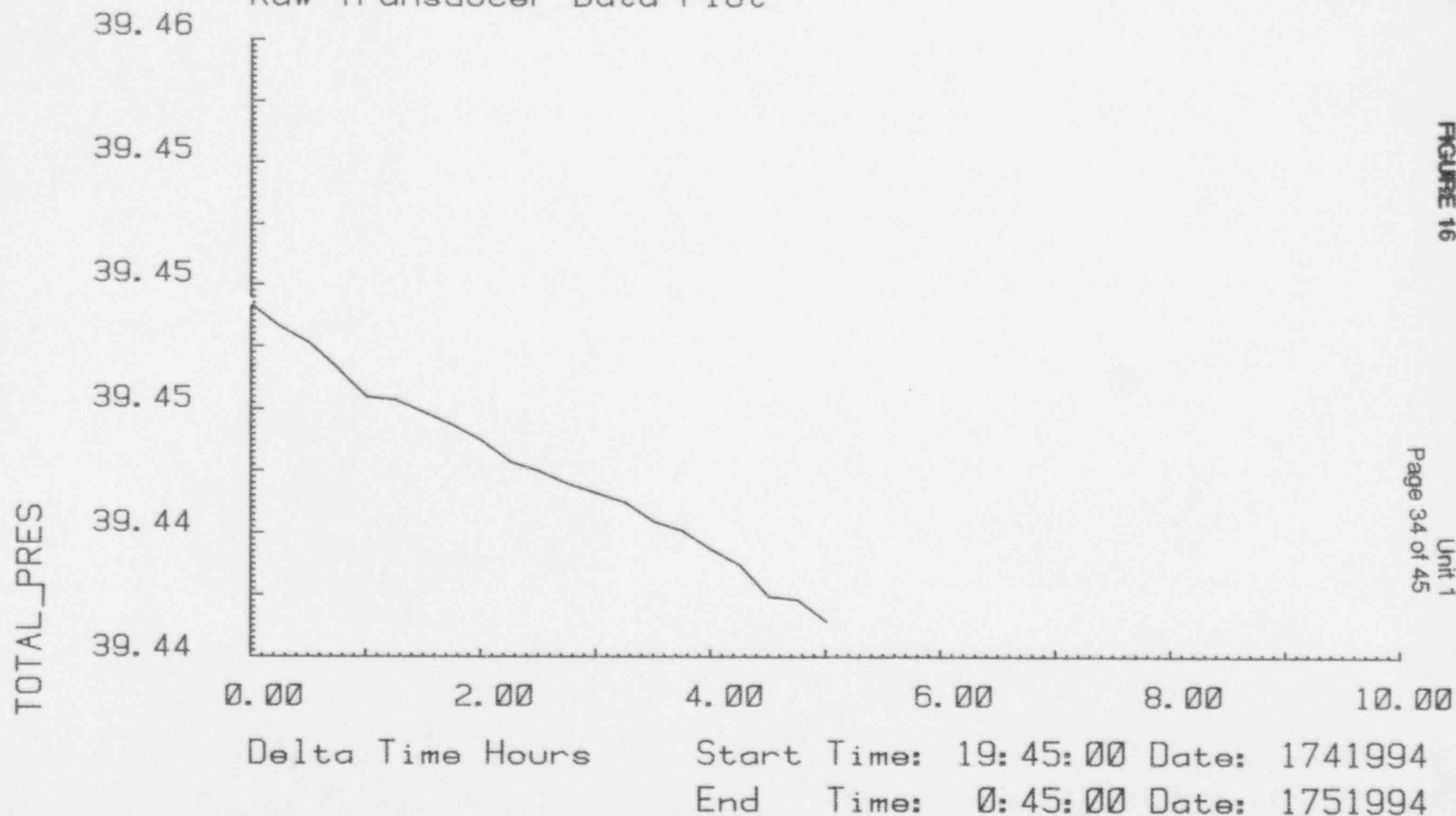


Delta Time Hours

Start Time: 19:45:00 Date: 1741994

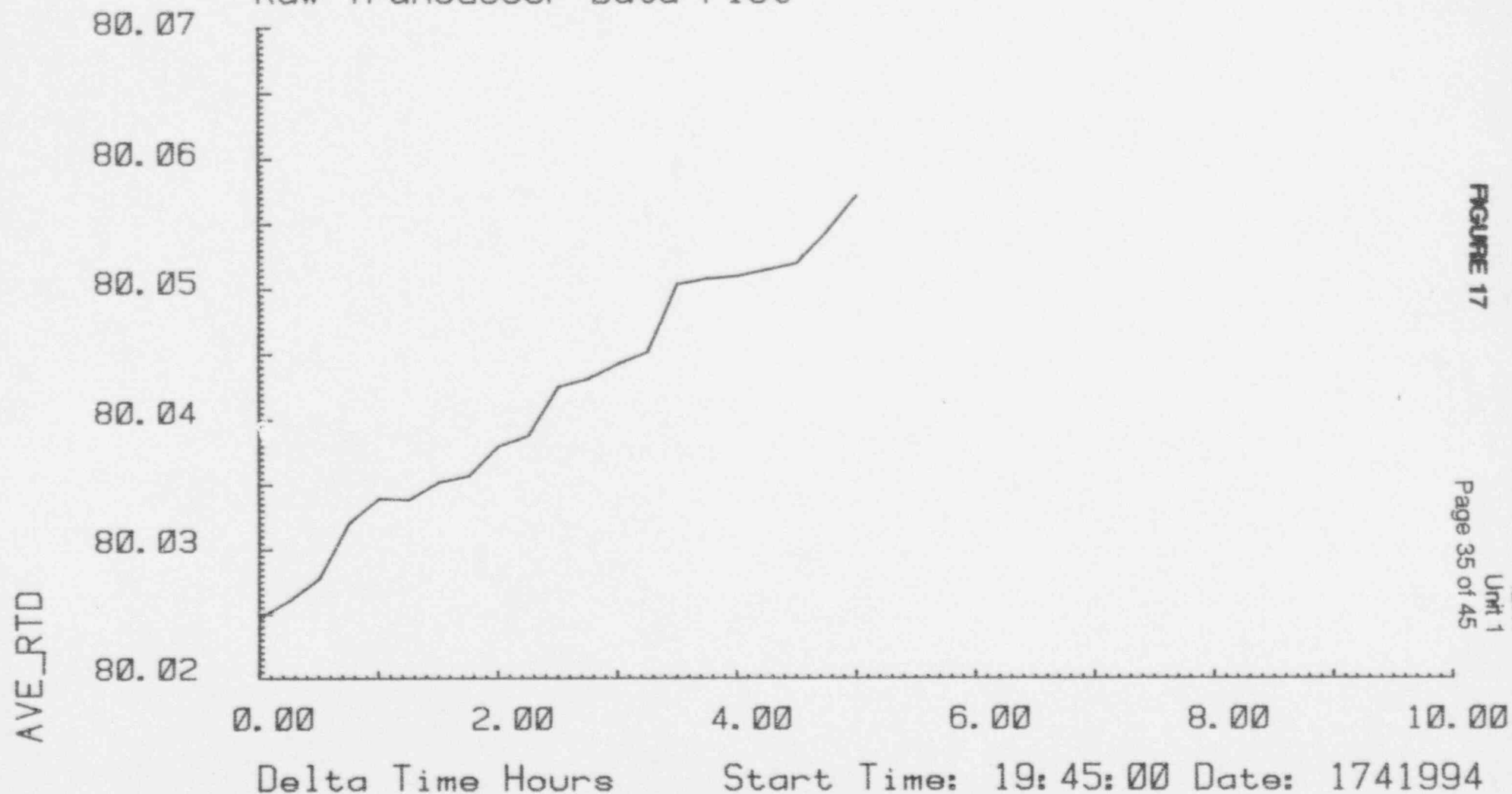
End Time: 0:45:00 Date: 1751994

NSP PINGP Unit-1, ILRT 1994  
Data Frequency 900 seconds  
Raw Transducer Data Plot



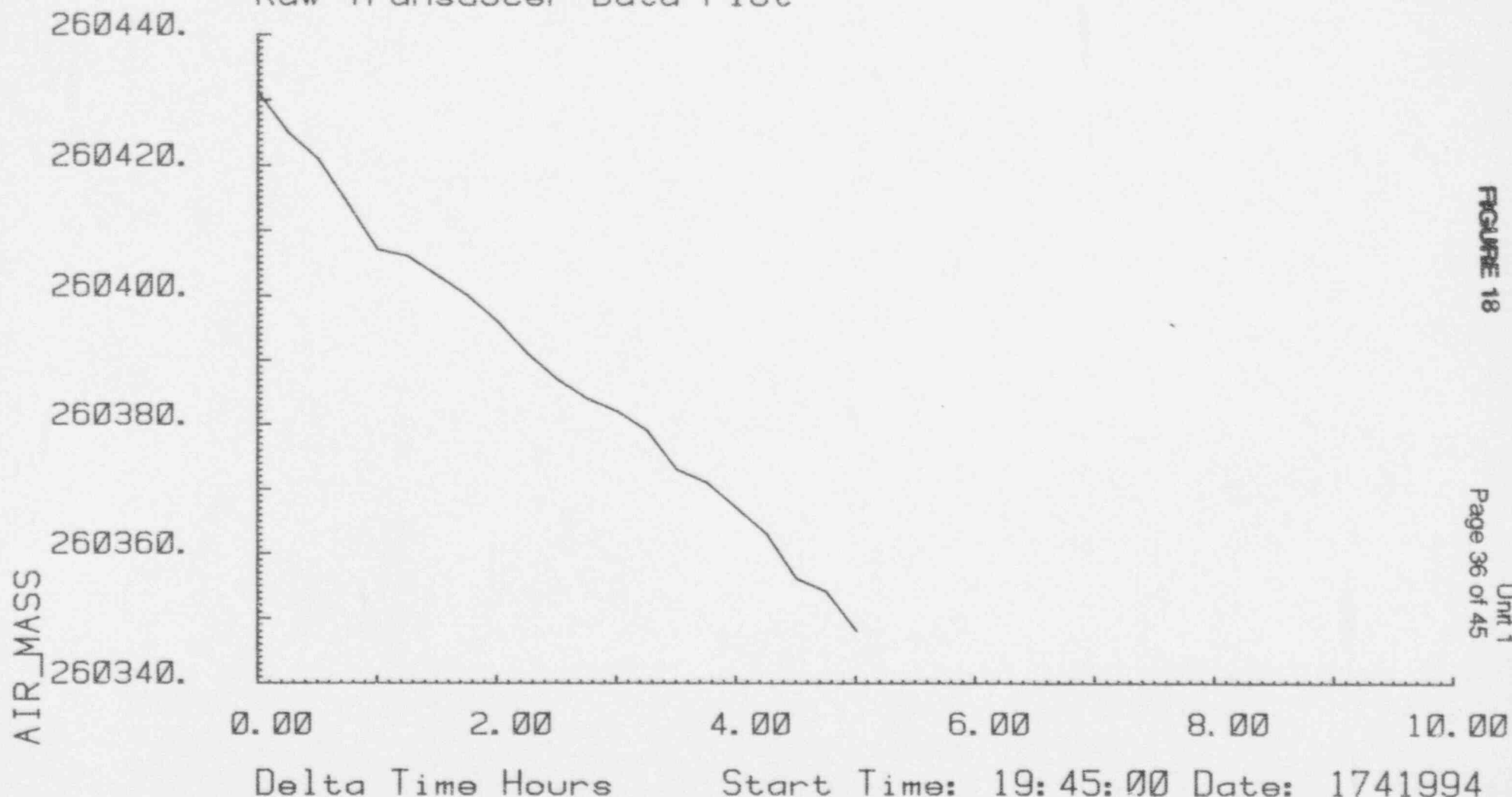


NSP PINGP Unit-1, ILRT 1994  
Data Frequency 900 seconds  
Raw Transducer Data Plot



Start Time: 19:45:00 Date: 1741994  
End Time: 0:45:00 Date: 1751994

NSP PINGP Unit-1, ILRT 1994  
Data Frequency 900 seconds  
Raw Transducer Data Plot



Delta Time Hours

Start Time: 19:45:00 Date: 1741994

End Time: 0:45:00 Date: 1751994

## TABLE 1

ANS 56.B  
Integrated Leakage Rate Calculations

Page 1

ILRT

Unit 1

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File: June.set  
NSP PINGP Unit-1, ILRT 1994

## Data Analysis Window

Start Time: 1:45: 0 Date: 1731994

End Time: 1:45: 0 Date: 1741994

Data Analysis Frequency 900 seconds

DELTA TIME	PRESSURE	TEMP	LSF	UCL	OMEGA
0.0000	39.4707	79.4644	0.0000	0.0000	260843.0000
.2500	39.4675	79.4287	0.0000	0.0000	260839.0000
.5000	39.4644	79.3990	.1840	.3658	260833.0000
.7500	39.4619	79.3681	.1435	.2170	260832.0000
1.0000	39.4591	79.3441	.1583	.1980	260825.0000
1.2500	39.4573	79.3155	.1293	.1720	260827.0000
1.5000	39.4549	79.2882	.1170	.1489	260824.0000
1.7500	39.4532	79.2688	.1082	.1332	260822.0000
2.0000	39.4516	79.2450	.0920	.1179	260824.0000
2.2500	39.4506	79.2305	.0787	.1035	260824.0000
2.5000	39.4488	79.2110	.0729	.0938	260821.0000
2.7500	39.4481	79.1959	.0625	.0829	260824.0000
3.0000	39.4467	79.1846	.0590	.0764	260820.0000
3.2500	39.4457	79.1732	.0562	.0713	260819.0000
3.5000	39.4444	79.1611	.0557	.0687	260816.0000
3.7500	39.4438	79.1490	.0526	.0643	260818.0000
4.0000	39.4431	79.1409	.0501	.0607	260817.0000
4.2500	39.4418	79.1297	.0494	.0588	260814.0000
4.5000	39.4403	79.1229	.0516	.0603	260808.0000
4.7500	39.4403	79.1196	.0519	.0597	260809.0000
5.0000	39.4392	79.1104	.0525	.0595	260807.0000
5.2500	39.4384	79.1092	.0544	.0611	260802.0000
5.5000	39.4372	79.1052	.0578	.0647	260796.0000
5.7500	39.4379	79.0979	.0568	.0632	260804.0000
6.0000	39.4367	79.0967	.0582	.0643	260796.0000
6.2500	39.4366	79.0927	.0582	.0638	260798.0000
6.5000	39.4358	79.0883	.0589	.0641	260794.0000
6.7500	39.4357	79.0896	.0593	.0641	260793.0000
7.0000	39.4349	79.0856	.0600	.0645	260790.0000
7.2500	39.4347	79.0852	.0604	.0646	260789.0000
7.5000	39.4345	79.0856	.0608	.0648	260787.0000
7.7500	39.4337	79.0862	.0618	.0657	260782.0000
8.0000	39.4337	79.0860	.0624	.0660	260782.0000
8.2500	39.4334	79.0865	.0629	.0663	260780.0000
8.5000	39.4336	79.0890	.0630	.0663	260780.0000
8.7500	39.4336	79.0920	.0631	.0662	260778.0000
9.0000	39.4334	79.0949	.0633	.0662	260776.0000
9.2500	39.4328	79.0982	.0641	.0670	260770.0000
9.5000	39.4325	79.1017	.0649	.0673	260767.0000
9.7500	39.4331	79.1014	.0649	.0676	260771.0000

**TABLE 1**    ANS 56.8  
Integrated Leakage Rate Calculations

Page 2

ILRT  
Unit 1  
Page 38 of 45

File: june.set  
NSP PINGP Unit-1, ILRT 1994

Data Analysis Window

Start Time: 1:45: 0 Date: 1731994  
End Time: 1:45: 0 Date: 1741594

Data Analysis Frequency 900 seconds

DELTA TIME	PRESSURE	TEMP	LSF	UCL	OMEGA
10.0000	39.4334	79.1094	.0649	.0674	260769.0000
10.2500	39.4337	79.1148	.0648	.0672	260768.0000
10.5000	39.4333	79.1212	.0652	.0675	260762.0000
10.7500	39.4339	79.1228	.0649	.0671	260766.0000
11.0000	39.4340	79.1285	.0646	.0668	260764.0000
11.2500	39.4339	79.1353	.0648	.0669	260759.0000
11.5000	39.4341	79.1405	.0648	.0668	260758.0000
11.7500	39.4340	79.1468	.0650	.0670	260754.0000
12.0000	39.4332	79.1543	.0658	.0678	260746.0000
12.2500	39.4335	79.1584	.0664	.0685	260745.0000
12.5000	39.4346	79.1686	.0666	.0685	260748.0000
12.7500	39.4342	79.1777	.0671	.0691	260741.0000
13.0000	39.4347	79.1828	.0674	.0693	260742.0000
13.2500	39.4352	79.1928	.0677	.0695	260740.0000
13.5000	39.4356	79.2012	.0678	.0696	260739.0000
13.7500	39.4361	79.2068	.0679	.0696	260739.0000
14.0000	39.4362	79.2174	.0680	.0697	260735.0000
14.2500	39.4370	79.2258	.0680	.0696	260736.0000
14.5000	39.4372	79.2352	.0680	.0696	260733.0000
14.7500	39.4376	79.2442	.0681	.0696	260731.0000
15.0000	39.4381	79.2502	.0680	.0695	260731.0000
15.2500	39.4379	79.2599	.0681	.0695	260726.0000
15.5000	39.4376	79.2706	.0686	.0700	260718.0000
15.7500	39.4381	79.2795	.0689	.0703	260717.0000
16.0000	39.4386	79.2890	.0692	.0706	260716.0000
16.2500	39.4383	79.2973	.0697	.0711	260710.0000
16.5000	39.4381	79.3071	.0703	.0718	260704.0000
16.7500	39.4382	79.3173	.0710	.0726	260700.0000
17.0000	39.4386	79.3283	.0716	.0733	260697.0000
17.2500	39.4388	79.3393	.0723	.0741	260693.0000
17.5000	39.4388	79.3505	.0731	.0749	260688.0000
17.7500	39.4394	79.3609	.0738	.0757	260686.0000
18.0000	39.4402	79.3696	.0743	.0762	260688.0000
18.2500	39.4406	79.3792	.0747	.0767	260686.0000
18.5000	39.4413	79.3908	.0751	.0770	260685.0000
18.7500	39.4416	79.4014	.0755	.0774	260681.0000
19.0000	39.4420	79.4090	.0759	.0777	260680.0000
19.2500	39.4426	79.4185	.0761	.0780	260680.0000
19.5000	39.4432	79.4292	.0763	.0781	260679.0000
19.7500	39.4438	79.4406	.0765	.0783	260676.0000



**TABLE 1** ANS 56.8  
Integrated Leakage Rate Calculations

Page 3

ILRT  
Unit 1  
Page 39 of 45

File: June.set  
NSP PINGP Unit-1, ILRT 1994

Data Analysis Window

Start Time: 1:45: 0 Date: 1731994  
End Time: 1:45: 0 Date: 1741994

Data Analysis Frequency 900 seconds

DELTA TIME	PRESSURE	TEMP	LSF	UCL	OMEGA
20.0000	39.4453	79.4501	.0764	.0782	260682.0000
20.2500	39.4485	79.4595	.0762	.0779	260686.0000
20.5000	39.4479	79.4671	.0757	.0774	260692.0000
20.7500	39.4492	79.4763	.0750	.0768	260696.0000
21.0000	39.4498	79.4813	.0743	.0762	260697.0000
21.2500	39.4507	79.4907	.0736	.0755	260698.0000
21.5000	39.4514	79.4993	.0728	.0749	260699.0000
21.7500	39.4521	79.5104	.0720	.0742	260698.0000
22.0000	39.4529	79.5146	.0712	.0734	260701.0000
22.2500	39.4531	79.5268	.0705	.0728	260697.0000
22.5000	39.4540	79.5366	.0697	.0721	260698.0000
22.7500	39.4543	79.5473	.0690	.0714	260695.0000
23.0000	39.4551	79.5593	.0684	.0708	260694.0000
23.2500	39.4555	79.5680	.0677	.0702	260593.0000
23.5000	39.4561	79.5800	.0671	.0696	260591.0000
23.7500	39.4563	79.5875	.0666	.0690	260589.0000
24.0000	39.4572	79.5957	.0659	.0685	260591.0000



**TABLE 2** ANS 55.8  
Integrated Leakage Rate Calculations

Page 1

ILRT  
Unit 1  
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File: june.set  
NSP PINGP Unit-1, ILRT 1994

Data Analysis Window

Start Time: 2:30: 0 Date: 1741994  
End Time: 13:15: Date: 1741994

Data Analysis Frequency 900 seconds

DELTA TIME	PRESSURE	TEMP	LSF	UCL	OMEGA
0.0000	39.4565	79.6185	0.0000	0.0000	260575.0000
.2500	39.4560	79.6268	0.0000	0.0000	260568.0000
.5000	39.4557	79.6376	.2578	.2578	260561.0000
.7500	39.4550	79.6472	.2909	.3472	260551.0000
1.0000	39.4552	79.6580	.2688	.3086	260547.0000
1.2500	39.4548	79.6697	.2662	.2900	260539.0000
1.5000	39.4545	79.6772	.2565	.2760	260534.0000
1.7500	39.4544	79.6870	.2495	.2655	260528.0000
2.0000	39.4543	79.6949	.2394	.2558	260524.0000
2.2500	39.4546	79.7047	.2272	.2455	260521.0000
2.5000	39.4537	79.7109	.2253	.2402	260512.0000
2.7500	39.4531	79.7240	.2297	.2428	260502.0000
3.0000	39.4525	79.7309	.2333	.2449	260595.0000
3.2500	39.4520	79.7415	.2384	.2495	260586.0000
3.5000	39.4513	79.7512	.2449	.2566	260576.0000
3.7500	39.4505	79.7622	.2520	.2645	260566.0000
4.0000	39.4501	79.7707	.2570	.2690	260559.0000
4.2500	39.4500	79.7781	.2586	.2693	260555.0000
4.5000	39.4497	79.7873	.2597	.2693	260548.0000
4.7500	39.4501	79.7922	.2562	.2656	260549.0000
5.0000	39.4495	79.7996	.2528	.2619	260544.0000
5.2500	39.4500	79.8056	.2480	.2575	260542.0000
5.5000	39.4492	79.8126	.2453	.2544	260533.0000
5.7500	39.4492	79.8162	.2416	.2506	260531.0000
6.0000	39.4486	79.8249	.2391	.2478	260523.0000
6.2500	39.4483	79.8328	.2367	.2450	260518.0000
6.5000	39.4479	79.8389	.2347	.2426	260512.0000
6.7500	39.4478	79.8434	.2321	.2399	260509.0000
7.0000	39.4474	79.8495	.2300	.2375	260503.0000
7.2500	39.4473	79.8526	.2272	.2348	260501.0000
7.5000	39.4473	79.8622	.2245	.2321	260497.0000
7.7500	39.4467	79.8669	.2225	.2298	260490.0000
8.0000	39.4465	79.8710	.2202	.2274	260487.0000
8.2500	39.4461	79.8735	.2179	.2250	260483.0000
8.5000	39.4459	79.8783	.2154	.2226	260480.0000
8.7500	39.4454	79.8855	.2136	.2206	260473.0000
9.0000	39.4450	79.8896	.2119	.2187	260468.0000
9.2500	39.4449	79.8948	.2100	.2167	260465.0000
9.5000	39.4444	79.9009	.2085	.2150	260459.0000
9.7500	39.4440	79.9069	.2072	.2135	260453.0000

**TABLE 2** ANS 56.2  
Integrated Leakage Rate Calculations

Page 2

ILRT  
Unit 1

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File: june.set  
NSP PINGP Unit-1, ILRT 1994

Data Analysis Window

Start Time: 2:30: 0 Date: 1741994  
End Time: 13:15: 0 Date: 1741994

Data Analysis Frequency 900 seconds

DELTA TIME	PRESSURE	TEMP	LSF	UCL	OMEGA
10.0000	39.4440	79.9076	.2054	.2117	260453.0000
10.2500	39.4436	79.9139	.2039	.2100	260447.0000
10.5000	39.4438	79.9191	.2020	.2082	260446.0000
10.7500	39.4430	79.9232	.2006	.2066	260439.0000

**TABLE 3** Total Time (Double UCL)  
Integrated Leakage Rate Calculations

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ILRT  
Unit 1

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File: june.set  
NSP PINGP Unit-1, ILRT 1994

Data Analysis Window

Start Time: 13:30: 0 Date: 1741994  
End Time: 19:30: 0 Date: 1741994

Data Analysis Frequency 900 seconds

DELTA TIME	PRESSURE	TEMP	LSF	UCL	OMEGA
.2500	39.4432	79.9393	0.0000	0.0000	.0369
.5000	39.4434	79.9438	0.0000	0.0000	.0369
.7500	39.4433	79.9473	.0471	.0957	.0491
1.0000	39.4436	79.9526	.0482	.0708	.0461
1.2500	39.4441	79.9594	.0386	.0738	.0295
1.5000	39.4444	79.9631	.0342	.0620	.0307
1.7500	39.4450	79.9691	.0248	.0532	.0158
2.0000	39.4458	79.9754	.0144	.0431	.0046
2.2500	39.4456	79.9778	.0122	.0381	.0154
2.5000	39.4460	79.9819	.0089	.0325	.0111
2.7500	39.4463	79.9835	.0054	.0270	.0067
3.0000	39.4465	79.9902	.0036	.0244	.0092
3.2500	39.4468	79.9937	.0022	.0224	.0085
3.5000	39.4474	79.9972	-.0003	.0189	.0026
3.7500	39.4479	80.0023	-.0028	.0155	0.0000
4.0000	39.4480	80.0030	-.0047	.0130	0.0000
4.2500	39.4482	80.0058	-.0061	.0113	0.0000
4.5000	39.4486	80.0086	-.0081	.0088	-.0041
4.7500	39.4489	80.0114	-.0096	.0070	-.0039
5.0000	39.4488	80.0139	-.0101	.0070	0.0000
5.2500	39.4493	80.0180	-.0108	.0066	-.0018
5.5000	39.4494	80.0191	-.0116	.0058	-.0034
5.7500	39.4498	80.0224	-.0125	.0049	-.0048
6.0000	39.4496	80.0249	-.0124	.0056	0.0000

**TABLE 4**      ANS 56.8  
Integrated Leakage Rate Calculations

Page 1

ILRT  
Unit 1  
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File: june.set  
NSP PINGP Unit-1, ILRT 1994

Data Analysis Window

Start Time: 13:30: 0 Date: 1741994  
End Time: 19:30: 0 Date: 1741994

Data Analysis Frequency 900 seconds

DELTA TIME	PRESSURE	TEMP	LSF	UCL	OMEGA
0.0000	39.4427	79.9313	0.0000	0.0000	260433.0000
.2500	39.4432	79.9393	0.0000	0.0000	260432.0000
.5000	39.4434	79.9438	.0369	.0369	260431.0000
.7500	39.4433	79.9473	.0479	.0567	260429.0000
1.0000	39.4436	79.9526	.0479	.0566	260428.0000
1.2500	39.4441	79.9594	.0358	.0516	260429.0000
1.5000	39.4444	79.9631	.0316	.0432	260428.0000
1.7500	39.4450	79.9691	.0211	.0355	260430.0000
2.0000	39.4458	79.9754	.0098	.0263	260432.0000
2.2500	39.4456	79.9778	.0096	.0225	260429.0000
2.5000	39.4460	79.9819	.0074	.0180	260430.0000
2.7500	39.4463	79.9835	.0044	.0137	260431.0000
3.0000	39.4465	79.9902	.0036	.0115	260430.0000
3.2500	39.4468	79.9937	.0031	.0097	260430.0000
3.5000	39.4474	79.9972	.0008	.0070	260432.0000
3.7500	39.4479	80.0023	-.0016	.0043	260433.0000
4.0000	39.4480	80.0030	-.0032	.0023	260433.0000
4.2500	39.4482	80.0058	-.0042	.0007	260433.0000
4.5000	39.4486	80.0086	-.0061	-.0013	260435.0000
4.7500	39.4489	80.0114	-.0073	-.0029	260435.0000
5.0000	39.4488	80.0139	-.0072	-.0032	260433.0000
5.2500	39.4493	80.0180	-.0075	-.0038	260434.0000
5.5000	39.4494	80.0191	-.0080	-.0046	260435.0000
5.7500	39.4498	80.0224	-.0087	-.0055	260436.0000
6.0000	39.4496	80.0249	-.0081	-.0052	260433.0000

**TABLE 5** Total Time (Double UCL)  
Integrated Leakage Rate Calculations

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ILRT

Unit 1

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File: june.set

NSP PIN6P Unit-1, ILRT 1994

Data Analysis Window

Start Time: 19:45: 0 Date: 1741994

End Time: 0:45: 0 Date: 1751994

Data Analysis Frequency 900 seconds

DELTA TIME	PRESSURE	TEMP	LSF	UCL	OMEGA
.2500	39.4485	80.0261	0.0000	0.0000	.2212
.5000	39.4480	80.0278	0.0000	0.0000	.1843
.7500	39.4472	80.0321	.1986	.4416	.2089
1.0000	39.4463	80.0340	.2126	.3177	.2212
1.2500	39.4462	80.0339	.1966	.2758	.1843
1.5000	39.4456	80.0353	.1820	.2464	.1720
1.7500	39.4454	80.0358	.1697	.2238	.1632
2.0000	39.4449	80.0381	.1615	.2079	.1613
2.2500	39.4442	80.0389	.1574	.1993	.1638
2.5000	39.4439	80.0427	.1543	.1932	.1622
2.7500	39.4435	80.0433	.1508	.1871	.1575
3.0000	39.4432	80.0444	.1463	.1802	.1505
3.2500	39.4429	80.0453	.1423	.1743	.1474
3.5000	39.4423	80.0506	.1407	.1724	.1527
3.7500	39.4420	80.0510	.1383	.1691	.1474
4.0000	39.4414	80.0512	.1366	.1669	.1474
4.2500	39.4409	80.0517	.1352	.1654	.1474
4.5000	39.4399	80.0522	.1355	.1668	.1536
4.7500	39.4398	80.0546	.1350	.1664	.1494
5.0000	39.4391	80.0574	.1354	.1674	.1530



## TABLE 6

ANS 56.8

## Integrated Leakage Rate Calculations

Page 1

ILRT

Unit 1

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File: june.set

NSP PIN6P Unit-1, ILRT 1994

## Data Analysis Window

Start Time: 19:45: 0 Date: 1741994

End Time: 0:45: 0 Date: 1751994

Data Analysis Frequency 900 seconds

DELTA TIME	PRESSURE	TEMP	LSF	UCL	OMEGA
0.0000	39.4492	80.0247	0.0000	0.0000	260431.0000
.2500	39.4485	80.0251	0.0000	0.0000	260425.0000
.5000	39.4480	80.0278	.1843	.3664	260421.0000
.7500	39.4472	80.0321	.2027	.2447	260414.0000
1.0000	39.4463	80.0340	.2175	.2454	260407.0000
1.2500	39.4462	80.0339	.1959	.2272	260406.0000
1.5000	39.4458	80.0353	.1790	.2077	260403.0000
1.7500	39.4454	80.0358	.1663	.1914	260400.0000
2.0000	39.4449	80.0381	.1591	.1796	260395.0000
2.2500	39.4442	80.0389	.1568	.1731	260391.0000
2.5000	39.4439	80.0427	.1552	.1683	260387.0000
2.7500	39.4435	80.0433	.1525	.1637	260384.0000
3.0000	39.4432	80.0444	.1493	.1586	260382.0000
3.2500	39.4429	80.0453	.1445	.1541	260379.0000
3.5000	39.4423	80.0506	.1440	.1523	260373.0000
3.7500	39.4420	80.0510	.1421	.1496	260371.0000
4.0000	39.4414	80.0512	.1409	.1476	260367.0000
4.2500	39.4409	80.0517	.1402	.1462	260363.0000
4.5000	39.4399	80.0522	.1415	.1470	260356.0000
4.7500	39.4398	80.0546	.1416	.1465	260354.0000
5.0000	39.4391	80.0574	.1426	.1471	260348.0000