TENNESSEE VALLEY AUTHORITY
DIVISION OF NUCLEAR POWER

REACTOR BUILDING CONTAINMENT INTEGRATED LEAK RATE TEST SEQUOYAH NUCLEAR PLANT UNIT 1 CONDUCTED DECEMBER 8-9, 1982

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The United States Nuclear Regulatory Commission
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Facility Operating License

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DEFINITION OF SYMBOLS AND ABBREVIATIONS

CILRT	Containment integrated leak rate test
E	Repeatability error
e	Absolute error
ξ	Measurement system error
°F	Temperature, degrees Fahrenheit
ISG	Instrument Selection Guide
L_A	Full-pressure design basis leakage
L_{AM}	Containment leak rate during full-pressure CILRT
L_R	Imposed leak rate for verification
L_{RM}	Containment leak rate during verification
LLRT	Local leak rate test
P	Pressure
P_a	Design accident pressure
psia	Absolute pressure
psig	Gauge pressure
°R	Temperature, degrees Rankine
T	Temperature
T_{dp}	Dewpoint temperature
t	Time
UCL	Upper confidence limit
V	Containment volume, cubic feet
MLR	Mass Leak Rate
TTLR	Total Time Leak Rate

1.0 SUMMARY

A reactor building containment integrated leak rate test (CILRT) was conducted on Sequoyah Nuclear Plant unit 1 December 8-9, 1982.

The reportable mass leak rate (MLR) for the CILRT was 0.02530 percentage of containment air mass per day (% per day), and the observed 95% upper confidence limit (UCL) was 0.09429% per day. The above mentioned 95% UCL includes leakage measured from type B and C tests for testable lines that were in service during the test. The measured mass leak rate was less than 13.5% of the allowable 0.1875 % per day (0.75 L_A).

The reportable total time leak rate (TTLR) for the CILRT was 0.03651% per day, and the associated 95% upper confidence limit (including the type B and C test leakage from testable inservice lines) was 0.09313. Table 6 lists the lines that were in service during the CILRT.

2.0 INTRODUCTION

As prescribed in Sequoyah Nuclear Plant (SQNP) unit 1 Technical Specification 4.6.1.2, the leakage of air from the boundary forming the reactor building primary containment is limited to 0.25 percent by weight of the containment air mass per day at a pressure of P_a, 12.0 psig. In conformance with Title 10, Code of Federal Regulations, Part 50, Appendix J, Sequoyah Technical Specifications require that a reactor building CILRT be performed as part of the surveillance programs to demonstrate the continuing leak-tight integrity of the reactor building primary containment.

The first inservice reactor building CILRT was successfully completed on Sequoyah unit 1 by personnel of Tennessee Valley Authority (TVA) on December 9, 1982. This test was conducted in less than 24 hours in accordance with the procedure outlined in Becthel's topical report, "Testing Criteria for Integrated Leakage Rate Testing of Primary Containment Structures for Nuclear Power Plants" (BN-TOP-1) and a plant approved Surveillance Instruction, SQNP SI-156, which is on file at the plant site. This Surveillance Instruction implements the requirements of Sequoyah unit 1 Technical Specifications and 10 CFR 50, Appendix J. The American National Standard for Containment Testing, ANSI 45.4-1972 and the proposed American Nuclear Society for Containment Testing, ANS 56.8, provided guidance for the procedure implemented by the Surveillance Instruction.

Sequoyah unit 1 is a 3,411 megawatts thermal, pressurized-water reactor employing an ice condenser suppression containment. The Final Safety Analysis Report defines the calculated peak accident pressure, P_a, to be 12.0 psig. The reactor building containment is divided into four major compartments--the lower ice condenser compartment which houses the energy-absorbing ice beds, the upper ice condenser compartment which encloses the support equipment for the ice condenser system, the lower compartment which contains the

reactor and the main piping systems, and the upper compartment which provides for a large work area within containment and also can accommodate the displaced air mass from the other compartments in the unlikely event of a loss-of-coolant accident (LOCA). These four compartments are connected by means of blowout panels located between the lower compartment and the lower ice condenser compartment and between the upper and upper ice condenser compartments. In the event of a LOCA, steam flows from the lower compartment through the ice condenser compartments and into upper containment. The upper compartment is sealed from the lower compartment to ensure that any steam released in an accident will be forced through energy-absorbing ice beds. For the performance of the CILRT, the lower and upper compartments were not sealed from each other to promote the free flow of air in containment.

This report outlines the objectives, principal events, special equipment used, and analysis of the test results for the CILRT completed on December 8-9, 1982, on Sequoyah unit 1.

3.0 TEST PURPOSE AND RESULTS

3.1 Test Purpose

The objective of the inservice Containment Integrated Leak Rate Test was to demonstrate the continuing leak-tight integrity of the unit 1 reactor building containment for return-to-power operation.

For Sequoyah unit 1, the leak-tight integrity is defined in Technical Specification 4.6.1.2 to be that the leakage of air from containment is not to exceed 0.1875 percent per day (0.0078 percent per hour) at peak accident pressure, P_a.

3.2 Test Results

The leak rate reported in the CILRT by the Mass Method was 0.02530 percentage of containment air mass per day (0.00105 percent per hour), and is shown graphically in figure 9. The observed 95 percent upper confidence limit for the measured leak rate was 0.09429 percent per day (0.00393 percent per hour).

The reportable leak rate represents only 13.5 percent of the allowed 0.1875 percentage of containment air mass per day (0.75 L_A) as described in Technical Specification 4.6.1.2.

The Total Time Leak Rate (TTLR) reported during the CILRT was 0.03651 percent per day (0.00152 percent per hour), and the Total Time Leak Rate 95 percent upper confidence limit was 0.09313 percent per day (0.00388 percent per hour). The TTLR is shown graphically in figure 13. This reported TTLR was only 19.47% of the allowed 0.1875% per day.

During the 5-hour and 51-minute stabilization period, primary containment was tested for previously undetected leakage using a soap solution. No additional leakage was discovered other than that found during the type B and C testing. In addition no repairs were performed during the CILRT or the subsequent verification test.

Two significant temperature increases occurred in the average temperature in the lower compartment during the CILRT. The first increase in the average temperature in the Lower Compartment began with sample number 45 at 2.00 hours into the CILRT and peaked with sample number 47, lasting 10 minutes. The increase was 0.29713 °F in magnitude over these samples and was followed by a steady decline in the average temperature for the compartment. The second temperature increase began with sample number 62 and peaked with sample number 70, lasting 80 minutes. The increase in temperature for these samples was 0.31587 °F and temperature resumed a downward trend following sample number 70.

Similarly, two significant temperature increases also occurred in the upper compartment. The first temperature increase began 0.833 hours into the CILRT with sample number 38 and peaked with sample number 40. The overall increase in temperature for the upper compartment was 0.48971 °F and was 20 minutes in duration. The second significant increase in the average temperature of the upper compartment began with sample number 45 at 2.00 hours into the CILRT and peaked with sample number 52. The overall increase in average temperature for the compartment was 0.23786 °F and was 70 minutes in duration.

These conpartmental temperature increases were closely monitored by test engineers and posed little problem to the successful completion of the CILRT.

After the completion of the CILRT, a supplemental forced leakage verification test was conducted to check the results of the CILRT. The imposed leakage was measured using a mass flow meter technique, utilizing a Hastings Mass Flowmeter. A forced leakage rate (L_R) of 1.0185 L_A was imposed on the containment building.

The reported containment mass leak rate (L_{RM}) during the 8-hour verification test was 0.27509 percentage of containment air mass per day shown graphically in figure 31. Agreement, using MLR, between the CILRT and the verification test was achieved and was found to be -0.01182 L_A which is clearly within the ±0.25 L_A required by 10 CFR 50, Appendix J.

The reported TTLR during the 8-hour verification test was 0.27654 percentage of containment air mass per day and is shown graphically in figure 35. Agreement, using TTLR, between the CILRT and the verification test was also achieved and was found to be -0.0512L_A.

The leak-tight integrity of Sequoyah Nuclear Plant unit 1 was accurately measured and recorded by computer-based instrumentation. The computer-based data acquisition system provided reliable, immediate calculations of test data, which allowed test engineers to more easily monitor important test parameters.

The CILRT and subsequent verification tests were successfully completed at 0700 hours on December 10, 1982.

4.0 CONDUCT OF TEST

In compliance with Surveillance Instruction SQNP SI-157, local leak rate tests (LLRT) were performed on containment closures (hatches and resilient seals), bellows, and electrical penetrations. Local tests were also performed on valves forming the boundary of the primary containment in accordance with Surveillance Instruction SQNP SI-158 and SI-158.1. The above mentioned Surveillance Instructions were performed prior to the CILRT. All valves and penetrations satisfactorily met leakage requirements prior to the performance of the CILRT.

Appendix E shows a complete summary of the LLRT performed on Sequoyah Nuclear Plant unit 1 since the preoperational CILRT performed in March 1979.

Figure 1 depicts the sequence of events for the CILRT and its verification conducted December 8-10, 1982. The following is an accounting of significant events occurring during the test program.

Date and Time		Event
12-01-82	1200	RCS pressurizer water level monitor line connected and calibrated.
12-06-82	0800	Received administrative control of unit (1) Reactor Building.
12-07-82	1800	All sensors and other special test equipment in place and calibrated.
12-07-82	1830	Temperature sensor at location nine (9) showed erractic readings and was deleted prior to pressurization. The volume weights of all the upper compartment RTDs were adjusted accordingly.
12-07-82	2200	Dewpoint sensor at location five (5) was deleted prior to pressurization due to a calibration error. The volume weights of all other lower compartment dewcels were adjusted accordingly.
12-07-82	2400	Lower airlock door passed SI 159.2.

Date and Time		Event
12-08-82	0050	Upper airlock door passed SI 159.2.
12-08-82	0100	All prerequisites completed and signed off.
12-08-82	0148	Started pressurization of containment with both compressors.
12-08-82	0130	One compressor shut down for repairs, continued pressurization with other compressor.
12-08-82	0400	Average containment pressure 1.8749 psig.
12-08-82	0600	Average containment pressure 3.6060 psig.
12-08-82	0843	Compressor repaired, resumed pressurization with both compressors.
12-08-82	0853	Average containment pressure 6.1058 psig, shut down both compressors.
12-08-82	0857	Isolated pressurization valve X-54 while replacing gasket on compressor dryer.
12-08-82	0925	Average containment pressure 6.0877 psig.
12-08-82	1015	Compressors repaired, isolation valve X-54 opened.
12-08-82	1016	Resumed pressurization with both compressors.
12-08-82	1023	Average containment pressure 6.0818 psig.
12-08-82	1123	Average containment pressure 7.1683 psig, shut down both compressors.
12-08-82	1135	Resumed pressurization with both compressors.
12-08-82	1223	Average containment pressure 8.2541 psig.
12-08-82	1233	Average containment pressure 8.4592 psig shut down compressors.
12-08-82	1243	Resumed containment pressurization.
12-08-82	1323	Average containment pressure 9.2346 psig.
12-08-82	1339	Average containment pressure 9.579 psig.

Date and Time		Event
12-08-82	1349	Average containment pressure 9.6124 psig.
12-08-82	1350	Resumed pressurization.
12-08-82	1439	Average containment pressure 10.5820 psig.
12-08-82	1448	Shut down compressors.
12-08-82	1459	Containment pressure 10.7580 psig, resumed pressurization.
12-08-82	1549	Average containment pressure 11.7806 psig.
12-08-82	1559	Shut down compressors
12-08-82	1609	Average containment pressure 11.9860 psig, resumed pressurization with one compressor.
12-08-82	1629	Average containment pressure 12.3866 psig.
12-08-82	1639	Average containment pressure 12.5643 psig shut down compressors.
12-08-82	1645	Average containment pressure 12.5936 psig, closed pressurization valve X-54.
12-08-82	1700	Compressor discharge line vented.
12-08-82	1710	Began bubble testing of penetrations and leak paths listed in Appendix J of the procedure.
12-08-82	1750	Sample 1 of stabilization period, average containment pressure 12.5470 psig.
12-08-82	2340	Containment stabilization temperature criteria met.
12-08-82	2341	Began CILRT sample with sample 33 as base.
12-09-82	0051	Unusual temperature increase recorded in upper compartment of approximately 0.5 °F over a 30-minute duration, with the peak temperature occurring at sample 40.
12-09-82	0201	A similar temperature increase recorded in lower compartment of approximately 0.3 °F over a 30-minute duration, with the peak temperature occurring at sample 47.
12-09-82	0251	Another unusual temperature increase in the upper compartment of approximately 0.3 °F over a 20-minute period, with the peak temperature occurring at sample 52.

Date and Time		Event
12-09-82	0551	A similar temperature increase in the lower compartment of approximately 0.3 °F occurred over a 30-minute period, with the peak temperature occurring at sample 70.
12-09-82	1502	CILRT concluded with 15.345 hours of data, samples 33 - 122. Reportable MLR value of 0.02530 %/day and a TTLR value of .03651 %/day.
12-09-82	1505	Began verification test setup.
12-09-82	1526	Established imposed flow through Hastings flowmeter.
12-09-82	1536	Sample 1 for verification test
12-10-82	0305	Rebased sampling program to sample 34.
12-10-82	0700	Verification completed with 7.917 hours of data, samples 34 - 131. Verification per Appendix J was -1.182% for the MLR method and -5.12% for the TTLR method.
12-10-82	0810	Began depressurization.
12-10-82	1835	Depressurization completed.
12-11-82	1127	Completed removal and calibration of all special test equipment.
12-11-82	1400	Released administrative control of reactor building.

5.0 MEASUREMENTS AND CALIBRATIONS

5.1 Test Equipment

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

Pressurization for the CILRT was achieved using portable high-capacity air compressors. The compressors were rated at 3,500 SCFM of dry, oil-free air, and brought containment to test pressure in approximately 15 hours, including final "topping off" stages of presurization.

5.2 Sensor Location

Table 2 lists the final volumetric weighing factor for each temperature and dewpoint sensor based on the 4-compartment model. Figures 3 through 8 indicate sensor locations. The pressure sensors were divided so that two sensors measured each of the four compartments through penetrations X-27C, X-87D, X-87A, and X-98. An additional pressure sensor measured barometric pressure at the test station.

5.3 Computer-Based Data Acquisition and Data Reduction

The raw test data measured by the special test instrumentation during the Sequoyah Nuclear Plant unit 1 CILRT was scanned and collected by a microprocessor based data acquisition system. This raw test data was automatically presented to a portable minicomputer system for correction to calibration curves and reduction to containment leak rate. The minicomputer produced immediate statistical and graphical results of the containment test parameters, including temperature, pressure, vapor pressure, mass, and mass leak rate plots.

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

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

Source listings for all computer programs are on file with the Division of Nuclear Power, Mechanical Branch, in Chattanooga, Tennessee. Table 3 identifies the principal function of each computer program.

5.4 Reactor Building Containment Model

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

Since an ice condenser containment typically exhibits a 40°F temperature differential between the ice compartments and others, it is necessary to compensate by compartmentalization so the leak rate is accurately measured. For Sequoyah unit 1 CILRT, a 4-compartment containment model was used to measure the leak rate. The free air mass is calculated individually for each compartment, and containment leak rate is calculated from the sum of the compartmental masses. Each sensor within a compartment is volume weighted for the calculation of compartment average temperature and vapor pressure. Figure 30 depicts the four compartments used in the Sequoyah unit 1 reactor building containment model.

6.0 ANALYSIS OF TEST DATA

The previous sections of this report have discussed the general test conduct, calibration methods, and test equipment. In this section events and problems that influenced the test results are discussed and are used to formulate conclusions on the performance of the Sequoyah unit 1, cycle 1 CILRT.

6.1 Instrument Check

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

One humidity sensor was deleted prior to the start of the CILRT due to an error in calibration data. DPE-5, as shown in figure 3, was deleted and its volume weight was set equal to zero, with the volume weights for DPE's 3, 4, and 6 adjusted accordingly.

One temperature sensor, RTD-9, was also deleted prior to the start of pressurization and the CILRT due to erroneous readings. The sensor's volume weight was set equal to zero and the volume weights of the other temperature sensors in the lower compartment were adjusted.

Four of eight Mensor Quartz Manometer pressure gauges were found to be slightly non-conservatively out of tolerance when the gauges were calibrated following the CILRT. The manometers were indicating slightly higher than the actual pressure readings according to the post-test calibration report. Test engineers corrected each pressure reading taken by these manometers during the CILRT and subsequent verification test and the changes in the manometer readings did not affect the success of the unit 1 CILRT. In addition, all test results and reported data in this report include corrected manometer readings.

The instrumentation error analysis of Appendix A indicates that the instrumentation used in the unit 1, cycle 1 CILRT was extremely accurate to ±0.0090 L_A in determining the containment leak rate for unit 1, far surpassing the recommendations of ANS 56.8 which states that the measuring system be capable of detecting 0.25 L_A.

6.2 Discussion of Graphical and Tabular Results

The December 8-9, 1982, CILRT that was performed on unit 1 at Sequoyah Nuclear Plant was concluded after 90 samples were taken in 15.345 hours of testing. Figure 9 is a graphical representation of the MLR and figure 13 is a graphical representation of the TTLR, expressed as a percentage of containment air mass per day, during the CILRT. Tabulated data accumulated during the CILRT is shown in Table 4.

The CILRT was started following a 5-hour and 51-minute stabilization period.

There were two significant abrupt increases in temperature experienced in both the upper and lower compartments with cyclical temperature trends experienced in the ice-upper compartment.

The first of the temperature increases that was experienced in the lower compartment occurred at 2.00 hours into the CILRT. The increase of 0.29713 °F resulted in corresponding increases in the total time and mass leak rates for the samples involved (samples 45-47). The second and most significant temperature change occurred between 4.833 and 6.166 hours into the CILRT. It was 0.3159 °F in magnitude, and again, the increase in compartmental temperature resulted in appropriate increases in total time and mass leak rates.

One temperature increase occurred in the upper compartment between 0.833 and 1.167 hours into the CILRT. The increase was 0.48971 °F in magnitude and resulted in an expected increase in mass leak rate and total time leak rate. The second upper compartment significant temperature increase occurred between 1.00 ad 3.166 hours into the CILRT. The increase of 0.23786 °F once more caused a corresponding increase in mass leak rate.

The corresponding increases to mass leak rates and total time leak rates were only temporary and following the above mentioned abrupt increases in temperature, the mass leak rate and the total time leak rate resumed a slowly downward trend.

In each case efforts were made by test engineers both during the test and the weeks thereafter to determine the cause of the temperature increases, but no exact reason for the increases has been discovered to date.

The temperature trends in the ice-upper compartment were cyclic in nature. The first cycle beginning with sample 38 and ending 10 samples later with sample number 48, lasting 60 minutes. Between samples 38 through 42 the compartment experienced a 0.3732°F increase, and the cycle ended with a 0.43683°F decrease in compartmental temperature between samples 42 and 48.

The second cycle began with sample number 48 and ended with sample 89. A steady increase was experienced between samples 48 and 73 and was 2.21258 °F in magnitude and was followed by a steady decline in average compartmental temperature between samples 73 and 89 amounting to -1.43047 °F. A third and relatively small cycle seems to have occurred between samples 89 and 95. The peak of the cycle occurred with sample number 92 and was 0.26057 °F in magnitude. A fourth and final cycle began with sample 95, peak with sample 119, and concluded with the last CILRT sample (sample 122). Between samples 95 and 119 a steady overall increase of 2.27163 °F was experienced and was followed by a steady decline of -0.6212 °F between sample 119 and the conclusion of the CILRT. These trends in the upper ice condenser compartment had little effect on the MLR and TTLR and were closely monitored by test engineers. The cyclic trends were suspected to be caused by the defrosting cycles of the air handling units located in the upper ice condenser.

Due to the fact that the steam generators, accumulators, and the RCS pressurizer were laid up wet and vented to inside containment during the CILRT, it was determined that the reactor coolant system (RCS) pressurizer water level should be monitored to account for any changes in free air volume during the test. Since any change in the level of the steam generators or accumulators would be reflected in the RCS pressurizer water level, only the RCS pressurizer level would require monitoring. The pressurizer was monitored through LT 68-321.

Figures 14 through 29 show compartmental temperatures, corrected pressures, vapor pressures, and masses during the 15.345 hour CILRT. Table 4 is a tabular listing of important measured parameters and corresponding results for the unit 1 CILRT.

Final results indicate a MLR of 0.02530 percent per day and a TTLR of 0.03651 percent per day. The associated 95 percent upper confidence limits for the Sequoyah unit 1, cycle 1 CILRT were 0.09429 percent per day for MLR and 0.09313 percent per day for TTLR.

After instrumentation received post-test calibrations, the calibration reports indicated that all instrumentation used in the unit 1 CILRT and subsequent verification test was in proper tolerance, with the exception of items already mentioned.

6.3 Discussion of Agreement (Verification Test)

Appendix J to 10 CFR 50 specifies the technique for the calculation of agreement between the CILRT and its subsequent verification. Appendix J requires the absolute value of the difference between the measured containment leak rate with a superimposed leak and the sum of the imposed leak and the measured containment leak rate be less than 0.25 L_A.

The verification test was concluded at 0700 hours on December 10, 1982.

After collecting 98 samples in approximately 8 hours, agreement, as prescribed by Appendix J of 10 CFR 50, between the CILRT (L_{AM}) and the imposed leak rate (L_R) was reached at -0.01182 L_A, which is well within the ± 0.25 L_A allowable limit.

Agreement was also reached using TTLR and was found to be -0.05125 L_A. Appendix B details the methods of agreement calculations.

Tabulated data collected during the 8 hour verification test is shown in Table 5.

Figure 34 shows the total containment air mass loss during the 8 hour verification test, while Figure 33 shows the corresponding total containment pressure.

Figures 36 through 51 show compartmental temperatures, corrected pressures, vapor pressures and masses for the 8 hour verification test.

7.0 CONCLUSIONS

The reactor building containment integrated leak rate test performed on Sequoyah Nuclear Plant unit 1, cycle 1 December 8-9, 1982, recorded a MLR of 0.02530 and a TTLR of 0.03651 percentage of containment air mass per day, which clearly demonstrates the leak-tight integrity of unit 1. The total leak rate was much less than the allowable 0.1875 percent of containment air mass per day as prescribed under Sequoyah Technical Specifications.

The full-pressure CILRT (12.0 psig) was completed in 15.345 hours, completing TVA's first short-duration CILRT. The test results indicated that the containment leak rate could be accurately measured in less than 24 hours.

The technique of multicompartment modeling coupled with a computer-based data acquisition system yielded immediate results that accurately measured and displayed the unit 1 containment leak rate.

TABLES

Table 1

Measured Parameter	Manufacturer and Model No.	Number Used	Instrument Specification	
Containment Temperature	Leeds & Northrup Model No. 178055	48	Range: Accuracy: Repeatability:	0-250°F ±0.1°F ±0.001°F
Containment Pressure	Mensor Corporation Model No. 10100-001	8	Range: Accuracy: Repeatability:	0-30 psia, 400,000 counts F.S. ±0.015 percent reading ±0.0005 percent reading
Containment Dewpoint	Foxboro Corporation Model No. 2701 RG	12	Range: Accuracy: Repeatability:	-50 to +142°F ±1°F dewpoint ±0.10°F
Analog to Digital Converter	Acurex Corporation Autodata Nine	1	Accuracy:	±0.001°F dewpoint ±0.001°F temperature ±1 count pressure
Verification Flow	Teledyne-Hastings Mass Flow Meter Model AHL25 with H-3M Transducer TVA No. 4699.36	1	Range: Accuracy: Repeability:	0-25 SCFM ±2 percent of range ±½% of range
Mensor Chamber Temperature	Princo ASTM 19L	8	Range: Accuracy:	49° to 57°C ±0.12°C
Atmospheric Pressure	Texas Instruments Precision Pressure Gauge Model No. 145-01	1	Range: Accuracy:	0-50 psia ±0.015% F.S.
RCS Pressurizer Water Level	Plant Process Transmitter Model LT-68-321	1	Range: Accuracy:	0-100 level ±5 percent F.S.

TABLE 2

VOLUMETRIC WEIGHTING GROUPS

	Temperature	Number of Transducers	Segment Volume	Volumetric Weight Per Sensor by Compartment (Percent)
I.	Upper compartment	13	651,000	7.6923
II.	Lower compartment	25	383,720	4.0000
III.	Ice-upper compartment	6	47,000	16.6667
IV.	Ice-lower compartment	4	110,500	25.0000
		48		
	Dewpoint			
I.	Upper compartment	3	651,000	33.3333
II.	Lower compartment	2	383,720	50.0000
III.	Ice-upper compartment	3	47,000	33.0000
IV.	Ice-lower compartment	4	110,500	25.0000
		12		

TABLE 3

CONTAINMENT LEAKAGE MEASUREMENT
MINICOMPUTER ROUTINE SUMMARY

Routine Name	
FORE	a. Automatically acquires, stores, and corrects raw data to calibration curves. b. Calculates volumetric weighted containment air mass and leak rates as defined by ANS 56.8 (draft). c. Prints for each sample a summary with average parameters and containment leak rate.
TABLE	Provide a summary for all samples from test start of average parameters, including calculated containment leak rate.
TALLY	a. Calculate statistical confidence levels for the measured leak rate from the test start. b. Provide a summary comparison of reportable leak rates as defined by ANS 56.8 (draft).
BASE	a. Allow test director to change the sample considered the test base. b. Provide a summary for each sample leak rate recalculated with a shift in the test base.
PLOT	Provides graphical display of test data.
VERIFY	Calculates "induced-leakage" results during verification test.

TENNESSEE VALLEY AUTHORITY
CONTAINMENT LEAKAGE MEASUREMENT
TEST SUMMARY

CILRT

SAMPLE	HOURS SINCE START	AVERAGE TEMPERATURE (DEG F.)	CORRECTED PRESSURE (PSIA)	TOTAL MASS OF AIR (LBM)	F-T-P LEAK RATE (% PER DAY)	TOTAL TIME LEAK RATE (% PER DAY)	MASS LEAK RATE (% PER DAY)
33	0.000	63.0614	26.9808	166366.36	0.0000000	0.0000000	0.0000000
34	0.166	63.0143	26.9802	166366.52	-0.9680673	-0.9680672	-0.9683977
35	0.333	63.0200	26.9806	166366.73	-0.0188972	-0.4924398	-0.4932304
36	0.500	63.0568	26.9801	166352.30	1.2527072	0.0884514	0.0763840
37	0.667	63.0414	26.9800	166356.73	-0.3833758	-0.0297628	0.0990494
38	0.833	63.0245	26.9788	166354.97	0.1532083	0.0067673	0.1141700
39	1.000	63.1758	26.9778	166301.17	4.6476812	0.7819511	0.6065552
40	1.167	63.2882	26.9765	166258.23	3.7107060	1.2009596	1.0694443
41	1.333	63.1699	26.9776	166301.66	-3.7700706	0.5812210	0.9639882
42	1.500	63.1709	26.9773	166299.44	0.1917462	0.5378546	0.8685461
43	1.666	63.0790	26.9768	166325.58	-2.2690771	0.2578545	0.6739482
44	1.833	63.0566	26.9735	166312.69	1.1138586	0.3358103	0.5787684
45	2.000	63.0594	26.9735	166312.09	0.0515350	0.3121717	0.5036739
46	2.167	63.1795	26.9732	166273.09	3.3702013	0.5478143	0.5387535
47	2.333	63.2385	26.9726	166251.31	1.8909712	0.6434765	0.5949808
48	2.500	63.1637	26.9735	166280.47	-2.5204709	0.4322194	0.5640656
49	2.667	63.1658	26.9727	166274.89	0.4821277	0.4353311	0.5412956
50	2.833	63.1832	26.9727	166268.80	0.5290321	0.4408.51	0.5252470
51	3.000	63.1731	26.9724	166269.83	-0.0891391	0.4113183	0.5033866
52	3.166	63.2407	26.9711	166240.98	2.5041616	0.5211455	0.5166128
53	3.333	63.1432	26.9718	166276.09	-3.0352893	0.3430767	0.4798853
54	3.500	63.1242	26.9720	166283.20	-0.6171997	0.2974685	0.4393109
55	3.667	63.1056	26.9722	166289.72	-0.5651483	0.2582825	0.3977438
56	3.833	63.1075	26.9707	166278.73	0.9535292	0.2884250	0.3710350
57	4.000	63.0807	26.9708	166287.80	-0.7832969	0.2436950	0.3396138
58	4.167	63.0619	26.9700	166288.58	-0.0675219	0.2312234	0.3114610
59	4.333	63.0375	26.9703	166297.95	-0.8138285	0.1911367	0.2803172
60	4.500	63.0325	26.9705	166301.00	-0.2633194	0.1742755	0.2510335
61	4.666	63.0402	26.9707	166299.31	0.1464782	0.1732834	0.2269606
62	4.833	63.0427	26.9703	166295.36	0.3416373	0.1790962	0.2082322

STOP --

TABLE 4
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TENNESSEE VALLEY AUTHORITY
CONTAINMENT LEAKAGE MEASUREMENT
TEST SUMMARY
CILRT

SAMPLE	HOURS SINCE START	AVERAGE TEMPERATURE (DEG F.)	CORRECTED PRESSURE (PSIA)	TOTAL MASS OF AIR (LBM)	B-T-B LEAK RATE (% PER DAY)	TOTAL TIME LEAK RATE (% PER DAY)	MASS LEAK RATE (% PER DAY)
63	5.000	63.0545	26.9697	166287.69	0.6659559	0.1952788	0.1954181
64	5.167	63.0663	26.9696	166282.58	0.4415936	0.2032344	0.1864118
65	5.333	63.0429	26.9677	166278.77	0.3309689	0.2072123	0.1798641
66	5.500	63.0590	26.9680	166274.83	0.3403289	0.2112494	0.1750825
67	5.667	63.0626	26.9681	166274.50	0.0283614	0.2058595	0.1702383
68	5.833	63.0675	26.9665	166262.75	1.0200849	0.2290535	0.1703413
69	6.000	63.0758	26.9657	166254.86	0.6820741	0.2416514	0.1721614
70	6.166	63.1114	26.9659	166244.66	0.8858964	0.2590076	0.1768798
71	6.333	63.0442	26.9649	166259.39	-1.2737938	0.2186138	0.1751794
72	6.500	62.9898	26.9658	166281.89	-1.9535314	0.1630784	0.1658730
73	6.667	62.9794	26.9653	166281.34	0.0472670	0.1601768	0.1576454
74	6.833	62.9693	26.9642	166277.69	0.3174070	0.1639992	0.1510273
75	7.000	62.9653	26.9632	166272.53	0.4456717	0.1707141	0.1459080
76	7.167	62.9516	26.9621	166269.45	0.2660608	0.1729327	0.1423295
77	7.333	62.9290	26.9626	166279.52	0.8736098	0.1492149	0.1357860
78	7.500	62.9170	26.9632	166286.97	-0.6441911	0.1315557	0.1282720
79	7.666	62.9070	26.9622	166283.39	0.3106143	0.1354363	0.1219384
80	7.833	62.8948	26.9623	166287.53	-0.3578756	0.1249229	0.1152625
81	8.000	62.8866	26.9599	166274.98	1.0891607	0.1449546	0.1117406
82	8.167	62.8685	26.9599	166280.06	-0.4389262	0.1330195	0.1073630
83	8.333	62.8558	26.9600	166283.70	-0.3160529	0.1240622	0.1024868
84	8.500	62.8254	26.9599	166292.63	-0.7711192	0.1064814	0.0961541
85	8.667	62.8225	26.9603	166295.08	-0.2120127	0.1003461	0.0899743
86	8.833	62.8398	26.9592	166281.63	1.1677984	0.1204303	0.0866512
87	9.000	62.7650	26.9571	166291.23	-0.8303504	0.1027920	0.0818593
88	9.166	62.7371	26.9574	166301.14	-0.8599319	0.0853359	0.0757054
89	9.333	62.7554	26.9579	166297.94	0.2768176	0.0887603	0.0707122
90	9.500	62.7634	26.9589	166300.00	-0.1790322	0.0840745	0.0657112
91	9.667	62.7649	26.9585	166293.03	0.4294079	0.0900378	0.0618186
92	9.833	62.7574	26.9569	166286.23	0.7636129	0.1014224	0.0592408

STOP --

TENNESSEE VALLEY AUTHORITY
CONTAINMENT LEAKAGE MEASUREMENT
TEST SUMMARY

CILRT

SAMPLE	HOURS SINCE START	AVERAGE TEMPERATURE (DEG F.)	CORRECTED PRESSURE (PSIA)	TOTAL MASS OF AIR (LBM)	B-T-B LEAK RATE (% PER DAY)	TOTAL TIME LEAK RATE (% PER DAY)	MASS LEAK RATE (% PER DAY)
93	10.000	62.7565	26.9559	166279.92	0.5455822	0.1088359	0.0579129
94	10.167	62.7671	26.9558	166275.27	0.4024496	0.1136556	0.0571434
95	10.333	62.7603	26.9564	166280.27	-0.4340766	0.1048459	0.0556620
96	10.500	62.7798	26.9571	166277.77	0.2160799	0.1066134	0.0547104
97	10.833	62.8091	26.9571	166267.08	0.4628929	0.1175666	0.0549736
98	11.000	62.8092	26.9566	166262.72	0.3784792	0.1215073	0.0555700
99	11.167	62.7941	26.9568	166267.97	-0.4338157	0.1129073	0.0555453
100	11.333	62.7839	26.9576	166275.45	-0.6497871	0.1017230	0.0543534
101	11.500	62.7934	26.9596	166283.70	-0.7130843	0.0898959	0.0525994
102	11.667	62.7775	26.9595	166286.87	-0.2741457	0.0846869	0.0504324
103	11.833	62.7808	26.9591	166282.05	0.4191260	0.0893835	0.0488726
104	12.000	62.7857	26.9586	166276.33	0.4942775	0.0950150	0.0478485
105	12.166	62.7328	26.9588	166293.05	-1.4514345	0.0738912	0.0453455
106	12.333	62.7311	26.9583	166290.39	0.2295673	0.0759979	0.0432390
107	12.500	62.7626	26.9594	166283.03	0.3784262	0.0800186	0.0417202
108	12.667	62.7991	26.9599	166276.94	0.7859634	0.0893213	0.0410577
109	12.833	62.8123	26.9597	166270.73	0.5385209	0.0951378	0.0409412
110	13.000	62.8278	26.9583	166256.56	1.2249732	0.1096434	0.0421302
111	13.167	62.8269	26.9587	166258.28	-0.1485761	0.1063695	0.0428938
112	13.333	62.7922	26.9586	166268.58	-0.8940180	0.0939014	0.0427062
113	13.500	62.7263	26.9587	166288.86	-1.7530717	0.0710661	0.0410293
114	13.666	62.7179	26.9591	166293.75	-0.4245465	0.0650387	0.0390858
115	14.094	62.6660	26.9567	166294.25	-0.0168706	0.0625530	0.0368926
116	14.260	62.6522	26.9559	166293.59	0.0569661	0.0624876	0.0350797
117	14.427	62.6374	26.9566	166302.44	-0.7643215	0.0529208	0.0325880
118	14.594	62.6316	26.9563	166301.28	0.0999236	0.0534582	0.0303285
119	14.760	62.6355	26.9559	166297.36	0.3404256	0.0566893	0.0285728
120	14.927	62.6344	26.9541	166285.58	1.0181719	0.0674414	0.0277635
121	15.179	62.6[illegible]	26.9533	166290.34	-0.2737922	0.0617956	0.0265634
122	15.345	62.592[illegible]	26.9532	166292.97	-0.2278696	0.0586581	0.0252981

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TENNESSEE VALLEY AUTHORITY
CONTAINMENT LEAKAGE MEASUREMENT
TEST SUMMARY

VERIFICATION TEST
ALL COMPARTMENTS

SAMPLE	HOURS SINCE START	AVERAGE TEMPERATURE (DEG F.)	CORRECTED PRESSURE (PSIA)	TOTAL MASS OF AIR (LBM)	P-T-P LEAK RATE (% PER DAY)	TOTAL TIME LEAK RATE (% PER DAY)	MASS LEAK RATE (% PER DAY)
34	0.000	62.4929	26.9416	166235.64	0.0000000	0.0000000	0.0000000
35	0.083	62.5098	26.9424	166234.14	0.2616608	0.2616608	0.2634618
36	0.166	62.5132	26.9423	166231.86	0.3944553	0.3283487	0.3305100
37	0.250	62.5202	26.9423	166228.53	0.5754803	0.4109631	0.4098557
38	0.333	62.5371	26.9425	166223.53	0.8645886	0.5246094	0.5162891
39	0.416	62.5476	26.9414	166212.41	1.9407921	0.8063219	0.7488812
40	0.500	62.5638	26.9403	166199.89	2.1643834	1.0332787	0.9848685
41	0.583	62.5973	26.9403	166188.38	1.9915988	1.1704643	1.1670927
42	0.667	62.6638	26.9401	166165.77	3.9105062	1.5133829	1.4348959
43	0.750	62.7232	26.9396	166143.42	3.8650901	1.7751911	1.7034923
44	0.833	62.7328	26.9394	166138.19	0.9135939	1.6895113	1.8143556
45	0.916	62.7412	26.9397	166136.69	0.2595176	1.5591863	1.8191913
46	1.000	62.7547	26.9399	166133.94	0.4757866	1.4686809	1.7761917
47	1.083	62.7658	26.9407	166135.69	-0.3027783	1.3321527	1.6902493
48	1.166	62.7650	26.9392	166127.45	1.4372728	1.3395526	1.6279716
49	1.250	62.7760	26.9391	166123.44	0.6947953	1.2964380	1.5662878
50	1.333	62.7888	26.9387	166117.17	1.0841230	1.2830932	1.5141419
51	1.417	62.7922	26.9382	166113.92	0.5623593	1.2405859	1.4600071
52	1.500	62.7900	26.9373	166108.97	0.8570741	1.2192030	1.4131708
53	1.583	62.7908	26.9365	166104.31	0.8128581	1.1979226	1.3692991
54	1.666	62.7785	26.9363	166106.30	-0.3433902	1.1207012	1.3149210
55	1.750	62.7830	26.9364	166105.13	0.2027871	1.0768921	1.2607820
56	1.833	62.7957	26.9360	166098.75	1.1031696	1.0780494	1.2186751
57	1.916	62.7865	26.9370	166106.78	-1.4021300	0.9709661	1.1597759
58	2.000	62.7847	26.9356	166098.81	1.3789482	0.9879582	1.1155652
59	2.083	62.7896	26.9366	166103.03	-0.7300664	0.9191163	1.0655454
60	2.167	62.7873	26.9371	166106.19	-0.5461840	0.8626610	1.0129197
61	2.250	62.7995	26.9368	166100.03	1.0653088	0.8701503	0.9706801
62	2.333	62.8010	26.9369	166099.64	0.0681965	0.8416960	0.9310198
63	2.416	62.8013	26.9358	166092.17	1.2924817	0.8572368	0.9006106
64	2.500	62.7964	26.9350	166088.95	0.5570359	0.8471934	0.8740234
65	2.583	62.7961	26.9346	166086.03	0.5056686	0.8361403	0.8498032

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TENNESSEE VALLEY AUTHORITY
CONTAINMENT LEAKAGE MEASUREMENT
TEST SUMMARY

VERIFICATION TEST

ALL COMPARTMENTS

SAMPLE	HOURS SINCE START	AVERAGE TEMPERATURE (DEG F.)	CORRECTED PRESSURE (PSIA)	TOTAL MASS OF AIR (LBM)	P-T-P LEAK RATE (% PER DAY)	TOTAL TIME LEAK RATE (% PER DAY)	MASS LEAK RATE (% PER DAY)
66	2.666	62.8088	26.9350	166084.02	0.3319234	0.8210985	0.8269827
67	2.750	62.8085	26.9340	166077.89	1.0600426	0.8283253	0.8094903
68	2.833	62.8068	26.9336	166075.73	0.3731921	0.8149009	0.7924164
69	2.917	62.7950	26.9347	166085.48	-1.6874989	0.7433065	0.7669616
70	3.000	62.8037	26.9333	166074.06	1.9767457	0.7775860	0.7507576
71	3.083	62.8041	26.9340	166078.11	-0.7066258	0.7377574	0.7307995
72	3.166	62.7951	26.9339	166079.88	-0.3033844	0.7102515	0.7096744
73	3.250	62.7756	26.9341	166086.95	-1.2230289	0.6605578	0.6850573
74	3.333	62.7812	26.9334	166080.44	1.1276276	0.6722324	0.6650978
75	3.416	62.7962	26.9323	166068.38	2.1061552	0.7069260	0.6527525
76	3.500	62.8088	26.9317	166060.03	1.4441736	0.7244816	0.6443684
77	3.583	62.8098	26.9315	166058.02	0.3488909	0.7157205	0.6362889
78	3.667	62.8098	26.9311	166055.16	0.4949443	0.7106807	0.6287585
79	3.750	62.8066	26.9309	166054.80	0.0622072	0.6962406	0.6204176
80	3.833	62.8034	26.9305	166053.25	0.2701315	0.6870330	0.6124315
81	3.916	62.8042	26.9306	166053.78	-0.0919595	0.6704267	0.6036094
82	4.000	62.8020	26.9302	166051.55	0.3867697	0.6644964	0.5951890
83	4.083	62.8027	26.9308	166055.00	-0.5977429	0.6386992	0.5847374
84	4.166	62.8219	26.9300	166043.17	2.0655487	0.6670009	0.5792428
85	4.250	62.8190	26.9292	166039.50	0.6356410	0.6663703	0.5745122
86	4.333	62.8155	26.9293	166040.86	-0.2353277	0.6490001	0.5684182
87	4.417	62.8121	26.9286	166037.50	0.5815520	0.6477121	0.5627751
88	4.500	62.8040	26.9275	166033.03	0.7736152	0.6500311	0.5584254
89	4.583	62.8088	26.9269	166028.38	0.8132299	0.6529605	0.5549116
90	4.666	62.7959	26.9271	166033.44	-0.8764513	0.6256134	0.5491268
91	4.750	62.8008	26.9252	166020.33	2.2695069	0.6544629	0.5465353
92	4.833	62.7819	26.9268	166036.34	-2.7728586	0.5953168	0.5386521
93	4.916	62.7841	26.9260	166030.58	1.0069659	0.6022269	0.5329708
94	5.000	62.7592	26.9254	166034.98	-0.7628272	0.5794450	0.5254427
95	5.083	62.7665	26.9258	166034.88	0.0189349	0.5702374	0.5178099
96	5.167	62.7609	26.9247	166030.00	0.8439571	0.5746445	0.5113056
97	5.250	62.7486	26.9220	166017.75	2.1207750	0.5991924	0.5078886

STOP --

TENNESSEE VALLEY AUTHORITY
CONTAINMENT LEAKAGE MEASUREMENT
TEST SUMMARY

VERIFICATION TEST

ALL COMPARTMENTS

SAMPLE	HOURS SINCE START	AVERAGE TEMPERATURE (DEG F.)	CORRECTED PRESSURE (PSIA)	TOTAL MASS OF AIR (LBM)	P-T-P LEAK RATE (% PER DAY)	TOTAL TIME LEAK RATE (% PER DAY)	MASS LEAK RATE (% PER DAY)
98	5.333	[illegible]	26.9210	166025.80	-1.4055432	0.5681079	0.5020783
99	5.416	[illegible]	26.9213	166029.16	-0.5816048	0.5503954	0.4950551
100	5.500	[illegible]	26.9199	166022.94	1.0766234	0.5583642	0.4896472
101	5.583	[illegible]	26.9198	166029.62	-1.0523171	0.5342970	0.4826460
102	5.666	[illegible]	26.9183	166030.77	-0.3056508	0.5220334	0.4753412
103	5.750	[illegible]	26.9187	166034.89	-0.7141353	0.5040942	0.4670504
104	5.833	[illegible]	26.9184	166039.00	-0.7114125	0.4867073	0.4580541
105	5.917	[illegible]	26.9188	166045.09	-1.0549202	0.4649687	0.4480589
106	6.000	62.5967	26.9183	166041.80	0.5707179	0.4664313	0.4391332
107	6.083	62.5864	26.9189	166048.84	-1.2306956	0.4433592	0.4289660
108	6.166	62.5920	26.9185	166043.97	0.8438861	0.4487699	0.4200838
109	6.250	62.5762	26.9187	166050.11	-1.0630032	0.4285891	0.4105427
110	6.333	62.5677	26.9182	166049.25	0.1487608	0.4248977	0.4013144
111	6.416	62.5537	26.9168	166045.38	0.6767157	0.4281363	0.3930238
112	6.500	62.5615	26.9172	166044.73	0.1108976	0.4240592	0.3851746
113	6.583	62.5433	26.9153	166038.80	1.0278355	0.4317023	0.3785165
114	6.667	62.5413	26.9158	166042.33	-0.6113135	0.4186479	0.3712452
115	6.750	62.5286	26.9152	166042.77	-0.0757363	0.4125336	0.3643456
116	6.833	62.5260	26.9152	166043.25	-0.0845928	0.4065132	0.3574491
117	6.916	62.5127	26.9160	166051.89	-1.4957845	0.3835687	0.3493849
118	7.000	62.5106	26.9157	166050.23	0.2866997	0.3824094	0.3417513
119	7.083	62.5038	26.9159	166053.53	-0.5707003	0.3711818	0.3340492
120	7.166	62.4966	26.9152	166051.31	0.3874644	0.3713650	0.3267595
121	7.250	62.5022	26.9148	166046.83	0.7762555	0.3760184	0.3204366
122	7.333	62.4950	26.9131	166038.66	1.4146084	0.3878258	0.3152807
123	7.417	62.4882	26.9119	166033.41	0.9088562	0.3936795	0.3109138
124	7.500	62.4797	26.9120	166036.97	-0.6167433	0.3824391	0.3063400
125	7.583	62.4770	26.9116	166035.41	0.2728894	0.3812398	0.3017181
126	7.666	62.4732	26.9114	166034.89	0.0892644	0.3780586	0.2974283
127	7.750	62.4668	26.9114	166036.89	-0.3462388	0.3702595	0.2930858
128	7.833	62.4652	26.9117	166039.16	-0.3922189	0.3621371	0.2883527
129	7.916	62.4577	26.9110	166037.22	0.3383784	0.3618846	0.2840646
130	8.000	62.4518	26.9112	166040.13	-0.5031212	0.3528622	0.2794186
131	8.083	62.4497	26.9110	166039.58	0.0946717	0.3501940	0.2750902

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TABLE 6
TESTABLE PENETRATIONS REQUIRED TO BE IN SERVICE DURING TEST PERFORMANCE

Penetration	Description	Justification	Leakage Rate Added to 95% UCL
X-27(C)	Integrated Leak Rate System Pressure	Isolation valves required to be open to monitor containment pressure.	0.0000 SCFH
X-47A	Ice Condenser System	Glycol cooling supply to air handling units in ice condenser required to ensure ice condition is maintained.	0.0000 SCFH
X-47B	Ice Condenser System	Same as X-47A.	0.0559 SCFH
X-54	Thimble Renewal	Used as pressurization point for air compressors.	0.0000 SCFH
X-98	Integrated Leak Rate System Pressure	Same as X-27(C).	0.0000 SCFH
X-114	Ice Condenser System	Glycol return from air handling units required to ensure ice condition is maintained.	0.0000 SCFH
X-115	Ice Condenser System	Same as X-114.	
X-118	Hatch	Used as source for verification flow and post test depressurization.	0.0000 SCFH
X-46	Waste Disposal	Used to provide leakoff for RCP seals.	0.0000 SCFH

TABLE 6
TESTABLE PENETRATIONS REQUIRED TO BE IN SERVICE DURING TEST PERFORMANCE

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

FIGURES

SNP (1) - CYCLE (1)

CILRT - SEQUENCE OF EVENTS

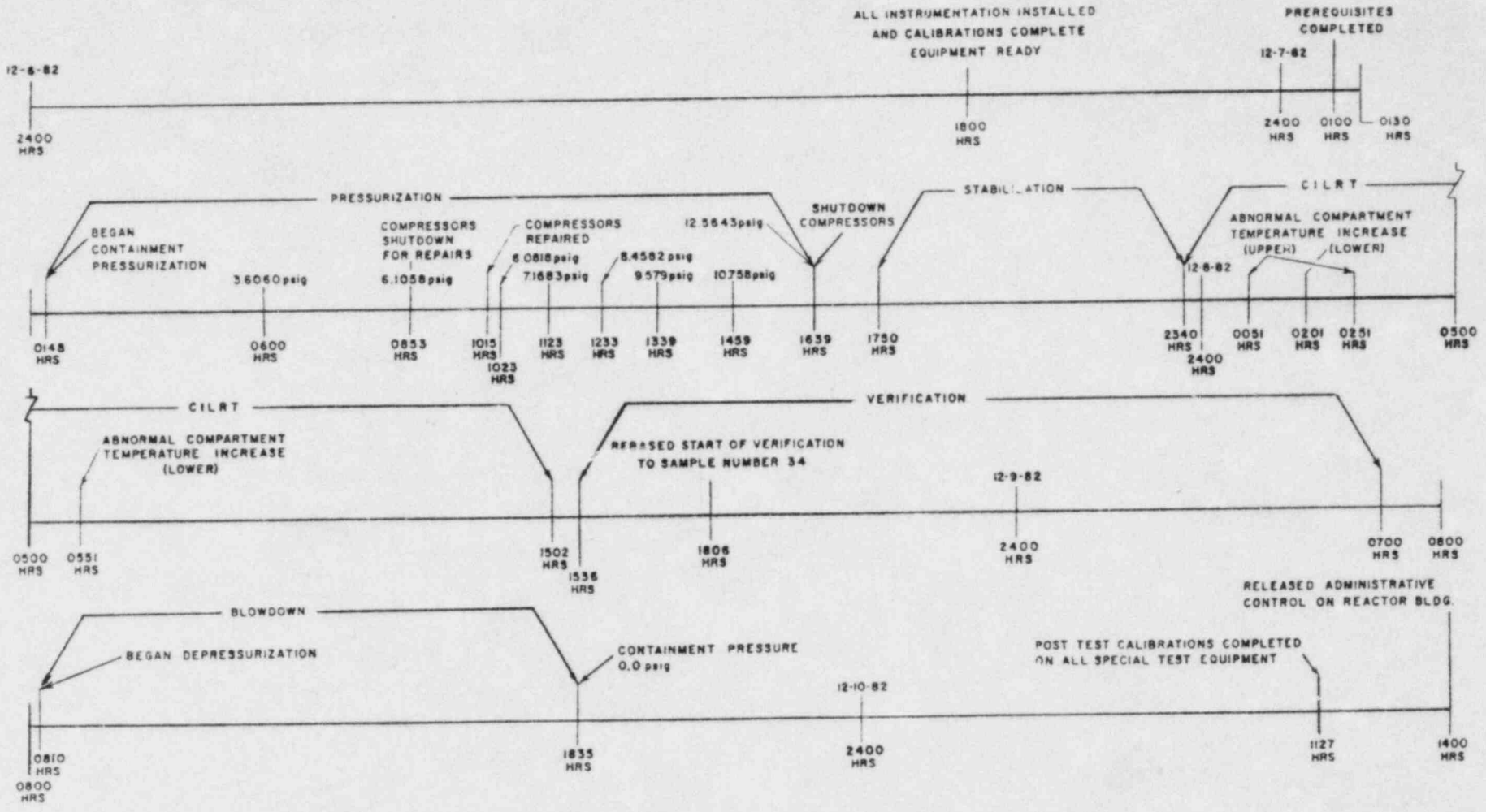


Figure 1

COMPUTER BASE ACQUISITION AND DATA REDUCTION SYSTEM

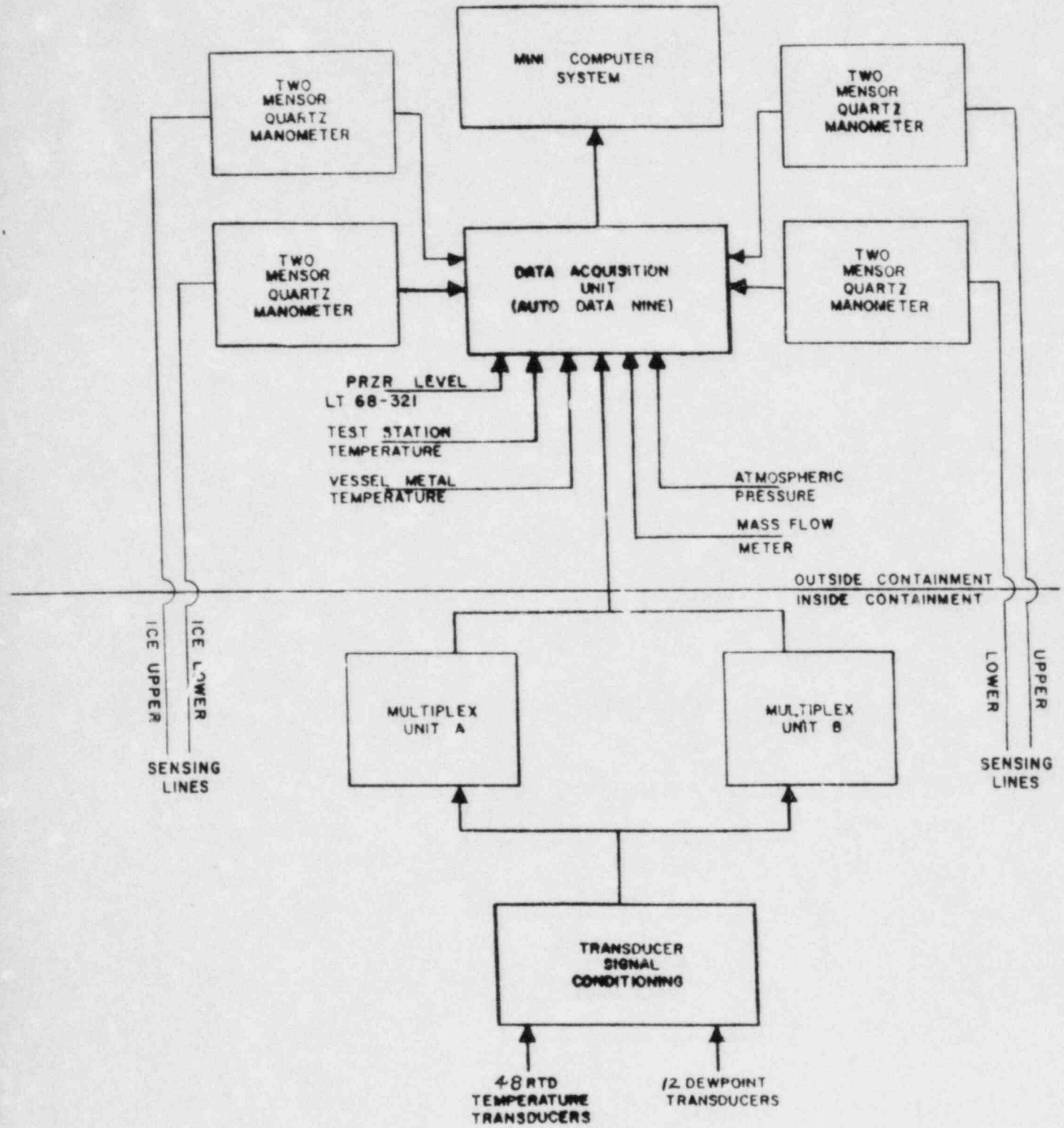


Figure 2

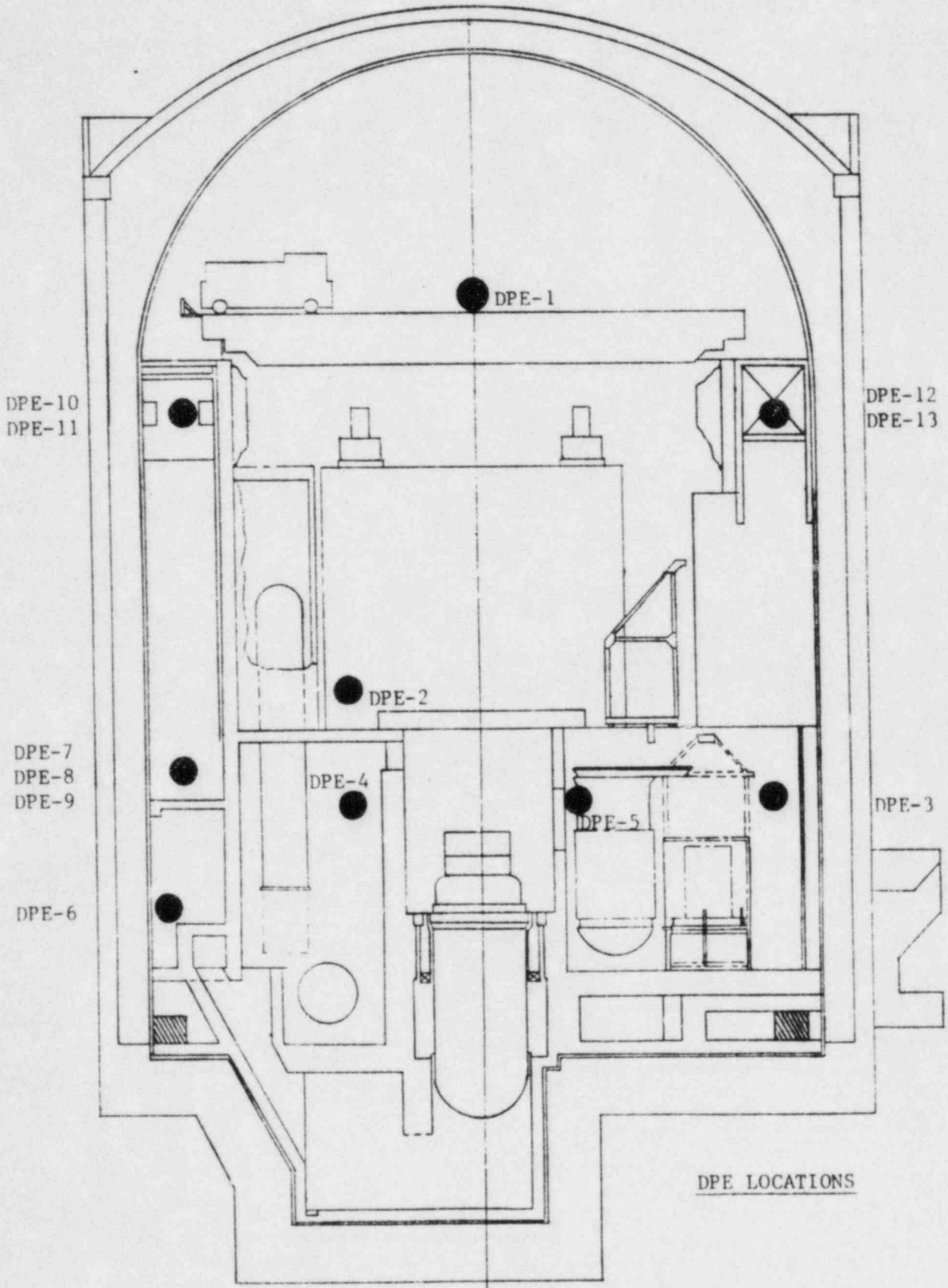

DPE-1
DPE-10
DPE-11
DPE-12
DPE-13
DPE-2
DPE-7
DPE-8
DPE-9
DPE-4
DPE-5
DPE-3
DPE-6
DPE LOCATIONS

FIGURE 3

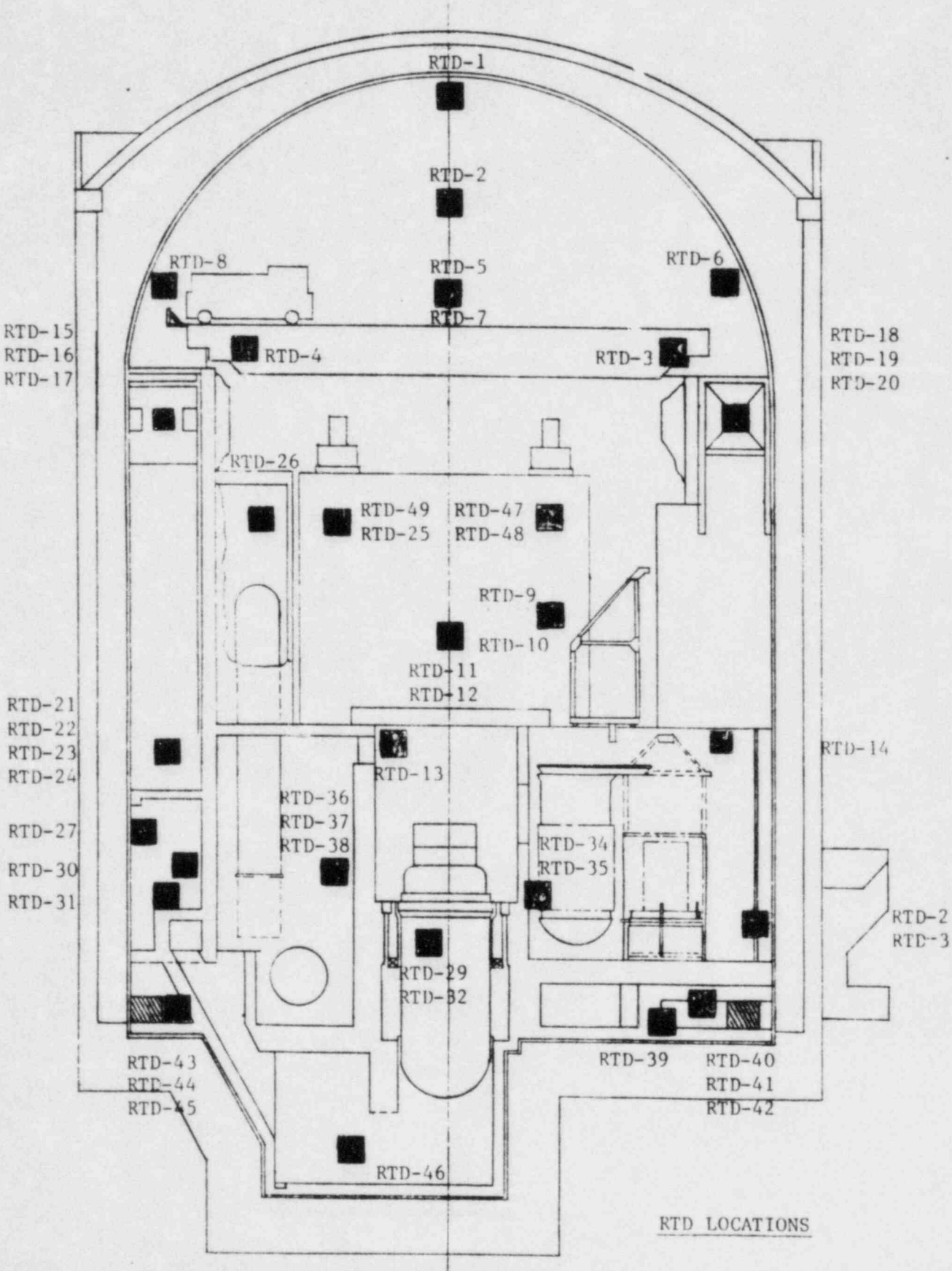
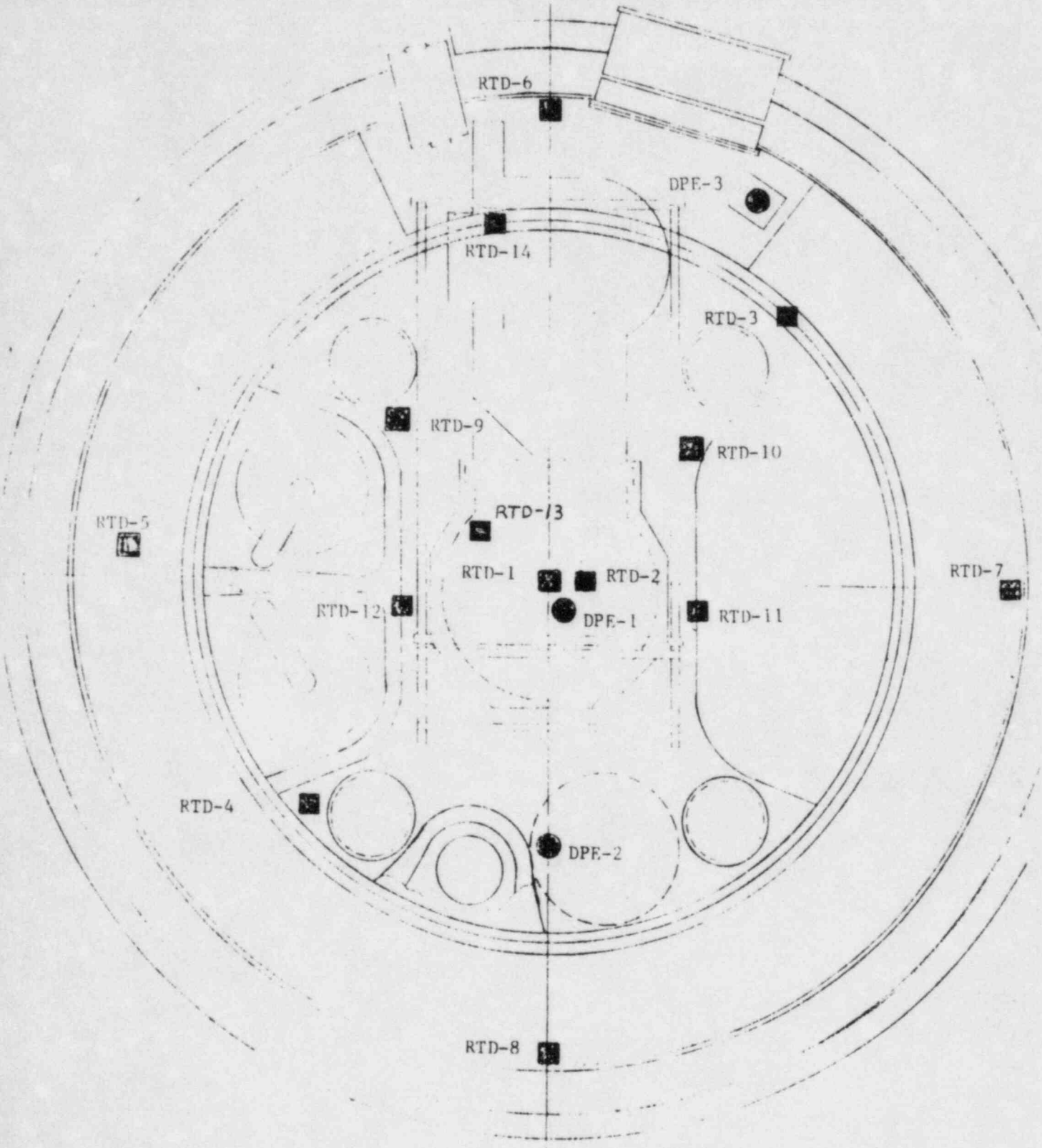
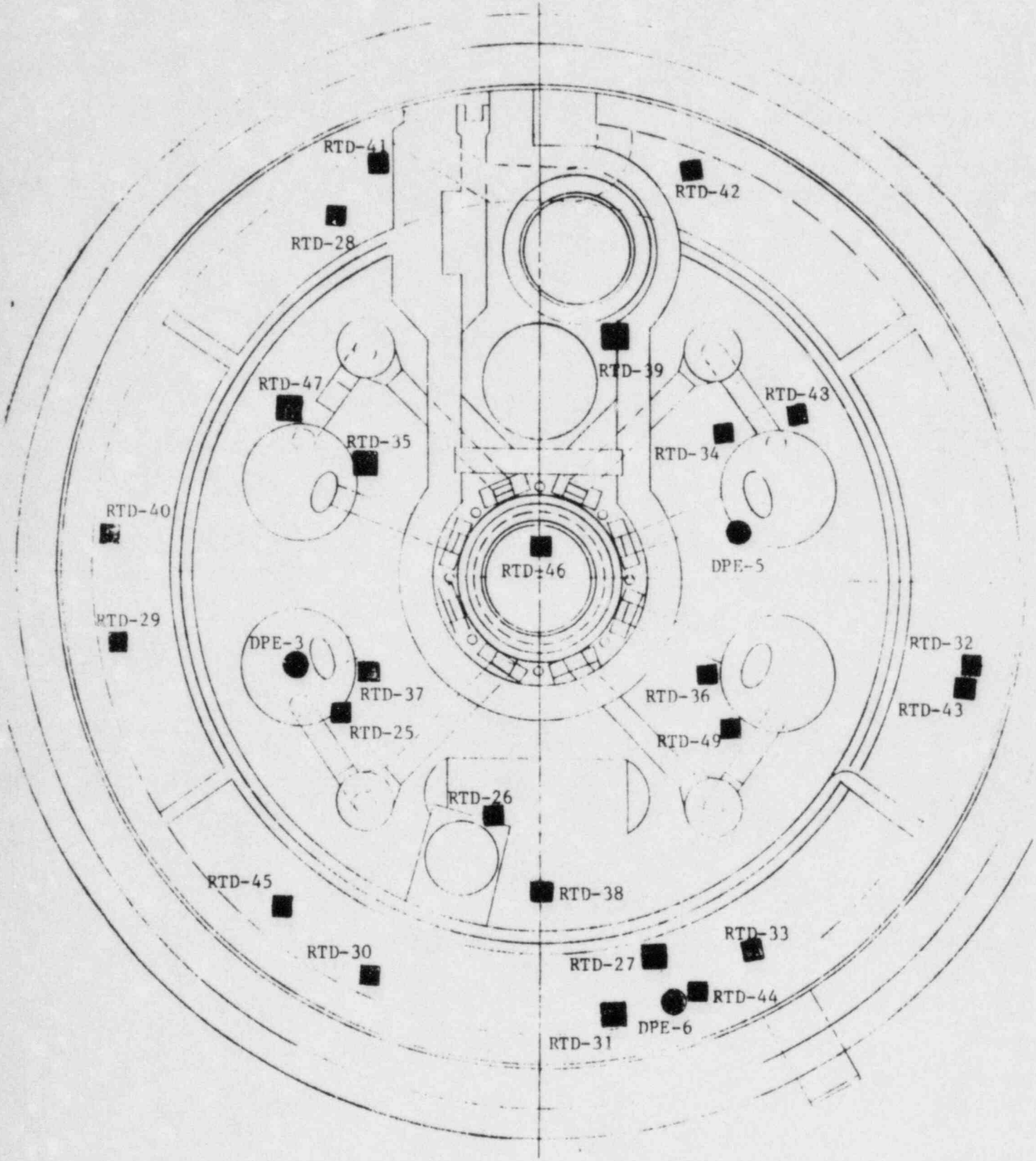

RTD-1
RTD-2
RTD-8
RTD-5
RTD-6
RTD-7
RTD-15
RTD-16
RTD-17
RTD-4
RTD-3
RTD-18
RTD-19
RTD-20
RTD-26
RTD-49
RTD-25
RTD-47
RTD-48
RTD-9
RTD-10
RTD-11
RTD-12
RTD-21
RTD-22
RTD-23
RTD-24
RTD-13
RTD-14
RTD-36
RTD-37
RTD-38
RTD-27
RTD-34
RTD-35
RTD-30
RTD-31
RTD-2
RTD-3
RTD-29
RTD-32
RTD-43
RTD-44
RTD-45
RTD-39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

FIGURE 4



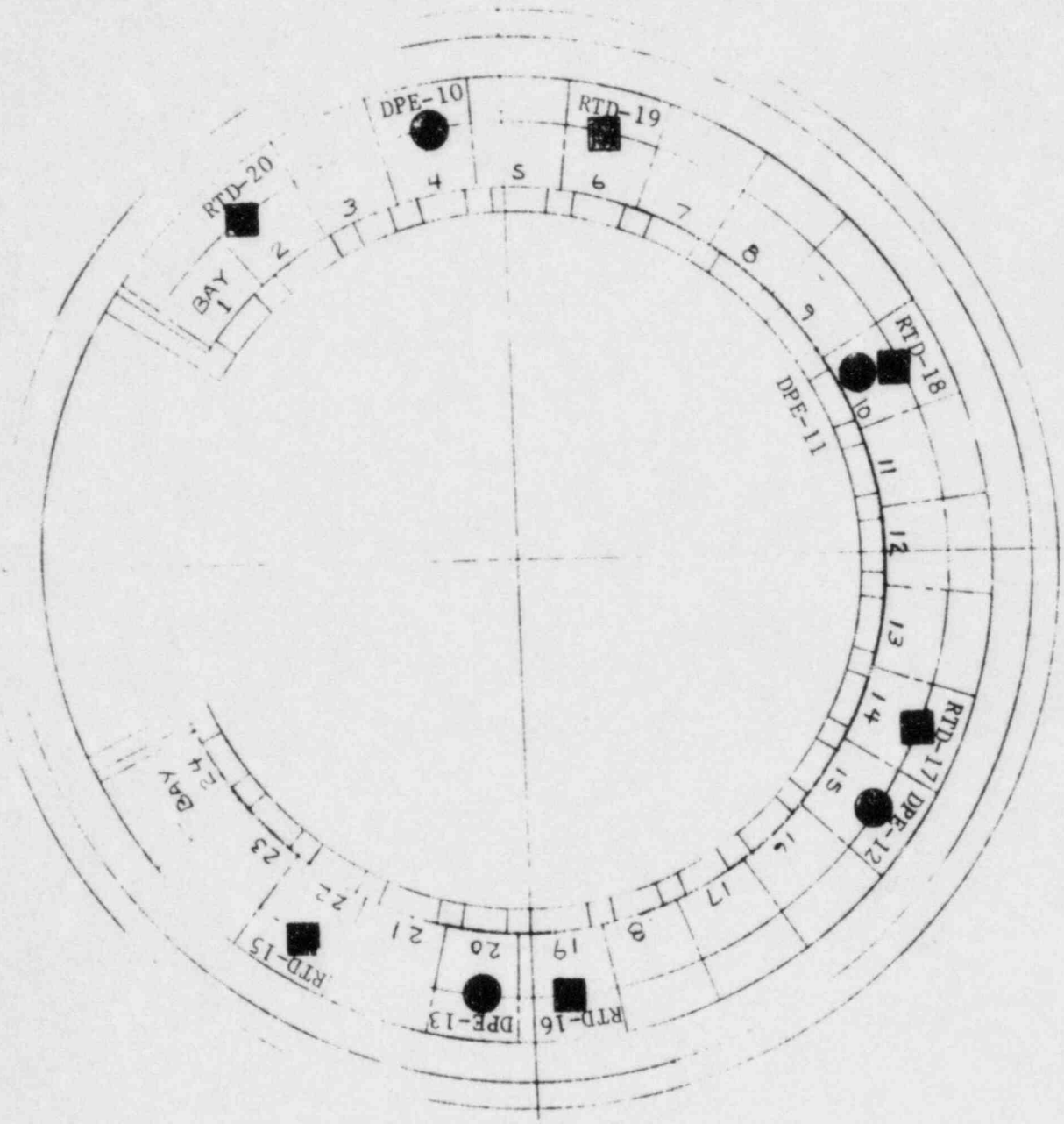
PLAN-UPPER COMPARTMENT
SENSOR LOCATIONS

FIGURE 5



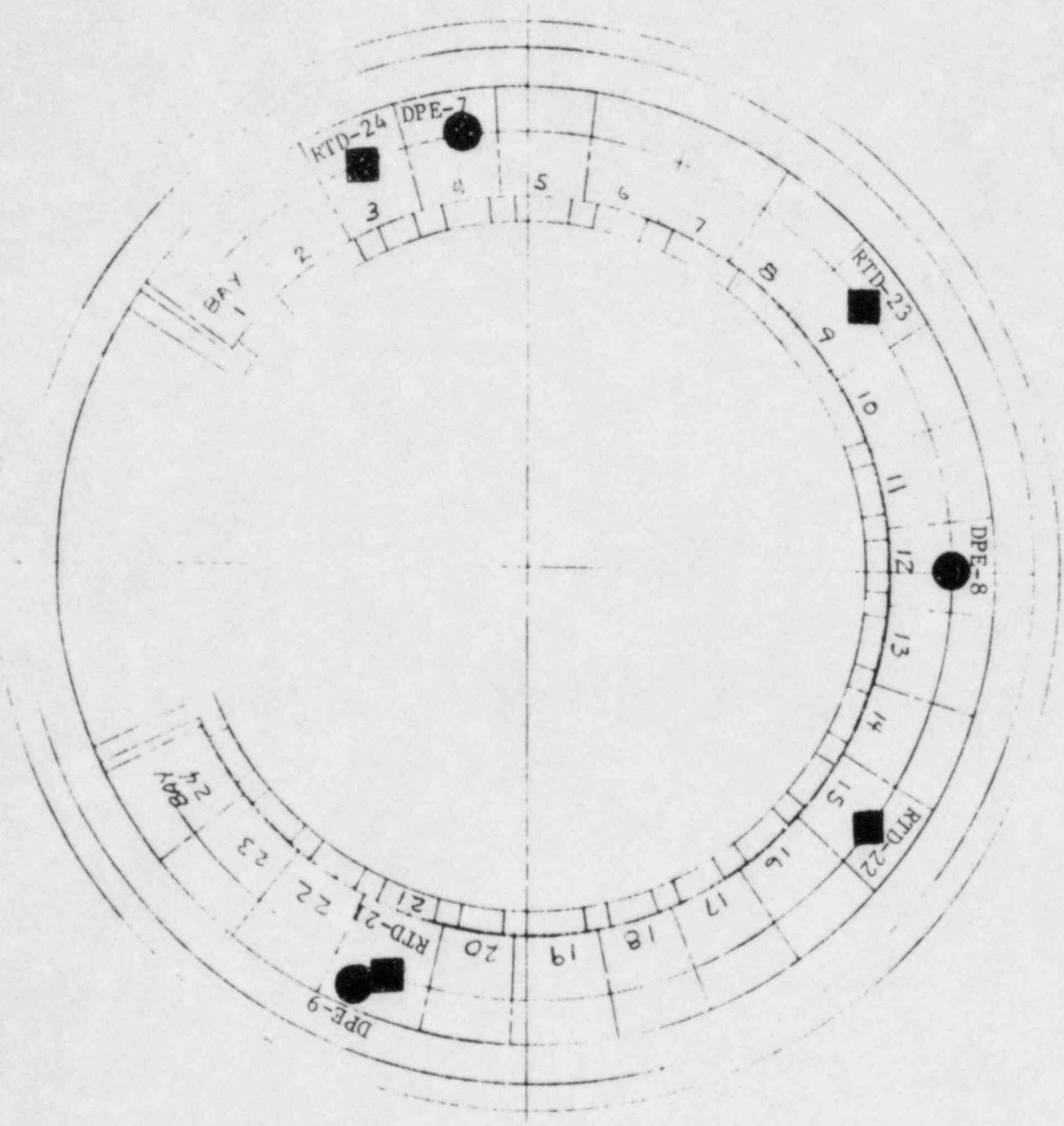
PLAN-LOWER COMPARTMENT
SENSOR LOCATIONS

FIGURE 6



UPP_R ICE COMPARTMENT

FIGURE 7



LOWER ICE COMPARTMENT

FIGURE 8

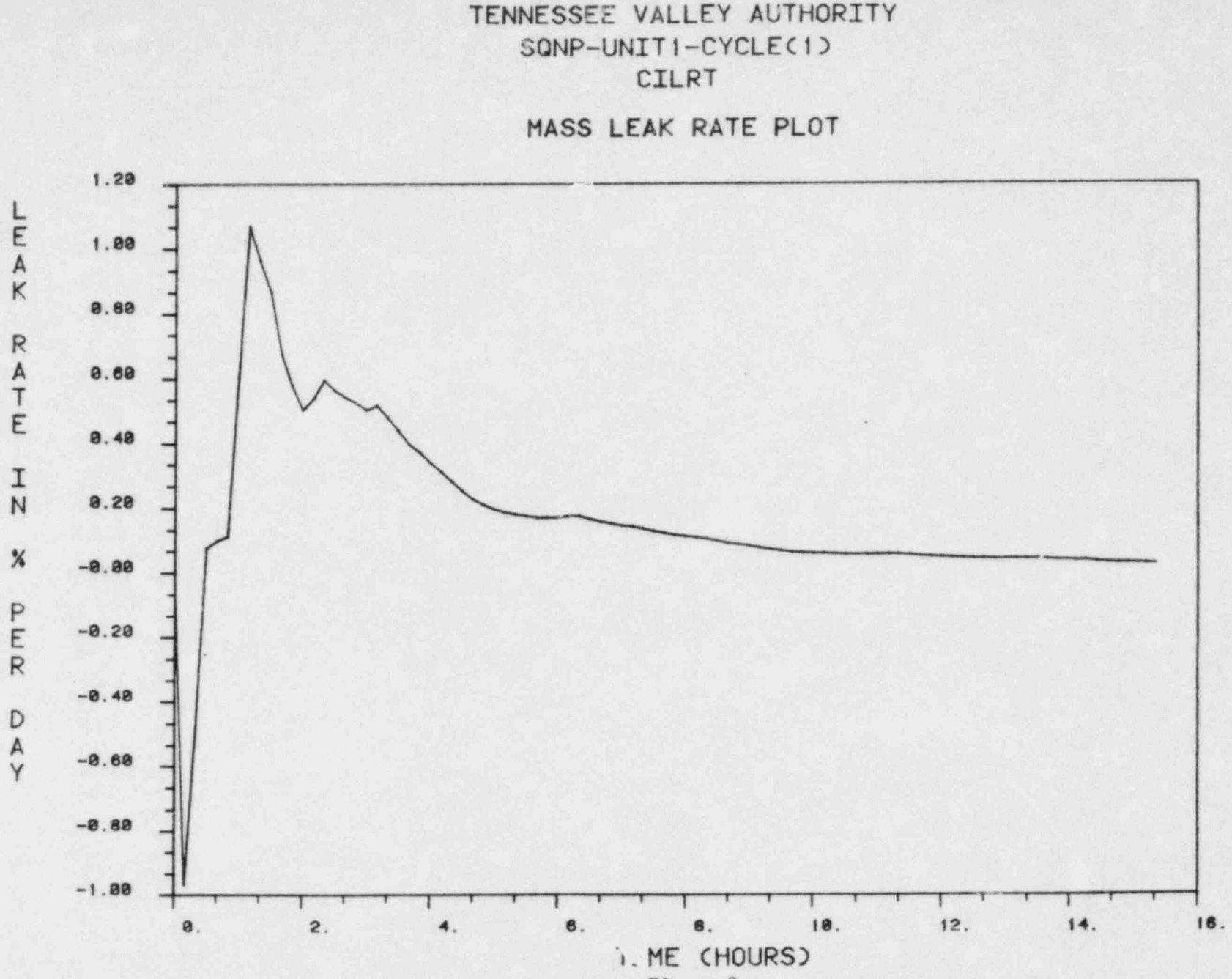

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
CILRT
MASS LEAK RATE PLOT
LEAK RATE IN % PER DAY
1.20
1.00
0.80
0.60
0.40
0.20
-0.00
-0.20
-0.40
-0.60
-0.80
-1.00
0.
2.
4.
6.
8.
10.
12.
14.
16.
TIME (HOURS)

Figure 9

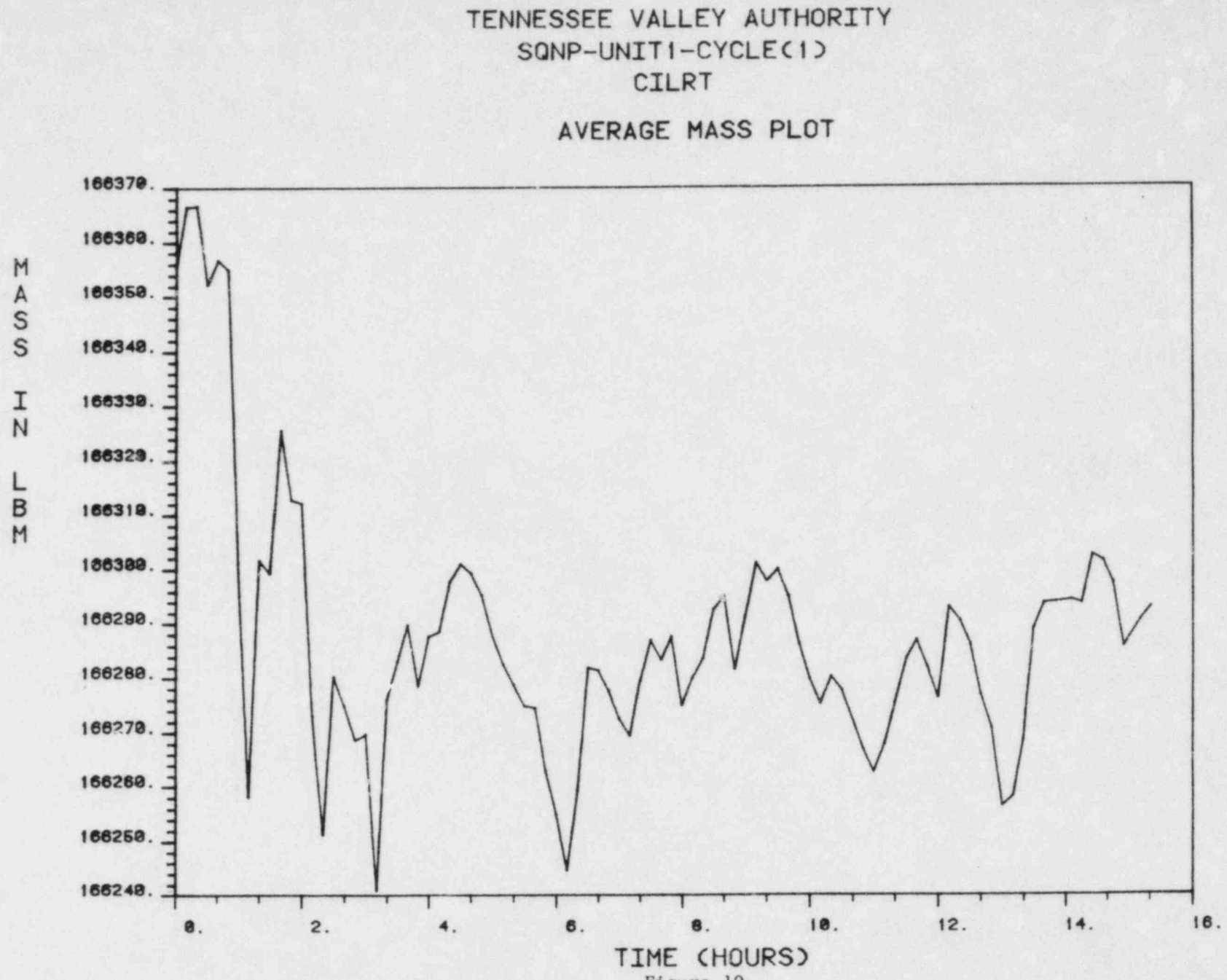

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
CILRT
AVERAGE MASS PLOT
MASS IN LBM
166370.
166360.
166350.
166340.
166330.
166320.
166310.
166300.
166290.
166280.
166270.
166260.
166250.
166240.
0.
2.
4.
6.
8.
10.
12.
14.
16.
TIME (HOURS)

Figure 10

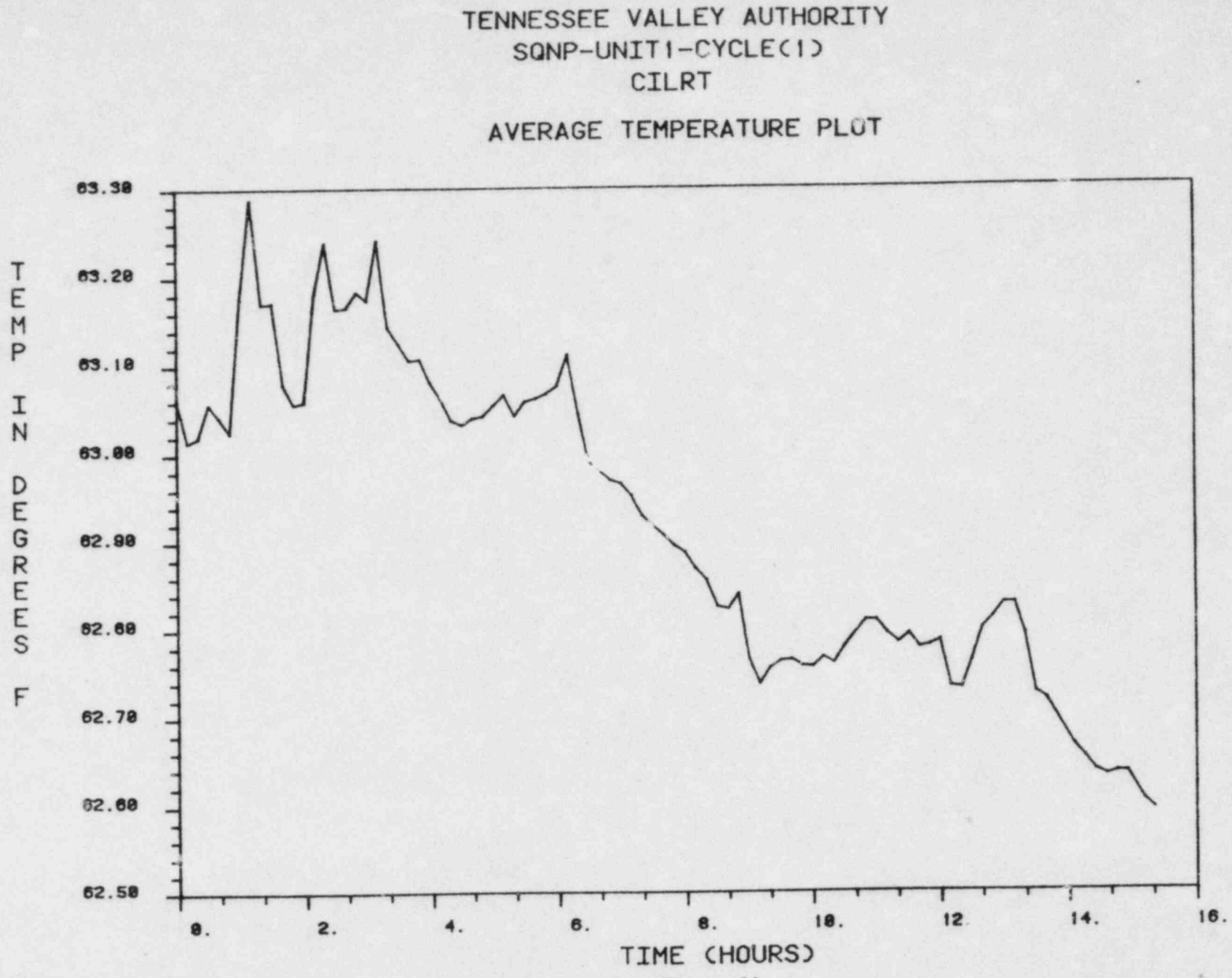

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
CILRT
AVERAGE TEMPERATURE PLOT
TEMP IN DEGREES F
63.30
63.20
63.10
63.00
62.90
62.80
62.70
62.60
62.50
0.
2.
4.
6.
8.
10.
12.
14.
16.
TIME (HOURS)

Figure 11

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
CILRT

AVERAGE PRESSURE PLOT

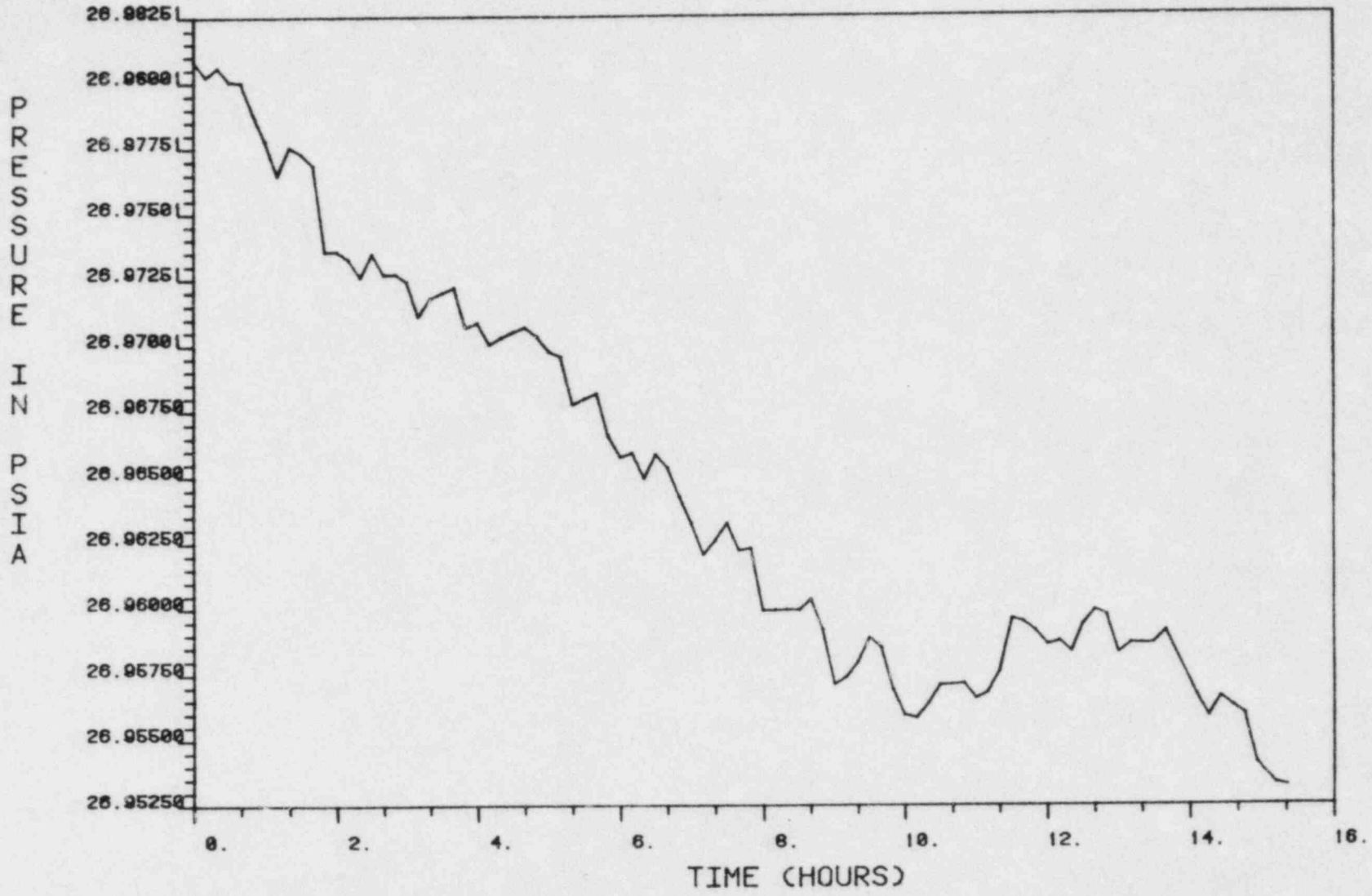


Figure 12

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
CILRT

TOTAL TIME LEAK RATE PLOT

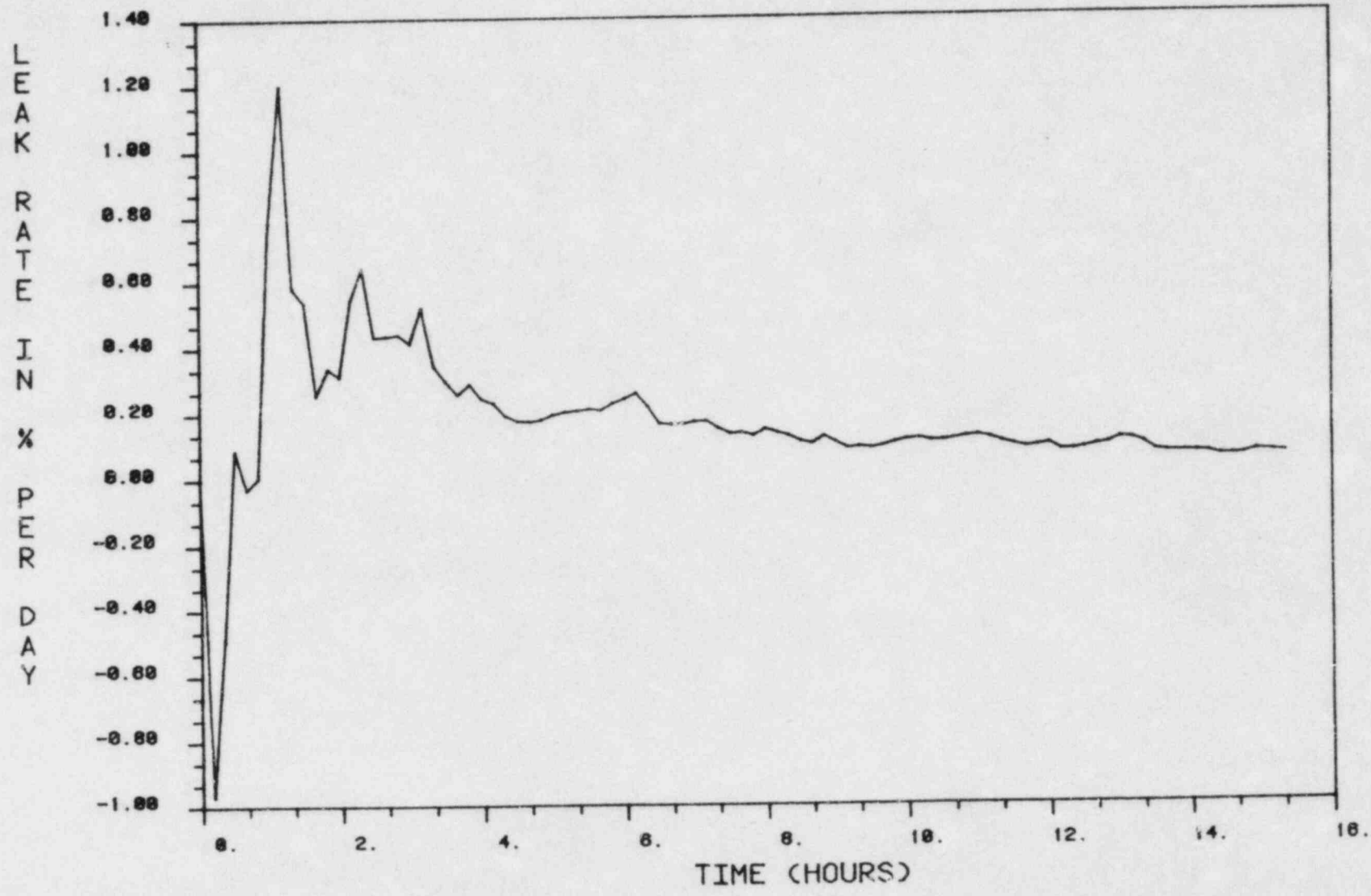


Figure 13

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
CILRT

UPPER TEMPERATURE PLOT

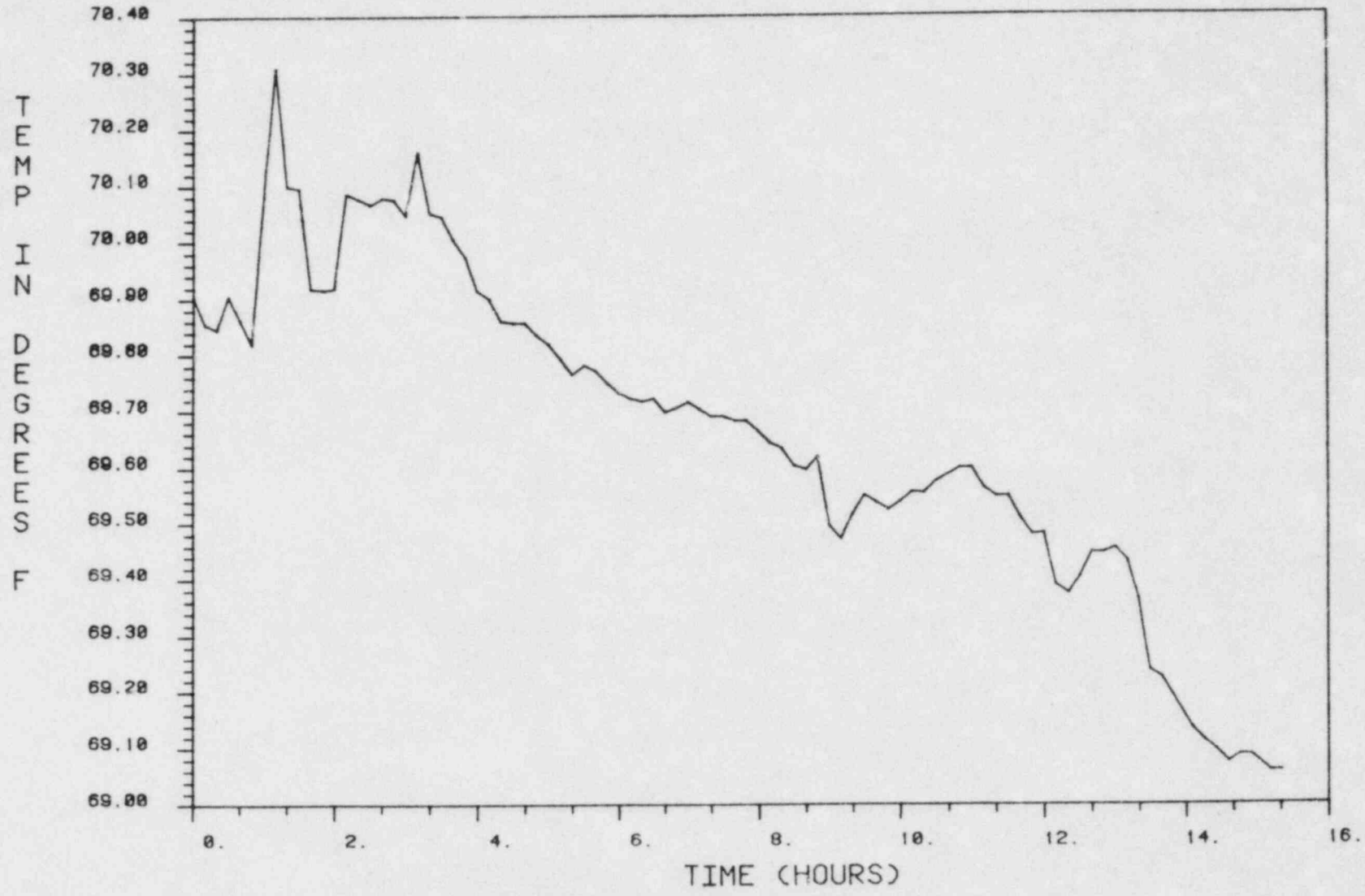


Figure 14

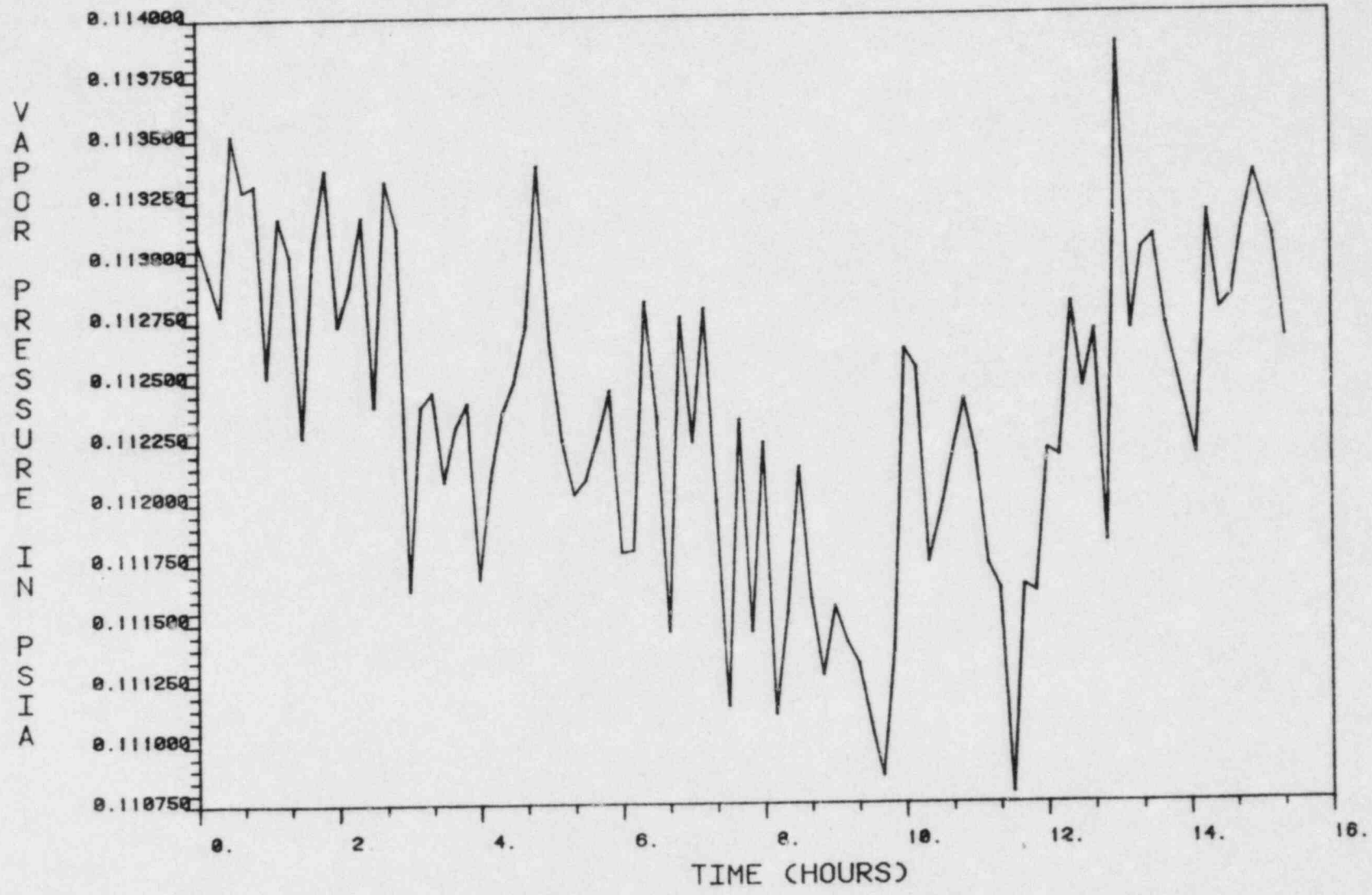

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
CILRT
UPPER VAPOR PRESSURE PLOT
VAPOR PRESSURE IN PSIA
0.114000
0.113750
0.113500
0.113250
0.113000
0.112750
0.112500
0.112250
0.112000
0.111750
0.111500
0.111250
0.111000
0.110750
0.
2.
4.
6.
8.
10.
12.
14.
16.
TIME (HOURS)

Figure 15

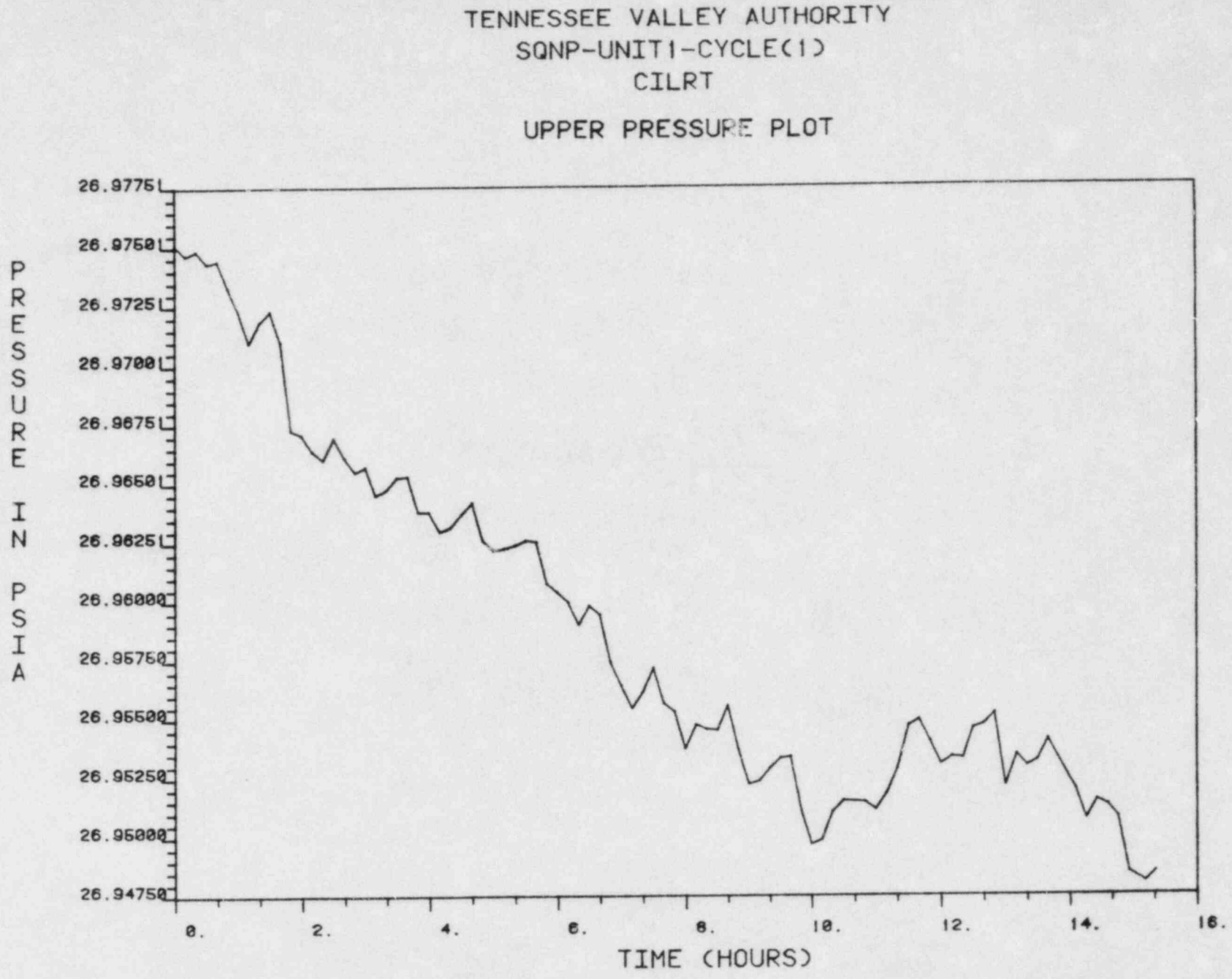

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
CILRT
UPPER PRESSURE PLOT
PRESSURE IN PSIA
26.97750
26.97500
26.97250
26.97000
26.96750
26.96500
26.96250
26.96000
26.95750
26.95500
26.95250
26.95000
26.94750
0.
2.
4.
6.
8.
10.
12.
14.
16.
TIME (HOURS)

Figure 16

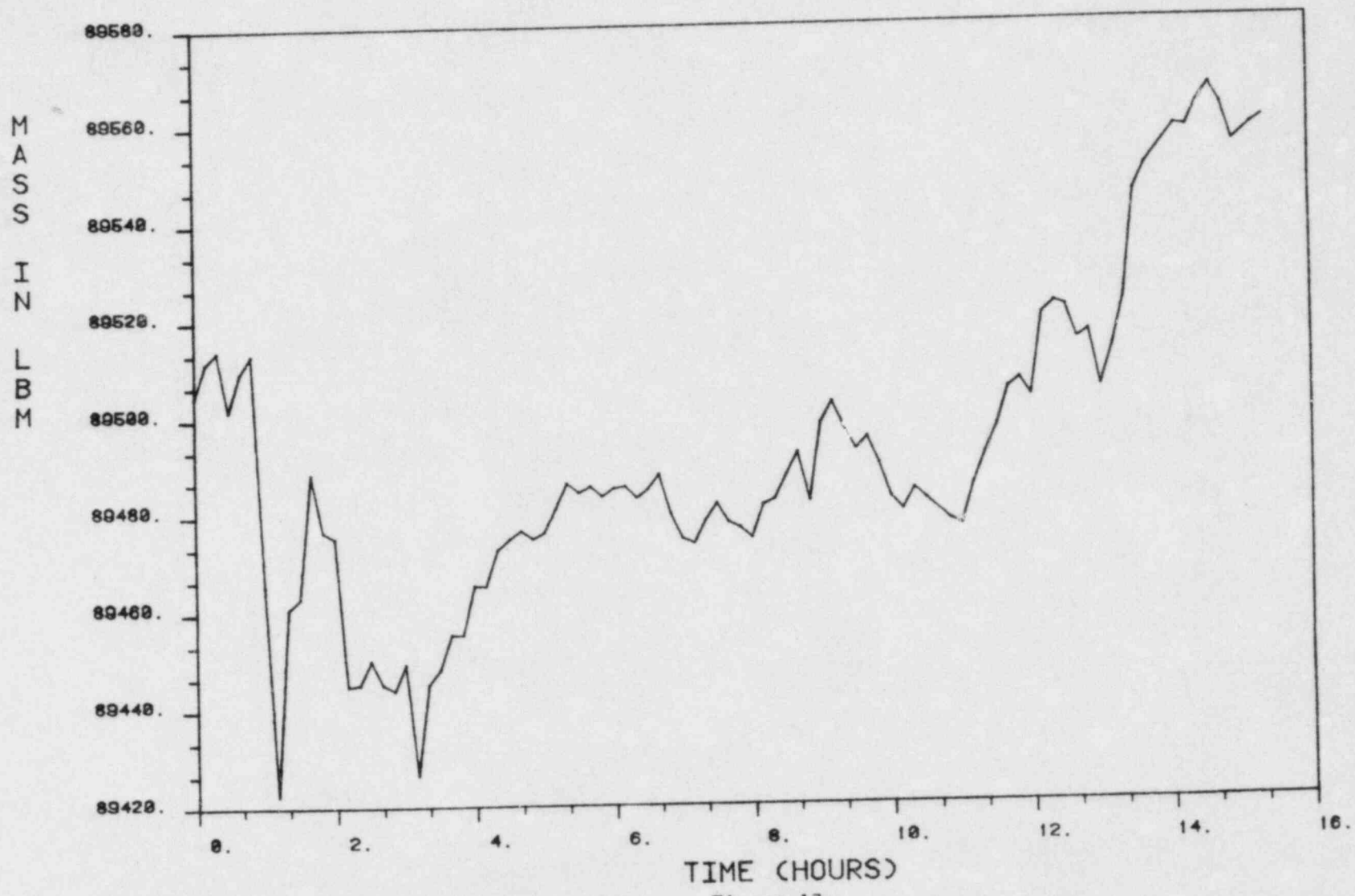

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
CILRT
UPPER MASS PLOT
MASS IN LBM
89580.
89560.
89540.
89520.
89500.
89480.
89460.
89440.
89420.
0.
2.
4.
6.
8.
10.
12.
14.
16.
TIME (HOURS)

Figure 17

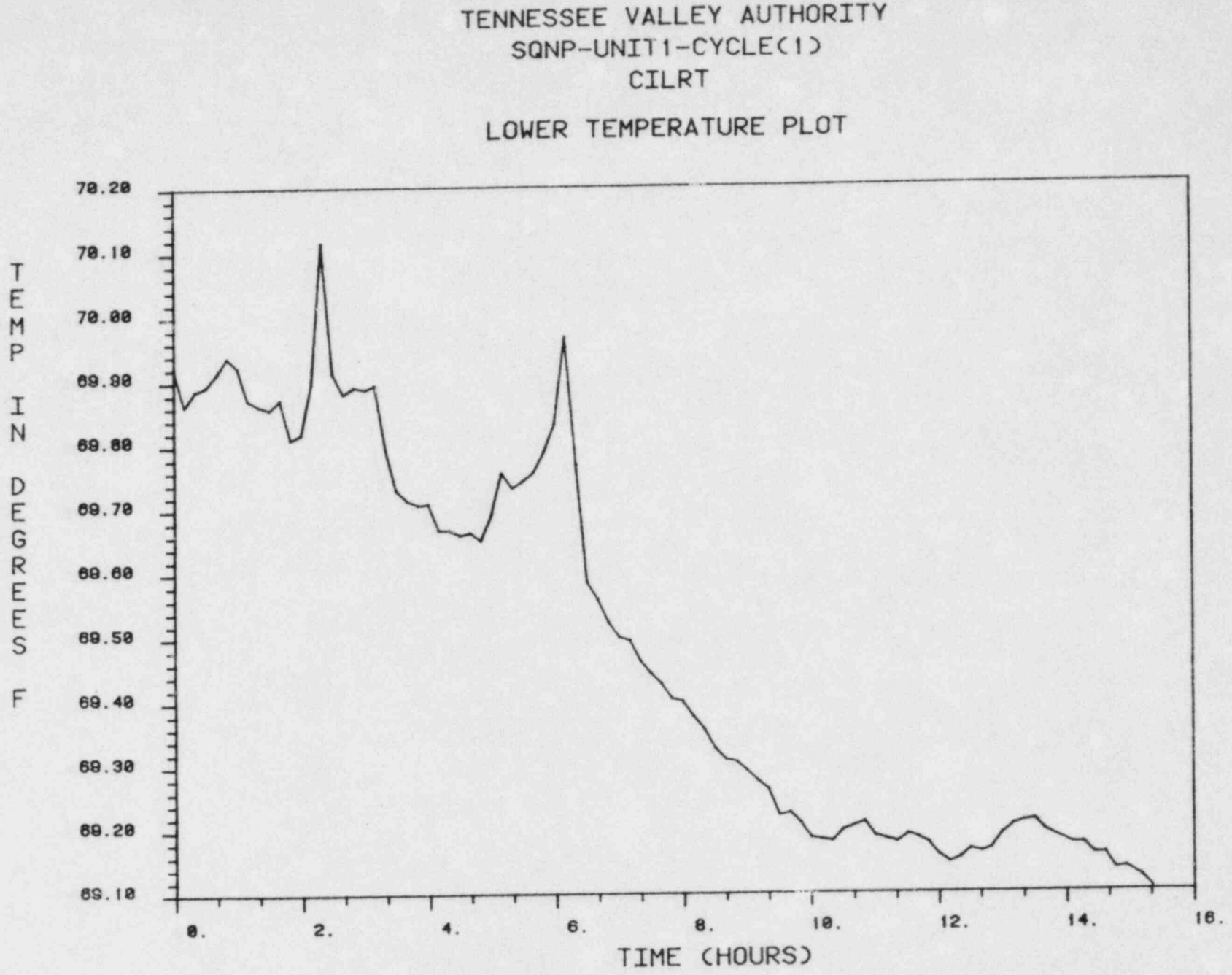

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
CILRT
LOWER TEMPERATURE PLOT
TEMP IN DEGREES F
70.20
70.10
70.00
69.90
69.80
69.70
69.60
69.50
69.40
69.30
69.20
69.10
0.
2.
4.
6.
8.
10.
12.
14.
16.
TIME (HOURS)

Figure 18

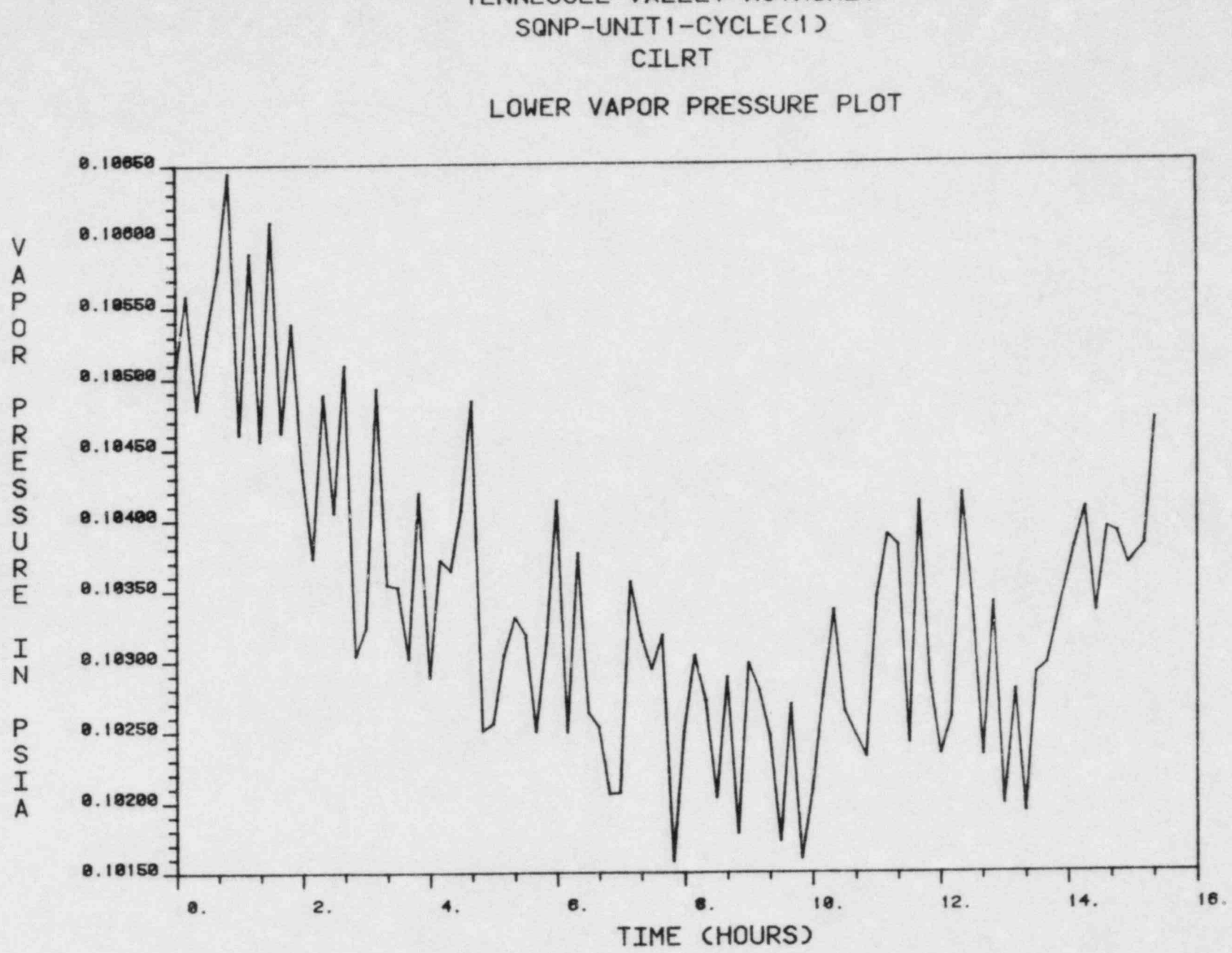

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
CILRT
LOWER VAPOR PRESSURE PLOT
VAPOR PRESSURE IN PSIA
0.10650
0.10600
0.10550
0.10500
0.10450
0.10400
0.10350
0.10300
0.10250
0.10200
0.10150
0.
2.
4.
6.
8.
10.
12.
14.
16.
TIME (HOURS)

Figure 19

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
CILRT

LOWER PRESSURE PLOT

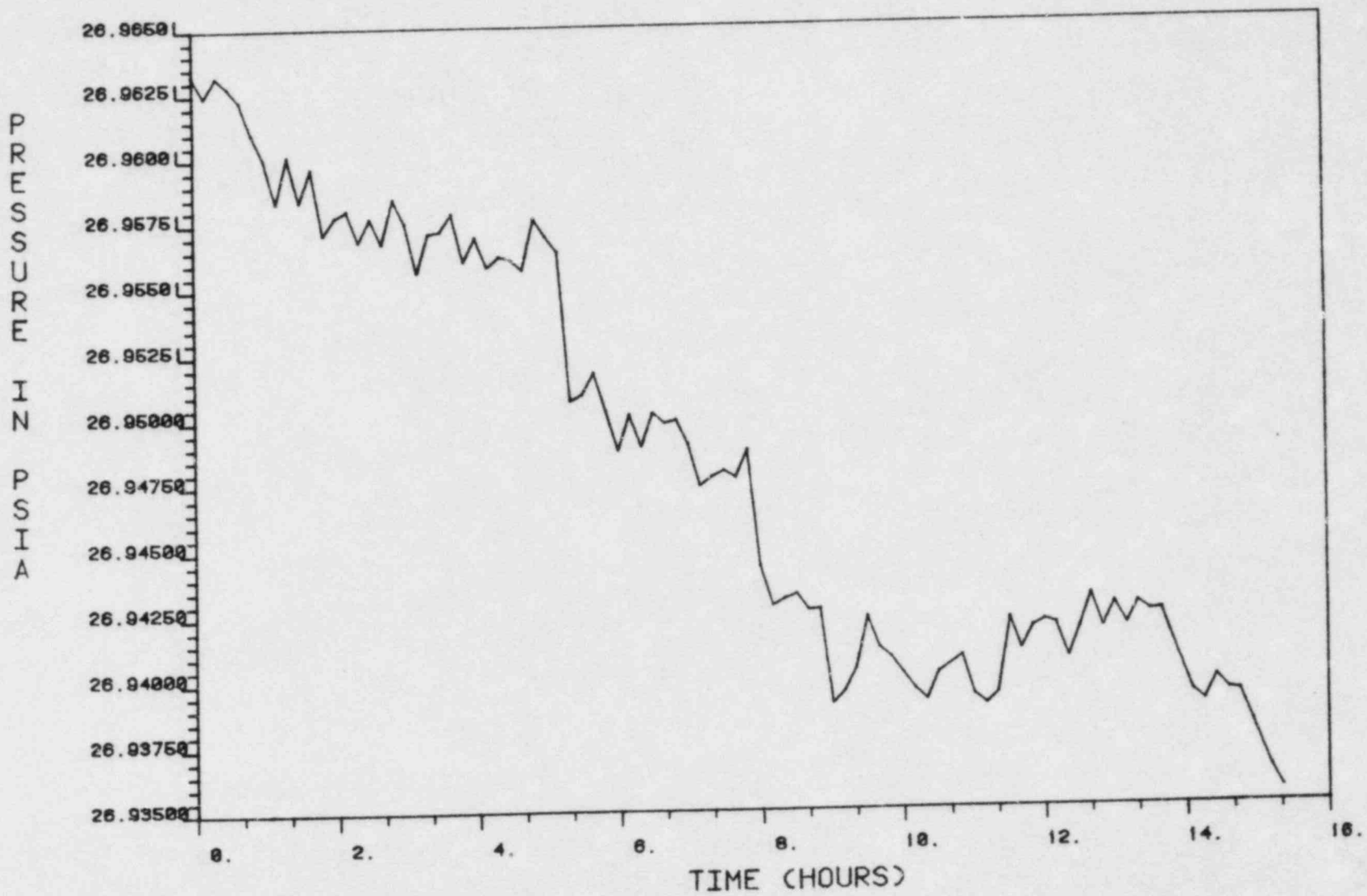


Figure 20

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
CILRT

LOWER MASS PLOT

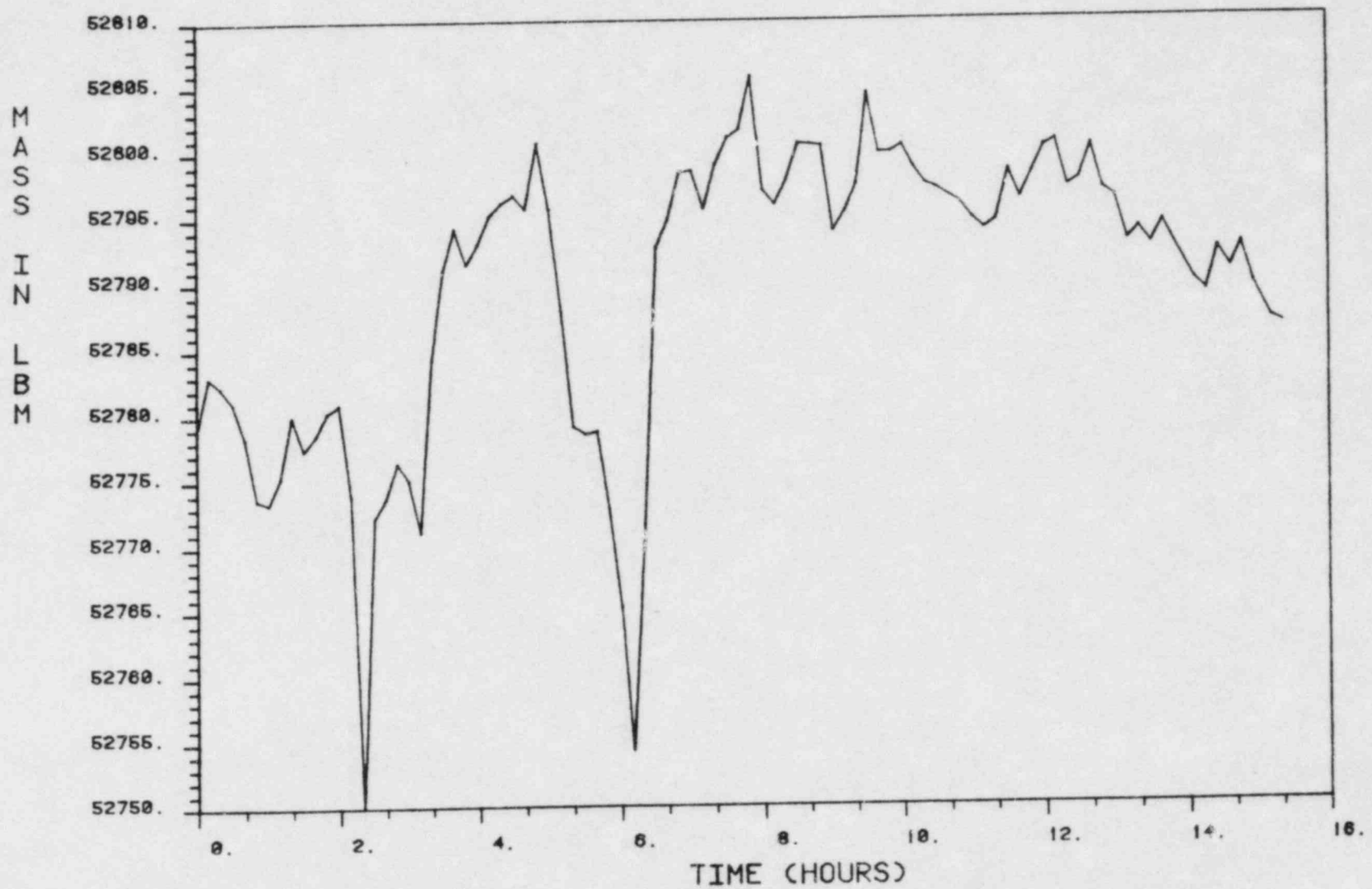


Figure 21

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
CILRT

ICE-UPPER TEMPERATURE PLOT

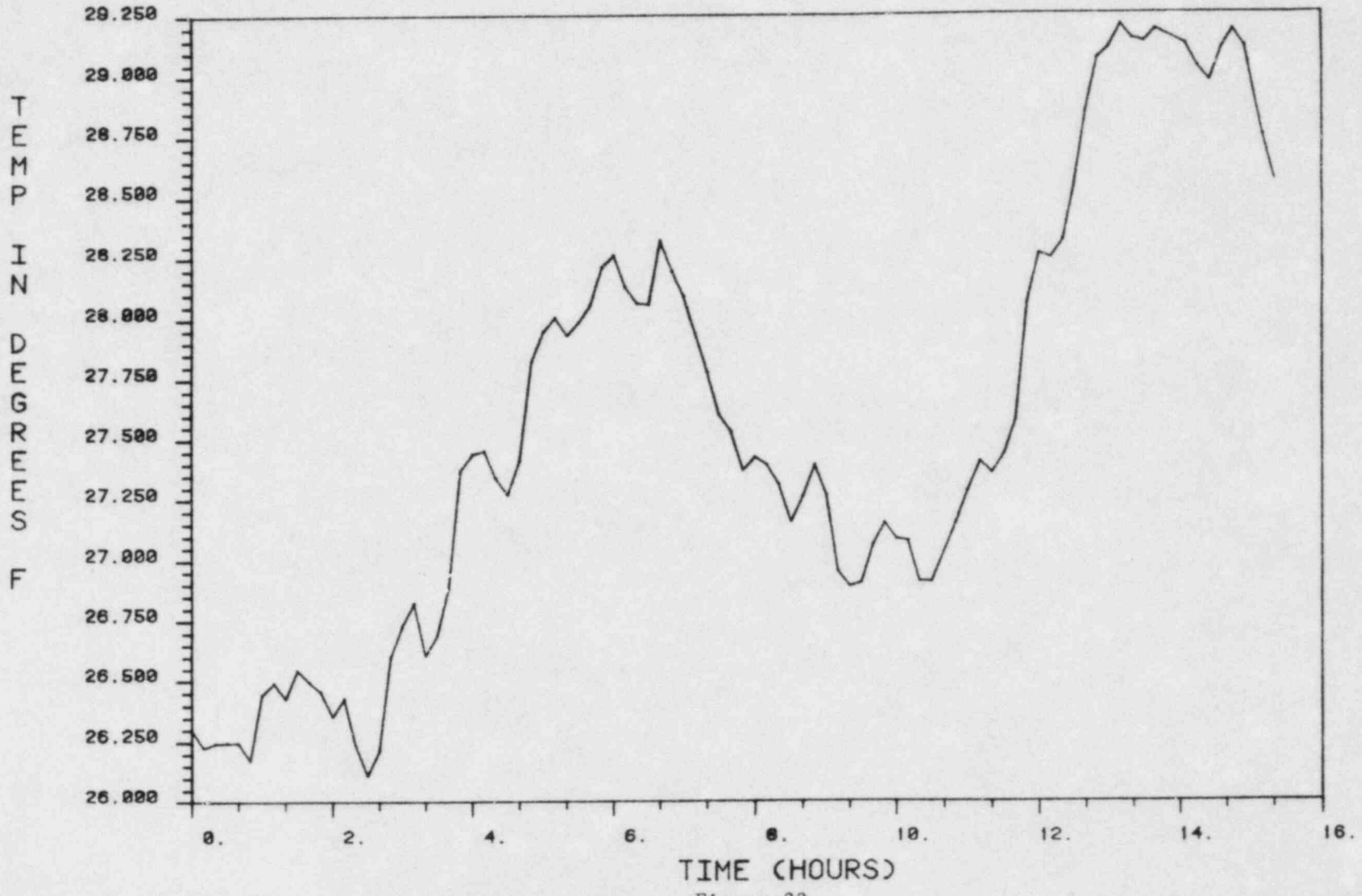


Figure 22

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
CILRT

ICE-UPPER VAPOR PRESSURE PLOT

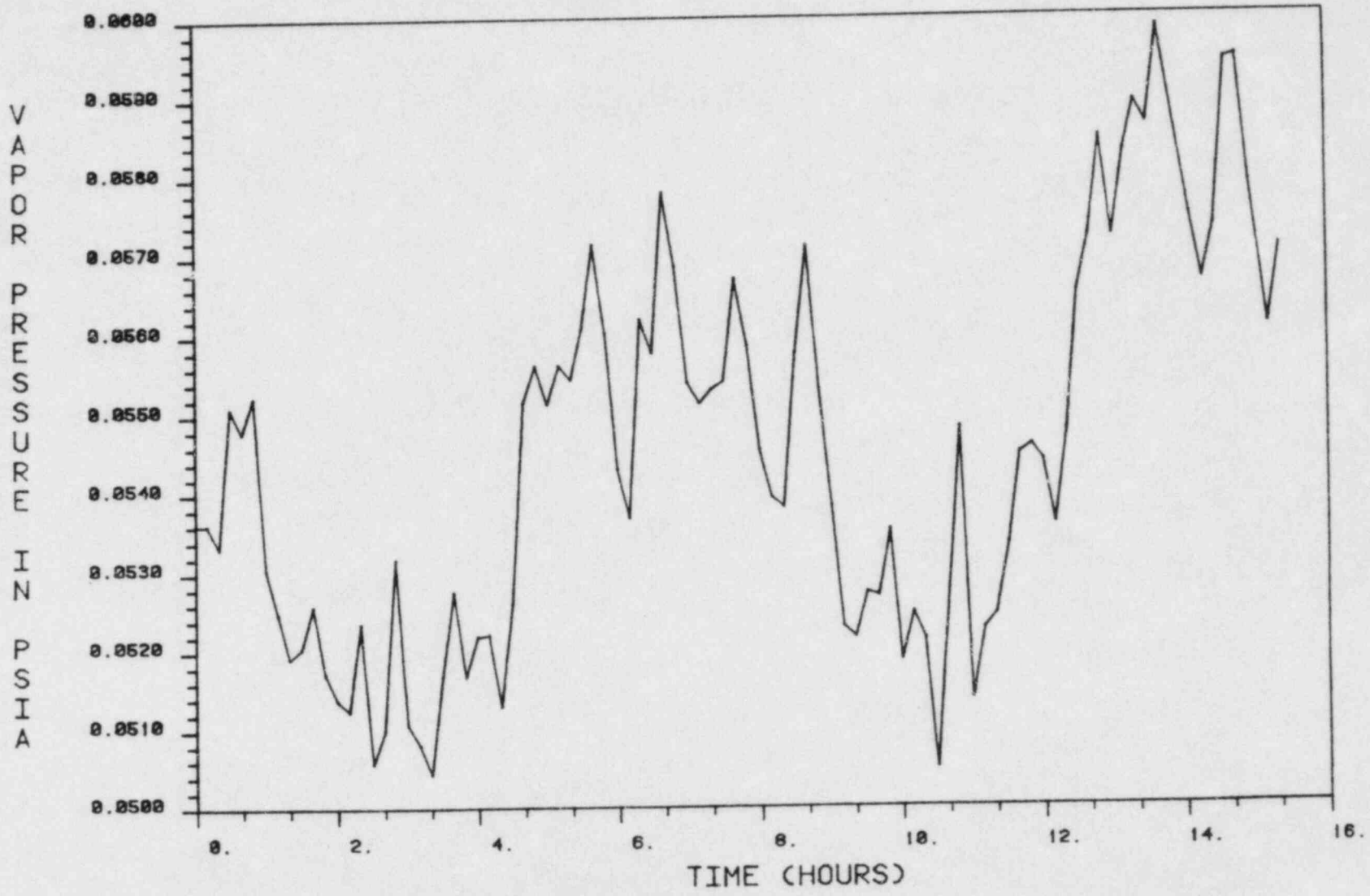


Figure 23

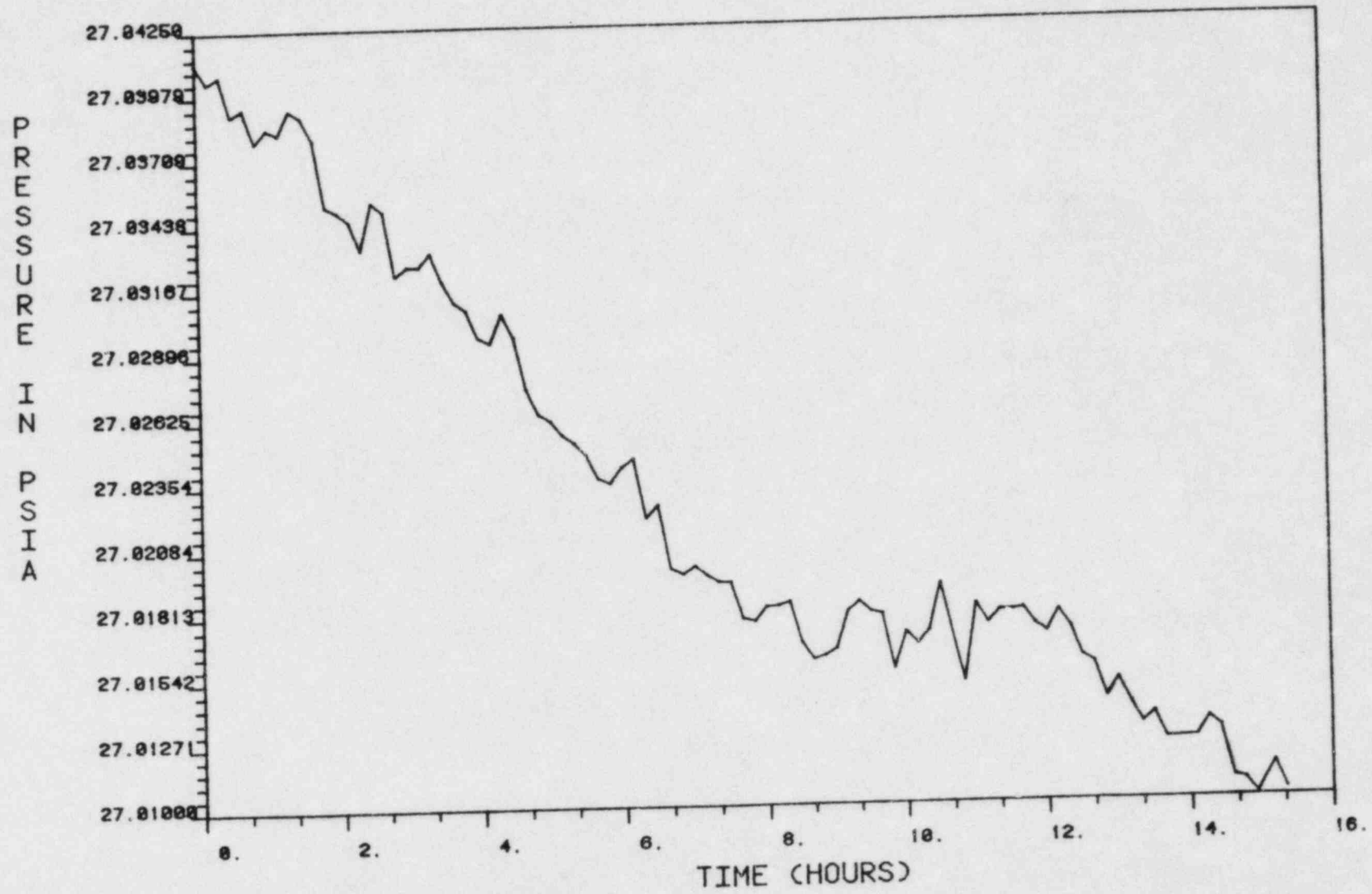

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
CILRT
ICE-UPPER PRESSURE PLOT
PRESSURE IN PSIA
27.04250
27.03979
27.03709
27.03438
27.03167
27.02896
27.02625
27.02354
27.02084
27.01813
27.01542
27.01271
27.01000
0.
2.
4.
6.
8.
10.
12.
14.
16.
TIME (HOURS)

Figure 24

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
CILRT

ICE-UPPER MASS PLOT

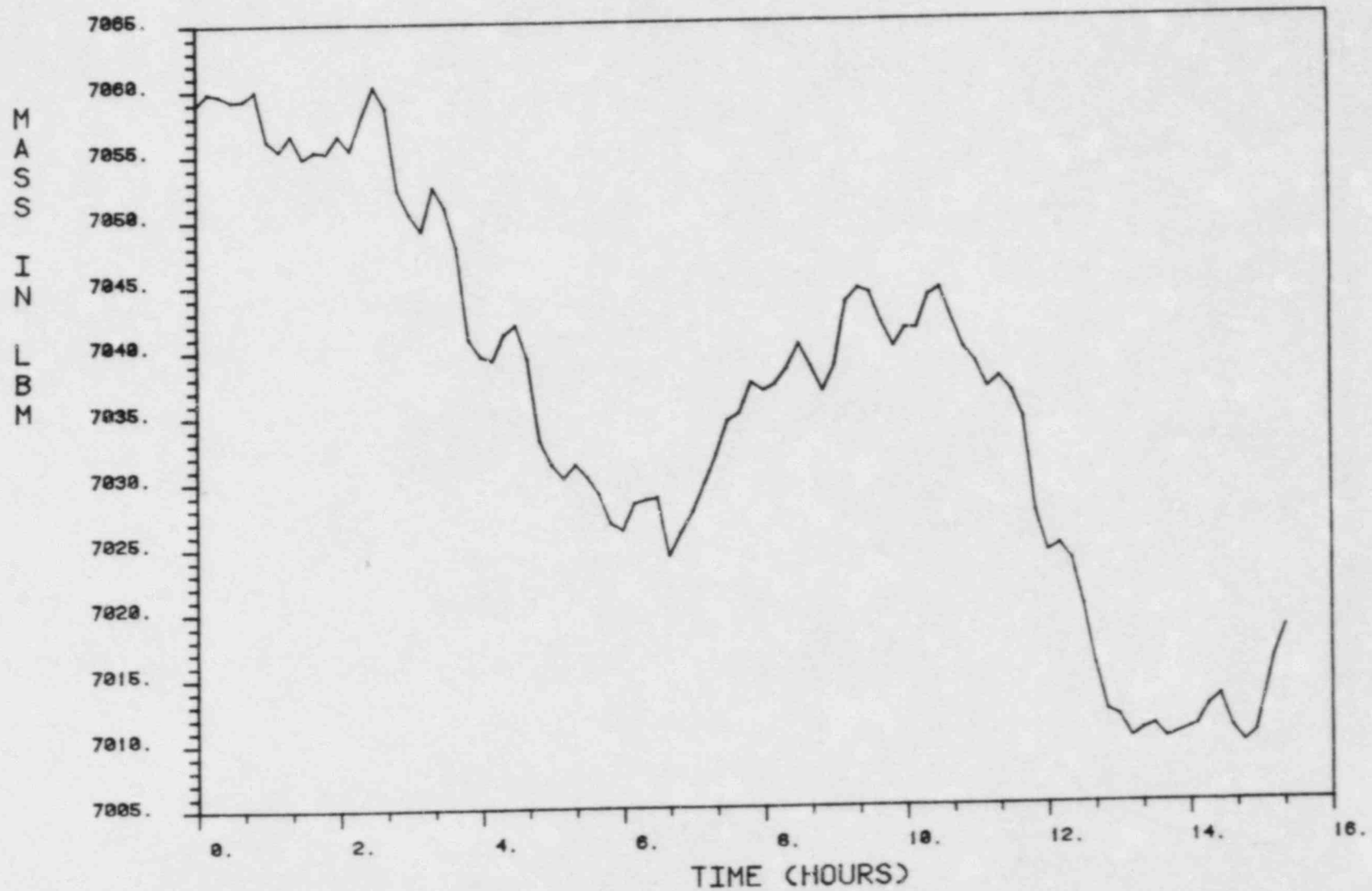


Figure 25

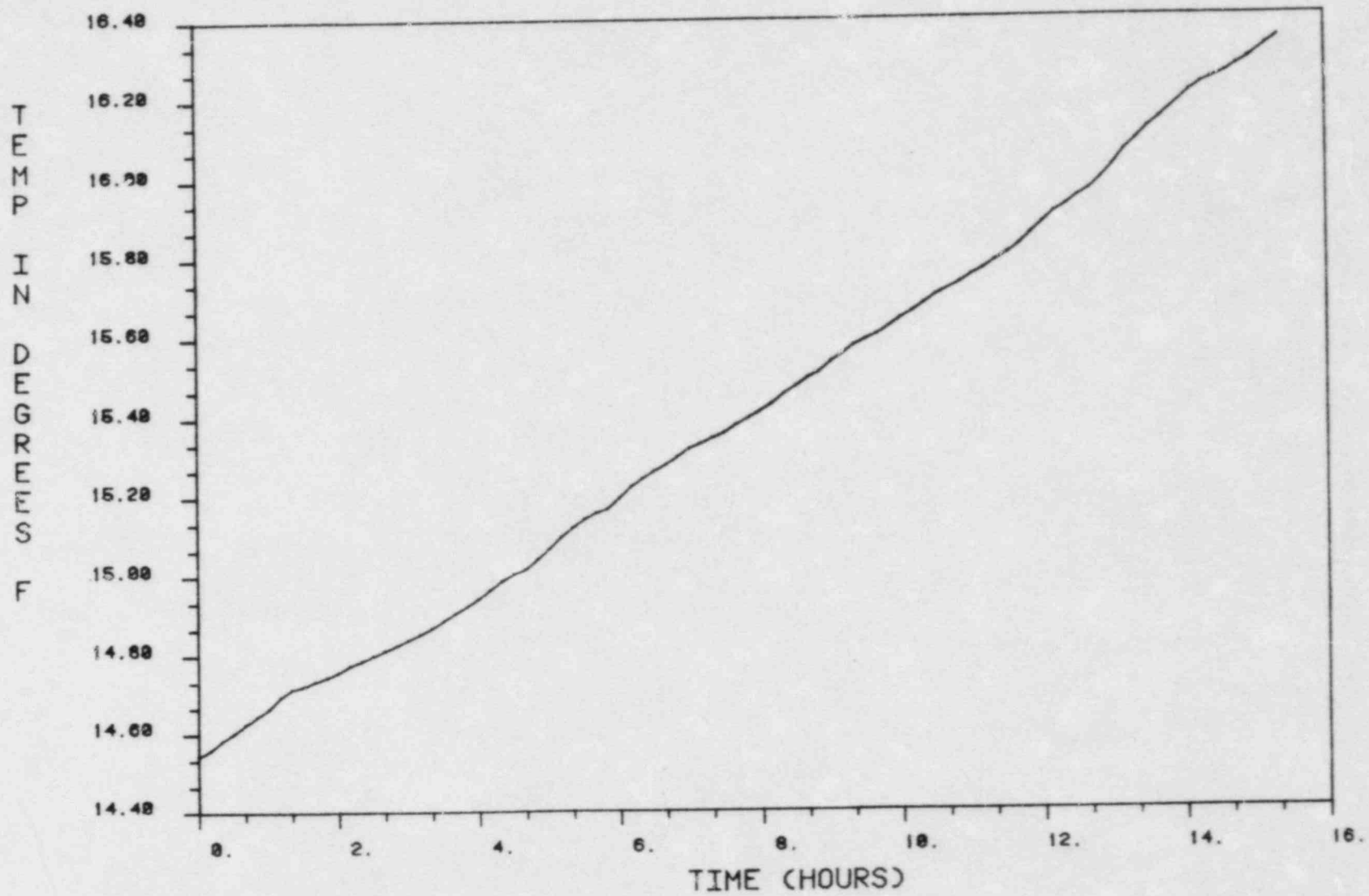

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
CILRT
ICE-LOWER TEMPERATURE PLOT
TEMP IN DEGREES F
16.40
16.20
16.00
15.80
15.60
15.40
15.20
15.00
14.80
14.60
14.40
0.
2.
4.
6.
8.
10.
12.
14.
16.
TIME (HOURS)

Figure 26

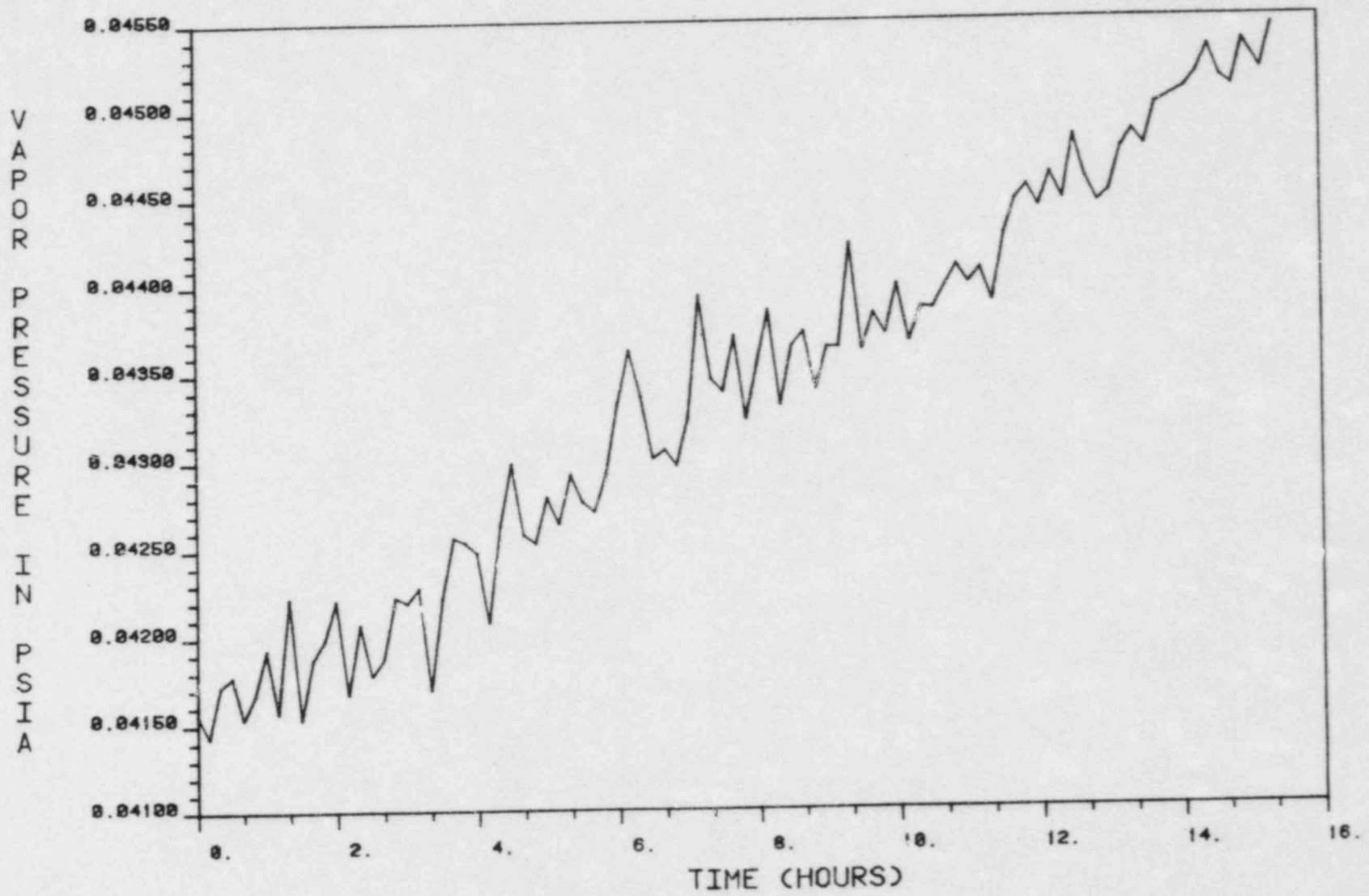

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
CILRT
ICE-LOWER VAPOR PRESSURE PLOT
VAPOR PRESSURE IN PSIA
0.04550
0.04500
0.04450
0.04400
0.04350
0.04300
0.04250
0.04200
0.04150
0.04100
0.
2.
4.
6.
8.
10.
12.
14.
16.
TIME (HOURS)

Figure 27

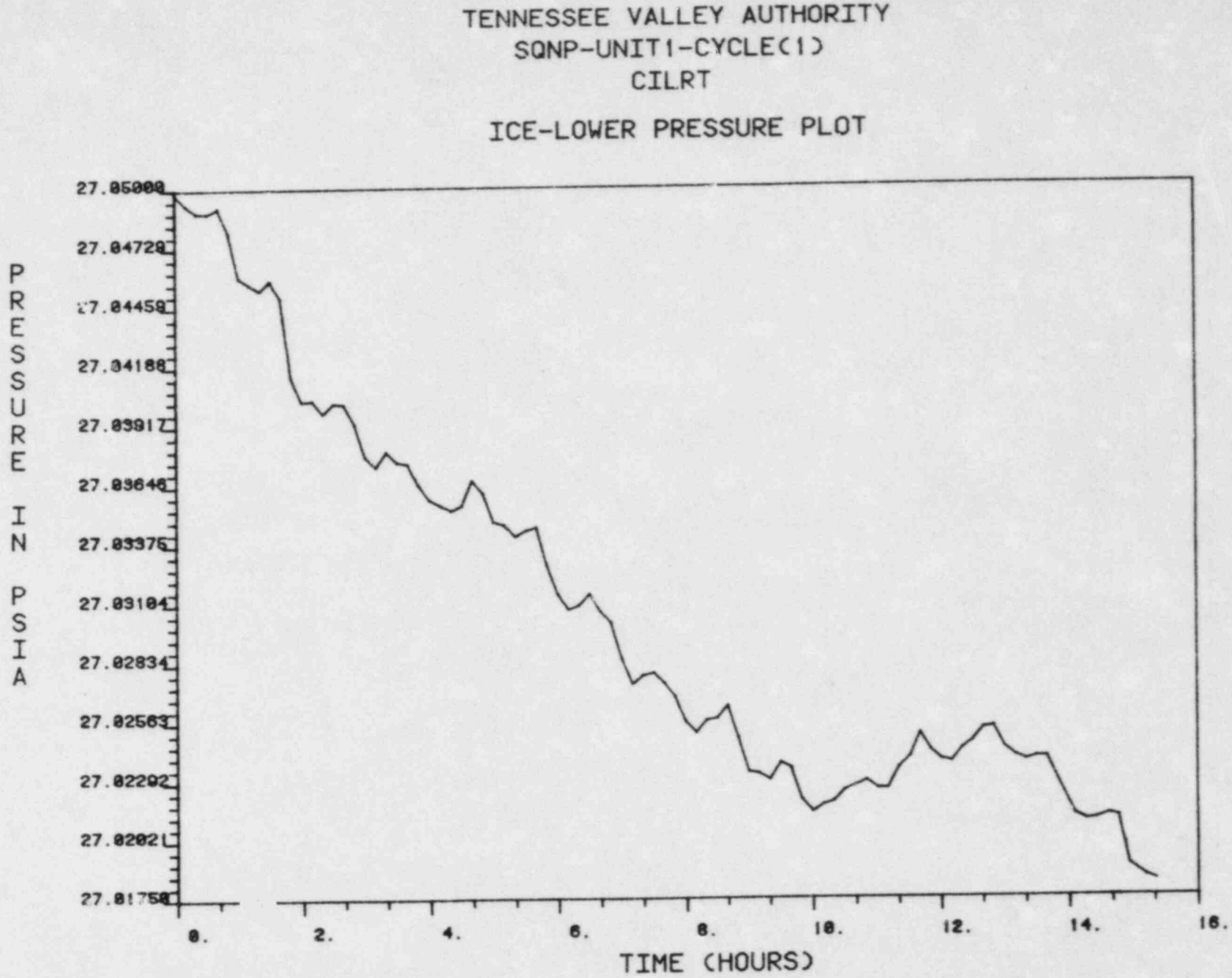

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
CILRT
ICE-LOWER PRESSURE PLOT
PRESSURE IN PSIA
27.05000
27.04729
27.04458
27.04188
27.03917
27.03646
27.03375
27.03104
27.02834
27.02563
27.02292
27.02021
27.01750
0.
2.
4.
6.
8.
10.
12.
14.
16.
TIME (HOURS)

Figure 28

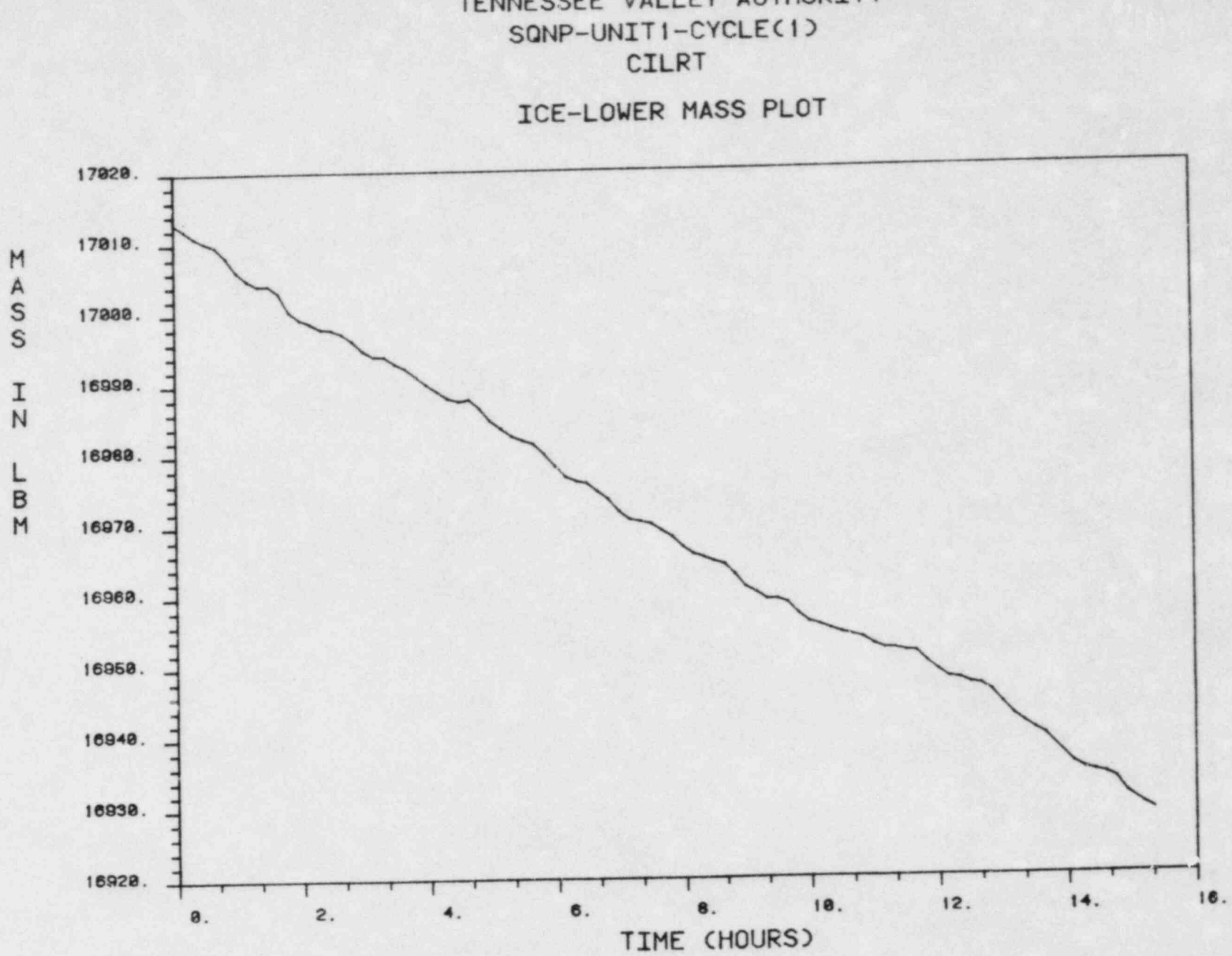

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
CILRT
ICE-LOWER MASS PLOT
MASS IN LBM
17020.
17010.
17000.
16990.
16980.
16970.
16960.
16950.
16940.
16930.
16920.
0.
2.
4.
6.
8.
10.
12.
14.
16.
TIME (HOURS)

Figure 29

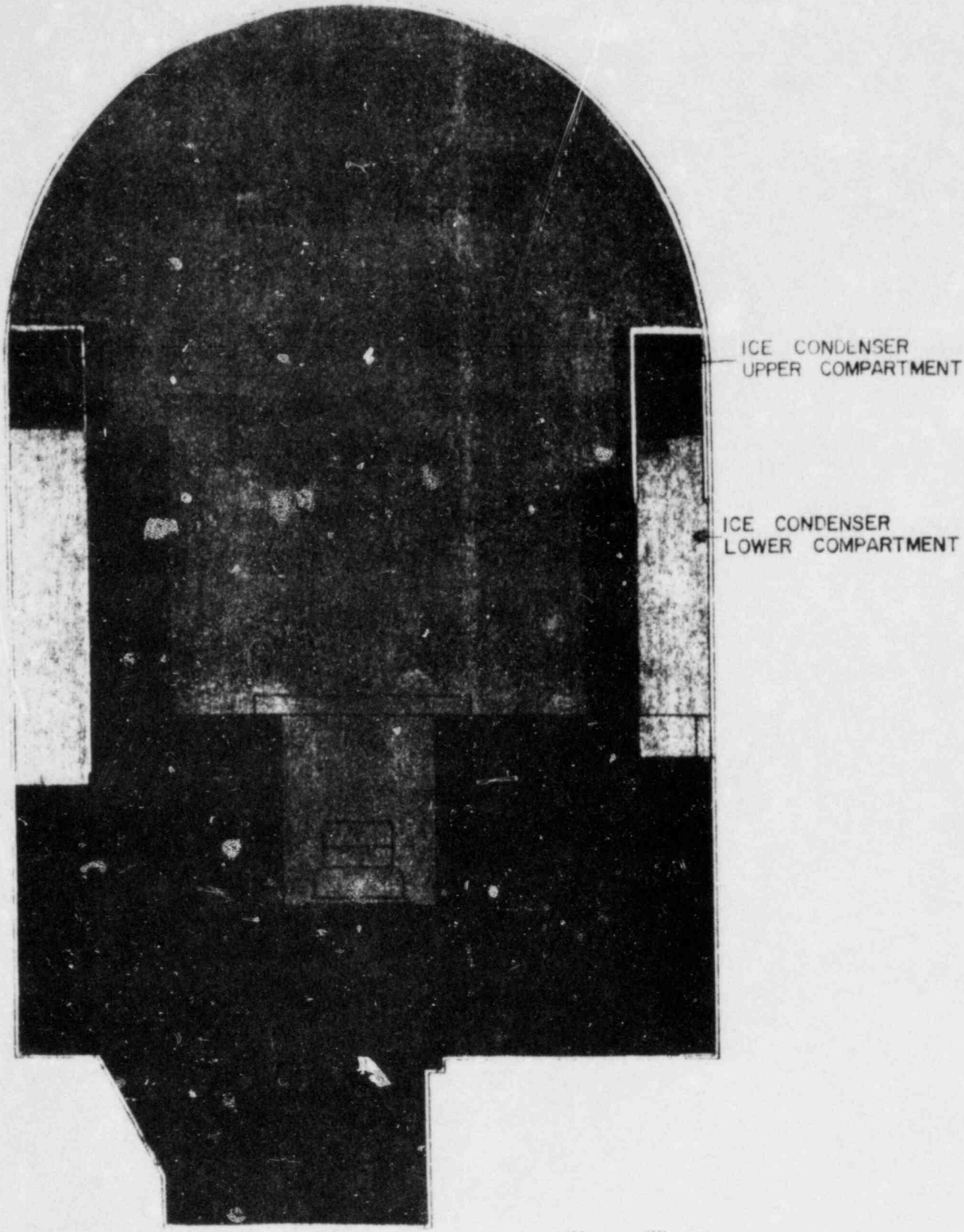

ICE CONDENSER
UPPER COMPARTMENT
ICE CONDENSER
LOWER COMPARTMENT

Figure 30

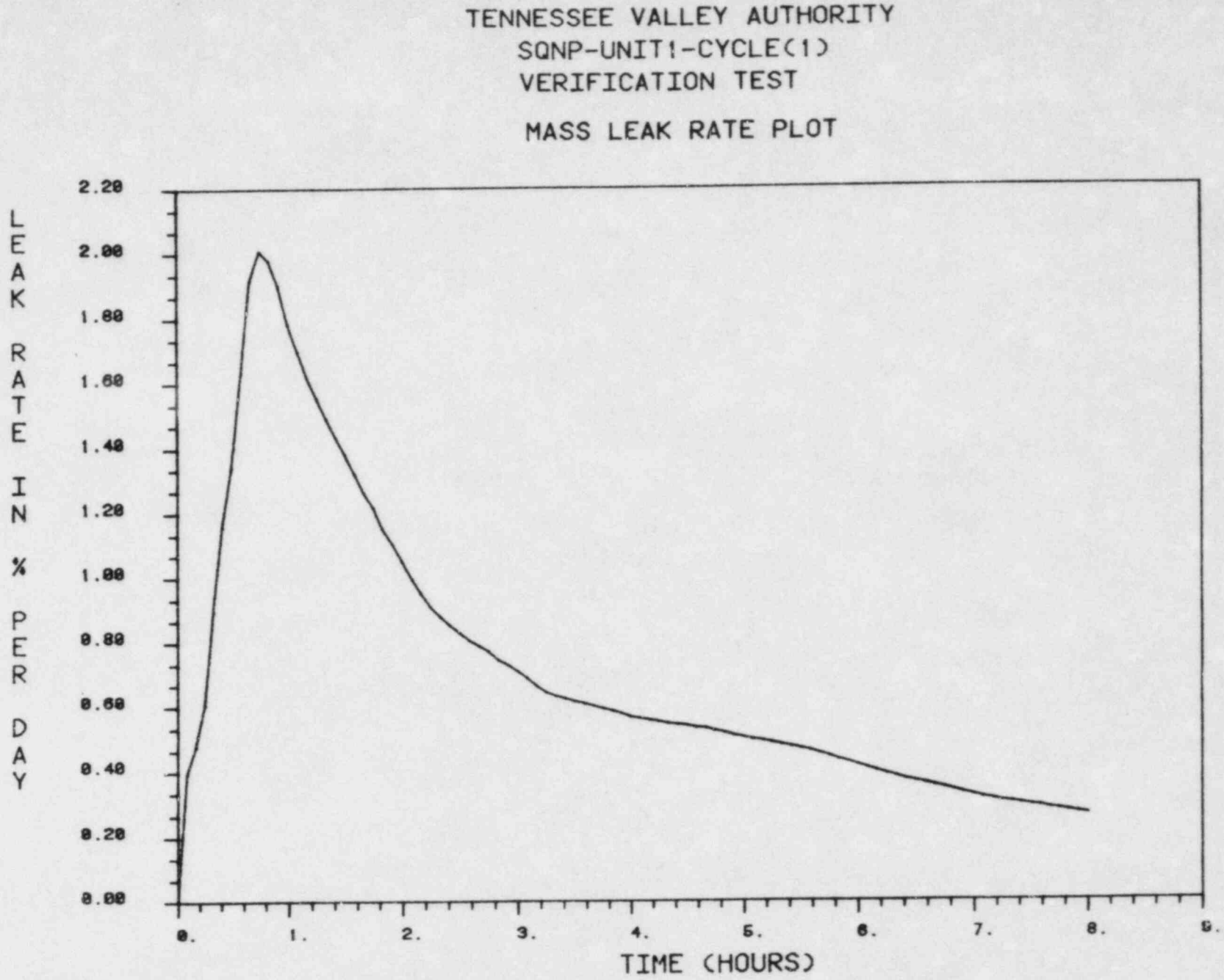

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
VERIFICATION TEST
MASS LEAK RATE PLOT
LEAK RATE IN % PER DAY
2.20
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.
1.
2.
3.
4.
5.
6.
7.
8.
TIME (HOURS)

Figure 31

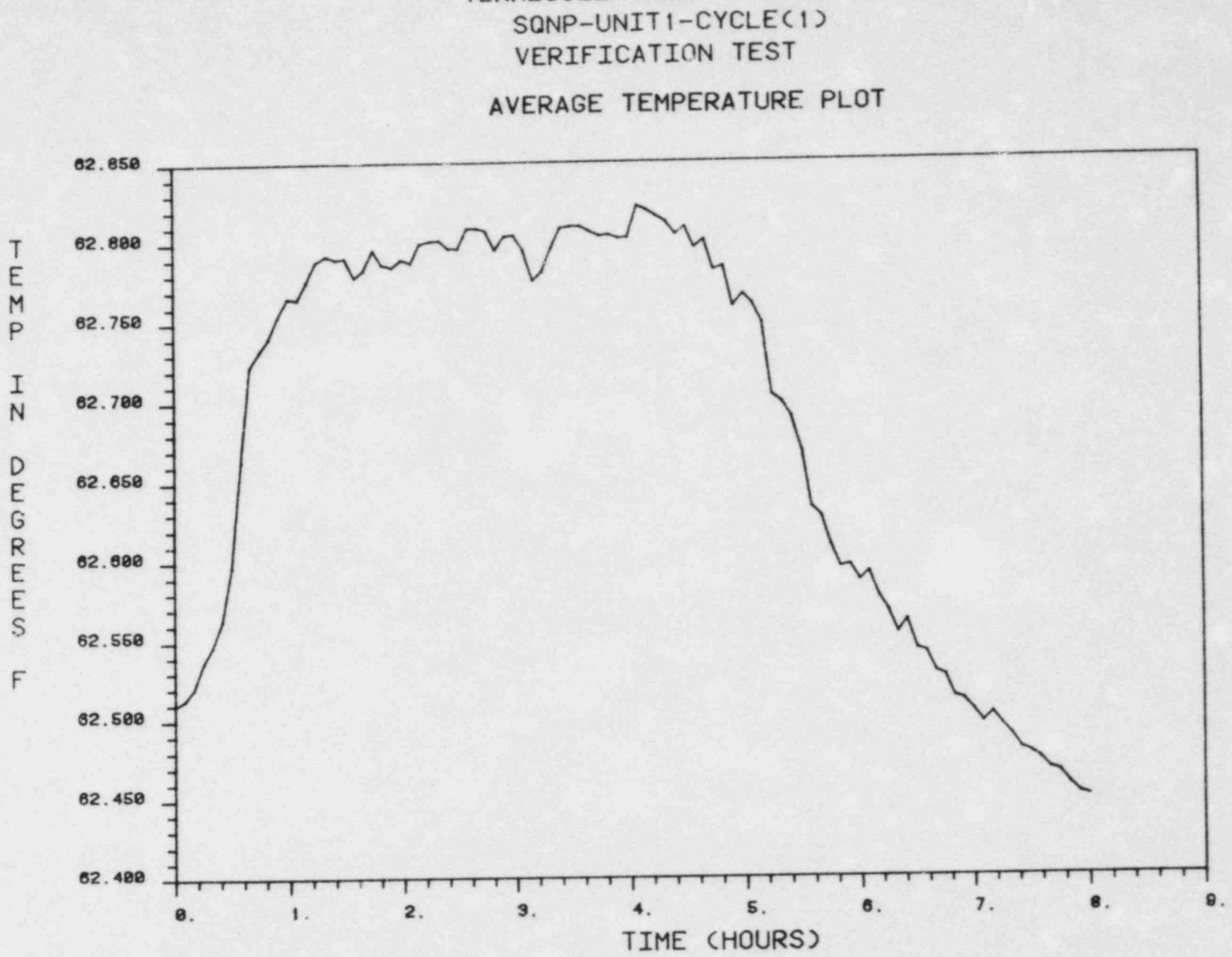

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
VERIFICATION TEST
AVERAGE TEMPERATURE PLOT
TEMP IN DEGREES F
62.850
62.800
62.750
62.700
62.650
62.600
62.550
62.500
62.450
62.400
0.
1.
2.
3.
4.
5.
6.
7.
8.
9.
TIME (HOURS)

Figure 32

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
VERIFICATION TEST

AVERAGE PRESSURE PLOT

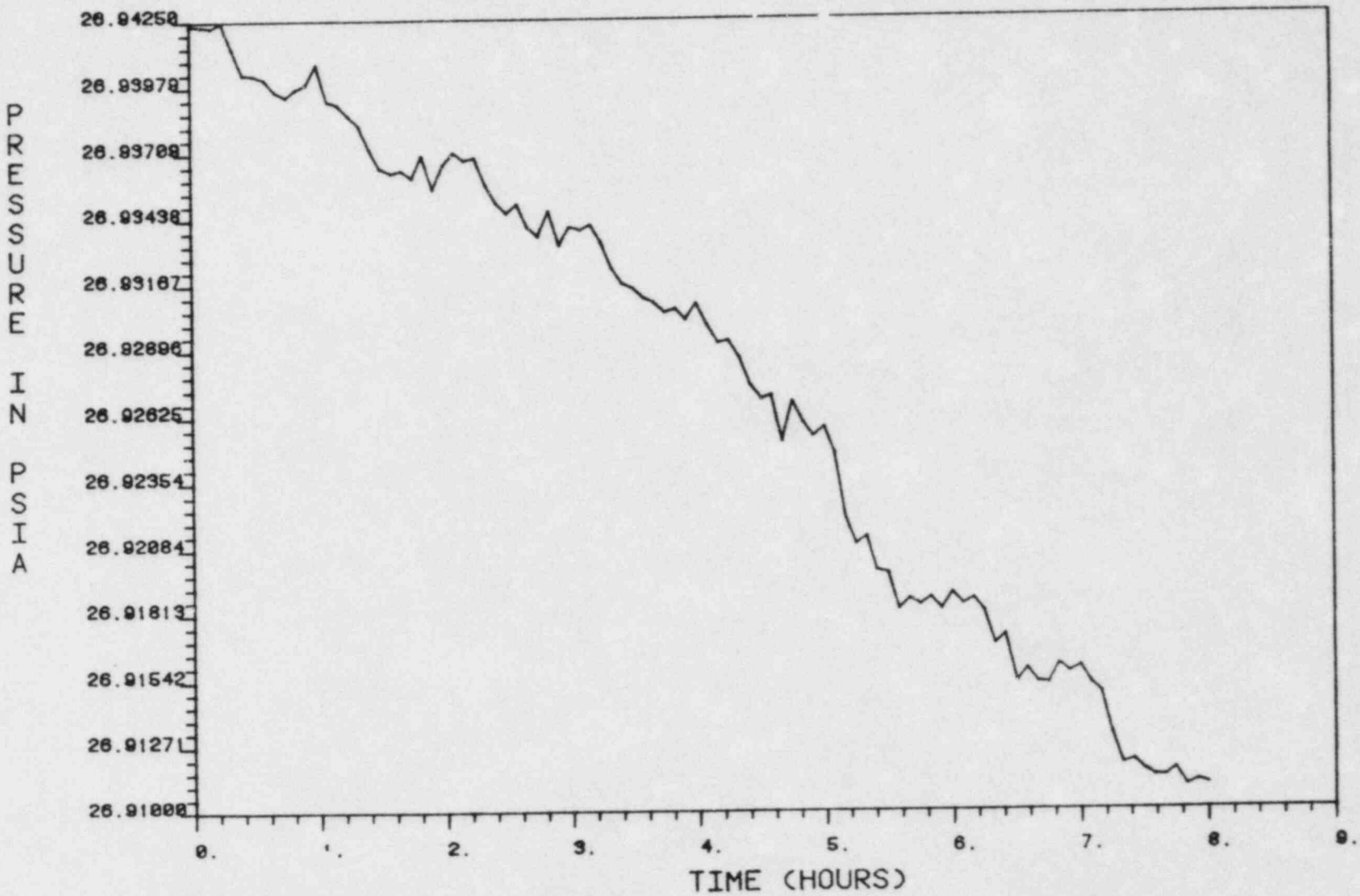


Figure 33

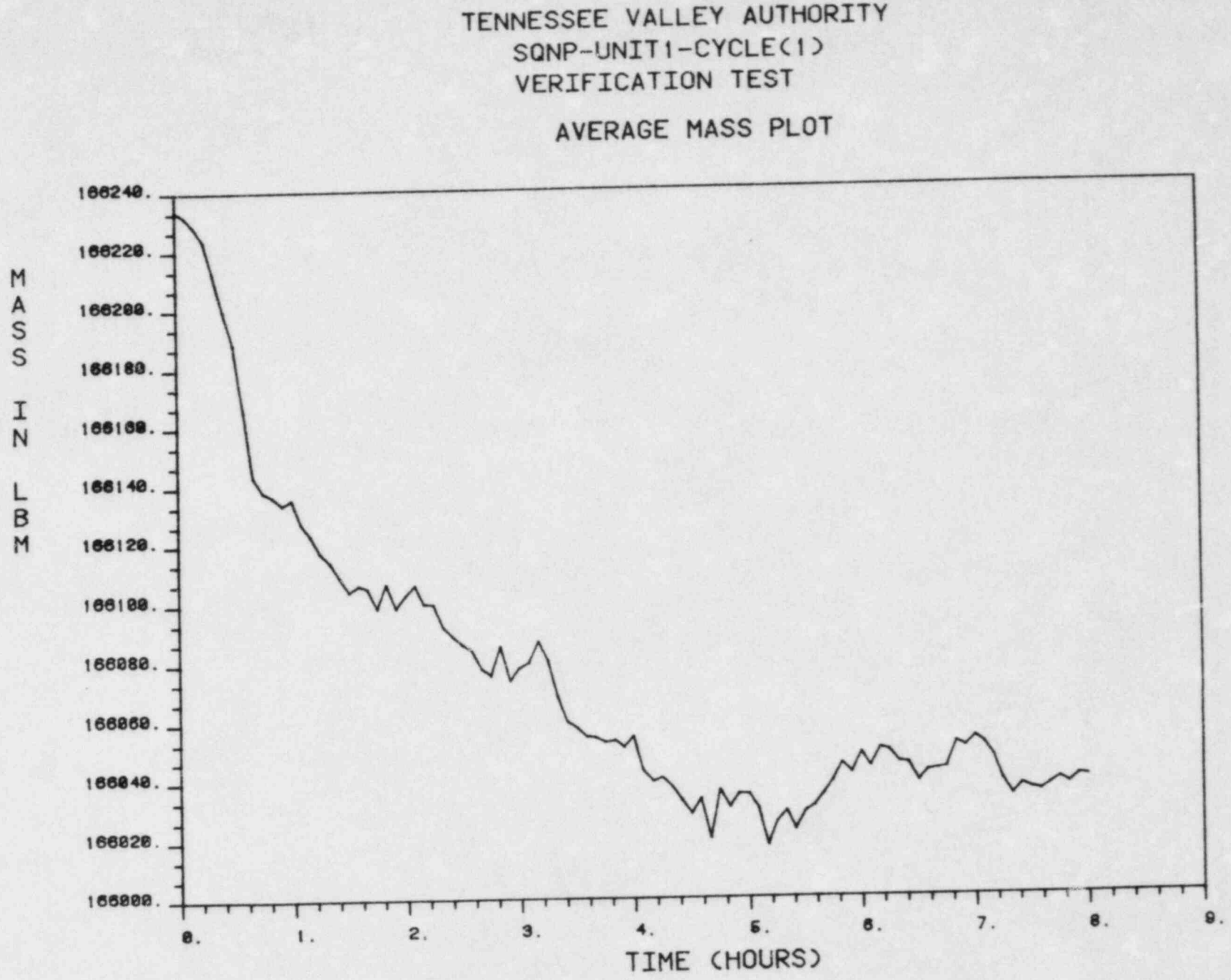

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
VERIFICATION TEST
AVERAGE MASS PLOT
MASS IN LBM
166240.
166220.
166200.
166180.
166160.
166140.
166120.
166100.
166080.
166060.
166040.
166020.
166000.
0.
1.
2.
3.
4.
5.
6.
7.
8.
9.
TIME (HOURS)

Figure 34

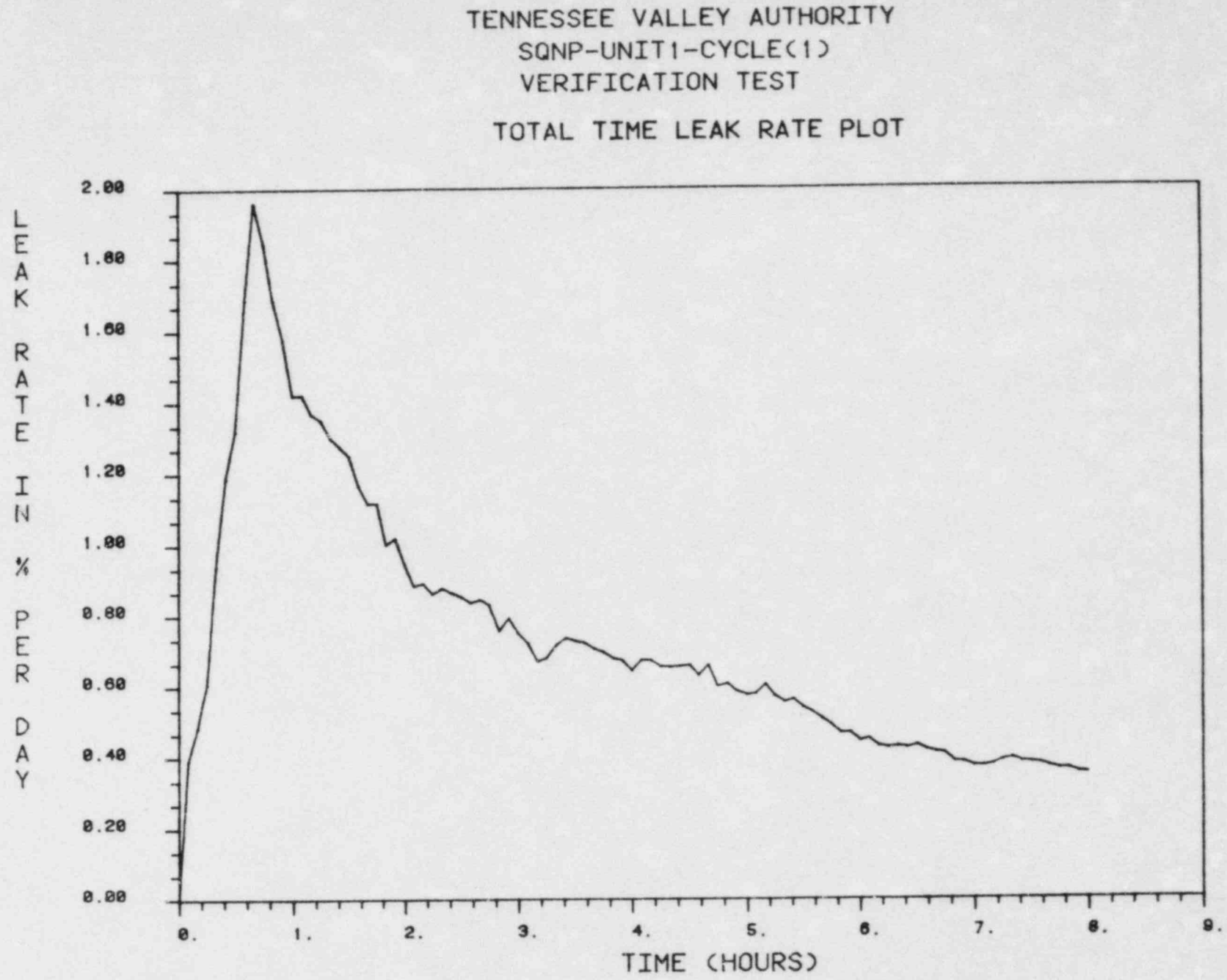

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
VERIFICATION TEST
TOTAL TIME LEAK RATE PLOT
LEAK RATE IN % PER DAY
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.
1.
2.
3.
4.
5.
6.
7.
8.
9.
TIME (HOURS)

Figure 35

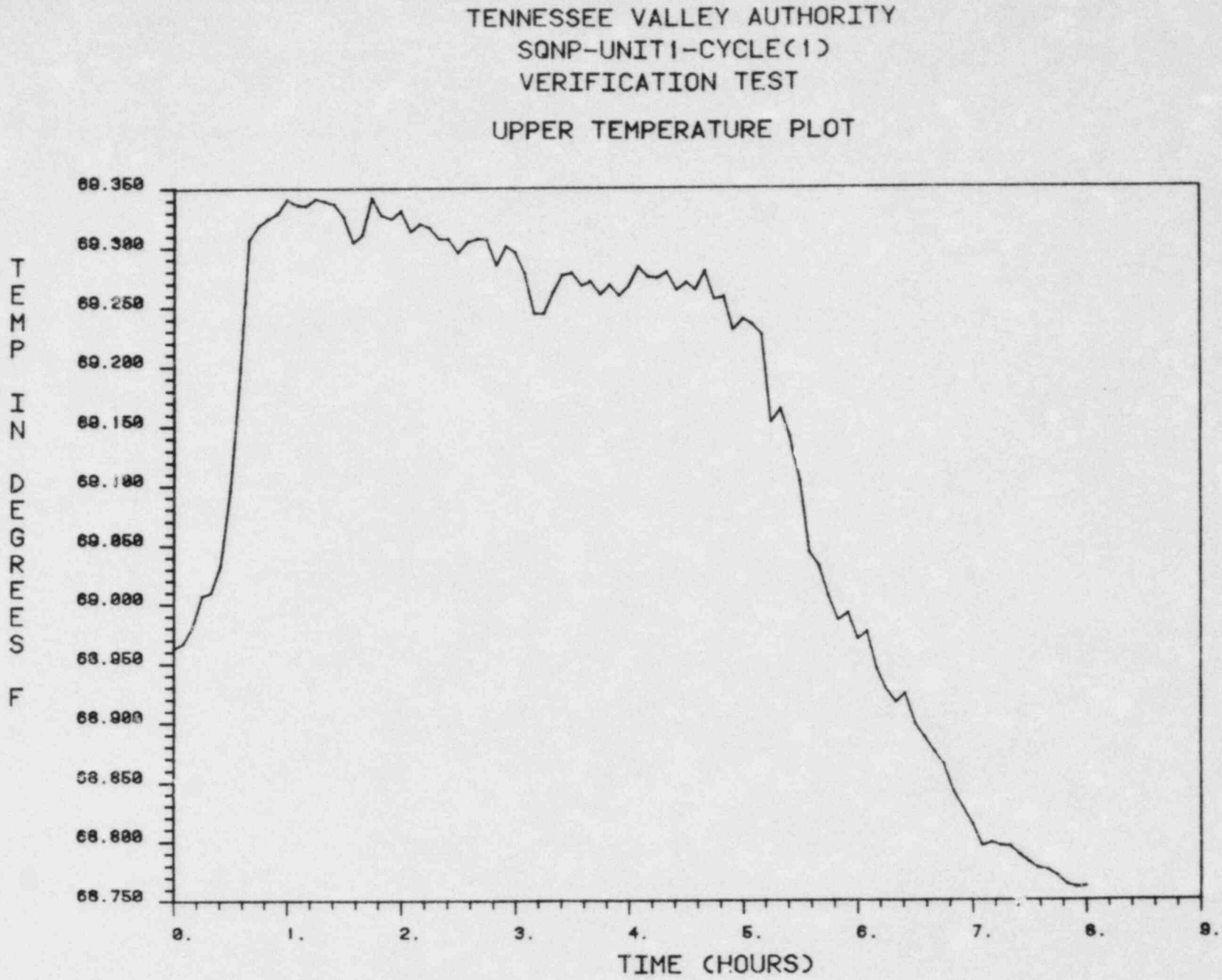

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
VERIFICATION TEST
UPPER TEMPERATURE PLOT
TEMP IN DEGREES F
69.350
69.300
69.250
69.200
69.150
69.100
69.050
69.000
68.950
68.900
68.850
68.800
68.750
0.
1.
2.
3.
4.
5.
6.
7.
8.
9.
TIME (HOURS)

Figure 36

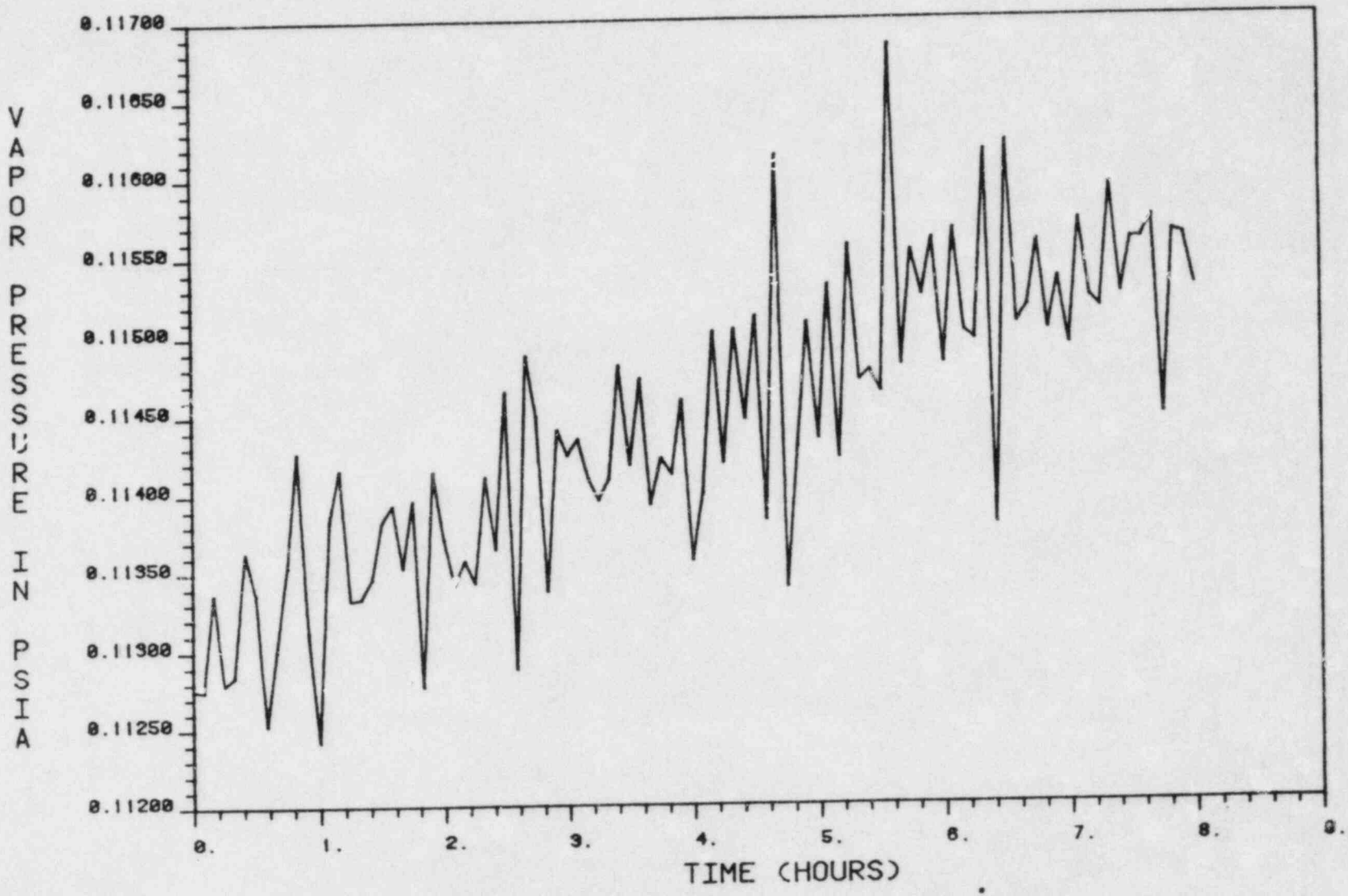

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
VERIFICATION TEST
UPPER VAPOR PRESSURE PLOT
VAPOR PRESSURE IN PSIA
0.11700
0.11650
0.11600
0.11550
0.11500
0.11450
0.11400
0.11350
0.11300
0.11250
0.11200
0.
1.
2.
3.
4.
5.
6.
7.
8.
9.
TIME (HOURS)

Figure 37

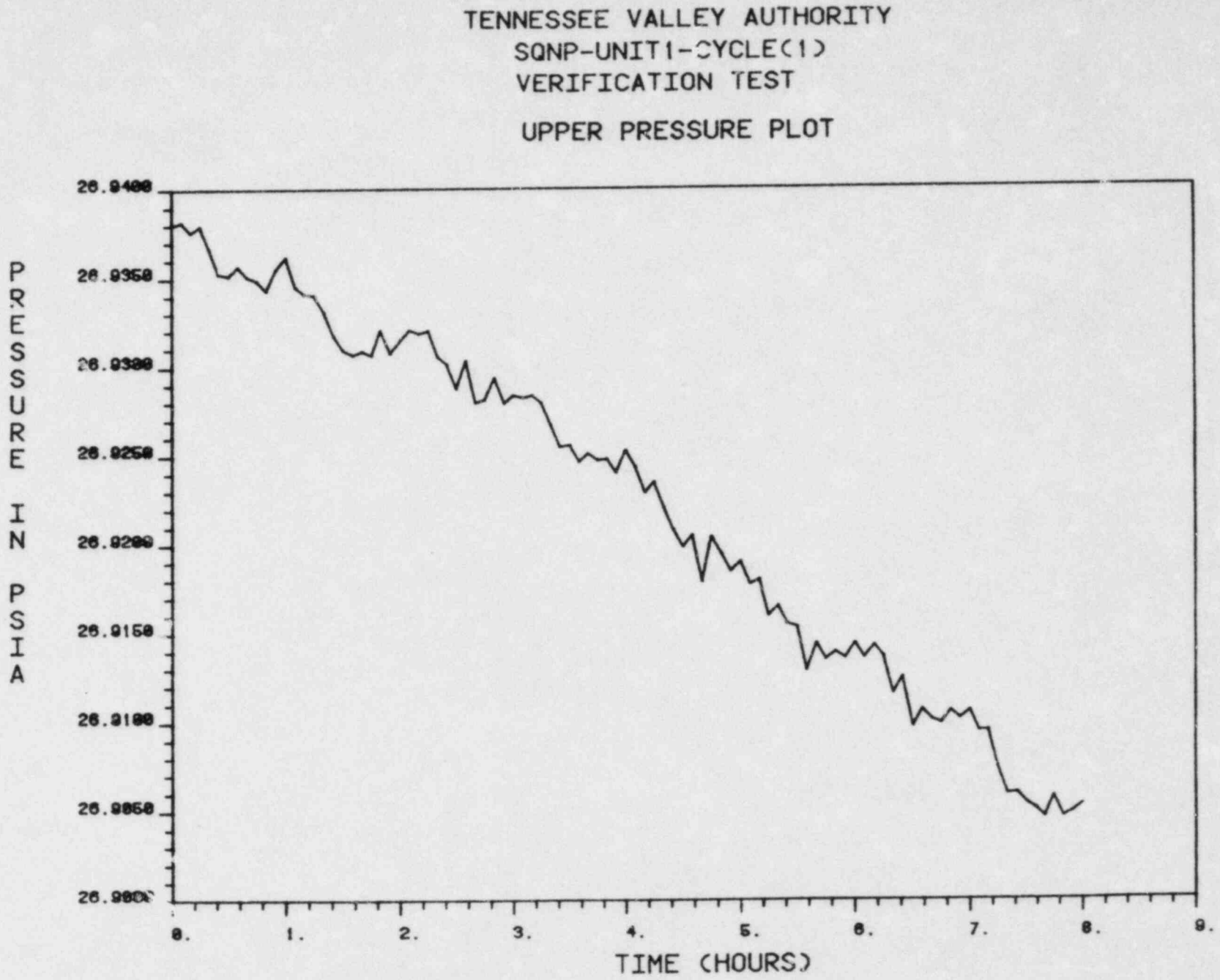

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
VERIFICATION TEST
UPPER PRESSURE PLOT
PRESSURE IN PSIA
26.9400
26.9350
26.9300
26.9250
26.9200
26.9150
26.9100
26.9050
26.9000
0.
1.
2.
3.
4.
5.
6.
7.
8.
9.
TIME (HOURS)

Figure 38

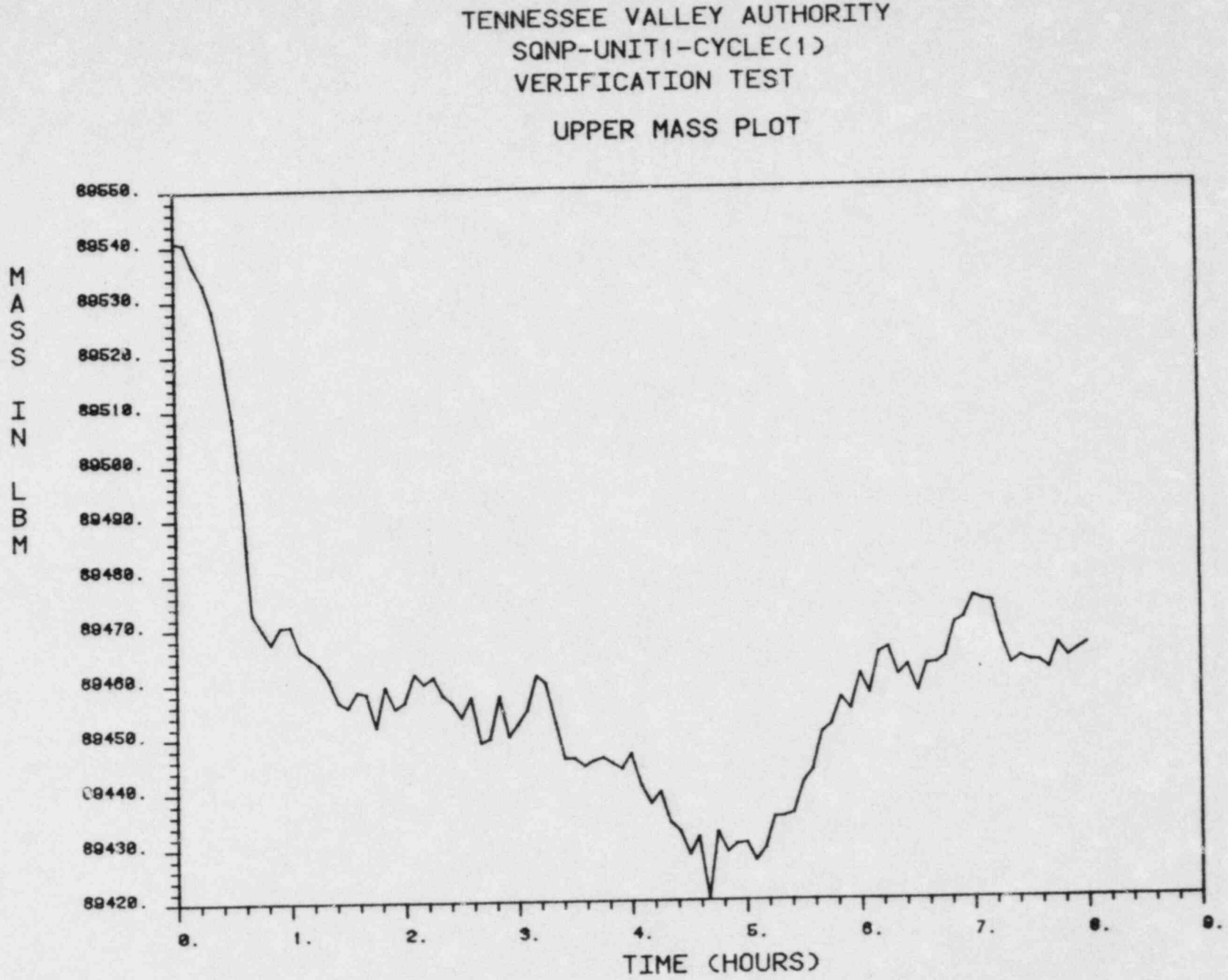

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
VERIFICATION TEST
UPPER MASS PLOT
MASS IN LBM
89550.
89540.
89530.
89520.
89510.
89500.
89490.
89480.
89470.
89460.
89450.
89440.
89430.
89420.
0.
1.
2.
3.
4.
5.
6.
7.
8.
9.
TIME (HOURS)

Figure 39

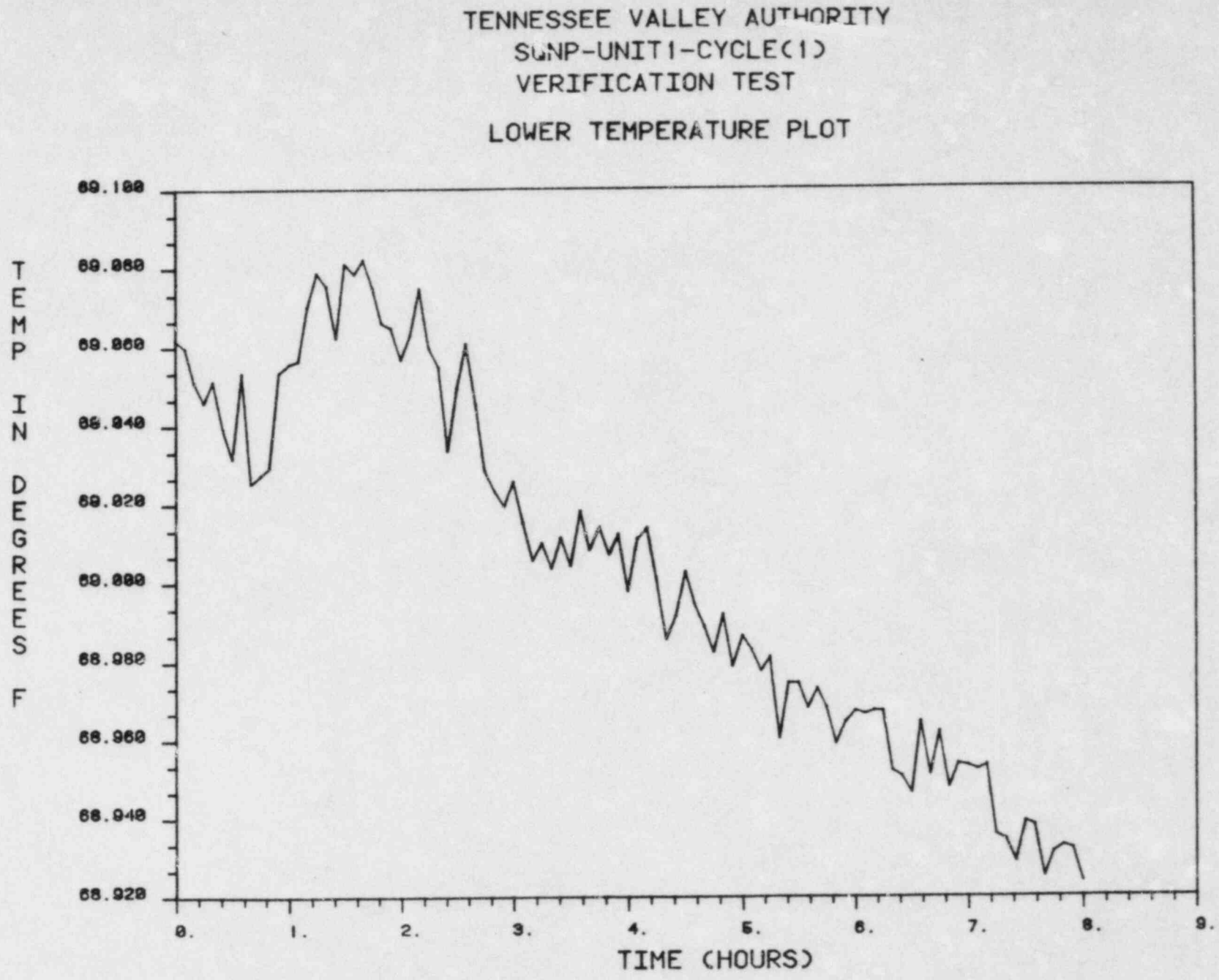

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
VERIFICATION TEST
LOWER TEMPERATURE PLOT
TEMP IN DEGREES F
69.100
69.080
69.060
69.040
69.020
69.000
68.980
68.960
68.940
68.920
0.
1.
2.
3.
4.
5.
6.
7.
8.
9.
TIME (HOURS)

Figure 40

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
VERIFICATION TEST

LOWER VAPOR PRESSURE PLOT

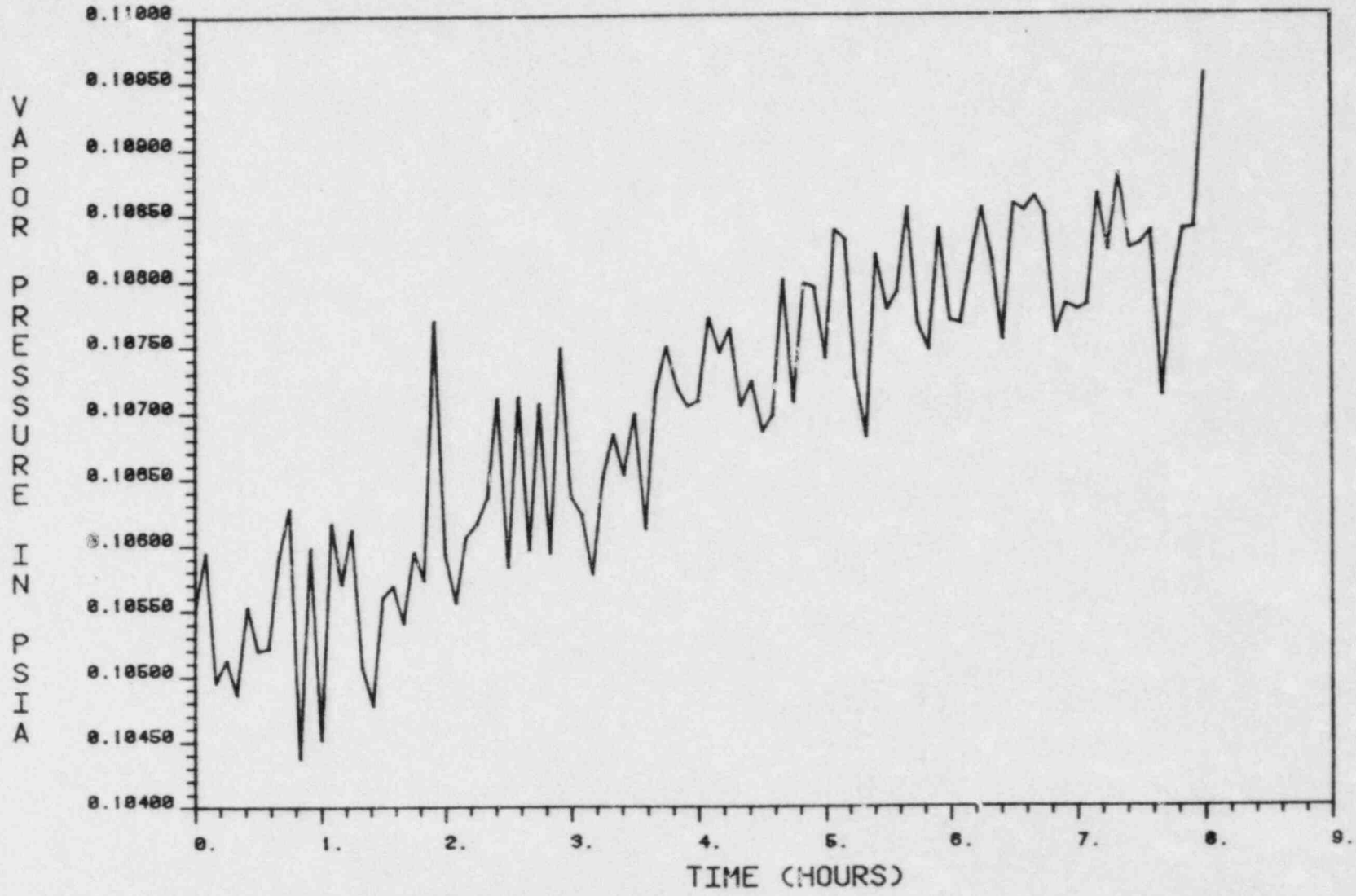


Figure 41

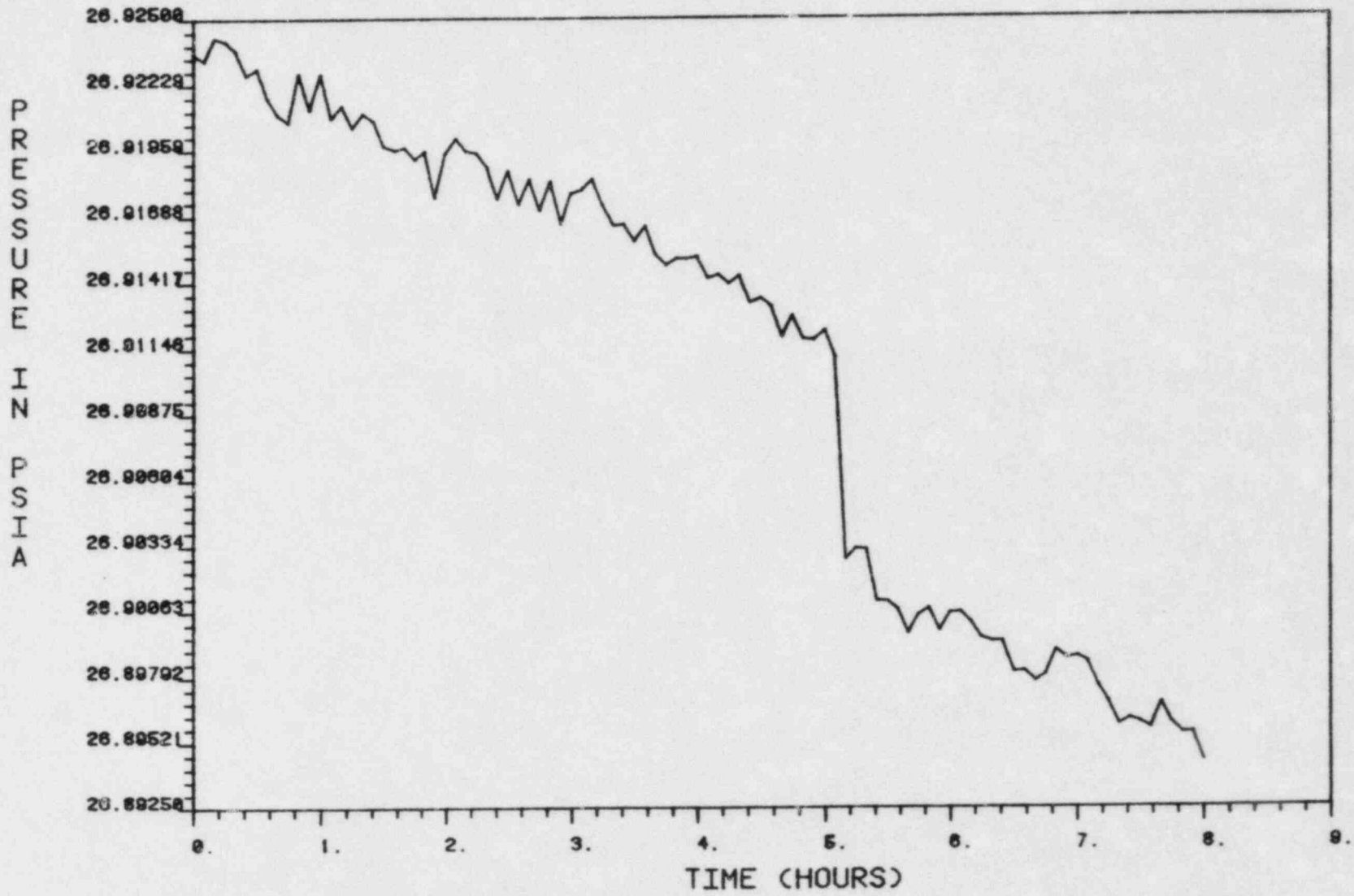
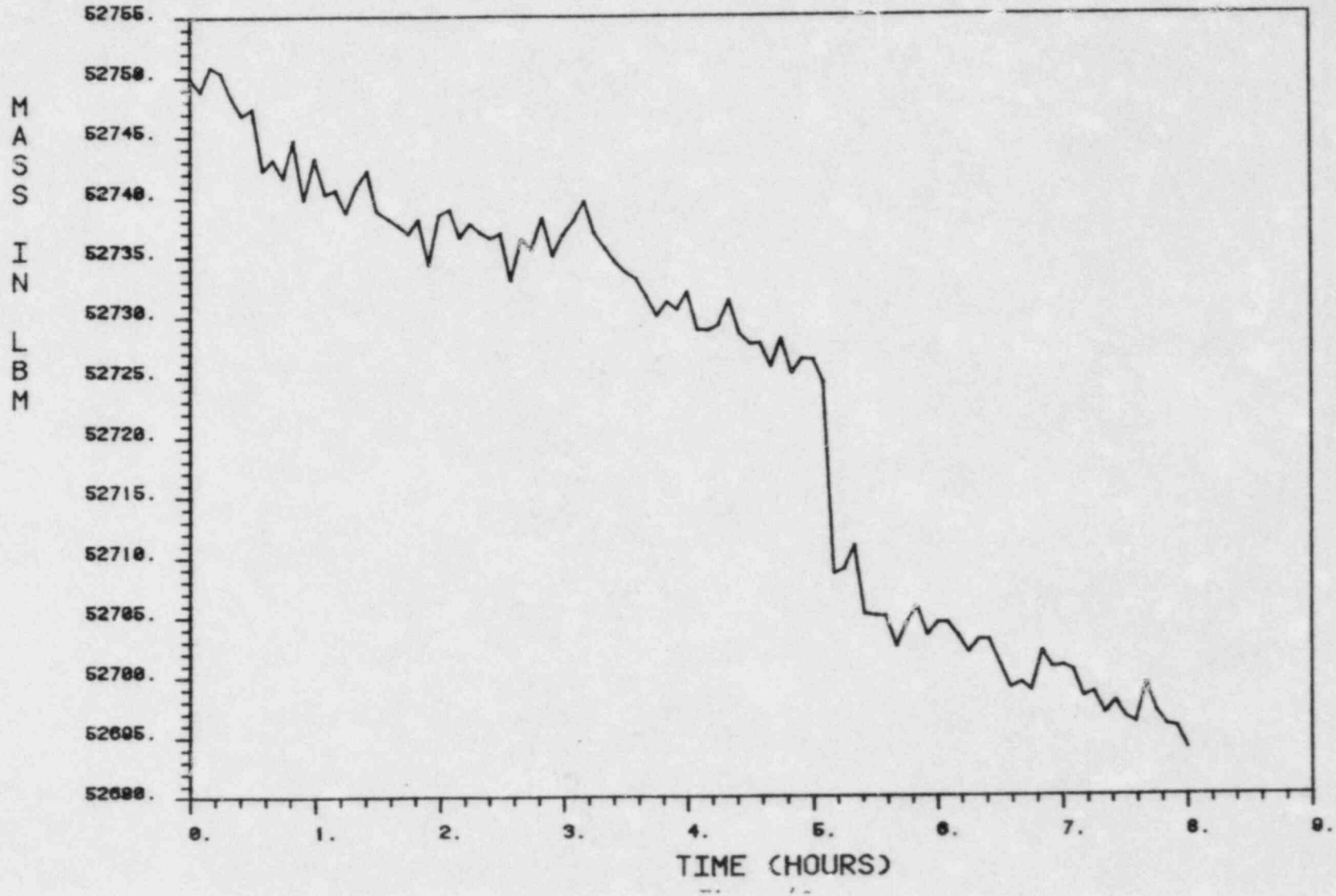

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
VERIFICATION TEST
LOWER PRESSURE PLOT
PRESSURE IN PSIA
26.92500
26.92229
26.91959
26.91688
26.91417
26.91146
26.90875
26.90604
26.90334
26.90063
26.89792
26.89521
26.89250
0.
1.
2.
3.
4.
5.
6.
7.
8.
9.
TIME (HOURS)

Figure 42

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
VERIFICATION TEST

LOWER MASS PLOT



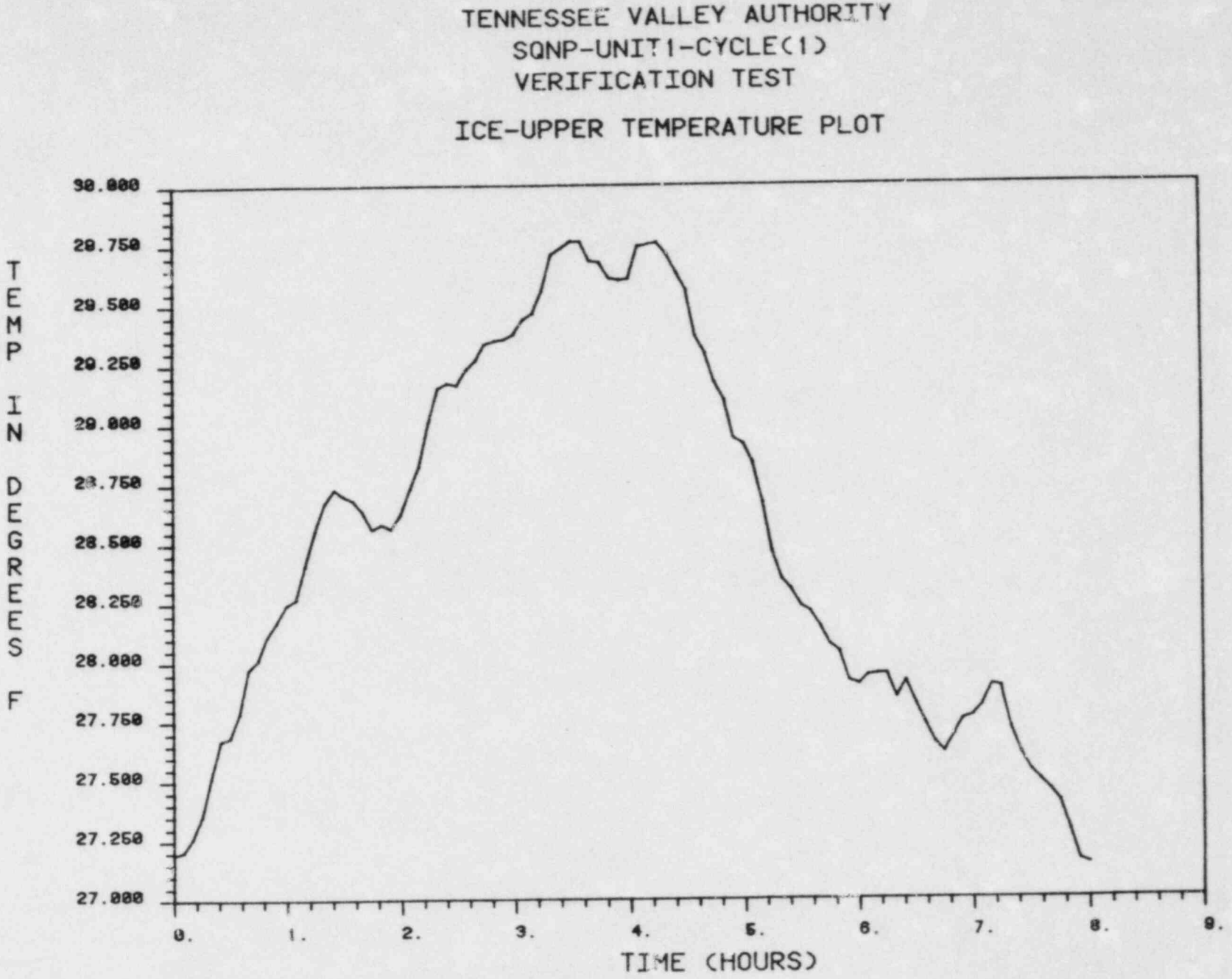

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
VERIFICATION TEST
ICE-UPPER TEMPERATURE PLOT
TEMP IN DEGREES F
30.000
29.750
29.500
29.250
29.000
28.750
28.500
28.250
28.000
27.750
27.500
27.250
27.000
0.
1.
2.
3.
4.
5.
6.
7.
8.
9.
TIME (HOURS)

Figure 44

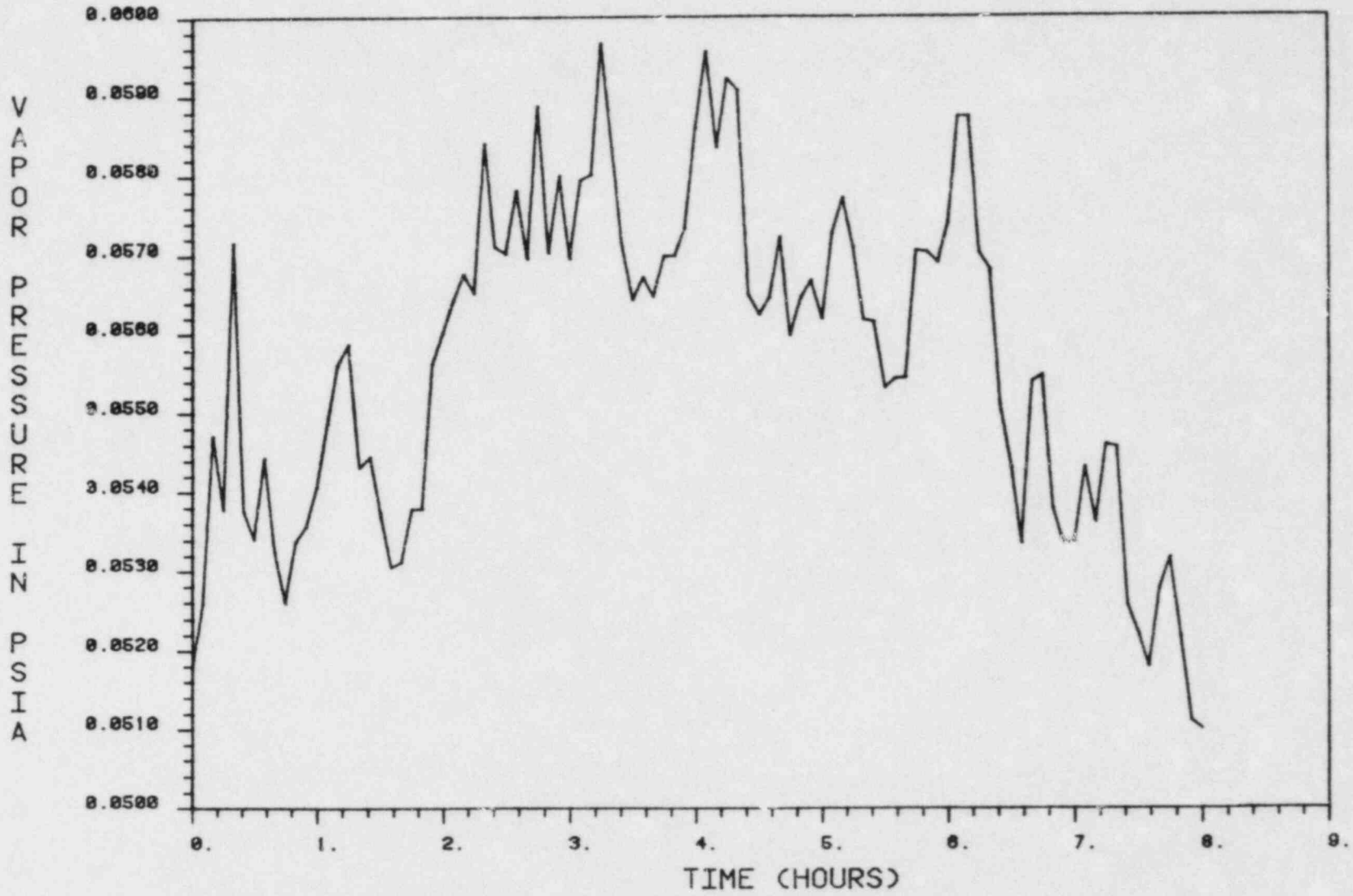

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
VERIFICATION TEST
ICE-UPPER VAPOR PRESSURE PLOT
VAPOR PRESSURE IN PSIA
0.0600
0.0590
0.0580
0.0570
0.0560
0.0550
0.0540
0.0530
0.0520
0.0510
0.0500
0.
1.
2.
3.
4.
5.
6.
7.
8.
9.
TIME (HOURS)

Figure 45

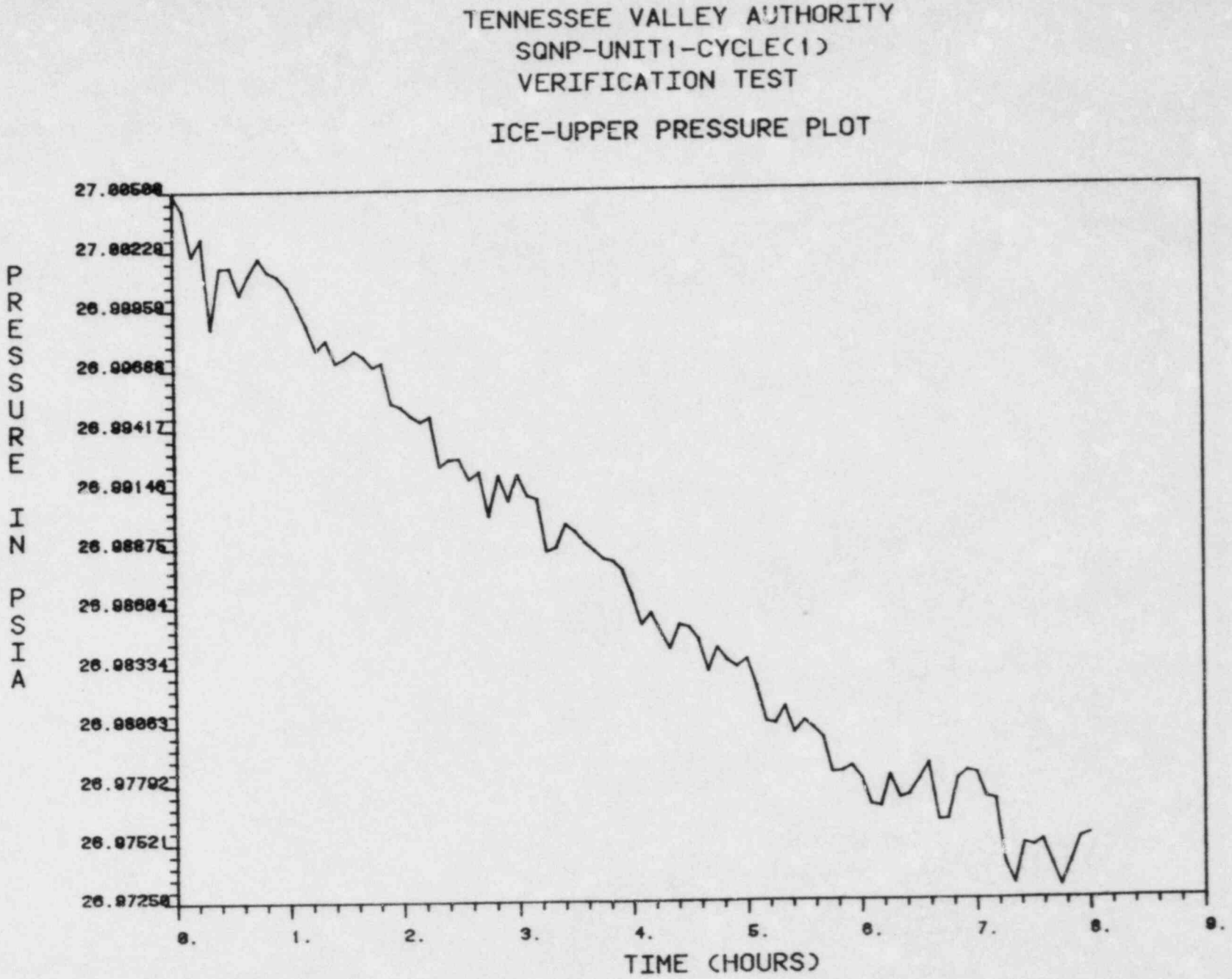

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
VERIFICATION TEST
ICE-UPPER PRESSURE PLOT
PRESSURE IN PSIA
27.00508
27.00229
26.99950
26.99671
26.99417
26.99146
26.98875
26.98604
26.98334
26.98063
26.97792
26.97521
26.97250
0.
1.
2.
3.
4.
5.
6.
7.
8.
9.
TIME (HOURS)

Figure 46

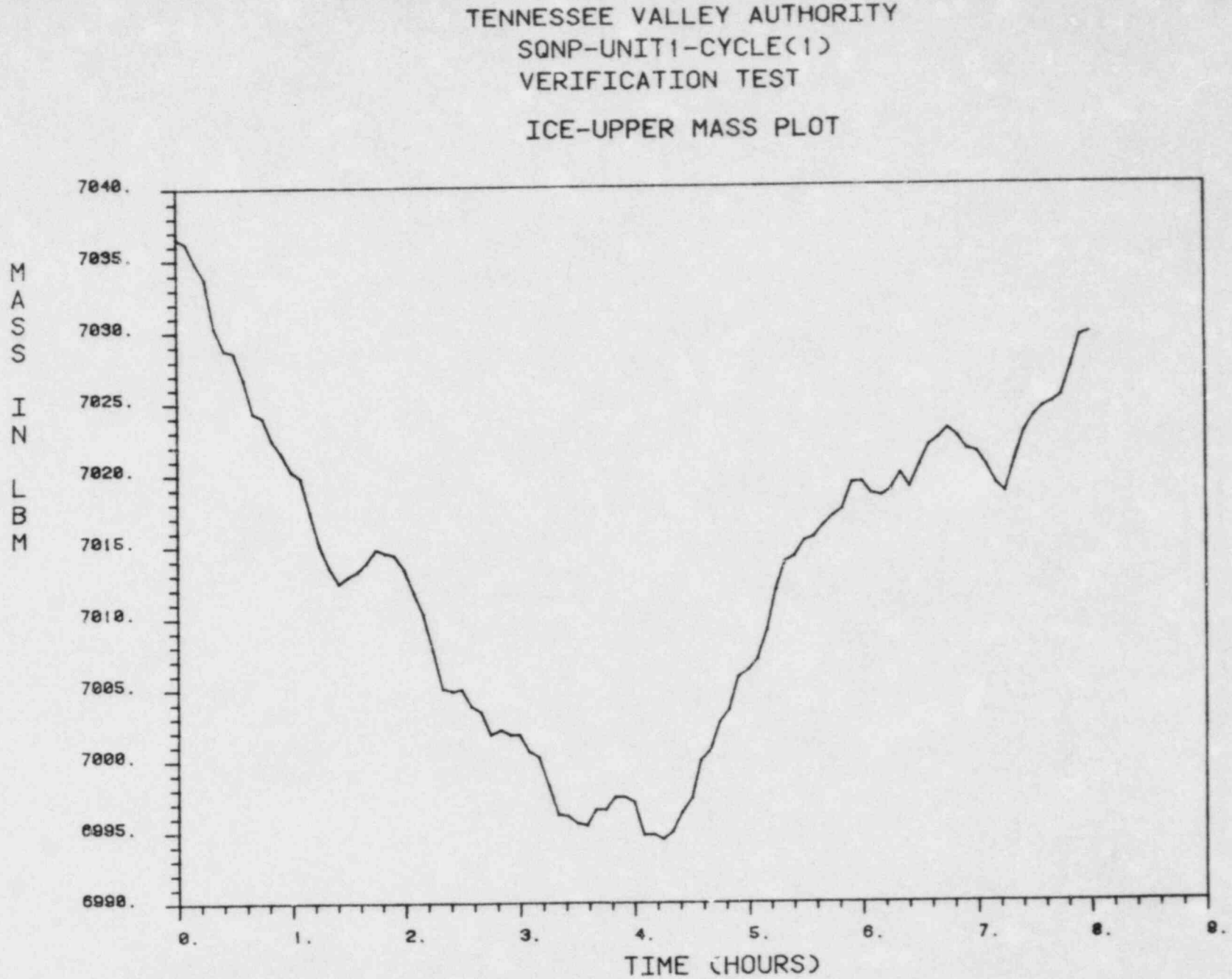

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
VERIFICATION TEST
ICE-UPPER MASS PLOT
MASS IN LBM
7040.
7035.
7030.
7025.
7020.
7015.
7010.
7005.
7000.
6995.
6990.
0.
1.
2.
3.
4.
5.
6.
7.
8.
9.
TIME (HOURS)

Figure 47

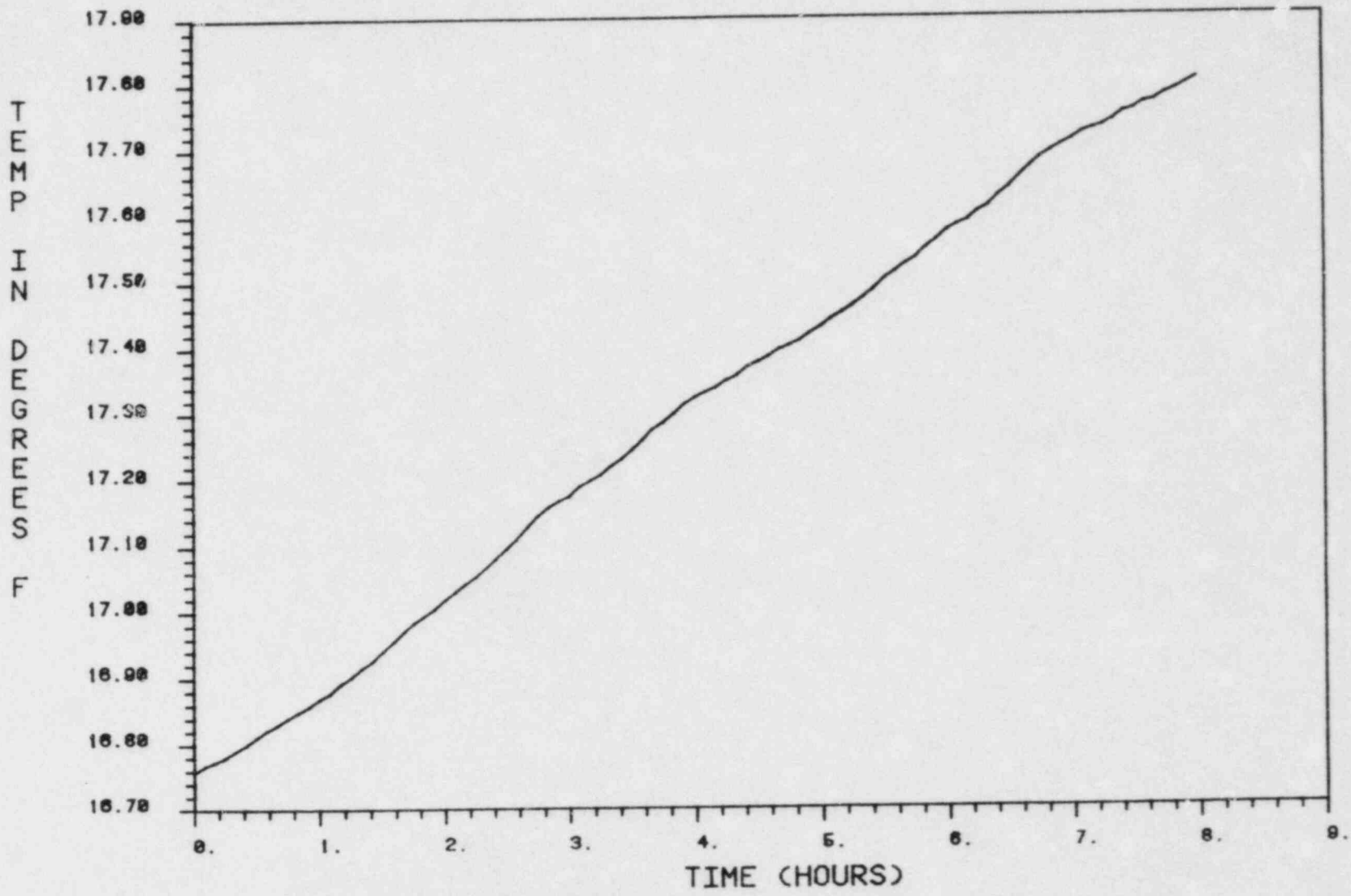

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
VERIFICATION TEST
ICE-LOWER TEMPERATURE PLOT
TEMP IN DEGREES F
17.90
17.80
17.70
17.60
17.50
17.40
17.30
17.20
17.10
17.00
16.90
16.80
16.70
0.
1.
2.
3.
4.
5.
6.
7.
8.
9.
TIME (HOURS)

Figure 48

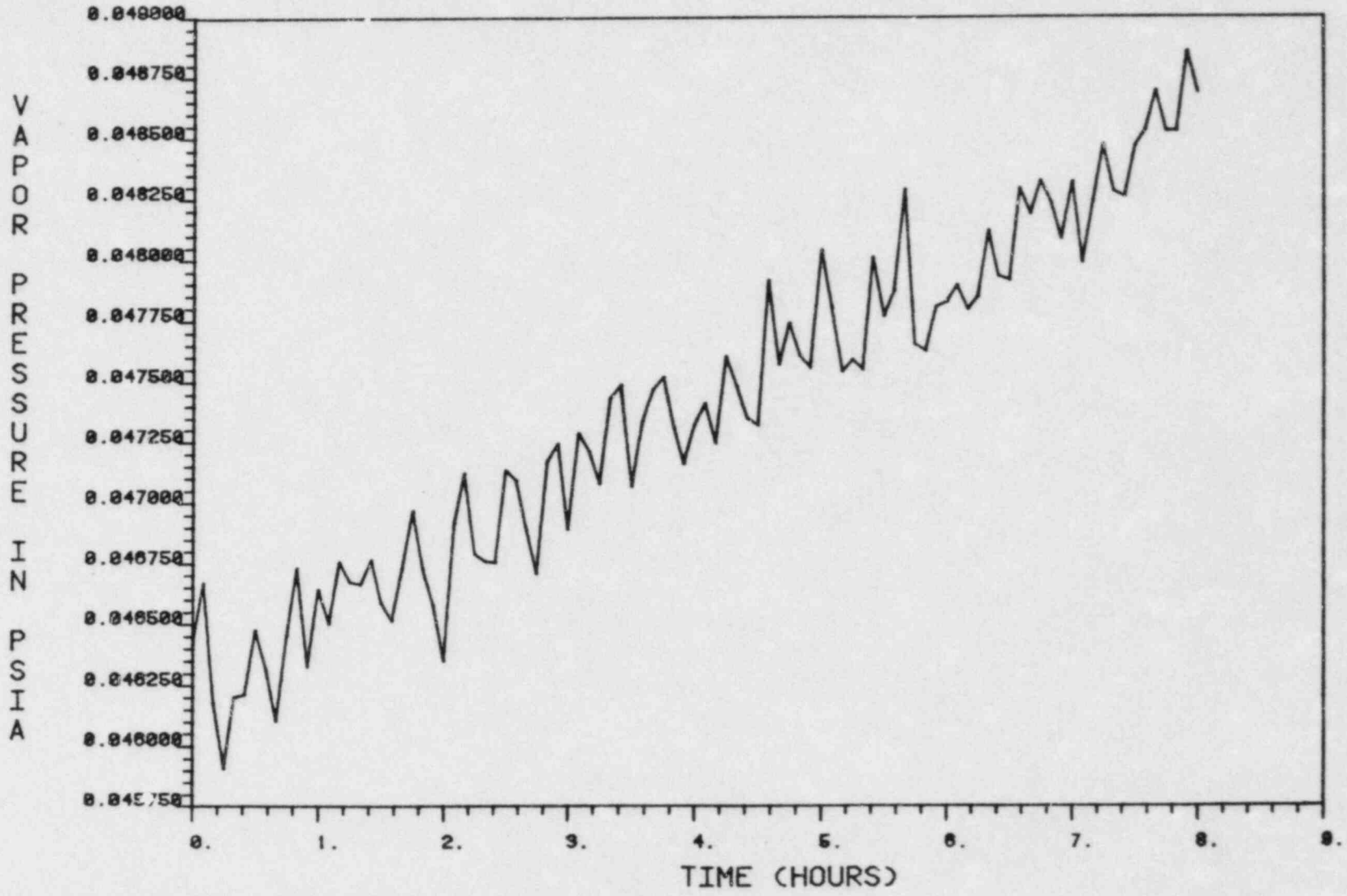

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
VERIFICATION TEST.
ICE-LOWER VAPOR PRESSURE PLOT
VAPOR PRESSURE IN PSIA
0.048750
0.048500
0.048250
0.048000
0.047750
0.047500
0.047250
0.047000
0.046750
0.046500
0.046250
0.046000
0.
1.
2.
3.
4.
5.
6.
7.
8.
9.
TIME (HOURS)

Figure 49

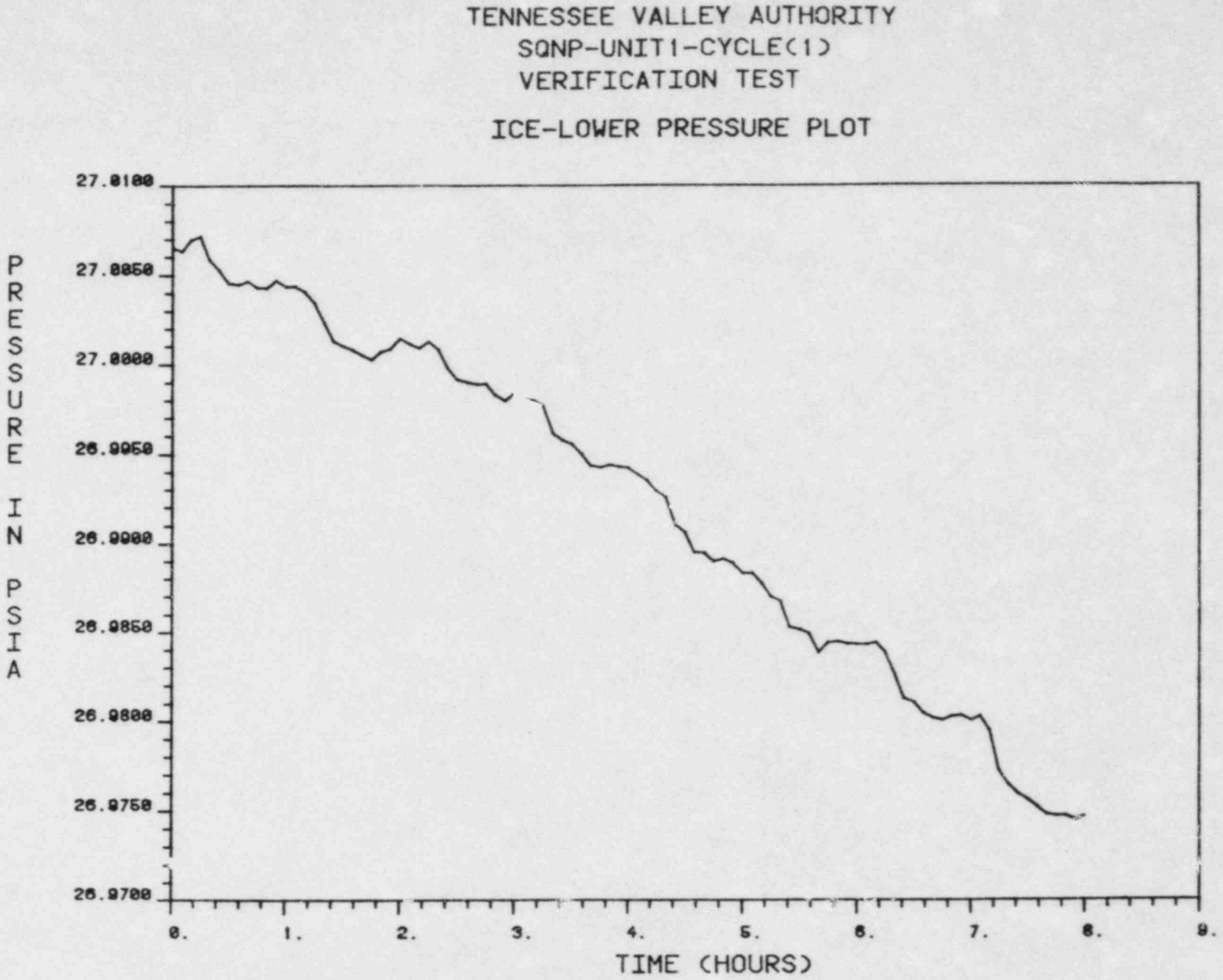

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
VERIFICATION TEST
ICE-LOWER PRESSURE PLOT
PRESSURE IN PSIA
27.0100
27.0050
27.0000
26.9950
26.9900
26.9850
26.9800
26.9750
26.9700
0.
1.
2.
3.
4.
5.
6.
7.
8.
9.
TIME (HOURS)

Figure 50

TENNESSEE VALLEY AUTHORITY
SQNP-UNIT1-CYCLE(1)
VERIFICATION TEST

ICE-LOWER MASS PLOT

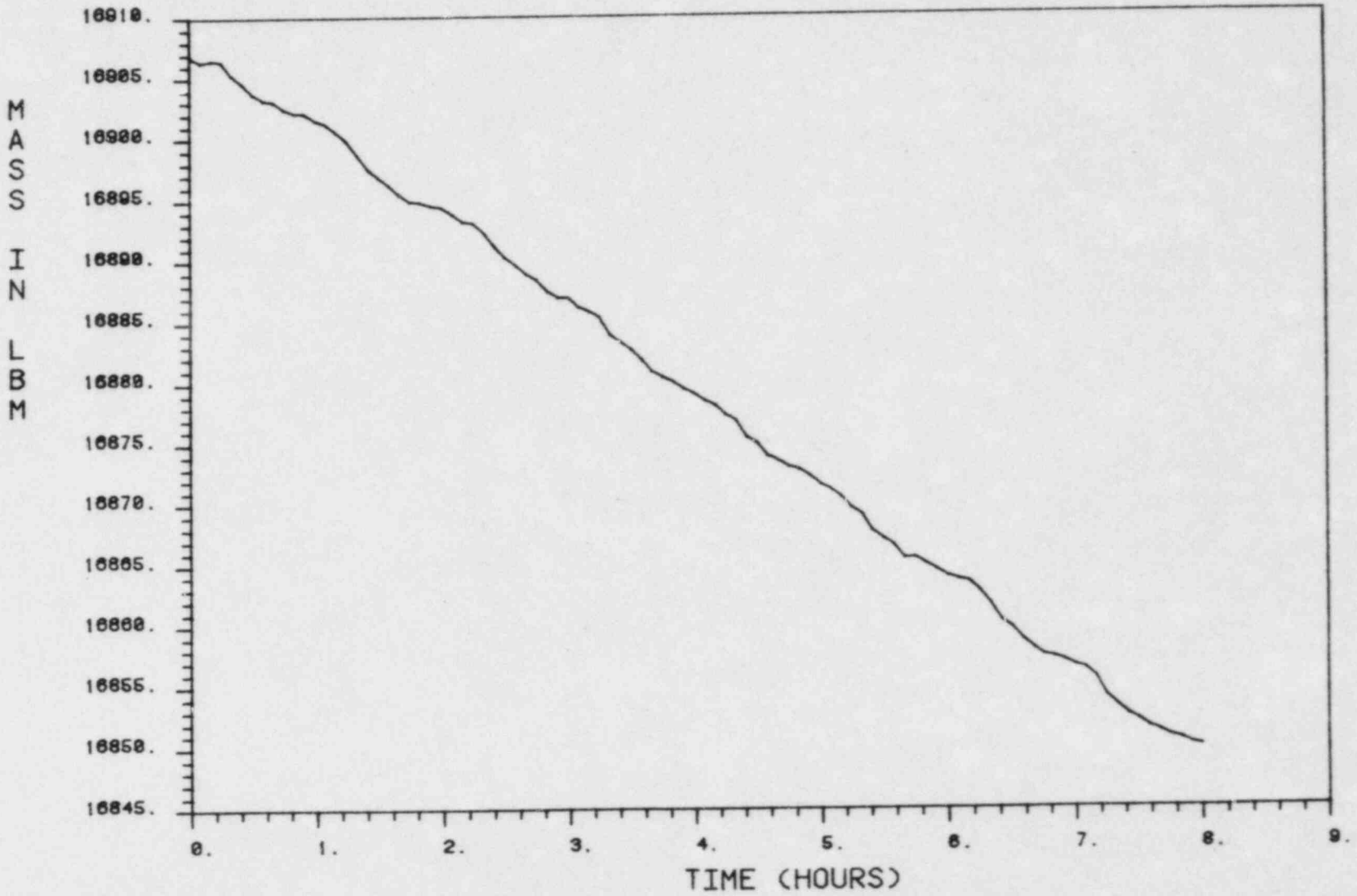


Figure 51

APPENDICES

APPENDIX A

INSTRUMENTATION ERROR ANALYSIS

Instrumentation Error Analysis: (as defined in Appendix G, ANS 56.8 Draft).

Assumed conditions at the time of test:

P = 12 + 14.696 = 26.696 psia

T = 459.67° + 54 = 513.67°R

T_{dp} = 60°F dewpoint

t = 15.34 hours

Using the absolute method:

1. Total Absolute Pressure Method

   Number of sensors: 8

   Range: 0-30 psia

   Repeatability error (E_p) =

   ±0.0005 percent reading = ±0.0001335 psia

   Accuracy error (E_p) =

   ±0.015 percent of reading = ±0.001416

   $$\xi p = \frac{1}{400{,}000} \times 30 \text{ psia} = 0.000075$$

   $$e_p = \frac{[(E_p)^2 + (\xi_p)^2]^{\frac{1}{2}}}{(\text{no. sensors})^{\frac{1}{2}}} = \pm 0.000054 \text{ psia (using repeatability)}$$

   e_p = ±0.00141602 psia (using accuracy)

2. Water Vapor Pressure

   Number of sensors: 12

   Sensor repeatability error (E): ±0.1°F

   Sensor accuracy 1.0°F

Measurement system error (ξ), excluding sensor: ±0.001°F

$$e_{pv} = \frac{\pm[(E_{pv})^2 + (\xi)^2]^{\frac{1}{2}}}{(\text{no. of sensors})^{\frac{1}{2}}}$$

E_{pv} = ±0.1°F (0.0092 psia/°F) = ±0.00092 psia (using reportability)

E_{pv} = ±1.0°F (0.0092 psia/°F) = ±0.0092 psia (accuracy)

ξ_{pv} = ±0.001°F (0.0092 psia/°F) = ±0.0000092 psia

e_{pv} = ±0.0002656 psia (using repeatability)

e_{pv} = ±0.002656 psia (using accuracy)

3. Temperature

Number of sensors: 48

Sensor repeatability error (E_T): ±0.001°R

Sensor accuracy error (E_T): ±0.1°R

Measurement system error (ξ) excluding sensor:

±0.001°R

$$e_T = \frac{\pm[(E_T)^2 + (\xi_T)^2]^{\frac{1}{2}}}{(\text{no. of sensors})^{\frac{1}{2}}}$$

e_T = ±0.0002040 (repeatability)

e_T = ±0.0144345 (accuracy)

4. ISG (using repeatability)

$$ISG = \pm \frac{2400}{15.345}\left[2\left(\frac{e_p}{P}\right)^2 + 2\left(\frac{e_{pv}}{Pv}\right)^2 + 2\left(\frac{e_T}{T}\right)^2\right]^{\frac{1}{2}}$$

$$ISG = \pm \frac{2400}{15.345}\left[2\left(\frac{0.000054}{26.696}\right)^2 + 2\left(\frac{0.0002656}{26.696}\right)^2 + 2\left(\frac{0.000204}{513.67}\right)^2\right]^{\frac{1}{2}}$$

ISG = ±0.002247 percent/day = $\pm 0.0090 L_A$

5. ISG (using accuracy)

$$ISG = \frac{\pm 2400}{15.345}\left[2\left(\frac{0.00141602}{26.696}\right)^2 + 2\left(\frac{0.002656}{26.696}\right)^2 + 2\left(\frac{0.0144345}{513.67}\right)^2\right]^{\frac{1}{2}}$$

ISG = ±0.025697 percent/day = $\pm 0.102789 L_A$

APPENDIX A

DEFINITION OF SYMBOLS

P - Absolute pressure, psia

T - Temperature, degrees Rankine

T_{dp} - Temperature, dewpoint

t - Time, hours

E - Measurement system repeatability error

ξ - Error associated with the sensor

ISG - Instrumentation selection guide

e - Error associated with measurement of change in a given parameter

Subscripts

T - Temperature

P - Pressure

PV - Vapor pressure

APPENDIX B

CALCULATION OF AGREEMENT (USING MLR)

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

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

L_R = imposed leak rate for verification

L_{AM} = containment leak rate measured during CILRT

L_A = full pressure design basis leakage

L_{RM} = 119962.5156 SCCM

L_R = 110194.7656 SCCM

L_{AM} = 11046.10937 SCCM

L_A = 108188.1953 SCCM

$$\frac{L_{RM} - L_R - L_{AM}}{L_A} = \frac{119962.5156 - 110194.7656 - 11046.10937}{108188.1953} = -0.011812$$

Agreement: $0.01181\ L_A < \pm 0.25\ L_A$

Therefore, compliance with Appendix J, using the MLR, has easily been met.

APPENDIX B

CALCULATION OF AGREEMENT (USING TTLR)

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

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

L_R = imposed leak rate for verification

L_{AM} = containment leak rate measured during CILRT

L_A = full pressure design basis leakage

L_{RM} = 120593.02 SCCM

L_R = 110194.7656 SCCM

L_{AM} = 15942.89 SCCM

L_A = 108188.1953 SCCM

$$\frac{L_{RM} - L_R - L_{AM}}{L_A} = \frac{120593.02 - 110194.7656 - 15942.89}{108188.1953} = -0.051250$$

Agreement: $-0.5125\ L_A < \pm 0.25\ L_A$ Therefore, compliance with Appendix J, using the TTLR, has also been met.

APPENDIX C

SPECIAL TEST INSTRUMENTATION

I. Pressure Measurement: (8 Total)

Two Mensor Quartz Manometers Per Compartment

II. Temperature Measure (48 Total)

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

RTD -1
RTD -2
RTD -3
RTD -4
RTD -5
RTD -6
RTD -7
RTD -8
RTD -10
RTD -11
RTD -12
RTD -13
RTD -14

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

RTD -25
RTD -26
RTD -27
RTD -28
RTD -29
RTD -30
RTD -31
RTD -32
RTD -33
RTD -34
RTD -35
RTD -36
RTD -37
RTD -38
RTD -39
RTD -40
RTD -41
RTD -42
RTD -43
RTD -44
RTD -45
RTD -46
RTD -47
RTD -48
RTD -49

Ice Condenser (10 Total)

Upper Volume
V = 47,000 cubic feet

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

Lower Volume
V = 110,500 cubic feet

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

APPENDIX C

SPECIAL TEST INSTRUMENTATION

(Continued)

III. Vapor Pressure Measurement (12 Total):

Upper Compartment (3 Total)

DPE -1
DPE -2
DPE -3

Lower Compartment (2 Total)

DPE -4
DPE -6

Ice Condenser (7 Total)

Upper Volume	Lower Volume
DPE -10	DPE -7
DPE -11	DPE -8
DPE -12	DPE -9
DPE -13	

IV. Test Station Equipment

Temperature: 1 RTD

Barometric Pressure: 1 Pressure Gauge

APPENDIX D

TENNESSEE VALLEY AUTHORITY
CILRT
TEMPERATURE STABILIZATION

TEMP. STABILIZATION CRITERIA:
ABS(AVG. RATE OF TEMP. CHANGE FOR LAST 4 HOURS - AVG. RATE OF TEMP. CHANGE FOR LAST HOUR)
MUST BE LESS THAN OR EQUAL TO 0.5 (DEG.F/HR.)

SAMPLE NO.	TIME	TEMPERATURE	RATE OF CHANGE OF CONTAINMENT TEMP.(DEG.F/HR)
8	1.691	63.2472	0.1191
9	1.857	63.2166	0.1841
10	2.024	63.1769	0.2377
11	2.191	63.1551	0.1312
12	2.358	63.1294	0.1537
13	2.525	63.1208	0.0520
14	2.691	63.1188	0.0119
15	2.858	63.0982	0.1230
16	3.024	63.0770	0.1275
17	3.191	63.0757	0.0080
18	3.357	63.0601	0.0937
19	3.524	63.0484	0.0702
20	3.691	63.0527	0.0262
21	3.858	63.0566	0.0232
22	4.025	63.0484	0.0494
23	4.191	63.0519	0.0215
24	4.358	63.0424	0.0570
25	4.524	63.0457	0.0195
26	4.691	63.0542	0.0509
27	4.857	63.0675	0.0802
28	5.024	63.0662	0.0080
29	5.191	63.0659	0.0014
30	5.358	63.0495	0.0982
31	5.525	63.0444	0.0309
32	5.691	63.0811	0.2208

THE AVG. RATE OF TEMPERATURE CHANGE FOR THE LAST 4 HOURS= 0.0783 (DEG.F/HR).

THE AVG. RATE OF TEMPERATURE CHANGE FOR THE LAST HOUR= 0.0733 (DEG.F/HR).

THE TEMP. STABILIZATION CHECK INDICATED A VALUE OF 0.0051 DEG.F/HR.,
WHICH IS ONLY 1.02 PERCENT OF THE RECOMMENDED 0.5(DEG.F/HR).

STABILITY CHECK INDICATES COND. ARE FAVORABLE TO PROCEED WITH CILRT.

APPENDIX E
LOCAL LEAK RATE TEST SUMMARY

A. Type B Tests

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

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

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

A summary of all type B test data since the unit 1 preoperational CILRT conducted in March 1979 is included in this appendix.

B. Type C Tests

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

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

The Volumetrics mass flowmeter is also used to conduct type C tests. The results of these tests are noted in the summary of type C data in this appendix.

All testable containment isolation valves were tested prior to the performance of the CILRT.

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

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

APPENDIX E
SUMMARY OF LOCAL LEAKAGE RATES

Type B Leakage:

A.	Bellows	0.0037 SCFH
B.	Electrical	0.7095 SCFH
C.	Resilient Seals	0.0974 SCFH
D.	Air Lock Doors	5.8901 SCFH
	Total Type B	6.7007 SCFH

Type C Leakage 0.8195 SCFH

	Actual	Maximum Allowable
Total (Types B and C):	7.5202 SCFH	141.9 SCFH
Penetrations defined as potential bypass leakage paths:	6.3374 SCFH	59.1250 SCFH
Penetrations water sealed to at least 1.1 P_a subject to inventory restrictions:		
A. ERCW discharge	0.0086 CFH	0.24 CFH
B. Containment Spray	0.0179 CFH	0.08 CFH

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-4	Ventilation	30-56/57	0.0000	0.0000	0.0000	0.0000	10/12/79
			0.0000	0.0000	0.0000	0.0000	04/17/80
			0.0000	0.0000	0.0000	0.0000	05/23/80
			0.0000	0.0000	0.0000	0.0000	06/19/80
			0.0000	0.0000	0.0000	0.0000	06/25/80
			0.0000	0.0000	0.0000	0.0000	07/01/80
			0.0327	0.0327	0.0327	0.0327	07/02/80
			0.0000	0.0000	0.0000	0.0000	07/14/80
			0.0000	0.0000	0.0000	0.0000	09/21/80
			0.0000	0.0000	0.0000	0.0000	09/29/80
			0.0000	0.0000	0.0000	0.0000	10/09/80
			0.0000	0.0000	0.0000	0.0000	10/12/80
			0.0000	0.0000	0.0000	0.0000	10/28/80
			0.0000	0.0000	0.0000	0.0000	10/31/80
			0.0000	0.0000	0.0000	0.0000	11/10/80
			0.0000	0.0000	0.0000	0.0000	12/12/80
			0.0000	0.0000	0.0000	0.0000	03/04/81
			0.0000	0.0000	0.0000	0.0000	03/08/81
			0.0000	0.0000	0.0000	0.0000	03/19/81
			0.0000	0.0000	0.0000	0.0000	04/04/81
			0.0000	0.0000	0.0000	0.0000	04/28/81
			0.0000	0.0000	0.0000	0.0000	05/01/81
			0.0000	0.0000	0.0000	0.0000	05/04/81
			0.1314	0.1314	0.1314	0.1314	05/05/81
			0.0085	0.0085	0.0085	0.0085	05/13/81
			0.1000	0.1000	0.1000	0.1000	05/18/81
			0.0000	0.0000	0.0000	0.0000	05/23/81
			0.0000	0.0000	0.0000	0.0000	05/25/81
			0.0000	0.0000	0.0000	0.0000	05/28/81
			0.0000	0.0000	0.0000	0.0000	06/02/81
			0.0000	0.0000	0.0000	0.0000	06/04/81

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-4	Ventilation	30-56/57	0.0000	0.0000	0.0000	0.0000	06/10/81
			0.0000	0.0000	0.0000	0.0000	06/25/81
			0.0000	0.0000	0.0000	0.0000	06/26/81
			0.0000	0.0000	0.0000	0.0000	07/10/81
			0.0000	0.0000	0.0000	0.0000	07/15/81
			0.0000	0.0000	0.0000	0.0000	07/17/81
			0.0000	0.0000	0.0000	0.0000	07/18/81
			0.0000	0.0000	0.0000	0.0000	07/21/81
			0.0000	0.0000	0.0000	0.0000	07/30/81
			0.0000	0.0000	0.0000	0.0000	07/31/81
			0.0000	0.0000	0.0000	0.0000	07/31/81
			0.0000	0.0000	0.0000	0.0000	08/01/81
			0.0000	0.0000	0.0000	0.0000	08/02/81
			0.0000	0.0000	0.0000	0.0000	08/03/81
			0.0000	0.0000	0.0000	0.0000	08/04/81
			0.0000	0.0000	0.0000	0.0000	08/05/81
			0.0000	0.0000	0.0000	0.0000	08/07/81
			0.0000	0.0000	0.0000	0.0000	08/16/81
			0.0000	0.0000	0.0000	0.0000	08/17/81
			0.0000	0.0000	0.0000	0.0000	08/18/81
			0.0000	0.0000	0.0000	0.0000	08/22/81
			0.0000	0.0000	0.0000	0.0000	09/05/81
			0.0000	0.0000	0.0000	0.0000	10/21/81
			0.1242	0.1242	0.1242	0.1242	10/22/81
			0.0000	0.0000	0.0000	0.0000	11/17/81
			0.0000	0.0000	0.0000	0.0000	11/22/81
			0.0000	0.0000	0.0000	0.0000	11/28/81
			0.0000	0.0000	0.0000	0.0000	12/06/81
			0.0000	0.0000	0.0000	0.0000	12/09/81
			0.0000	0.0000	0.0000	0.0000	12/18/81
			0.0000	0.0000	0.0000	0.0000	12/27/81

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-4	Ventilation	30-56/57	0.0000	0.0000	0.0000	0.0000	01/02/82
			0.0000	0.0000	0.0000	0.0000	01/05/82
			0.0000	0.0000	0.0000	0.0000	01/09/82
			0.0000	0.0000	0.0000	0.0000	01/12/82
			0.0000	0.0000	0.0000	0.0000	01/16/82
			0.0000	0.0000	0.0000	0.0000	02/03/82
			0.0000	0.0000	0.0000	0.0000	02/05/82
			0.0000	0.0000	0.0000	0.0000	02/26/82
			0.0000	0.0000	0.0000	0.0000	03/08/82
			0.0000	0.0000	0.0000	0.0000	03/18/82
			0.0000	0.0000	0.0000	0.0000	03/21/82
			0.0000	0.0000	0.0000	0.0000	03/25/82
			0.0000	0.0000	0.0000	0.0000	03/27/82
			0.0000	0.0000	0.0000	0.0000	03/31/82
			0.0000	0.0000	0.0000	0.0000	04/02/82
			0.0000	0.0000	0.0000	0.0000	04/03/82
			0.0000	0.0000	0.0000	0.0000	04/11/82
			0.0000	0.0000	0.0000	0.0000	04/14/82
			0.0000	0.0000	0.0000	0.0000	04/23/82
			0.0000	0.0000	0.0000	0.0000	04/26/82
			0.0000	0.0000	0.0000	0.0000	04/29/82
			0.0000	0.0000	0.0000	0.0000	04/30/82
			0.0000	0.0000	0.0000	0.0000	05/04/82
			0.0000	0.0000	0.0000	0.0000	05/13/82
			0.0000	0.0000	0.0000	0.0000	05/17/82
			0.0000	0.0000	0.0000	0.0000	05/21/82
			0.0000	0.0000	0.0000	0.0000	05/25/82
			0.0000	0.0000	0.0000	0.0000	05/27/82
			0.0000	0.0000	0.0000	0.0000	05/30/82
			0.0000	0.0000	0.0000	0.0000	06/02/82
			0.0000	0.0000	0.0000	0.0000	06/04/82

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-4	Ventilation	30-56/57	0.0000	0.0000	0.0000	0.0000	06/09/82
			0.0000	0.0000	0.0000	0.0000	06/12/82
			0.0000	0.0000	0.0000	0.0000	06/17/82
			0.0000	0.0000	0.0000	0.0000	06/19/82
			0.0000	0.0000	0.0000	0.0000	06/21/82
			0.0000	0.0000	0.0000	0.0000	06/23/82
			0.0000	0.0000	0.0000	0.0000	06/25/82
			0.0000	0.0000	0.0000	0.0000	06/28/82
X-5	Ventilation	30-58/59	0.0000	0.0000	0.0000	0.0000	10/18/79
			0.0000	0.0000	0.0000	0.0000	05/01/80
			0.0000	0.0000	0.0000	0.0000	05/23/80
			0.0000	0.0000	0.0000	0.0000	06/19/80
			0.0000	0.0000	0.0000	0.0000	07/01/80
			0.0000	0.0000	0.0000	0.0000	09/21/80
			0.0000	0.0000	0.0000	0.0000	10/9/80
			0.0000	0.0000	0.0000	0.0000	10/28/80
			0.0000	0.0000	0.0000	0.0000	10/31/80
			0.0000	0.0000	0.0000	0.0000	12/12/80
			0.0000	0.0000	0.0000	0.0000	12/13/80
			0.0000	0.0000	0.0000	0.0000	03/04/81
			0.0000	0.0000	0.0000	0.0000	03/09/81
			0.0000	0.0000	0.0000	0.0000	03/19/81
			0.0000	0.0000	0.0000	0.0000	05/01/81
			0.0000	0.0000	0.0000	0.0000	05/04/81
			0.0000	0.0000	0.0000	0.0000	05/13/81
			0.0000	0.0000	0.0000	0.0000	05/24/81
			0.0000	0.0000	0.0000	0.0000	06/02/81
			0.0000	0.0000	0.0000	0.0000	06/10/81
			0.0000	0.0000	0.0000	0.0000	06/12/81

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-5	Ventilation	30-58/59	0.0000	0.0000	0.0000	0.0000	06/25/81
			0.0000	0.0000	0.0000	0.0000	07/10/81
			0.0000	0.0000	0.0000	0.0000	08/16/81
			0.0000	0.0000	0.0000	0.0000	08/22/81
			0.0000	0.0000	0.0000	0.0000	09/04/81
			0.0000	0.0000	0.0000	0.0000	10/20/81
			0.0000	0.0000	0.0000	0.0000	10/21/81
			0.0000	0.0000	0.0000	0.0000	11/22/81
			0.0000	0.0000	0.0000	0.0000	11/28/81
			0.0000	0.0000	0.0000	0.0000	12/06/81
			0.0000	0.0000	0.0000	0.0000	12/18/81
			0.0000	0.0000	0.0000	0.0000	12/27/81
			0.0000	0.0000	0.0000	0.0000	01/02/82
			0.0000	0.0000	0.0000	0.0000	02/03/82
			0.0000	0.0000	0.0000	0.0000	03/08/82
			0.0000	0.0000	0.0000	0.0000	04/11/82
			0.0000	0.0000	0.0000	0.0000	04/14/82
			0.0000	0.0000	0.0000	0.0000	04/23/82
			0.0000	0.0000	0.0000	0.0000	04/26/82
			0.0000	0.0000	0.0000	0.0000	04/29/82
			0.0000	0.0000	0.0000	0.0000	05/13/82
			0.0000	0.0000	0.0000	0.0000	05/21/82
			0.0000	0.0000	0.0000	0.0000	05/25/82
			0.0000	0.0000	0.0000	0.0000	05/27/82
			0.0000	0.0000	0.0000	0.0000	05/30/82
			0.0000	0.0000	0.0000	0.0000	06/02/82
			0.0000	0.0000	0.0000	0.0000	06/06/82
			0.0000	0.0000	0.0000	0.0000	06/09/82
			0.0000	0.0000	0.0000	0.0000	06/12/82
			0.0000	0.0000	0.0000	0.0000	06/17/82
			0.0000	0.0000	0.0000	0.0000	06/19/82

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-5	Ventilation	30-58/59	0.0000	0.0000	0.0000	0.0000	06/21/82
			0.0000	0.0000	0.0000	0.0000	06/23/82
			0.0000	0.0000	0.0000	0.0000	06/25/82
			0.0000	0.0000	0.0000	0.0000	06/28/82
X-6	Ventilation	30-52/53	0.0000	0.0000	0.0000	0.0000	10/18/79
			0.0000	0.0000	0.0000	0.0000	04/18/79
			0.0000	0.0000	0.0000	0.0000	05/23/80
			0.0000	0.0000	0.0000	0.0000	06/19/80
			0.0000	0.0000	0.0000	0.0000	06/30/80
			0.0000	0.0000	0.0000	0.0000	09/26/80
			0.0000	0.0000	0.0000	0.0000	10/09/80
			0.0000	0.0000	0.0000	0.0000	10/28/80
			0.0000	0.0000	0.0000	0.0000	11/10/80
			0.2508	0.2508	0.2508	0.2508	11/19/80
			0.0000	0.0000	0.0000	0.0000	12/12/80
			0.0000	0.0000	0.0000	0.0000	03/04/81
			0.0193	0.0193	0.0193	0.0193	03/19/81
			0.0000	0.0000	0.0000	0.0000	04/04/81
			0.0000	0.0000	0.0000	0.0000	05/13/81
			0.0000	0.0000	0.0000	0.0000	05/23/81
			0.1199	0.1199	0.1199	0.1199	05/25/81
			0.0000	0.0000	0.0000	0.0000	06/25/81
			0.0000	0.0000	0.0000	0.0000	08/16/81
			0.0000	0.0000	0.0000	0.0000	08/22/81
			0.0000	0.0000	0.0000	0.0000	10/21/81
			0.0000	0.0000	0.0000	0.0000	11/17/81
			0.0000	0.0000	0.0000	0.0000	11/20/81
			0.0000	0.0000	0.0000	0.0000	11/22/81
			0.0000	0.0000	0.0000	0.0000	11/28/82

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-6	Ventilation	30-52/53	0.0000	0.0000	0.0000	0.0000	12/26/82
			0.0000	0.0000	0.0000	0.0000	12/27/82
			0.0000	0.0000	0.0000	0.0000	01/02/82
			0.0000	0.0000	0.0000	0.0000	02/03/82
			0.0000	0.0000	0.0000	0.0000	03/08/82
			0.0000	0.0000	0.0000	0.0000	03/21/82
			0.0000	0.0000	0.0000	0.0000	03/31/82
			0.0000	0.0000	0.0000	0.0000	04/03/82
			0.0000	0.0000	0.0000	0.0000	04/11/82
			0.0000	0.0000	0.0000	0.0000	04/14/82
			0.0000	0.0000	0.0000	0.0000	04/23/82
			0.0000	0.0000	0.0000	0.0000	04/26/82
			0.0000	0.0000	0.0000	0.0000	05/13/82
			0.0000	0.0000	0.0000	0.0000	05/17/82
			0.0000	0.0000	0.0000	0.0000	05/25/82
			0.0000	0.0000	0.0000	0.0000	05/29/82
			0.0000	0.0000	0.0000	0.0000	06/02/82
			0.0000	0.0000	0.0000	0.0000	06/06/82
			0.0000	0.0000	0.0000	0.0000	06/12/82
			0.0000	0.0000	0.0000	0.0000	06/17/82
			0.0000	0.0000	0.0000	0.0000	06/19/82
X-7	Ventilation	30-50/51	0.0000	0.0000	0.0000	0.0000	10/18/79
			0.1099	0.1099	0.1099	0.1099	04/18/80
			0.0000	0.0000	0.0000	0.0000	05/23/80
			0.0000	0.0000	0.0000	0.0000	06/19/80
			0.0000	0.0000	0.0000	0.0000	06/30/80
			0.0614	0.0614	0.0614	0.0614	09/21/80
			0.0000	0.0000	0.0000	0.0000	09/23/80
			0.0000	0.0000	0.0000	0.0000	10/09/80

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-7	Ventilation	30-50/51	0.0000	0.0000	0.0000	0.0000	10/28/80
			0.0000	0.0000	0.0000	0.0000	11/10/80
			0.0000	0.0000	0.0000	0.0000	12/12/80
			0.0029	0.0029	0.0029	0.0029	12/13/80
			0.0000	0.0000	0.0000	0.0000	03/04/80
			0.0000	0.0000	0.0000	0.0000	03/08/80
			0.0000	0.0000	0.0000	0.0000	03/19/80
			0.0000	0.0000	0.0000	0.0000	04/04/80
			0.0000	0.0000	0.0000	0.0000	05/01/80
			0.0254	0.0254	0.0254	0.0254	05/05/80
			0.0000	0.0000	0.0000	0.0000	05/13/80
			0.0000	0.0000	0.0000	0.0000	05/19/80
			0.0000	0.0000	0.0000	0.0000	05/23/80
			0.0000	0.0000	0.0000	0.0000	05/25/80
			0.0000	0.0000	0.0000	0.0000	05/27/80
			0.0000	0.0000	0.0000	0.0000	05/29/80
			0.0000	0.0000	0.0000	0.0000	06/02/81
			0.1842	0.1842	0.1842	0.1842	06/18/81
			0.0000	0.0000	0.0000	0.0000	06/25/81
			0.0000	0.0000	0.0000	0.0000	06/26/81
			0.0000	0.0000	0.0000	0.0000	07/15/81
			0.0000	0.0000	0.0000	0.0000	07/18/81
			0.0000	0.0000	0.0000	0.0000	08/16/81
			0.0000	0.0000	0.0000	0.0000	08/17/81
			0.0000	0.0000	0.0000	0.0000	08/18/81
			0.0000	0.0000	0.0000	0.0000	08/22/81
			0.0000	0.0000	0.0000	0.0000	09/05/81
			0.0000	0.0000	0.0000	0.0000	10/21/81
			0.0000	0.0000	0.1150	0.1150	10/22/81
			0.0000	0.0000	0.0000	0.0000	11/22/81
			0.0000	0.0000	0.0000	0.0000	12/06/81

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-7	Ventilation	30-50/51	0.0000	0.0000	0.0000	0.0000	12/09/81
			0.0000	0.0000	0.0000	0.0000	12/18/81
			0.0000	0.0000	0.0000	0.0000	12/26/81
			0.0000	0.0000	0.0000	0.0000	12/27/81
			0.0000	0.0000	0.0000	0.0000	01/02/82
			0.0000	0.0000	0.0000	0.0000	01/05/82
			0.0000	0.0000	0.0000	0.0000	01/09/82
			0.0000	0.0000	0.0000	0.0000	01/12/82
			0.0000	0.0000	0.0000	0.0000	01/16/82
			0.4658	0.4658	0.4658	0.4658	02/03/82
			0.0000	0.0000	0.0000	0.0000	02/05/82
			0.0000	0.0000	0.0000	0.0000	02/08/82
			0.0000	0.0000	0.0000	0.0000	02/24/82
			0.0000	0.0000	0.0000	0.0000	03/08/82
			0.0000	0.0000	0.0000	0.0000	03/17/82
			0.0000	0.0000	0.0000	0.0000	03/18/82
			0.0000	0.0000	0.0000	0.0000	03/21/82
			0.0000	0.0000	0.0000	0.0000	03/25/82
			0.0000	0.0000	0.0000	0.0000	03/27/82
			0.0000	0.0000	0.0000	0.0000	04/06/82
			0.0000	0.0000	0.0000	0.0000	04/16/82
			0.0000	0.0000	0.0000	0.0000	04/23/82
			0.0000	0.0000	0.0000	0.0000	04/26/82
			0.0000	0.0000	0.0000	0.0000	04/29/82
			0.0000	0.0000	0.0000	0.0000	04/30/82
			0.0000	0.0000	0.0000	0.0000	05/04/82
			0.0000	0.0000	0.0000	0.0000	05/05/82
			0.0000	0.0000	0.0000	0.0000	05/13/82
			0.0000	0.0000	0.0000	0.0000	05/21/82
			0.0000	0.0000	0.0000	0.0000	05/25/82
			0.0000	0.0000	0.0000	0.0000	05/30/82

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-7	Ventilation	30-50/51	0.0000	0.0000	0.0000	0.0000	06/09/82
			0.0000	0.0000	0.0000	0.0000	06/12/82
			0.0000	0.0000	0.0000	0.0000	06/17/82
			0.0000	0.0000	0.0000	0.0000	06/28/82
X-9A	Ventilation	30-7/8	0.0000	0.0000	0.0000	0.0000	10/18/79
			0.0000	0.0000	0.0000	0.0000	04/18/80
			0.0000	0.0000	0.0000	0.0000	05/23/80
			0.2002	0.2002	0.2002	0.2002	06/29/80
			0.0000	0.0000	0.0000	0.0000	06/30/80
			0.0254	0.0254	0.0254	0.0254	09/21/80
			0.0000	0.0000	0.0000	0.0000	09/27/80
			0.0000	0.0000	0.0000	0.0000	10/09/80
			0.0000	0.0000	0.0000	0.0000	10/28/80
			0.0000	0.0000	0.0000	0.0000	11/10/80
			0.0000	0.0000	0.0000	0.0000	11/26/80
			0.0000	0.0000	0.0000	0.0000	12/12/80
			0.0000	0.0000	0.0000	0.0000	12/13/80
			0.0000	0.0000	0.0000	0.0000	03/04/81
			0.0000	0.0000	0.0000	0.0000	03/08/81
			0.0000	0.0000	0.0000	0.0000	03/19/81
			0.0000	0.0000	0.0000	0.0000	04/04/81
			0.0000	0.0000	0.0000	0.0000	05/01/81
			0.0000	0.0000	0.0000	0.0000	05/05/81
			0.0530	0.0530	0.0530	0.0530	05/13/81
			0.0000	0.0000	0.0000	0.0000	05/19/81
			0.1338	0.1338	0.1338	0.1338	05/23/81
			0.0000	0.0000	0.0000	0.0000	05/25/81
			0.0000	0.0000	0.0000	0.0000	05/27/81
			0.0000	0.0000	0.0000	0.0000	05/29/81

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-9A	Ventilation	30-7/8	0.0000	0.0000	0.0000	0.0000	06/02/81
			0.0000	0.0000	0.0000	0.0000	06/10/81
			0.0000	0.0000	0.0000	0.0000	06/25/81
			0.0000	0.0000	0.0000	0.0000	06/26/81
			0.0000	0.0000	0.0000	0.0000	07/15/81
			0.0000	0.0000	0.0000	0.0000	07/18/81
			0.0000	0.0000	0.0000	0.0000	08/16/81
			0.0000	0.0000	0.0000	0.0000	08/17/81
			0.0000	0.0000	0.0000	0.0000	08/18/81
			0.0000	0.0000	0.0000	0.0000	08/22/81
			0.0000	0.0000	0.0000	0.0000	09/03/81
			0.0000	0.0000	0.0000	0.0000	09/05/81
			0.0000	0.0000	0.0000	0.0000	10/21/81
			0.0000	0.0000	0.0000	0.0000	10/22/81
			0.0000	0.0000	0.0000	0.0000	11/22/81
			0.0000	0.0000	0.0000	0.0000	12/06/81
			0.0000	0.0000	0.0000	0.0000	12/09/81
			0.0000	0.0000	0.0000	0.0000	12/18/81
			0.0000	0.0000	0.0000	0.0000	12/26/81
			0.0000	0.0000	0.0000	0.0000	12/29/81
			0.0000	0.0000	0.0000	0.0000	01/02/82
			0.0000	0.0000	0.0000	0.0000	01/05/82
			0.0000	0.0000	0.0000	0.0000	01/09/82
			0.0000	0.0000	0.0000	0.0000	01/12/82
			0.0000	0.0000	0.0000	0.0000	01/16/82
			0.0000	0.0000	0.0000	0.0000	02/03/82
			0.0000	0.0000	0.0000	0.0000	02/05/82
			0.0000	0.0000	0.0000	0.0000	02/08/82
			0.0000	0.0000	0.0000	0.0000	02/24/82
			0.0000	0.0000	0.0000	0.0000	03/08/82
			0.0000	0.0000	0.0000	0.0000	03/18/82

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-9A	Ventilation	30-7/8	0.0000	0.0000	0.0000	0.0000	06/26/81
			0.0000	0.0000	0.0000	0.0000	07/15/81
			0.0000	0.0000	0.0000	0.0000	07/18/81
			0.0000	0.0000	0.0000	0.0000	08/16/81
			0.0000	0.0000	0.0000	0.0000	08/17/81
			0.0000	0.0000	0.0000	0.0000	08/22/81
			0.0000	0.0000	0.0000	0.0000	09/03/81
			0.0000	0.0000	0.0000	0.0000	09/05/81
			0.0000	0.0000	0.0000	0.0000	10/21/81
			0.0000	0.0000	0.0000	0.0000	10/22/81
			0.0000	0.0000	0.0000	0.0000	11/22/81
			0.0000	0.0000	0.0000	0.0000	12/06/81
			0.0000	0.0000	0.0000	0.0000	12/09/81
			0.0000	0.0000	0.0000	0.0000	12/18/81
			0.0000	0.0000	0.0000	0.0000	12/26/81
			0.0000	0.0000	0.0000	0.0000	12/29/81
			0.0000	0.0000	0.0000	0.0000	01/02/82
			0.0000	0.0000	0.0000	0.0000	01/05/82
			0.0000	0.0000	0.0000	0.0000	01/09/82
			0.0000	0.0000	0.0000	0.0000	01/12/82
			0.0000	0.0000	0.0000	0.0000	01/16/82
			0.0000	0.0000	0.0000	0.0000	02/03/82
			0.0000	0.0000	0.0000	0.0000	02/05/82
			0.0000	0.0000	0.0000	0.0000	02/08/82
			0.0000	0.0000	0.0000	0.0000	02/24/82
			0.0000	0.0000	0.0000	0.0000	03/08/82
			0.0000	0.0000	0.0000	0.0000	03/18/82
			0.0000	0.0000	0.0000	0.0000	03/21/82
			0.0000	0.0000	0.0000	0.0000	03/25/82
			0.0000	0.0000	0.0000	0.0000	03/27/82
			0.0000	0.0000	0.0000	0.0000	04/06/82

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-9A	Ventilation	30-7/8	0.0000	0.0000	0.0000	0.0000	04/16/82
			0.0000	0.0000	0.0000	0.0000	04/23/82
			0.0000	0.0000	0.0000	0.0000	04/26/82
			0.0000	0.0000	0.0000	0.0000	04/29/82
			0.0000	0.0000	0.0000	0.0000	04/30/82
			0.0000	0.0000	0.0000	0.0000	05/04/82
			0.0000	0.0000	0.0000	0.0000	05/05/82
			0.0000	0.0000	0.0000	0.0000	05/13/82
			0.0000	0.0000	0.0000	0.0000	05/21/82
			0.0000	0.0000	0.0000	0.0000	05/25/82
			0.0000	0.0000	0.0000	0.0000	05/30/82
			0.0000	0.0000	0.0000	0.0000	06/09/82
			0.0000	0.0000	0.0000	0.0000	06/17/82
			0.0000	0.0000	0.0000	0.0000	06/28/82
X-9B	Ventilation	30-9/10	0.0000	0.0000	0.0000	0.0000	10/18/79
			0.0000	0.0000	0.0000	0.0000	04/18/80
			0.1060	0.1060	0.1060	0.1060	05/23/80
			0.0000	0.0000	0.0000	0.0000	06/03/80
			0.0071	0.0071	0.0071	0.0071	06/19/80
			0.0000	0.0000	0.0000	0.0000	09/21/80
			0.2119	0.2119	0.2119	0.2119	10/09/80
			0.0000	0.0000	0.0000	0.0000	10/28/80
			0.0000	0.0000	0.0000	0.0000	11/10/80
			0.0000	0.0000	0.0000	0.0000	11/19/80
			0.0000	0.0000	0.0000	0.0000	03/04/81
			0.0000	0.0000	0.0000	0.0000	03/19/81
			0.0000	0.0000	0.0000	0.0000	04/04/81
			0.0000	0.0000	0.0000	0.0000	05/04/81
			0.0000	0.0000	0.0000	0.0000	05/13/81

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-9B	Ventilation	30-9/10	0.0000	0.0000	0.0000	0.0000	05/23/81
			0.0000	0.0000	0.0000	0.0000	05/25/81
			0.0000	0.0000	0.0000	0.0000	06/24/81
			0.0714	0.0714	0.0714	0.0714	08/16/81
			0.0000	0.0000	0.0000	0.0000	08/18/81
			0.0000	0.0000	0.0000	0.0000	08/22/81
			0.0000	0.0000	0.0000	0.0000	10/21/81
			0.0000	0.0000	0.0000	0.0000	11/17/81
			0.0000	0.0000	0.0000	0.0000	11/20/81
			0.0000	0.0000	0.0000	0.0000	11/22/81
			0.0000	0.0000	0.0000	0.0000	11/28/81
			0.0000	0.0000	0.0000	0.0000	12/26/81
X-9B	Ventilation	30-9/10	0.0000	0.0000	0.0000	0.0000	12/27/81
			0.0000	0.0000	0.0000	0.0000	01/02/82
			0.0000	0.0000	0.0000	0.0000	02/03/82
			0.0000	0.0000	0.0000	0.0000	03/08/82
			0.0000	0.0000	0.0000	0.0000	03/21/82
			0.0000	0.0000	0.0000	0.0000	03/31/82
			0.0000	0.0000	0.0000	0.0000	04/11/82
			0.0000	0.0000	0.0000	0.0000	04/14/82
			0.0000	0.0000	0.0000	0.0000	04/23/82
			0.0000	0.0000	0.0000	0.0000	04/26/82
			0.0000	0.0000	0.0000	0.0000	05/13/82
			0.0000	0.0000	0.0000	0.0000	05/17/82
			0.0000	0.0000	0.0000	0.0000	05/25/82
			0.0000	0.0000	0.0000	0.0000	05/27/82
			0.0000	0.0000	0.0000	0.0000	06/02/82
			0.0000	0.0000	0.0000	0.0000	06/06/82
			0.0000	0.0000	0.0000	0.0000	06/12/82

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-10A	Ventilation	30-14/15	0.0000	0.0000	0.0000	0.0000	10/18/79
			0.0000	0.0000	0.0000	0.0000	04/17/80
			0.0000	0.0000	0.0000	0.0000	05/23/80
			0.0000	0.0000	0.0000	0.0000	05/24/80
			0.0000	0.0000	0.0000	0.0000	06/30/80
			0.0000	0.0000	0.0000	0.0000	07/02/80
			0.0000	0.0000	0.0000	0.0000	07/09/80
			0.0000	0.0000	0.0000	0.0000	09/21/80
			0.1165	0.1165	0.1165	0.1165	09/23/80
			0.0000	0.0000	0.0000	0.0000	09/29/80
			0.1800	0.1800	0.1800	0.1800	10/09/80
			0.0000	0.0000	0.0000	0.0000	10/12/80
			0.0000	0.0000	0.0000	0.0000	10/28/80
			0.0000	0.0000	0.0000	0.0000	10/31/80
			0.0000	0.0000	0.0000	0.0000	11/07/80
			0.0000	0.0000	0.0000	0.0000	11/10/80
			0.0000	0.0000	0.0000	0.0000	12/12/80
			0.0000	0.0000	0.0000	0.0000	03/04/81
			0.0000	0.0000	0.0000	0.0000	03/08/81
			0.0000	0.0000	0.0000	0.0000	03/19/81
			0.0000	0.0000	0.0000	0.0000	04/28/81
			0.0000	0.0000	0.0000	0.0000	05/01/81
			0.0636	0.0636	0.0636	0.0636	05/05/81
			0.0297	0.0297	0.0297	0.0297	05/13/81
			0.1179	0.1179	0.1179	0.1179	05/17/81
			0.0000	0.0000	0.0000	0.0000	05/23/81
			0.0000	0.0000	0.0000	0.0000	05/25/81
			0.0000	0.0000	0.0000	0.0000	05/28/81
			0.0000	0.0000	0.0000	0.0000	06/02/81
			0.0000	0.0000	0.0000	0.0000	06/05/81
			0.0000	0.0000	0.0000	0.0000	06/10/81

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-10A	Ventilation	30-14/15	0.0000	0.0000	0.0000	0.0000	06/25/81
			0.0000	0.0000	0.0000	0.0000	06/26/81
			0.0000	0.0000	0.0000	0.0000	07/10/81
			0.0000	0.0000	0.0000	0.0000	07/15/81
			0.0000	0.0000	0.0000	0.0000	07/17/81
			0.0000	0.0000	0.0000	0.0000	07/18/81
			0.0000	0.0000	0.0000	0.0000	07/20/81
			0.0000	0.0000	0.0000	0.0000	07/30/81
			0.0000	0.0000	0.0000	0.0000	08/01/81
			0.0000	0.0000	0.0000	0.0000	08/02/81
			0.0000	0.0000	0.0000	0.0000	08/03/81
			0.0000	0.0000	0.0000	0.0000	08/04/81
			0.0000	0.0000	0.0000	0.0000	08/05/81
			0.0000	0.0000	0.0000	0.0000	08/07/81
			0.0000	0.0000	0.0000	0.0000	08/16/81
			0.0000	0.0000	0.0000	0.0000	08/17/81
			0.0000	0.0000	0.0000	0.0000	08/18/81
			0.0000	0.0000	0.0000	0.0000	08/22/81
			0.0000	0.0000	0.0000	0.0000	09/05/81
			0.0000	0.0000	0.0000	0.0000	10/21/81
			0.0000	0.0000	0.0000	0.0000	10/22/81
			0.0000	0.0000	0.0000	0.0000	11/17/81
			0.0000	0.0000	0.0000	0.0000	11/22/81
			0.0000	0.0000	0.0000	0.0000	11/28/81
			0.0000	0.0000	0.0000	0.0000	12/06/81
			0.0000	0.0000	0.0000	0.0000	12/09/81
			0.0000	0.0000	0.0000	0.0000	12/18/81
			0.0000	0.0000	0.0000	0.0000	12/20/81
			0.0000	0.0000	0.0000	0.0000	01/02/82
			0.0000	0.0000	0.0000	0.0000	01/05/82
			0.0000	0.0000	0.0000	0.0000	01/09/82

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-10A	Ventilation	30-14/15	0.0000	0.0000	0.0000	0.0000	01/12/82
			0.0000	0.0000	0.0000	0.0000	01/16/82
			0.0000	0.0000	0.0000	0.0000	02/03/82
			0.0000	0.0000	0.0000	0.0000	02/05/82
			0.0000	0.0000	0.0000	0.0000	02/26/82
			0.0000	0.0000	0.0000	0.0000	03/08/82
			0.0000	0.0000	0.0000	0.0000	03/18/82
			0.0000	0.0000	0.0000	0.0000	03/21/82
			0.0000	0.0000	0.0000	0.0000	03/25/82
			0.0000	0.0000	0.0000	0.0000	03/27/82
			0.0000	0.0000	0.0000	0.0000	03/31/82
			0.0000	0.0000	0.0000	0.0000	04/02/82
			0.0000	0.0000	0.0000	0.0000	04/03/82
			0.0000	0.0000	0.0000	0.0000	04/11/82
			0.0000	0.0000	0.0000	0.0000	04/14/82
			0.0000	0.0000	0.0000	0.0000	04/23/82
			0.0000	0.0000	0.0000	0.0000	04/26/82
			0.0000	0.0000	0.0000	0.0000	04/29/82
			0.0000	0.0000	0.0000	0.0000	05/04/82
			0.0000	0.0000	0.0000	0.0000	05/13/82
			0.0000	0.0000	0.0000	0.0000	05/17/82
			0.0000	0.0000	0.0000	0.0000	05/21/82
			0.0000	0.0000	0.0000	0.0000	05/25/82
			0.0000	0.0000	0.0000	0.0000	05/27/82
			0.0000	0.0000	0.0000	0.0000	05/30/82
			0.0000	0.0000	0.0000	0.0000	06/02/82
			0.0000	0.0000	0.0000	0.0000	06/06/82
			0.0000	0.0000	0.0000	0.0000	06/09/82
			0.0000	0.0000	0.0000	0.0000	06/12/82
			0.0000	0.0000	0.0000	0.0000	06/17/82
			0.0000	0.0000	0.0000	0.0000	06/21/82

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-10A	Ventilation	30-14/15	0.0000	0.0000	0.0000	0.0000	06/23/82
			0.0000	0.0000	0.0000	0.0000	06/25/82
			0.0000	0.0000	0.0000	0.0000	06/28/82
X-10B	Ventilation	30-16/17	0.0000	0.0000	0.0000	0.0000	10/25/79
			0.0000	0.0000	0.0000	0.0000	04/18/80
			0.2531	0.2531	0.2531	0.2531	05/13/80
			0.0017	0.0017	0.0017	0.0017	05/24/80
			0.0000	0.0000	0.0000	0.0000	06/19/80
			0.0000	0.0000	0.0000	0.0000	06/22/80
			0.1822	0.1822	0.1822	0.1822	07/12/80
			0.0000	0.0000	0.0000	0.0000	09/21/80
			0.0000	0.0000	0.0000	0.0000	09/23/80
			0.0000	0.0000	0.0000	0.0000	10/09/80
			0.0000	0.0000	0.0000	0.0000	10/28/80
			0.0000	0.0000	0.0000	0.0000	11/10/80
			0.0000	0.0000	0.0000	0.0000	12/12/80
			0.0000	0.0000	0.0000	0.0000	03/04/81
			0.0000	0.0000	0.0000	0.0000	03/19/81
			0.0000	0.0000	0.0000	0.0000	04/04/81
			0.0000	0.0000	0.0000	0.0000	05/13/81
			0.0000	0.0000	0.0000	0.0000	05/23/81
			0.0000	0.0000	0.0000	0.0000	06/03/81
			0.0000	0.0000	0.0000	0.0000	06/24/81
			0.0000	0.0000	0.0000	0.0000	08/16/81
			0.0000	0.0000	0.0000	0.0000	08/18/81
			0.0000	0.0000	0.0000	0.0000	08/21/81
			0.0000	0.0000	0.0000	0.0000	08/22/81
			0.0000	0.0000	0.0000	0.0000	10/21/81
			0.0000	0.0000	0.0000	0.0000	11/22/81

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-10B	Ventilation	30-16/17	0.0000	0.0000	0.0000	0.0000	12/27/81
			0.0000	0.0000	0.0000	0.0000	01/02/82
			0.0000	0.0000	0.0000	0.0000	02/03/82
			0.0000	0.0000	0.0000	0.0000	03/08/82
			0.0000	0.0000	0.0000	0.0000	04/23/82
			0.0000	0.0000	0.0000	0.0000	04/26/82
			0.0000	0.0000	0.0000	0.0000	04/29/82
			0.0000	0.0000	0.0000	0.0000	04/30/82
			0.0000	0.0000	0.0000	0.0000	05/13/82
			0.0000	0.0000	0.0000	0.0000	05/25/82
			0.0000	0.0000	0.0000	0.0000	06/12/82
			0.0000	0.0000	0.0000	0.0000	06/17/82
X-11	Ventilation	30-19/20	0.0000	0.0000	0.0000	0.0000	10/12/79
			0.0000	0.0000	0.0000	0.0000	05/01/80
			0.0000	0.0000	0.0000	0.0000	05/23/80
			0.0000	0.0000	0.0000	0.0000	06/19/80
			0.0000	0.0000	0.0000	0.0000	06/30/80
			0.0000	0.0000	0.0000	0.0000	07/18/80
			0.0000	0.0000	0.0000	0.0000	09/21/80
			0.0000	0.0000	0.0000	0.0000	10/09/80
			0.0000	0.0000	0.0000	0.0000	10/28/80
			0.0000	0.0000	0.0000	0.0000	10/31/80
			0.0000	0.0000	0.0000	0.0000	11/10/80
			0.0000	0.0000	0.0000	0.0000	11/14/80
			0.0000	0.0000	0.0000	0.0000	11/17/80
			0.0000	0.0000	0.0000	0.0000	12/12/80
			0.0000	0.0000	0.0000	0.0000	03/04/81
			0.0000	0.0000	0.0000	0.0000	03/09/81
			0.0000	0.0000	0.0000	0.0000	03/19/81

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-11	Ventilation	30-19/20	0.0000	0.0000	0.0000	0.0000	04/04/81
			0.0000	0.0000	0.0000	0.0000	05/01/81
			0.0000	0.0000	0.0000	0.0000	05/04/81
			0.0000	0.0000	0.0000	0.0000	05/13/81
			0.0000	0.0000	0.0000	0.0000	05/23/81
			0.0000	0.0000	0.0000	0.0000	05/24/81
			0.0000	0.0000	0.0000	0.0000	06/02/81
			0.0000	0.0000	0.0000	0.0000	06/10/81
			0.0000	0.0000	0.0000	0.0000	06/12/81
			0.0000	0.0000	0.0000	0.0000	06/24/81
			0.0000	0.0000	0.0000	0.0000	07/10/81
			0.0000	0.0000	0.0000	0.0000	08/16/81
			0.0000	0.0000	0.0000	0.0000	08/18/81
			0.0000	0.0000	0.0000	0.0000	08/22/81
			0.0000	0.0000	0.0000	0.0000	10/21/81
			0.0000	0.0000	0.0000	0.0000	11/22/81
			0.0000	0.0000	0.0000	0.0000	11/28/81
			0.0000	0.0000	0.0000	0.0000	12/06/81
			0.0000	0.0000	0.0000	0.0000	12/18/81
			0.0000	0.0000	0.0000	0.0000	12/26/81
			0.0000	0.0000	0.0000	0.0000	12/27/81
			0.0000	0.0000	0.0000	0.0000	12/28/81
			0.0000	0.0000	0.0000	0.0000	01/02/82
			0.0000	0.0000	0.0000	0.0000	02/05/82
			0.0000	0.0000	0.0000	0.0000	02/08/82
			0.0000	0.0000	0.0000	0.0000	03/08/82
			0.0000	0.0000	0.0000	0.0000	04/11/82
			0.0000	0.0000	0.0000	0.0000	04/14/82
			0.0000	0.0000	0.0000	0.0000	04/23/82
			0.0000	0.0000	0.0000	0.0000	04/26/82
			0.0000	0.0000	0.0000	0.0000	04/29/82

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-11	Ventilation	30-19/20	0.0000	0.0000	0.0000	0.0000	05/13/82
			0.0000	0.0000	0.0000	0.0000	05/21/82
			0.0000	0.0000	0.0000	0.0000	05/25/82
			0.0000	0.0000	0.0000	0.0000	05/27/82
			0.0000	0.0000	0.0000	0.0000	05/30/82
			0.0000	0.0000	0.0000	0.0000	06/02/82
			0.0000	0.0000	0.0000	0.0000	06/06/82
			0.0000	0.0000	0.0000	0.0000	06/09/82
			0.0000	0.0000	0.0000	0.0000	06/12/82
			0.0000	0.0000	0.0000	0.0000	06/17/82
			0.0000	0.0000	0.0000	0.0000	06/19/82
			0.0000	0.0000	0.0000	0.0000	06/21/82
			0.0000	0.0000	0.0000	0.0000	06/23/82
			0.0000	0.0000	0.0000	0.0000	06/25/82
			0.0000	0.0000	0.0000	0.0000	06/28/82
X-97	Ventilation	30-134/135	0.0000	0.0000	0.0000	0.0000	09/20/79
			0.0000	0.0000	0.0000	0.0000	08/26/80
			0.0000	0.0000	0.0000	0.0000	06/24/81
X-111	Ventilation	30-46/571	0.0000	0.0000	0.0000	0.0000	10/22/79
			0.0000	0.0000	0.0000	0.0000	04/30/80
			0.7753	0.7753	0.7753	0.7753	09/23/81
X-112	Ventilation	30-47/572	0.7220	0.7220	0.7220	0.7220	04/16/80
			0.6318	0.6318	0.6318	0.6318	09/27/81

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-113	Ventilation	30-48/573	0.0000	0.0000	0.0000	0.0000	09/20/79
			0.0000	0.0000	0.0000	0.0000	04/16/80
			0.0169	0.0169	0.0169	0.0169	08/04/80
			0.6318	0.6318	0.6318	0.6318	04/27/81
			0.6605	0.6605	0.6605	0.6605	09/23/81
X-80	Ventilation	30-37/40	0.0000	0.0000	0.0000	0.0000	10/12/79
			0.0000	0.0000	0.0000	0.0000	05/04/80
			0.0000	0.0000	0.0000	0.0000	05/13/80
			0.0000	0.0000	0.0000	0.0000	05/24/80
			0.0000	0.0000	0.0000	0.0000	06/19/80
			4.6207	4.6207	4.6207	4.6207	06/28/80
			0.0000	0.0000	0.0000	0.0000	07/03/80
			0.0000	0.0000	0.0000	0.0000	07/12/80
			0.0000	0.0000	0.0000	0.0000	07/14/80
			0.0000	0.0000	0.0000	0.0000	07/18/80
			0.0000	0.0000	0.0000	0.0000	07/21/80
			0.0000	0.0000	0.0000	0.0000	08/08/80
			0.0000	0.0000	0.0000	0.0000	08/11/80
			0.0000	0.0000	0.0000	0.0000	09/21/80
			20.7643	20.7643	0.0000	0.0000	09/23/80
			0.0000	0.0000	0.0000	0.0000	09/29/80
			0.0000	0.0000	0.0000	0.0000	10/01/80
			0.0000	0.0000	0.0000	0.0000	10/03/80
			0.0000	0.0000	0.0000	0.0000	10/07/80
			0.0000	0.0000	0.0000	0.0000	10/08/80
			0.0000	0.0000	0.0000	0.0000	10/09/80
			0.0000	0.0000	0.0000	0.0000	10/12/80
			0.0000	0.0000	0.0000	0.0000	10/15/80
			0.0000	0.0000	0.0000	0.0000	10/17/80

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-80	Ventilation	30-37/04	0.0000	0.0000	0.0000	0.0000	10/20/80
			0.0000	0.0000	0.0000	0.0000	10/22/80
			0.0000	0.0000	0.0000	0.0000	10/24/80
			0.0000	0.0000	0.0000	0.0000	10/28/80
			0.0000	0.0000	0.0000	0.0000	10/31/80
			0.0000	0.0000	0.0000	0.0000	11/03/80
			0.0000	0.0000	0.0000	0.0000	11/05/80
			0.0000	0.0000	0.0000	0.0000	11/10/80
			0.0000	0.0000	0.0000	0.0000	11/12/80
			0.0000	0.0000	0.0000	0.0000	11/14/80
			0.0000	0.0000	0.0000	0.0000	11/17/80
			0.0000	0.0000	0.0000	0.0000	11/21/80
			0.0000	0.0000	0.0000	0.0000	11/25/80
			0.0000	0.0000	0.0000	0.0000	11/26/80
			0.0000	0.0000	0.0000	0.0000	11/28/80
			0.0000	0.0000	0.0000	0.0000	12/01/80
			0.0000	0.0000	0.0000	0.0000	12/03/80
			0.0000	0.0000	0.0000	0.0000	12/05/80
			0.0000	0.0000	0.0000	0.0000	12/15/80
			0.0000	0.0000	0.0000	0.0000	12/17/80
			0.0000	0.0000	0.0000	0.0000	12/19/80
			0.0000	0.0000	0.0000	0.0000	12/22/80
			0.0029	0.0029	0.0029	0.0029	01/02/81
			0.0000	0.0000	0.0000	0.0000	01/05/81
			0.0073	0.0073	0.0073	0.0073	01/09/81
			0.0010	0.0010	0.0010	0.0010	01/12/81
			0.0145	0.0145	0.0145	0.0145	01/14/81
			0.0116	0.0116	0.0116	0.0116	01/16/81
			0.0145	0.0145	0.0145	0.0145	01/17/81
			0.0145	0.0145	0.0145	0.0145	01/21/81
			0.0000	0.0000	0.0000	0.0000	01/23/81

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-80	Ventilation	30-37/40	0.0000	0.0000	0.0000	0.0000	10/28/81
			0.0000	0.0000	0.0000	0.0000	10/30/81
			0.0000	0.0000	0.0000	0.0000	11/02/81
			0.0000	0.0000	0.0000	0.0000	11/04/81
			0.0000	0.0000	0.0000	0.0000	11/06/81
			0.0000	0.0000	0.0000	0.0000	11/09/81
			0.0000	0.0000	0.0000	0.0000	11/12/81
			0.0000	0.0000	0.0000	0.0000	11/13/81
			0.0000	0.0000	0.0000	0.0000	11/16/81
			0.0000	0.0000	0.0000	0.0000	11/17/81
			0.0000	0.0000	0.0000	0.0000	11/20/81
			0.0000	0.0000	0.0000	0.0000	11/22/81
			0.0000	0.0000	0.0000	0.0000	11/25/81
			0.0000	0.0000	0.0000	0.0000	11/27/81
			0.0000	0.0000	0.0000	0.0000	11/30/81
			0.0000	0.0000	0.0000	0.0000	12/03/81
			0.0000	0.0000	0.0000	0.0000	12/04/81
			0.0000	0.0000	0.0000	0.0000	12/06/81
			0.0000	0.0000	0.0000	0.0000	12/09/81
			0.0000	0.0000	0.0000	0.0000	12/11/81
			0.0000	0.0000	0.0000	0.0000	12/14/81
			0.0000	0.0000	0.0000	0.0000	12/16/81
			0.0000	0.0000	0.0000	0.0000	12/18/81
			0.0000	0.0000	0.0000	0.0000	12/21/81
			0.0000	0.0000	0.0000	0.0000	12/23/81
			0.0000	0.0000	0.0000	0.0000	12/26/81
			0.0000	0.0000	0.0000	0.0000	12/27/81
			0.0000	0.0000	0.0000	0.0000	12/29/81
			0.0000	0.0000	0.0000	0.0000	12/31/81
			0.0000	0.0000	0.0000	0.0000	01/02/82
			0.0000	0.0000	0.0000	0.0000	01/04/82

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-80	Ventilation	30-37/40	0.0000	0.0000	0.0000	0.0000	07/24/81
			0.0000	0.0000	0.0000	0.0000	07/25/81
			0.0000	0.0000	0.0000	0.0000	07/27/81
			9.3374	9.3374	0.0000	0.0000	07/29/81
			0.0000	0.0000	0.0000	0.0000	08/02/81
			0.0000	0.0000	0.0000	0.0000	08/03/81
			0.0000	0.0000	0.0000	0.0000	08/05/81
			1.2167	1.2167	0.0000	0.0000	08/07/81
			0.0000	0.0000	0.0000	0.0000	08/12/81
			0.0000	0.0000	0.0000	0.0000	08/16/81
			0.0000	0.0000	0.0000	0.0000	08/17/81
			0.1511	0.1511	0.1511	0.1511	08/18/81
			0.0000	0.0000	0.0000	0.0000	08/19/81
			0.0000	0.0000	0.0000	0.0000	08/21/81
			0.0000	0.0000	0.0000	0.0000	08/22/81
			0.0000	0.0000	0.0000	0.0000	08/24/81
			0.0000	0.0000	0.0000	0.0000	08/26/81
			0.0000	0.0000	0.0000	0.0000	08/28/81
			0.0000	0.0000	0.0000	0.0000	08/31/81
			0.0000	0.0000	0.0000	0.0000	09/01/81
			0.0000	0.0000	0.0000	0.0000	09/02/81
			0.0000	0.0000	0.0000	0.0000	09/04/81
			0.0000	0.0000	0.0000	0.0000	09/07/81
			0.0000	0.0000	0.0000	0.0000	09/09/81
			0.0000	0.0000	0.0000	0.0000	09/11/81
			0.0000	0.0000	0.0000	0.0000	10/21/81
			0.0000	0.0000	0.0000	0.0000	10/22/81
			0.0000	0.0000	0.0000	0.0000	10/23/81
			0.0000	0.0000	0.0000	0.0000	10/24/81
			0.0000	0.0000	0.0000	0.0000	10/25/81
			0.0000	0.0000	0.0000	0.0000	10/26/81

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-80	Ventilation	X-37/04	0.0000	0.0000	0.0000	0.0000	05/13/81
			0.0000	0.0000	0.0000	0.0000	05/18/81
			0.0000	0.0000	0.0000	0.0000	05/20/81
			0.0000	0.0000	0.0000	0.0000	05/22/81
			0.0000	0.0000	0.0000	0.0000	05/23/81
			0.0000	0.0000	0.0000	0.0000	05/25/81
			0.0144	0.0144	0.0000	0.0000	05/27/81
			0.0000	0.0000	0.0000	0.0000	05/29/81
			0.0000	0.0000	0.0000	0.0000	06/02/81
			0.0000	0.0000	0.0000	0.0000	06/03/81
			0.0000	0.0000	0.0000	0.0000	06/04/81
			0.0000	0.0000	0.0000	0.0000	06/08/81
			0.0000	0.0000	0.0000	0.0000	06/10/81
			0.0000	0.0000	0.0000	0.0000	06/12/81
			0.0000	0.0000	0.0000	0.0000	06/15/81
			0.0000	0.0000	0.0000	0.0000	06/17/81
			0.0000	0.0000	0.0000	0.0000	06/19/81
			0.0000	0.0000	0.0000	0.0000	06/24/81
			0.0000	0.0000	0.0000	0.0000	06/25/81
			0.0000	0.0000	0.0000	0.0000	06/26/81
			0.0000	0.0000	0.0000	0.0000	06/29/81
			0.0000	0.0000	0.0000	0.0000	07/01/81
			0.0000	0.0000	0.0000	0.0000	07/03/81
			0.0000	0.0000	0.0000	0.0000	07/06/81
			0.0000	0.0000	0.0000	0.0000	07/08/81
			0.0000	0.0000	0.0000	0.0000	07/10/81
			0.0000	0.0000	0.0000	0.0000	07/13/81
			0.0000	0.0000	0.0000	0.0000	07/15/81
			0.0000	0.0000	0.0000	0.0000	07/17/81
			0.0000	0.0000	0.0000	0.0000	07/20/81
			0.0000	0.0000	0.0000	0.0000	07/22/81

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-80	Ventilation	30-37/40	0.0000	0.0000	0.0000	0.0000	01/26/81
			0.0000	0.0000	0.0000	0.0000	01/28/81
			0.0000	0.0000	0.0000	0.0000	01/30/81
			0.0000	0.0000	0.0000	0.0000	02/02/81
			0.0000	0.0000	0.0000	0.0000	02/04/81
			0.0000	0.0000	0.0000	0.0000	03/04/81
			0.0000	0.0000	0.0000	0.0000	03/09/81
			0.0000	0.0000	0.0000	0.0000	03/11/81
			0.0000	0.0000	0.0000	0.0000	03/13/81
			0.0000	0.0000	0.0000	0.0000	03/16/81
			0.0000	0.0000	0.0000	0.0000	03/19/81
			0.0000	0.0000	0.0000	0.0000	03/20/81
			0.0000	0.0000	0.0000	0.0000	03/22/81
			0.0000	0.0000	0.0000	0.0000	03/25/81
			0.0000	0.0000	0.0000	0.0000	04/03/81
			0.0000	0.0000	0.0000	0.0000	04/06/81
			0.0000	0.0000	0.0000	0.0000	04/08/81
			0.0000	0.0000	0.0000	0.0000	04/10/81
			0.0000	0.0000	0.0000	0.0000	04/13/81
			0.0000	0.0000	0.0000	0.0000	04/15/81
			0.0000	0.0000	0.0000	0.0000	04/17/81
			0.0000	0.0000	0.0000	0.0000	04/20/81
			0.0000	0.0000	0.0000	0.0000	04/22/81
			0.0000	0.0000	0.0000	0.0000	04/24/81
			0.0000	0.0000	0.0000	0.0000	04/27/81
			0.0000	0.0000	0.0000	0.0000	04/29/81
			0.0000	0.0000	0.0000	0.0000	05/01/81
			0.0000	0.0000	0.0000	0.0000	05/04/81
			0.0000	0.0000	0.0000	0.0000	05/06/81
			0.0000	0.0000	0.0000	0.0000	05/08/81
			0.0000	0.0000	0.0000	0.0000	05/11/81

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-80	Ventilation	30-37/40	0.0000	0.0000	0.0000	0.0000	01/05/82
			0.0000	0.0000	0.0000	0.0000	01/08/82
			0.0000	0.0000	0.0000	0.0000	01/12/82
			0.0000	0.0000	0.0000	0.0000	01/14/82
			0.0000	0.0000	0.0000	0.0000	01/15/82
			0.0000	0.0000	0.0000	0.0000	01/16/82
			0.0000	0.0000	0.0000	0.0000	01/18/82
			0.0000	0.0000	0.0000	0.0000	02/03/82
			0.0000	0.0000	0.0000	0.0000	02/05/82
			0.0000	0.0000	0.0000	0.0000	02/08/82
			0.0000	0.0000	0.0000	0.0000	02/10/82
			0.0000	0.0000	0.0000	0.0000	02/13/82
			0.0000	0.0000	0.0000	0.0000	02/16/82
			0.0000	0.0000	0.0000	0.0000	02/19/82
			0.0000	0.0000	0.0000	0.0000	02/22/82
			0.0000	0.0000	0.0000	0.0000	02/24/82
			0.0000	0.0000	0.0000	0.0000	02/26/82
			0.0000	0.0000	0.0000	0.0000	03/08/82
			0.0000	0.0000	0.0000	0.0000	03/10/82
			0.0000	0.0000	0.0000	0.0000	03/12/82
			0.0000	0.0000	0.0000	0.0000	03/15/82
			0.0000	0.0000	0.0000	0.0000	03/17/82
			0.0000	0.0000	0.0000	0.0000	03/19/82
			0.0000	0.0000	0.0000	0.0000	03/22/82
			0.0000	0.0000	0.0000	0.0000	03/24/82
			0.0000	0.0000	0.0000	0.0000	03/25/82
			0.0000	0.0000	0.0000	0.0000	03/26/82
			0.0000	0.0000	0.0000	0.0000	03/27/82
			0.0000	0.0000	0.0000	0.0000	03/29/82
			0.0000	0.0000	0.0000	0.0000	03/31/82
			0.0000	0.0000	0.0000	0.0000	04/02/82

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-80	Ventilation	30-37/40	0.0000	0.0000	0.0000	0.0000	04/03/82
			0.0000	0.0000	0.0000	0.0000	04/05/82
			0.0000	0.0000	0.0000	0.0000	04/11/82
			0.0000	0.0000	0.0000	0.0000	04/14/82
			0.0000	0.0000	0.0000	0.0000	04/16/82
			0.0000	0.0000	0.0000	0.0000	04/21/82
			0.0000	0.0000	0.0000	0.0000	04/23/82
			0.0000	0.0000	0.0000	0.0000	04/26/82
			0.0000	0.0000	0.0000	0.0000	04/29/82
			0.0000	0.0000	0.0000	0.0000	04/30/82
			0.0000	0.0000	0.0000	0.0000	05/03/82
			0.0000	0.0000	0.0000	0.0000	05/04/82
			0.0000	0.0000	0.0000	0.0000	05/05/82
			0.0000	0.0000	0.0000	0.0000	05/07/82
			0.0000	0.0000	0.0000	0.0000	05/10/82
			0.0000	0.0000	0.0000	0.0000	05/12/82
			0.0000	0.0000	0.0000	0.0000	05/13/82
			0.0000	0.0000	0.0000	0.0000	05/17/82
			0.0000	0.0000	0.0000	0.0000	05/19/82
			0.0000	0.0000	0.0000	0.0000	05/21/82
			0.0000	0.0000	0.0000	0.0000	05/24/82
			0.0000	0.0000	0.0000	0.0000	05/25/82
			0.0000	0.0000	0.0000	0.0000	05/26/82
			0.0000	0.0000	0.0000	0.0000	05/28/82
			0.0000	0.0000	0.0000	0.0000	05/30/82
			0.0000	0.0000	0.0000	0.0000	06/02/82
			0.0000	0.0000	0.0000	0.0000	06/04/82
			0.0000	0.0000	0.0000	0.0000	06/06/82
			0.0000	0.0000	0.0000	0.0000	06/07/82
			0.0000	0.0000	0.0000	0.0000	06/09/82
			0.0000	0.0000	0.0000	0.0000	06/12/82

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-80	Ventilation	30-37/40	0.0000	0.0000	0.0000	0.0000	06/14/82
			0.0000	0.0000	0.0000	0.0000	06/17/82
			0.0000	0.0000	0.0000	0.0000	06/19/82
			0.0000	0.0000	0.0000	0.0000	06/21/82
			0.0000	0.0000	0.0000	0.0000	06/23/82
			0.0000	0.0000	0.0000	0.0000	06/25/82
			0.0000	0.0000	0.0000	0.0000	06/28/82
**X-15	CVCS	62-72/73/74	101.5661		0.0000		09/20/81
		62-77/662	0.8025	0.8025	0.8025	0.8025	AF/AL
			17.5694	17.5694	17.5694	17.5694	01/24/81
			0.0723		0.0723		AF/AL
			0.6981	0.6981	0.6981	0.6981	06/24/81
					0.0000		AF/AL
			32.8840		0.0000	0.0000	09/21/82
			0.9456	0.9456	0.0000		11/02/82
**X-25A	Sampling	43-2	0.0000	0.0000	0.0000		12/28/81
		43-3	0.0000		0.0000	0.0000	AF/AL
			0.0000	0.0000	0.0000		09/28/82 AF
			0.0000		0.0000	0.0000	12/07/82 AL
			0.0000	0.0000	0.0000	0.0000	06/24/81
			0.0000		0		AF/AL

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
**X-25D	Sampling	43-11 43-12	0.000 0.0002	0.000	0.000 0.0002	0.0000 0.0002	01/23/82 AF/AL
			0.0000 0.0000	0.0000	0.0000 0.0000	0.0000	09/28/82 AF 12/07/82 AL
**X-26	Control Air	32-102/295 32-297	0.0000 0.000	0.0000	0.0000 0.0000	0.0000	09/25/81 AF/AL
			0.6204 0.4412	0.4412	0.0000 0.0000	0.0000	10/12/82 AF 12/07/82 AL
**X-27C	1LRT	52-IN 52-OUT	0.0000 0.0000	0.0000	0.0000 0.0000	0.0000	06/23/81 AF/AL
			0.0000 0.0000	0.0000	0.0000 0.0000	0.0000	09/18/82 AF 12/07/82 AL
**X-29	Component Cooling	70-89/698 70-92	0.4053 0.2145	0.2145	0.4053 0.2145	0.4053	09/17/81 AF/AL
			0.1932 0.0000	0.0000	0.0000 0.0000	0.0000	09/18/82 AF 10/22/82 AL
**X-30	SIS	63-71 63-84/23	0.8336 0.5174	0.5174	0.0000 0.0000	0.0000	09/19/81 AF 09/24/81 AL

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
**X-30	SIS	63-71 63-84/23	0.0000 0.2513	0.0000	0.0000 0.0000	0.0000	02/17/82 AF 02/19/82 AL
			16.7345 4.6568	4.6568	0.0000 0.0000	0.0000	09/25/82 AF 12/07/82 AL
**X-31	Sampling System	43-207 43-208	0.0000 0.0000	0.0000	0.0000 0.0000	0.0000	06/23/81 AF/AL
			0.0000 0.0000	0.0000	0.0000 0.0000	0.0000	09/19/82 AF 12/07/82 AL
**X-34	Control Air	32-110/375 32-377	0.0000 0.0000	0.0000	0.0000 0.0000	0.0000	09/25/81 AF 09/27/81 AL
			0.0000 0.0000	0.0000	0.0000 0.0000	0.0000	09/28/82 AF 12/07/82 AL
**X-35	Component Cooling	70-85/143/703	0.0000	0.0000	0.0000	0.0000	10/06/81 AF/AL
			0.6365	0.6365	0.6365	0.6365	09/17/81 AF/AL
			0.8461	0.8461	0.0000	0.0000	09/18/82 AF 10/14/82 AL

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
**X-39A	SIS	63-64 77-868	0.0000 44.7737	0.0000	0.0000 0.0345	0.0345	09/24/81 AF 09/26/81 AL
			0.0000 0.0000	0.0000	0.0000 0.0000	0.0000	09/20/82 AF 12/07/82 AL
**X-39B	Main Cooling	68-305 77-849	0.0000 258.2790	0.0000	0.0000 0.0000	0.0000	09/22/81 AF 09/30/81 AL
			0.0000 0.0000	0.0000	0.0000 0.0000	0.0000	09/20/82 AF 12/07/82 AL
**X-41	Waste Disposal	77-128 77-127	0.0000 0.6365	0.0000	0.0000 0.6365	0.6365	09/20/81 AF/AL
			0.0000 0.0000	0.0000	0.0000 0.0000	0.0000	09/21/82 AF/AL
**X-42	Primary Water	81-12 81-502	0.7731 0.3695	0.3695	0.7731 0.3695	0.7732	09/20/81 AF/AL
			0.0000 1.2550	0.0000	0.0000 0.0000	0.0000	09/17/82 AF 10/01/82 AL
X-44	CVCS	62-61/639 62-63	0.2949 0.6365	0.2949	0.2949 0.6365	0.6365	09/18/81 AF/AL

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-44	CVCS	62-61/639 62-63	0.0723 0.1932	0.0723	0.0000 0.0000	0.0000	09/21/82 AF 10/01/82 AL
**X-45	Waste Disposal	77-18 77-19/20	0.0000 0.2250	0.0000	0.0000 0.0000	0.0000	09/27/81 AF 10/01/81 AL
			0.0000 0.0000	0.0000	0.0000 0.0000	0.0000	09/13/82 AF 12/07/82 AL
**X-46	Waste Disposal	77-9 77-10	could not pressure		0.0000		09/27/81 AF
			0.0000	0.0000	0.0000	0.0000	09/30/81 AL
			0.0000 0.0000	0.0000	0.0000 0.0000	0.0000	09/21/82 AF 12/07/82 AL
**X-47A	Ice Condenser	61-191 61-192/533	0.0000 0.0000	0.0000	0.0000 0.0000	0.0000	09/15/81 AF/AL
			0.0000 0.0994	0.0000	0.0000 0.0000	0.0000	09/30/82 AF 10/07/82 AL
**X-47B	Ice Condenser	61-193 61-194/680	0.0000 0.0000	0.0000	0.0559 0.0000	0.0559	09/30/82 AF 10/07/82 AL

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
**X-50A	Component Cooling	70-87/687	0.1851		0.1851	0.1851	09/16/81 AF/AL
		70-90	0.0000	0.0000	0.0000		
			0.0000	0.0000	0.0000	0.0000	09/17/82 AF
			0.0000		0.0000		12/07/82 AL
X-48A	Containment Spray	72-39	0.0000	0.0000	0.0000	0.0000	09/21/81 AF/AL
			0.0179	0.0179	0.0179	0.0179	09/12/82 AF
							12/07/82 AL
X-48B	Containment Spray	72-2	0.0000	0.0000	0.0000	0.0000	01/29/82 AF/AL
			0.0000	0.0000	0.0000	0.0000	09/12/82 AF
							12/07/82 AL
**X-50B	Component Cooling	70-134	0.0000	0.0000	0.0000		09/16/81 AF/AL
		70-679	16.8014		0.0000	0.0000	
			0.0000	0.0000	0.0000		09/17/82 AF
			0.0000		0.0000	0.0000	12/07/82 AL
**X-51	Fire Protection	26-240	2.2070	2.2070	0.0000	0.0000	09/17/81 AF
		26-1260	495.0941		0.0000		09/20/81 AL

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
**X-51	Fire Protection	26-240	0.0000	0.0000	0.0000	0.0000	09/27/82 AF
		26-1260	145.2820		0.0000		12/07/82 AL
X-52	Component Cooling	70-140	0.1932	0.1932	0.1932		09/17/81 AF
		70-692	389.1722		0.2949	0.2949	09/20/81 AL
			1.0558	1.0558	0.0000		09/17/82 AF
			18.5307		0.2506	0.2506	11/03/82 AL
X-56	ERCW	67-107	0.0000	0.0000	0.0000		01/24/82
		67-562D	2.1498		2.1498	2.1498	AF/AL
			0.0000	0.0000	0.0000	0.0000	10/05/82 AF
			1.0422		0.0000		11/01/82 AL
X-57	ERCW	67-111/575D	0.0001	0.0001	0.0001		09/23/81
		67-112	0.0008		0.0008	0.0008	AF/AL
			0.0000	0.0000	0.0000	0.0000	11/05/82 AF
			0.0000		0.0000		12/07/82 AL
X-58	ERCW	67-83	0.3875		0.3875	0.3875	10/16/81
		67-562A	0.0994	0.0994	0.0994		AF/AL
			0.3695		0.3695	0.3695	01/27/82
			0.0994	0.0994	0.0994		AF/AL

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-58	ERCW	67-83	0.2754		0.0000		09/26/82 AF
		67-562A	0.0000	0.0000	0.1216	0.1216	11/07/82 AL
X-59	ERCW	67-87/575A	0.0000	0.0000	0.0000	0.0000	09/18/81
		67-88	0.0000		0.0000		AF/AL
			0.0013		0.0013	0.0013	09/26/82
			0.0000	0.0000	0.0000		AF/AL
X-60	ERCW	67-99	0.0000	0.0000	0.0000		01/24/82 AF
		67-562B	25.5+		0.3875	0.3875	01/24/82 AL
			0.0000	0.0000	0.0000	0.0000	10/05/82 AF
			0.7284		0.0000		11/01/82 AL
X-61	ERCW	67-103/575B	0.0064		0.0064	0.0064	09/23/81
		67-104	0.0008	0.0008	0.0008		AF/AL
			0.0000	0.0000	0.0000		10/05/82 AF
			0.0000		0.0000	0.0000	12/07/82 AL
X-62	ERCW	67-91	0.0000	0.0000	0.0000		01/27/82 AF
		67-562C	278.4+		0.6520	0.6520	01/27/82 AL
			42.7910	42.7910	0.0000		09/27/82 AF
			189.6522		0.0000	0.0000	09/29/82 AL

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-63	ERCW	67-95/575C	0.0000	0.0000	0.0000	0.0000	09/18/81
		67-96	0.0000		0.0000		AF/AL
			0.0012		0.0012	0.0012	09/27/82 AF
			0.0009	0.0009	0.0009		12/07/82 AL
**X-64	Chilled Water	31C-222	0 2145	0.2145	0.2145		01/25/82
		31C-223/752	0.4574		0.4574	0.4574	AF/AL
			0.7284	0.7284	0.0867	0.0867	09/16/82 AF
			0.7878		0.0000		09/27/82 AL
**X-65	Chilled Water	31C-224	0.6208		0.6208	0.6208	01/25/82
		31C-225/734	0.3513	0.3513	0.3513		AF/AL
			0.0000	0.0000	0.0000	0.0000	09/16/82 AF
			0.1932		0.0000		09/27/82 AL
**X-66	Chilled Water	31C-229	0.3139	0.3139	0.3139		01/25/82
		31C-230/715	1.3061		1.3061	1.3061	AF/AL
			0.0000	0.0000	0.0000	0.0000	09/14/82 AF
			0.0723		0.0000		10/01/82 AL
**X-67	Chilled Water	31C-231	0.0000	0.0000	0.0000		01/25/82
		31C-232/697	1.8304		1.8304	1.8304	AF/AL

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-67	Chilled Water	31C-231	0.0000	0.0000	0.0000		09/14/82 AF
		31C-232/697	0.1932		0.0000	0.0000	10/01/82 AL
X-68	ERCW	67-141	0.2949	0.2949	0.2949		09/22/81
		67-580D	0.6365		0.6365	0.6365	AF/AL
			0.0000	0.0000	0.0000	0.0000	09/22/81 AF
			0.0000		0.0000		12/01/82 AL
X-69	ERCW	67-130	0.2754	0.2754	0.2754		09/18/81
		67-580A	0.8749		0.8749	0.8749	AF/AL
			0.0000	0.0000	0.0000	0.0000	09/23/82 AF
			0.0000		0.0000		11/22/82 AL
X-70	ERCW	67-139	0.0000	0.0000	0.0000	0.0000	09/22/81
		67-297/585B	0.0000		0.0000		AF/AL
			0.0000	0.0000	0.0000		11/22/82 AF
			0.1140		0.0013	0.0013	12/07/82 AL
X-71	ERCW	67-134	0.0009	0.0009	0.0009	0.0009	09/18/81 AF
		67-296/585C	0.0482		0.0008		09/18/81 AL
			0.0000	0.0000	0.0000		09/23/82 AF
			0.0000		0.0032	0.0032	12/07/82 AL

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
X-72	ERCW	67-142	0.0020	0.0020	0.0020	0.0020	09/22/81 AF
		67-298/585D	0.0392		0.0005		09/22/81 AL
			0.0005		0.0005	0.0005	09/22/82 AF
			0.0002	0.0002	0.0002		12/07/82 AL
X-73	ERCW	67-131	0.0008	0.0008	0.0008		09/18/81
		67-295/585A	0.0008		0.0008	0.0008	AF/AL
			0.0000	0.0000	0.0000		09/23/82 AF
			0.0011		0.0011	0.0011	12/07/82 AL
X-74	ERCW	67-138	0.1245	0.1245	0.1245		09/22/81
		67-580B	0.2145		0.2145	0.2145	AF/AL
			0.0000	0.0000	0.0000	0.0000	09/22/82 AF
			0.0000		0.0000		12/01/82 AL
X-75	ERCW	67-133	0.3875	0.3875	0.3875		09/18/81 AF
		67-580C	39.2631		0.8461	0.8461	09/20/81 AL
			4.8503	4.8503	0.0000	0.0000	09/23/82 AF
			174.6068		0.0000		11/12/82 AL
**X-76	Service Air	33-704	0.0004	0.0004	0.0004		01/28/82
		33-740	0.1483		0.1483	0.1483	AF/AL

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
**X-76	Service Air	33-704	0.0000	0.0000	0.0000	0.0000	12/06/82 AF
		33-740	8.0100		0.0000		12/07/82 AL
**X-77	Demin Water	59-522/529	0.1712		0.1712	0.1712	09/26/81
		59-633	0.1245	0.1245	0.1245		AF/AL
			0.0000	0.0000	0.0000	0.0000	11/02/82 AF
			1.7952		0.0000		11/04/82 AL
**X-78	Fire Protection	26-243	1.5048	1.5048	0.0000		09/14/81 AF
		26-1296	1.6911		0.0000	0.0000	09/19/81 AL
			0.0000	0.0000	0.0000	0.3047	09/19/82
			0.3047		0.3047		AF/AL
**X-81	Waste Disposal	77-16	0.0000	0.0000	0.0000	0.0000	09/27/81
		77-17	0.0000		0.0000		AF/AL
			0.0000	0.0000	0.0000	0.0000	09/13/82 AF
			0.0000		0.0000		12/07/82 AL
**X-82	Fuel Pool Cooling	78-560	0.6365		0.0000		09/24/81 AF
		78-561	0.0000	0.0000	2.2497	2.2497	09/27/81 AL
			0.4912	0.4912	0.0000	0.0000	09/13/82 AF
			5.5342		0.0000		09/18/82 AL

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
**X-83	Fuel Pool Cooling	78-557	0.0600	0.0000	0.0000	0.0000	06/24/81
		78-558	0.0000		0.0000		AF/AL
			0.0000	0.0000	0.0000	0.0000	09/17/82 AF
			0.0000		0.0000		09/22/82 AL
**X-84A	Main Coolant	68-307	0.0034	0.0034	0.0034		01/26/82
		68-308	0.0038		0.0038	0.0038	AF/AL
			0.0000	0.0000	0.0000	0.0000	09/21/82 AF
			0.0060		0.0000		12/07/82 AL
**X-85A	Sampling System	43-75	0.0000	0.0000	0.0000	0.0000	01/23/82
		43-77	0.0000		0.0000		AF/AL
			0.0000	0.0000	0.0000	0.0000	09/24/82 AF
			0.0000		0.0000		12/07/82 AL
**X-90	Control Air	32-80/285	0.0000	0.0000	0.0000		09/25/81
		32-287	73.1834		0.0000	0.0000	AF/AL
			0.0000	0.0000	0.0000		10/20/82 AF
			0.0000		0.0000	0.0000	12/07/82 AL
**X-93	Sampling System	43-34	0.0000	0.0000	0.0000	0.0000	01/23/82
		43-35	0.0000		0.0000		AF/AL

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
**X-96C	Sampling System	43-22 43-23	0.0000 0.0000	0.0000	0.0000 0.0000	0.0000	01/23/82 AF/AL
			0.0000 0.5372	0.0000	0.0000 0.0000	0.0000	09/24/82 AF 12/07/82 AL
**X-98	1LRT	52-Inboard 52-Outboard	0.0000 0.0000	0.0000	0.0000 0.0000	0.0000	06/23/81 AF/AL
			0.0000 0.0000	0.0000	0.0000 0.0000	0.0000	09/19/82 AF 12/07/82 AL
X-99	Sampling System	43-202	0.0000	0.0000	0.0000	0.0000	06/23/81 AF/AL
			0.0000	0.0000	0.0000	0.0000	09/19/82 AF 12/07/82 AL
X-100	Sampling System	43-201	0.0000	0.0000	0.0000	0.0000	06/23/81 AF/AL
			0.0000	0.0000	0.0000	0.0000	09/19/82 AF 12/07/82 AL
**X-110	Upper Head Injection	87-7/8/9	0.2145	0.2145	0.2145	0.2145	09/19/81 AF/AL

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
**X-93	Sampling System	43-34	0.0000	0.0000	0.0000	0.0000	09/24/82 AF
		43-35	0.0000		0.0000		12/07/82 AL
**X-94A/B	Radiation Monitoring	90-113	0.0000	0.0000	0.0000	0.0000	09/21/81
		90-114/115	0.0000		0.0000		AF/AL
			0.0000	0.0000	0.0000	0.0000	09/25/82 AF
			0.0000		0.0000		12/07/82 AL
**X-94C	Radiation Monitoring	90-116	0.0000	0.0000	0.0000	0.0000	09/21/81
		90-117	0.0000		0.0000		AF/AL
			0.0000	0.0000	0.0000	0.0000	09/25/82 AF
			0.0000		0.0000		12/07/82 AL
**X-95A/B	Radiation Monitoring	90-107	4.2953		0.0000	0.0000	09/21/81 AF
		90-108/109	0.5297	0.5297	0.0000		09/26/81 AL
			0.0000	0.0000	0.0000		10/01/82 AF
			0.0000		0.0000	0.0000	12/07/82 AL
**X-95C	Radiation Monitoring	90-110	0.0000	0.0000	0.0000		09/20/81 AF
		90-111	1.3744		0.0000	0.0000	09/26/81 AL
			0.0000	0.0000	0.0000		09/25/82 AF
			0.0000		0.0000	0.0000	12/07/82 AL

TABLE E-1
Type C Test Summary
Cycle 1 - Unit 1

Path Leakage Tabulation

Leakage Path	System Name	Isolation Valve Number	As Found Valve Leak Rate SCFH	As Found Path Leak Rate SCFH	As Left Valve Leak Rate SCFH	As Left Path Leak Rate SCFH	Test Date
**X-110	Upper Head Injection	87-7/8/9	0.6051	0.6051	0.0000	0.0000	09/19/82 AF 10/19/82 AL
**X-114	Ice Condenser	61-110	0.1245		0.1245	0.1245	09/15/81 AF
		61-122/745	0.0000	0.0000	0.0000		09/15/81 AL
			0.0000	0.0000	0.0000		09/30/82 AF
			0.0000		0.0000	0.0000	10/21/82 AL
**X-115	Ice Condenser	61-96	0.0000	0.0000	0.0000	0.0000	09/15/81
		61-97/692	0.0000		0.0000		09/15/81
			0.0000	0.0000	0.0000	0.0000	09/30/82 AF
			0.0000		0.0000		10/21/82 AL

**Indicates isolation valves subject to bypass leakage requirements.

TABLE E-2
Type B Test Summary
Cycle 1 - Unit 1

I. Bellows

Leakage Path X-12A

Leakage, SCFH AF/AL	Test Date
0.0017 (INB)	9/15/81
0.0014 (OUTB)	9/15/81
0.0000 (INB)	9/26/82
0.0000 (OUTB)	9/26/82

Leakage Path X-12B

Leakage, SCFH AF/AL	Test Date
0.0000 (INB)	9/15/81
0.0027 (OUTB)	9/15/81
0.0000 (INB)	9/20/82
0.0000 (OUTB)	9/20/82

Leakage Path X-12C

Leakage, SCFH AF/AL	Test Date
0.0000 (INB)	9/24/81
0.0032 (OUTB)	9/24/81
0.0000 (INB)	9/20/82
0.0000 (OUTB)	9/20/82

Leakage Path X-12D

Leakage, SCFH AF/AL	Test Date
0.0036 (INB)	9/26/81
0.0013 (OUTB)	9/26/81
0.0000 (INB)	9/20/82
0.0000 (OUTB)	9/20/82

Leakage Path X-13A

Leakage, SCFH AF/AL	Test Date
0.0000 (INB)	9/15/81
0.0000 (OUTB)	9/15/81
0.0000 (INB)	9/26/82
0.0000 (OUTB)	9/26/82

Leakage Path X-13B

Leakage, SCFH AF/AL	Test Date
0.0008 (INB)	9/24/81
0.0000 (OUTB)	9/24/81
0.0000 (INB)	9/20/82
0.0000 (OUTB)	9/20/82

Leakage Path X-13C

Leakage, SCFH AF/AL	Test Date
0.0000 (INB)	9/24/81
0.0010 (OUTB)	9/24/81
0.0000 (INB)	9/20/82
0.0000 (OUTB)	9/20/82

Leakage Path X-13D

Leakage, SCFH AF/AL	Test Date
0.0000 (INB)	9/15/81
0.0000 (OUTB)	9/15/81
0.0000 (INB)	9/26/82
0.0000 (OUTB)	9/26/82

TABLE E-2
Type B Test Summary
Cycle 1 - Unit 1

I. Bellows (continued)

Leakage Path X-14A

Leakage, SCFH AF/AL	Test Date
0.0002	9/15/81
0.0000	9/26/82

Leakage Path X-14B

Leakage, SCFH AF/AL	Test Date
0.0004	9/15/81
0.0000	9/26/82

Leakage Path X-14C

Leakage, SCFH AF/AL	Test Date
0.0004	9/15/81
0.0000	9/26/82

Leakage Path X-14D

Leakage SCFH AF/AL	Test Date
0.0000	9/15/81
0.0000	9/20/82

Leakage Path X-15

Leakage, SCFH AF/AL	Test Date
0.0000	9/15/81
0.0000	9/19/82

Leakage Path X-17

Leakage, SCFH AF/AL	Test Date
0.0021	9/26/81
0.0000	9/19/82

Leakage Path X-20A

Leakage, SCFH AF/AL	Test Date
0.0000	9/16/81
0.0000	9/19/82

Leakage Path X-20B

Leakage, SCFH AF/AL	Test Date
0.0000	9/16/81
0.0000	9/19/82

Leakage Path X-21

Leakage, SCFH AF/AL	Test Date
0.0000	9/16/81
0.0000	9/19/82

Leakage Path X-22

Leakage, SCFH AF/AL	Test Date
0.0000	9/15/81
0.0000	9/18/82

TABLE E-2
Type B Test Summary
Cycle 1 - Unit 1

I. Bellows (continued)

Leakage Path X-24

Leakage, SCFH AF/AL	Test Date
0.0000	9/15/81
0.0000	9/18/82

Leakage Path X-30

Leakage, SCFH AF/AL	Test Date
0.0000	9/22/81
0.0000	9/18/82

Leakage Path X-32

Leakage, SCFH AF/AL	Test Date
0.0028	9/26/81
0.0000	9/19/82

Leakage Path X-33

Leakage, SCFH AF/AL	Test Date
0.0000	9/26/81
0.0000	9/19/82

Leakage Path X-45

Leakage, SCFH AF/AL	Test Date
0.0013	9/26/81
0.0021	9/19/82

Leakage Path X-46

Leakage, SCFH AF/AL	Test Date
0.0000	9/26/81
0.0000	9/19/89

Leakage Path X-47A

Leakage, SCFH AF/AL	Test Date
0.0000 (OUTB)	9/14/81
0.0010 (INB)	9/14/81
0.0000 (INB)	9/18/82
0.0000 (OUTB)	9/18/82

Leakage Path X-47B

Leakage, SCFH AF/AL	Test Date
0.0011 (OUTB)	9/14/81
0.0025 (INB)	9/14/81
0.0000 (INB)	9/18/82
0.0000 (OUTB)	9/18/82

Leakage Path X-81

Leakage, SCFH AF/AL	Test Date
0.0026	9/27/81
0.0000	9/19/82

Leakage Path X-107

Leakage, SCFH AF/AL	Test Date
0.0006	9/26/81
0.0000	9/19/82

TABLE E-2
Type B Test Summary
Cycle 1 - Unit 1

I. Bellows (continued)

Leakage Path X-108

Leakage, SCFH AF/AL	Test Date
0.0000	9/13/81
0.0000	9/19/82

Leakage Path K-14

Leakage, SCFH AF/AL	Test Date
0.0000	9/28/81
0.0000	9/21/82

Leakage Path X-109

Leakage, SCFH AF/AL	Test Date
0.0000	9/13/81
0.0000	9/19/82

Leakage Path K-15

Leakage, SCFH AF/AL	Test Date
0.0000	9/28/81
0.0016	9/28/82

TABLE E-2
Type B Test Summary
Cycle 1 - Unit 1

II. Electrical

Leakage Path X-120E

Leakage, SCFH AF/AL	Test Date
0.0000	5/4/79
0.0004	9/11/81
0.0042	9/18/82

Leakage Path X-121E

Leakage, SCFH AF/AL	Test Date
0.0000	5/5/79
0.0184	9/12/81
0.0720	9/18/82

Leakage Path X-122E

Leakage, SCFH AF/AL	Test Date
0.0000	5/7/79
0.0000	9/13/81
0.0911	9/17/82

Leakage Path X-123E

Leakage, SCFH AF/AL	Test Date
0.0000	5/1/79
0.0025	9/13/81
0.0297	9/16/82

Leakage Path X-124E

Leakage, SCFH AF/AL	Test Date
0.0318	5/7/79
0.0000	9/13/81
0.0021	9/18/82

Leakage Path X-126E

Leakage, SCFH AF/AL	Test Date
0.3667	5/3/79
0.0047	9/13/81
0.0049	9/13/81
0.0699	9/18/82

Leakage Path X-127E

Leakage, SCFH AF/AL	Test Date
0.0021	5/2/79
0.0000	9/12/81
0.0000	9/16/82

Leakage Path X-128E

Leakage, SCFH AF/AL	Test Date
0.0233	5/2/79
0.0000	9/12/81
*3.4092	9/16/82 AF
*0.0000	11/27/82 AL

*Denotes a single condition either AF for "as found" or AL for the "as left" condition only. Otherwise, the leakages shown are both the AF and the AL conditions.

TABLE E-2
Type B Test Summary
Cycle 1 - Unit 1

II. Electrical (continued)

Leakage Path X-129E

Leakage, SCFH AF/AL	Test Date
0.0000	5/3/79
0.0038	9/12/81
0.0021	9/18/82

Leakage Path X-134E

Leakage, SCFH AF/AL	Test Date
0.0000	5/4/79
0.0000	9/13/81
0.0000	9/18/82

Leakage Path X-131E

Leakage, SCFH AF/AL	Test Date
4.2000	5/1/79
0.0000	9/14/81
0.0000	9/15/82

Leakage Path X-135E

Leakage, SCFH AF/AL	Test Date
0.0000	9/13/81
0.0021	9/18/82

Leakage Path X-132E

Leakage, SCFH AF/AL	Test Date
0.0000	5/1/79
0.0000	9/13/81
0.0000	9/15/82

Leakage Path X-136E

Leakage, SCFH AF/AL	Test Date
0.0000	5/4/79
0.0021	9/13/81
0.0000	9/17/82

Leakage Path X-133E

Leakage, SCFH AF/AL	Test Date
0.0254	5/1/79
0.0008	9/13/81
0.0000	9/15/82

Leakage Path X-137E

Leakage, SCFH AF/AL	Test Date
0.0042	5/4/79
0.0004	9/13/81
0.0000	9/17/82

TABLE E-2
Type B Test Summary
Cycle 1 - Unit 1

II. Electrical (continued)

Leakage Path X-138E

Leakage, SCFH AF/AL	Test Date
0.0000	5/4/79
0.0013	9/13/81
0.0000	9/18/82

Leakage Path X-139E

Leakage, SCFH AF/AL	Test Date
0.0000	5/3/79
0.0006	9/12/81
0.0000	9/18/82

Leakage Path X-140E

Leakage, SCFH AF/AL	Test Date
0.0000	5/4/79
0.0000	9/13/81
0.0000	9/17/82

Leakage Path X-141E

Leakage, SCFH AF/AL	Test Date
0.0000	5/1/79
0.0015	9/13/81
0.0000	9/16/82

Leakage Path X-142E

Leakage, SCFH AF/AL	Test Date
0.0000	5/4/79
0.0030	9/13/81
0.0000	9/18/82

Leakage Path X-143E

Leakage, SCFH AF/AL	Test Date
0.0106	5/1/79
0.0178	9/13/81
0.0000	9/15/82

Leakage Path X-144E

Leakage, SCFH AF/AL	Test Date
0.0000	5/1/79
0.0000	9/13/81
0.0466	9/16/82

Leakage Path X-145E

Leakage, SCFH AF/AL	Test Date
0.0000	5/1/79
0.0002	9/14/81
0.0000	9/15/82

Leakage Path X-146E

Leakage, SCFH AF/AL	Test Date
0.0953	5/1/79
0.1345	9/14/81
0.2712	9/15/82

Leakage Path X-147E

Leakage, SCFH AF/AL	Test Date
0.0127	5/3/79
0.0074	9/12/81
0.0042	9/18/82

TABLE E-2
Type B Test Summary
Cycle 1 - Unit 1

II. Electrical (continued)

Leakage Path X-148E

Leakage, SCFH AF/AL	Test Date
0.0000	5/3/79
0.0000	9/12/81
0.0042	9/18/82

Leakage Path X-149E

Leakage, SCFH AF/AL	Test Date
0.0085	5/3/79
0.0011	9/12/81
0.0000	9/18/82

Leakage Path X-150E

Leakage, SCFH AF/AL	Test Date
0.0021	5/3/79
0.0000	9/12/81
0.0000	9/18/82

Leakage Path X-151E

Leakage, SCFH AF/AL	Test Date
0.0000	5/3/79
0.0000	9/12/81
0.0021	9/18/82

Leakage Path X-152E

Leakage, SCFH AF/AL	Test Date
0.0000	5/3/79
0.0004	9/12/81
0.0000	9/18/82

Leakage Path X-153E

Leakage, SCFH AF/AL	Test Date
0.0000	5/2/79
0.0006	9/12/81
0.0000	9/17/82

Leakage Path X-154E

Leakage, SCFH AF/AL	Test Date
0.0000	5/2/79
0.0000	9/12/81
0.0000	9/16/82

Leakage Path X-156E

Leakage, SCFH AF/AL	Test Date
0.0000	5/2/79
0.0023	9/12/81
0.0000	9/17/82

TABLE E-2
Type B Test Summary
Cycle 1 - Unit 1

II. Electrical (continued)

Leakage Path X-157E

Leakage, SCFH AF/AL	Test Date
0.0042	5/2/79
0.0000	9/12/81
0.0000	9/16/82

Leakage Path X-158E

Leakage, SCFH AF/AL	Test Date
0.0042	5/2/79
0.0034	9/12/81
0.0000	9/16/82

Leakage Path X-159E

Leakage, SCFH AF/AL	Test Date
0.0042	5/2/79
0.0000	9/12/81
0.0106	9/16/82

Leakage Path X-160E

Leakage, SCFH AF/AL	Test Date
0.0021	5/2/79
0.0000	9/12/81
0.0064	9/16/82

Leakage Path X-161E

Leakage, SCFH AF/AL	Test Date
0.0021	5/2/79
0.0000	9/12/81
0.0529	9/16/82

Leakage Path X-163E

Leakage, SCFH AF/AL	Test Date
0.0042	5/2/79
0.0000	9/12/81
0.0360	9/16/82

Leakage Path X-164E

Leakage, SCFH AF/AL	Test Date
0.0021	5/2/79
0.0000	9/12/81
0.0021	9/16/82

Leakage Path X-165E

Leakage, SCFH AF/AL	Test Date
0.0042	5/2/79
0.0004	9/12/81
0.0000	9/16/82

Leakage Path X-166E

Leakage, SCFH AF/AL	Test Date
0.0064	5/2/79
0.0000	9/12/81
0.0000	9/16/82

Leakage Path X-167E

Leakage, SCFH AF/AL	Test Date
0.0127	5/3/79
0.0021	9/12/81
0.0000	9/18/82

TABLE E-2
Type B Test Summary
Cycle 1 - Unit 1

II. Electrical (continued)

Leakage Path X-169E		Leakage Path X-170E	
Leakage, SCFH AF/AL	Test Date	Leakage, SCFH AF/AL	Test Date
0.0021	5/3/79	0.0000	5/3/79
0.0013	9/12/81	0.0000	9/12/81
0.0000	9/18/82	0.0000	9/18/82

TABLE E-2
Type B Test Summary
Cycle 1 - Unit 1

III. Resilient Seals

Leakage Path X-1

Leakage, SCFH AF/AL	Test Date
0.0012	3/3/80
0.0003	4/23/80
0.0003	4/27/80
0.0006	5/23/80
0.0004	6/20/80
0.0012	3/3/81
0.0097	9/14/81
0.0070	10/17/81
0.0003	3/6/82
0.0000	9/11/82
0.0000	12/6/82

Leakage Path X-54

Leakage, SCFH AF/AL	Test Date
0.0000	2/20/80
0.0000	4/17/80
0.0004	3/3/81
0.0000	3/3/81
0.0030	9/14/81
0.0013	9/26/81
0.0090	10/15/81
0.0805	9/11/82

Leakage Path X-3

Leakage, SCFH AF/AL	Test Date
0.0008	4/17/80
0.0000	9/28/81
0.0000	9/11/82
0.0000	11/30/82

Leakage Path X-79A

Leakage, SCFH AF/AL	Test Date
0.0000	2/20/80
0.0000	4/17/80
0.0002	3/3/81
0.0023	9/14/81
0.0000	10/15/81
0.0000	9/11/82
0.0000	12/2/82

Leakage Path X-40D

Leakage, SCFH AF/AL	Test Date
0.0000	2/20/80
0.0013	3/3/80
0.0001	3/16/80
0.0000	4/17/80
0.0013	3/3/81
0.0001	3/16/82
0.0004	9/28/81
0.0000	10/15/81
0.0000	9/11/82

Leakage Path X-79B

Leakage, SCFH AF/AL	Test Date
0.0000	2/20/80
0.0000	4/17/80
0.0004	3/3/81
0.0091	9/14/81
0.0000	10/15/81
0.0000	9/11/82
0.0000	12/3/82

TABLE E-2
Type B Test Summary
Cycle 1 - Unit 1

III. Resilient Seals (continued)

Leakage Path X-111

Leakage, SCFH AF/AL	Test Date
0.0004	9/27/81
0.0001	10/15/81
0.0000	9/12/82

Leakage Path X-112

Leakage, SCFH AF/AL	Test Date
Greater than 200 SCCM	9/27/81
0.0038	9/28/81
0.0000	10/15/81
0.0000	9/12/82

Leakage Path X-113

Leakage, SCFH AF/AL	Test Date
0.0053	9/27/81
0.0000	10/15/81
0.0000	9/12/82

Leakage Path X-118

Leakage, SCFH AF/AL	Test Date
0.0000	2/20/80
0.0000	4/17/80
0.0001	3/3/81
0.0000	9/24/81
0.0000	10/5/81
0.0169	9/11/82

TABLE E-2
Air Lock Door Tests
Cycle 1 - Unit 1

IV. Air Lock Door Test

Leakage Path X-2A		Leakage Path X-2B	
Leakage, SCFH AF/AL	Test Date	Leakage, SCFH AF/AL	Test Date
10.3735	12/5/79	6.7781	12/3/79
4.1728	4/24/80	9.9044	4/30/80
9.2238	10/21/80	10.8805	10/21/80
4.2203	3/5/81	3.3763	3/5/81
0.8707	8/25/81	1.6692	10/9/81
1.6818	10/14/81	5.724	3/26/82
8.3869	3/25/82		
*43.0169	11/25/82 AF	*1954.50	11/26/82 AF
*1.6850	12/5/82 AL	*4.2051	12/5/82 AL

*Denotes a single condition: either AF for the "as found" or AL for the "as left" condition only. Otherwise, the leakages shown are both the AF and the AL conditions.

TABLE E-3
Type B and C Tests
Cycle 1 - Unit 1

Path Leakage Tabulation

Summary

		As Found	As Left
A.	Type B Leakage		
	I Bellows	0.0037 SCFH	0.0037 SCFH
	II Electrical	4.1187 SCFH	0.7095 SCFH
	III Resilient Seals	0.0974 SCFH	0.0974 SCFH
	IV Air Lock Doors	1997.5169 SCFH	5.8901 SCFH
B.	Type C Leakage	57.5028 SCFH	0.8195 SCFH

APPENDIX F

References

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

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

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

4. Sequoyah Nuclear Plant FSAR Chapters 6.2 and 6.3

5. Sequoyah Nuclear Plant Technical Specification 4.6.1.2

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