REACTOR CONTAINMENT BUILDING
INTEGRATED LEAK RATE TEST
WATTS BAR NUCLEAR PLANT UNIT 1

CONDUCTED JUNE 22-29, 1994

Docket No. 50-390

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Reactor Containment Building
Integrated Leak Rate Test
Watts Bar Nuclear Plant Unit 1

Conducted June 22-29, 1994

Test Report

Prepared by: _____,

Reviewed by: _____,

Approved by: _____,

Date Approved: 9-2-94

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The United States Nuclear Regulatory Commission
Pursuant to
Facility Operating License

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1.0 INTRODUCTION

This report contains the summary technical analysis of the Reactor Containment Building Integrated Leak Rate Test (CILRT) conducted on Watts Bar Nuclear Plant (WBN) Unit 1 June 22-29. As prescribed in WBN Unit 1 Technical Specification 3.6.1.1, the leakage of air from the boundary forming the reactor primary Containment Building is limited to 0.25 percent by weight of the containment air mass per day at a pressure of 15.0 psig. This test was conducted in accordance with the requirements of Title 10, Code of Federal Regulations, Part 50, Appendix J, which is implemented by WBN Surveillance Instructions (SI) 1-SI-0-703. The American National Standard for Containment Testing, ANSI 45.4-1972, the proposed American Nuclear Society for Containment Testing, ANS 56.8, and the procedure outlined in Bechtel's Topical Report, "Testing Criteria for Integrated Leakage Rate Testing of Primary Containment Structure for Nuclear Power Plants" (BN-TOP-1, Revision 1), provided guidance for the procedure implemented by the SI.

WBN Unit 1 is a 3,425-megawatt thermal, pressurized-water reactor employing an ice condenser pressure suppression containment. The Final Safety Analysis Report defines the calculated peak accident pressure, Pa, to be 15.0 psig. The Reactor Building containment is divided into three major compartments for the CILRT analysis--the ice condenser compartment which houses the energy-absorbing ice beds and 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 can accommodate the displaced air mass from the other compartments in the unlikely event of a loss-of-coolant accident (LOCA). These three compartments are connected by means of lower inlet doors (which open under a pressure differential) located between the lower compartment and bottom of the ice condenser compartment and blowout panels located between the upper compartment and top of the ice condenser compartment. In the event of a LOCA, steam flows from the lower compartment through the ice condenser compartment and into the upper compartment. 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 completely sealed from each other in order to provide access for test instrumentation cables and to promote the 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 June 29, 1994, on WBN Unit 1. A summary of local leak rate tests (LLRTs) conducted prior to the CILRT are included in Appendix L.

2.0 SUMMARY

The WBN Unit 1 CILRT was conducted from June 22 to 29, 1994 in preparation for initial fuel load. The CILRT was successfully completed in 29 hours and 36 minutes and included 178 data samples.

Prior to performing the CILRT, the mass point leak rate (MLR) calculation technique was designated as the method that would be used for data analysis. The calculated MLR for the CILRT was 0.01379 percent per day (%/day). The associated reportable "as found" 95 percent upper confidence limit (UCL), which includes Type B and C leakages from testable penetrations in service at the time of the CILRT and water level changes not accounted for by the CILRT computer system, was 0.01669 %/day. The calculated total time leak rate (TTLR) was 0.01923 %/day. The associated reportable "as found" 95 percent upper confidence limit (UCL), which includes Type B and C leakages from testable penetrations in service at the time of the CILRT and water level changes not accounted for by the CILRT computer system, was 0.03766 %/day.

3.0 TEST PURPOSE AND RESULTS

3.1 Test Purpose

The objective of the preoperational CILRT was twofold. The primary objective of the CILRT was to demonstrate the leak tight integrity of the Unit 1 Reactor Building containment prior to power operation.

A problem unique to preoperational CILRT'S is that of possible incomplete construction. Therefore, the second objective was to verify that there were no unidentified openings in the containment vessel.

For Unit 1, the leak tight integrity is defined in Technical Specification 3.6.1.1 to be that the leakage of air from containment is not to exceed 0.1875 percent per day at peak accident pressure, P_a.

3.2 Test Results

Initial pressurization to 15.25 psig was completed at 0440 hours on June 24, 1994, and the pressurization header was isolated from the air compressors.

The criteria for temperature stabilization phase was met at 1115 hours on June 24, 1994. Although the pressurization rate had been limited to minimize destabilizing the containment parameters, the data was unstable beyond the initial four hours.

The pressurization rate had been controlled to achieve test pressure in about 10 hours. This was done to limit gross changes in containment vapor pressure and temperature. However, there was a temperature inversion with an increase in humidity in the 24 hours immediately preceding pressurization for the Unit 1 CILRT. This inversion was partially countered by limiting the pressurization rate; however, the stabilization phase had to be extended so that the total stabilization time was 6 hours and 35 minutes. Additionally, completion of a preoperational test to verify the leak-tightness of containment pressure monitor sensing lines while the primary containment was at accident pressure necessitated

extending the stabilization time until 1223 hours for a total time of 7 hours and 13 minutes.

Although stabilization temperature criteria had been met, the ice condenser compartment temperature had been trending upward during the stabilization period. Operations personnel were working with glycol chillers and recirculation pumps to stabilize the compartment.

At 1910 hours, it had become evident that the ice condenser compartment temperature could not be stabilized. Evidence of a flow restriction in the glycol system inside the containment building was apparent. The decision was made to terminate the test, reduce pressure to below 14.3 psig to allow more convenient entries into containment, and resolve the system problems before proceeding.

An inspection of the air handling units (AHU's) inside the ice condenser found 35 of 60 units in tripped status. All units were reset. A second inspection was performed approximately three hours later, and again multiple AHU's were tripped. Electrical current measurements showed that the units were tripping on overcurrent at the elevated containment pressure.

AHU thermal overloads were examined and found to be adjustable. An engineering calculation was performed to ascertain the acceptability of increasing the overload setpoints from the existing 1.0 setting to a setting of 1.15. This increased setting did not significantly reduce the number of AHU's tripping.

The final adjustment made to the AHU's to prevent tripping during the test was to restrict the blower outlet damper opening on the units that were drawing more than their rated current. This adjustment was successful, and the test sequence was resumed.

Repressurization of containment commenced at 2245 hours on June 26. Pressurization to 15.255 psig was completed at 0313 hours on June 27, and the pressurization header was isolated from the air compressors. Stabilization temperature criteria was met after the required 4 hour period, and the 24 hour integrated leak rate test period began at 0722 hours.

The ice condenser temperature was controlled to within a narrow temperature band of approximately 2 degrees Fahrenheit during both the leak test period and the verification test period. However, due to the low leak rate measured, the relatively small temperature changes had a significant impact on testing. The rapidity of the changes (aggravated by the lack of the temperature-moderating ice mass) resulted in a magnification of their effect on the test parameters and caused the measured leak rate to appear lower or higher than actual, thereby increasing the time required to determine the true leak rate.

At approximately 11 hours and 20 minutes into the 24 hour leak rate test period, a glycol system chiller package tripped due to low flow. The sudden, unexpected trip caused a temporary surge in the glycol expansion tank level inside containment. This rapid level

change resulted in a pressure spike which was reflected throughout the containment. An apparent mass increase, corresponding to the pressure increase, ensued. This drove the measured leak rate into the negative range. Recovery from this perturbation, along with the temperature swings in the ice condenser, resulted in the duration of the test being extended to 29 hours and 36 minutes to obtain a stable and accurate leak rate.

The verification leak rate test was also extended from 4 hours to 9 hours and 7 minutes due to oscillations in the measured leak rate. Again, these oscillations were caused by the sudden temperature swings in the ice condenser compartment.

The following table presents the test results for the CILRT and verification tests. Additional specific data on these tests are included in the appendices.

Table of CILRT and Verification Test Results

Post Test ISG 0.032 percent of La (using repeatability)

		MLR	TTLR
1.	Leakage for systems in service during test.	0.00000 %/day	0.00000 %/day
2.	Calculated 95% UCL during test.	0.01106 %/day	0.03203 %/day
3.	Leakage due to pressurizer level change	0.00551 %/day	0.00551 %/day
4.	Leakage due to sump level increase.	0.00012 %/day	0.00012 %/day
	Total	0.01669 %/day	0.03766 %/day

CILRT duration: 29 hours and 36 minutes
Number of samples: 178

Verification Test
MLR agreement: -8.7 % La
TTLR agreement: -6.0 % La

Verification duration: 9 hours and 7 minutes
Number of samples: 109

Extended ANSI statistical analysis for CILRT (satisfaction of equations 1.1 or 1.2 and 2.1 is required)

Equation	1.1	5.2392 < 1.0
	1.2	0.3890 < 1.0
	2.1	11.6742 > 1.0

4.0 CONDUCT OF TEST

The following is a summary of chronological events associated with the CILRT.

Dates and Time	Event
06/22/94 1800	Completed 1-SI-88-4, "40 Month Visual Inspection of the Steel Containment Vessel".
06/23/94 0141	Completed final containment walkdown.
06/23/94 0355	Started compressors.
06/23/94 0426	Started pressurization.
06/23/94 0430	Compressors stopped. Apparent restriction in pressurization line.
06/23/94 0700	Found blind flange installed in temporary pressurization assembly.
06/23/94 1630	Issued Change notice to test instruction to place hold order on SSPS output breakers after discovering that previous software changes which bypassed channels for containment pressure signals could be inadvertantly overridden and the channels reset to active status in the event of a short power interruption to the SSPS.

06/23/94	1835	Blind flange removed from pressurization assembly; received permission to pressurize containment.
06/23/94	1843	Started pressurization.
06/24/94	0440	Pressurization complete; stopped compressors.
06/24/94	0448	Pressurization header isolation valve shut.
06/24/94	0453	Containment pressure 15.25 psig; began stabilization.
06/24/94	0930	Pressurization header isolated and removed from compressor.
06/24/94	1115	Met stabilization temperature criteria, but awaiting post-modification inservice leak checks of containment pressure monitor instrument lines to be completed.
06/24/94	1223	Started CILRT, but ice condenser compartment temperature increasing significantly.
06/24/94	1910	Decision made by test director to terminate CILRT because ice condenser compartment temperature has been increasing more rapidly and Operations is unable to stabilize. Temperature problem must be resolved prior to resuming test.

06/24/94	2340	Began depressurization of containment to less than 14.3 psig to allow entries at less than one atmosphere for inspection/repair of ice condenser problems.
06/25/94	0030	Completed depressurization to 12.62 psig.
06/25/94	0900	Two entries made into containment found multiple ice condenser Air handling units (AHU) tripped.
06/25/94	1717	Permission received from Nuclear Engineering to reset AHU thermal overloads reset from 1.0 to 1.15. Thermal overloads reset.
06/25/94		Entry into containment found AHU's still tripping out almost immediately.
06/25/94	2330	Replacement of several AHU thermal overloads complete. AHU's still tripping. Measurements show current too high.
06/26/94	1050	Entered containment to throttle AHU discharge dampers to reduce current.
06/26/94	1804	Ice condenser temperature decreasing since throttling of AHU discharge dampers. Entered containment to verify operation.

06/26/94	2035	Finalizing preparations for repressurization of containment to test pressure.
06/26/94	2245	Started pressurization.
06/27/94	0313	Pressurization complete; stopped compressors.
06/27/94	0315	Containment pressure at 15.255 psig. Pressurization header isolation valve shut. Began stablilzation.
06/27/94	0520	Pressurization header isolated and removed from compressor.
06/27/94	0722	Stabilization criteria met. Started CILRT at sample number 57.
06/27/94	2147	Very low measured leak rate went into negative range due to temperature cycling in the ice condenser and pressure surge in containment (Glycol chiller tripped).
06/28/94	0418	Leak rate went back into positive range. Still very low but increasing slowly.
06/28/94	1258	Terminated CILRT at sample number 234. Leak rate steady at .016472 percent per day; UCL at .019415 percent per day.

06/28/94	1330	Establish verification flow of 248.40 SCFH.
06/28/94	1428	Started verification with sample Number 243
06/28/94	2335	End verification with sample Number 351. Preliminary agreement -7.16 percent.
06/29/94	0113	Started depressurization.
06/29/94	0700	Containment pressure at 0.0 psig.

5.0 MEASUREMENTS AND CALCULATIONS

5.1 Test-Equipment

Appendix K lists the range, accuracy, and repeatability of the special test equipment used in the Unit 1 Preoperational CILRT.

5.2 Sensor Location

Appendix J lists the final volumetric weighing factor for each temperature and dewpoint sensor based on the 3-compartment model. The associated figures indicate sensor locations. The pressure sensors were divided so that two sensors measured each of the three compartments through penetrations X-26A, X-96A, and X-96B. Utilizing two pressure sensors per compartment allows the removal of any one malfunctioning pressure gauge during the test while

continuing to accurately monitor containment pressure. An additional pressure gauge measured barometric pressure at the test station.

5.3 Computer-Based Data Acquisition and Data Reduction

The test data measured by the special test instrumentation during the WBN Unit 1 CILRT was automatically scanned and collected by a PC computer system and then reduced. The computer produced immediate statistical and graphical results of the containment test parameters, including temperature, pressure, vapor pressure, mass, MLR, and TTLR plots.

These calculated results were reported automatically to the test director as the data was collected. Appendix I depicts the functional relationship between the special test instrumentation and the PC computer system.

All calculations performed by the computer system were in conformance with the procedure outlined in ANS 56.8, ANSI 45.4, and/or Bechtel Topical Report (BN-TOP-1), Revision 1.

Software used by the PC was purchased from Duke Engineering Company. Source listings for all computer programs are on file with the Plant Operating Systems group in Chattanooga, Tennessee. Additional software Commercial Dedication, Software Description, and User's manuals are located in the WBN Technical Support organization.

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 the WBN Unit I CILRT, a 3-compartment containment model was used to measure the leak rate.

The free air mass was calculated individually for each compartment, and the containment leak rate was calculated from the sum of the compartmental masses.

Each sensor within the upper and lower containment compartments was volume weighted for the calculation of compartment average temperature, vapor pressure, and absolute pressure. Sensors for the calculation of the ice condenser conpartment average temperature and pressure were volume weighted, but the relative humidity sensors were set to zero due to a question that arose prior to the test as

to the adequacy of the range required in the ice condenser. A conservative assumption of zero vapor pressure in this compartment was used for all calculations in this report. In retrospect, the measured relative humidity levels in the ice condenser compartment during the test were within the range of the instruments.

6.0 ANALYSIS OF TEST DATA

The previous sections of this report have discussed the general test conduct 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 WBN Unit 1 Preoperational CILRT.

6.1 Instrument Check

The instrument complement for WBN Unit 1 was 50 temperature sensors (49 containment temperature sensors and 1 atmospheric temperature sensor), 13 relative humidity sensors (5 after deletion of the ice condenser compartment sensors and 1 upper compartment sensor found to be out of tolerance), 1 mass flow meter (for verification test flow), and 7 absolute pressure gauges (6 containment pressure gauges and one atmospheric pressure gauge).

Prior to the start of the test, several temperature and humidity sensors were removed from the data base. The mode of failure

appeared to be overranging. The primary cause was discovered to be an error in the timing setup in the software. All instrumentation that was initially removed from the data base was restored prior to the start of the CILRT, and no further sensor problems were experienced during the testing sequence. However, post-test calibration of the instrumentation showed one upper containment compartment relative humidity sensor to be out of tolerance. This sensor, RHE-1, was subsequently deleted from the calculations and the volume fractions of the remaining two upper compartment relative humidity sensors were adjusted to compensate for the sensor loss.

6.2 Discussions of Graphical and Tabular Results of the CILRT

Upon completion of initial pressurization and the subsequent repressurization from approximately 12.5 psig to test pressure, the relevant parameters began to achieve equilibrium conditions. The vapor pressure throughout containment was higher by a factor of approximately 1.75 over that which is normally expected when near equilibrium conditions exist. This condition was apparently caused by the temperature and humidity inversion which occurred prior to the test (i.e., the temperature dropped and it rained before and throughout both periods of pressurization). This highly humid condition resulted in prolonging the initial stabilization period (first test attempt) and caused less than ideal vapor pressure conditions to exist for the entire testing sequence. The vapor pressure dropped continuously throughout the test period.

The ice condenser compartment was a source of instability throughout the CILRT test and verification test phases. The initial problem of the tripping of the ice condenser air handling units coupled with the continuously inconsistant operation of the glycol cooling system caused temperature variations which resulted in swings in the leak rate data. These temperature variations were relatively large in magnitude and occurred rapidly due to the absence of ice (which would have served as a moderator) in the ice condenser. These variations ultimately resulted in prolonging both test phases.

In addition to the ice condenser temperature problems, the trip of a glycol chiller package approximately twelve hours into the CILRT test phase caused a surge in the glycol expansion tank level inside the upper containment compartment, which caused a pressure spike throughout containment. This resulted in the appearance of an increase in the containment mass and a corresponding negative leak rate for a period of approximately six hours. Although the leak rate returned to the positive range after the six hour period, recovery to a stable leak rate value required extending the test period from twenty four hours to twenty nine hours and thirty six minutes.

Following the containment pressure spike, an investigation of possible causes other than the glycol tank surge was conducted to ensure no other changes in conditions had occurred. A trace of the pressurizer level over the time period in question was obtained from the control room. This represented the only other level other than

the Reactor Building Floor and Equipment Drain Sump (RBFEDS) and the Auxiliary RBFEDS inside containment which could have been changed to cause a rapid increase in pressure. The trace showed that the pressurizer level remained essentially constant before, during, and after the event. The RBFEDS and ARBFEDS levels were checked after the test completion and the small increase in their respective levels was consistent with the level trends determined prior to the CILRT. It was concluded that these levels did not contribute to the containment pressure spike. No other anomallies were identified.

With the exceptions discussed above, the CILRT progressed satisfactorily to completion in accordance with the requirements of ANSI 45.4 and ANSI 56.8.

6.3 Discussion of Agreement (Verification Test)

Verification flow was allowed to stabilize for approximately one hour prior to the official start of the verification test.

A large and rapid temperature increase in the ice condenser compartment occurred approximately three hours and twenty minutes into the verification test period. This elevated temperature remained in the compartment for about two hours and resulted in the measured leak rate value falling below the acceptable range of agreement. After this event, the ice condenser temperature began a decline, which persisted for the remainder of the verification test period. The verification test was extended from the required four

hours to nine hours and seven minutes to allow the measured leak rate to return to an acceptable value and stabilize. No other significant trends or events occurred which affected test results.

7.0 CONCLUSIONS

The WBN Unit 1 preoperational CILRT was conducted with a total reportable leak rate of 0.01669 percent day (MLR) which is only 6.7 percent of the Technical Specification limit of 0.25 percent per day. The corresponding total (TTLR) leak rate was 0.03766 percent per day, which is only 15.1 percent of the limit allowed by Technical Specifications.

APPENDIX A

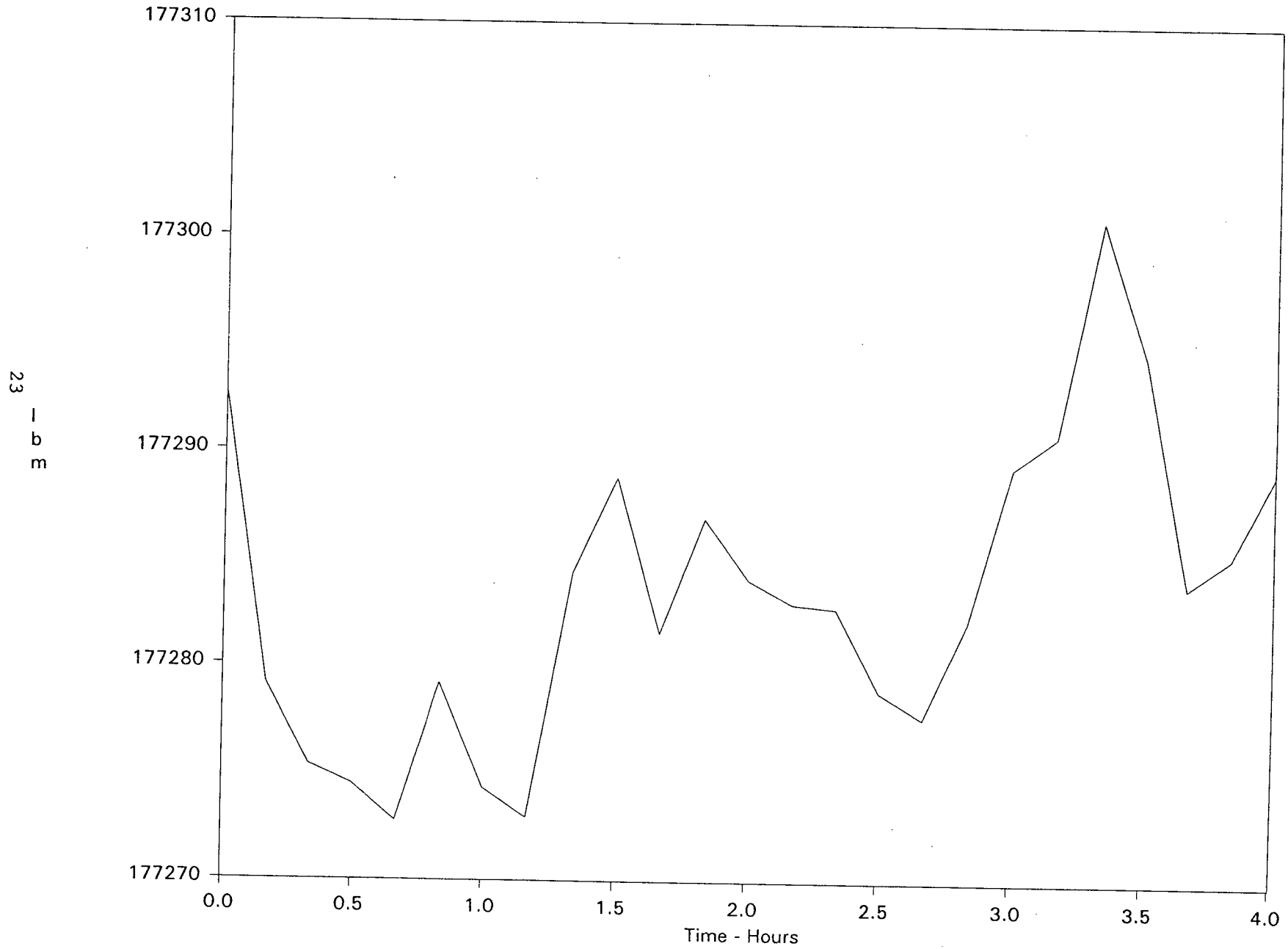
Stabilization Phase

Graphs and Tabular Data

Contents: Temperature stabilization criteria - samples 32 to 56

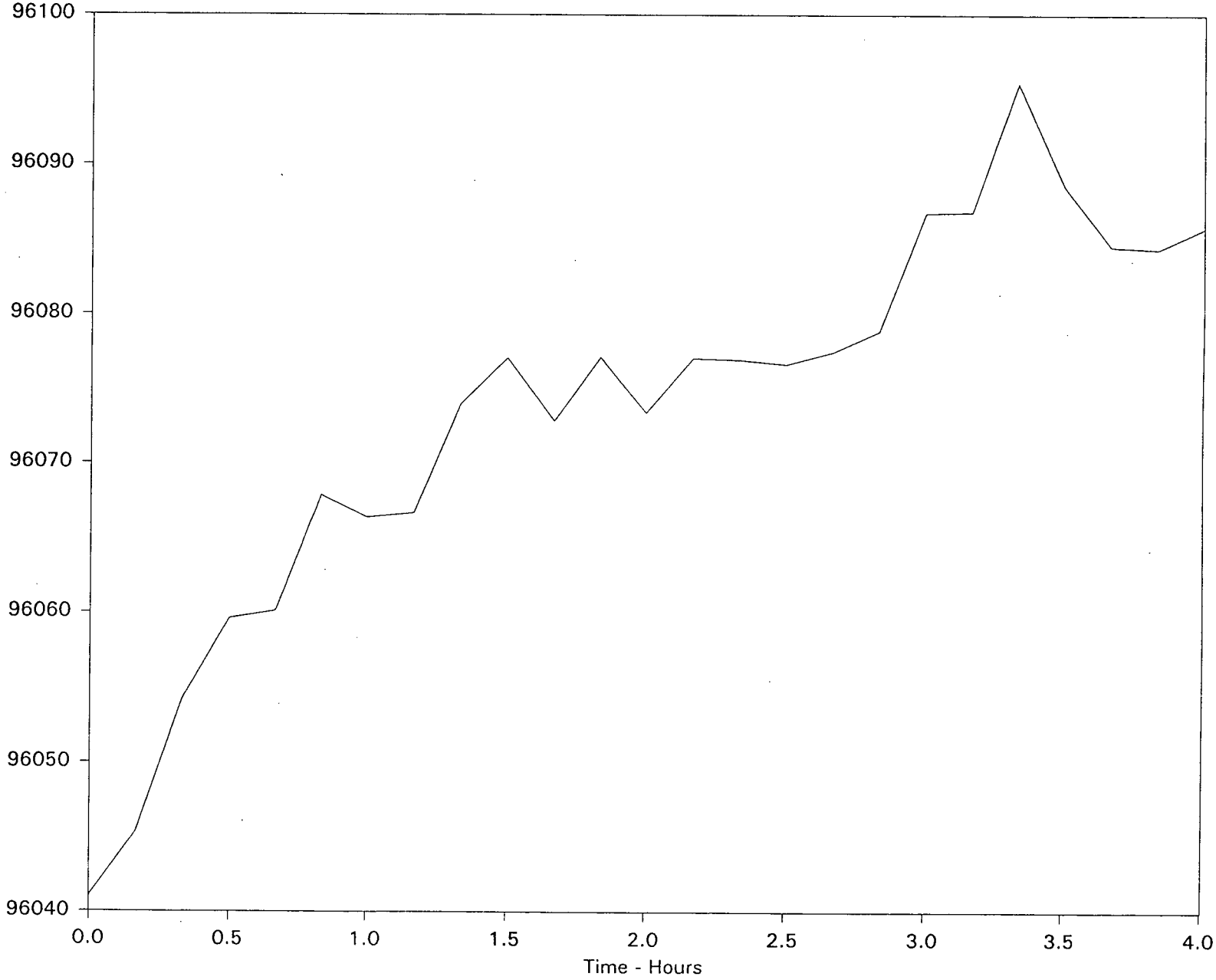
Containment Mass

Watts Bar Nuclear Plant
Unit 1 - Startup



Upper Containment Mass

Watts Bar Nuclear Plant
Unit 1 - Startup



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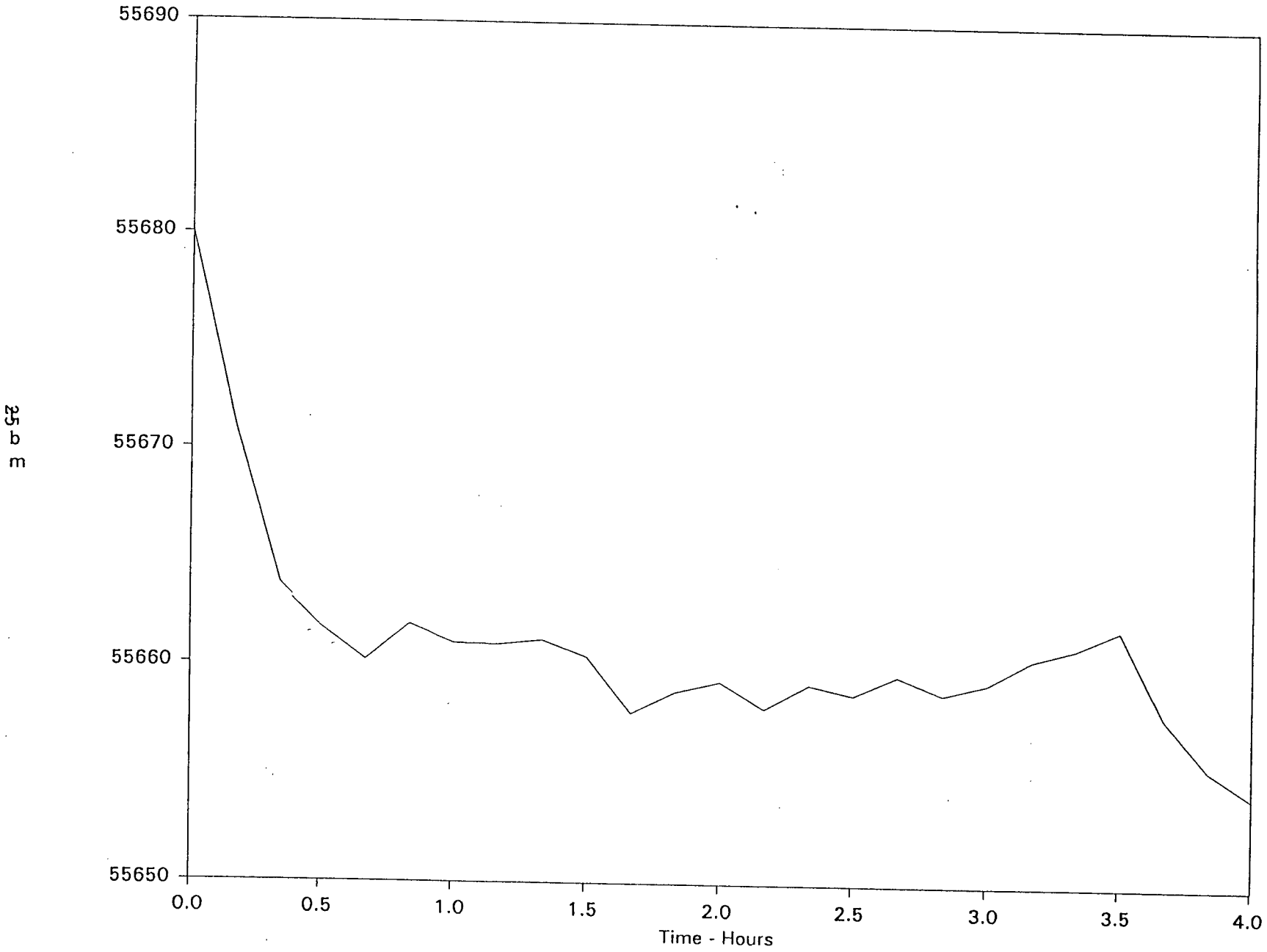
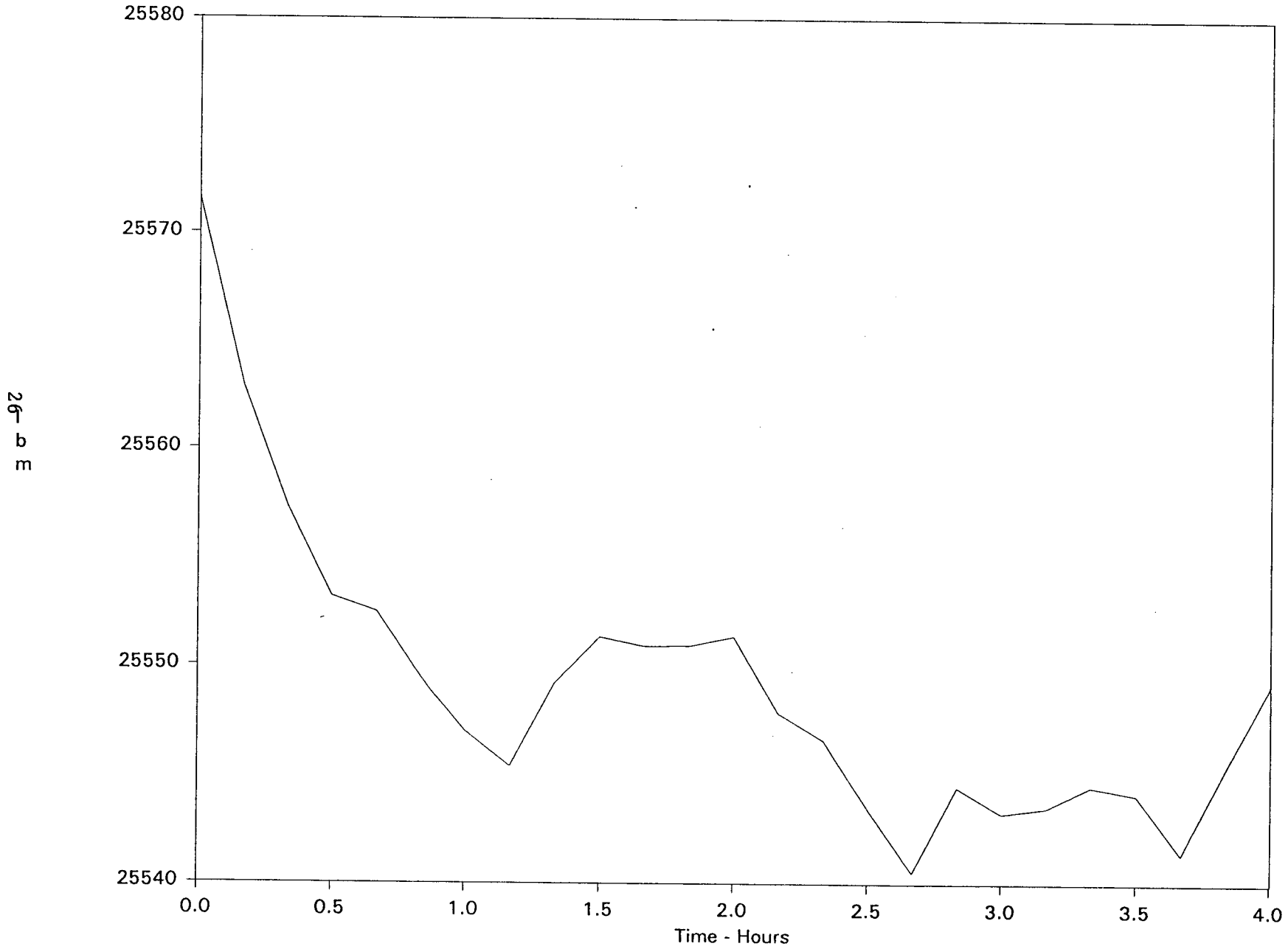
Lower Containment Mass

Watts Bar Nuclear Plant
Unit 1 - Startup



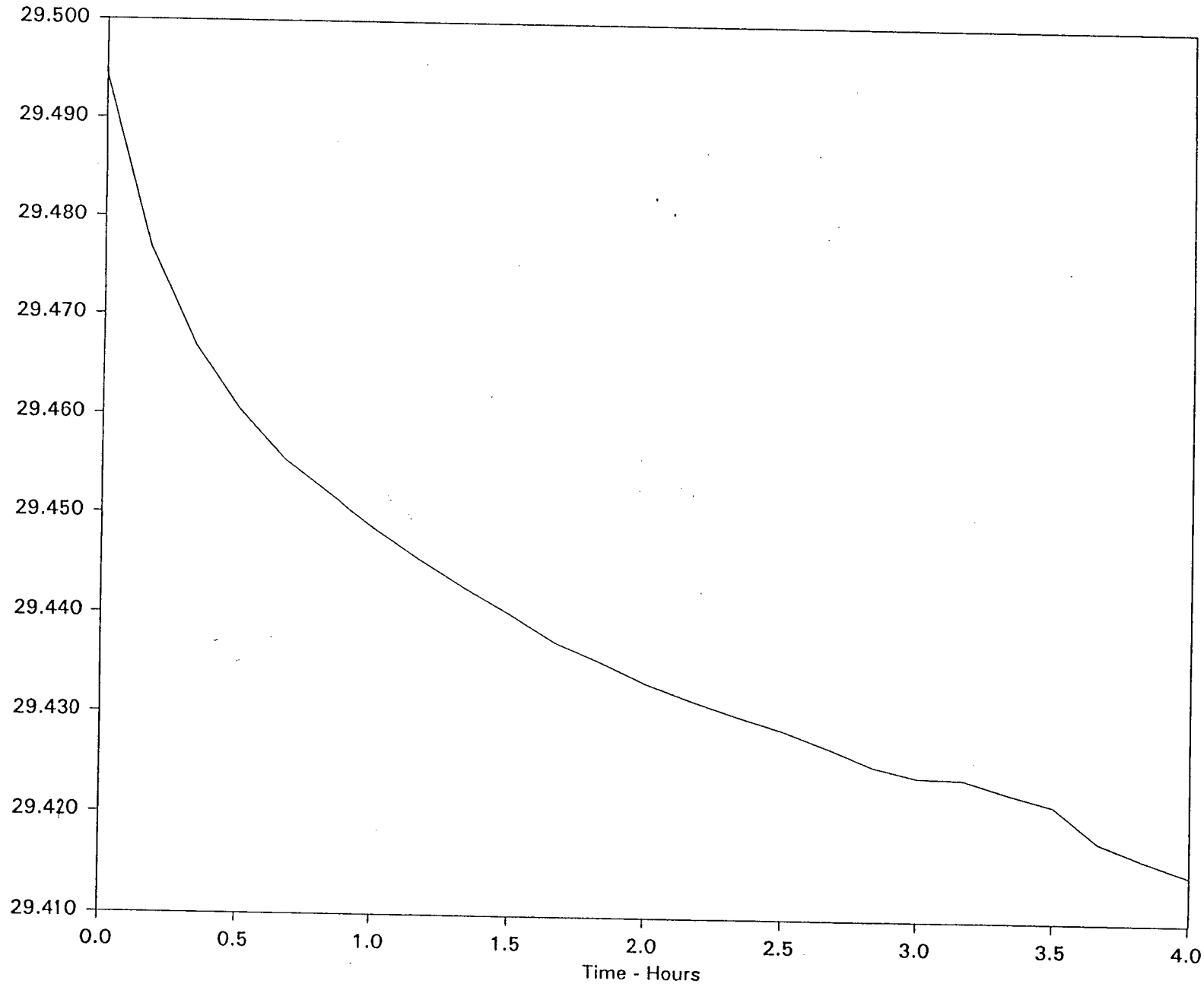
Ice Condenser Mass

Watts Bar Nuclear Plant
Unit 1 - Startup



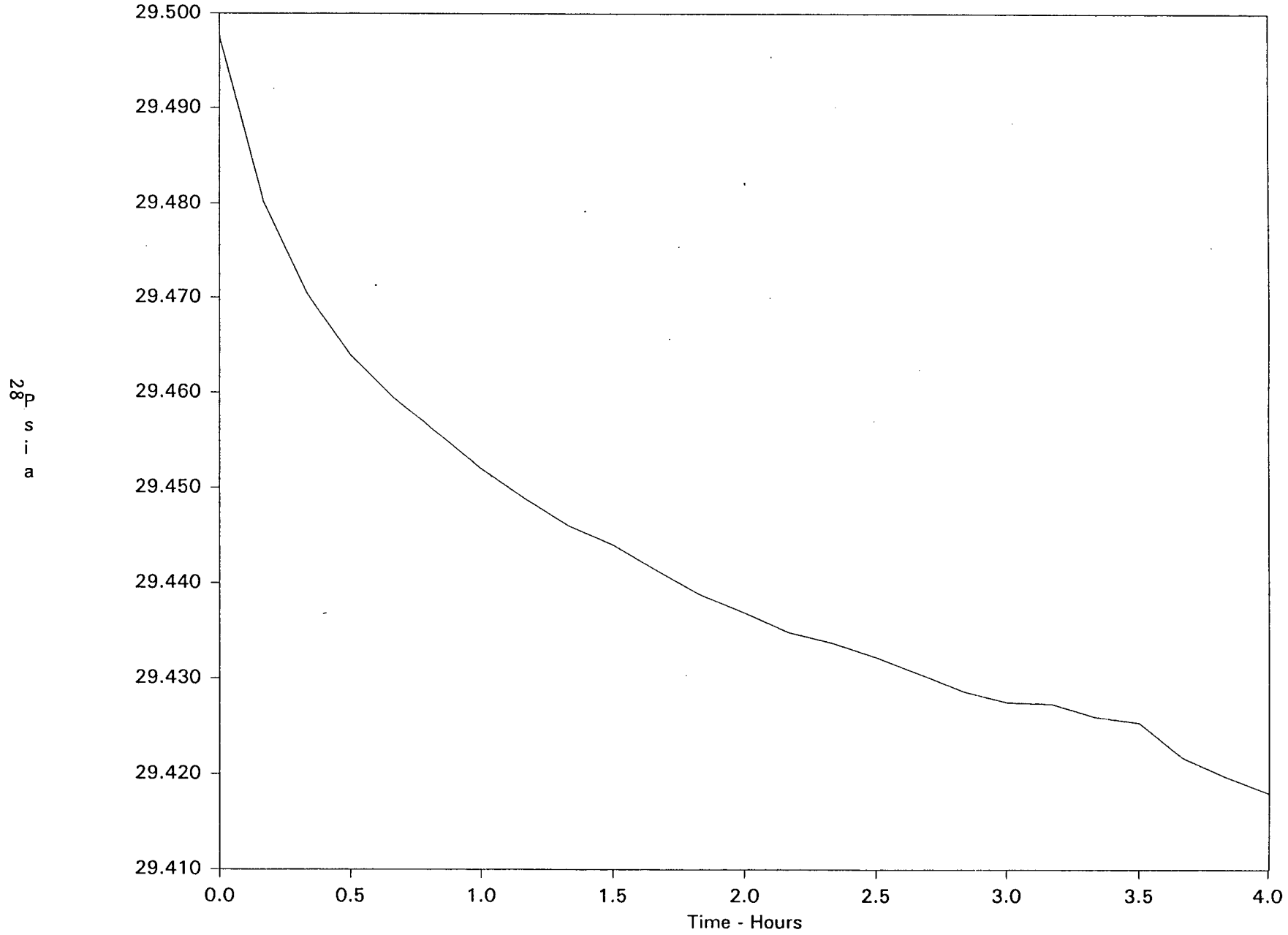
Upper Containment Average Pressure

Watts Bar Nuclear Plant
Unit 1 - Startup



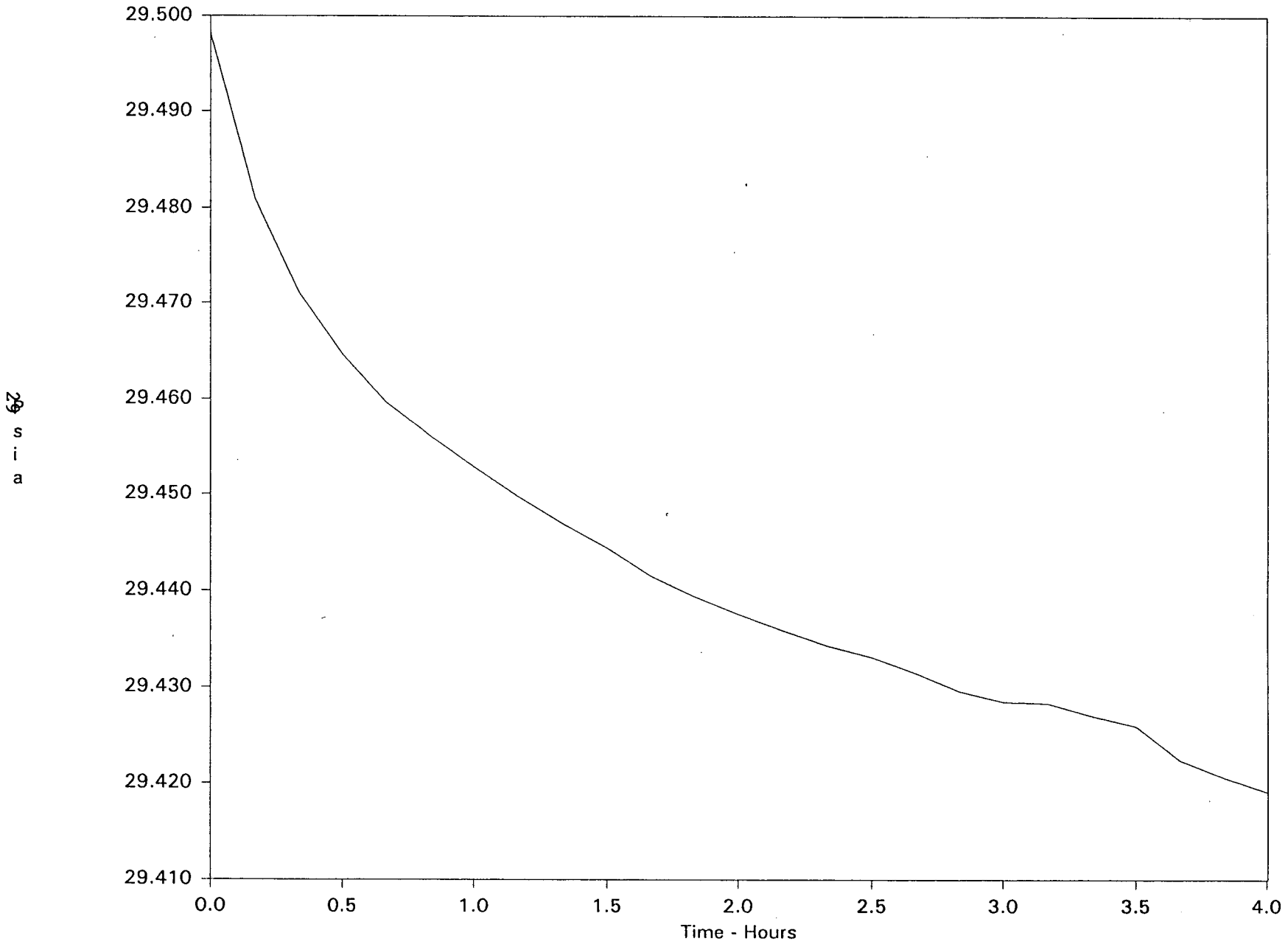
Lower Containment Average Pressure

Watts Bar Nuclear Plant
Unit 1 - Startup



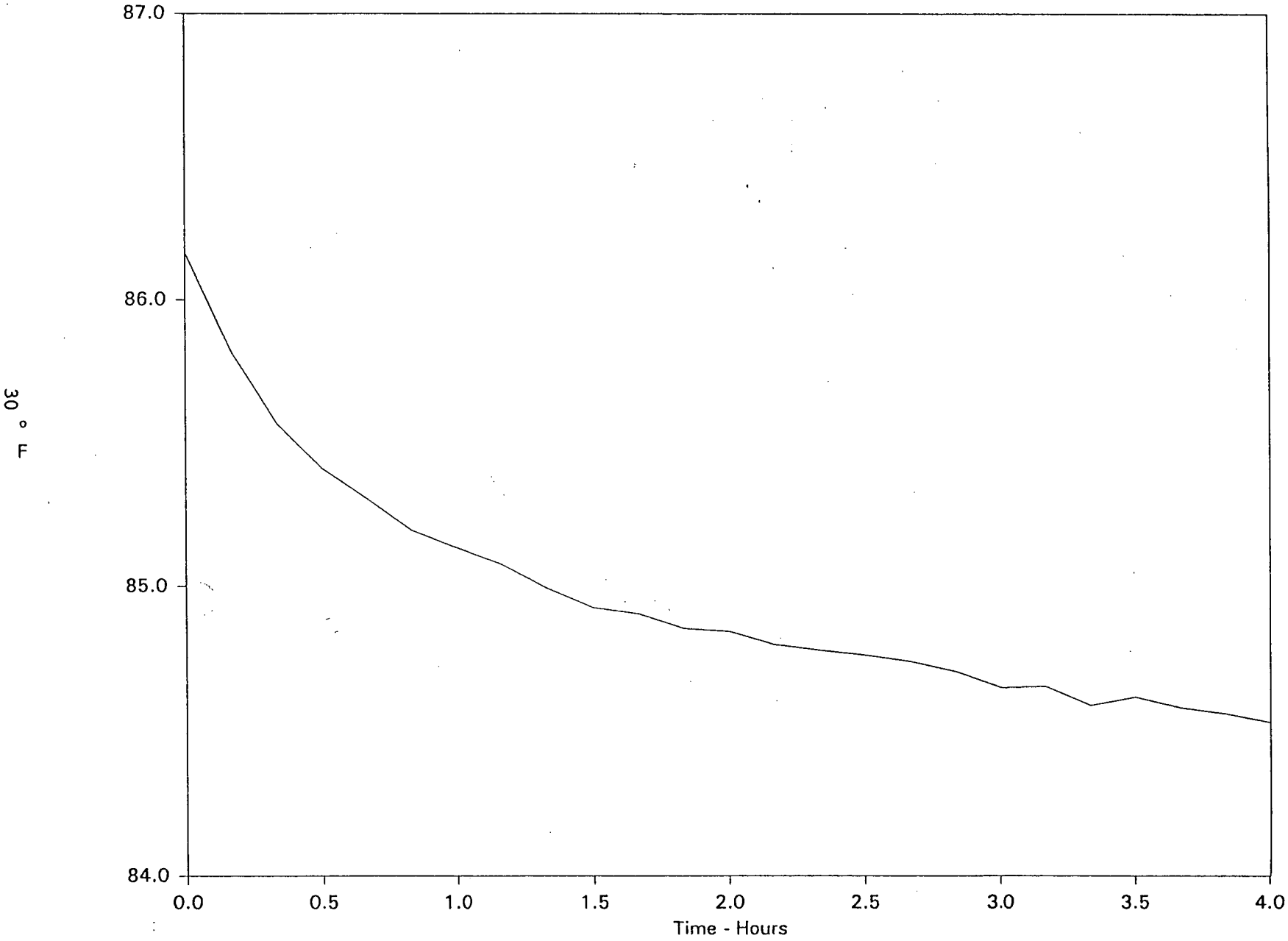
Ice Condenser Average Pressure

Watts Bar Nuclear Plant
Unit 1 - Startup



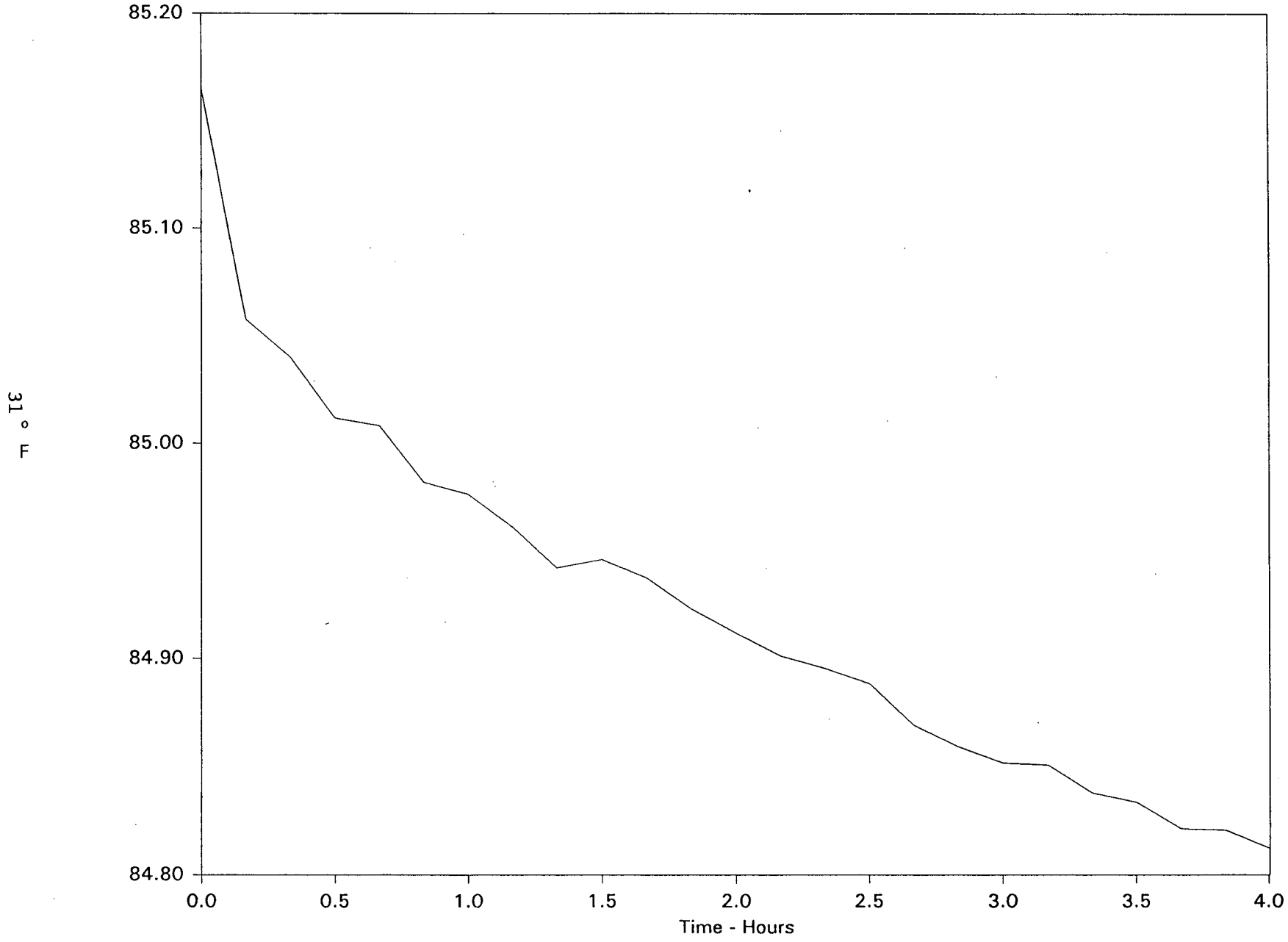
Upper Containment Average Temperature

Watts Bar Nuclear Plant
Unit 1 - Startup



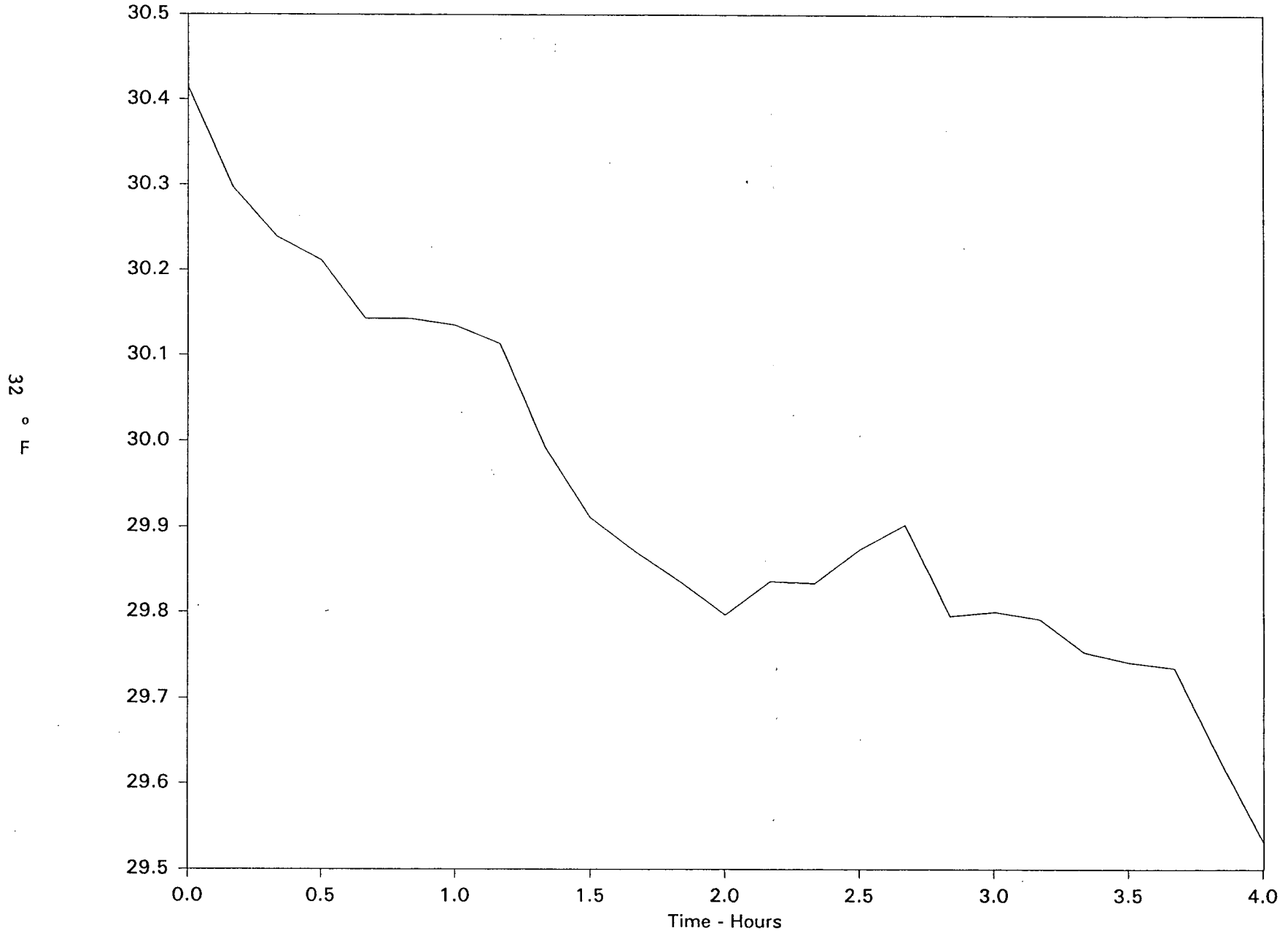
Lower Containment Average Temperature

Watts Bar Nuclear Plant
Unit 1 - Startup



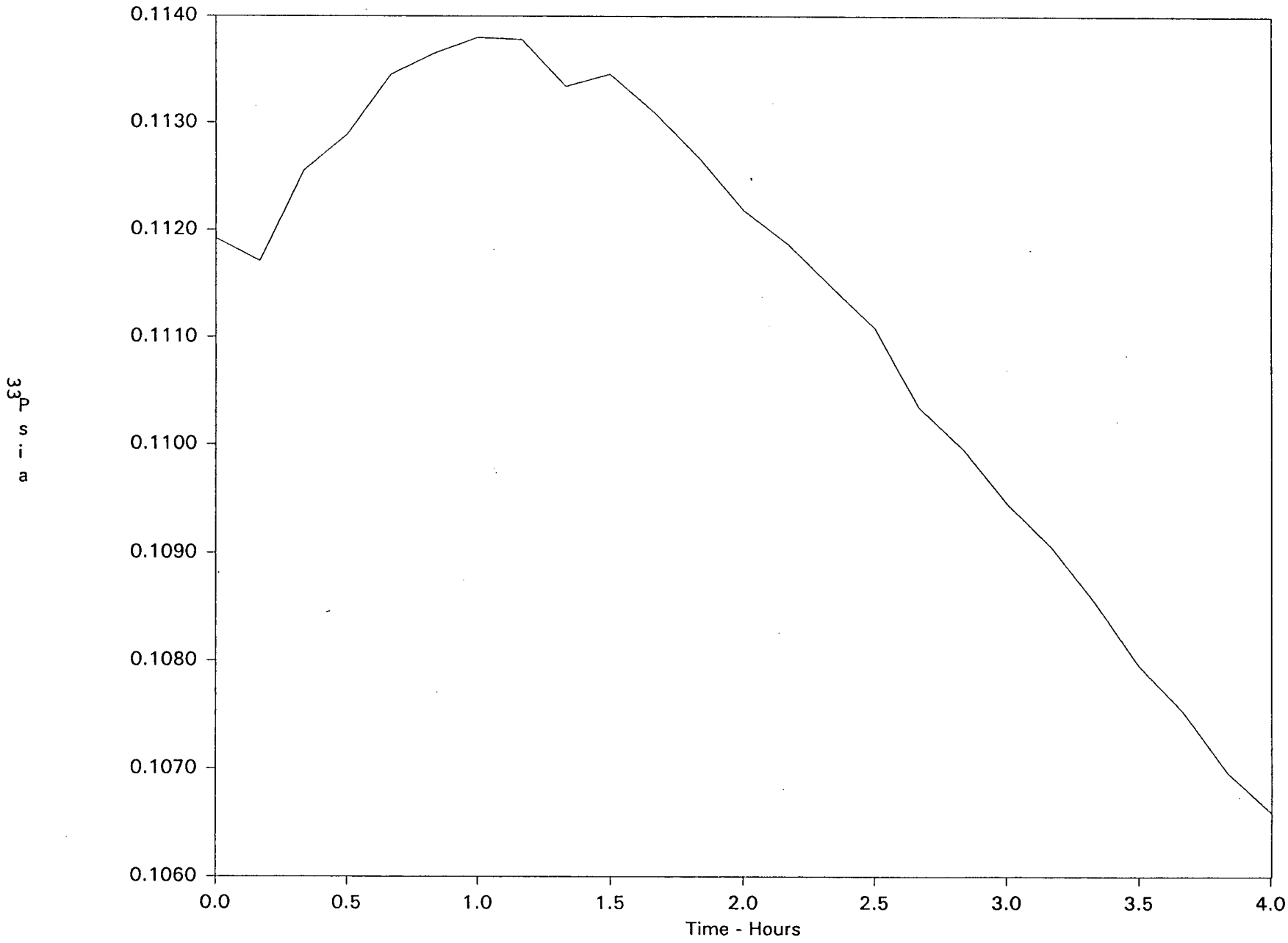
Ice Condenser Average Temperature

Watts Bar Nuclear Plant
Unit 1 - Startup



Upper Containment Average Vapor Pressure

Watts Bar Nuclear Plant
Unit 1 - Startup



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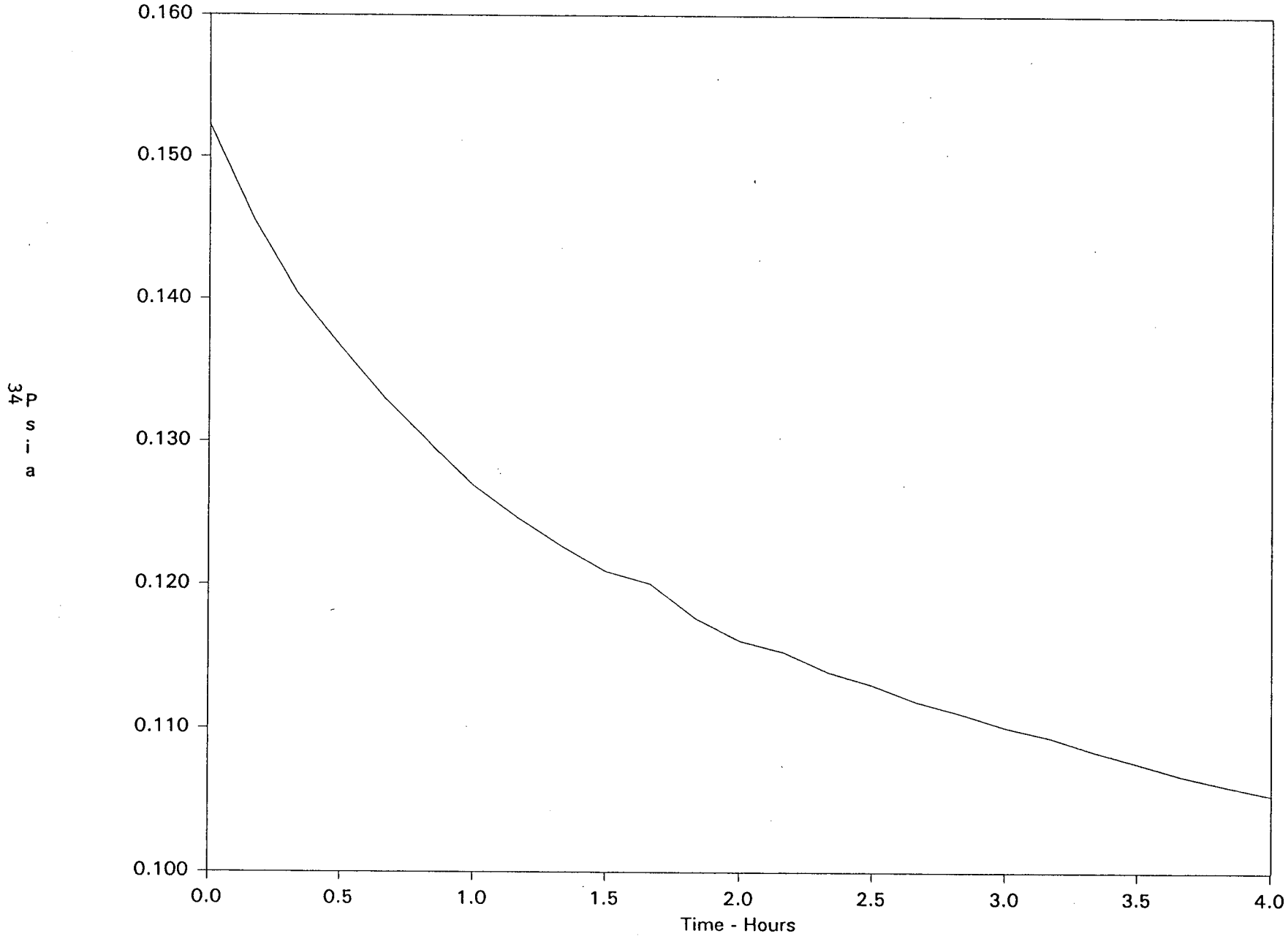
Lower Containment Average Vapor Pressure

Watts Bar Nuclear Plant
Unit 1 - Startup



Temperature Stabilization Criteria Review

Time	Elapsed Time	Average Temperature	Rate of Change of Containment Temp. Last 4 Hrs.(DegF/Hr)	Rate of Change of Containment Temp. Last Hr. (DegF/Hr)
03:12	00:00	78.537		
03:22	00:10	78.297		
03:32	00:20	78.146		
03:42	00:30	78.048		
03:52	00:40	77.979		
04:02	00.50	77.911		
04:12	00.60	77:875		
04:22	01:10	77.836		
04:32	01:20	77.767		
04:42	01:30	77.720		
04:52	01:40	77.700		
05:02	01:50	77.662		
05:12	02:00	77.649		
05:22	02:10	77.626		
05:32	02:20	77.613		
05:42	02:30	77.606		
05:52	02:40	77.592		
06:02	02:50	77.555		
06:12	03:00	77.523		
06:22	03:10	77.525		
06:32	03:20	77.480		
06:42	03:30	77.493		
06:52	03:40	77.468		
07:02	03:50	77.443		
07:12	04:00	77.411	0.281	0.112

The avg rate of temp change for the last 4 hours = 0.281 degF/hr.
The avg rate of temp change for the last hour = 0.112 degF/hr.
The temp stabilization check indicated a value of 0.169 degF/hr, which is only 33.8 % of the recommended 0.5 degF/hr.
Stability check indicates conditions are favorable to proceed with CILRT.

Containment Calculated Values
Stabilization Phase

Watts Bar Nuclear Plant

Unit 1 - Startup

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
32	03:12:15	Upper Containment	96041.06	86.163	0.1119	29.4943
		Lower Containment	55680.05	85.165	0.1523	29.4975
		Ice Condenser	25571.62	30.414	0.0185	29.4981
		TOTAL	177292.73			
33	03:22:16	Upper Containment	96045.36	85.818	0.1117	29.4768
		Lower Containment	55670.89	85.057	0.1456	29.4803
		Ice Condenser	25562.9	30.297	0.0185	29.481
		TOTAL	177279.15			
34	03:32:16	Upper Containment	96054.29	85.567	0.1126	29.4669
		Lower Containment	55663.73	85.04	0.1404	29.4704
		Ice Condenser	25557.33	30.239	0.0185	29.4711
		TOTAL	177275.35			
35	03:42:16	Upper Containment	96059.59	85.411	0.1129	29.4605
		Lower Containment	55661.7	85.012	0.1366	29.464
		Ice Condenser	25553.18	30.211	0.0185	29.4646
		TOTAL	177274.47			
36	03:52:17	Upper Containment	96060.11	85.305	0.1135	29.4555
		Lower Containment	55660.19	85.008	0.133	29.4594
		Ice Condenser	25552.46	30.143	0.0185	29.4597
		TOTAL	177272.76			
37	04:02:17	Upper Containment	96067.85	85.195	0.1136	29.4521
		Lower Containment	55661.84	84.982	0.1299	29.4558
		Ice Condenser	25549.45	30.143	0.0185	29.4562
		TOTAL	177279.14			
38	04:12:17	Upper Containment	96066.35	85.136	0.1138	29.4486
		Lower Containment	55660.98	84.976	0.1269	29.452
		Ice Condenser	25546.97	30.135	0.0185	29.4529
		TOTAL	177274.29			
39	04:22:18	Upper Containment	96066.65	85.079	0.1138	29.4456
		Lower Containment	55660.93	84.961	0.1246	29.4489
		Ice Condenser	25545.35	30.114	0.0185	29.4497
		TOTAL	177272.93			
40	04:32:18	Upper Containment	96073.97	84.992	0.1133	29.4428

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
		Lower Containment	55661.16	84.942	0.1227	29.446
		Ice Condenser	25549.18	29.993	0.0185	29.4469
		TOTAL	177284.31			
41	04:42:18	Upper Containment	96077.04	84.925	0.1135	29.4402
		Lower Containment	55660.41	84.946	0.1209	29.4441
		Ice Condenser	25551.32	29.911	0.0185	29.4444
		TOTAL	177288.77			
42	04:52:19	Upper Containment	96072.81	84.903	0.1131	29.4374
		Lower Containment	55657.8	84.937	0.1201	29.4414
		Ice Condenser	25550.9	29.871	0.0185	29.4415
		TOTAL	177281.51			
43	05:02:19	Upper Containment	96077.12	84.851	0.1127	29.4355
		Lower Containment	55658.8	84.923	0.1177	29.4388
		Ice Condenser	25550.92	29.836	0.0185	29.4394
		TOTAL	177286.84			
44	05:12:19	Upper Containment	96073.38	84.843	0.1122	29.4334
		Lower Containment	55659.29	84.912	0.1162	29.4369
		Ice Condenser	25551.34	29.797	0.0185	29.4376
		TOTAL	177284.02			
45	05:22:20	Upper Containment	96077.05	84.797	0.1119	29.4317
		Lower Containment	55658.05	84.901	0.1153	29.4348
		Ice Condenser	25547.82	29.836	0.0185	29.4359
		TOTAL	177282.92			
46	05:32:20	Upper Containment	96076.95	84.777	0.1115	29.4302
		Lower Containment	55659.2	84.895	0.1139	29.4337
		Ice Condenser	25546.57	29.834	0.0185	29.4343
		TOTAL	177282.72			
47	05:42:20	Upper Containment	96076.65	84.76	0.1111	29.4288
		Lower Containment	55658.74	84.888	0.1131	29.4322
		Ice Condenser	25543.45	29.874	0.0185	29.4331
		TOTAL	177278.84			
48	05:52:21	Upper Containment	96077.47	84.738	0.1103	29.4272
		Lower Containment	55659.65	84.869	0.1119	29.4305
		Ice Condenser	25540.52	29.902	0.0185	29.4315
		TOTAL	177277.64			
49	06:02:21	Upper Containment	96078.87	84.703	0.11	29.4253
		Lower Containment	55658.8	84.859	0.1111	29.4287
		Ice Condenser	25544.43	29.796	0.0185	29.4296
		TOTAL	177282.11			

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
50	06:12:21	UppeContainment	96086.77 8	4.649 0	.1094 2	9.4243
		Lower Containment	55659.32	84.851	0.1101	29.4276
		Ice Condenser	25543.24	29.8	0.0185	29.4285
		TOTAL	177289.33			
51	06:22:22	Upper Containment	96086.85	84.654	0.1091	29.4242
		Lower Containment	55660.44	84.851	0.1094	29.4274
		Ice Condenser	25543.52	29.793	0.0185	29.4283
		TOTAL	177290.82			
52	06:32:22	Upper Containment	96095.43	84.589	0.1085	29.4228
		Lower Containment	55660.99	84.838	0.1084	29.4261
		Ice Condenser	25544.48	29.753	0.0185	29.4271
		TOTAL	177300.9			
53	06:42:22	Upper Containment	96088.54	84.617	0.108	29.4216
		Lower Containment	55661.89	84.833	0.1076	29.4255
		Ice Condenser	25544.12	29.742	0.0185	29.426
		TOTAL	177294.54			
54	06:52:23	Upper Containment	96084.56	84.582	0.1075	29.4181
		Lower Containment	55657.85	84.821	0.1067	29.4218
		Ice Condenser	25541.38	29.735	0.0185	29.4224
		TOTAL	177283.79			
55	07:02:23	Upper Containment	96084.39	84.561	0.107	29.4164
		Lower Containment	55655.46	84.821	0.106	29.4198
		Ice Condenser	25545.36	29.629	0.0185	29.4206
		TOTAL	177285.21			
56	07:12:24	Upper Containment	96085.8	84.532	0.1066	29.4148
		Lower Containment	55654.17	84.812	0.1054	29.4181
		Ice Condenser	25549.16	29.531	0.0185	29.4191
		TOTAL	177289.13			

APPENDIX B

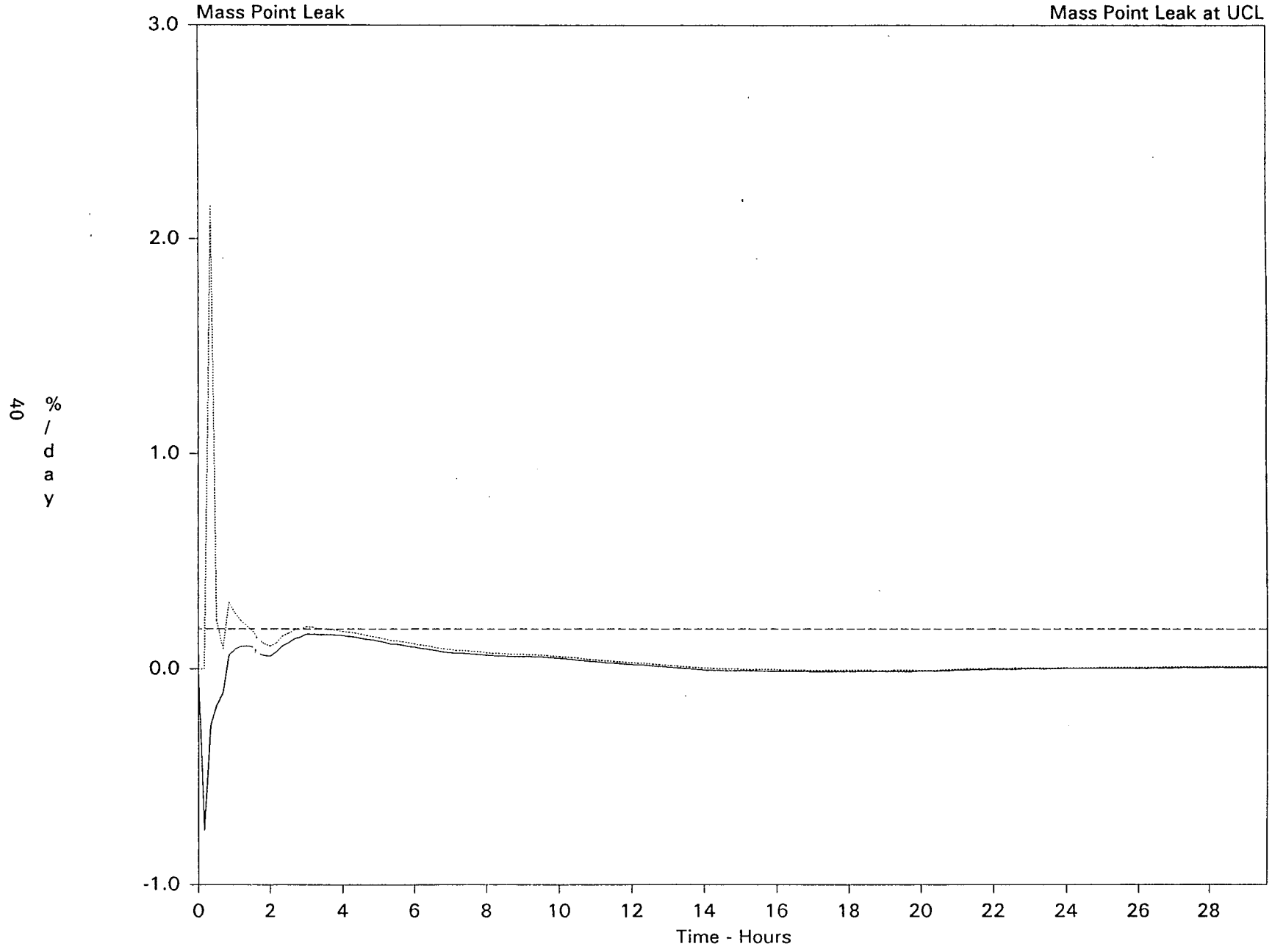
CILRT Test Phase Graphs

(samples 57 to 234)

Contents:

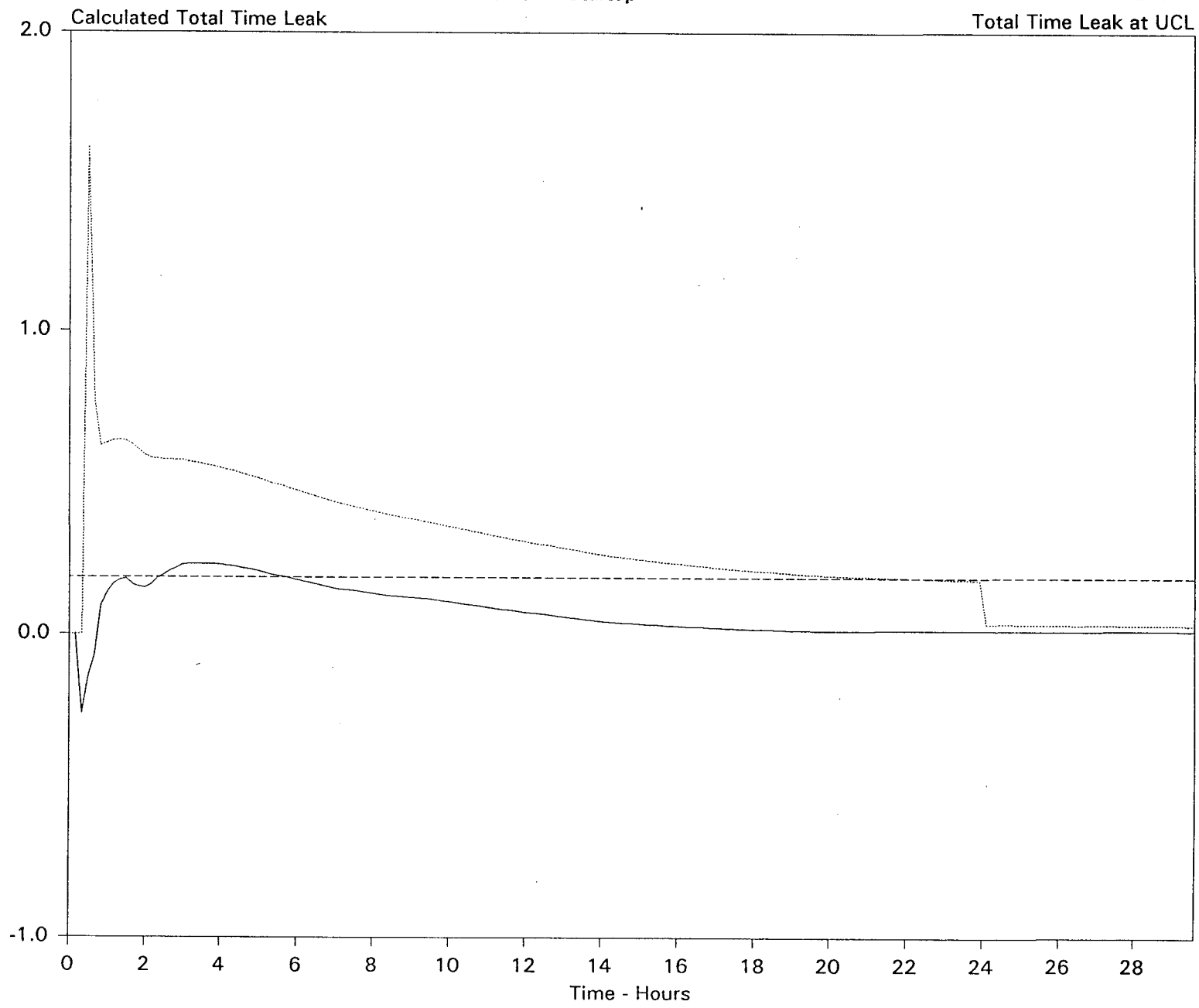
Mass Point Leak & Mass Point Leak at UCL

Watts Bar Nuclear Plant
Unit 1 - Startup



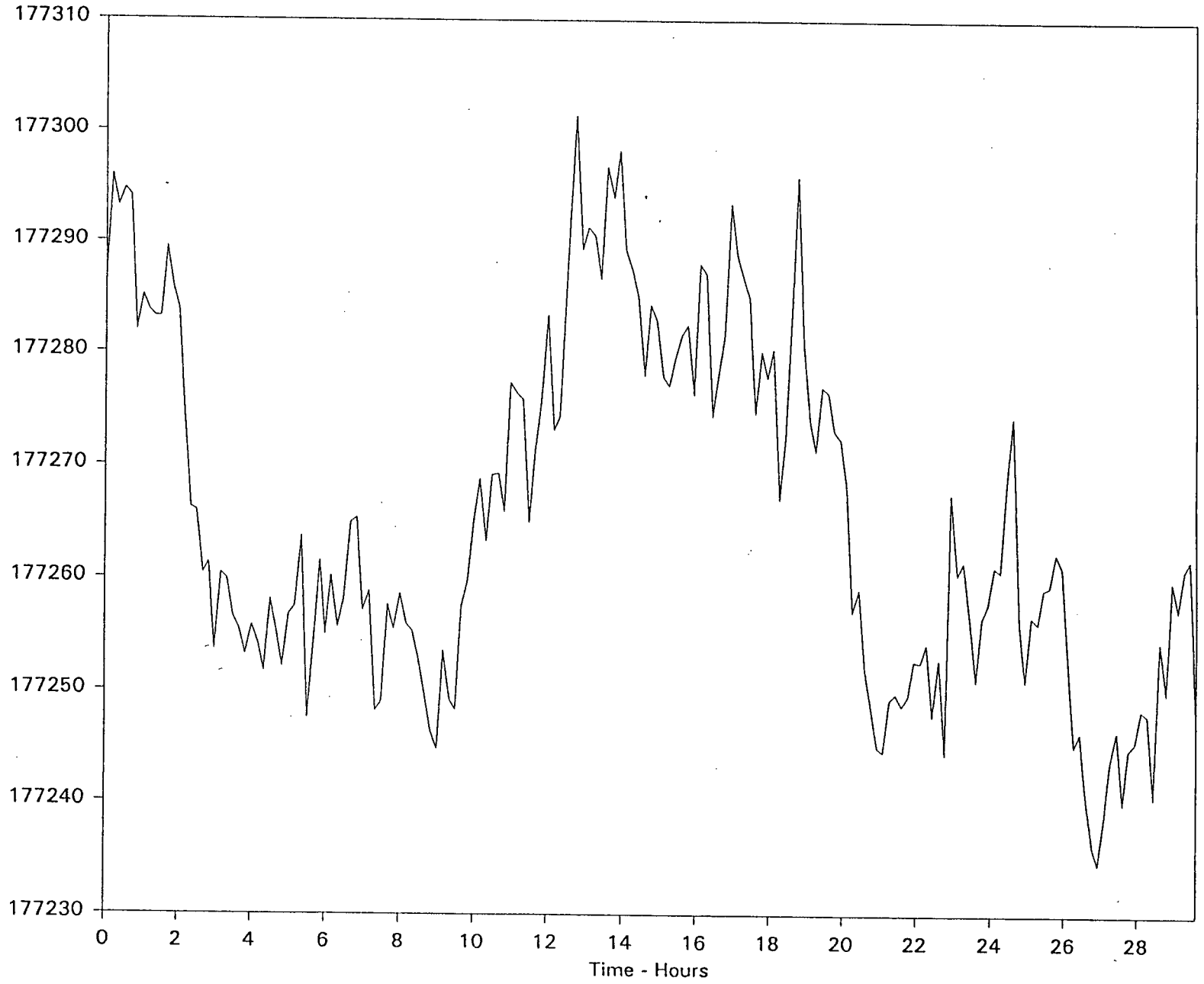
Calculated Total Time Leak & Total Time Leak at UCL

Watts Bar Nuclear Plant
Unit 1 - Startup



Containment Mass

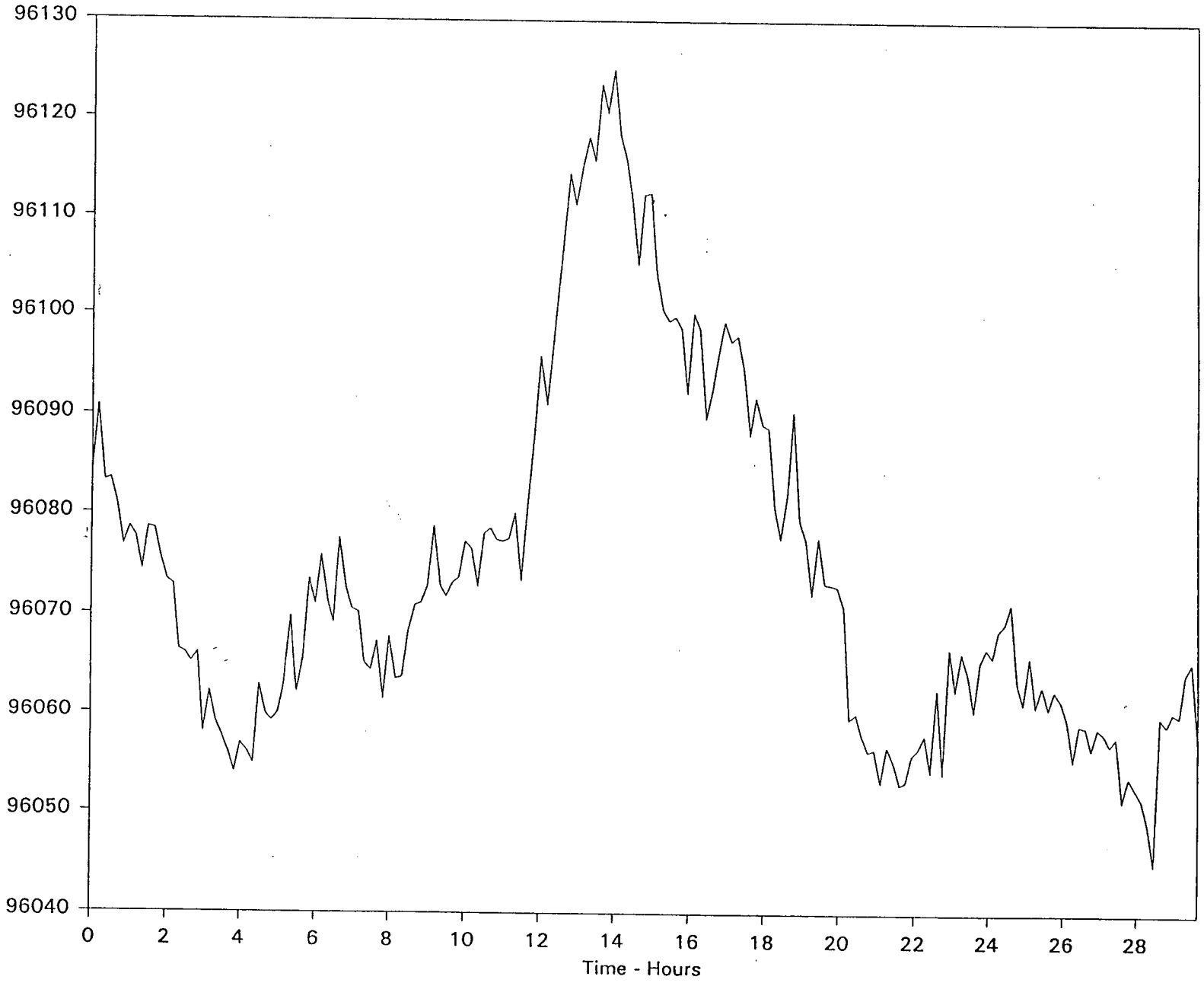
Watts Bar Nuclear Plant
Unit 1 - Startup



42 - b m

Upper Containment Mass

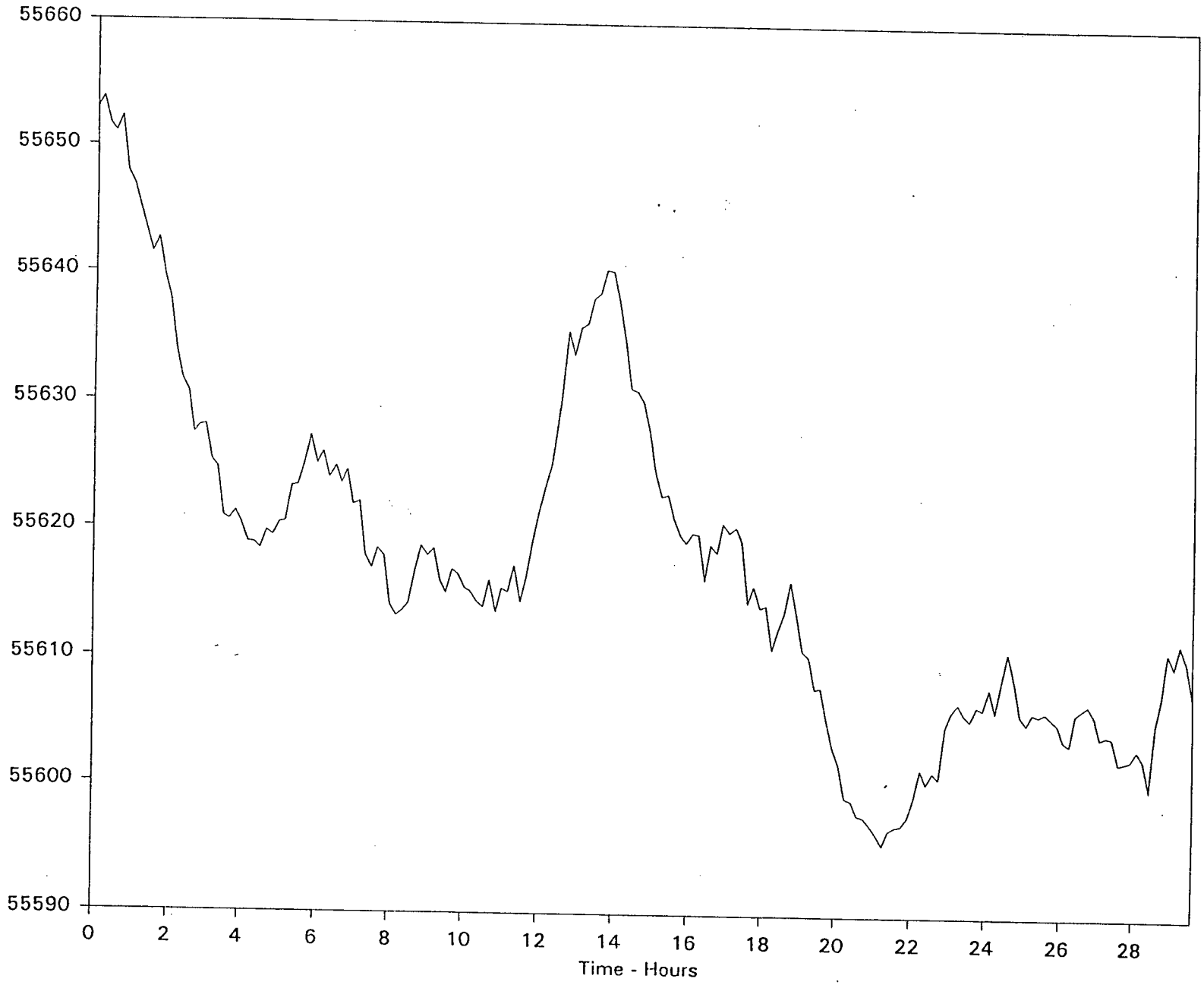
Watts Bar Nuclear Plant
Unit 1 - Startup



43 lbm

Lower Containment Mass

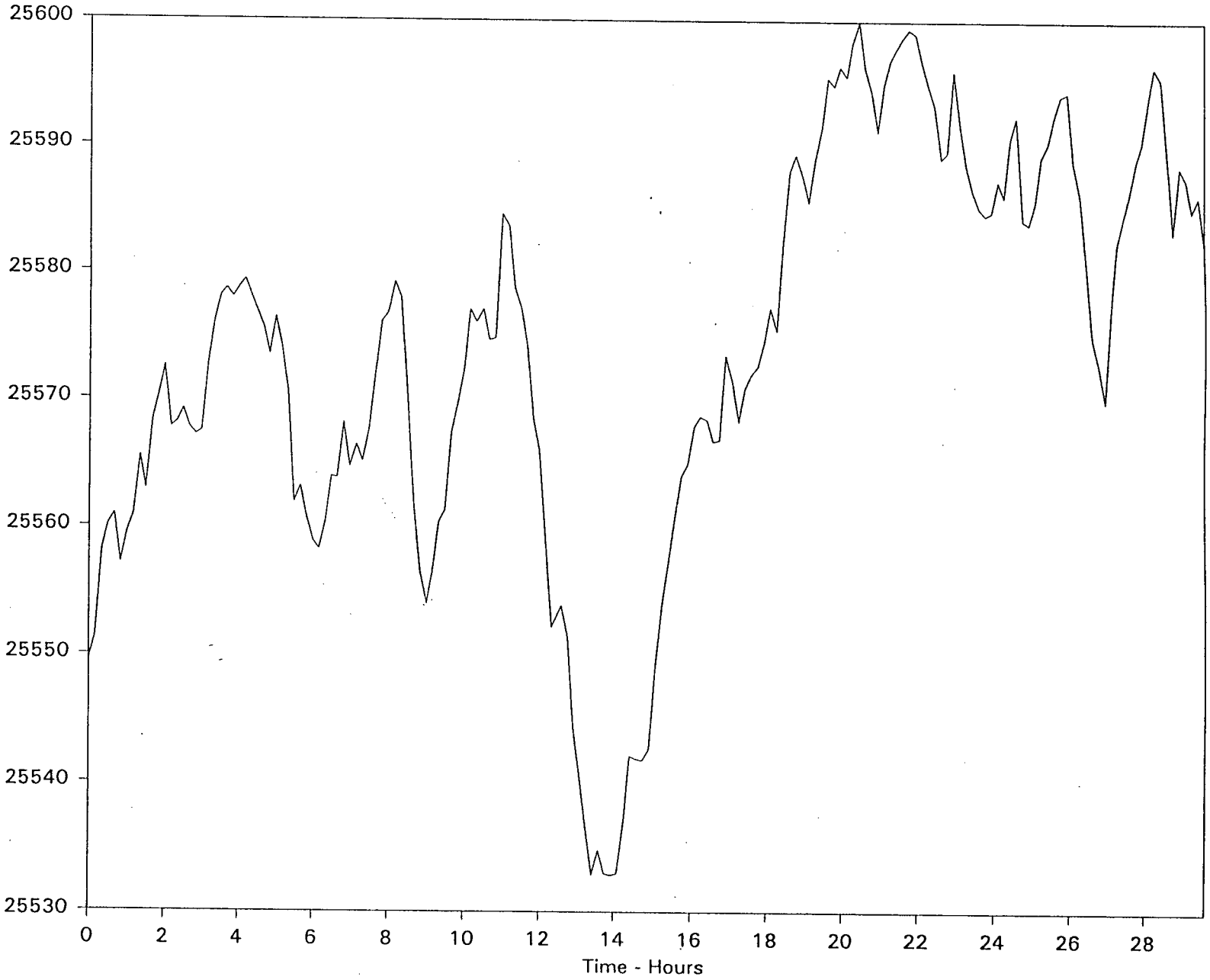
Watts Bar Nuclear Plant
Unit 1 - Startup



44_ b m

Ice Condenser Mass

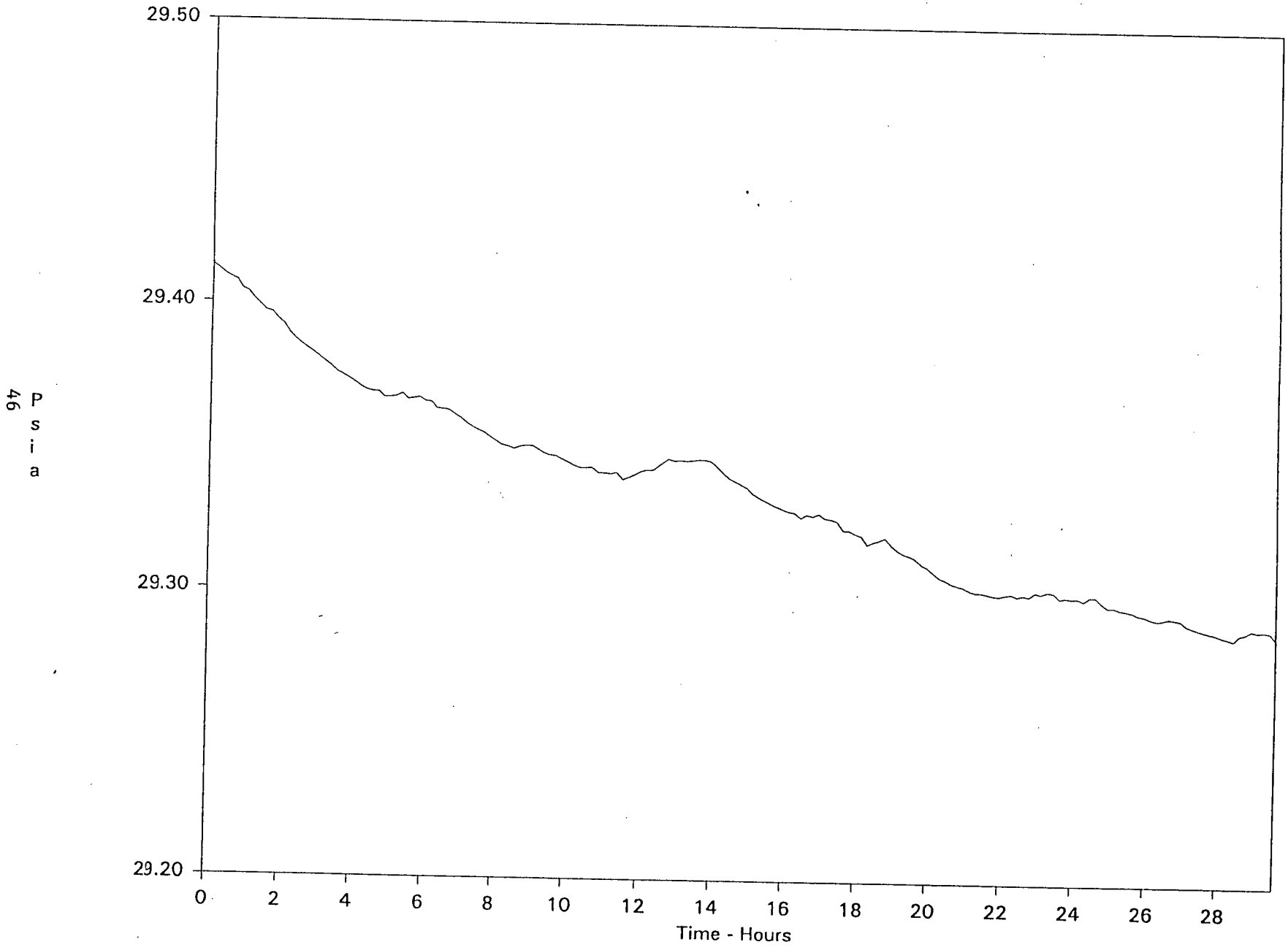
Watts Bar Nuclear Plant
Unit 1 - Startup



45 — b m

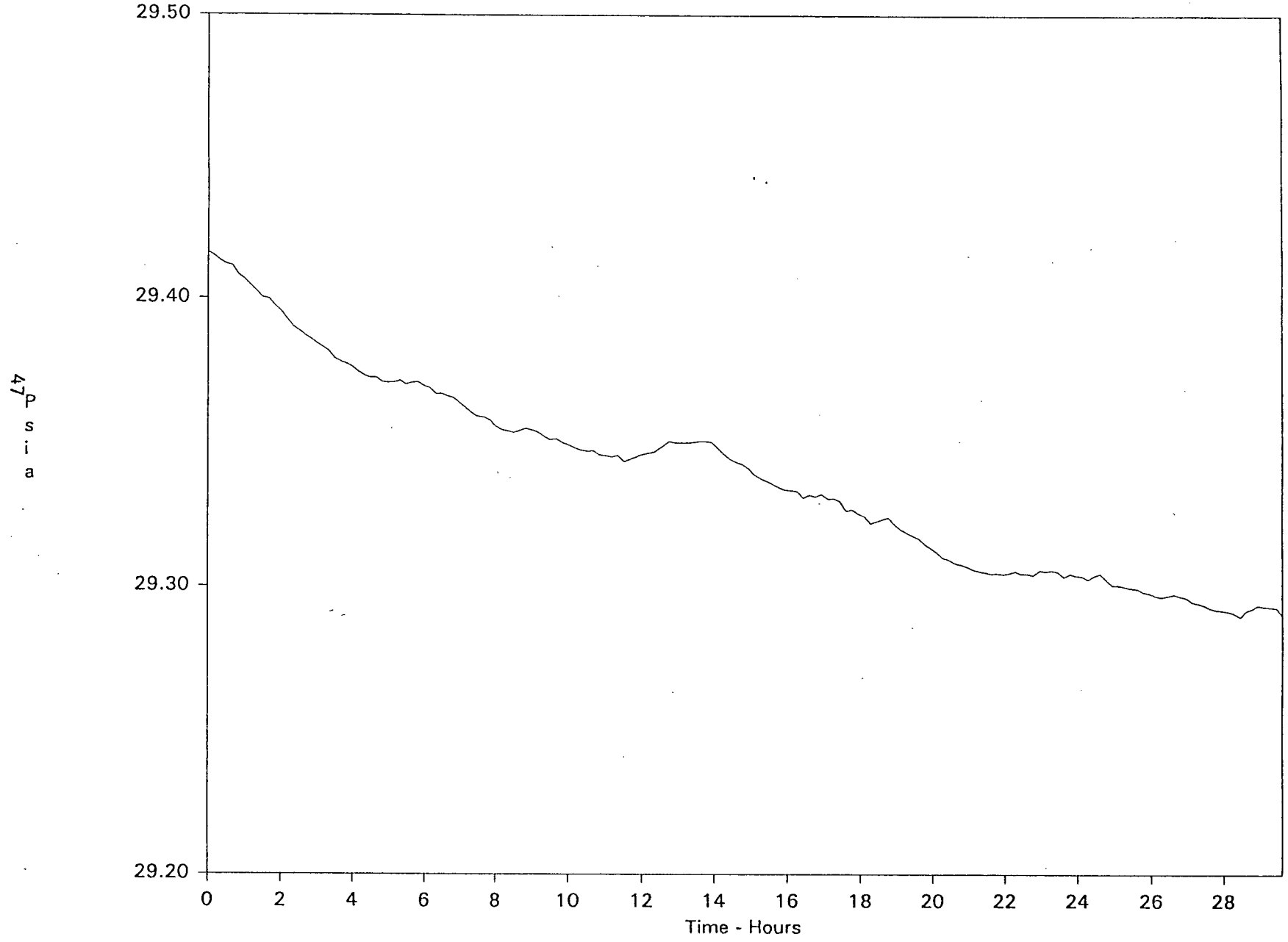
Upper Containment Average Pressure

Watts Bar Nuclear Plant
Unit 1 - Startup



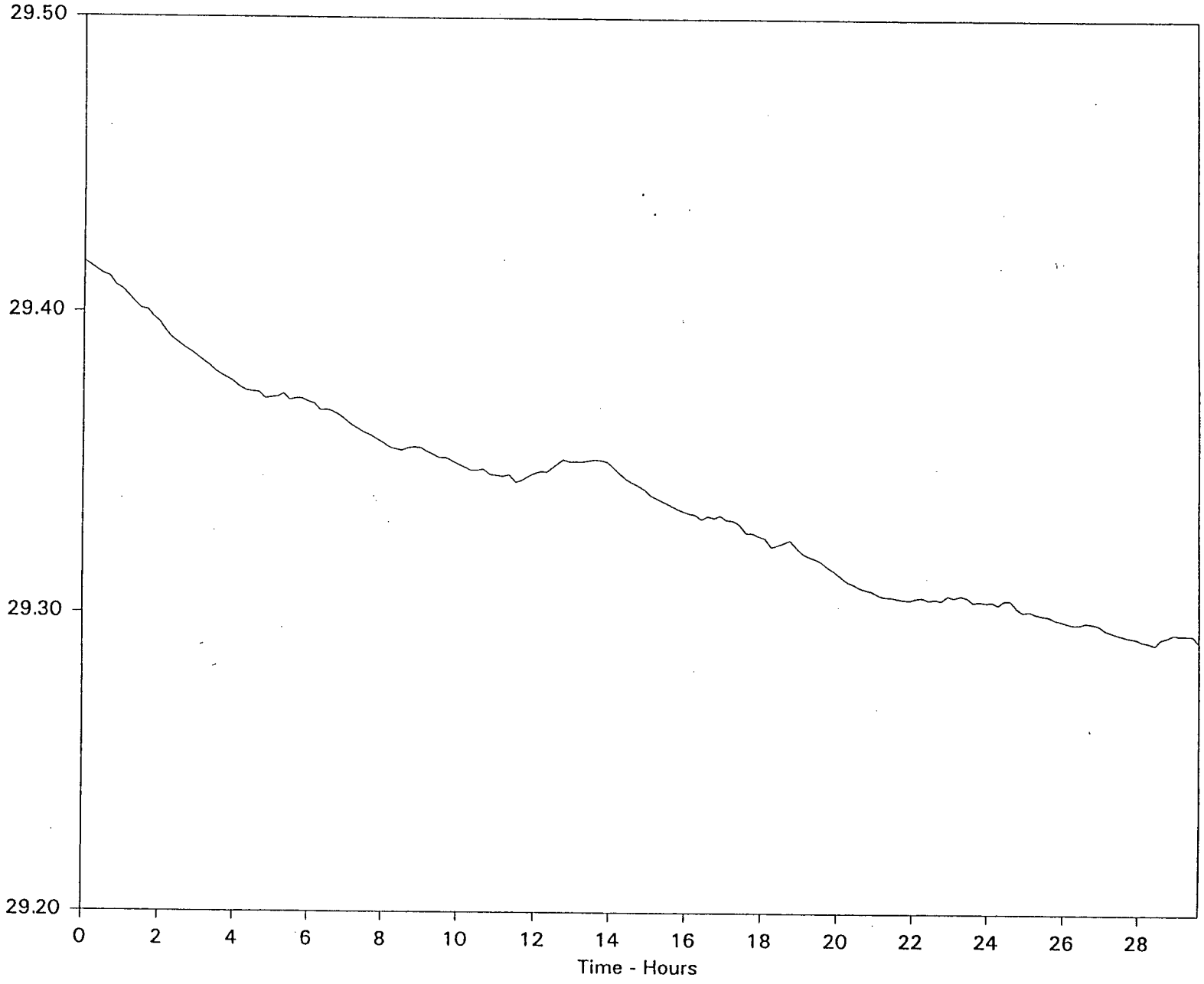
Lower Containment Average Pressure

Watts Bar Nuclear Plant
Unit 1 - Startup



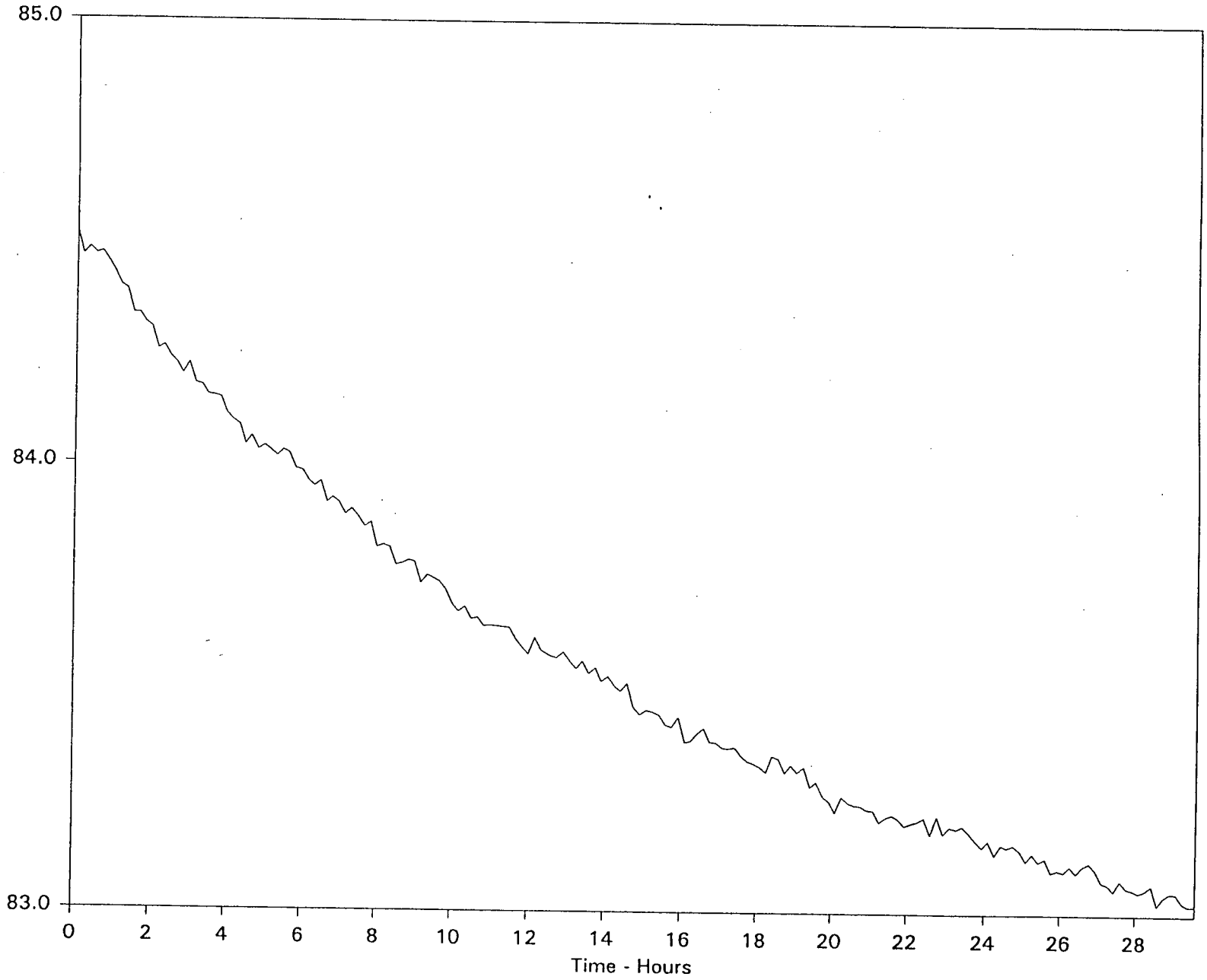
Ice Condenser Average Pressure

Watts Bar Nuclear Plant
Unit 1 - Startup



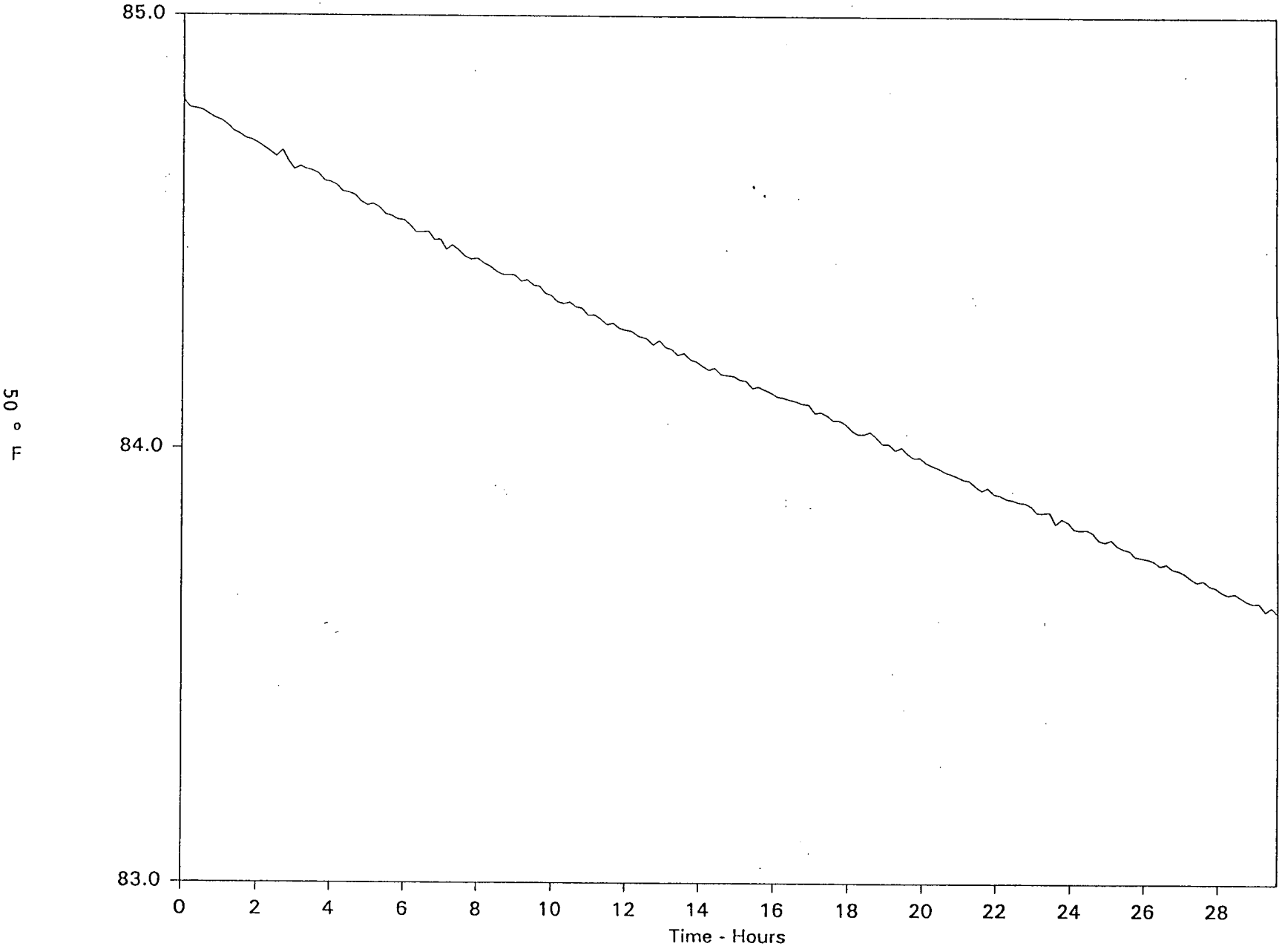
Upper Containment Average Temperature

Watts Bar Nuclear Plant
Unit 1 - Startup



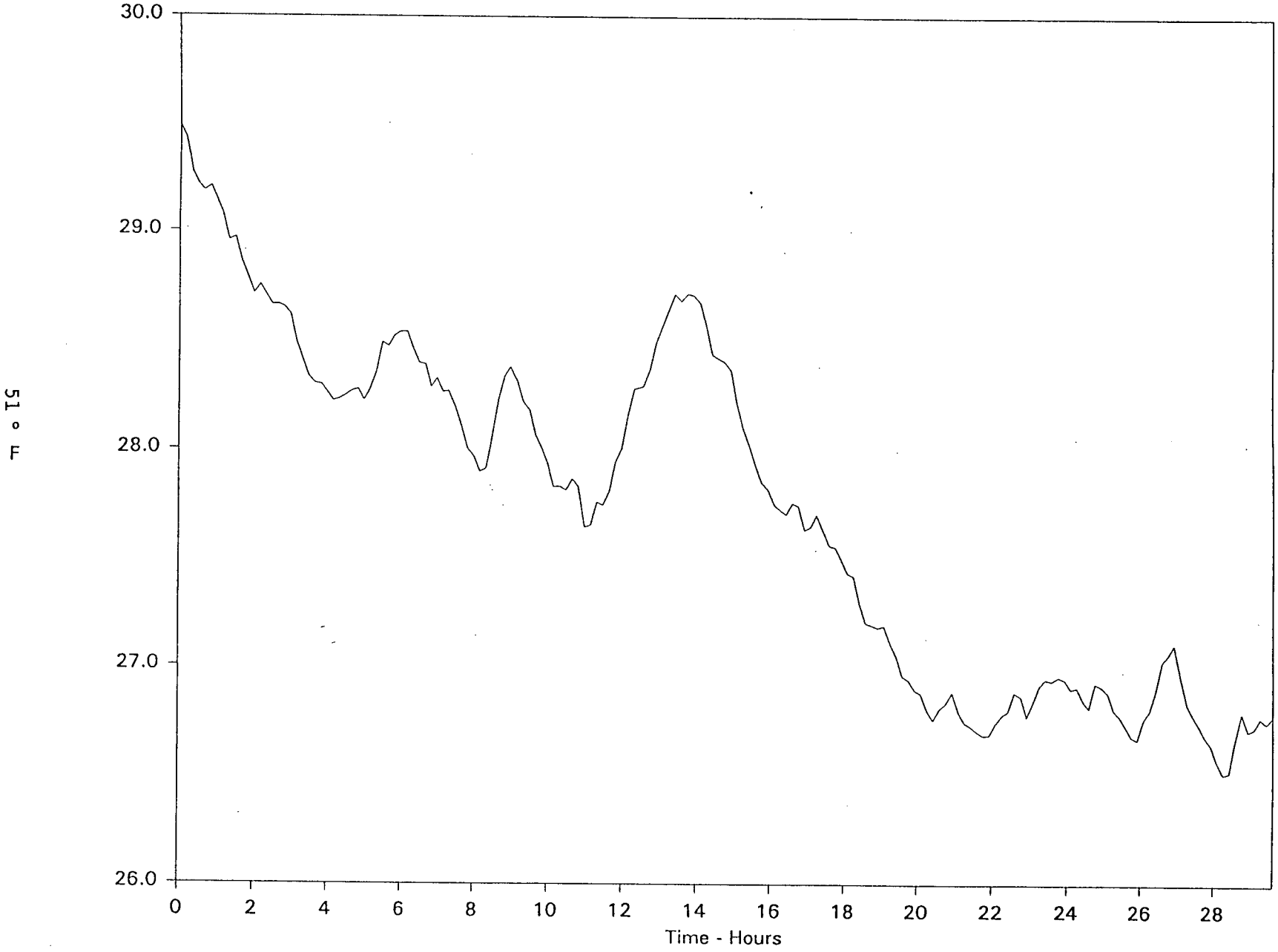
Lower Containment Average Temperature

Watts Bar Nuclear Plant
Unit 1 - Startup



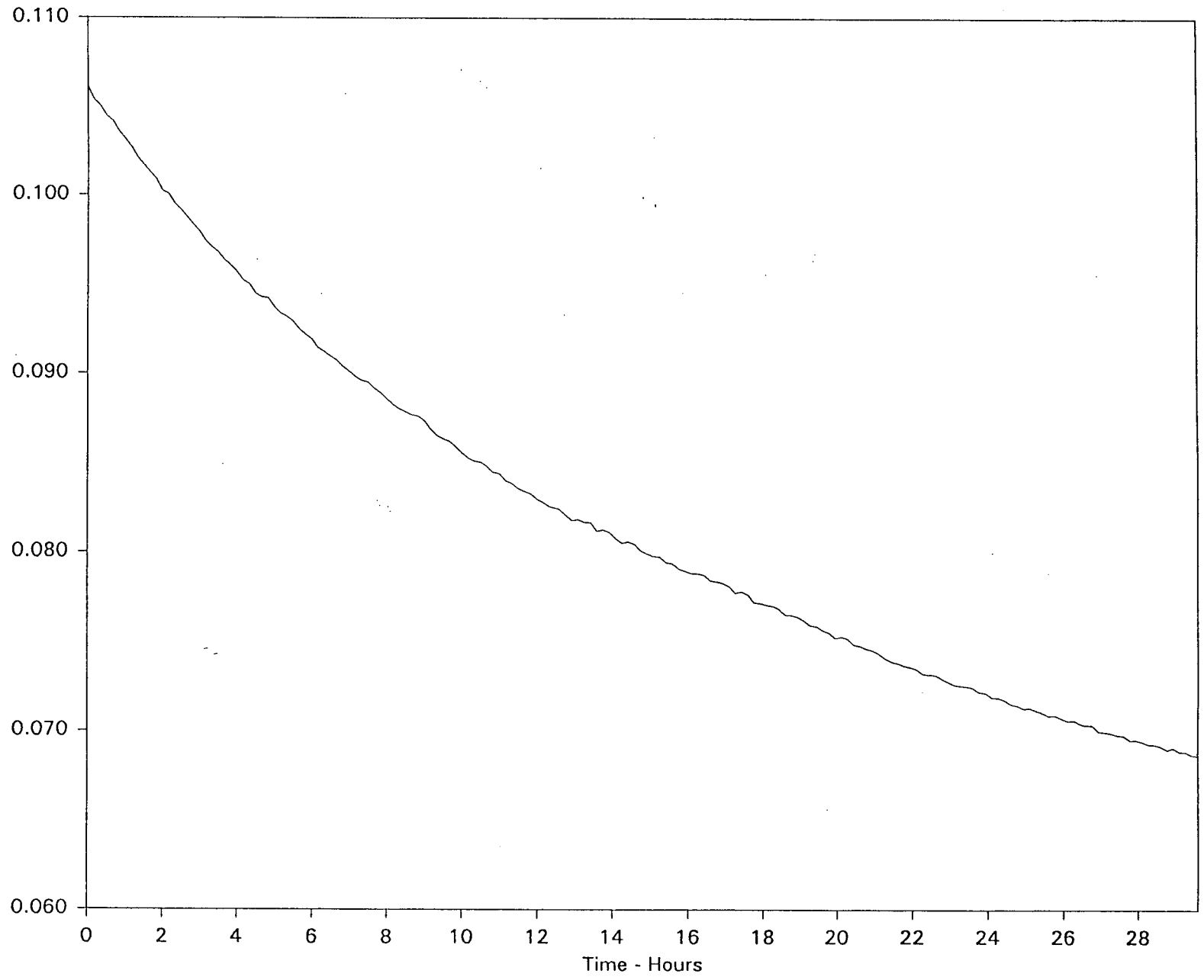
Ice Condenser Average Temperature

Watts Bar Nuclear Plant
Unit 1 - Startup



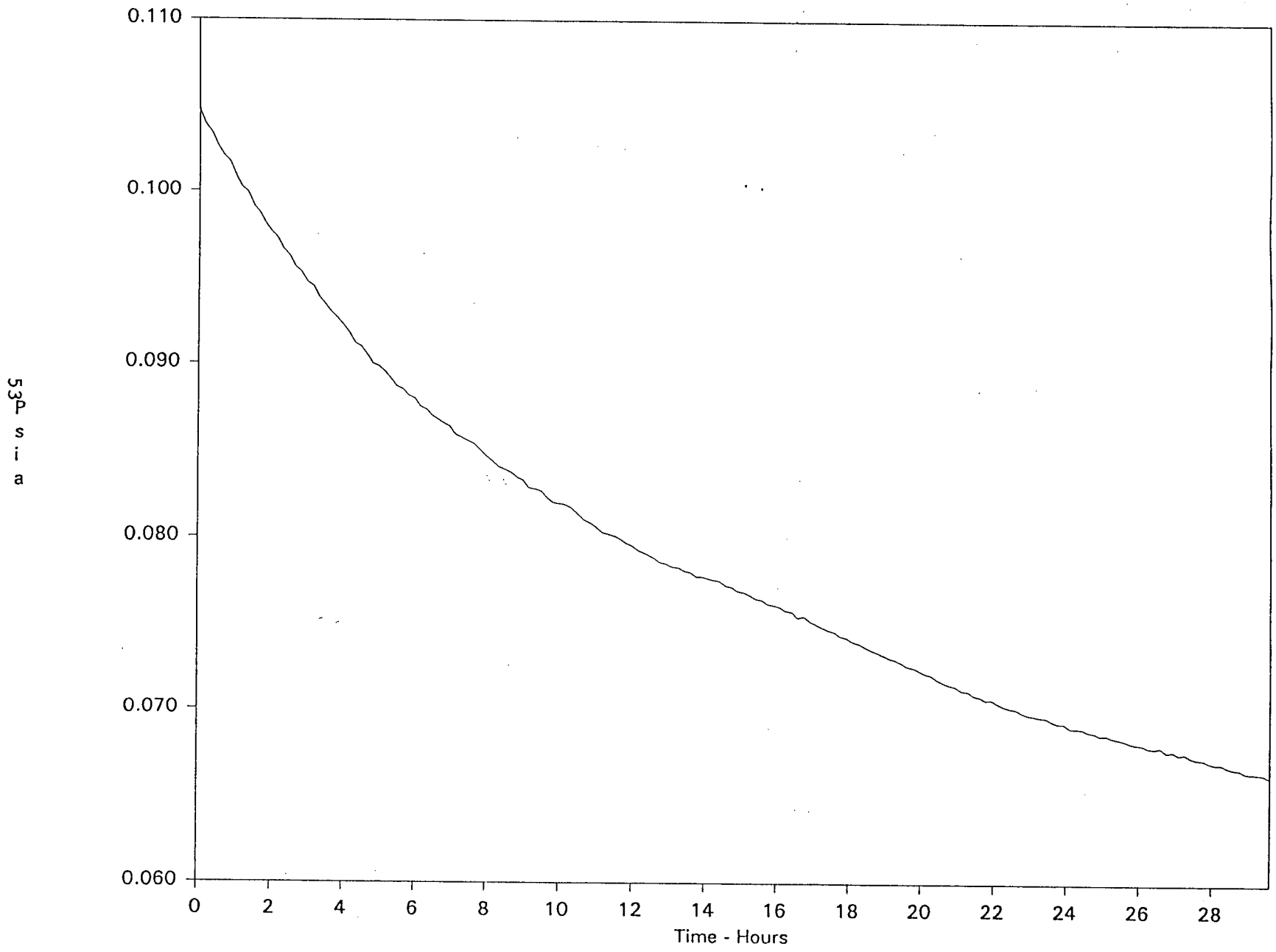
Upper Containment Average Vapor Pressure

Watts Bar Nuclear Plant
Unit 1 - Startup



Lower Containment Average Vapor Pressure

Watts Bar Nuclear Plant
Unit 1 - Startup



APPENDIX C

CILRT Test Phase Tabular Data
(samples 57 to 234)

Contents:

Mass Point Leak Rate Analysis
CILRT Phase

Watts Bar Nuclear Plant
Unit 1 - Startup

Rdg	Time	Norm Mass	MP Leak %/day	MP UCL %/day
57	27-Jun-94 07:22	1.000000	0.000000	0.000000
58	27-Jun-94 07:32	1.000052	-0.751312	0.000000
59	27-Jun-94 07:42	1.000036	-0.261998	2.152317
60	27-Jun-94 07:52	1.000045	-0.173232	0.227590
61	27-Jun-94 08:02	1.000042	-0.110591	0.093280
62	27-Jun-94 08:12	0.999973	0.064112	0.310703
63	27-Jun-94 08:22	0.999991	0.092363	0.260423
64	27-Jun-94 08:32	0.999984	0.105290	0.226965
65	27-Jun-94 08:42	0.999980	0.107442	0.199361
66	27-Jun-94 08:52	0.999980	0.102804	0.174947
67	27-Jun-94 09:02	1.000016	0.072283	0.138734
68	27-Jun-94 09:12	0.999995	0.063571	0.118992
69	27-Jun-94 09:22	0.999984	0.061435	0.107899
70	27-Jun-94 09:32	0.999932	0.079589	0.123274
71	27-Jun-94 09:42	0.999885	0.106399	0.152921
72	27-Jun-94 09:52	0.999883	0.122514	0.166168
73	27-Jun-94 10:02	0.999852	0.140025	0.182246
74	27-Jun-94 10:12	0.999857	0.148492	0.186815
75	27-Jun-94 10:22	0.999814	0.162080	0.198859
76	27-Jun-94 10:32	0.999852	0.161799	0.194786
77	27-Jun-94 10:42	0.999849	0.160025	0.189831
78	27-Jun-94 10:52	0.999831	0.159960	0.186982
79	27-Jun-94 11:02	0.999824	0.159249	0.183869
80	27-Jun-94 11:12	0.999811	0.158939	0.181459
81	27-Jun-94 11:22	0.999826	0.155213	0.176215
82	27-Jun-94 11:32	0.999817	0.152036	0.171639
83	27-Jun-94 11:42	0.999803	0.149966	0.168201
84	27-Jun-94 11:52	0.999839	0.143392	0.161494
85	27-Jun-94 12:02	0.999823	0.138674	0.156132
86	27-Jun-94 12:12	0.999805	0.135585	0.152137
87	27-Jun-94 12:22	0.999832	0.129929	0.146360
88	27-Jun-94 12:32	0.999835	0.124212	0.140586
89	27-Jun-94 12:42	0.999870	0.116137	0.133417
90	27-Jun-94 12:52	0.999779	0.115440	0.131700
91	27-Jun-94 13:02	0.999815	0.111855	0.127567
92	27-Jun-94 13:12	0.999858	0.105523	0.121587
93	27-Jun-94 13:22	0.999821	0.101978	0.117550
94	27-Jun-94 13:32	0.999850	0.096854	0.112417
95	27-Jun-94 13:42	0.999825	0.093491	0.108604
96	27-Jun-94 13:52	0.999839	0.089557	0.104407
97	27-Jun-94 14:02	0.999877	0.083927	0.099069

Mass Point Leak Rate Analysis
CILRT Phase

Watts Bar Nuclear Plant
Unit 1 - Startup

Rdg	Time	Norm Mass	MP Leak %/day	MP UCL %/day
98	27-Jun-94 14:12	0.999880	0.078665	0.093957
99	27-Jun-94 14:22	0.999834	0.075967	0.090773
100	27-Jun-94 14:32	0.999843	0.072974	0.087395
101	27-Jun-94 14:42	0.999783	0.072666	0.086442
102	27-Jun-94 14:52	0.999787	0.072013	0.085198
103	27-Jun-94 15:02	0.999836	0.069385	0.082258
104	27-Jun-94 15:12	0.999824	0.067338	0.079828
105	27-Jun-94 15:22	0.999842	0.064742	0.076977
106	27-Jun-94 15:32	0.999827	0.062796	0.074687
107	27-Jun-94 15:42	0.999823	0.061043	0.072589
108	27-Jun-94 15:52	0.999808	0.059821	0.070981
109	27-Jun-94 16:02	0.999790	0.059158	0.069912
110	27-Jun-94 16:12	0.999772	0.058971	0.069324
111	27-Jun-94 16:22	0.999763	0.058941	0.068914
112	27-Jun-94 16:32	0.999813	0.057450	0.067171
113	27-Jun-94 16:42	0.999788	0.056648	0.066056
114	27-Jun-94 16:52	0.999783	0.055961	0.065067
115	27-Jun-94 17:02	0.999835	0.053979	0.062979
116	27-Jun-94 17:12	0.999848	0.051792	0.060742
117	27-Jun-94 17:22	0.999878	0.049054	0.058103
118	27-Jun-94 17:32	0.999899	0.046028	0.055256
119	27-Jun-94 17:42	0.999868	0.043881	0.053050
120	27-Jun-94 17:52	0.999901	0.041170	0.050427
121	27-Jun-94 18:02	0.999902	0.038633	0.047930
122	27-Jun-94 18:12	0.999883	0.036642	0.045858
123	27-Jun-94 18:22	0.999948	0.033547	0.042970
124	27-Jun-94 18:32	0.999942	0.030775	0.040301
125	27-Jun-94 18:42	0.999939	0.028251	0.037813
126	27-Jun-94 18:52	0.999878	0.026975	0.036342
127	27-Jun-94 19:02	0.999914	0.025152	0.034421
128	27-Jun-94 19:12	0.999938	0.023056	0.032289
129	27-Jun-94 19:22	0.999981	0.020410	0.029742
130	27-Jun-94 19:32	0.999924	0.018848	0.028050
131	27-Jun-94 19:42	0.999931	0.017277	0.026358
132	27-Jun-94 19:57	1.000029	0.014327	0.023597
133	27-Jun-94 20:07	1.000083	0.010800	0.020425
134	27-Jun-94 20:17	1.000015	0.008493	0.018119
135	27-Jun-94 20:27	1.000026	0.006199	0.015826
136	27-Jun-94 20:37	1.000022	0.004125	0.013712
137	27-Jun-94 20:47	1.000000	0.002489	0.011963
138	27-Jun-94 20:57	1.000057	0.000246	0.009729

Mass Point Leak Rate Analysis
CILRT Phase

Watts Bar Nuclear Plant
Unit 1 - Startup

Rdg	Time	Norm Mass	MP Leak %/day	MP UCL %/day
139	27-Jun-94 21:07	1.000042	-0.001645	0.007778
140	27-Jun-94 21:17	1.000065	-0.003687	0.005712
141	27-Jun-94 21:27	1.000015	-0.004988	0.004270
142	27-Jun-94 21:37	1.000005	-0.006074	0.003025
143	27-Jun-94 21:47	0.999991	-0.006925	0.001998
144	27-Jun-94 21:57	0.999951	-0.007276	0.001448
145	27-Jun-94 22:07	0.999987	-0.007980	0.000571
146	27-Jun-94 22:17	0.999979	-0.008554	-0.000176
147	27-Jun-94 22:27	0.999951	-0.008790	-0.000596
148	27-Jun-94 22:37	0.999946	-0.008960	-0.000945
149	27-Jun-94 22:48	0.999960	-0.009250	-0.001404
150	27-Jun-94 22:58	0.999972	-0.009627	-0.001941
151	27-Jun-94 23:08	0.999977	-0.010022	-0.002490
152	27-Jun-94 23:18	0.999942	-0.010064	-0.002690
153	27-Jun-94 23:28	1.000008	-0.010693	-0.003448
154	27-Jun-94 23:38	1.000003	-0.011235	-0.004120
155	27-Jun-94 23:48	0.999931	-0.011114	-0.004143
156	27-Jun-94 23:58	0.999952	-0.011173	-0.004343
157	28-Jun-94 00:08	0.999972	-0.011383	-0.004685
158	28-Jun-94 00:18	1.000039	-0.012124	-0.005521
159	28-Jun-94 00:28	1.000012	-0.012604	-0.006113
160	28-Jun-94 00:38	1.000000	-0.012953	-0.006579
161	28-Jun-94 00:48	0.999991	-0.013204	-0.006948
162	28-Jun-94 00:58	0.999932	-0.012991	-0.006850
163	28-Jun-94 01:08	0.999964	-0.013016	-0.006990
164	28-Jun-94 01:18	0.999950	-0.012935	-0.007021
165	28-Jun-94 01:28	0.999964	-0.012954	-0.007149
166	28-Jun-94 01:38	0.999889	-0.012437	-0.006717
167	28-Jun-94 01:48	0.999920	-0.012154	-0.006531
168	28-Jun-94 01:58	0.999984	-0.012315	-0.006791
169	28-Jun-94 02:08	1.000052	-0.012916	-0.007459
170	28-Jun-94 02:18	0.999967	-0.012919	-0.007559
171	28-Jun-94 02:28	0.999929	-0.012674	-0.007402
172	28-Jun-94 02:38	0.999914	-0.012338	-0.007148
173	28-Jun-94 02:48	0.999946	-0.012214	-0.007111
174	28-Jun-94 02:58	0.999943	-0.012074	-0.007056
175	28-Jun-94 03:08	0.999924	-0.011821	-0.006882
176	28-Jun-94 03:18	0.999920	-0.011551	-0.006687
177	28-Jun-94 03:28	0.999896	-0.011152	-0.006354
178	28-Jun-94 03:38	0.999833	-0.010407	-0.005634
179	28-Jun-94 03:48	0.999844	-0.009758	-0.005021

Mass Point Leak Rate Analysis
CILRT Phase

Watts Bar Nuclear Plant
Unit 1 - Startup

Rdg	Time	Norm Mass	MP Leak %/day	MP UCL %/day
180	28-Jun-94 03:58	0.999804	-0.008915	-0.004186
181	28-Jun-94 04:08	0.999784	-0.007996	-0.003261
182	28-Jun-94 04:18	0.999764	-0.007014	-0.002260
183	28-Jun-94 04:28	0.999762	-0.006062	-0.001294
184	28-Jun-94 04:38	0.999789	-0.005291	-0.000540
185	28-Jun-94 04:48	0.999792	-0.004570	0.000158
186	28-Jun-94 04:58	0.999786	-0.003848	0.000858
187	28-Jun-94 05:08	0.999791	-0.003183	0.001494
188	28-Jun-94 05:18	0.999808	-0.002632	0.002005
189	28-Jun-94 05:28	0.999808	-0.002100	0.002494
190	28-Jun-94 05:38	0.999817	-0.001637	0.002911
191	28-Jun-94 05:48	0.999780	-0.001022	0.003497
192	28-Jun-94 05:58	0.999809	-0.000566	0.003907
193	28-Jun-94 06:08	0.999761	0.000089	0.004541
194	28-Jun-94 06:18	0.999892	0.000130	0.004518
195	28-Jun-94 06:28	0.999852	0.000347	0.004677
196	28-Jun-94 06:38	0.999858	0.000528	0.004800
197	28-Jun-94 06:48	0.999829	0.000827	0.005047
198	28-Jun-94 06:58	0.999799	0.001240	0.005420
199	28-Jun-94 07:08	0.999830	0.001505	0.005633
200	28-Jun-94 07:18	0.999837	0.001728	0.005805
201	28-Jun-94 07:28	0.999856	0.001867	0.005890
202	28-Jun-94 07:38	0.999853	0.002010	0.005980
203	28-Jun-94 07:48	0.999898	0.001971	0.005887
204	28-Jun-94 07:58	0.999931	0.001805	0.005672
205	28-Jun-94 08:08	0.999827	0.002043	0.005865
206	28-Jun-94 08:18	0.999798	0.002380	0.006165
207	28-Jun-94 08:28	0.999831	0.002581	0.006321
208	28-Jun-94 08:38	0.999828	0.002786	0.006481
209	28-Jun-94 08:48	0.999845	0.002920	0.006569
210	28-Jun-94 08:58	0.999846	0.003044	0.006648
211	28-Jun-94 09:08	0.999863	0.003104	0.006661
212	28-Jun-94 09:18	0.999856	0.003185	0.006697
213	28-Jun-94 09:28	0.999806	0.003433	0.006910
214	28-Jun-94 09:38	0.999765	0.003811	0.007262
215	28-Jun-94 09:48	0.999772	0.004150	0.007573
216	28-Jun-94 09:58	0.999738	0.004591	0.007997
217	28-Jun-94 10:08	0.999715	0.005089	0.008487
218	28-Jun-94 10:18	0.999706	0.005597	0.008988
219	28-Jun-94 10:28	0.999731	0.006007	0.009379
220	28-Jun-94 10:38	0.999757	0.006315	0.009659

Mass Point Leak Rate Analysis
CILRT Phase

Watts Bar Nuclear Plant
Unit 1 - Startup

Rdg	Time	Norm Mass	MP Leak %/day	MP UCL %/day
221	28-Jun-94 10:48	0.999773	0.006562	0.009874
222	28-Jun-94 10:58	0.999736	0.006914	0.010203
223	28-Jun-94 11:08	0.999764	0.007166	0.010424
224	28-Jun-94 11:18	0.999767	0.007397	0.010624
225	28-Jun-94 11:28	0.999784	0.007568	0.010761
226	28-Jun-94 11:38	0.999782	0.007739	0.010899
227	28-Jun-94 11:48	0.999739	0.008027	0.011162
228	28-Jun-94 11:58	0.999818	0.008075	0.011174
229	28-Jun-94 12:08	0.999792	0.008193	0.011259
230	28-Jun-94 12:18	0.999848	0.008149	0.011179
231	28-Jun-94 12:28	0.999834	0.008144	0.011140
232	28-Jun-94 12:38	0.999854	0.008082	0.011045
233	28-Jun-94 12:48	0.999860	0.008006	0.010936
234	28-Jun-94 12:58	0.999774	0.008161	0.011062

Mass Point Termination Criteria
CILRT Phase

Watts Bar Nuclear Plant
Unit 1 - Startup

Rdg	Date/Time	MP UCL % / day	Curve 1.1	Curve 1.1.1	Curve 1.2	Scatter 2.1
57	27-Jun-94 07:22	0.000000	0.000000	0.000000	0.000000	0.000000
58	27-Jun-94 07:32	0.000000	0.000000	0.000000	0.000000	1.000000
59	27-Jun-94 07:42	2.152317	0.000000	0.000000	0.000000	0.489281
60	27-Jun-94 07:52	0.227590	0.006759	-68.918621	211.622608	0.529025
61	27-Jun-94 08:02	0.093280	0.106099	-39.528565	142.462168	0.535392
62	27-Jun-94 08:12	0.310703	1.271407	-63.167392	441.617948	0.190699
63	27-Jun-94 08:22	0.260423	0.608353	-35.037861	288.855659	0.363558
64	27-Jun-94 08:32	0.226965	0.425849	-20.389812	183.110825	0.535412
65	27-Jun-94 08:42	0.199361	0.269254	-11.549252	105.283258	0.683482
66	27-Jun-94 08:52	0.174947	0.129445	-5.881902	51.929576	0.808983
67	27-Jun-94 09:02	0.138734	0.012720	1.579512	11.550062	0.764133
68	27-Jun-94 09:12	0.118992	0.052805	2.393627	16.685219	0.889198
69	27-Jun-94 09:22	0.107899	0.057623	1.911213	13.171576	1.048984
70	27-Jun-94 09:32	0.123274	0.029917	-1.198838	9.142290	1.053880
71	27-Jun-94 09:42	0.152921	0.472999	-4.339548	39.271915	0.950203
72	27-Jun-94 09:52	0.166168	0.982238	-5.117215	52.163632	0.973474
73	27-Jun-94 10:02	0.182246	1.833605	-5.812395	68.684750	0.974596
74	27-Jun-94 10:12	0.186815	2.161790	-5.296640	67.810827	1.009299
75	27-Jun-94 10:22	0.198859	3.252227	-5.468817	80.835819	1.011397
76	27-Jun-94 10:32	0.194786	2.185571	-4.197935	61.852418	1.044889
77	27-Jun-94 10:42	0.189831	1.396436	-3.114241	44.980512	1.074596
78	27-Jun-94 10:52	0.186982	1.090827	-2.459482	35.497773	1.100345
79	27-Jun-94 11:02	0.183869	0.814461	-1.904681	27.274724	1.123447
80	27-Jun-94 11:12	0.181459	0.645949	-1.511887	21.576218	1.143485
81	27-Jun-94 11:22	0.176215	0.282907	-0.926188	12.697961	1.162890
82	27-Jun-94 11:32	0.171639	0.103049	-0.509508	6.758758	1.181917
83	27-Jun-94 11:42	0.168201	0.034045	-0.263555	3.423789	1.200046
84	27-Jun-94 11:52	0.161494	0.037928	0.265816	3.240186	1.211851
85	27-Jun-94 12:02	0.156132	0.199814	0.560055	6.537512	1.229128
86	27-Jun-94 12:12	0.152137	0.366846	0.686380	7.795776	1.248614
87	27-Jun-94 12:22	0.146360	0.833011	0.962009	10.411637	1.263127
88	27-Jun-94 12:32	0.140586	1.487655	1.193045	12.325157	1.277808
89	27-Jun-94 12:42	0.133417	2.651154	1.533621	14.887875	1.276645
90	27-Jun-94 12:52	0.131700	2.441978	1.363541	13.168213	1.299819
91	27-Jun-94 13:02	0.127567	3.049864	1.393911	13.112189	1.323705
92	27-Jun-94 13:12	0.121587	4.426053	1.579578	14.207477	1.333348
93	27-Jun-94 13:22	0.117550	5.234740	1.578417	13.857022	1.360246
94	27-Jun-94 13:32	0.112417	6.762998	1.664925	14.127352	1.379257
95	27-Jun-94 13:42	0.108604	7.727377	1.643544	13.646280	1.409556
96	27-Jun-94 13:52	0.104407	9.158814	1.655343	13.407273	1.438025
97	27-Jun-94 14:02	0.099069	11.604439	1.752921	13.716208	1.450337
98	27-Jun-94 14:12	0.093957	14.266691	1.818610	13.793144	1.466872
99	27-Jun-94 14:22	0.090773	14.963502	1.749345	13.062151	1.507872
100	27-Jun-94 14:32	0.087395	16.181740	1.703330	12.503557	1.548815
101	27-Jun-94 14:42	0.086442	13.205261	1.536623	11.260270	1.588398
102	27-Jun-94 14:52	0.085198	11.641432	1.406680	10.270294	1.629804

Mass Point Termination Criteria
CILRT Phase

Watts Bar Nuclear Plant
Unit 1 - Startup

Rdg	Date/Time	MP UCL % / day	Curve 1.1	Curve 1.1.1	Curve 1.2	Scatter 2.1
103	27-Jun-94 15:02	0.082258	12.777340	1.381944	9.942901	1.674031
104	27-Jun-94 15:12	0.079828	13.368690	1.334409	9.493327	1.722254
105	27-Jun-94 15:22	0.076977	14.728382	1.316351	9.233612	1.769771
106	27-Jun-94 15:32	0.074687	15.352346	1.272668	8.834428	1.822195
107	27-Jun-94 15:42	0.072589	15.781115	1.225864	8.430588	1.876836
108	27-Jun-94 15:52	0.070981	15.391073	1.162470	7.943275	1.931918
109	27-Jun-94 16:02	0.069912	14.114432	1.083501	7.377972	1.983125
110	27-Jun-94 16:12	0.069324	12.259567	0.994173	6.763077	2.026736
111	27-Jun-94 16:22	0.068914	10.569169	0.908129	6.176803	2.065861
112	27-Jun-94 16:32	0.067171	11.191670	0.886764	5.984806	2.123858
113	27-Jun-94 16:42	0.066056	10.952731	0.841747	5.657404	2.178200
114	27-Jun-94 16:52	0.065067	10.622927	0.796933	5.337281	2.231459
115	27-Jun-94 17:02	0.062979	11.981658	0.803613	5.327578	2.292291
116	27-Jun-94 17:12	0.060742	13.678616	0.816900	5.355929	2.353173
117	27-Jun-94 17:22	0.058103	16.028913	0.848340	5.486259	2.403227
118	27-Jun-94 17:32	0.055256	18.793166	0.886782	5.649781	2.441918
119	27-Jun-94 17:42	0.053050	20.940696	0.891747	5.622214	2.508527
120	27-Jun-94 17:52	0.050427	23.972206	0.915170	5.694973	2.556063
121	27-Jun-94 18:02	0.047930	27.086430	0.930748	5.722389	2.609035
122	27-Jun-94 18:12	0.045858	29.487041	0.927154	5.647100	2.682203
123	27-Jun-94 18:22	0.042970	33.554377	0.959291	5.759307	2.692126
124	27-Jun-94 18:32	0.040301	37.762863	0.978485	5.800249	2.718339
125	27-Jun-94 18:42	0.037813	41.966727	0.988316	5.791830	2.755820
126	27-Jun-94 18:52	0.036342	41.779994	0.958953	5.587599	2.850042
127	27-Jun-94 19:02	0.034421	44.375140	0.948562	5.482267	2.924294
128	27-Jun-94 19:12	0.032289	48.175045	0.947213	5.423895	2.977976
129	27-Jun-94 19:22	0.029742	53.504025	0.962211	5.446266	2.972647
130	27-Jun-94 19:32	0.028050	55.115532	0.944407	5.309396	3.052842
131	27-Jun-94 19:42	0.026358	56.988780	0.928285	5.183522	3.130223
132	27-Jun-94 19:57	0.023597	63.411679	0.950004	5.238399	3.088129
133	27-Jun-94 20:07	0.020425	69.142516	0.986393	5.358831	2.904090
134	27-Jun-94 20:17	0.018119	74.974712	0.985863	5.304796	2.892735
135	27-Jun-94 20:27	0.015826	81.156645	0.985270	5.251716	2.873050
136	27-Jun-94 20:37	0.013712	86.465008	0.978960	5.174075	2.869697
137	27-Jun-94 20:47	0.011963	88.199522	0.961674	5.049112	2.903082
138	27-Jun-94 20:57	0.009729	95.204757	0.961770	5.004285	2.860812
139	27-Jun-94 21:07	0.007778	100.071958	0.952939	4.921062	2.853502
140	27-Jun-94 21:17	0.005712	106.605078	0.948699	4.859745	2.820944
141	27-Jun-94 21:27	0.004270	104.050151	0.926214	4.720370	2.859287
142	27-Jun-94 21:37	0.003025	98.671256	0.900054	4.567612	2.910616
143	27-Jun-94 21:47	0.001998	90.571214	0.870021	4.400585	2.975760
144	27-Jun-94 21:57	0.001448	76.055790	0.829953	4.192207	3.065990
145	27-Jun-94 22:07	0.000571	70.452786	0.801125	4.035557	3.137580
146	27-Jun-94 22:17	-0.000176	64.484766	0.771133	3.875881	3.216248
147	27-Jun-94 22:27	-0.000596	56.068968	0.735243	3.692126	3.311544
148	27-Jun-94 22:37	-0.000945	49.028737	0.700145	3.513589	3.410387

Mass Point Termination Criteria
CILRT Phase

Watts Bar Nuclear Plant
Unit 1 - Startup

Rdg	Date/Time	MP UCL % / day	Curve 1.1	Curve 1.1.1	Curve 1.2	Scatter 2.1
149	27-Jun-94 22:48	-0.001404	44.534993	0.670065	3.358886	3.505210
150	27-Jun-94 22:58	-0.001941	41.483726	0.643882	3.222961	3.595137
151	27-Jun-94 23:08	-0.002490	39.044363	0.619749	3.097459	3.683442
152	27-Jun-94 23:18	-0.002690	34.809049	0.589225	2.944449	3.790751
153	27-Jun-94 23:28	-0.003448	34.392496	0.573552	2.859210	3.855884
154	27-Jun-94 23:38	-0.004120	33.667557	0.556903	2.770463	3.927653
155	27-Jun-94 23:48	-0.004143	29.602696	0.526921	2.622534	4.041256
156	27-Jun-94 23:58	-0.004343	27.156369	0.502550	2.500680	4.150675
157	28-Jun-94 00:08	-0.004685	25.700550	0.482795	2.400462	4.251835
158	28-Jun-94 00:18	-0.005521	26.303386	0.475373	2.356875	4.286476
159	28-Jun-94 00:28	-0.006113	26.053699	0.462914	2.290918	4.355920
160	28-Jun-94 00:38	-0.006579	25.375607	0.448476	2.216525	4.439015
161	28-Jun-94 00:48	-0.006948	24.403039	0.432834	2.137182	4.531708
162	28-Jun-94 00:58	-0.006850	21.641298	0.408644	2.019380	4.653165
163	28-Jun-94 01:08	-0.006990	20.194936	0.390546	1.929772	4.766843
164	28-Jun-94 01:18	-0.007021	18.547340	0.371337	1.835425	4.888188
165	28-Jun-94 01:28	-0.007149	17.411791	0.355114	1.755121	5.005084
166	28-Jun-94 01:38	-0.006717	14.678687	0.329259	1.630549	5.128012
167	28-Jun-94 01:48	-0.006531	13.087930	0.309309	1.533413	5.260629
168	28-Jun-94 01:58	-0.006791	12.748333	0.298965	1.481217	5.368795
169	28-Jun-94 02:08	-0.007459	13.316690	0.297537	1.470782	5.390742
170	28-Jun-94 02:18	-0.007559	12.617722	0.284878	1.408186	5.513591
171	28-Jun-94 02:28	-0.007402	11.373782	0.268182	1.326900	5.650418
172	28-Jun-94 02:38	-0.007148	10.059146	0.250653	1.241763	5.789035
173	28-Jun-94 02:48	-0.007111	9.339585	0.237905	1.179167	5.927486
174	28-Jun-94 02:58	-0.007056	8.646868	0.225481	1.118191	6.068850
175	28-Jun-94 03:08	-0.006882	7.802128	0.211630	1.050519	6.215429
176	28-Jun-94 03:18	-0.006687	7.006777	0.198131	0.984531	6.364217
177	28-Jun-94 03:28	-0.006354	6.077180	0.183000	0.910731	6.509839
178	28-Jun-94 03:38	-0.005634	4.729516	0.162429	0.810672	6.598907
179	28-Jun-94 03:48	-0.005021	3.753414	0.144516	0.723077	6.705738
180	28-Jun-94 03:58	-0.004186	2.734426	0.124070	0.622799	6.753140
181	28-Jun-94 04:08	-0.003261	1.868962	0.103261	0.520193	6.763716
182	28-Jun-94 04:18	-0.002260	1.171813	0.082325	0.416310	6.736953
183	28-Jun-94 04:28	-0.001294	0.679894	0.062868	0.319103	6.712486
184	28-Jun-94 04:38	-0.000540	0.391412	0.047376	0.241195	6.750114
185	28-Jun-94 04:48	0.000158	0.198663	0.033429	0.170673	6.797162
186	28-Jun-94 04:58	0.000858	0.073285	0.020094	0.102883	6.836272
187	28-Jun-94 05:08	0.001494	0.012839	0.008304	0.042627	6.888288
188	28-Jun-94 05:18	0.002005	0.000227	-0.001086	0.005588	6.970415
189	28-Jun-94 05:28	0.002494	0.018854	-0.009736	0.050196	7.053689
190	28-Jun-94 05:38	0.002911	0.059013	-0.016911	0.087349	7.152192
191	28-Jun-94 05:48	0.003497	0.146094	-0.026210	0.135708	7.196059
192	28-Jun-94 05:58	0.003907	0.234113	-0.032564	0.168916	7.288183
193	28-Jun-94 06:08	0.004541	0.397208	-0.041811	0.217452	7.301072
194	28-Jun-94 06:18	0.004518	0.398552	-0.040977	0.213151	7.457968

Mass Point Termination Criteria
CILRT Phase

Watts Bar Nuclear Plant
Unit 1 - Startup

Rdg	Date/Time	MP UCL % / day	Curve 1.1	Curve 1.1.1	Curve 1.2	Scatter 2.1
195	28-Jun-94 06:28	0.004677	0.456545	-0.042930	0.223503	7.599510
196	28-Jun-94 06:38	0.004800	0.506177	-0.044246	0.230520	7.747363
197	28-Jun-94 06:48	0.005047	0.603142	-0.047321	0.246839	7.871582
198	28-Jun-94 06:58	0.005420	0.757063	-0.052027	0.271835	7.957996
199	28-Jun-94 07:08	0.005633	0.858427	-0.054273	0.283874	8.087261
200	28-Jun-94 07:18	0.005805	0.945824	-0.055801	0.292129	8.225424
201	28-Jun-94 07:28	0.005890	0.993441	-0.056009	0.293383	8.380159
202	28-Jun-94 07:38	0.005980	1.044608	-0.056257	0.294851	8.535447
203	28-Jun-94 07:48	0.005887	0.993504	-0.053791	0.281883	8.708163
204	28-Jun-94 07:58	0.005672	0.874135	-0.049560	0.259537	8.873792
205	28-Jun-94 08:08	0.005865	0.978658	-0.051412	0.269494	9.009223
206	28-Jun-94 08:18	0.006165	1.146893	-0.054631	0.286756	9.105185
207	28-Jun-94 08:28	0.006321	1.243080	-0.055760	0.292919	9.248217
208	28-Jun-94 08:38	0.006481	1.346122	-0.056894	0.299126	9.389515
209	28-Jun-94 08:48	0.006569	1.404572	-0.056979	0.299737	9.549761
210	28-Jun-94 08:58	0.006648	1.457552	-0.056916	0.299554	9.712967
211	28-Jun-94 09:08	0.006661	1.463732	-0.055945	0.294513	9.890306
212	28-Jun-94 09:18	0.006697	1.487273	-0.055315	0.291293	10.065041
213	28-Jun-94 09:28	0.006910	1.641706	-0.057041	0.300687	10.183965
214	28-Jun-94 09:38	0.007262	1.908661	-0.060485	0.319332	10.224478
215	28-Jun-94 09:48	0.007573	2.162125	-0.063268	0.334482	10.283978
216	28-Jun-94 09:58	0.007997	2.525720	-0.067345	0.356680	10.261780
217	28-Jun-94 10:08	0.008487	2.971956	-0.072052	0.382385	10.182276
218	28-Jun-94 10:18	0.008988	3.462629	-0.076721	0.408009	10.086278
219	28-Jun-94 10:28	0.009379	3.878124	-0.079893	0.425593	10.068271
220	28-Jun-94 10:38	0.009659	4.192080	-0.081606	0.435269	10.116273
221	28-Jun-94 10:48	0.009874	4.436229	-0.082440	0.440162	10.196643
222	28-Jun-94 10:58	0.010203	4.835643	-0.084625	0.452482	10.203086
223	28-Jun-94 11:08	0.010424	5.107143	-0.085423	0.457225	10.271865
224	28-Jun-94 11:18	0.010624	5.355880	-0.085925	0.460351	10.348618
225	28-Jun-94 11:28	0.010761	5.512419	-0.085629	0.459088	10.454960
226	28-Jun-94 11:38	0.010899	5.674895	-0.085353	0.457932	10.558723
227	28-Jun-94 11:48	0.011162	6.042602	-0.086573	0.465028	10.585310
228	28-Jun-94 11:58	0.011174	5.976162	-0.084693	0.455023	10.737107
229	28-Jun-94 12:08	0.011259	6.052482	-0.083780	0.450337	10.860700
230	28-Jun-94 12:18	0.011179	5.800163	-0.080845	0.434479	11.036290
231	28-Jun-94 12:28	0.011140	5.639003	-0.078503	0.421885	11.205400
232	28-Jun-94 12:38	0.011045	5.367250	-0.075530	0.405802	11.387432
233	28-Jun-94 12:48	0.010936	5.078915	-0.072484	0.389312	11.573021
234	28-Jun-94 12:58	0.011062	5.239246	-0.072380	0.389005	11.674187

Total Time Leak Rate Analysis
CILRT Phase

Watts Bar Nuclear Plant
Unit 1 - Startup

Rdg	Date / Time	TT Meas % / day	TT Calc % / day	TT UCL % / day
57	27-Jun-94 07:22	0.000000	0.000000	0.000000
58	27-Jun-94 07:32	-0.751312	0.000000	0.000000
59	27-Jun-94 07:42	-0.262136	-0.262136	0.000000
60	27-Jun-94 07:52	-0.217718	-0.143604	1.613483
61	27-Jun-94 08:02	-0.150487	-0.068376	0.767111
62	27-Jun-94 08:12	0.076975	0.092808	0.622349
63	27-Jun-94 08:22	0.021757	0.139756	0.631553
64	27-Jun-94 08:32	0.033821	0.166319	0.639819
65	27-Jun-94 08:42	0.035486	0.178910	0.641882
66	27-Jun-94 08:52	0.031795	0.182070	0.637226
67	27-Jun-94 09:02	-0.022698	0.162599	0.626720
68	27-Jun-94 09:12	0.006980	0.156013	0.608919
69	27-Jun-94 09:22	0.019604	0.153121	0.591635
70	27-Jun-94 09:32	0.075319	0.164868	0.582261
71	27-Jun-94 09:42	0.118503	0.183894	0.580465
72	27-Jun-94 09:52	0.112191	0.196202	0.577188
73	27-Jun-94 10:02	0.133408	0.209927	0.576615
74	27-Jun-94 10:12	0.120979	0.217551	0.574067
75	27-Jun-94 10:22	0.148997	0.228743	0.574462
76	27-Jun-94 10:32	0.112171	0.230168	0.570637
77	27-Jun-94 10:42	0.108629	0.230142	0.566326
78	27-Jun-94 10:52	0.116164	0.230898	0.562378
79	27-Jun-94 11:02	0.115385	0.230941	0.558229
80	27-Jun-94 11:12	0.118329	0.231067	0.554239
81	27-Jun-94 11:22	0.104286	0.228569	0.549104
82	27-Jun-94 11:32	0.105167	0.226200	0.543970
83	27-Jun-94 11:42	0.109164	0.224435	0.539127
84	27-Jun-94 11:52	0.086020	0.219343	0.532789
85	27-Jun-94 12:02	0.091108	0.215304	0.526757
86	27-Jun-94 12:12	0.096740	0.212265	0.521170
87	27-Jun-94 12:22	0.080798	0.207322	0.514677
88	27-Jun-94 12:32	0.076374	0.202188	0.508025
89	27-Jun-94 12:42	0.058381	0.195298	0.500547
90	27-Jun-94 12:52	0.096394	0.193351	0.495414
91	27-Jun-94 13:02	0.078421	0.189436	0.489292
92	27-Jun-94 13:12	0.058368	0.183592	0.482244
93	27-Jun-94 13:22	0.071485	0.179567	0.476059
94	27-Jun-94 13:32	0.058216	0.174430	0.469323
95	27-Jun-94 13:42	0.066166	0.170471	0.463220
96	27-Jun-94 13:52	0.059502	0.166101	0.456923
97	27-Jun-94 14:02	0.044142	0.160542	0.450026

Total Time Leak Rate Analysis
CILRT Phase

Watts Bar Nuclear Plant
Unit 1 - Startup

Rdg	Date / Time	TT Meas % / day	TT Calc % / day	TT UCL % / day
98	27-Jun-94 14:12	0.042190	0.155197	0.443233
99	27-Jun-94 14:22	0.057047	0.151574	0.437405
100	27-Jun-94 14:32	0.052526	0.147771	0.431524
101	27-Jun-94 14:42	0.071049	0.145842	0.426895
102	27-Jun-94 14:52	0.068018	0.143738	0.422230
103	27-Jun-94 15:02	0.051306	0.140334	0.416805
104	27-Jun-94 15:12	0.053910	0.137354	0.411699
105	27-Jun-94 15:22	0.047467	0.134016	0.406419
106	27-Jun-94 15:32	0.050867	0.131142	0.401482
107	27-Jun-94 15:42	0.050862	0.128432	0.396711
108	27-Jun-94 15:52	0.054095	0.126112	0.392254
109	27-Jun-94 16:02	0.058109	0.124213	0.388149
110	27-Jun-94 16:12	0.061905	0.122690	0.384381
111	27-Jun-94 16:22	0.063163	0.121322	0.380787
112	27-Jun-94 16:32	0.048929	0.119006	0.376578
113	27-Jun-94 16:42	0.054356	0.117188	0.372770
114	27-Jun-94 16:52	0.054760	0.115481	0.369092
115	27-Jun-94 17:02	0.040904	0.112921	0.364867
116	27-Jun-94 17:12	0.037042	0.110238	0.360599
117	27-Jun-94 17:22	0.029299	0.107183	0.356119
118	27-Jun-94 17:32	0.023817	0.103931	0.351541
119	27-Jun-94 17:42	0.030668	0.101278	0.347381
120	27-Jun-94 17:52	0.022530	0.098246	0.343000
121	27-Jun-94 18:02	0.022053	0.095335	0.338724
122	27-Jun-94 18:12	0.025964	0.092802	0.334733
123	27-Jun-94 18:22	0.011441	0.089525	0.330275
124	27-Jun-94 18:32	0.012436	0.086464	0.325977
125	27-Jun-94 18:42	0.012870	0.083575	0.321816
126	27-Jun-94 18:52	0.025545	0.081537	0.318278
127	27-Jun-94 19:02	0.017647	0.079149	0.314518
128	27-Jun-94 19:12	0.012549	0.076589	0.310665
129	27-Jun-94 19:22	0.003723	0.073663	0.306585
130	27-Jun-94 19:32	0.015054	0.071475	0.303043
131	27-Jun-94 19:42	0.013410	0.069298	0.299536
132	27-Jun-94 19:57	-0.005444	0.066555	0.295871
133	27-Jun-94 20:07	-0.015600	0.063021	0.291464
134	27-Jun-94 20:17	-0.002811	0.060291	0.287591
135	27-Jun-94 20:27	-0.004833	0.057578	0.283752
136	27-Jun-94 20:37	-0.004034	0.055027	0.280049
137	27-Jun-94 20:47	-0.000058	0.052787	0.276595
138	27-Jun-94 20:57	-0.010056	0.050151	0.272876

Total Time Leak Rate Analysis
CILRT Phase

Watts Bar Nuclear Plant
Unit 1 - Startup

Rdg	Date / Time	TT Meas % / day	TT Calc % / day	TT UCL % / day
139	27-Jun-94 21:07	-0.007283	0.047763	0.269355
140	27-Jun-94 21:17	-0.011245	0.045287	0.265791
141	27-Jun-94 21:27	-0.002576	0.043323	0.262631
142	27-Jun-94 21:37	-0.000783	0.041524	0.259622
143	27-Jun-94 21:47	0.001512	0.039905	0.256779
144	27-Jun-94 21:57	0.008010	0.038646	0.254259
145	27-Jun-94 22:07	0.002158	0.037174	0.251582
146	27-Jun-94 22:17	0.003338	0.035813	0.249019
147	27-Jun-94 22:27	0.007817	0.034701	0.246690
148	27-Jun-94 22:37	0.008441	0.033659	0.244444
149	27-Jun-94 22:48	0.006187	0.032560	0.242169
150	27-Jun-94 22:58	0.004341	0.031423	0.239882
151	27-Jun-94 23:08	0.003525	0.030295	0.237621
152	27-Jun-94 23:18	0.008746	0.029425	0.235608
153	27-Jun-94 23:28	-0.001177	0.028179	0.233285
154	27-Jun-94 23:38	-0.000437	0.027008	0.231045
155	27-Jun-94 23:48	0.010032	0.026301	0.229233
156	27-Jun-94 23:58	0.006895	0.025495	0.227348
157	28-Jun-94 00:08	0.004075	0.024605	0.225407
158	28-Jun-94 00:18	-0.005505	0.023372	0.223183
159	28-Jun-94 00:28	-0.001726	0.022327	0.221138
160	28-Jun-94 00:38	-0.000016	0.021385	0.219197
161	28-Jun-94 00:48	0.001260	0.020522	0.217343
162	28-Jun-94 00:58	0.009225	0.019989	0.215807
163	28-Jun-94 01:08	0.004919	0.019313	0.214153
164	28-Jun-94 01:18	0.006649	0.018724	0.212594
165	28-Jun-94 01:28	0.004718	0.018084	0.211003
166	28-Jun-94 01:38	0.014545	0.017821	0.209785
167	28-Jun-94 01:48	0.010405	0.017417	0.208445
168	28-Jun-94 01:58	0.002030	0.016730	0.206852
169	28-Jun-94 02:08	-0.006681	0.015758	0.205016
170	28-Jun-94 02:18	0.004218	0.015197	0.203565
171	28-Jun-94 02:28	0.008929	0.014817	0.202300
172	28-Jun-94 02:38	0.010757	0.014511	0.201119
173	28-Jun-94 02:48	0.006696	0.014078	0.199826
174	28-Jun-94 02:58	0.006995	0.013668	0.198568
175	28-Jun-94 03:08	0.009237	0.013346	0.197407
176	28-Jun-94 03:18	0.009679	0.013049	0.196281
177	28-Jun-94 03:28	0.012397	0.012850	0.195264
178	28-Jun-94 03:38	0.019787	0.012899	0.194510
179	28-Jun-94 03:48	0.018298	0.012899	0.193715

Total Time Leak Rate Analysis
CILRT Phase

Watts Bar Nuclear Plant
Unit 1 - Startup

Rdg	Date / Time	TT Meas % / day	TT Calc % / day	TT UCL % / day
180	28-Jun-94 03:58	0.022788	0.013044	0.193083
181	28-Jun-94 04:08	0.024989	0.013255	0.192530
182	28-Jun-94 04:18	0.027007	0.013525	0.192051
183	28-Jun-94 04:28	0.027074	0.013790	0.191576
184	28-Jun-94 04:38	0.023831	0.013948	0.190995
185	28-Jun-94 04:48	0.023284	0.014085	0.190401
186	28-Jun-94 04:58	0.023814	0.014235	0.189831
187	28-Jun-94 05:08	0.023055	0.014359	0.189241
188	28-Jun-94 05:18	0.020971	0.014417	0.188592
189	28-Jun-94 05:28	0.020896	0.014472	0.187948
190	28-Jun-94 05:38	0.019721	0.014491	0.187275
191	28-Jun-94 05:48	0.023486	0.014621	0.186726
192	28-Jun-94 05:58	0.020257	0.014654	0.186083
193	28-Jun-94 06:08	0.025188	0.014829	0.185598
194	28-Jun-94 06:18	0.011299	0.014600	0.184708
195	28-Jun-94 06:28	0.015397	0.014495	0.183947
196	28-Jun-94 06:38	0.014660	0.014372	0.183177
197	28-Jun-94 06:48	0.017547	0.014334	0.182499
198	28-Jun-94 06:58	0.020484	0.014379	0.181915
199	28-Jun-94 07:08	0.017161	0.014331	0.181243
200	28-Jun-94 07:18	0.016308	0.014262	0.180554
201	28-Jun-94 07:28	0.014375	0.014141	0.036812
202	28-Jun-94 07:38	0.014509	0.014028	0.036541
203	28-Jun-94 07:48	0.010029	0.013796	0.036154
204	28-Jun-94 07:58	0.006766	0.013483	0.035687
205	28-Jun-94 08:08	0.016761	0.013444	0.035497
206	28-Jun-94 08:18	0.019415	0.013476	0.035380
207	28-Jun-94 08:28	0.016164	0.013423	0.035180
208	28-Jun-94 08:38	0.016365	0.013377	0.034988
209	28-Jun-94 08:48	0.014656	0.013287	0.034756
210	28-Jun-94 08:58	0.014446	0.013195	0.034522
211	28-Jun-94 09:08	0.012801	0.013063	0.034250
212	28-Jun-94 09:18	0.013373	0.012949	0.033998
213	28-Jun-94 09:28	0.017844	0.012951	0.033864
214	28-Jun-94 09:38	0.021448	0.013044	0.033824
215	28-Jun-94 09:48	0.020670	0.013116	0.033764
216	28-Jun-94 09:58	0.023677	0.013262	0.033779
217	28-Jun-94 10:08	0.025562	0.013451	0.033841
218	28-Jun-94 10:18	0.026206	0.013652	0.033916
219	28-Jun-94 10:28	0.023859	0.013793	0.033932
220	28-Jun-94 10:38	0.021361	0.013869	0.033885

Total Time Leak Rate Analysis
CILRT Phase

Watts Bar Nuclear Plant
Unit 1 - Startup

Rdg	Date / Time	TT Meas % / day	TT Calc % / day	TT UCL % / day
221	28-Jun-94 10:48	0.019856	0.013909	0.033801
222	28-Jun-94 10:58	0.022967	0.014022	0.033794
223	28-Jun-94 11:08	0.020399	0.014072	0.033725
224	28-Jun-94 11:18	0.019986	0.014112	0.033646
225	28-Jun-94 11:28	0.018419	0.014114	0.033531
226	28-Jun-94 11:38	0.018548	0.014119	0.033421
227	28-Jun-94 11:48	0.022015	0.014206	0.033394
228	28-Jun-94 11:58	0.015233	0.014134	0.033208
229	28-Jun-94 12:08	0.017325	0.014111	0.033075
230	28-Jun-94 12:18	0.012589	0.013981	0.032835
231	28-Jun-94 12:28	0.013688	0.013880	0.032624
232	28-Jun-94 12:38	0.011953	0.013741	0.032377
233	28-Jun-94 12:48	0.011451	0.013594	0.032123
234	28-Jun-94 12:58	0.018307	0.013603	0.032027

Containment Calculated Values
CILRT Phase

Watts Bar Nuclear Plant
Unit 1 - Startup

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
57	07:22:24	**Upper Containment**	96084.14	84.514	0.1061	29.4129
		Lower Containment	55652.97	84.800	0.1047	29.4161
		Ice Condenser	25549.56	29.489	0.0185	29.4170
		TOTAL	177286.67			
58	07:32:24	**Upper Containment**	96090.76	84.464	0.1054	29.4115
		Lower Containment	55653.76	84.783	0.1039	29.4148
		Ice Condenser	25551.40	29.431	0.0185	29.4157
		TOTAL	177295.92			
59	07:42:25	**Upper Containment**	96083.28	84.480	0.1050	29.4097
		Lower Containment	55651.69	84.781	0.1034	29.4131
		Ice Condenser	25558.17	29.274	0.0185	29.4140
		TOTAL	177293.13			
60	07:52:25	**Upper Containment**	96083.51	84.466	0.1045	29.4085
		Lower Containment	55651.08	84.777	0.1027	29.4118
		Ice Condenser	25560.12	29.215	0.0185	29.4127
		TOTAL	177294.71			
61	08:02:25	**Upper Containment**	96080.87	84.470	0.1042	29.4076
		Lower Containment	55652.25	84.767	0.1021	29.4113
		Ice Condenser	25560.96	29.186	0.0185	29.4119
		TOTAL	177294.08			
62	08:12:26	**Upper Containment**	96076.83	84.447	0.1036	29.4045
		Lower Containment	55647.98	84.759	0.1018	29.4083
		Ice Condenser	25557.12	29.208	0.0185	29.4088
		TOTAL	177281.93			
63	08:22:26	**Upper Containment**	96078.64	84.423	0.1031	29.4033
		Lower Containment	55646.91	84.753	0.1009	29.4066
		Ice Condenser	25559.51	29.140	0.0185	29.4075
		TOTAL	177285.06			
64	08:32:26	**Upper Containment**	96077.67	84.396	0.1027	29.4011
		Lower Containment	55645.18	84.743	0.1003	29.4045
		Ice Condenser	25560.90	29.077	0.0185	29.4053
		TOTAL	177283.75			
65	08:42:27	**Upper Containment**	96074.35	84.386	0.1021	29.3990
		Lower Containment	55643.31	84.729	0.0999	29.4024
		Ice Condenser	25565.50	28.953	0.0185	29.4031
		TOTAL	177283.17			
66	08:52:27	**Upper Containment**	96078.62	84.332	0.1017	29.3970

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
		Lower Containment	55641.58	84.721	0.0992	29.4003
		Ice Condenser	25562.95	28.968	0.0185	29.4011
		TOTAL	177283.14			
67	09:02:27	**Upper Containment**	96078.44	84.333	0.1013	29.3966
		Lower Containment	55642.69	84.711	0.0987	29.3999
		Ice Condenser	25568.34	28.859	0.0185	29.4007
		TOTAL	177289.46			
68	09:12:28	**Upper Containment**	96075.74	84.312	0.1009	29.3943
		Lower Containment	55639.84	84.708	0.0981	29.3976
		Ice Condenser	25570.15	28.786	0.0185	29.3984
		TOTAL	177285.72			
69	09:22:28	**Upper Containment**	96073.40	84.302	0.1003	29.3923
		Lower Containment	55637.83	84.700	0.0976	29.3956
		Ice Condenser	25572.54	28.709	0.0185	29.3966
		TOTAL	177283.77			
70	09:32:28	**Upper Containment**	96072.89	84.253	0.1001	29.3893
		Lower Containment	55633.94	84.690	0.0973	29.3927
		Ice Condenser	25567.78	28.749	0.0185	29.3935
		TOTAL	177274.61			
71	09:42:29	**Upper Containment**	96066.41	84.260	0.0995	29.3872
		Lower Containment	55631.64	84.681	0.0966	29.3903
		Ice Condenser	25568.18	28.705	0.0185	29.3913
		TOTAL	177266.23			
72	09:52:29	**Upper Containment**	96066.11	84.236	0.0992	29.3855
		Lower Containment	55630.65	84.670	0.0962	29.3888
		Ice Condenser	25569.18	28.658	0.0185	29.3896
		TOTAL	177265.94			
73	10:02:29	**Upper Containment**	96065.13	84.222	0.0988	29.3840
		Lower Containment	55627.44	84.684	0.0956	29.3873
		Ice Condenser	25567.80	28.659	0.0185	29.3881
		TOTAL	177260.38			
74	10:12:30	**Upper Containment**	96066.12	84.198	0.0984	29.3826
		Lower Containment	55628.00	84.660	0.0952	29.3859
		Ice Condenser	25567.22	28.647	0.0185	29.3867
		TOTAL	177261.33			
75	10:22:30	**Upper Containment**	96058.00	84.223	0.0980	29.3811
		Lower Containment	55628.10	84.640	0.0947	29.3844
		Ice Condenser	25567.53	28.616	0.0185	29.3852
		TOTAL	177253.63			
76	10:32:30	**Upper Containment**	96062.23	84.177	0.0974	29.3794
		Lower Containment	55625.36	84.649	0.0944	29.3831
		Ice Condenser	25572.82	28.487	0.0185	29.3835
		TOTAL	177260.42			

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
77	10:42:31	**Upper Containment**	96059.22	84.174	0.0971	29.3780
		Lower Containment	55624.75	84.640	0.0938	29.3817
		Ice Condenser	25575.94	28.406	0.0185	29.3822
		TOTAL	177259.91			
78	10:52:31	**Upper Containment**	96057.67	84.153	0.0968	29.3760
		Lower Containment	55620.88	84.639	0.0934	29.3792
		Ice Condenser	25578.06	28.332	0.0185	29.3802
		TOTAL	177256.62			
79	11:02:31	**Upper Containment**	96056.10	84.151	0.0964	29.3750
		Lower Containment	55620.64	84.630	0.0930	29.3782
		Ice Condenser	25578.67	28.302	0.0185	29.3791
		TOTAL	177255.40			
80	11:12:32	**Upper Containment**	96053.95	84.148	0.0960	29.3739
		Lower Containment	55621.26	84.614	0.0926	29.3773
		Ice Condenser	25577.94	28.297	0.0185	29.3780
		TOTAL	177253.14			
81	11:22:32	**Upper Containment**	96056.86	84.112	0.0957	29.3725
		Lower Containment	55620.29	84.612	0.0922	29.3763
		Ice Condenser	25578.69	28.262	0.0185	29.3767
		TOTAL	177255.84			
82	11:32:32	**Upper Containment**	96056.08	84.097	0.0952	29.3709
		Lower Containment	55618.87	84.605	0.0918	29.3747
		Ice Condenser	25579.33	28.221	0.0185	29.3750
		TOTAL	177254.28			
83	11:42:33	**Upper Containment**	96054.85	84.086	0.0950	29.3698
		Lower Containment	55618.82	84.590	0.0912	29.3732
		Ice Condenser	25578.04	28.230	0.0185	29.3740
		TOTAL	177251.71			
84	11:52:33	**Upper Containment**	96062.86	84.042	0.0944	29.3693
		Lower Containment	55618.35	84.587	0.0910	29.3727
		Ice Condenser	25576.85	28.245	0.0185	29.3736
		TOTAL	177258.06			
85	12:02:33	**Upper Containment**	96059.90	84.061	0.0942	29.3692
		Lower Containment	55619.75	84.581	0.0905	29.3726
		Ice Condenser	25575.60	28.267	0.0185	29.3735
		TOTAL	177255.24			
86	12:12:34	**Upper Containment**	96059.21	84.031	0.0942	29.3674
		Lower Containment	55619.40	84.567	0.0900	29.3711
		Ice Condenser	25573.50	28.274	0.0185	29.3715
		TOTAL	177252.11			
87	12:22:34	**Upper Containment**	96060.01	84.039	0.0937	29.3675
		Lower Containment	55620.44	84.557	0.0899	29.3710

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
		Ice Condenser	25576.36	28.223	0.0185	29.3717
		TOTAL	177256.81			
88	12:32:34	Upper Containment	96062.96	84.030	0.0933	29.3676
		Lower Containment	55620.49	84.561	0.0895	29.3709
		Ice Condenser	25574.05	28.271	0.0185	29.3720
		TOTAL	177257.50			
89	12:42:35	Upper Containment	96069.79	84.016	0.0931	29.3687
		Lower Containment	55623.32	84.553	0.0891	29.3716
		Ice Condenser	25570.54	28.354	0.0185	29.3729
		TOTAL	177263.66			
90	12:52:35	Upper Containment	96062.16	84.030	0.0929	29.3669
		Lower Containment	55623.39	84.536	0.0887	29.3703
		Ice Condenser	25561.93	28.487	0.0185	29.3710
		TOTAL	177247.48			
91	13:02:35	Upper Containment	96065.44	84.024	0.0924	29.3671
		Lower Containment	55625.15	84.533	0.0885	29.3709
		Ice Condenser	25563.23	28.471	0.0185	29.3715
		TOTAL	177253.82			
92	13:12:36	Upper Containment	96073.47	83.989	0.0922	29.3674
		Lower Containment	55627.31	84.524	0.0882	29.3712
		Ice Condenser	25560.72	28.518	0.0185	29.3715
		TOTAL	177261.50			
93	13:22:36	Upper Containment	96070.98	83.986	0.0919	29.3662
		Lower Containment	55625.08	84.523	0.0880	29.3698
		Ice Condenser	25558.91	28.536	0.0185	29.3705
		TOTAL	177254.97			
94	13:32:36	Upper Containment	96075.83	83.962	0.0914	29.3660
		Lower Containment	55626.04	84.510	0.0876	29.3691
		Ice Condenser	25558.27	28.536	0.0185	29.3698
		TOTAL	177260.14			
95	13:42:37	Upper Containment	96071.22	83.950	0.0912	29.3637
		Lower Containment	55623.97	84.494	0.0874	29.3670
		Ice Condenser	25560.50	28.459	0.0185	29.3677
		TOTAL	177255.70			
96	13:52:37	Upper Containment	96069.15	83.962	0.0910	29.3634
		Lower Containment	55624.93	84.495	0.0870	29.3672
		Ice Condenser	25564.00	28.393	0.0185	29.3678
		TOTAL	177258.08			
97	14:02:37	Upper Containment	96077.52	83.914	0.0907	29.3632
		Lower Containment	55623.54	84.495	0.0868	29.3663
		Ice Condenser	25563.86	28.389	0.0185	29.3674
		TOTAL	177264.92			

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
98	14:12:38	**Upper Containment**	96072.59	83.925	0.0904	29.3619
		Lower Containment	55624.60	84.476	0.0866	29.3656
		Ice Condenser	25568.17	28.286	0.0185	29.3661
		TOTAL	177265.36			
99	14:22:38	**Upper Containment**	96070.54	83.914	0.0901	29.3604
		Lower Containment	55621.90	84.478	0.0864	29.3641
		Ice Condenser	25564.72	28.327	0.0185	29.3646
		TOTAL	177257.15			
100	14:32:38	**0 Upper Containment**	96070.24	83.887	0.0898	29.3586
		Lower Containment	55622.13	84.453	0.0859	29.3624
		Ice Condenser	25566.48	28.263	0.0185	29.3628
		TOTAL	177258.85			
101	14:42:39	**1 Upper Containment**	96065.09	83.899	0.0896	29.3575
		Lower Containment	55617.91	84.464	0.0858	29.3606
		Ice Condenser	25565.16	28.269	0.0185	29.3616
		TOTAL	177248.16			
102	14:52:39	**2 Upper Containment**	96064.39	83.882	0.0895	29.3563
		Lower Containment	55616.92	84.452	0.0856	29.3592
		Ice Condenser	25567.65	28.201	0.0185	29.3604
		TOTAL	177248.96			
103	15:02:39	**3 Upper Containment**	96067.22	83.859	0.0892	29.3555
		Lower Containment	55618.48	84.437	0.0854	29.3591
		Ice Condenser	25571.90	28.106	0.0185	29.3595
		TOTAL	177257.60			
104	15:12:40	**4 Upper Containment**	96061.45	83.869	0.0889	29.3541
		Lower Containment	55617.88	84.431	0.0850	29.3581
		Ice Condenser	25576.13	28.003	0.0185	29.3582
		TOTAL	177255.46			
105	15:22:40	**5 Upper Containment**	96067.70	83.814	0.0886	29.3527
		Lower Containment	55614.15	84.433	0.0847	29.3559
		Ice Condenser	25576.76	27.970	0.0185	29.3570
		TOTAL	177258.60			
106	15:32:40	**6 Upper Containment**	96063.49	83.819	0.0883	29.3513
		Lower Containment	55613.28	84.422	0.0844	29.3545
		Ice Condenser	25579.20	27.899	0.0185	29.3555
		TOTAL	177255.97			
107	15:42:41	**7 Upper Containment**	96063.69	83.814	0.0880	29.3509
		Lower Containment	55613.71	84.415	0.0841	29.3540
		Ice Condenser	25577.93	27.914	0.0185	29.3549
		TOTAL	177255.34			
108	15:52:41	**8 Upper Containment**	96068.36	83.775	0.0879	29.3500
		Lower Containment	55614.25	84.404	0.0839	29.3536
		Ice Condenser	25570.07	28.054	0.0185	29.3543

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
		TOTAL	177252.68			
109	16:02:41	**9 Upper Containment**	96070.92	83.778	0.0877	29.3508
		Lower Containment	55616.74	84.395	0.0838	29.3543
		Ice Condenser	25561.78	28.225	0.0185	29.3551
		TOTAL	177249.45			
110	16:12:42	**0 Upper Containment**	96071.12	83.785	0.0876	29.3512
		Lower Containment	55618.70	84.395	0.0835	29.3550
		Ice Condenser	25556.43	28.334	0.0185	29.3555
		TOTAL	177246.25			
111	16:22:42	**1 Upper Containment**	96072.76	83.782	0.0873	29.3512
		Lower Containment	55617.92	84.395	0.0833	29.3544
		Ice Condenser	25553.97	28.377	0.0185	29.3553
		TOTAL	177244.65			
112	16:32:42	**2 Upper Containment**	96078.75	83.735	0.0869	29.3501
		Lower Containment	55618.49	84.380	0.0829	29.3535
		Ice Condenser	25556.28	28.314	0.0185	29.3541
		TOTAL	177253.52			
113	16:42:43	**3 Upper Containment**	96072.85	83.752	0.0866	29.3489
		Lower Containment	55615.95	84.383	0.0828	29.3522
		Ice Condenser	25560.38	28.220	0.0185	29.3532
		TOTAL	177249.17			
114	16:52:43	**4 Upper Containment**	96071.78	83.745	0.0864	29.3480
		Lower Containment	55615.07	84.371	0.0827	29.3510
		Ice Condenser	25561.37	28.182	0.0185	29.3520
		TOTAL	177248.22			
115	17:02:43	**5 Upper Containment**	96073.18	83.738	0.0862	29.3479
		Lower Containment	55616.85	84.369	0.0823	29.3514
		Ice Condenser	25567.41	28.067	0.0185	29.3521
		TOTAL	177257.44			
116	17:12:44	**6 Upper Containment**	96073.61	83.720	0.0859	29.3468
		Lower Containment	55616.52	84.352	0.0820	29.3501
		Ice Condenser	25569.62	28.009	0.0185	29.3511
		TOTAL	177259.75			
117	17:22:44	**7 Upper Containment**	96077.25	83.688	0.0856	29.3458
		Lower Containment	55615.46	84.347	0.0819	29.3492
		Ice Condenser	25572.30	27.937	0.0185	29.3498
		TOTAL	177265.01			
118	17:32:44	**8 Upper Containment**	96076.60	83.673	0.0853	29.3445
		Lower Containment	55615.17	84.334	0.0819	29.3483
		Ice Condenser	25577.00	27.830	0.0185	29.3488
		TOTAL	177268.77			
119	17:42:45	**9 Upper Containment**	96072.78	83.683	0.0851	29.3437

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
		Lower Containment	55614.40	84.329	0.0817	29.3474
		Ice Condenser	25576.07	27.832	0.0185	29.3479
		TOTAL	177263.25			
120	17:52:45	0 Upper Containment	96078.12	83.656	0.0851	29.3438
		Lower Containment	55613.99	84.333	0.0814	29.3471
		Ice Condenser	25577.08	27.814	0.0185	29.3479
		TOTAL	177269.18			
121	18:02:45	1 Upper Containment	96078.60	83.658	0.0848	29.3438
		Lower Containment	55616.03	84.322	0.0810	29.3472
		Ice Condenser	25574.66	27.864	0.0185	29.3482
		TOTAL	177269.28			
122	18:12:46	2 Upper Containment	96077.46	83.640	0.0845	29.3421
		Lower Containment	55613.62	84.319	0.0809	29.3456
		Ice Condenser	25574.81	27.832	0.0185	29.3464
		TOTAL	177265.88			
123	18:22:46	3 Upper Containment	96077.34	83.640	0.0844	29.3421
		Lower Containment	55615.43	84.302	0.0807	29.3455
		Ice Condenser	25584.59	27.643	0.0185	29.3463
		TOTAL	177277.37			
124	18:32:46	4 Upper Containment	96077.55	83.640	0.0840	29.3417
		Lower Containment	55615.18	84.303	0.0803	29.3451
		Ice Condenser	25583.67	27.654	0.0185	29.3459
		TOTAL	177276.40			
125	18:42:47	5 Upper Containment	96080.04	83.638	0.0839	29.3422
		Lower Containment	55617.16	84.294	0.0802	29.3455
		Ice Condenser	25578.69	27.758	0.0185	29.3464
		TOTAL	177275.89			
126	18:52:47	6 Upper Containment	96073.38	83.636	0.0836	29.3398
		Lower Containment	55614.43	84.282	0.0801	29.3433
		Ice Condenser	25577.15	27.746	0.0185	29.3439
		TOTAL	177264.96			
127	19:02:47	7 Upper Containment	96080.87	83.610	0.0834	29.3405
		Lower Containment	55616.23	84.284	0.0800	29.3442
		Ice Condenser	25574.36	27.810	0.0185	29.3446
		TOTAL	177271.45			
128	19:12:48	8 Upper Containment	96088.02	83.593	0.0833	29.3416
		Lower Containment	55619.17	84.274	0.0797	29.3450
		Ice Condenser	25568.50	27.943	0.0185	29.3458
		TOTAL	177275.69			
129	19:22:48	9 Upper Containment	96095.83	83.576	0.0830	29.3428
		Lower Containment	55621.49	84.270	0.0796	29.3458
		Ice Condenser	25566.05	28.008	0.0185	29.3469
		TOTAL	177283.37			

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
130	19:32:48	**0 Upper Containment**	96091.10	83.613	0.0828	29.3432
		Lower Containment	55623.45	84.267	0.0793	29.3464
		Ice Condenser	25558.59	28.160	0.0185	29.3475
		TOTAL	177273.13			
131	19:42:49	**1 Upper Containment**	96097.04	83.585	0.0826	29.3432
		Lower Containment	55625.19	84.256	0.0792	29.3466
		Ice Condenser	25552.21	28.280	0.0185	29.3474
		TOTAL	177274.44			
132	19:57:36	**2 Upper Containment**	96107.32	83.572	0.0824	29.3455
		Lower Containment	55630.55	84.250	0.0789	29.3489
		Ice Condenser	25553.86	28.289	0.0185	29.3499
		TOTAL	177291.73			
133	20:07:54	**3 Upper Containment**	96114.43	83.568	0.0821	29.3472
		Lower Containment	55635.55	84.236	0.0786	29.3505
		Ice Condenser	25551.38	28.363	0.0185	29.3515
		TOTAL	177301.37			
134	20:17:55	**4 Upper Containment**	96111.26	83.581	0.0818	29.3466
		Lower Containment	55633.77	84.246	0.0786	29.3500
		Ice Condenser	25544.32	28.489	0.0185	29.3509
		TOTAL	177289.35			
135	20:27:55	**5 Upper Containment**	96115.16	83.560	0.0818	29.3467
		Lower Containment	55635.88	84.230	0.0784	29.3501
		Ice Condenser	25540.30	28.564	0.0185	29.3508
		TOTAL	177291.34			
136	20:37:55	**6 Upper Containment**	96118.12	83.543	0.0817	29.3465
		Lower Containment	55636.21	84.226	0.0784	29.3500
		Ice Condenser	25536.30	28.641	0.0185	29.3508
		TOTAL	177290.62			
137	20:47:56	**7 Upper Containment**	96115.70	83.560	0.0817	29.3467
		Lower Containment	55638.18	84.213	0.0782	29.3501
		Ice Condenser	25532.85	28.712	0.0185	29.3511
		TOTAL	177286.73			
138	20:57:56	**6 Upper Containment**	96123.42	83.533	0.0812	29.3471
		Lower Containment	55638.59	84.217	0.0781	29.3505
		Ice Condenser	25534.75	28.681	0.0185	29.3515
		TOTAL	177296.77			
139	21:07:56	**9 Upper Containment**	96120.62	83.545	0.0813	29.3470
		Lower Containment	55640.48	84.203	0.0778	29.3505
		Ice Condenser	25532.97	28.714	0.0185	29.3514
		TOTAL	177294.07			
140	21:17:57	**0 Upper Containment**	96125.00	83.515	0.0811	29.3465
		Lower Containment	55640.39	84.198	0.0778	29.3502

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
		Ice Condenser	25532.84	28.708	0.0185	29.3509
		TOTAL	177298.24			
141	21:27:57	1 Upper Containment	96118.35	83.526	0.0808	29.3448
		Lower Containment	55638.05	84.188	0.0777	29.3483
		Ice Condenser	25532.96	28.674	0.0185	29.3490
		TOTAL	177289.35			
142	21:37:57	2 Upper Containment	96115.82	83.505	0.0805	29.3426
		Lower Containment	55634.84	84.180	0.0776	29.3461
		Ice Condenser	25536.84	28.566	0.0185	29.3469
		TOTAL	177287.49			
143	21:47:58	3 Upper Containment	96111.75	83.493	0.0806	29.3408
		Lower Containment	55631.21	84.184	0.0776	29.3443
		Ice Condenser	25542.09	28.436	0.0185	29.3452
		TOTAL	177285.06			
144	21:57:58	4 Upper Containment	96105.17	83.510	0.0804	29.3396
		Lower Containment	55631.00	84.169	0.0773	29.3432
		Ice Condenser	25541.86	28.420	0.0185	29.3439
		TOTAL	177278.03			
145	22:07:58	5 UppeContainment	96112.36 8	3.456 0	.0801 2	9.3385
		Lower Containment	55630.21	84.167	0.0773	29.3426
		Ice Condenser	25541.74	28.404	0.0185	29.3429
		TOTAL	177284.32			
146	22:17:59	6 Upper Containment	96112.47	83.440	0.0799	29.3375
		Lower Containment	55627.90	84.166	0.0770	29.3410
		Ice Condenser	25542.62	28.366	0.0185	29.3416
		TOTAL	177282.99			
147	22:27:59	7 Upper Containment	96104.24	83.449	0.0798	29.3353
		Lower Containment	55624.73	84.157	0.0769	29.3388
		Ice Condenser	25548.99	28.211	0.0185	29.3396
		TOTAL	177277.95			
148	22:37:59	8 Upper Containment	96100.57	83.446	0.0798	29.3340
		Lower Containment	55622.76	84.155	0.0768	29.3375
		Ice Condenser	25553.82	28.100	0.0185	29.3385
		TOTAL	177277.15			
149	22:48:00	9 Upper Containment	96099.44	83.439	0.0794	29.3330
		Lower Containment	55622.89	84.139	0.0766	29.3365
		Ice Condenser	25557.29	28.017	0.0185	29.3374
		TOTAL	177279.62			
150	22:58:00	0 Upper Containment	96099.87	83.417	0.0794	29.3319
		Lower Containment	55621.04	84.141	0.0765	29.3356
		Ice Condenser	25560.76	27.933	0.0185	29.3364
		TOTAL	177281.67			

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
151	23:08:00	**1 Upper Containment**	96098.72	83.411	0.0791	29.3309
		Lower Containment	55619.73	84.135	0.0762	29.3343
		Ice Condenser	25564.11	27.851	0.0185	29.3353
		TOTAL	177282.56			
152	23:18:01	**2 Upper Containment**	96092.30	83.434	0.0790	29.3301
		Lower Containment	55619.09	84.129	0.0762	29.3336
		Ice Condenser	25564.99	27.820	0.0185	29.3344
		TOTAL	177276.38			
153	23:28:01	**3 Upper Containment**	96100.22	83.378	0.0789	29.3293
		Lower Containment	55619.87	84.120	0.0761	29.3334
		Ice Condenser	25567.98	27.750	0.0185	29.3336
		TOTAL	177288.07			
154	23:38:01	**4 Upper Containment**	96098.66	83.380	0.0789	29.3290
		Lower Containment	55619.81	84.117	0.0758	29.3330
		Ice Condenser	25568.72	27.728	0.0185	29.3332
		TOTAL	177287.19			
155	23:48:02	**5 Upper Containment**	96089.78	83.398	0.0788	29.3271
		Lower Containment	55616.21	84.113	0.0758	29.3308
		Ice Condenser	25568.50	27.706	0.0185	29.3316
		TOTAL	177274.50			
156	23:58:02	**6 Upper Containment**	96092.46	83.409	0.0784	29.3283
		Lower Containment	55618.99	84.110	0.0754	29.3318
		Ice Condenser	25566.77	27.757	0.0185	29.3327
		TOTAL	177278.22			
157	00:08:02	**7 Upper Containment**	96096.34	83.378	0.0784	29.3277
		Lower Containment	55618.38	84.104	0.0755	29.3312
		Ice Condenser	25566.91	27.745	0.0185	29.3321
		TOTAL	177281.62			
158	00:18:03	**8 Upper Containment**	96099.38	83.378	0.0783	29.3285
		Lower Containment	55620.70	84.103	0.0753	29.3321
		Ice Condenser	25573.47	27.634	0.0185	29.3330
		TOTAL	177293.55			
159	00:28:03	**9 Upper Containment**	96097.40	83.365	0.0782	29.3271
		Lower Containment	55619.97	84.083	0.0751	29.3305
		Ice Condenser	25571.48	27.647	0.0185	29.3315
		TOTAL	177288.85			
160	00:38:03	**0 Upper Containment**	96097.98	83.364	0.0778	29.3268
		Lower Containment	55620.39	84.085	0.0749	29.3306
		Ice Condenser	25568.32	27.703	0.0185	29.3312
		TOTAL	177286.69			
161	00:48:04	**1 Upper Containment**	96094.84	83.366	0.0779	29.3261
		Lower Containment	55619.28	84.079	0.0747	29.3295
		Ice Condenser	25570.93	27.633	0.0185	29.3300

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
		TOTAL	177285.05			
162	00:58:04	**2 Upper Containment**	96088.14	83.348	0.0777	29.3229
		Lower Containment	55614.49	84.067	0.0746	29.3263
		Ice Condenser	25572.05	27.562	0.0185	29.3270
		TOTAL	177274.68			
163	01:08:04	**3 Upper Containment**	96091.81	83.335	0.0772	29.3229
		Lower Containment	55615.81	84.067	0.0744	29.3267
		Ice Condenser	25572.59	27.554	0.0185	29.3271
		TOTAL	177280.22			
164	01:18:05	**4 Upper Containment**	96089.21	83.331	0.0772	29.3218
		Lower Containment	55614.13	84.059	0.0743	29.3253
		Ice Condenser	25574.53	27.499	0.0185	29.3260
		TOTAL	177277.86			
165	01:28:05	**5 Upper Containment**	96088.82	83.323	0.0771	29.3211
		Lower Containment	55614.35	84.044	0.0741	29.3244
		Ice Condenser	25577.20	27.437	0.0185	29.3254
		TOTAL	177280.36			
166	01:38:05	**6 Upper Containment**	96080.78	83.311	0.0770	29.3180
		Lower Containment	55610.84	84.035	0.0739	29.3220
		Ice Condenser	25575.43	27.422	0.0185	29.3225
		TOTAL	177267.05			
167	01:48:06	**7 Upper Containment**	96077.68	83.347	0.0769	29.3189
		Lower Containment	55612.40	84.036	0.0738	29.3227
		Ice Condenser	25582.42	27.299	0.0185	29.3231
		TOTAL	177272.50			
168	01:58:06	**8 Upper Containment**	96082.07	83.342	0.0766	29.3196
		Lower Containment	55613.78	84.041	0.0736	29.3235
		Ice Condenser	25588.03	27.206	0.0185	29.3239
		TOTAL	177283.88			
169	02:08:06	**9 Upper Containment**	96090.38	83.310	0.0766	29.3204
		Lower Containment	55616.20	84.028	0.0734	29.3239
		Ice Condenser	25589.35	27.196	0.0185	29.3248
		TOTAL	177295.93			
170	02:18:07	**0 Upper Containment**	96079.50	83.328	0.0765	29.3179
		Lower Containment	55613.54	84.013	0.0733	29.3216
		Ice Condenser	25587.73	27.185	0.0185	29.3223
		TOTAL	177280.77			
171	02:28:07	**1 Upper Containment**	96077.64	83.310	0.0762	29.3162
		Lower Containment	55610.81	84.013	0.0731	29.3200
		Ice Condenser	25585.63	27.192	0.0185	29.3203
		TOTAL	177274.07			
172	02:38:07	**2 Upper Containment**	96072.01	83.323	0.0760	29.3149

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
		Lower Containment	55610.35	83.999	0.0730	29.3188
		Ice Condenser	25589.00	27.111	0.0185	29.3193
		TOTAL	177271.36			
173	02:48:08	3 Upper Containment	96077.70	83.279	0.0759	29.3142
		Lower Containment	55607.77	84.005	0.0729	29.3177
		Ice Condenser	25591.58	27.047	0.0185	29.3184
		TOTAL	177277.06			
174	02:58:08	4 Upper Containment	96073.17	83.290	0.0757	29.3132
		Lower Containment	55607.89	83.991	0.0726	29.3167
		Ice Condenser	25595.48	26.959	0.0185	29.3175
		TOTAL	177276.54			
175	03:08:09	5 Upper Containment	96073.10	83.259	0.0755	29.3114
		Lower Containment	55605.23	83.981	0.0725	29.3147
		Ice Condenser	25594.85	26.939	0.0185	29.3156
		TOTAL	177273.18			
176	03:18:09	6 Upper Containment	96072.90	83.247	0.0753	29.3104
		Lower Containment	55603.16	83.982	0.0724	29.3135
		Ice Condenser	25596.36	26.892	0.0185	29.3145
		TOTAL	177272.42			
177	03:28:09	7 Upper Containment	96070.87	83.223	0.0753	29.3085
		Lower Containment	55601.80	83.970	0.0722	29.3119
		Ice Condenser	25595.61	26.876	0.0185	29.3127
		TOTAL	177268.27			
178	03:38:10	8 Upper Containment	96059.53	83.258	0.0752	29.3069
		Lower Containment	55599.21	83.963	0.0721	29.3101
		Ice Condenser	25598.31	26.798	0.0185	29.3111
		TOTAL	177257.05			
179	03:48:10	9 Upper Containment	96060.11	83.245	0.0749	29.3060
		Lower Containment	55599.04	83.958	0.0718	29.3095
		Ice Condenser	25599.91	26.753	0.0185	29.3102
		TOTAL	177259.06			
180	03:58:10	0 Upper Containment	96057.88	83.238	0.0748	29.3049
		Lower Containment	55597.90	83.949	0.0717	29.3083
		Ice Condenser	25596.22	26.806	0.0185	29.3092
		TOTAL	177252.00			
181	04:08:11	1 Upper Containment	96056.24	83.237	0.0746	29.3042
		Lower Containment	55597.73	83.945	0.0715	29.3078
		Ice Condenser	25594.37	26.830	0.0185	29.3085
		TOTAL	177248.34			
182	04:18:11	2 Upper Containment	96056.45	83.228	0.0746	29.3037
		Lower Containment	55597.20	83.939	0.0714	29.3071
		Ice Condenser	25591.27	26.881	0.0185	29.3080
		TOTAL	177244.91			

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
183	04:28:11	**3 Upper Containment**	96053.02	83.228	0.0744	29.3024
		Lower Containment	55596.45	83.931	0.0712	29.3061
		Ice Condenser	25595.01	26.789	0.0185	29.3068
		TOTAL	177244.48			
184	04:38:12	**4 Upper Containment**	96056.68	83.202	0.0741	29.3019
		Lower Containment	55595.60	83.929	0.0711	29.3055
		Ice Condenser	25596.96	26.742	0.0185	29.3062
		TOTAL	177249.24			
185	04:48:12	**5 Upper Containment**	96055.25	83.212	0.0739	29.3018
		Lower Containment	55596.71	83.916	0.0709	29.3051
		Ice Condenser	25597.85	26.724	0.0185	29.3061
		TOTAL	177249.81			
186	04:58:12	**6 Upper Containment**	96052.90	83.217	0.0738	29.3013
		Lower Containment	55597.04	83.906	0.0708	29.3046
		Ice Condenser	25598.74	26.699	0.0185	29.3056
		TOTAL	177248.68			
187	05:08:13	**7 Upper Containment**	96053.12	83.210	0.0737	29.3008
		Lower Containment	55597.11	83.912	0.0706	29.3048
		Ice Condenser	25599.37	26.681	0.0185	29.3053
		TOTAL	177249.60			
188	05:18:13	**8 Upper Containment**	96055.90	83.194	0.0736	29.3007
		Lower Containment	55597.76	83.898	0.0707	29.3044
		Ice Condenser	25599.03	26.684	0.0185	29.3051
		TOTAL	177252.70			
189	05:28:13	**9 Upper Containment**	96056.50	83.200	0.0735	29.3011
		Lower Containment	55599.22	83.895	0.0704	29.3048
		Ice Condenser	25596.84	26.738	0.0185	29.3058
		TOTAL	177252.56			
190	05:38:14	**0 Upper Containment**	96057.88	83.204	0.0732	29.3015
		Lower Containment	55601.46	83.887	0.0703	29.3054
		Ice Condenser	25594.90	26.777	0.0185	29.3059
		TOTAL	177254.23			
191	05:48:14	**1 Upper Containment**	96054.14	83.212	0.0732	29.3007
		Lower Containment	55600.32	83.885	0.0701	29.3046
		Ice Condenser	25593.29	26.794	0.0185	29.3051
		TOTAL	177247.75			
192	05:58:14	**2 Upper Containment**	96062.54	83.174	0.0732	29.3012
		Lower Containment	55601.25	83.880	0.0701	29.3047
		Ice Condenser	25589.07	26.881	0.0185	29.3055
		TOTAL	177252.85			
193	06:08:15	**3 Upper Containment**	96053.95	83.215	0.0730	29.3006
		Lower Containment	55600.74	83.878	0.0699	29.3042

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
		Ice Condenser	25589.62	26.862	0.0185	29.3050
		TOTAL	177244.31			
194	06:18:15	4 Upper Containment	96066.67	83.177	0.0728	29.3022
		Lower Containment	55604.82	83.870	0.0698	29.3058
		Ice Condenser	25596.03	26.767	0.0185	29.3066
		TOTAL	177267.53			
195	06:28:15	5 Upper Containment	96062.48	83.192	0.0726	29.3016
		Lower Containment	55606.07	83.855	0.0697	29.3055
		Ice Condenser	25591.84	26.835	0.0185	29.3059
		TOTAL	177260.40			
196	06:38:16	6 Upper Containment	96066.31	83.187	0.0726	29.3025
		Lower Containment	55606.75	83.855	0.0696	29.3058
		Ice Condenser	25588.41	26.914	0.0185	29.3067
		TOTAL	177261.48			
197	06:48:16	7 Upper Containment	96063.99	83.194	0.0725	29.3021
		Lower Containment	55605.85	83.856	0.0696	29.3054
		Ice Condenser	25586.46	26.942	0.0185	29.3062
		TOTAL	177256.30			
198	06:58:16	8 Upper Containment	96060.39	83.180	0.0725	29.3002
		Lower Containment	55605.37	83.828	0.0694	29.3034
		Ice Condenser	25585.20	26.937	0.0185	29.3044
		TOTAL	177250.96			
199	07:08:17	9 Upper Containment	96065.35	83.163	0.0722	29.3005
		Lower Containment	55606.56	83.841	0.0693	29.3046
		Ice Condenser	25584.64	26.953	0.0185	29.3048
		TOTAL	177256.54			
200	07:18:17	0 Upper Containment	96066.73	83.148	0.0722	29.3001
		Lower Containment	55606.26	83.833	0.0693	29.3040
		Ice Condenser	25584.85	26.943	0.0185	29.3044
		TOTAL	177257.84			
201	07:28:17	1 Upper Containment	96065.85	83.163	0.0719	29.3003
		Lower Containment	55607.92	83.817	0.0690	29.3038
		Ice Condenser	25587.31	26.900	0.0185	29.3046
		TOTAL	177261.08			
202	07:38:18	2 Upper Containment	96068.56	83.130	0.0719	29.2994
		Lower Containment	55606.02	83.815	0.0690	29.3027
		Ice Condenser	25586.08	26.906	0.0185	29.3036
		TOTAL	177260.66			
203	07:48:18	3 Upper Containment	96069.28	83.154	0.0718	29.3008
		Lower Containment	55608.57	83.816	0.0690	29.3040
		Ice Condenser	25590.71	26.843	0.0185	29.3051
		TOTAL	177268.57			

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
204	07:58:18	**4 Upper Containment**	96071.18	83.148	0.0715	29.3008
		Lower Containment	55610.81	83.809	0.0688	29.3047
		Ice Condenser	25592.38	26.811	0.0185	29.3051
		TOTAL	177274.37			
205	08:08:19	**5 Upper Containment**	96063.25	83.154	0.0715	29.2986
		Lower Containment	55608.54	83.792	0.0687	29.3025
		Ice Condenser	25584.22	26.926	0.0185	29.3027
		TOTAL	177256.01			
206	08:18:19	**6 Upper Containment**	96061.16	83.142	0.0713	29.2972
		Lower Containment	55605.84	83.787	0.0686	29.3006
		Ice Condenser	25583.92	26.909	0.0185	29.3013
		TOTAL	177250.91			
207	08:28:19	**7 Upper Containment**	96065.87	83.118	0.0713	29.2973
		Lower Containment	55605.16	83.793	0.0686	29.3006
		Ice Condenser	25585.67	26.881	0.0185	29.3016
		TOTAL	177256.70			
208	08:38:20	**8 Upper Containment**	96060.85	83.135	0.0712	29.2966
		Lower Containment	55606.04	83.780	0.0685	29.3002
		Ice Condenser	25589.24	26.801	0.0185	29.3009
		TOTAL	177256.13			
209	08:48:20	**9 Upper Containment**	96062.98	83.117	0.0710	29.2961
		Lower Containment	55605.84	83.772	0.0684	29.2996
		Ice Condenser	25590.32	26.772	0.0185	29.3004
		TOTAL	177259.14			
210	08:58:20	**0 Upper Containment**	96060.66	83.124	0.0709	29.2957
		Lower Containment	55606.11	83.768	0.0683	29.2995
		Ice Condenser	25592.58	26.723	0.0185	29.3000
		TOTAL	177259.35			
211	09:08:21	**1 Upper Containment**	96062.52	83.094	0.0709	29.2946
		Lower Containment	55605.65	83.754	0.0682	29.2983
		Ice Condenser	25594.13	26.676	0.0185	29.2990
		TOTAL	177262.30			
212	09:18:21	**2 Upper Containment**	96061.53	83.099	0.0707	29.2944
		Lower Containment	55605.17	83.751	0.0681	29.2979
		Ice Condenser	25594.35	26.664	0.0185	29.2985
		TOTAL	177261.05			
213	09:28:21	**3 Upper Containment**	96059.64	83.095	0.0706	29.2935
		Lower Containment	55603.87	83.749	0.0680	29.2970
		Ice Condenser	25588.76	26.758	0.0185	29.2978
		TOTAL	177252.27			
214	09:38:22	**4 Upper Containment**	96055.31	83.108	0.0706	29.2929
		Lower Containment	55603.52	83.744	0.0679	29.2964
		Ice Condenser	25586.22	26.799	0.0185	29.2973

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
		TOTAL	177245.05			
215	09:48:22	**5 Upper Containment**	96059.01	83.093	0.0704	29.2930
		Lower Containment	55605.99	83.733	0.0678	29.2971
		Ice Condenser	25581.31	26.892	0.0185	29.2973
		TOTAL	177246.31			
216	09:58:22	**6 Upper Containment**	96058.88	83.108	0.0703	29.2937
		Lower Containment	55606.39	83.737	0.0679	29.2976
		Ice Condenser	25574.88	27.027	0.0185	29.2981
		TOTAL	177240.15			
217	10:08:23	**7 Upper Containment**	96056.50	83.115	0.0703	29.2934
		Lower Containment	55606.75	83.726	0.0676	29.2969
		Ice Condenser	25572.88	27.059	0.0185	29.2977
		TOTAL	177236.13			
218	10:18:23	**8 Upper Containment**	96058.73	83.102	0.0700	29.2930
		Lower Containment	55605.87	83.723	0.0677	29.2963
		Ice Condenser	25569.93	27.107	0.0185	29.2972
		TOTAL	177234.53			
219	10:28:23	**9 Upper Containment**	96058.18	83.074	0.0700	29.2913
		Lower Containment	55604.09	83.715	0.0675	29.2948
		Ice Condenser	25576.64	26.954	0.0185	29.2957
		TOTAL	177238.91			
220	10:38:24	**0 Upper Containment**	96056.92	83.068	0.0699	29.2905
		Lower Containment	55604.30	83.705	0.0676	29.2944
		Ice Condenser	25582.42	26.829	0.0185	29.2948
		TOTAL	177243.64			
221	10:48:24	**1 Upper Containment**	96057.79	83.053	0.0698	29.2899
		Lower Containment	55604.17	83.697	0.0674	29.2937
		Ice Condenser	25584.48	26.779	0.0185	29.2941
		TOTAL	177246.43			
222	10:58:24	**2 Upper Containment**	96051.25	83.077	0.0698	29.2891
		Lower Containment	55602.10	83.700	0.0673	29.2927
		Ice Condenser	25586.50	26.730	0.0185	29.2935
		TOTAL	177239.84			
223	11:08:25	**3 Upper Containment**	96053.70	83.060	0.0695	29.2887
		Lower Containment	55602.23	83.687	0.0672	29.2920
		Ice Condenser	25588.90	26.677	0.0185	29.2931
		TOTAL	177244.83			
224	11:18:25	**4 Upper Containment**	96052.59	83.057	0.0695	29.2882
		Lower Containment	55602.40	83.684	0.0671	29.2918
		Ice Condenser	25590.44	26.642	0.0185	29.2927
		TOTAL	177245.43			
225	11:28:25	**5 Upper Containment**	96051.50	83.050	0.0694	29.2874

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
		Lower Containment	55603.18	83.673	0.0670	29.2915
		Ice Condenser	25593.76	26.563	0.0185	29.2917
		TOTAL	177248.43			
226	11:38:26	6 Upper Containment	96049.13	83.056	0.0693	29.2869
		Lower Containment	55602.42	83.668	0.0670	29.2908
		Ice Condenser	25596.39	26.505	0.0185	29.2913
		TOTAL	177247.94			
227	11:48:26	7 Upper Containment	96044.97	83.067	0.0693	29.2862
		Lower Containment	55600.03	83.671	0.0668	29.2896
		Ice Condenser	25595.43	26.512	0.0185	29.2906
		TOTAL	177240.43			
228	11:58:26	8 Upper Containment	96059.88	83.023	0.0691	29.2882
		Lower Containment	55605.20	83.662	0.0667	29.2917
		Ice Condenser	25589.41	26.661	0.0185	29.2927
		TOTAL	177254.49			
229	12:08:27	9 Upper Containment	96059.01	83.041	0.0690	29.2888
		Lower Containment	55607.61	83.654	0.0667	29.2925
		Ice Condenser	25583.23	26.787	0.0185	29.2932
		TOTAL	177249.85			
230	12:18:27	0 Upper Containment	96060.37	83.051	0.0691	29.2898
		Lower Containment	55610.91	83.648	0.0665	29.2937
		Ice Condenser	25588.48	26.704	0.0185	29.2942
		TOTAL	177259.76			
231	12:28:27	1 Upper Containment	96059.98	83.049	0.0689	29.2894
		Lower Containment	55609.77	83.649	0.0664	29.2931
		Ice Condenser	25587.50	26.716	0.0185	29.2938
		TOTAL	177257.24			
232	12:38:28	2 Upper Containment	96064.22	83.029	0.0688	29.2896
		Lower Containment	55611.62	83.629	0.0664	29.2930
		Ice Condenser	25584.99	26.766	0.0185	29.2939
		TOTAL	177260.83			
233	12:48:28	3 Upper Containment	96065.42	83.022	0.0687	29.2894
		Lower Containment	55610.19	83.639	0.0664	29.2928
		Ice Condenser	25586.15	26.741	0.0185	29.2938
		TOTAL	177261.77			
234	12:58:28	4 Upper Containment	96057.01	83.022	0.0686	29.2868
		Lower Containment	55607.35	83.623	0.0662	29.2902
		Ice Condenser	25582.28	26.772	0.0185	29.2912
		TOTAL	177246.64			
235	13:08:29	5 Upper Containment	96054.96	83.039	0.0686	29.2870
		Lower Containment	55609.58	83.615	0.0662	29.2910
		Ice Condenser	25582.66	26.765	0.0185	29.2912
		TOTAL	177247.20			

APPENDIX D

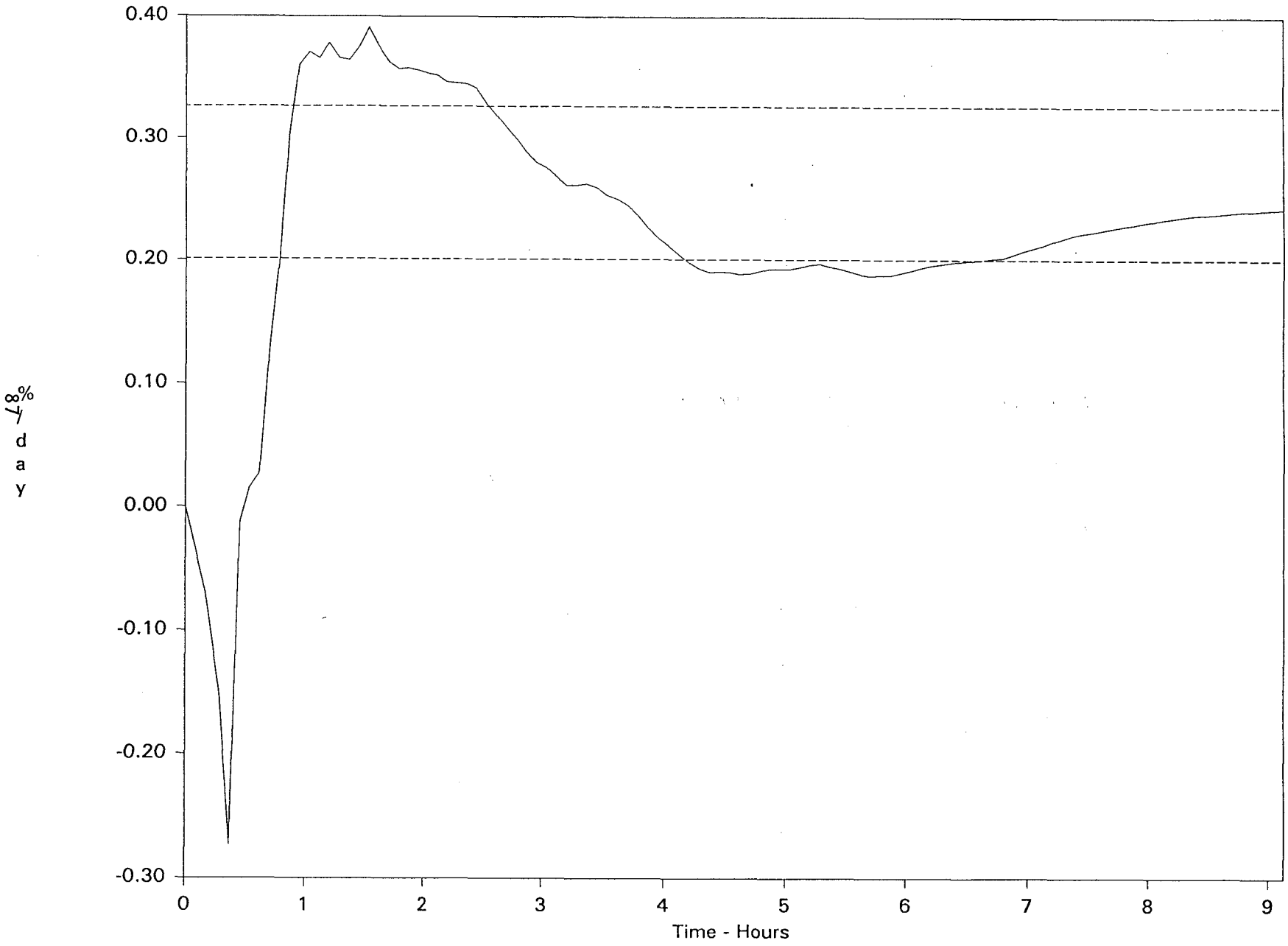
Verification Test Phase Graphs

(samples 243 to 351)

Contents:

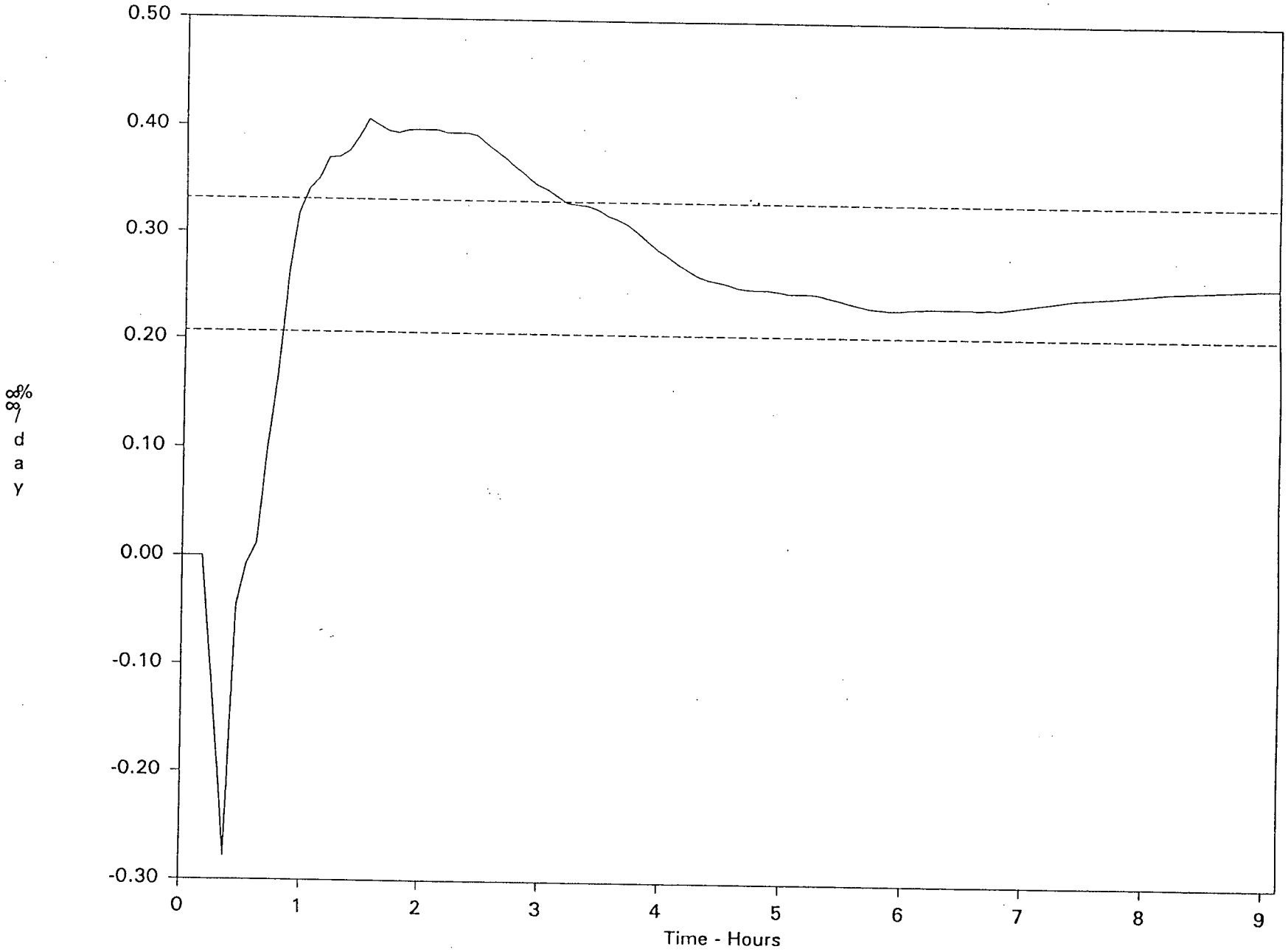
Mass Point Leak

Watts Bar Nuclear Plant
Unit 1 - Startup



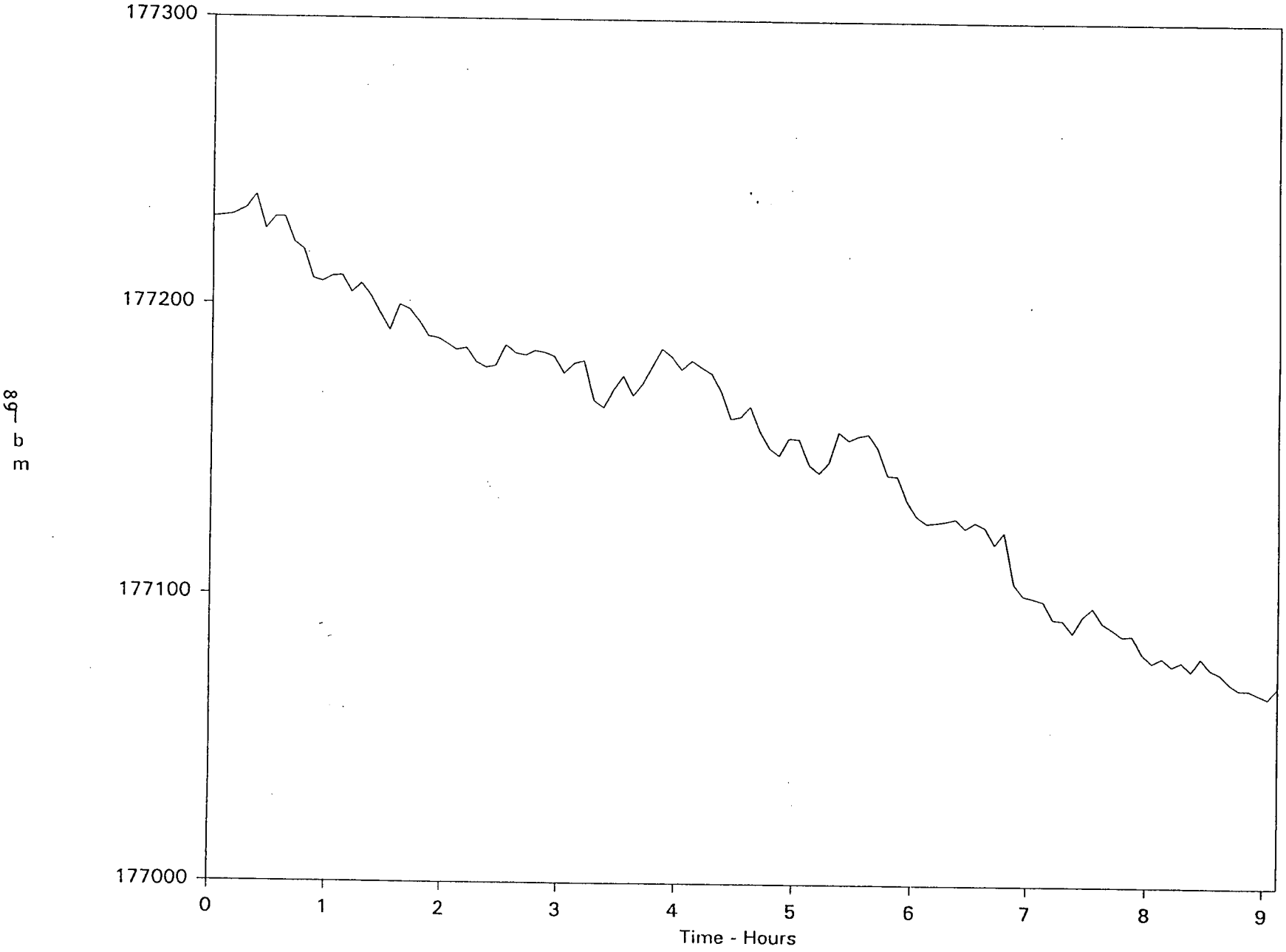
Calculated Total Time Leak

Watts Bar Nuclear Plant
Unit 1 - Startup



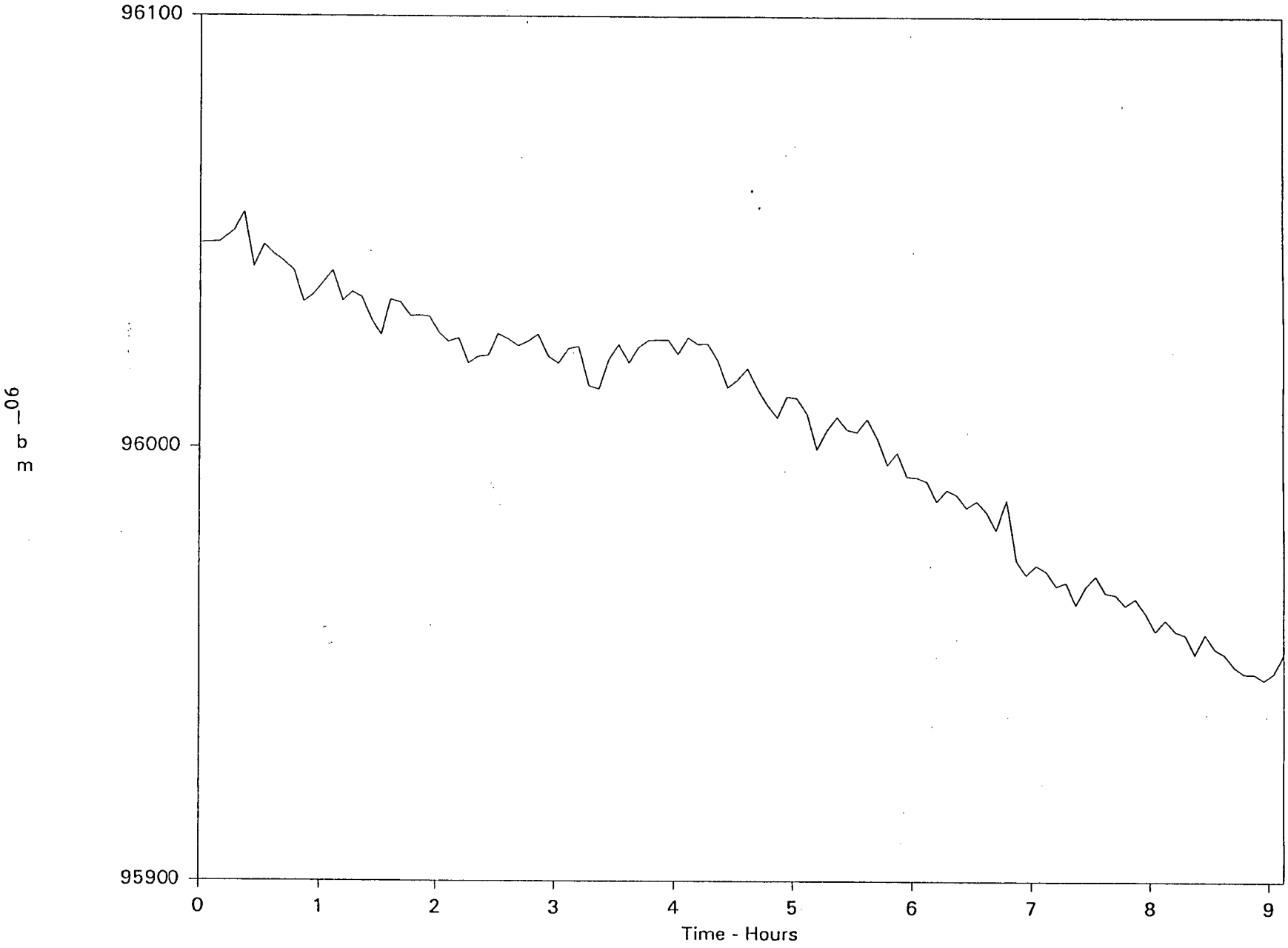
Containment Mass

Watts Bar Nuclear Plant
Unit 1 - Startup



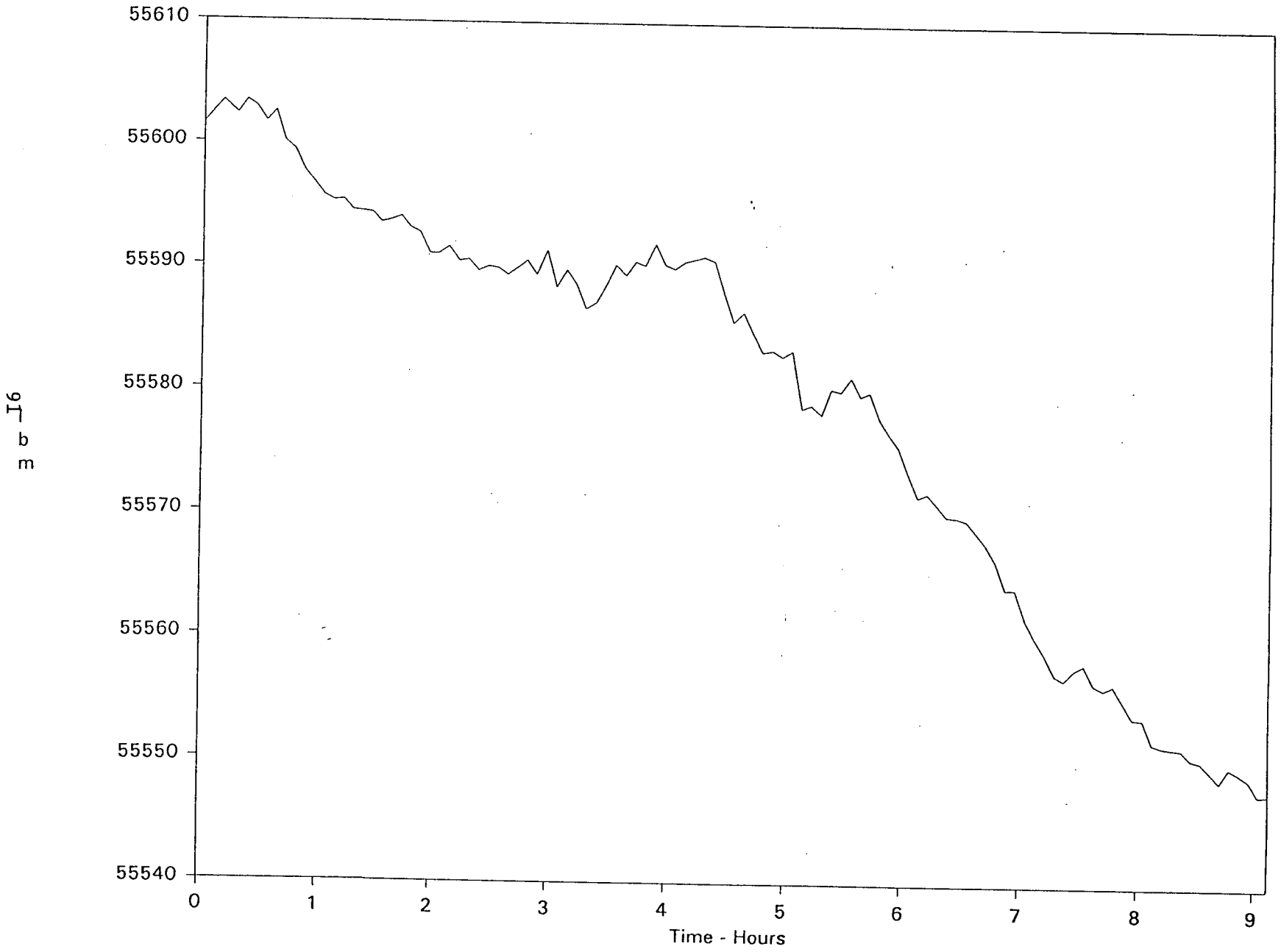
Upper Containment Mass

Watts Bar Nuclear Plant
Unit 1 - Startup



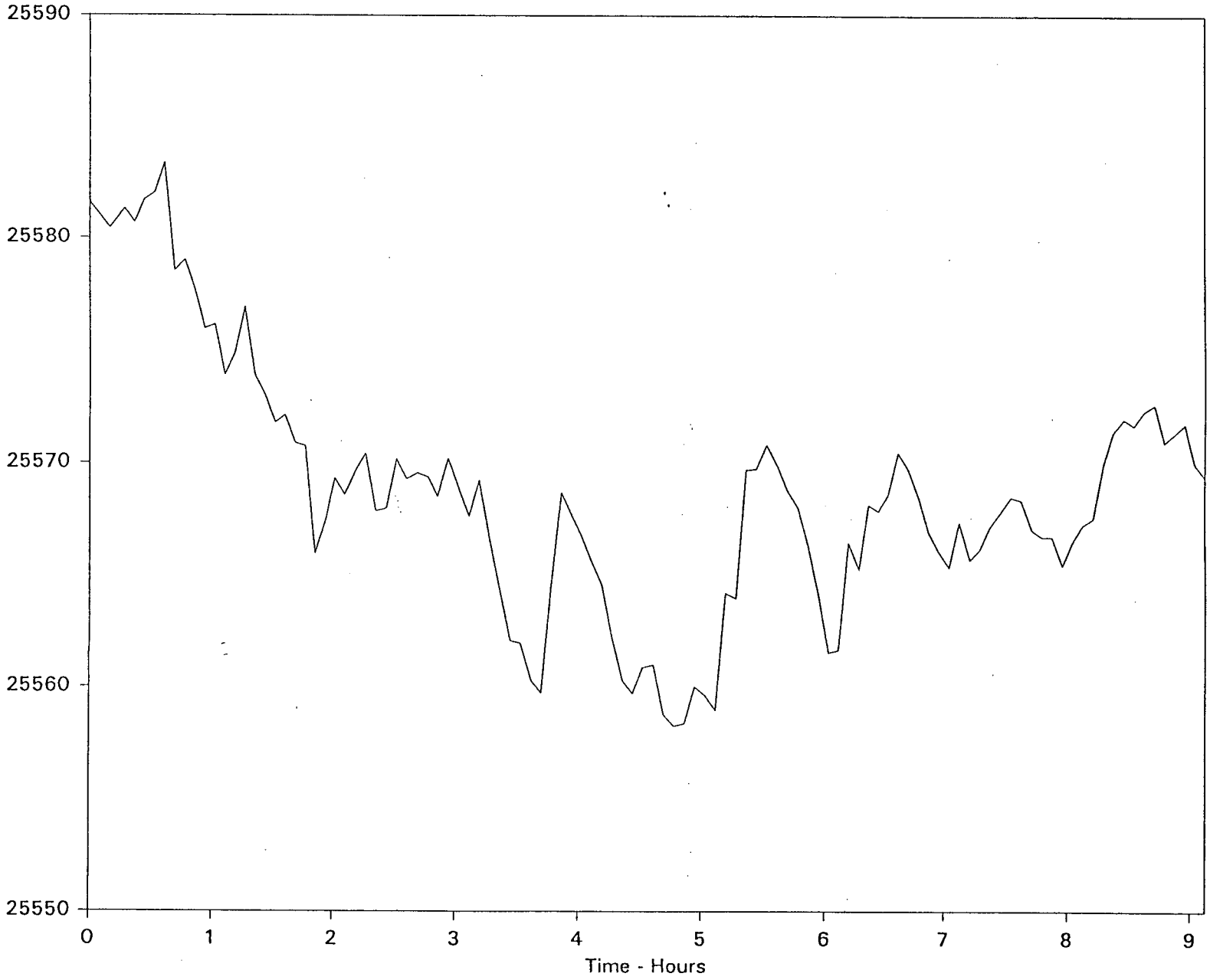
Lower Containment Mass

Watts Bar Nuclear Plant
Unit 1 - Startup



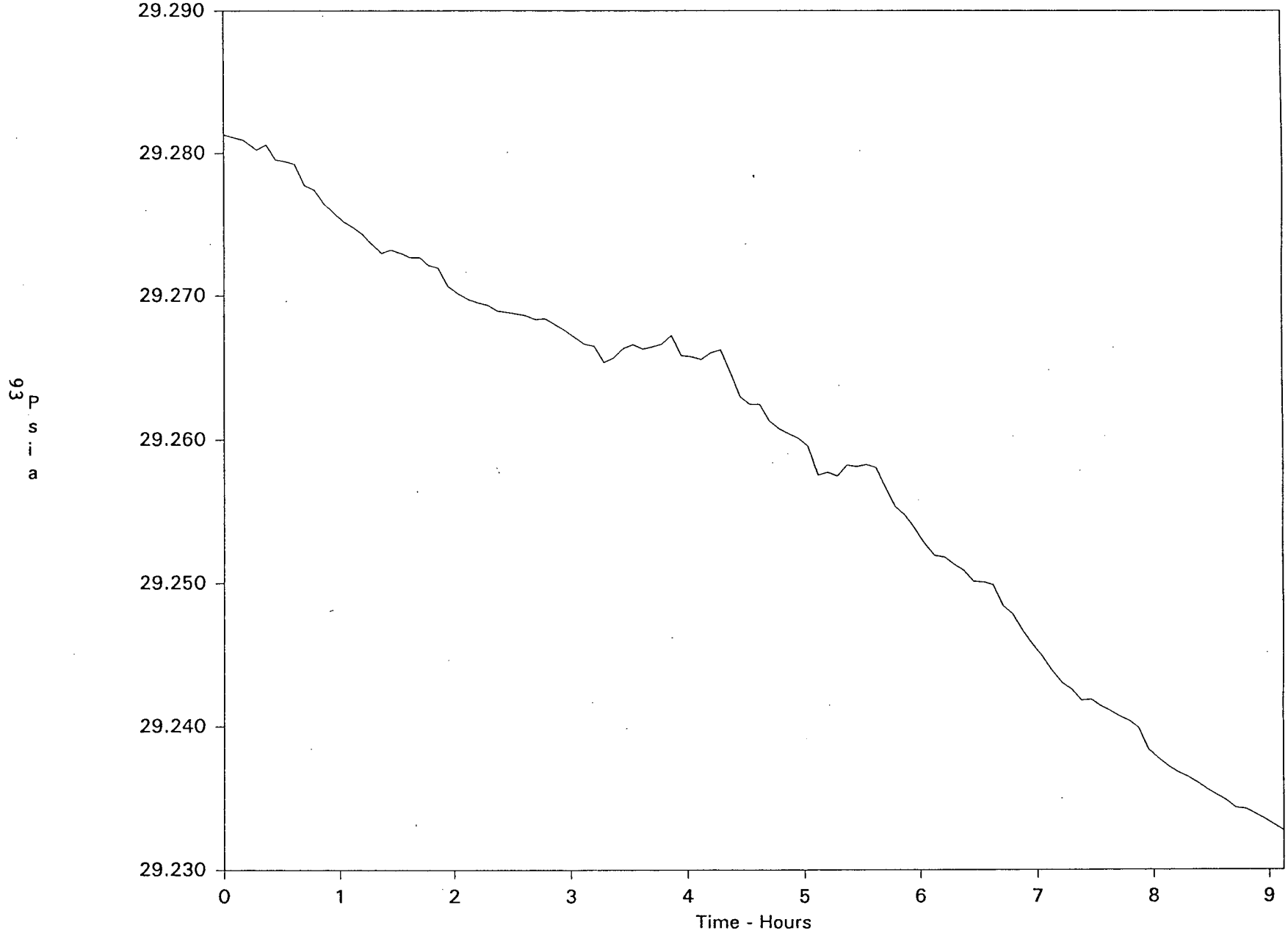
Ice Condenser Mass

Watts Bar Nuclear Plant
Unit 1 - Startup



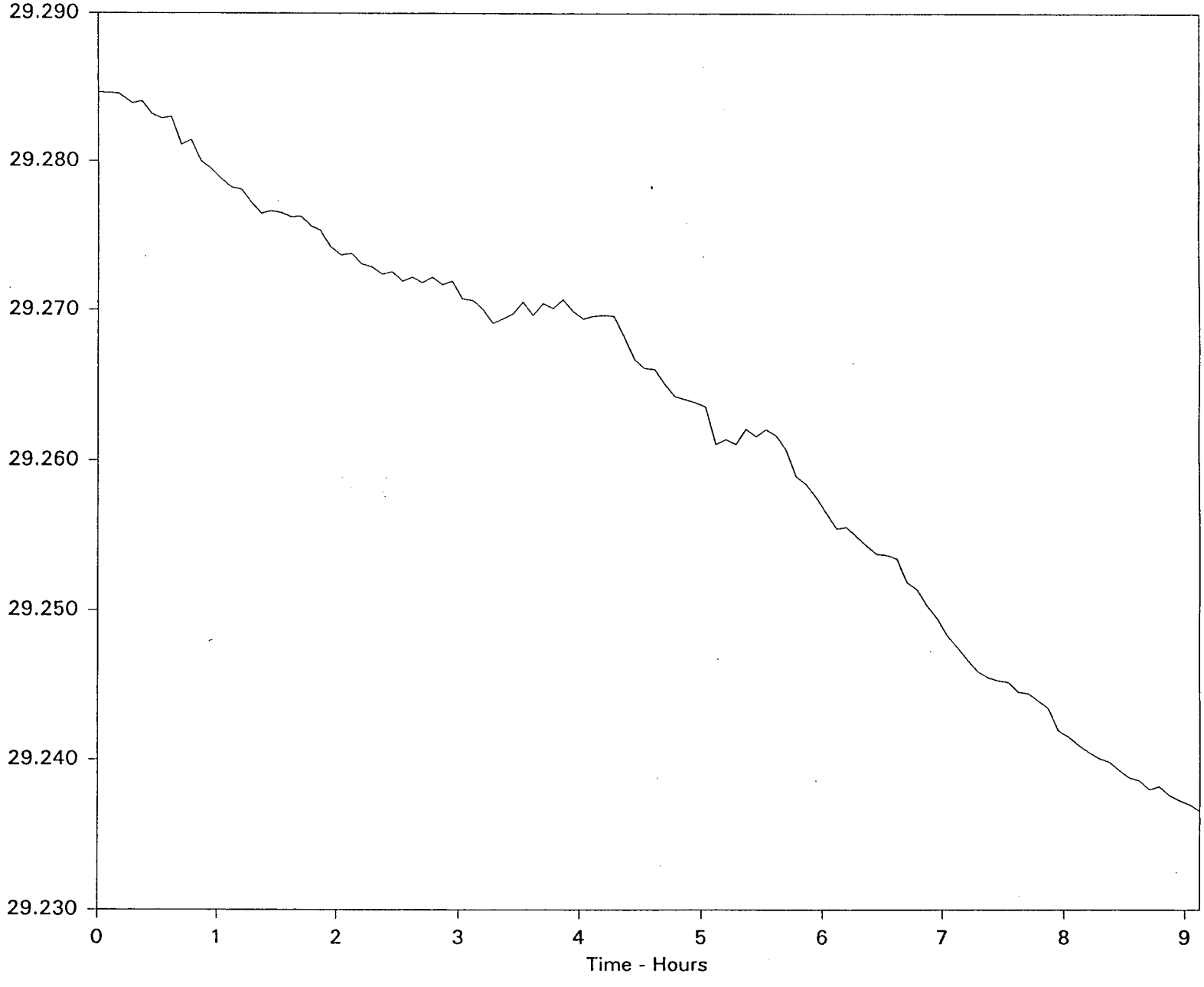
Upper Containment Average Pressure

Watts Bar Nuclear Plant
Unit 1 - Startup



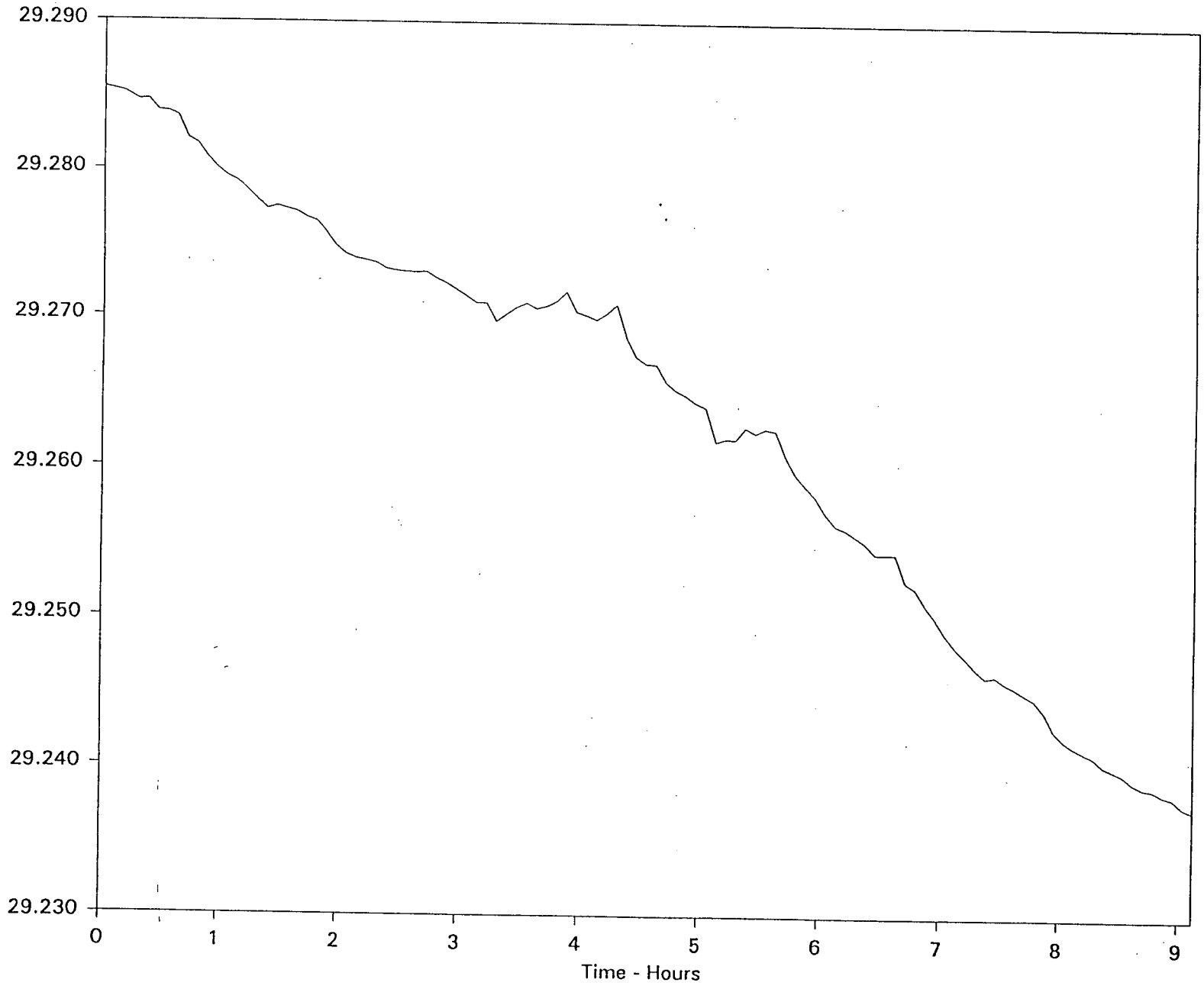
Lower Containment Average Pressure

Watts Bar Nuclear Plant
Unit 1 - Startup



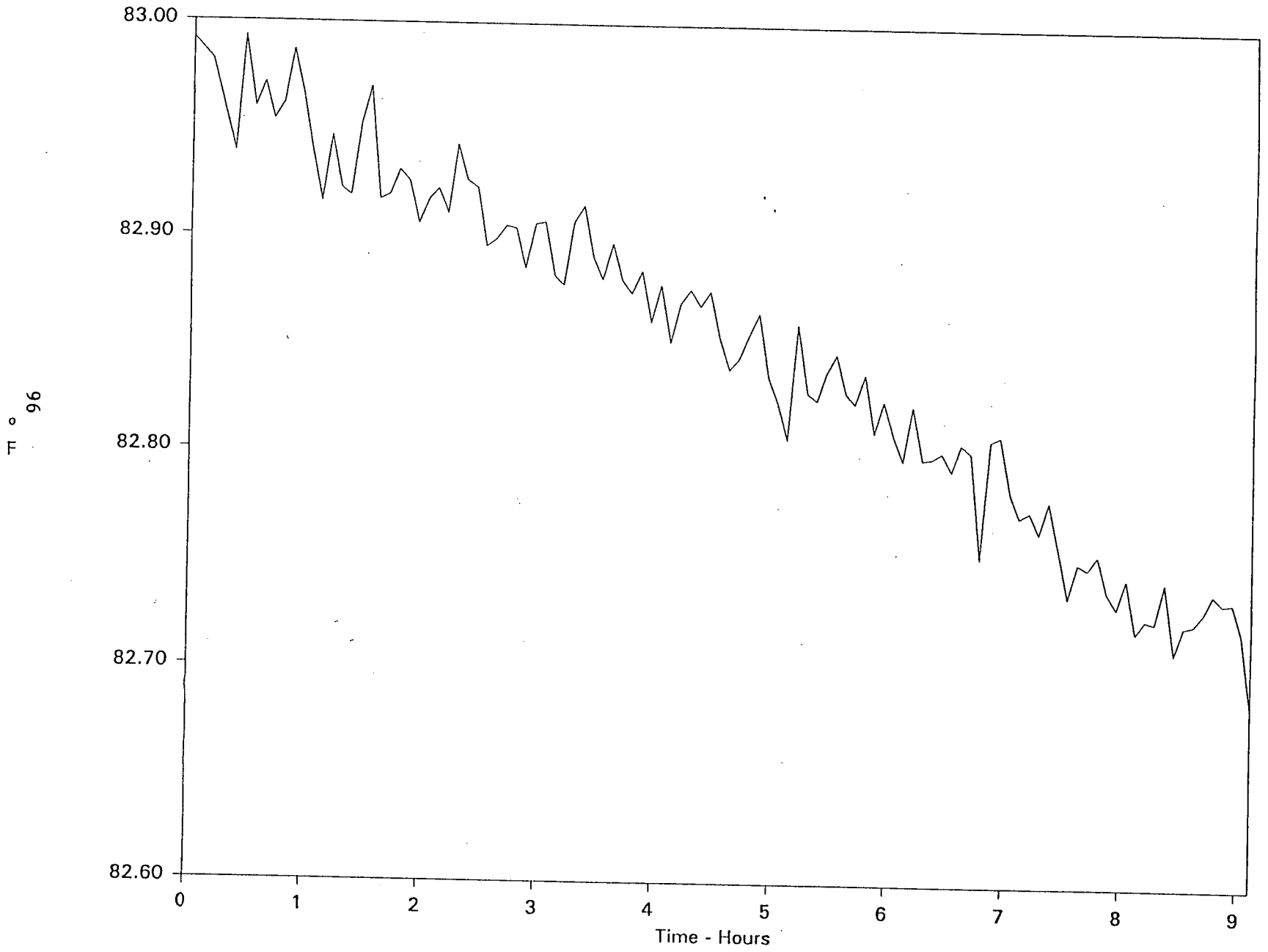
Ice Condenser Average Pressure

Watts Bar Nuclear Plant
Unit 1 - Startup



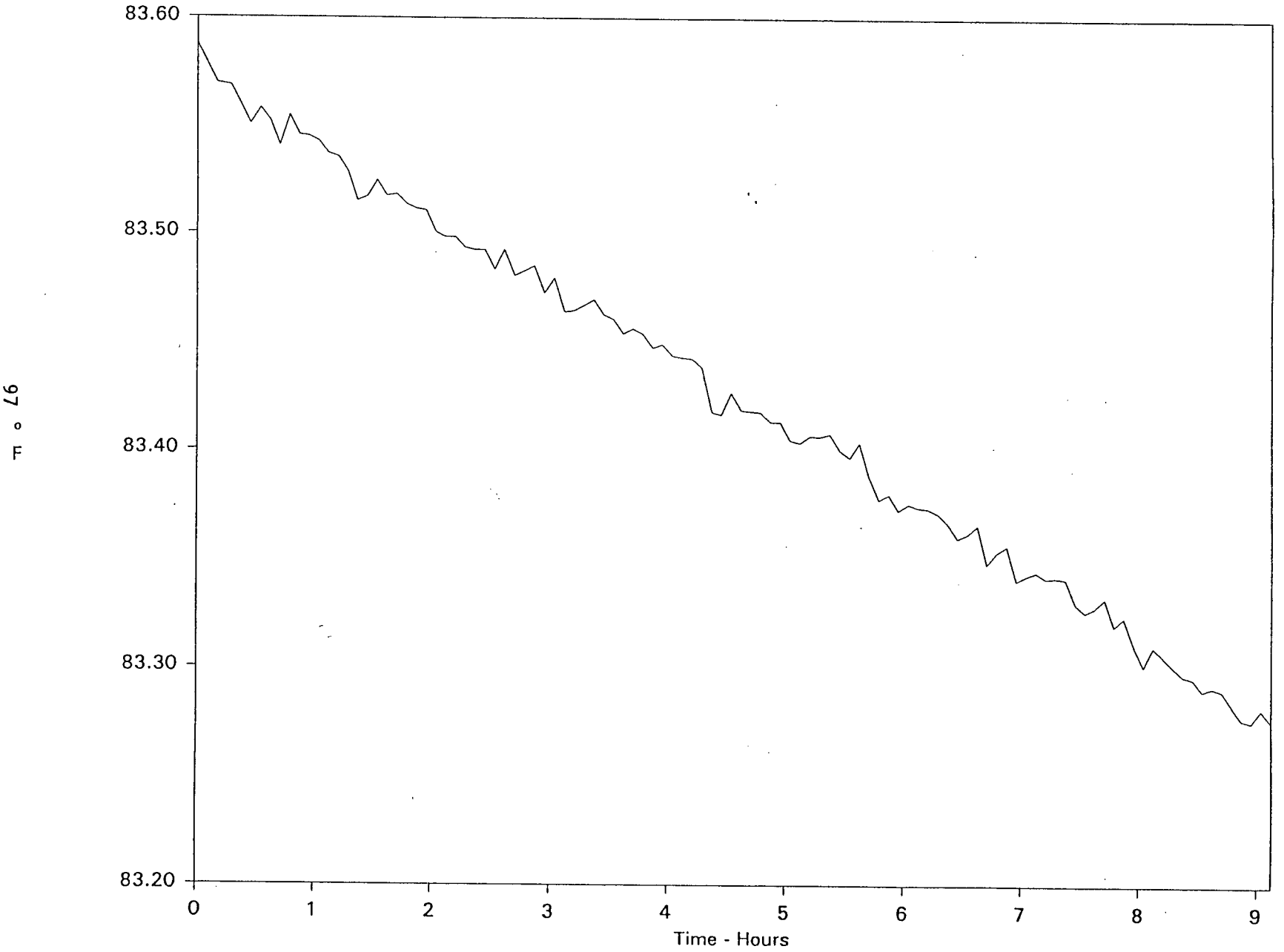
Upper Containment Average Temperature

Watts Bar Nuclear Plant
Unit 1 - Startup



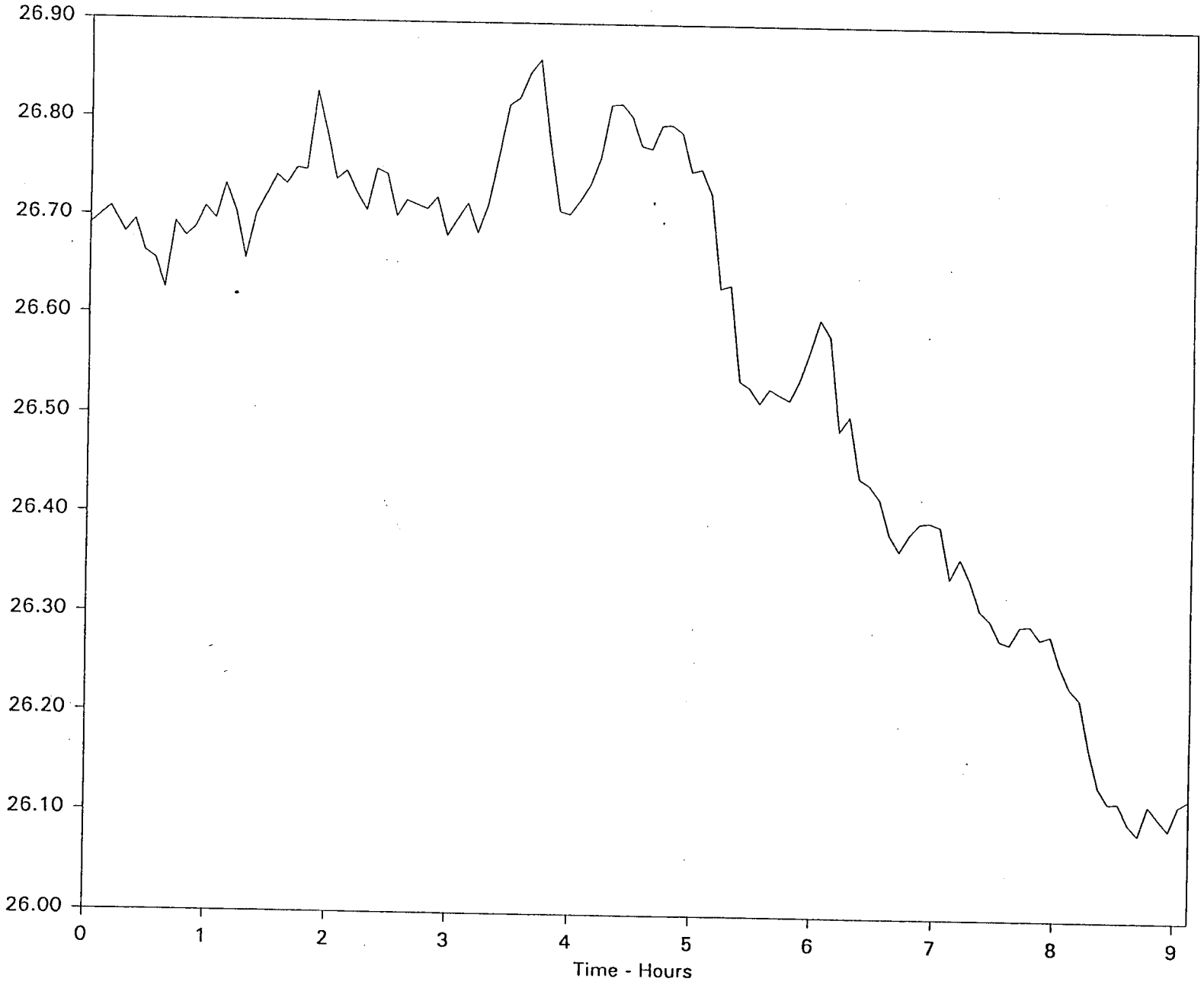
Lower Containment Average Temperature

Watts Bar Nuclear Plant
Unit 1 - Startup



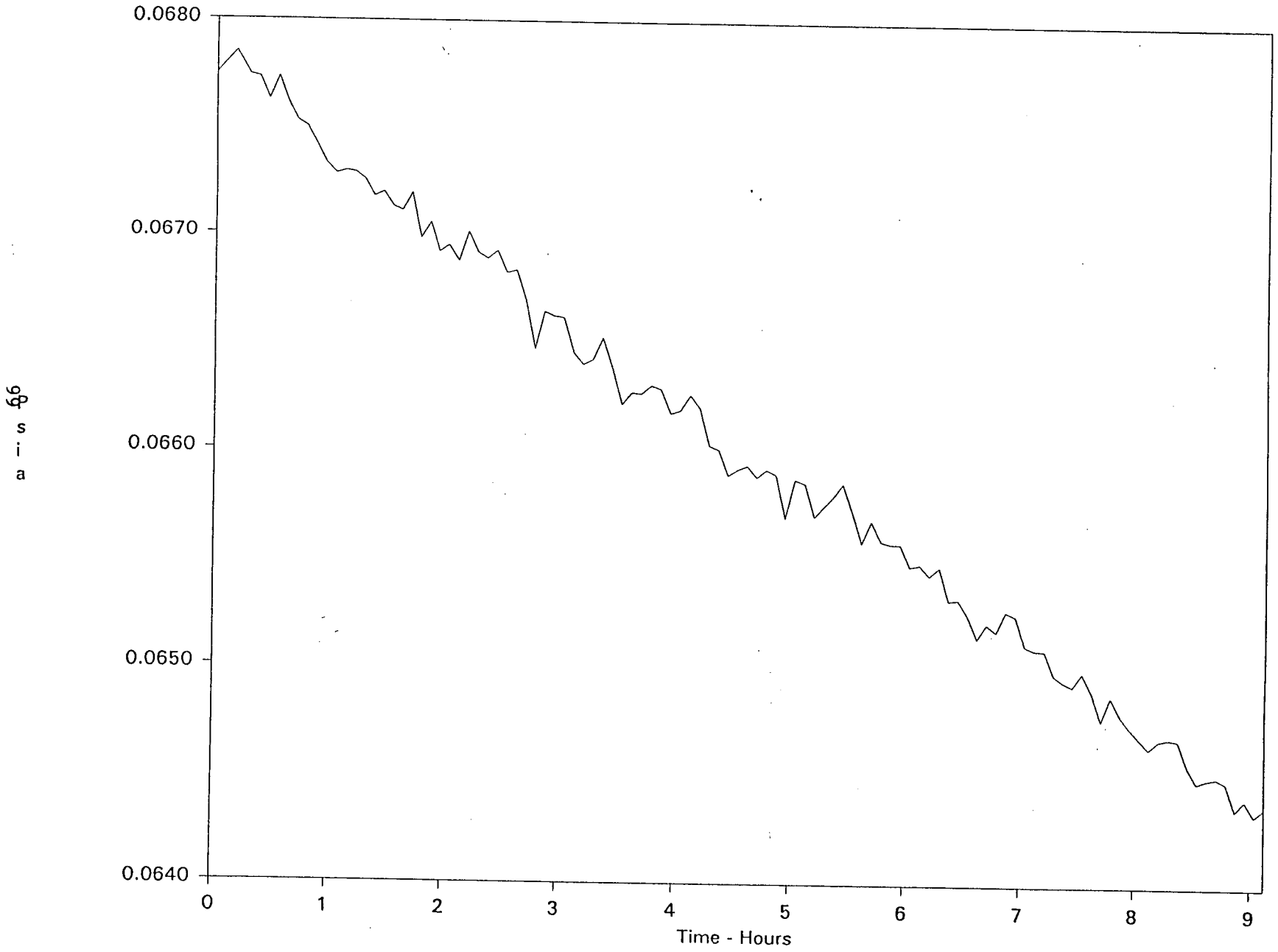
Ice Condenser Average Temperature

Watts Bar Nuclear Plant
Unit 1 - Startup



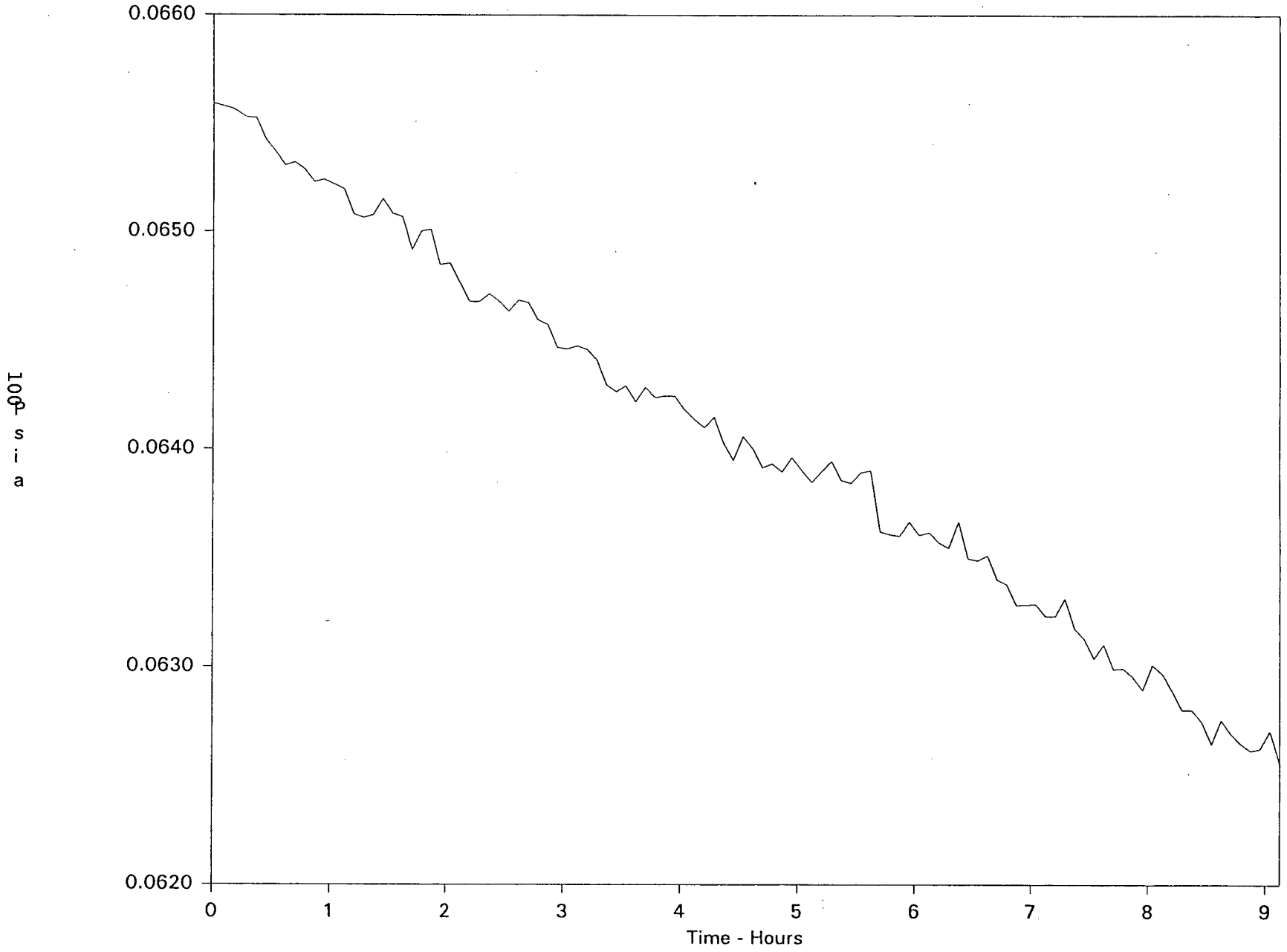
Upper Containment Average Vapor Pressure

Watts Bar Nuclear Plant
Unit 1 - Startup



Lower Containment Average Vapor Pressure

Watts Bar Nuclear Plant
Unit 1 - Startup



APPENDIX E

CILRT Verification Tabular Data

(samples 243 to 351)

Contents:

Mass Point Leak Rate Analysis
Verification Phase

Watts Bar Nuclear Plant
Unit 1 - Startup

Rdg	Time	Norm Mass	MP Leak %/day	MP UCL %/day
243	28-Jun-94 14:28	1.000000	0.000000	0.000000
244	28-Jun-94 14:38	1.000005	-0.069530	0.000000
245	28-Jun-94 14:45	1.000019	-0.152029	0.357867
246	28-Jun-94 14:50	1.000045	-0.273551	0.012715
247	28-Jun-94 14:55	0.999977	-0.012716	0.454796
248	28-Jun-94 15:00	1.000001	0.015580	0.315224
249	28-Jun-94 15:05	1.000001	0.027035	0.237659
250	28-Jun-94 15:10	0.999950	0.128716	0.330763
251	28-Jun-94 15:15	0.999936	0.197210	0.373945
252	28-Jun-94 15:20	0.999878	0.304038	0.491613
253	28-Jun-94 15:25	0.999872	0.360178	0.525972
254	28-Jun-94 15:30	0.999883	0.370810	0.509316
255	28-Jun-94 15:35	0.999884	0.365667	0.482872
256	28-Jun-94 15:40	0.999850	0.378251	0.479514
257	28-Jun-94 15:45	0.999868	0.365776	0.454445
258	28-Jun-94 15:50	0.999844	0.364076	0.441614
259	28-Jun-94 15:55	0.999810	0.374541	0.443759
260	28-Jun-94 16:00	0.999778	0.391042	0.454836
261	28-Jun-94 16:05	0.999828	0.375559	0.434761
262	28-Jun-94 16:10	0.999819	0.362544	0.417415
263	28-Jun-94 16:15	0.999795	0.356753	0.406707
264	28-Jun-94 16:20	0.999767	0.357687	0.403076
265	28-Jun-94 16:25	0.999763	0.355570	0.397038
266	28-Jun-94 16:30	0.999753	0.353386	0.391437
267	28-Jun-94 16:35	0.999741	0.351539	0.386570
268	28-Jun-94 16:40	0.999745	0.346299	0.379036
269	28-Jun-94 16:45	0.999717	0.345617	0.375919
270	28-Jun-94 16:50	0.999707	0.344724	0.372859
271	28-Jun-94 16:55	0.999711	0.340961	0.367406
272	28-Jun-94 17:00	0.999750	0.328526	0.356100
273	28-Jun-94 17:05	0.999735	0.318879	0.346369
274	28-Jun-94 17:10	0.999732	0.309723	0.337021
275	28-Jun-94 17:15	0.999740	0.299186	0.326842
276	28-Jun-94 17:20	0.999737	0.289345	0.317108
277	28-Jun-94 17:25	0.999729	0.280776	0.308265
278	28-Jun-94 17:30	0.999696	0.276512	0.302798
279	28-Jun-94 17:35	0.999716	0.269338	0.295170
280	28-Jun-94 17:40	0.999721	0.261557	0.287181
281	28-Jun-94 17:45	0.999645	0.262289	0.286600
282	28-Jun-94 17:50	0.999631	0.263431	0.286545
283	28-Jun-94 17:55	0.999665	0.260139	0.282352

Mass Point Leak Rate Analysis
Verification Phase

Watts Bar Nuclear Plant
Unit 1 - Startup

Rdg	Time	Norm Mass	MP Leak %/day	MP UCL %/day
284	28-Jun-94 18:00	0.999692	0.253867	0.275884
285	28-Jun-94 18:05	0.999654	0.251043	0.272209
286	28-Jun-94 18:10	0.999677	0.245831	0.266658
287	28-Jun-94 18:15	0.999711	0.237763	0.259155
288	28-Jun-94 18:20	0.999746	0.227285	0.250144
289	28-Jun-94 18:25	0.999731	0.218622	0.242069
290	28-Jun-94 18:30	0.999705	0.212316	0.235602
291	28-Jun-94 18:35	0.999724	0.204943	0.228395
292	28-Jun-94 18:40	0.999710	0.198852	0.222124
293	28-Jun-94 18:45	0.999699	0.193733	0.216633
294	28-Jun-94 18:50	0.999664	0.190910	0.213094
295	28-Jun-94 18:55	0.999611	0.191186	0.212529
296	28-Jun-94 19:00	0.999615	0.190831	0.211381
297	28-Jun-94 19:05	0.999635	0.189036	0.208911
298	28-Jun-94 19:10	0.999587	0.189628	0.208798
299	28-Jun-94 19:15	0.999554	0.191531	0.210116
300	28-Jun-94 19:20	0.999539	0.193672	0.211732
301	28-Jun-94 19:25	0.999573	0.193631	0.211075
302	28-Jun-94 19:30	0.999572	0.193327	0.210189
303	28-Jun-94 19:35	0.999521	0.195046	0.211436
304	28-Jun-94 19:40	0.999506	0.196991	0.212961
305	28-Jun-94 19:45	0.999526	0.197591	0.213062
306	28-Jun-94 19:50	0.999587	0.195355	0.210494
307	28-Jun-94 19:55	0.999570	0.193714	0.208471
308	28-Jun-94 20:00	0.999579	0.191602	0.206054
309	28-Jun-94 20:05	0.999582	0.189290	0.203485
310	28-Jun-94 20:10	0.999554	0.187975	0.201809
311	28-Jun-94 20:15	0.999501	0.188412	0.201849
312	28-Jun-94 20:20	0.999501	0.188597	0.201649
313	28-Jun-94 20:25	0.999452	0.190213	0.202991
314	28-Jun-94 20:30	0.999423	0.192426	0.205030
315	28-Jun-94 20:35	0.999409	0.194704	0.207155
316	28-Jun-94 20:40	0.999411	0.196522	0.208761
317	28-Jun-94 20:45	0.999414	0.197906	0.209892
318	28-Jun-94 20:50	0.999419	0.198838	0.210541
319	28-Jun-94 20:55	0.999400	0.200036	0.211492
320	28-Jun-94 21:00	0.999411	0.200631	0.211806
321	28-Jun-94 21:05	0.999403	0.201229	0.212136
322	28-Jun-94 21:10	0.999369	0.202499	0.213201
323	28-Jun-94 21:15	0.999393	0.202864	0.213307
324	28-Jun-94 21:20	0.999294	0.205531	0.216036

Mass Point Leak Rate Analysis
Verification Phase

Watts Bar Nuclear Plant
Unit 1 - Startup

Rdg	Time	Norm Mass	MP Leak %/day	MP UCL %/day
325	28-Jun-94 21:25	0.999270	0.208425	0.219047
326	28-Jun-94 21:30	0.999265	0.211055	0.221727
327	28-Jun-94 21:35	0.999260	0.213461	0.224135
328	28-Jun-94 21:40	0.999225	0.216346	0.227133
329	28-Jun-94 21:45	0.999222	0.218926	0.229751
330	28-Jun-94 21:50	0.999197	0.221712	0.232625
331	28-Jun-94 21:55	0.999229	0.223457	0.234254
332	28-Jun-94 22:00	0.999248	0.224534	0.235141
333	28-Jun-94 22:05	0.999217	0.226013	0.236483
334	28-Jun-94 22:10	0.999205	0.227484	0.237822
335	28-Jun-94 22:15	0.999191	0.228978	0.239194
336	28-Jun-94 22:20	0.999193	0.230194	0.240259
337	28-Jun-94 22:25	0.999159	0.231828	0.241805
338	28-Jun-94 22:30	0.999141	0.233544	0.243450
339	28-Jun-94 22:35	0.999150	0.234852	0.244635
340	28-Jun-94 22:40	0.999135	0.236207	0.245876
341	28-Jun-94 22:45	0.999143	0.237194	0.246715
342	28-Jun-94 22:50	0.999125	0.238285	0.247673
343	28-Jun-94 22:55	0.999150	0.238753	0.247965
344	28-Jun-94 23:00	0.999129	0.239407	0.248460
345	28-Jun-94 23:05	0.999120	0.240027	0.248923
346	28-Jun-94 23:10	0.999101	0.240783	0.249538
347	28-Jun-94 23:15	0.999089	0.241551	0.250170
348	28-Jun-94 23:20	0.999089	0.242151	0.250626
349	28-Jun-94 23:25	0.999081	0.242722	0.251056
350	28-Jun-94 23:30	0.999072	0.243262	0.251457
351	28-Jun-94 23:35	0.999094	0.243336	0.251381

Total Time Leak Rate Analysis
Verification Phase

Watts Bar Nuclear Plant
Unit 1 - Startup

Rdg	Date / Time	TT Meas % / day	TT Calc % / day	TT UCL % / day
243	6/28/94 14:28	0.000000	0.000000	0.000000
244	6/28/94 14:38	-0.069530	0.000000	0.000000
245	6/28/94 14:45	-0.158129	-0.158129	0.000000
246	6/28/94 14:50	-0.295658	-0.278970	0.056578
247	6/28/94 14:55	0.124906	-0.046220	0.982128
248	6/28/94 15:00	-0.004333	-0.008008	0.642487
249	6/28/94 15:05	-0.003141	0.011842	0.504196
250	6/28/94 15:10	0.171032	0.100371	0.524554
251	6/28/94 15:15	0.196537	0.165385	0.532830
252	6/28/94 15:20	0.338065	0.259373	0.600505
253	6/28/94 15:25	0.322319	0.317642	0.625749
254	6/28/94 15:30	0.270748	0.341596	0.633454
255	6/28/94 15:35	0.248830	0.351381	0.638904
256	6/28/94 15:40	0.298957	0.370855	0.646968
257	6/28/94 15:45	0.245823	0.371160	0.650513
258	6/28/94 15:50	0.273250	0.376906	0.653078
259	6/28/94 15:55	0.314656	0.389944	0.658300
260	6/28/94 16:00	0.347440	0.406714	0.666301
261	6/28/94 16:05	0.255826	0.401167	0.667450
262	6/28/94 16:10	0.255907	0.395859	0.666338
263	6/28/94 16:15	0.275589	0.394500	0.664768
264	6/28/94 16:20	0.299953	0.397169	0.664242
265	6/28/94 16:25	0.290917	0.397473	0.662724
266	6/28/94 16:30	0.291269	0.397397	0.660897
267	6/28/94 16:35	0.293116	0.397314	0.658974
268	6/28/94 16:40	0.278139	0.394619	0.655864
269	6/28/94 16:45	0.297087	0.394727	0.653694
270	6/28/94 16:50	0.297111	0.394566	0.651399
271	6/28/94 16:55	0.283421	0.392337	0.648167
272	6/28/94 17:00	0.236610	0.384033	0.642805
273	6/28/94 17:05	0.242561	0.377247	0.637305
274	6/28/94 17:10	0.238346	0.370468	0.631417
275	6/28/94 17:15	0.223810	0.362517	0.624851
276	6/28/94 17:20	0.219922	0.354789	0.618027
277	6/28/94 17:25	0.220042	0.347716	0.611181
278	6/28/94 17:30	0.240054	0.343402	0.605383
279	6/28/94 17:35	0.218448	0.337113	0.598671
280	6/28/94 17:40	0.208885	0.330293	0.591617
281	6/28/94 17:45	0.259520	0.329116	0.587540
282	6/28/94 17:50	0.263105	0.328319	0.583828
283	6/28/94 17:55	0.233152	0.324639	0.578434

Total Time Leak Rate Analysis
Verification Phase

Watts Bar Nuclear Plant
Unit 1 - Startup

Rdg	Date / Time	TT Meas % / day	TT Calc % / day	TT UCL % / day
284	6/28/94 18:00	0.209224	0.318950	0.572033
285	6/28/94 18:05	0.229468	0.315534	0.566807
286	6/28/94 18:10	0.209296	0.310508	0.560725
287	6/28/94 18:15	0.183143	0.303526	0.553716
288	6/28/94 18:20	0.157594	0.294833	0.545962
289	6/28/94 18:25	0.163388	0.287232	0.538479
290	6/28/94 18:30	0.175335	0.281131	0.531604
291	6/28/94 18:35	0.161073	0.274290	0.524356
292	6/28/94 18:40	0.165636	0.268249	0.517457
293	6/28/94 18:45	0.168767	0.262840	0.510889
294	6/28/94 18:50	0.184512	0.258970	0.505260
295	6/28/94 18:55	0.209735	0.257219	0.501183
296	6/28/94 19:00	0.203877	0.255133	0.496921
297	6/28/94 19:05	0.189887	0.252161	0.492079
298	6/28/94 19:10	0.210755	0.250830	0.488521
299	6/28/94 19:15	0.223625	0.250460	0.485834
300	6/28/94 19:20	0.227272	0.250349	0.483443
301	6/28/94 19:25	0.207010	0.248870	0.479968
302	6/28/94 19:30	0.204079	0.247272	0.476454
303	6/28/94 19:35	0.224473	0.247084	0.474171
304	6/28/94 19:40	0.228062	0.247121	0.472147
305	6/28/94 19:45	0.215154	0.246334	0.469458
306	6/28/94 19:50	0.184788	0.243698	0.465391
307	6/28/94 19:55	0.189306	0.241471	0.461650
308	6/28/94 20:00	0.182511	0.238945	0.457727
309	6/28/94 20:05	0.178309	0.236296	0.453750
310	6/28/94 20:10	0.187647	0.234319	0.450289
311	6/28/94 20:15	0.206763	0.233535	0.447830
312	6/28/94 20:20	0.203954	0.232626	0.445303
313	6/28/94 20:25	0.221062	0.232712	0.443704
314	6/28/94 20:30	0.229472	0.233253	0.442581
315	6/28/94 20:35	0.231932	0.233898	0.441601
316	6/28/94 20:40	0.227928	0.234296	0.440416
317	6/28/94 20:45	0.223820	0.234444	0.439024
318	6/28/94 20:50	0.219051	0.234336	0.437431
319	6/28/94 20:55	0.223157	0.234440	0.436066
320	6/28/94 21:00	0.216114	0.234176	0.434394
321	6/28/94 21:05	0.216554	0.233944	0.432781
322	6/28/94 21:10	0.225986	0.234184	0.431636
323	6/28/94 21:15	0.214626	0.233853	0.429990
324	6/28/94 21:20	0.246608	0.235081	0.429898

Total Time Leak Rate Analysis
Verification Phase

Watts Bar Nuclear Plant
Unit 1 - Startup

Rdg	Date / Time	TT Meas % / day	TT Calc % / day	TT UCL % / day
325	6/28/94 21:25	0.251915	0.236509	0.430047
326	6/28/94 21:30	0.250518	0.237807	0.430080
327	6/28/94 21:35	0.249442	0.239000	0.430027
328	6/28/94 21:40	0.258320	0.240549	0.430382
329	6/28/94 21:45	0.256211	0.241935	0.430582
330	6/28/94 21:50	0.261398	0.243497	0.430996
331	6/28/94 21:55	0.248107	0.244400	0.430731
332	6/28/94 22:00	0.239442	0.244881	0.430068
333	6/28/94 22:05	0.246494	0.245650	0.429710
334	6/28/94 22:10	0.247598	0.246432	0.429385
335	6/28/94 22:15	0.249195	0.247249	0.429115
336	6/28/94 22:20	0.246067	0.247899	0.428697
337	6/28/94 22:25	0.253778	0.248844	0.428596
338	6/28/94 22:30	0.256478	0.249866	0.428592
339	6/28/94 22:35	0.251294	0.250632	0.428343
340	6/28/94 22:40	0.253171	0.251443	0.428158
341	6/28/94 22:45	0.248242	0.252024	0.427760
342	6/28/94 22:50	0.250833	0.252685	0.427456
343	6/28/94 22:55	0.241223	0.252940	0.426779
344	6/28/94 23:00	0.244841	0.253340	0.426256
345	6/28/94 23:05	0.244847	0.253694	0.425698
346	6/28/94 23:10	0.247808	0.254159	0.425264
347	6/28/94 23:15	0.248685	0.254639	0.424857
348	6/28/94 23:20	0.246375	0.255013	0.424363
349	6/28/94 23:25	0.246424	0.255374	0.423870
350	6/28/94 23:30	0.246382	0.255720	0.423376
351	6/28/94 23:35	0.238371	0.255757	0.422611

Containment Calculated Values
Verification Phase

Watts Bar Nuclear Plant

Unit 1 - Startup

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
243	14:28:31	Upper Containment	96047.29	82.992	0.0677	29.2813
		Lower Containment	55601.58	83.587	0.0656	29.2847
		Ice Condenser	25581.62	26.69	0.0185	29.2855
		TOTAL	177230.49			
244	14:38:32	Upper Containment	96047.55	82.982	0.0678	29.281
		Lower Containment	55603.37	83.569	0.0656	29.2846
		Ice Condenser	25580.43	26.708	0.0185	29.2852
		TOTAL	177231.35			
245	14:45:32	Upper Containment	96050.14	82.956	0.0677	29.2803
		Lower Containment	55602.34	83.568	0.0655	29.284
		Ice Condenser	25581.32	26.682	0.0185	29.2847
		TOTAL	177233.8			
246	14:50:32	Upper Containment	96054.38	82.939	0.0677	29.2806
		Lower Containment	55603.43	83.559	0.0655	29.2841
		Ice Condenser	25580.69	26.695	0.0185	29.2847
		TOTAL	177238.5			
247	14:55:32	Upper Containment	96041.71	82.993	0.0676	29.2796
		Lower Containment	55602.91	83.551	0.0654	29.2832
		Ice Condenser	25581.72	26.663	0.0185	29.284
		TOTAL	177226.34			
248	15:00:32	Upper Containment	96046.9	82.96	0.0677	29.2795
		Lower Containment	55601.7	83.558	0.0654	29.2829
		Ice Condenser	25582.05	26.656	0.0185	29.2839
		TOTAL	177230.66			
249	15:05:33	Upper Containment	96044.65	82.971	0.0676	29.2793
		Lower Containment	55602.59	83.552	0.0653	29.283
		Ice Condenser	25583.4	26.625	0.0185	29.2836
		TOTAL	177230.63			
250	15:10:33	Upper Containment	96043.01	82.954	0.0675	29.2778
		Lower Containment	55600.14	83.541	0.0653	29.2811
		Ice Condenser	25578.5	26.693	0.0185	29.2821
		TOTAL	177221.64			
251	15:15:33	Upper Containment	96040.72	82.962	0.0675	29.2775
		Lower Containment	55599.42	83.555	0.0653	29.2815
		Ice Condenser	25578.97	26.679	0.0185	29.2818
		TOTAL	177219.11			

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
252	15:20:33	Upper Containment	96033.48	82.987	0.0674	29.2765
		Lower Containment	55597.72	83.545	0.0652	29.28
		Ice Condenser	25577.64	26.688	0.0185	29.2808
		TOTAL	177208.84			
253	15:25:33	Upper Containment	96035.17	82.967	0.0673	29.2759
		Lower Containment	55596.79	83.545	0.0652	29.2795
		Ice Condenser	25575.91	26.709	0.0185	29.2801
		TOTAL	177207.87			
254	15:30:33	Upper Containment	96037.98	82.94	0.0673	29.2752
		Lower Containment	55595.75	83.543	0.0652	29.2788
		Ice Condenser	25576.09	26.697	0.0185	29.2796
		TOTAL	177209.82			
255	15:35:34	Upper Containment	96040.76	82.916	0.0673	29.2748
		Lower Containment	55595.32	83.537	0.0652	29.2783
		Ice Condenser	25573.88	26.733	0.0185	29.2792
		TOTAL	177209.96			
256	15:40:34	Upper Containment	96033.71	82.947	0.0673	29.2743
		Lower Containment	55595.42	83.535	0.0651	29.2781
		Ice Condenser	25574.85	26.704	0.0185	29.2786
		TOTAL	177203.98			
257	15:45:34	Upper Containment	96035.8	82.923	0.0673	29.2736
		Lower Containment	55594.53	83.529	0.0651	29.2773
		Ice Condenser	25576.85	26.656	0.0185	29.278
		TOTAL	177207.18			
258	15:50:34	Upper Containment	96034.56	82.919	0.0672	29.273
		Lower Containment	55594.47	83.515	0.0651	29.2765
		Ice Condenser	25573.87	26.702	0.0185	29.2774
		TOTAL	177202.9			
259	15:55:34	Upper Containment	96029.39	82.952	0.0672	29.2732
		Lower Containment	55594.4	83.517	0.0652	29.2767
		Ice Condenser	25572.99	26.722	0.0185	29.2776
		TOTAL	177196.78			
260	16:00:34	Upper Containment	96025.78	82.969	0.0671	29.273
		Lower Containment	55593.56	83.525	0.0651	29.2766
		Ice Condenser	25571.79	26.742	0.0185	29.2774
		TOTAL	177191.13			
261	16:05:35	Upper Containment	96034.04	82.918	0.0671	29.2727
		Lower Containment	55593.76	83.517	0.0651	29.2763
		Ice Condenser	25572.13	26.733	0.0185	29.2772
		TOTAL	177199.93			

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
262	16:10:35	Upper Containment	96033.39	82.92	0.0672	29.2727
		Lower Containment	55594.06	83.518	0.0649	29.2763
		Ice Condenser	25570.9	26.75	0.0185	29.2768
		TOTAL	177198.34			
263	16:15:35	Upper Containment	96030.26	82.931	0.067	29.2721
		Lower Containment	55593.15	83.513	0.065	29.2757
		Ice Condenser	25570.76	26.748	0.0185	29.2766
		TOTAL	177194.18			
264	16:20:35	Upper Containment	96030.41	82.926	0.0671	29.272
		Lower Containment	55592.77	83.511	0.065	29.2754
		Ice Condenser	25565.94	26.828	0.0185	29.2758
		TOTAL	177189.12			
265	16:25:35	Upper Containment	96030.12	82.906	0.0669	29.2707
		Lower Containment	55591.07	83.511	0.0648	29.2743
		Ice Condenser	25567.38	26.785	0.0185	29.2749
		TOTAL	177188.57			
266	16:30:35	Upper Containment	96026.37	82.917	0.0669	29.2702
		Lower Containment	55591.04	83.501	0.0649	29.2737
		Ice Condenser	25569.32	26.738	0.0185	29.2743
		TOTAL	177186.73			
267	16:35:36	Upper Containment	96024.42	82.922	0.0669	29.2698
		Lower Containment	55591.64	83.498	0.0648	29.2738
		Ice Condenser	25568.58	26.747	0.0185	29.274
		TOTAL	177184.64			
268	16:40:36	Upper Containment	96025.16	82.911	0.067	29.2695
		Lower Containment	55590.48	83.498	0.0647	29.2731
		Ice Condenser	25569.64	26.725	0.0185	29.2739
		TOTAL	177185.28			
269	16:45:36	Upper Containment	96019.35	82.943	0.0669	29.2694
		Lower Containment	55590.59	83.493	0.0647	29.2729
		Ice Condenser	25570.43	26.707	0.0185	29.2737
		TOTAL	177180.37			
270	16:50:36	Upper Containment	96020.99	82.927	0.0669	29.269
		Lower Containment	55589.69	83.492	0.0647	29.2724
		Ice Condenser	25567.85	26.75	0.0185	29.2733
		TOTAL	177178.53			
271	16:55:36	Upper Containment	96021.18	82.923	0.0669	29.2689
		Lower Containment	55590.04	83.492	0.0647	29.2726
		Ice Condenser	25567.97	26.745	0.0185	29.2732
		TOTAL	177179.18			

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
272	17:00:36	Upper Containment	96026.1	82.895	0.0668	29.2688
		Lower Containment	55589.93	83.483	0.0646	29.272
		Ice Condenser	25570.18	26.702	0.0185	29.2731
		TOTAL	177186.2			
273	17:05:37	Upper Containment	96024.94	82.899	0.0668	29.2686
		Lower Containment	55589.36	83.492	0.0647	29.2722
		Ice Condenser	25569.28	26.718	0.0185	29.2731
		TOTAL	177183.59			
274	17:10:37	Upper Containment	96023.43	82.905	0.0667	29.2684
		Lower Containment	55589.95	83.48	0.0647	29.2719
		Ice Condenser	25569.55	26.714	0.0185	29.2731
		TOTAL	177182.94			
275	17:15:37	Upper Containment	96024.52	82.904	0.0665	29.2684
		Lower Containment	55590.57	83.482	0.0646	29.2722
		Ice Condenser	25569.38	26.71	0.0185	29.2727
		TOTAL	177184.46			
276	17:20:37	Upper Containment	96026.01	82.885	0.0666	29.268
		Lower Containment	55589.4	83.485	0.0646	29.2717
		Ice Condenser	25568.49	26.722	0.0185	29.2724
		TOTAL	177183.91			
277	17:25:37	Upper Containment	96020.99	82.907	0.0666	29.2676
		Lower Containment	55591.35	83.472	0.0645	29.272
		Ice Condenser	25570.19	26.683	0.0185	29.272
		TOTAL	177182.53			
278	17:30:37	Upper Containment	96019.4	82.907	0.0666	29.2672
		Lower Containment	55588.38	83.479	0.0645	29.2708
		Ice Condenser	25568.91	26.699	0.0185	29.2715
		TOTAL	177176.69			
279	17:35:38	Upper Containment	96022.8	82.882	0.0664	29.2667
		Lower Containment	55589.77	83.463	0.0645	29.2707
		Ice Condenser	25567.61	26.716	0.0185	29.271
		TOTAL	177180.18			
280	17:40:38	Upper Containment	96023.27	82.877	0.0664	29.2665
		Lower Containment	55588.61	83.464	0.0645	29.2701
		Ice Condenser	25569.22	26.685	0.0185	29.271
		TOTAL	177181.1			
281	17:45:38	Upper Containment	96014.27	82.907	0.0664	29.2654
		Lower Containment	55586.64	83.466	0.0644	29.2691
		Ice Condenser	25566.62	26.714	0.0185	29.2698
		TOTAL	177167.53			

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
282	17:50:38	Upper Containment	96013.56	82.915	0.0665	29.2657
		Lower Containment	55587.15	83.469	0.0643	29.2694
		Ice Condenser	25564.33	26.766	0.0185	29.2703
		TOTAL	177165.04			
283	17:55:38	Upper Containment	96020.42	82.891	0.0664	29.2664
		Lower Containment	55588.57	83.462	0.0643	29.2698
		Ice Condenser	25562.07	26.816	0.0185	29.2707
		TOTAL	177171.06			
284	18:00:38	Upper Containment	96023.66	82.88	0.0662	29.2666
		Lower Containment	55590.25	83.46	0.0643	29.2706
		Ice Condenser	25561.96	26.823	0.0185	29.271
		TOTAL	177175.87			
285	18:05:39	Upper Containment	96019.5	82.897	0.0663	29.2663
		Lower Containment	55589.37	83.453	0.0642	29.2697
		Ice Condenser	25560.3	26.849	0.0185	29.2707
		TOTAL	177169.17			
286	18:10:39	Upper Containment	96023.03	82.88	0.0663	29.2665
		Lower Containment	55590.52	83.456	0.0643	29.2705
		Ice Condenser	25559.72	26.863	0.0185	29.2708
		TOTAL	177173.27			
287	18:15:39	Upper Containment	96024.69	82.874	0.0663	29.2667
		Lower Containment	55590.18	83.453	0.0642	29.2701
		Ice Condenser	25564.42	26.779	0.0185	29.2712
		TOTAL	177179.29			
288	18:20:39	Upper Containment	96024.82	82.885	0.0663	29.2673
		Lower Containment	55591.97	83.447	0.0642	29.2707
		Ice Condenser	25568.67	26.709	0.0185	29.2718
		TOTAL	177185.47			
289	18:25:39	Upper Containment	96024.86	82.86	0.0662	29.2659
		Lower Containment	55590.28	83.449	0.0642	29.2699
		Ice Condenser	25567.66	26.706	0.0185	29.2705
		TOTAL	177182.81			
290	18:30:39	Upper Containment	96021.54	82.878	0.0662	29.2658
		Lower Containment	55589.98	83.443	0.0642	29.2694
		Ice Condenser	25566.72	26.72	0.0185	29.2702
		TOTAL	177178.24			
291	18:35:40	Upper Containment	96025.4	82.851	0.0663	29.2656
		Lower Containment	55590.54	83.443	0.0641	29.2696
		Ice Condenser	25565.56	26.737	0.0185	29.2699
		TOTAL	177181.49			

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
292	18:40:40	Upper Containment	96023.81	82.87	0.0662	29.2661
		Lower Containment	55590.74	83.442	0.0641	29.2697
		Ice Condenser	25564.55	26.763	0.0185	29.2704
		TOTAL	177179.09			
293	18:45:40	Upper Containment	96023.9	82.876	0.066	29.2663
		Lower Containment	55590.96	83.438	0.0641	29.2696
		Ice Condenser	25562.22	26.818	0.0185	29.271
		TOTAL	177177.08			
294	18:50:40	Upper Containment	96020.08	82.868	0.066	29.2647
		Lower Containment	55590.62	83.418	0.064	29.2682
		Ice Condenser	25560.26	26.818	0.0185	29.2688
		TOTAL	177170.96			
295	18:55:40	Upper Containment	96013.8	82.875	0.0659	29.263
		Lower Containment	55588.03	83.417	0.0639	29.2667
		Ice Condenser	25559.69	26.807	0.0185	29.2674
		TOTAL	177161.53			
296	19:00:40	Upper Containment	96015.67	82.854	0.0659	29.2625
		Lower Containment	55585.66	83.427	0.0641	29.2661
		Ice Condenser	25560.87	26.777	0.0185	29.267
		TOTAL	177162.2			
297	19:05:41	Upper Containment	96018.24	82.839	0.0659	29.2625
		Lower Containment	55586.49	83.419	0.064	29.2661
		Ice Condenser	25560.98	26.774	0.0185	29.2669
		TOTAL	177165.72			
298	19:10:41	Upper Containment	96013.77	82.844	0.0659	29.2613
		Lower Containment	55584.79	83.418	0.0639	29.2651
		Ice Condenser	25558.74	26.797	0.0185	29.2658
		TOTAL	177157.3			
299	19:15:41	Upper Containment	96009.95	82.855	0.0659	29.2608
		Lower Containment	55583.27	83.418	0.0639	29.2643
		Ice Condenser	25558.23	26.798	0.0185	29.2652
		TOTAL	177151.45			
300	19:20:41	Upper Containment	96007.01	82.865	0.0659	29.2604
		Lower Containment	55583.42	83.413	0.0639	29.2641
		Ice Condenser	25558.33	26.79	0.0185	29.2649
		TOTAL	177148.77			
301	19:25:41	Upper Containment	96011.86	82.836	0.0657	29.2601
		Lower Containment	55582.91	83.413	0.064	29.2639
		Ice Condenser	25560.01	26.751	0.0185	29.2644
		TOTAL	177154.78			

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
302	19:30:41	Upper Containment	96011.56	82.824	0.0659	29.2596
		Lower Containment	55583.4	83.405	0.0639	29.2636
		Ice Condenser	25559.63	26.753	0.0185	29.2641
		TOTAL	177154.59			
303	19:35:42	Upper Containment	96007.91	82.807	0.0659	29.2575
		Lower Containment	55578.77	83.404	0.0638	29.2611
		Ice Condenser	25558.94	26.728	0.0185	29.2618
		TOTAL	177145.62			
304	19:40:42	Upper Containment	95999.66	82.86	0.0657	29.2577
		Lower Containment	55579.02	83.407	0.0639	29.2614
		Ice Condenser	25564.19	26.631	0.0185	29.262
		TOTAL	177142.86			
305	19:45:42	Upper Containment	96004.22	82.829	0.0658	29.2575
		Lower Containment	55578.31	83.407	0.0639	29.2611
		Ice Condenser	25563.98	26.635	0.0185	29.262
		TOTAL	177146.5			
306	19:50:42	Upper Containment	96007.16	82.825	0.0658	29.2582
		Lower Containment	55580.35	83.408	0.0639	29.2621
		Ice Condenser	25569.7	26.539	0.0185	29.2628
		TOTAL	177157.22			
307	19:55:42	Upper Containment	96004.36	82.838	0.0659	29.2581
		Lower Containment	55580.16	83.401	0.0638	29.2616
		Ice Condenser	25569.74	26.532	0.0185	29.2624
		TOTAL	177154.26			
308	20:00:42	Upper Containment	96003.76	82.847	0.0657	29.2583
		Lower Containment	55581.29	83.397	0.0639	29.2621
		Ice Condenser	25570.82	26.517	0.0185	29.2627
		TOTAL	177155.87			
309	20:05:43	Upper Containment	96006.74	82.829	0.0656	29.2581
		Lower Containment	55579.81	83.404	0.0639	29.2617
		Ice Condenser	25569.94	26.531	0.0185	29.2626
		TOTAL	177156.49			
310	20:10:43	Upper Containment	96002.51	82.824	0.0657	29.2566
		Lower Containment	55580.14	83.388	0.0636	29.2607
		Ice Condenser	25568.81	26.525	0.0185	29.2609
		TOTAL	177151.46			
311	20:15:43	Upper Containment	95996.17	82.837	0.0656	29.2553
		Lower Containment	55577.94	83.377	0.0636	29.259
		Ice Condenser	25568.02	26.52	0.0185	29.2597
		TOTAL	177142.14			

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
312	20:20:43	Upper Containment	95999.01	82.81	0.0656	29.2547
		Lower Containment	55576.75	83.38	0.0636	29.2585
		Ice Condenser	25566.32	26.54	0.0185	29.259
		TOTAL	177142.08			
313	20:25:43	Upper Containment	95993.41	82.825	0.0656	29.2538
		Lower Containment	55575.65	83.373	0.0637	29.2576
		Ice Condenser	25564.24	26.568	0.0185	29.2583
		TOTAL	177133.31			
314	20:30:43	Upper Containment	95993.19	82.809	0.0655	29.2528
		Lower Containment	55573.48	83.375	0.0636	29.2565
		Ice Condenser	25561.53	26.601	0.0185	29.2572
		TOTAL	177128.2			
315	20:35:44	Upper Containment	95992.39	82.798	0.0655	29.2519
		Lower Containment	55571.62	83.374	0.0636	29.2555
		Ice Condenser	25561.65	26.585	0.0185	29.2563
		TOTAL	177125.67			
316	20:40:46	Upper Containment	95987.7	82.823	0.0654	29.2518
		Lower Containment	55571.94	83.373	0.0636	29.2556
		Ice Condenser	25566.42	26.49	0.0185	29.2561
		TOTAL	177126.06			
317	20:45:44	Upper Containment	95990.33	82.798	0.0655	29.2513
		Lower Containment	55571	83.371	0.0635	29.2549
		Ice Condenser	25565.25	26.505	0.0185	29.2556
		TOTAL	177126.58			
318	20:50:44	Upper Containment	95989.24	82.799	0.0653	29.2509
		Lower Containment	55570.08	83.367	0.0637	29.2543
		Ice Condenser	25568.13	26.443	0.0185	29.2552
		TOTAL	177127.44			
319	20:55:44	Upper Containment	95986.24	82.802	0.0653	29.2501
		Lower Containment	55570.05	83.36	0.0635	29.2538
		Ice Condenser	25567.85	26.436	0.0185	29.2545
		TOTAL	177124.14			
320	21:00:44	Upper Containment	95987.82	82.793	0.0653	29.2501
		Lower Containment	55569.76	83.362	0.0635	29.2537
		Ice Condenser	25568.58	26.422	0.0185	29.2545
		TOTAL	177126.17			
321	21:05:45	Upper Containment	95985.31	82.806	0.0651	29.2499
		Lower Containment	55568.84	83.366	0.0635	29.2535
		Ice Condenser	25570.47	26.386	0.0185	29.2545
		TOTAL	177124.62			

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
322	21:10:45	Upper Containment	95981.02	82.802	0.0652	29.2484
		Lower Containment	55567.85	83.348	0.0634	29.2519
		Ice Condenser	25569.74	26.369	0.0185	29.2526
		TOTAL	177118.62			
323	21:15:45	Upper Containment	95988.02	82.753	0.0652	29.2479
		Lower Containment	55566.45	83.353	0.0634	29.2514
		Ice Condenser	25568.44	26.387	0.0185	29.2522
		TOTAL	177122.92			
324	21:20:45	Upper Containment	95974.21	82.808	0.0653	29.2467
		Lower Containment	55564.26	83.356	0.0633	29.2503
		Ice Condenser	25566.9	26.398	0.0185	29.2511
		TOTAL	177105.37			
325	21:25:45	Upper Containment	95970.8	82.81	0.0653	29.2458
		Lower Containment	55564.27	83.34	0.0633	29.2495
		Ice Condenser	25566.05	26.399	0.0185	29.2502
		TOTAL	177101.13			
326	21:30:45	Upper Containment	95973.12	82.783	0.0651	29.2449
		Lower Containment	55561.83	83.343	0.0633	29.2483
		Ice Condenser	25565.35	26.395	0.0185	29.2491
		TOTAL	177100.3			
327	21:35:46	Upper Containment	95971.74	82.772	0.0651	29.2439
		Lower Containment	55560.25	83.344	0.0632	29.2475
		Ice Condenser	25567.33	26.342	0.0185	29.2482
		TOTAL	177099.32			
328	21:40:46	Upper Containment	95968.48	82.775	0.0651	29.243
		Lower Containment	55558.92	83.341	0.0632	29.2467
		Ice Condenser	25565.67	26.363	0.0185	29.2476
		TOTAL	177093.06			
329	21:45:46	Upper Containment	95969.15	82.764	0.065	29.2426
		Lower Containment	55557.3	83.342	0.0633	29.2459
		Ice Condenser	25566.16	26.341	0.0185	29.2468
		TOTAL	177092.61			
330	21:50:46	Upper Containment	95964.14	82.779	0.0649	29.2418
		Lower Containment	55556.88	83.341	0.0632	29.2455
		Ice Condenser	25567.19	26.312	0.0185	29.2462
		TOTAL	177088.21			
331	21:55:46	Upper Containment	95968.36	82.757	0.0649	29.2419
		Lower Containment	55557.73	83.33	0.0631	29.2453
		Ice Condenser	25567.83	26.301	0.0185	29.2463
		TOTAL	177093.92			

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
332	22:00:46	Upper Containment	95970.58	82.735	0.065	29.2414
		Lower Containment	55558.13	83.326	0.063	29.2452
		Ice Condenser	25568.5	26.281	0.0185	29.2459
		TOTAL	177097.21			
333	22:05:47	Upper Containment	95966.84	82.751	0.0649	29.2411
		Lower Containment	55556.56	83.328	0.0631	29.2446
		Ice Condenser	25568.36	26.278	0.0185	29.2455
		TOTAL	177091.77			
334	22:10:47	Upper Containment	95966.45	82.748	0.0648	29.2407
		Lower Containment	55556.13	83.332	0.063	29.2445
		Ice Condenser	25567.04	26.296	0.0185	29.2451
		TOTAL	177089.62			
335	22:15:47	Upper Containment	95963.97	82.755	0.0649	29.2404
		Lower Containment	55556.49	83.319	0.063	29.244
		Ice Condenser	25566.72	26.296	0.0185	29.2448
		TOTAL	177087.18			
336	22:20:47	Upper Containment	95965.55	82.738	0.0648	29.2399
		Lower Containment	55555.2	83.323	0.063	29.2435
		Ice Condenser	25566.72	26.283	0.0185	29.244
		TOTAL	177087.46			
337	22:25:47	Upper Containment	95962.17	82.73	0.0647	29.2384
		Lower Containment	55553.81	83.31	0.0629	29.242
		Ice Condenser	25565.45	26.286	0.0185	29.2427
		TOTAL	177081.42			
338	22:30:48	Upper Containment	95957.97	82.744	0.0647	29.2378
		Lower Containment	55553.77	83.301	0.063	29.2416
		Ice Condenser	25566.51	26.255	0.0185	29.2421
		TOTAL	177078.25			
339	22:35:48	Upper Containment	95960.71	82.719	0.0646	29.2372
		Lower Containment	55551.81	83.31	0.063	29.241
		Ice Condenser	25567.26	26.234	0.0185	29.2416
		TOTAL	177079.78			
340	22:40:48	Upper Containment	95957.99	82.725	0.0647	29.2368
		Lower Containment	55551.55	83.305	0.0629	29.2405
		Ice Condenser	25567.56	26.222	0.0185	29.2413
		TOTAL	177077.1			
341	22:45:48	Upper Containment	95957.22	82.724	0.0647	29.2365
		Lower Containment	55551.4	83.301	0.0628	29.2401
		Ice Condenser	25569.93	26.172	0.0185	29.241
		TOTAL	177078.56			

Rd	Time	Compartment	Mass	Temp	Vapor Press	Press
342	22:50:48	Upper Containment	95952.68	82.742	0.0647	29.2361
		Lower Containment	55551.34	83.297	0.0628	29.2399
		Ice Condenser	25571.42	26.134	0.0185	29.2404
		TOTAL	177075.43			
343	22:55:48	Upper Containment	95957.38	82.71	0.0646	29.2356
		Lower Containment	55550.51	83.296	0.0628	29.2393
		Ice Condenser	25571.99	26.118	0.0185	29.2401
		TOTAL	177079.88			
344	23:00:55	Upper Containment	95954.04	82.722	0.0645	29.2352
		Lower Containment	55550.33	83.29	0.0626	29.2388
		Ice Condenser	25571.71	26.118	0.0185	29.2398
		TOTAL	177076.08			
345	23:05:49	Upper Containment	95952.69	82.723	0.0645	29.2349
		Lower Containment	55549.58	83.292	0.0628	29.2386
		Ice Condenser	25572.33	26.097	0.0185	29.2392
		TOTAL	177074.6			
346	23:10:49	Upper Containment	95949.86	82.729	0.0645	29.2343
		Lower Containment	55548.72	83.29	0.0627	29.238
		Ice Condenser	25572.61	26.086	0.0185	29.2389
		TOTAL	177071.19			
347	23:15:49	Upper Containment	95948.26	82.737	0.0645	29.2343
		Lower Containment	55549.88	83.283	0.0626	29.2382
		Ice Condenser	25570.95	26.116	0.0185	29.2388
		TOTAL	177069.1			
348	23:20:49	Upper Containment	95948.3	82.733	0.0644	29.2339
		Lower Containment	55549.46	83.277	0.0626	29.2376
		Ice Condenser	25571.33	26.103	0.0185	29.2384
		TOTAL	177069.08			
349	23:25:49	Upper Containment	95946.86	82.734	0.0644	29.2336
		Lower Containment	55548.9	83.276	0.0626	29.2373
		Ice Condenser	25571.78	26.091	0.0185	29.2382
		TOTAL	177067.53			
350	23:30:50	Upper Containment	95948.42	82.719	0.0643	29.2332
		Lower Containment	55547.65	83.282	0.0627	29.237
		Ice Condenser	25569.97	26.116	0.0185	29.2376
		TOTAL	177066.04			
351	23:35:50	Upper Containment	95952.84	82.685	0.0644	29.2327
		Lower Containment	55547.68	83.276	0.0626	29.2366
		Ice Condenser	25569.39	26.122	0.0185	29.2373
		TOTAL	177069.92			

APPENDIX F

Verification Analysis Summary

MLR reported during Verification Test (%/day):	0.24346
TTLR reported during Verification Test (%/day):	0.25588
MLR reported during CILRT (%/day):	0.01379
TTLR reported during CILRT (%/day):	0.01923
Imposed Leak (%/day):	0.25154
Maximum Allowable Leak Rate (%/day):	0.25000
MLR Agreement:	-8.7 %
TTLR Agreement:	-6.0 %

APPENDIX G

Penetrations In Service During The CILRT

Penetration	Description	Justification	Leakage Rate Added to 95% UCL
X-26A	Integrated Leak Rate System Pressure containment pressure.	Isolation valves required to be open to monitor	0.0000 SCFH
X-47A	Ice Condenser System	Glycol cooling supply to air handling units in ice condenser required to maintain temperature.	0.0000 SCFH
X-47B	Ice Condenser System	Same as X-47A.	0.0000 SCFH
X-54	Thimble Renewal	Used as pressurization point for air compressors	0.0000 SCFH
X-96A	Integrated Leak Rate	Same as X-26A.	0.0000 SCFH
X-96B	Integrated Leak Rate	Same as X-26A.	0.0000 SCFH
X-114	Ice Condenser System	Glycol return from air handling units required to maintain ice condenser temperature.	0.0000 SCFH
X-115	Ice Condenser System	Same as X-114.	0.0000 SCFH
X-118	Layup Water Treatment	Used as source for verification flow and post-test depressurization.	0.0000 SCFH

APPENDIX H

Calculation of change in CILRT leak rate due to level changes inside containment

P_a conditions are: P = 29.696 psia V = 1,201,500 ft^3 T = 70°F

The amount of mass at P_a is

$$M = \frac{29.696 \text{ psia } (1{,}201{,}500 \text{ ft}^3)\ (144 \text{W}^2/\text{ft}^2)}{(53.35)\ \frac{\text{lbf ft}}{\text{lbm°R}}\ (529.67 \text{ R})}$$

$$= 181{,}821.1593 \text{ lbm}$$

The combined increase in the ARBFEDS AND RBFEDS sump levels was 0.4558 gallons/hour or 1.462 ft^3 over 24 hours.

The increase in the pressurizer level was 2.8264 ft^3/hour or 67.834 ft^3 over 24 hours.

The total increase in level was 69.296 ft^3 over 24 hours.

CILRT average temperature was 76.61607°F
CILRT average pressure was 29.35155 psia
CILRT Containment Volume was 1,201,500 ft^3

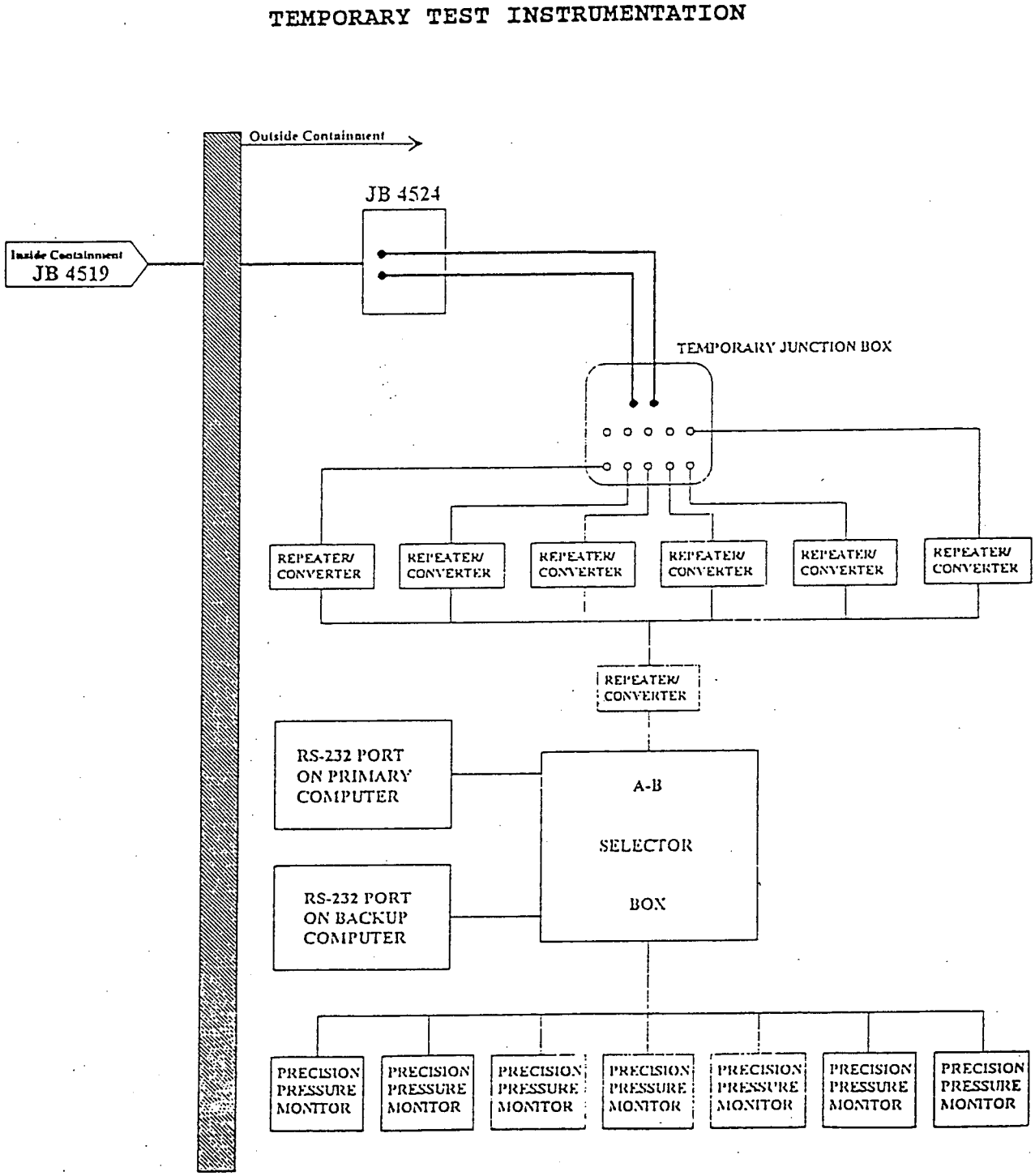
$$\frac{(69.296 \text{ ft}^3)\ 29.35155 \text{ psia})\ (144 \text{ in}^2/\text{ft}^2)}{(53.35)\ \frac{\text{lbf ft}}{\text{lbm°R}}\ (536.28607°\text{R})} = 10.2370 \text{ lbm/day}$$

The increase in leak rate is $\frac{10.2370 \text{ lbm/day} \times 100}{181{,}821.1593} = 0.00563$ %/day

ARBFEDS = Auxiliary Reactor Building Floor and Equipment Drain Sump
RBFEDS = Reactor Building Floor and Equipment Drain Sump

APPENDIX I

Computer System Block Diagram



APPENDIX J

Compartment Parameters and Instrument Location

Compartment Parameters

	Number of Transducers	Segment Volume	Volumetric Weight Per Sensor by Compartment (%)
Temperature			
I. Upper compartment	14	661,000	7.142857
II. Lower compartment	25	383,720	4.000000
III. Ice compartment		(157,500)	
Ice-upper	6	47,000	4.973545
Ice-lower	4	110,500	17.539683
Total	49		
Relative Humidity			
I. Upper compartment	2	661,000	50.000000
II. Lower compartment	3	383,720	33.333333
III. Ice compartment		(157,500)	
Ice-upper	0	47,000	0.000000
Ice-lower	0	110,500	0.000000
Total	5		
Pressure Sensor			
I. Upper compartment	2	661,000	50.000000
II. Lower compartment	2	383,720	50.000000
III. Ice compartment	2	157,500	50.000000
Total	6		

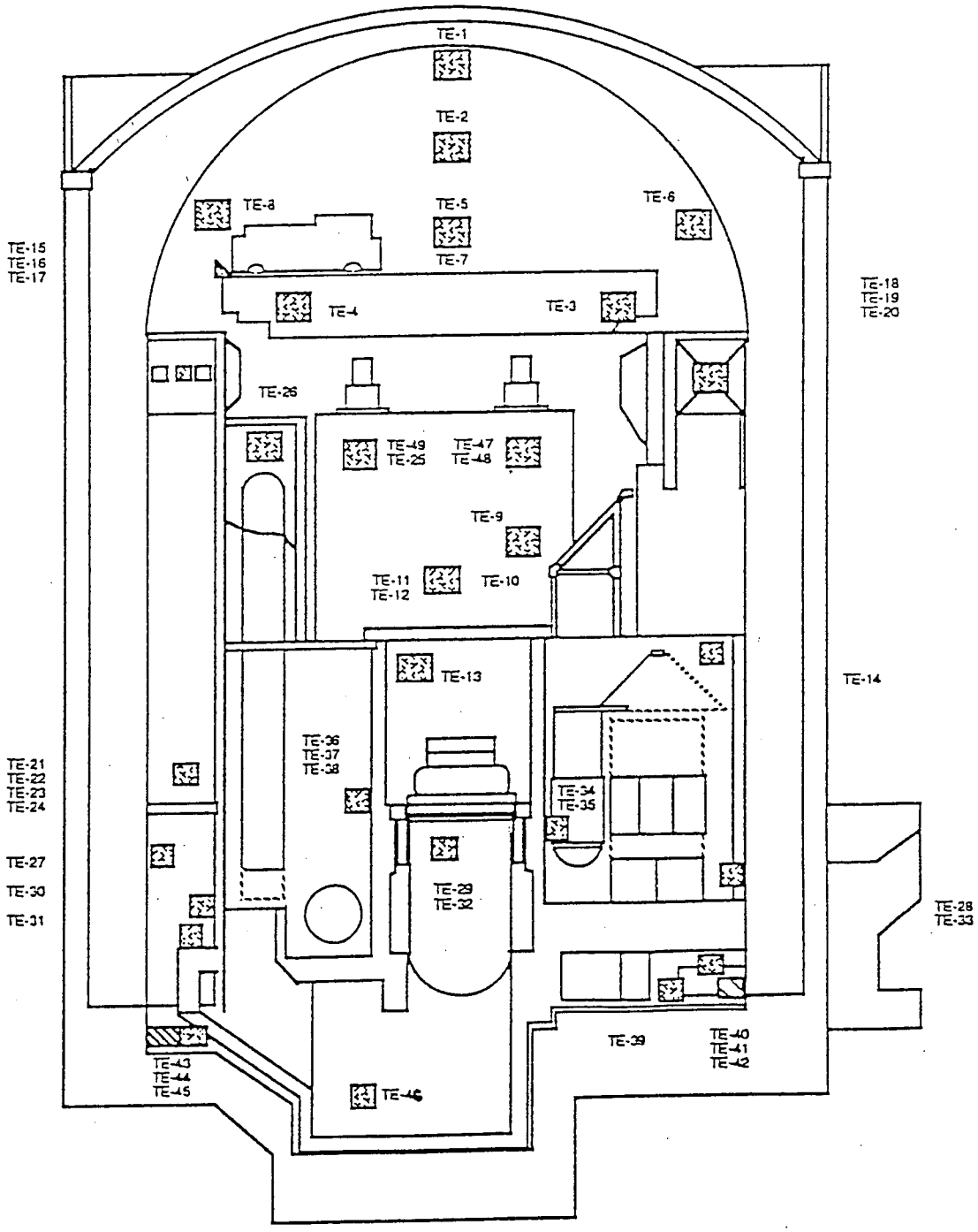
Compartment Volume Weights

Containment Compartment	Segment Volume (ft^3)	Volumetric Weight (%)
I. Upper compartment	661,000	55.014565
II. Lower compartment	383,000	31.876821
III. Ice compartment	157,500	13.108614
Total Containment	1,201,500	100.000000

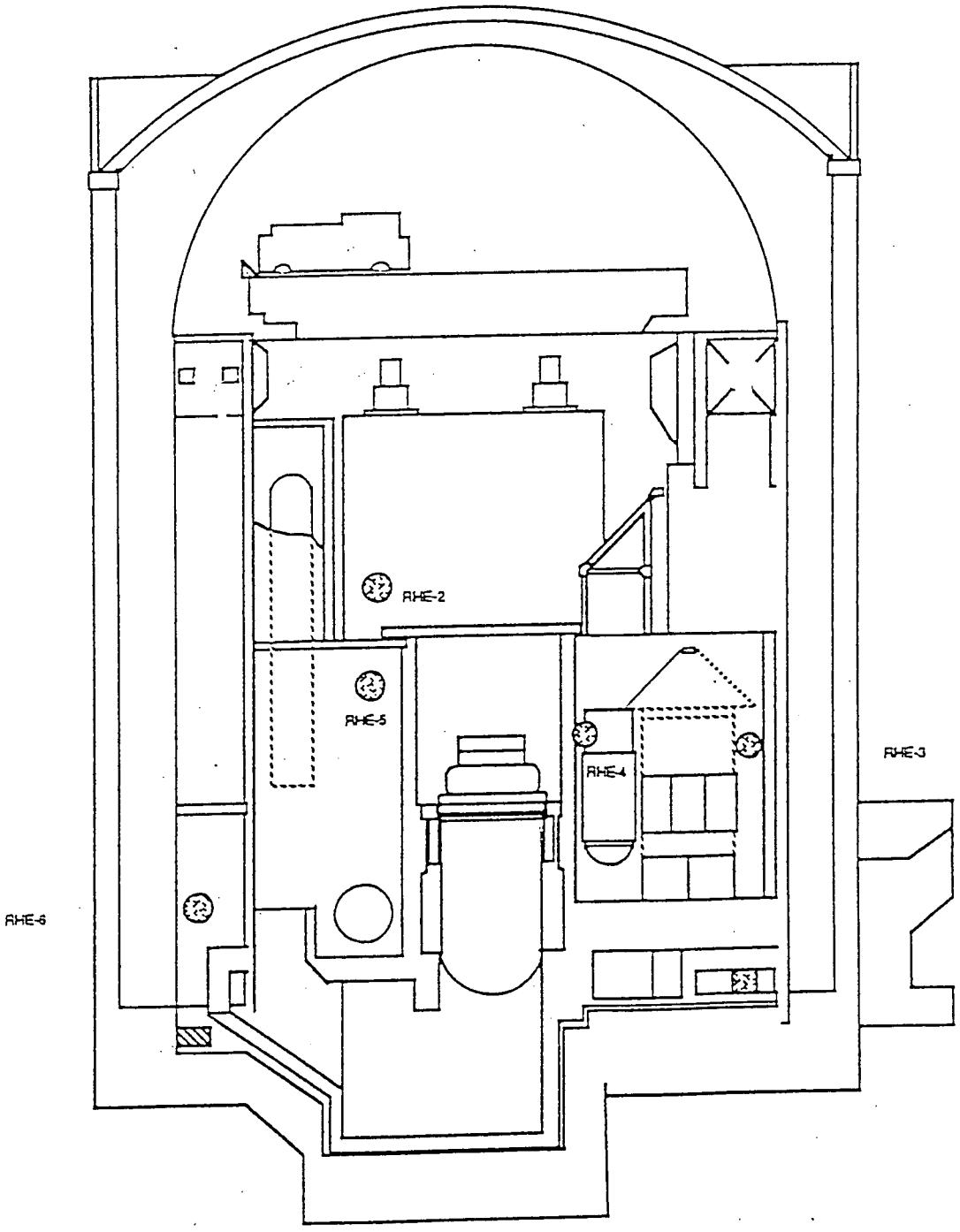
RHE/TE ASSOCIATIONS

RHE Sensor	TE
RHE-2	TE-12
RHE-3	TE-10
RHE-4	TE-34
RHE-5	TE-37
RHE-6	TE-31

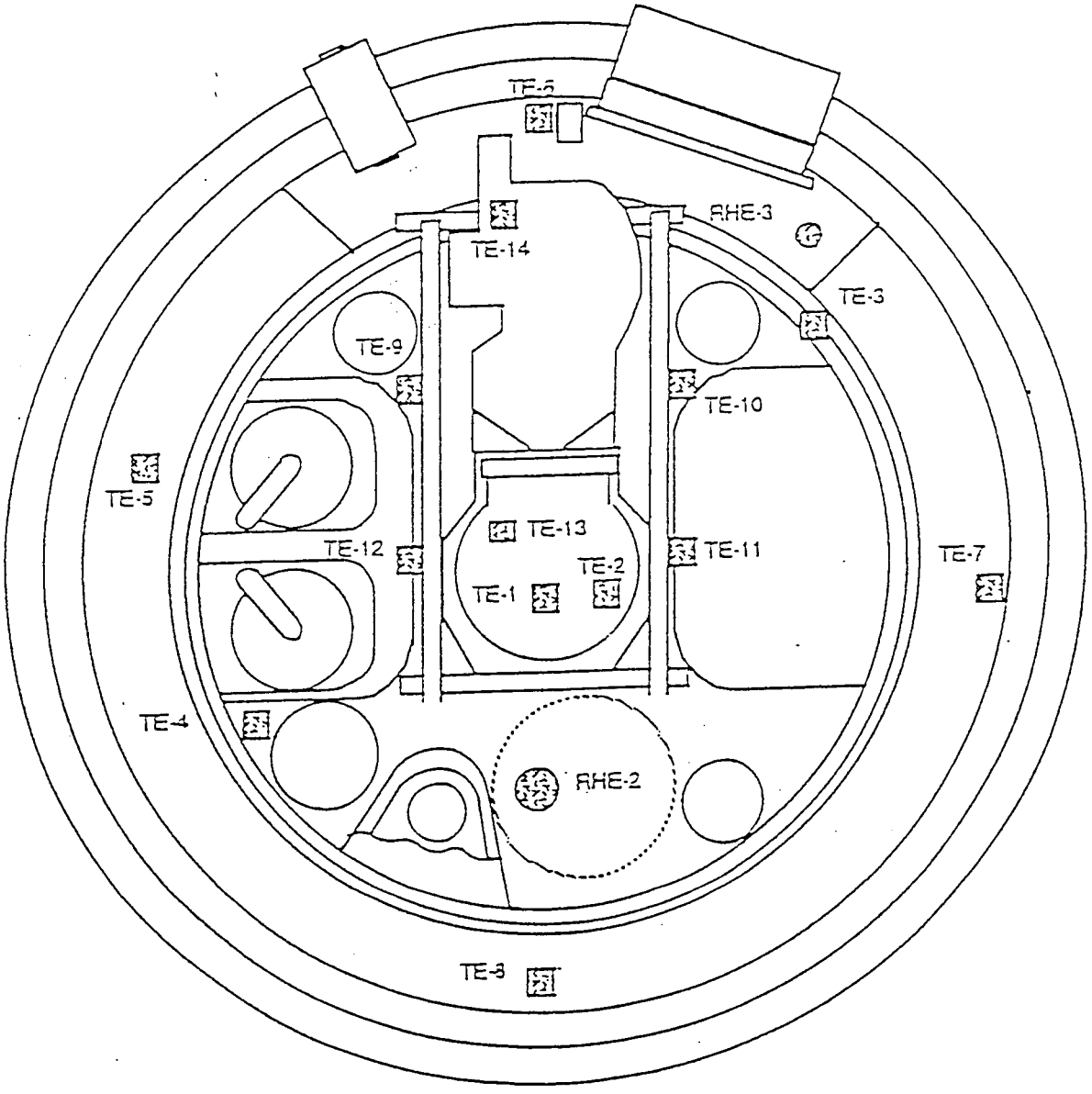
TEMPERATURE SENSOR LOCATIONS (Elevation View)



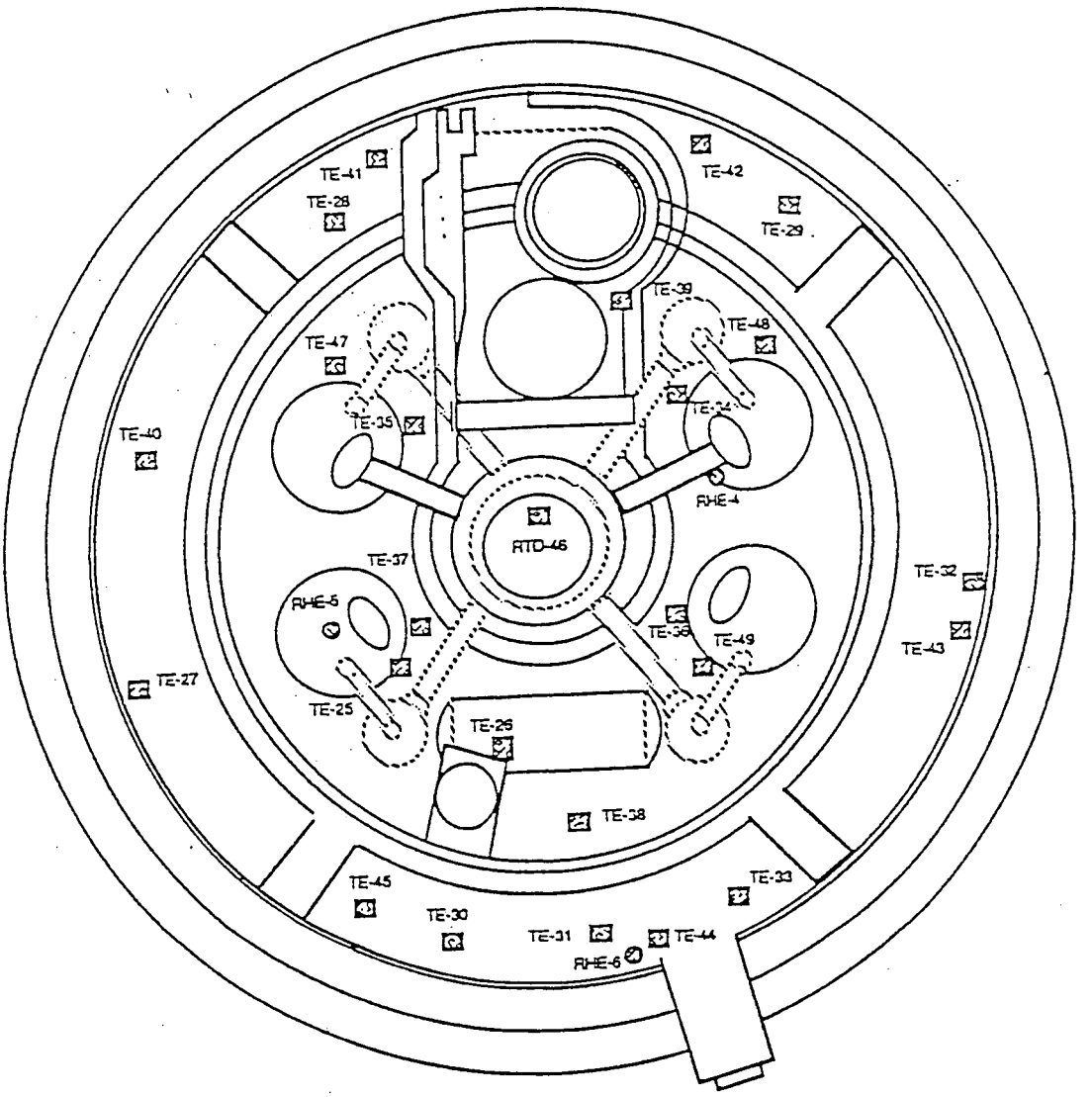
RELATIVE HUMIDITY SENSOR LOCATIONS (Elevation View)



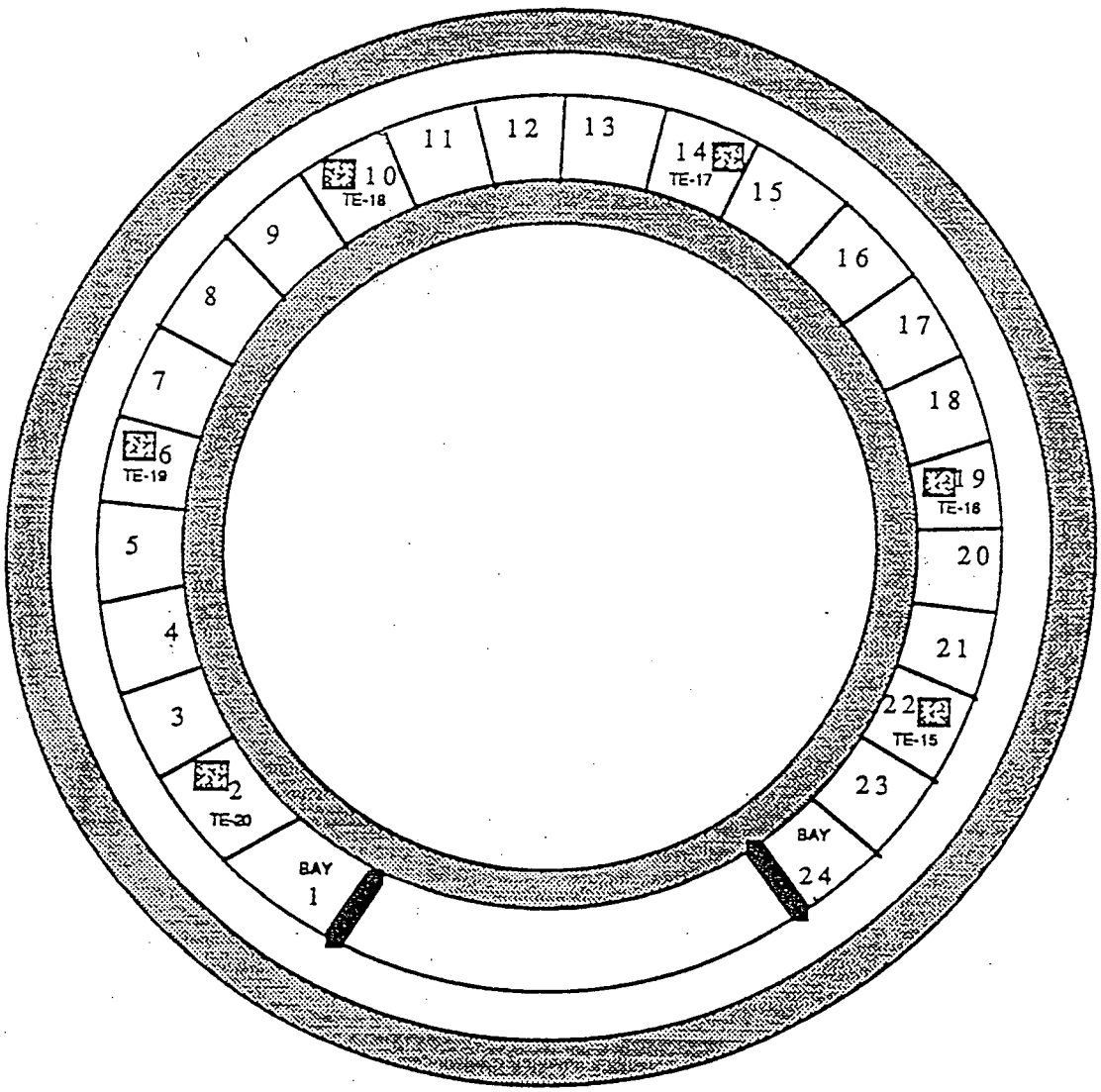
UPPER COMPARTMENT SENSOR LOCATIONS



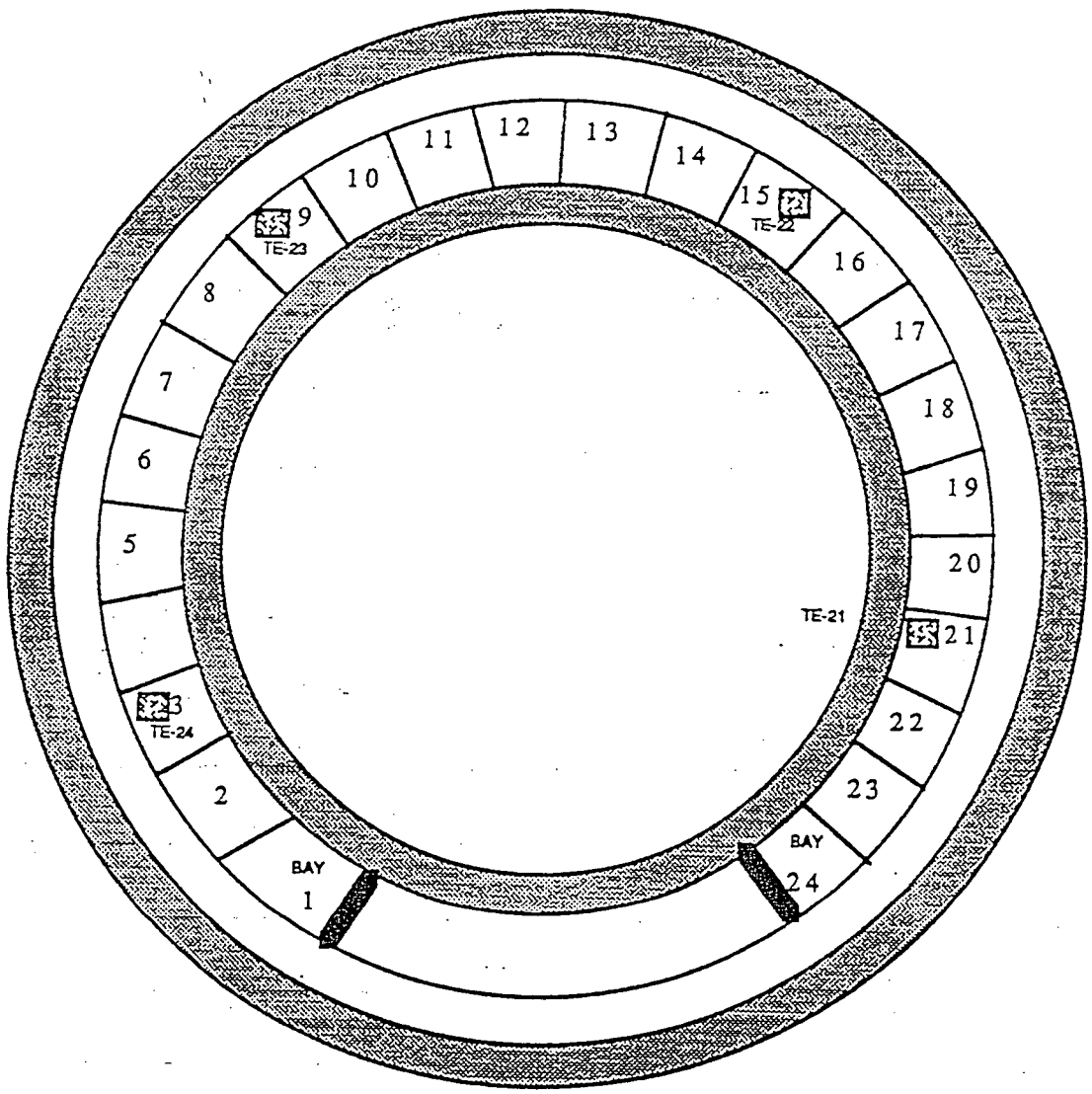
LOWER COMPARTMENT SENSOR LOCATIONS



UPPER ICE SENSOR LOCATIONS



LOWER ICE SENSOR LOCATIONS



APPENDIX K

Instrumentation Specifications

APPENDIX K

Measured Parameter Specification	Manufacturer and Model No.	Number Used	Instrument	
Containment Temperature	Graftel Model No. 9202 LT	49	Range: Accuracy: Repeatability:	0-114°F ±0.24°F 0.01°F
Containment Pressure	Paroscientific Model No. 760-100A	6	Range: Accuracy: Repeatability:	0-100 psia ±0.015% F.S. ±0.005% F.S.
Containment Relative Humidity	Graftel	5	Range: Accuracy: Repeatability:	17-100% RH ±2°F dewpoint ±0.1°F
Verification Flow	Teledyne-Hastings Mass Flow Meter Model AHL 25 with H-3M Transducer	1	Range: Accuracy: Repeatability:	0-5 SCFM ±2% range ±1/2% range
Atmospheric Pressure	Paroscientific Model No. 760-100A	1	Range: Accuracy:	0-100 psia ±0.015% range

APPENDIX L

Summary of Local Leak Rate Tests Conducted Prior to the CILRT

The local leak rate test program was completed prior to the performance of the CILRT with the exception of the water inventory tests required for the Containment Spray and RHR Spray isolation valves (penetrations X- 48A, X-48B, X-49A, and X-49B), and the Hydrogen Analyzer System loop test outside the H_2 Analyzer System isolation valves (penetrations X-92A, X-92B, X-99, and X-100).

The water inventory tests will be performed and any necessary repairs completed by September 30, 1994 to ensure that inventory limits are not exceeded and that penetrations X-48A, X-48B, X-49A, and X-49B do not contribute to the overall containment air leakage. The H_2 Analyzer System loop checks will also be performed and any necessary repairs completed prior to September 30, 1994 to ensure no detectable leakage exists.

A supplemental report containing the final results of these local leak rate tests will be submitted within 30 days of work completion.

Note: All leak rates are given in standard cubic feet per hour

1. IB = Inboard
2. OB = Outboard
3. ISV = Hand Control Valve
4. FCV = Flow Control Valve
5. FSV = Flow Solenoid Valve
6. CKV = Check Valve
7. BYV = Bypass Valve

Bellows

Penetration No.	Name	As Left	Date
X-8A (IB&OB)	Feedwater Bypass	0.0000	02/02/94
X-8B (IB&OB)	Feedwater Bypass	0.0000	02/08/94
X-8C (IB&OB)	Feedwater Bypass	0.0000	02/08/94
X-8D (IB&OB)	Feedwater Bypass	0.0000	02/10/94
X-12A (IB&OB)	Main Feedwater	0.0000	02/21/94
X-12B (IB&OB)	Main Feedwater	0.0000	02/08/94
X-12C (IB&OB)	Main Feedwater	0.0000	02/08/94
X-12D (IB&OB)	Main Feedwater	0.0000	02/10/94
X-13A (IB&OB)	Main Steam	0.0000	02/21/94
X-13B (IB&OB)	Main Steam	0.0000	02/22/94
X-13C (IB&OB)	Main Steam	0.0000	02/22/94
X-13D (IB&OB)	Main Steam	0.0000	02/21/94
X-14A	S/G Blowdown	0.0000	02/02/94
X-14B	S/G Blowdown	0.0000	02/10/94
X-14C	S/G Blowdown	0.0000	02/02/94
X-14D	S/G Blowdown	0.0000	02/10/94

Penetration No.	Name	As Left	Date
X-15	CVCS	0.0000	02/09/94
X-17	RHR Pump Return	0.0000	02/0994
X-20A	Low Head S.I.	0.0000	02/21/94
X-20B	Low Head S.I.	0.0000	02/21/94
X-21	Hot Leg S.I.	0.0000	02/09/94
X-22	BIT Chg. Pump Dischg.	0.0000	02/09/94
X-24	SIS Relief Vlv Dischg.	0.0000	02/09/94
X-30	Accum. to Holdup Tank	0.0000	02/11/94
X-32	High Head SIS	0.0000	02/11/94
X-33	High Head SIS	0.0000	02/11/94
X-45	RCDT and PRT to Vent Header	0.0000	02/11/94
X-46	RCDT Pump Dischg."	0.0000	02/11/94
X-47A	Glycol Return	0.0000	02/22/94
X-47B	Glycol Supply	0.0000	02/22/94
X-81	RCDT to Gas Analyzer	0.0000	02/11/94
X-107	RHR Supply	0.0000	02/11/94
X-108	Maintenance Port	0.0000	02/12/94
X-109	Maintenance Port	0.0000	02/12/94

Resilient Seals

Penetration No.	Name	As Left	Date
X-1	Equipment Hatch	0.0000	06/19/94
X-3	Fuel Transfer Tube	0.0000	02/14/94
X-36	Steam Generator Cleanup	0.0000	02/23/94
X-37	Maintenance Port	0.0000	04/19/94
X-40D	Hydrogen Purge	0.0000	02/25/94
X-54	Thimble Renewal	0.0000	06/16/94
X-79A	Ice Blowing	0.0000	02/22/94
X-79B	Negative Return	0.0000	02/22/94
X-108	Maintenance Port	0.0000	06/16/94
X-109	Maintenance Port	0.0000	06/22/94
X-117	Maintenance Port	0.0000	02/25/94
X-118	Maintenance Port	0.0000	02/24/94

Electrical Penetrations

Penetration No.	Name	As Left	Date
X-121E	RCP 1	0.0000	02/12/94
X-122E	RCP 2	0.0000	02/12/94
X-123E	RCP 3	0.0000	02/12/94
X-124E	RCP 4	0.0000	02/23/94
X-125E	480V Power Non-Div	0.0000	02/23/94
X-126E	480V Power A	0.0000	02/03/94
X-127E	480V Power B	0.0000	02/07/94
X-128E	480V Power A	0.0000	02/14/94
X-129E	480V Power B	0.0000	02/17/94
X-130E	Control Non-Div	0.0000	02/23/94
X-131E	480V Power Non-Div	0.0000	02/23/94
X-132E	Control Rod Drive Power	0.0000	02/14/94
X-133E	Control Rod Drive Power	0.0000	02/14/94
X-134E	480V Power A	0.0000	02/04/94
X-135E	480V Power A	0.0000	02/05/94
X-136E	480V Power B	0.0000	02/05/94
X-137E	480V Power B	0.0000	02/05/94
X-138E	Low Level Non-Div	0.0000	02/03/94
X-139E	Process Instrumentation	0.0000	02/03/94
X-140E	Incore Instrumentation	0.0000	02/24/94
X-141E	480V Power A	0.0000	02/15/94
X-142E	Incore Instrumentation	0.0000	02/04/94

Electrical Penetrations (cont.)

Penetration No.	Name	As Left	Date
X-143E	NIS Channel III	0.0000	03/18/94
X-144E	480V Power Non-Div	0.0000	02/15/94
X-145E	Control Rod Position Indication	0.0000	02/23/94
X-146E	Control Rod Drive Power	0.0000	02/23/94
X-147E	Control A	0.0000	02/03/94
X-148E	Process Inst Control	0.0000	02/04/94
X-149E	Miscellaneous Control	0.0000	02/04/94
X-150E	Miscellaneous Control	0.0000	02/03/94
X-151E	NIS Channel IV	0.0000	02/04/94
X-152E	480V Power Non-Div	0.0000	02/04/94
X-153E	Low Level Non-Div	0.0000	02/07/94
X-154E	Process Inst Control	0.0000	02/05/94
X-155E	480V Power Non-Div	0.0000	02/05/94
X-156E	Control B	0.0000	03/24/94
X-157E	Annunciation	0.0000	02/05/94
X-158E	Process Inst Protection	0.0000	02/07/94
X-159E	Process Inst Control	0.0000	02/14/94
X-160E	Communication	0.0000	02/14/94
X-161E	480V Power Non-Div	0.0000	02/14/94
X-163E	NIS Channel I	0.0000	02/14/94
X-164E	Control A	0.0000	02/14/94

Electrical Penetrations (cont.)

Penetration No.	Name	As Left	Date
X-165E	Process Inst Protection	0.0000	02/14/94
X-166E	Control Non-Div	0.0000	02/05/94
X-167E	480V Power Non-Div	0.0000	02/17/94
X-168E	Control Non-Div	0.0000	02/17/94
X-169E	Process Inst Protection	0.0000	04/12/94
X-170E	Process Inst Control	0.0000	02/17/94
X-171E	Control Non-Div	0.0000	02/04/94
X-172E	Control B	0.0000	02/17/94
X-173E	Control Non-Div	0.0000	02/15/94
X-174E	NIS Channel II	0.0000	02/24/94

Containment Isolation Valves

Penetration No.	Name	As Left	Date
X-4	1-FCV-30-56/57	0.36834	06/16/94
X-5	1-FCV-30-58/59	0.32110	05/25/94
X-6	1-FCV-30-50/51	0.00000	06/15/94
X-7	1-FCV-30-52/53	0.35977	05/27294
X-9A	1-FCV-30-7/8	0.00000	06/13/94
X-9B	1-FCV-30-9/10	0.082844	06/18/94
X-10A	1-FCV-30-14/15	0.95130	05/25/94
X-10B	1-FCV-30-16/17	0.07663	05/25/94
X-11	1-FCV-30-19/20	0.00000	06/11/94
X-15	1-FCV-62-72	0.00000	06/12/94
	1-FCV-62-73	0.00000	06/12/94
	1-FCV-62-74	0.00000	06/12/94
	1-FCV-62-76	0.00000	06/12/94
	1-FCV-62-77	0.00000	06/12/94
	1-RFV-62-662	0.00000	06/12/94
X-23	1-FSV-43-318	0.00000	05/16/94
	1-FSV-43-319	0.00000	05/16/94
X-25A	1-FCV-43-11	0.00000	04/19/94
	1-FCV-43-12	0.00000	04/19/94
X-25D	1-FCV-43-2	0.00000	06/17/94
	1-FCV-43-3	0.00000	06/17/94
X-26A	1-ISV-52-504	0.00000	02/16/94
	1-ISV-52-500	0.00000	02/16/94
X-26B	1-ISV-52-501	0.00000	02/16/94
	1-ISV-52-505	0.00000	02/16/94
X-28	1-FSV-43-341	0.00000	04/14/94
	1-CKV-43-834	0.00000	04/14/94

Containment Isolation Valves (cont.)

Penetration No.	Name	As Left	Date
X-29	1-FCV-70-89	0.00000	06/10/94
	1-FCV-70-92	0.00000	06/10/94
	1-CKV-70-698	0.00000	06/10/94
X-30	1-FCV-63-71	0.00000	06/12/94
	1-FCV-63-84	0.00000	06/23/94
	1-CKV-63-23	0.00000	06/23/94
X-31	1-FCV-26-243	0.00000	06/17/94
	1-CKV-26-1296	0.44960	06/17/94
X-34	1-FCV-32-110	0.00000	06/15/94
	1-BYV-32-288	0.00000	06/15/94
	1-CKV-32-293	0.00000	06/15/94
X-35	1-FCV-70-85	0.00000	06/11/94
	1-RFV-70-703	0.00000	06/11/94
X-39A	1-FCV-63-64	0.00000	06/09/94
	1-CKV-77-868	0.00000	06/09/94
X-39B	1-FCV-68-305	0.00000	06/17/94
	1-CKV-77-849	0.00000	06/17/94
X-41	1-FCV-77-127	0.00000	06/17/94
	1-FCV-77-128	0.00000	06/17/94
X-42	1-FCV-81-12	0.00000	02/26/94
	1-CKV-81-502	0.00000	02/26/94
X-44	1-FCV-62-61	0.00000	03/15/94
	1-FCV-62-63	0.00000	03/15/94
	1-CKV-62-639	0.00000	03/15/94
X-45	1-FCV-77-18	0.00000	06/21/94
	1-FCV-77-19	0.00000	06/21/94
	1-FCV-77-20	0.00000	06/21/94
X-46	1-FCV-77-9	0.00000	06/20/94
	1-FCV-77-10	0.00000	06/20/94
	1-ISV-84-530	0.00000	06/20/94

Containment Isolation Valves (cont.)

Penetration No.	Name	As Left	Date
X-47A	1-FCV-61-191	0.00000	05/07/94
	1-FCV-61-192	0.00000	05/07/94
	1-CKV-61-533	0.00000	05/07/94
X-47B	1-FCV-61-193	0.00000	05/07/94
	1-FCV-61-194	0.00000	05/07/94
	1-CKV-61-680	0.00000	05/07/94
X-50A	1-FCV-70-87	0.00000	06/10/94
	1-FCV-70-90	0.00000	06/10/94
	1-CKV-70-687	0.00000	06/10/94
X-50B	1-CKV-70-679	0.00000	06/10/94
	1-FCV-70-134	0.00000	06/17/94
X-52	1-FCV-70-140	0.00000	06/10/94
	1-FCV-70-100	0.00000	06/10/94
	1-CKV-70-790	0.00000	06/10/94
X-53	1-FCV-70-143	0.00000	06/10/94
X-56A	1-FCV-67-107	0.00000	03/04/94
	1-FCV-67-113	0.00000	03/04/94
	1-CKV-67-1054D	0.00000	03/04/94
X-57A	1-FCV-67-111	0.14820	03/04/94
	1-FCV-67-112	0.00000	03/04/94
	1-CKV-67-575D	0.00000	03/04/94
X-58A	1-FCV-67-83	0.00000	03/03/94
	1-FCV-67-89	0.00000	03/03/94
	1-CKV-67-1054A	0.00000	03/03/94
X-59A	1-FCV-67-87	0.00000	03/03/94
	1-FCV-67-88	0.00000	03/03/94
	1-CKV-67-575A	0.00000	03/03/94
X-60A	1-FCV-67-99	0.00000	03/04/94
	1-FCV-67-105	0.00000	03/04/94
	1-CKV-67-1054B	0.00000	03/04/94

Containment Isolation Valves (cont.)

Penetration No.	Name	As Left	Date
X-61A	1-FCV-67-103	0.00000	03/05/94
	1-FCV-67-104	0.00000	03/05/94
	1-CKV-67-575B	0.00000	03/05/94
X-62A	1-FCV-67-91	0.00000	03/05/94
	1-FCV-67-97	0.00000	03/05/94
	1-CKV-67-1054C	0.00000	03/05/94
X-63A	1-FCV-67-95	0.00000	06/19/94
	1-FCV-67-96	0.00000	06/19/94
	1-CKV-67-575C	0.00000	06/19/94
X-64	1-FCV-31-305	0.00000	03/26/94
	1-FCV-31-306	0.00000	03/26/94
	1-CKV-31-3421	0.00000	03/26/94
X-65	1-FCV-31-308	0.00000	03/27/94
	1-FCV-31-309	0.00000	03/27/94
	1-CKV-31-3407	0.00000	03/27/94
X-66	1-FCV-31-326	0.00000	04/25/94
	1-FCV-31-327	0.00000	04/25/94
	1-CKV-31-3392	0.00000	04/25/94
X-67	1-FCV-31-329	0.00000	04/25/94
	1-FCV-31-330	0.00000	04/25/94
	1-CKV-31-3378	0.00000	04/25/94
X-68	1-FCV-67-141	0.00000	03/06/94
	1-CKV-67-580D	0.00000	03/06/94
X-69	1-FCV-67-130	0.00000	03/10/94
	1-CKV-67-580A	0.00000	03/10/94
X-70	1-FCV-67-139	0.00000	03/06/94
	1-FCV-67-297	0.00000	03/06/94
	1-CKV-67-585B	0.00000	03/06/94
X-71	1-FCV-67-134	0.00000	03/08/94
	1-FCV-67-296	0.00000	03/08/94
	1-CKV-67-585C	0.00000	03/08/94

Containment Isolation Valves (cont.)

Penetration No.	Name	As Left	Date
X-72	1-FCV-67-142	0.00000	03/06/94
	1-FCV-67-298	0.00000	03/06/94
	1-CKV-67-585D	0.00000	03/06/94
X-73	1-FCV-67-131	0.00000	03/10/94
	1-FCV-67-295	0.00000	03/10/94
	1-CKV-67-585A	0.00000	03/10/94
X-74	1-FCV-67-138	0.00000	03/06/94
	1-CKV-67-580B	0.00000	03/06/94
X-75	1-FCV-67-133	0.00000	03/08/94
	1-CKV-67-580C	0.00000	03/08/94
X-76	1-ISV-33-713	0.00000	05/06/94
	1-ISV-33-714	0.00000	05/06/94
X-77	1-ISV-59-522	0.00000	03/24/94
	1-ISV-59-698	0.00000	03/24/94
X-78	1-FCV-26-240	0.00000	06/15/94
	1-CKV-26-1260	0.00000	06/15/94
X-80	1-FCV-30-37/40	0.12899	05/18/94
X-81	1-FCV-77-16	0.00000	06/16/94
	1-FCV-77-17	0.00000	06/16/94
X-82	1-ISV-78-560	0.00000	03/01/94
	1-ISV-78-561	0.00000	03/01/94
X-83	1-ISV-78-557	0.00000	03/09/94
	1-ISV-78-558	0.00000	03/09/94
X-84A	1-FCV-68-307	0.04818	06/15/94
	1-FCV-68-308	0.00000	06/15/94
X-85A	1-FCV-43-75	0.00000	04/14/94
	1-FCV-43-77	0.00000	04/14/94
X-85B	1-FCV-43-22	0.00000	06/17/94
	1-FCV-43-23	0.00000	06/17/94

Containment Isolation Valves (cont.)

Penetration No.	Name	As Left	Date
X-86A	1-FSV-43-287	0.00000	06/20/94
	1-FSV-43-288	0.00000	05/12/94
X-86B	1-CKV-43-883	0.00000	05/03/94
	1-FSV-43-307	0.00000	05/03/94
X-86C	1-CKV-43-841	0.13568	06/10/94
	1-FSV-43-342	0.00000	06/10/94
X-90	1-FCV-32-102	0.00000	06/14/94
	1-BYV-32-308	0.00000	06/14/94
	1-CKV-32-313	0.00000	06/14/94
X-91	1-FCV-32-80	0.00000	06/14/94
	1-BYV-32-298	0.00000	06/14/94
	1-CKV-32-303	0.00000	06/18/94
X-92A	1-FCV-43-207	0.00000	06/08/94
	1-FCV-43-435	0.00000	06/08/94
X-92B	1-FCV-43-208	0.03725	06/20/94
	1-FCV-43-436	0.00000	06/08/94
X-92C	1-FSV-43-250	0.00000	04/15/94
	1-FSV-43-251	0.00000	06/11/94
X-93	1-FCV-43-34	0.00000	04/19/94
	1-FCV-43-35	0.00000	04/19/94
X-94B	1-FCV-90-110	0.00000	06/22/94
	1-FCV-90-111	0.00000	06/22/94
X-94C	1-FCV-90-107	0.00000	05/15/94
	1-FCV-90-108	0.00000	05/15/94
	1-FCV-90-109	0.00000	05/15/94
X-95B	1-FCV-90-116	0.00000	05/15/94
	1-FCV-90-117	0.00000	05/15/94
X-95C	1-FCV-90-113	0.00000	05/18/94
	1-FCV-90-114	0.00000	05/18/94
	1-FCV-90-115	0.00000	05/18/94

Containment Isolation Valves (cont.)

Penetration No.	Name	As Left	Date
X-96A	1-ISV-52-506	0.00000	02/16/94
	1-ISV-52-502	0.00000	02/16/94
X-96B	1-ISV-52-507	0.00000	02/16/94
	1-ISV-52-503	0.00000	02/16/94
X-97	1-FSV-30-134	0.00000	05/28/94
	1-FSV-30-135	0.00000	05/28/94
X-99	1-FCV-43-202	0.00000	06/08/94
	1-FCV-43-434	0.06322	06/08/94
X-100	1-FCV-43-201	0.00000	06/08/94
	1-FCV-43-433	0.00000	06/08/94
X-105	1-FSV-43-325	0.00000	06/09/94
	1-CKV-43-884	0.00000	06/09/94
X-106	1-FSV-43-310	0.00000	06/20/94
	1-FSV-43-309	0.00000	06/20/94
X-114	1-FCV-61-110	0.00000	05/04/94
	1-FCV-61-122	0.00000	05/04/94
	1-CKV-61-745	0.00000	05/04/94
X-115	1-FCV-61-96	0.00000	05/04/94
	1-FCV-61-97	0.00000	05/04/94
	1-CKV-61-692	0.00000	05/04/94

Personnel Air Locks

Penetration No.	Name	As Left	Date
X-2A	Lower Air Lock	7.00000	06/18/94
X-2B	Upper Air Lock	7.00000	06/18/94

Closed Systems Outside Containment

Penetration No.	Name	As Left	Date
X-99/100	A Train H_2 Analyzer	Later	
X-92A/92B	B Train H_2 Analyzer	Later	

Water Inventory Tests

Penetration No.	Name	As Left	Date
X-48A	1-FCV-72-39	Later	
X-48B	1-FCV-72-2	Later	
X-49A	1-FCV-72-40	Later	
X-49B	1-FCV-72-41	Later	

ENCLOSURE 2

LIST OF COMMITMENTS

1. TVA will perform leak rate testing (water inventory tests) required for the containment spray and residual heat removal (RHR) spray isolation valves, and leak rate testing for the hydrogen analyzer system loop test outside the hydrogen analyzer isolation valves. TVA anticipates these tests will be performed and any necessary repairs completed by September 30, 1994, to ensure leakage is within acceptable limits.

2. A supplemental report containing the final results of these local leak rate tests will be submitted to NRC within 30 days of work completion.

ENCLOSURE 1

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2

SEVERE ACCIDENT MITIGATION DESIGN ALTERNATIVE

RESPONSE TO NRC'S REQUEST FOR ADDITIONAL INFORMATION

OCTOBER 7, 1994