

Regulatory Docket File

FLORIDA POWER & LIGHT COMPANY
ST. LUCIE NUCLEAR POWER STATION
UNIT NO. 1

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REACTOR CONTAINMENT BUILDING
INTEGRATED LEAK RATE TEST

SUMMARY TECHNICAL REPORT

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I. INTRODUCTION

A series of two Type A integrated leakage rate tests were performed on the containment structure of the Florida Power & Light Company, St. Lucie Nuclear Power Station - Unit No. 1 pressurized water reactor in June and July of 1975 utilizing the "Absolute Method" of testing. One test was performed at the reduced pressure test (P_t) which is defined as not less than 50% of the calculated peak accident pressure. The purpose of this test was to obtain a measured leakage rate (L_{tm}) to be used in determining an extrapolation factor should a reduced pressure test program be elected for future testing. The second test was performed at the calculated peak accident pressure (P_a) to verify that the measured leakage rate (L_{am}) was less than the maximum design leakage rate (L_a) of 0.5 weight percent per 24 hours.

Although the original test pressure for P_a as specified in preoperational test procedure number 1300080 - Integrated Leak Rate Test was 44.0 psig, this value was later reduced for test purposes to 42.0 psig as discussed on page 8 (description of Tests) of this report. However, P_a as defined in 10CFR50, Appendix J, is the calculated peak containment internal pressure related to the design basis accident and specified in the technical specification. This corresponds to a value of 39.6 psig for this unit. As a result, for the purpose of this report and correlation to subsequent periodic tests, P_a is equivalent to 39.6 psig and P_t is equivalent to or greater than 19.8 psig. It should also be noted that atmospheric pressure is assumed to be 14.65 psia for all calculations.

This report describes and presents the results of these two Type A leakage rate tests including the supplemental test method utilized for verification.

II. SUMMARY

An initial series of construction tests were satisfactorily performed during April 1972 on the completed containment structure shell. These tests were performed on the bare structure with all penetrations blanked-off. The results of these tests fulfilled a contractual agreement between Chicago Bridge & Iron (the fabricator) and Ebasco Services Incorporated for a leakage rate of equal to or less than 0.2%/day by weight at test pressure. The leakage rate was determined by the "Reference System Method" which consisted of measuring the pressure differential between the containment vessel air and that of a "Reference System" within the containment vessel. During this same period, the overpressure test was also satisfactorily performed. Following the initial bare containment leakage rate tests, all penetrations and associated systems were installed. Upon completion of all systems penetrating the primary containment (up to and including external containment isolation valves), the containment was ready for the preoperational leakage rate tests. All Type "B" and "C" tests were satisfactorily performed and repairs and corrections were made where necessary. All deviations are listed in section 13.0 of Appendix B.

At the start of the test, all valves were to be in their normal position for accident conditions. Exceptions to this valve lineup were noted during this test and are also listed in Section 13.0 of Appendix B. The measured total-time simple leakage rates were 0.016%/day at 22.83 psig (total containment pressure at start of test) and 0.025%/day at 43.06 psig (total containment pressure at start of test). The measured total-time least squares statistical fit leakage rates were 0.008%/day at 22.83 psig and 0.069%/day at 43.06 psig.

III. TEST DISCUSSION

A. Description of Containment

The free standing containment vessel is 140'Ø x 232' 4 3/4" high with a cylindrical steel shell 1.903" thick, a 0.95" thick hemispherical dome with a 1.903" thick ellipsoidal bottom and a 2 1/4" thick knuckle. The vessel is constructed of ASME SA 516 GR 70 carbon steel plate and has a calculated free air volume of 2,500,000 cubic feet. The structure includes one personnel airlock, one emergency escape lock, one fuel transfer tube, one maintenance hatch and one 28'Ø equipment hatch. A circular polar crane runway girder and crane rail were designed integrally with the vessel wall.

The vessel was designed and constructed in accordance with the rules of Section III of ASME symbol for a design internal containment pressure of 39.6 psig at a temperature of 264F.

B. Description of Instrumentation

The containment system was equipped with instrumentation to permit leakage rate determination by the "Absolute Method". Utilizing this method, the actual mass of dry air within the containment is calculated. The leakage rate becomes the time rate of change of this value. The mass of air (Q) is calculated according to the Perfect Gas Law as follows (reference Section 2.1.2 of Appendix B for additional information):

$$Q = \frac{P_a V}{RT}$$

where: P_a = air partial pressure
 V = free volume
 R = gas constant
 T = temperature

The parameters required are temperature, humidity and pressure. The location of the instrumentation is shown in Figures 1 and 2.

1. Temperature Instrumentation

The containment was equipped with 40 precision RTD's. The accuracy of these detectors is within $\pm 0.2^\circ\text{F}$ over the specified 200°F span and $\pm 0.5^\circ\text{F}$ over the remainder.

2. Humidity Instrumentation

The containment was equipped with 10 RHD's. The accuracy of these detectors is $\pm 2.5\%$ relative humidity for a 0-100% relative humidity excursion.

3. Pressure Instrumentation

The containment pressure was sensed by a 120 inch large bore U tube servomanometer. One leg is connected to the containment and the other leg is connected to a vacuum system to provide an absolute pressure signal. The accuracy of this instrument is ± 0.005 inches of mercury.

4. Numatron (Digital Voltmeter)

A L&N digital voltmeter (Numatron) was utilized to obtain direct readout temperature and humidity data. This instrument has an accuracy of ± 0.01 millivolt. In the case of humidity readouts, this error is insignificant. In the case of temperature, due to utilization of a resistance bridge circuit, the error contributes an additional $\pm 0.1^\circ\text{F}$. Consequently, the temperature loop error is equivalent to 0.3°F , the humidity loop error is equivalent to 2.5% and the pressure loop error is equivalent to 0.002 psia. Additional information concerning all instrumentation may be found in section 5.0 of Appendix B.



C. Description of Computer Program

Throughout the test, temperatures, humidities and pressure were monitored. These data were used to compute the leak rate from the perfect gas law using either the point-to-point or total-time method. Leak rate predictions and estimates of error were provided by first order linear regression over the test duration of 24 hours. Further, the sensitivity to sensor accuracy was computed to demonstrate that the test had met the minimum allowable leakage rates within statistical error bounds.

All data were manually entered using a Texas Instrument 700 terminal at 15 minute intervals. A weighted average temperature was computed according to the fraction of the total free containment volume each RTD sensed. A weighted average partial pressure was also computed according to the fraction of the total free containment volume each RHD sensed by utilizing "built-in" computer saturation tables. Data were verified by requesting a tabular listing with actual sensor values and other computed values listed in tables or plotted as requested. Prior to actual test performance, RTD #5 was deleted as a result of this sensor malfunctioning. At 1740 6-28-75, RHD #8 was deleted as well as RTD #40 which was deleted at 0845 7-1-75. When these sensors were deleted, the volumetric fractions were updated by the computer and future calculations deleted this sensor. As a result, it was no longer necessary to input a value for these deleted instruments.

Information on the progress of the test was retrieved and listed in tables or graphical form upon request. Raw sensor data and computed variables, such as single leak rates, average temperatures, vapor pressures, point-to-point, and total-time statistical leak rates were evaluated in these forms. Appendix A contains graphs of major variables, statistical

and simple leak rate results, instrument error analysis, tabular listings of both major variables and raw input data, and certain appropriate notes which fully describe the ILRT and CLRT.

It should also be noted that this program has been verified extensively against previously performed ILRT's as well as concurrently, during actual test performance, by utilizing a desk calculator. All data have been in exact agreement.

D. Error Analysis

Although maximum instrument loop errors are determined prior to the ILRT to ensure the reliability of the measured data, the effect of instrument inaccuracies is computed following the ILRT and CLRT to reflect actual test conditions. Total instrument error reported is established by the likelihood that additive errors will not exceed 95% confidence limits. Contribution to the reported instrument error is an additive function of the loop errors for temperature, humidity and pressure sensors, and the initial test average variables for the first set of data recorded by either the ILRT or CLRT. In addition, a statistical measure of the goodness of fit of the first order regression is reported as a function of test duration; in particular, this provides regression errors which diminish significantly as the amount of collected data increases.

E. Description of Tests

The initial Integrated Leak Rate Test (ILRT) was completed with satisfactory results on July 5, 1975. Interpretation and final analysis of test data show results well within the specified limits for this containment as delineated in section V of this report.

The containment was made ready for the integrated leakage rate tests with pressurization commencing at 0220 6-28-75. Pressurization was



accomplished by utilizing seven (7) mobile air compressors with an individual capacity of 1600 scfm each or a total capacity of 11,200 scfm. Only five (5) of the seven (7) compressors were utilized continuously during pressurization due to limiting chiller-dryer unit capacity (8600 scfm) and resultant air quality. These units were connected to the containment as shown in Figure 3. As a result of multiple tube failures experienced on the aftercoolers immediately prior to the ILRT, these units were not in service as such during these tests. Instead, the tube bundles were removed with the shells packed with ice during periods of pressurization. Additional information concerning this equipment may be found in section 7.0 of Appendix B.

At 0300 at approximately 1.0 psig, pressurization was secured for containment entry to open the isolation valves at penetrations 52D and E for the pressure indicating equipment as discussed in section 13 of Appendix B. Pressurization recommenced at 0321 with the pressurization station secured at 0640 at approximately 10.1 psig for containment entry and inspection which occurred at 0655. Following satisfactory completion of this inspection at 0825 with minor leaks corrected, pressurization recommenced at 1018. At 1540 with an indicated containment pressure of approximately 23.0 psig (76.830 inches Hg abs.), pressurization was secured with initiation of the external leak survey. At approximately 0100 6-29-75, the containment spray vents outside containment were found leaking and were closed and blanked. At approximately 0300 the drain valves on the pump side of the LPSI and HPSI check valves were found leaking and were closed. These closures did not violate ILRT nor valve line-up intent.

Between the hours of approximately 0930 and 1700, several problems were experienced due to loss of computer, concentrator or telephone lines. Although some time was lost as result, redundancy was provided in all these areas.

At approximately 0400 6-30-75, it was determined that excessive leakage (greater than 0.5%/day by weight) did exist. Continued leak surveys revealed air was exhausting from the main steam drain valves. As a result, depressurization to less than 14.3 psig commenced at 0715 to facilitate containment entry. At 1042 at less than 14.0 psig in containment, an internal inspection was made which revealed that steam generator "B" secondary manway was not properly torqued resulting in excessive audible leakage. As a result, all four (4) manways and hand holes were torqued or torque-checked. An additional leak was found at penetration 45 (containment to annulus differential pressure sensing line) due to its equalizer valve being inadvertently left open. Subsequent closure stopped this leak as well. At 1530 the containment was isolated following satisfactory completion of repairs. However, between the hours of 1900 and 2230 a severe thunderstorm resulted in a construction power blackout due to lightning and subsequent loss of compressors. At 0200 7-1-75, with partial construction power restored, pressurization recommenced with approximately 23.0 psig (76.7985 inches Hg. abs.) achieved at 0641. The leak survey remained in progress during this period, with leaks detected and repaired in the high pressure rotameter supply piping and the electromanometer instrument tubing. Stabilization was achieved with time zero commencing at 1400 7-1-75, and ending at 1400 7-2-75. The official Controlled Leakage Rate Test (CLRT) commenced at 1700 and was conducted for a period of 3 1/4 hours ending at 2015 at an average corrected flow rate of 6.40 scfm at 22.68 psig (although a previous CLRT was initiated, it was negated due to an incorrect rotameter setting of 7.5 scfm).

Pressurization to Pa commenced at 0030 7-3-75. During this period,

it was verified that the electromanometer could not exceed 118.250 inches Hg. abs. As a result, Pa was reduced to 42.0 psig. Pressurization continued at a rate less than the planned 4 to 6 psi/hour due to malfunctioning of one of the two chiller-dryer units, thus limiting total flow. At 1259 pressurization was secured at approximately 43.0 psig (117.250 inches Hg. abs.). At 1540 pressure was increased to approximately 43.0 psig (118.000 inches Hg. abs.) due to temperature decay and resultant pressure decrease and to assure containment pressure remained above 42.0 psig. This was achieved at 1655 with stabilization achieved and time zero commencing at 2200. Although minor problems were experienced due to computer system noise during this period, all problems were satisfactorily corrected with the CLRT commencing at 2200 7-4-75. This test was conducted for a seven (7) hour period ending at 0500 7-5-75 at an average corrected flowrate of 9.44 scfm at 42.79 psig. The containment circulating fans were then secured with depressurization commencing at 0630 and 0 psig achieved at 1730 followed by a containment air sample and entry for inspection. The internal survey revealed several light bulbs were broken with some hydraulic oil from the polar crane observed on the 62' elevation.

Prior to performing the ILRT, a Local Leakage Rate Test (LLRT) was performed to verify containment integrity. Type B and C local leakage rate tests were performed on containment electrical penetrations, mechanical penetrations, piping system isolation valves which become part of the containment boundary under accident conditions, the fuel transfer tube, the personnel access lock, the emergency escape lock, and the equipment hatch. The acceptance criteria for the LLRT is that the total leakage

from all local leakage rate tests shall not exceed 60% of the maximum allowable leakage (L_a) at test conditions. The total leakage from Type B and C tests was well within these limits and is presented in preoperational test procedure number 1300082 - Local Leakage Rate Test. Penetrations 51 (H_2 Sampling) and 52C (Radiation Monitoring) had valves blanked during the ILRT due to excessive leakage. These penetrations have since received local leakage rate tests following repair with zero leakage detected (reference section 13.0 of Appendix B).

IV. RESULTS AND VERIFICATION

A. Reduced Pressure Test (P_t) at 19.8 psig

The reduced pressure test was conducted for a period of 24 hours starting at 22.83 psig with a total of 97 samples or data sets taken. This test followed a stabilization period of approximately seven (7) hours. The results of a computed total-time least squares statistical fit of all data revealed a leakage rate of 0.008%/day by weight or a total-time simple leakage rate of 0.016%/day by weight. For the purposes of this test at P_t , the total-time simple leakage rate shall be utilized not only for conservatism, but due to comparison to the CLRT data which are of much shorter duration. Since the least squares statistical fit of the first order regression is a function of test duration, the regression errors during the CLRT are high. This total-time simple leak rate corresponds to an initial containment air weight of 453,802 pounds and a final containment air weight of 453,728 pounds or a loss of 74 pounds. Instrument error for this test contributes $\pm 0.0948\%$ /day.

Following satisfactory completion of the ILRT at P_t , a 3 1/4 hour verification test or CLRT was performed. This test was conducted by superimposing a known leak of 6.40 scfm at 22.68 psig which corresponds to a leakage rate of 0.148%/day by weight. Consequently, L_{tm} plus the superimposed leak equal 0.164%/day by weight. The measure total-time simple leak was 0.170%/day by weight ($0.023 \times \frac{24 \text{ hrs}}{3.25 \text{ hrs}} = 0.170$; reference Appendix A, section 2.). This corresponds to an initial containment air weight of 453,622 pounds and a final containment air weight of 453,518 or a loss of 104 pounds. Instrument error for this test contributes $\pm 0.0938\%$ /day.

B. Peak Pressure Test (P_a) at 39.6 psig

The peak pressure test was conducted for a period of 24 hours starting at 43.06 psig with a total of 97 samples or data sets taken. This test was preceded by a stabilization period of approximately six (6) hours. The results of a computed total-time least squares statistical fit of all data revealed a leakage rate of 0.069%/day by weight or a total-time simple leakage rate of 0.025%/day by weight. This total-time simple leak rate which shall be utilized for P_a , corresponds to an initial containment air weight of 702,022 pounds and a final containment air weight of 701,845 pounds or a loss of 177 pounds. Instrument error for this test contributes $\pm 0.0856\%/day$.

Following satisfactory completion of the ILRT at P_a , a seven (7) hour verification test or CLRT was performed. This test was conducted by superimposing a known leak rate of 9.44 scfm at 42.79 psig which corresponds to a leakage rate of 0.139%/day by weight. Consequently, L_{am} plus the superimposed leak equal 0.164%/day by weight. The measured total-time simple leak was 0.206%/day by weight ($0.06 \times \frac{24 \text{ hrs}}{7 \text{ hrs}} = 0.206$, reference Appendix A, section 4.). This corresponds to an initial containment air weight of 701,845 pounds and a final containment air weight of 701,424 pounds or a loss of 421 pounds. Instrument error for this test contributes $\pm 0.0851\%/day$.

V. CONCLUSIONS

Both the 39.6 psig and the 19.8 psig integrated leakage rate tests provided acceptable results as evidenced by the computer printout and graphs in Appendix A of this report. These leakage rates are well within the specified limits. These limits are as follows:

1. The maximum design leakage rate (L_a) shall not exceed 0.5%/day by weight. The maximum allowable operational leak rate shall not exceed $0.75 L_a$ or 0.375%/day by weight.

2. The maximum allowable retest leakage rate (L_t) shall be the lesser of:

$$a. L_t = L_a \left(\frac{L_{tm}}{L_{am}} \right) \text{ or } L_t = L_a \left(\frac{P_t}{P_a} \right)^{1/2}$$

where, L_m = measured leakage rate

P_t = retest pressure, 19.8 psig

P_a = peak accident pressure, 39.6 psig

3. The maximum allowable operational leak rate (L_{to}) which shall be met prior to resumption of power operation shall not exceed $0.75 L_t$.

These tests have provided the following results:

1. $L_{tm} = 0.016\%/day$
2. $L_{am} = 0.025\%/day$

As a result, L_t shall be equal to the lesser of:

$$1. L_t = L_a \left(\frac{L_{tm}}{L_{am}} \right) = 0.5 \left(\frac{0.016}{0.025} \right) = 0.320$$

or

$$2. L_t = L_a \left(\frac{P_t}{P_a} \right)^{1/2} = 0.5 \left(\frac{19.8}{39.6} \right)^{1/2} = 0.354$$



In this case, since $\frac{L_{tm}}{L_{am}} = 0.64$, or < 0.70 , $L_t = L_a \left(\frac{L_{tm}}{L_{am}} \right) = 0.320$.

As a result, for future testing, the following leak rates shall apply:

1. For reduced pressure test at P_t :

$$L_{tm} \leq 0.75 L_t = 0.75 (0.32) = 0.240\%/day \text{ by weight}$$

2. For peak pressure test at P_a :

$$L_{am} \leq 0.75 L_a = 0.375\%/day \text{ by weight}$$

The verification tests discussed in section IV contain the test results and verify the accuracy of the ILRT measurement system. The close correlation between the ILRT and these supplemental tests provides sufficient data to validate the ILRT results. The minor differences between these tests and the ILRT results are attributed to rotameter accuracy which is $\pm 1.0\%$ of full scale or less than the accuracy of the ILRT measurement system.

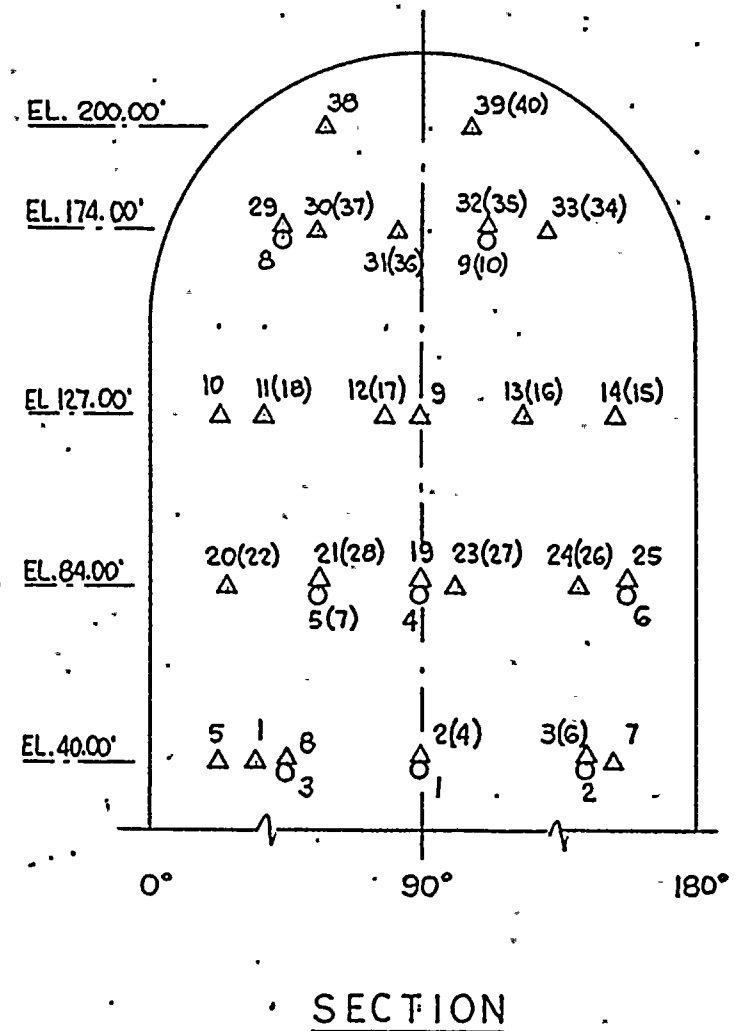
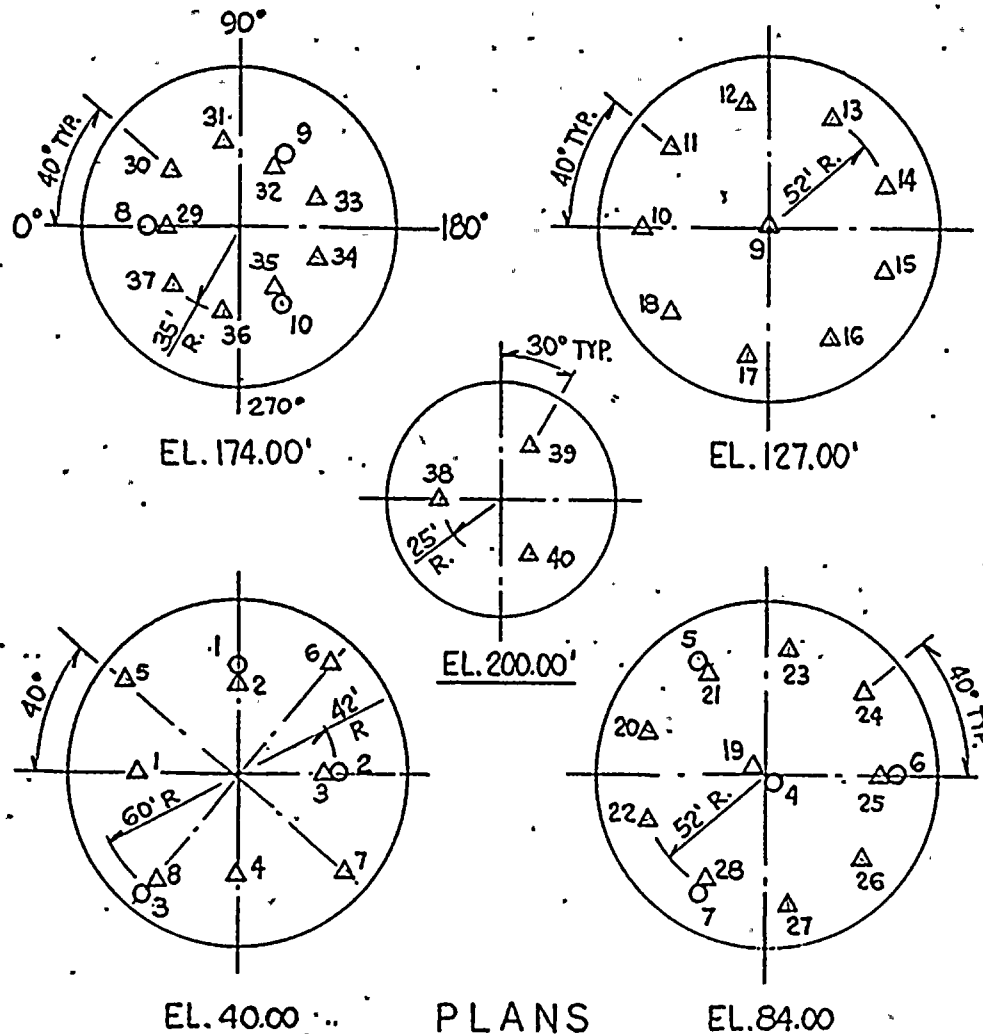
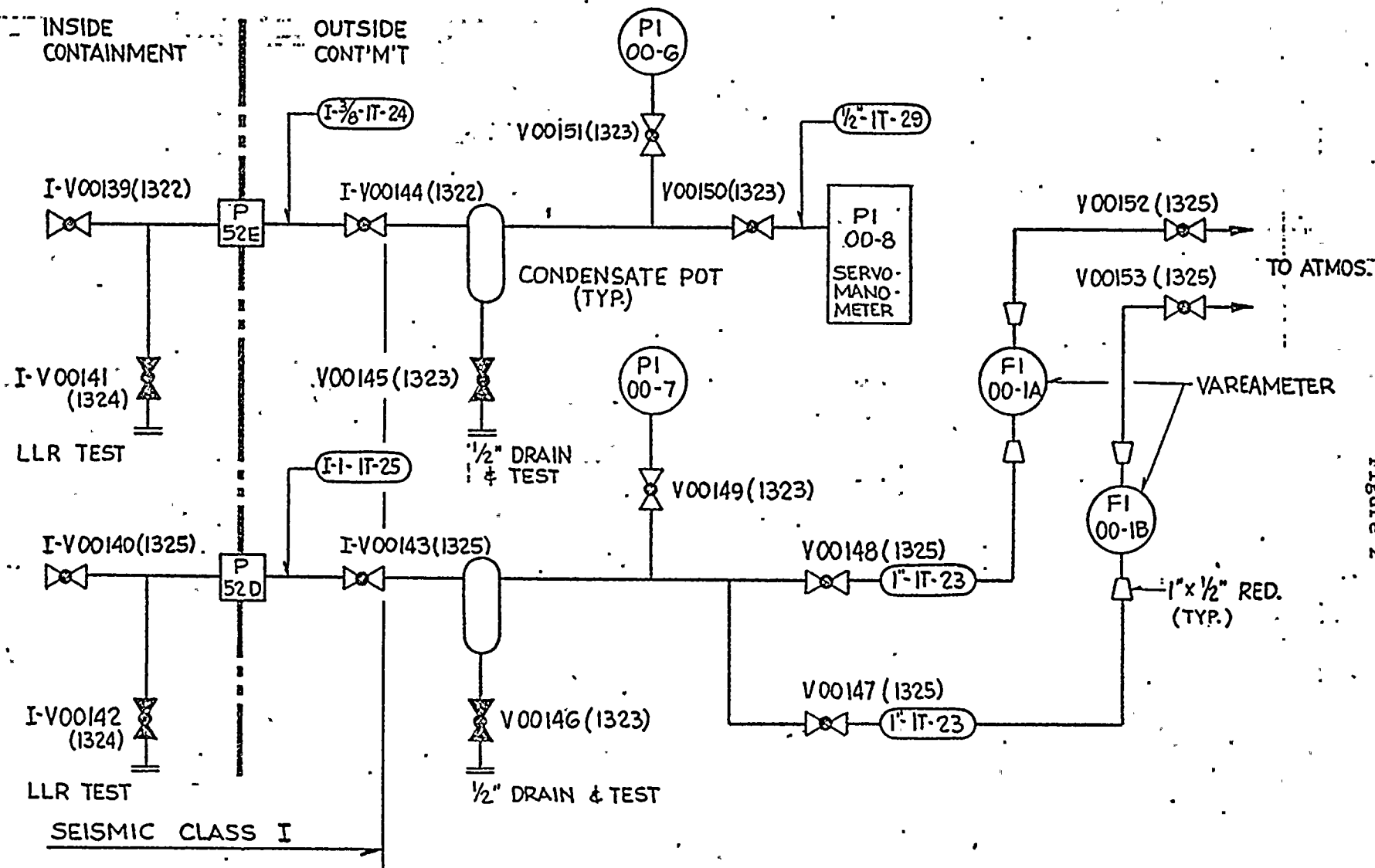


Figure 1

○ RHD (10)
 △ RTD (40)

REACTOR CONTAINMENT LOCATIONS OF RTD'S (△) & RHD'S (○)





FLOW DIAGRAM

ILRT PRESSURE SENSING & CONTROLLED LEAKAGE INST

-17-

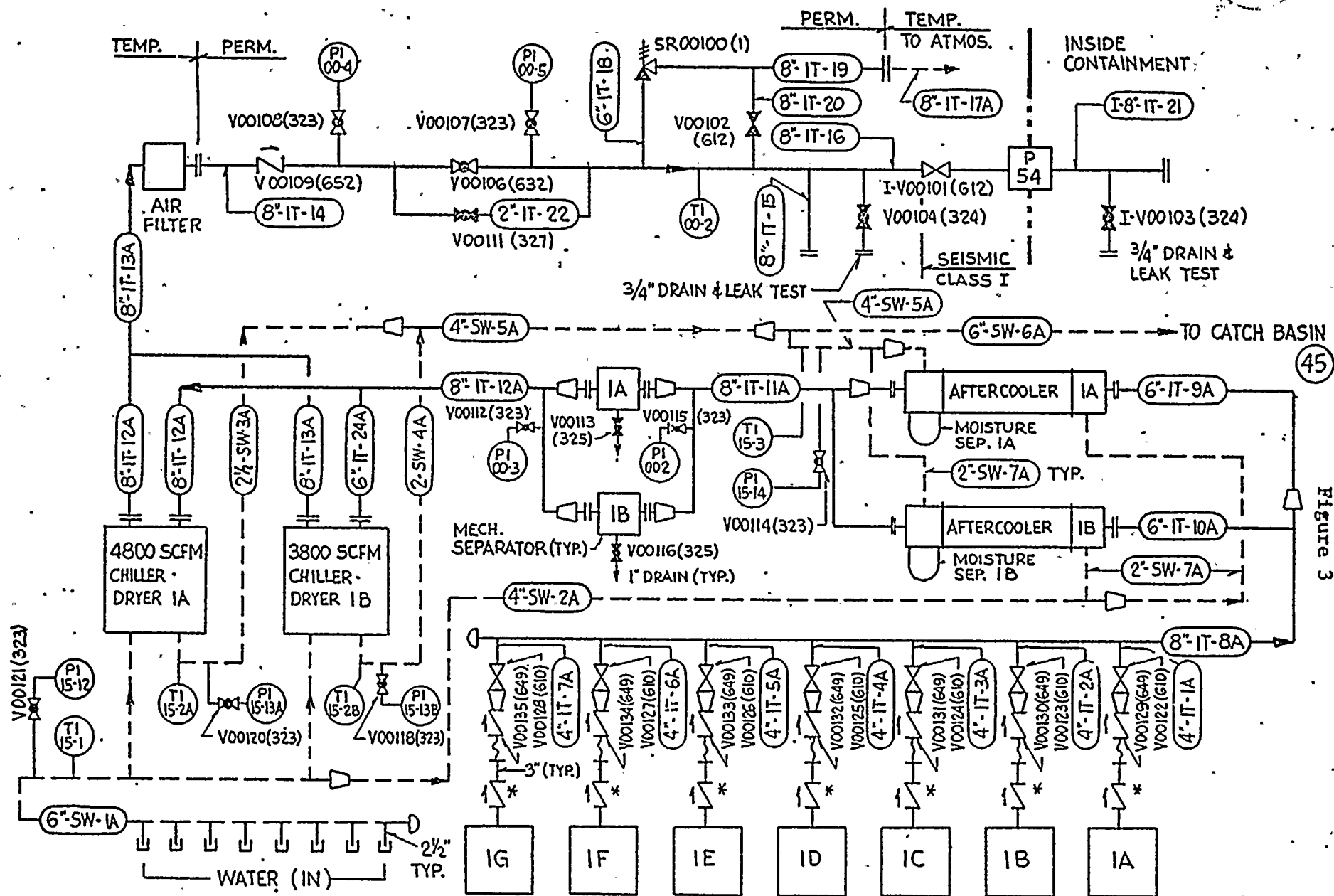


Figure 3

FLOW DIAGRAM
ILRT PRESSURIZING & DEPRESSURIZING STATION

COMPRESSORS



ADDENDUM

Eight (8) penetrations required additional local leakage rate testing following ILRT completion. These penetrations were found to have unacceptable indications in the welds joining the containment nozzle and pipe sleeve in the annulus in the course of normal Quality Control procedures following ILRT performance. These were penetrations 5, 27, 29, 37, 40, 44, 53, and 64. The results of these additional tests are acceptable with zero leakage measured and are delineated in the Addendum attached to Appendix B.

APPENDIX A

Computer-Generated Report

1.
LOW PRESSURE
INTEGRATED LEAK RATE TEST

LEAK RATE COMPUTED USING TOTAL TIME METHOD
AS RECOMMENDED BY APPENDIX J FOR 10 CFR 50
(REACTOR CONTAINMENT LEAKAGE TESTING FOR WATER COOLED POWER REACTORS)

TEST PERIOD STARTED AT 1400 HOURS ON JULY 1, 1975

A LEAST SQUARES FIRST ORDER FIT OF LEAK RATE TO TIME
SHOULD YIELD A SLOPE OF ZERO AND AN INTERCEPT EQUAL
TO THE LEAK RATE AS COMPUTED AT THE INITIAL START TIME

THE EQUATION HAS THE FORM $L = ST + R$

WHERE L = CORRELATED LEAK RATE

S = SLOPE OF CORRELATION

T = TIME IN HOURS

R = INTERCEPT LEAK RATE

LEAK RATE = 0.001 HOURS + -0.016 PER CENT

MEAN = -0.004 PER CENT

ERROR COEFFICIENT = 0.041

WHERE COEFFICIENT OF 1.0 MEANS A PERFECT FIT &

COEFFICIENT OF 0.0 MEANS NO CORRELATION.

INITIAL CONTAINMENT AIR WEIGHT = 453802 LBS.

FINAL CONTAINMENT AIR WEIGHT = 453728 LBS.

LEAK RATE FOR 24.00 HOUR PERIOD IS 0.016 PER CENT BY WEIGHT.

MAXIMUM NRC LEAK RATE OF 0.281 PER CENT PER DAY

GIVEN FOR LOW PRESSURE TEST AT 37.48 PSIA

TEMPERATURE LOOP ERROR = 0.300 DEGREES F. PRESSURE LOOP ERROR = 0.002 PSIA.

HUMIDITY LOOP ERROR = 2.50 PERCENT

INSTRUMENT ERROR CONTRIBUTES .0948 PERCENT PER DAY



TO ESTABLISH 95 PERCENT CONFIDENCE BOUND

NOTE FOR PLOT - TIME INCREASES DOWN THE PAGE.
 VARIABLE(S) INCREASE TO THE RIGHT.
 D DENOTES A DELETED SENSOR.
 LOWER VALUE INDICES MAY BE COVERED
 BY HIGHER VALUE INDICES IF THE
 NUMERICAL VALUES ARE CLOSE.

PLOT VARIABLE INDEX

- 1 - STATISTICAL LEAK RATE BASED ON TOTAL TIME METHOD
- 2 - MAXIMUM LEAK RATE (PER CENT)
- 3 - NRC TECHNICAL SPECIFICATION LIMIT FOR LEAK RATE
- 4 - 95 PER CENT CONFIDENCE LIMIT FOR INSTRUMENT ERROR
- 5 - LEAK RATE COMPUTED FROM FIRST ORDER EQUATION FIT

	-5.34E+00	-4.17E+00	-3.00E+00	-1.84E+00	-6.68E-01	5.00E-01	
	-4.76E+00	-3.59E+00	-2.42E+00	-1.25E+00	-8.40E-02		
0.00E+01	*-----*	*-----*	*-----*	*-----*	*-----*	*-----*	*5D43-2
5143 2
	.	.	.	1.	.	.	.5 43 2
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1.50E+02	*-----*	*-----*	*-----*	*-----*	*-----*	*-----*	*5-43-2
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3.00E+02	*-----*	*-----*	*-----*	*-----*	*-----*	*-----*	*-1-5-43-2
1 .5 43 2



[illegible]





3.00E+02

4.50E+02

6.00E+02

7.50E+02

9.00E+02

	4	.	.	.	3	.	2	.	.	.	1
	4	.	.	.	3	.	2	.	.	.	1
1.05E+03	*-4	-*	-*	-*	-*	-*	-2*	-*	-*	-*	-1
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	4	.	.	.	3	.	2	.	.	.	1
	4	.	.	.	3	.	2	.	.	.	1
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	4	.	.	.	3	.	2	.	.	.	1
	4	.	.	.	3	.	2	.	.	.	1
	4	.	.	.	3	.	2	.	.	.	1
1.20E+03	*-4	-*	-*	-*	-*	-*	-2*	-*	-*	-*	-1
	4	.	.	.	3	.	2	.	.	.	1
	4	.	.	.	3	.	2	.	.	.	1
	4	.	.	.	3	.	2	.	.	.	1
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	4	.	.	.	3	.	2	.	.	.	1
	4	.	.	.	3	.	2	.	.	.	1
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	4	.	.	.	3	.	2	.	.	.	1
	4	.	.	.	3	.	2	.	.	.	1
1.35E+03	*-4	-*	-*	-*	-*	-*	-2*	-*	-*	-*	-1
	4	.	.	.	3	.	2	.	.	.	1
	4	.	.	.	3	.	2	.	.	.	1
	4	.	.	.	3	.	2	.	.	.	1
	4	.	.	.	3	.	2	.	.	.	1
	4	.	.	.	3	.	2	.	.	.	1
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NOTE FOR PLCT - TIME INCREASES DOWN THE PAGE.
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 D DENOTES A DELETED SENSOR.
 LOWER VALUE INDICES MAY BE COVERED
 BY HIGHER VALUE INDICES IF THE
 NUMERICAL VALUES ARE CLOSE.

PLCT VARIABLE INDEX

- 1 - SIMPLE TOTAL LEAK RATE PROJECTED TO 24 HOURS
- 2 - LEAK RATE COMPUTED FROM FIRST ORDER EQUATION FIT

3 - 95 PER CENT CONFIDENCE LIMIT FOR INSTRUMENT ERROR

	-8.31E-02	-2.92E-02	2.47E-02	7.86E-02	1.33E-01	1.86E-01	
	-5.62E-02	-2.26E-03	5.17E-02	1.06E-01	1.60E-01		
0.00E+01	*-----*	*-----*	*-----*	*-----*	*-----*	*-----*	3
	.	.	2	.	.	1	3
	.	.	2	.	.	1	3
	.	.	2	.	.	1	3
	1	.	2	.	.	.	3
	.	1	2	.	.	.	3
	.	.	2	.	.	.	3
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	.	.	2	.	.	.	3
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1.50E+02	*--1--*	*--1--*	*--1--*	*--1--*	*--1--*	*--1--*	3
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	.	1	2	.	.	.	3
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	.	1	2	.	.	.	3
	.	1	2	.	.	.	3
	.	1	2	.	.	.	3
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	.	.	2	.	.	.	3
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	.	.	2	.	.	.	3
	.	.	2	.	.	.	3
	.	.	2	.	.	.	3
6.00E+02	*--1--*	*--1--*	*--1--*	*--1--*	*--1--*	*--1--*	3
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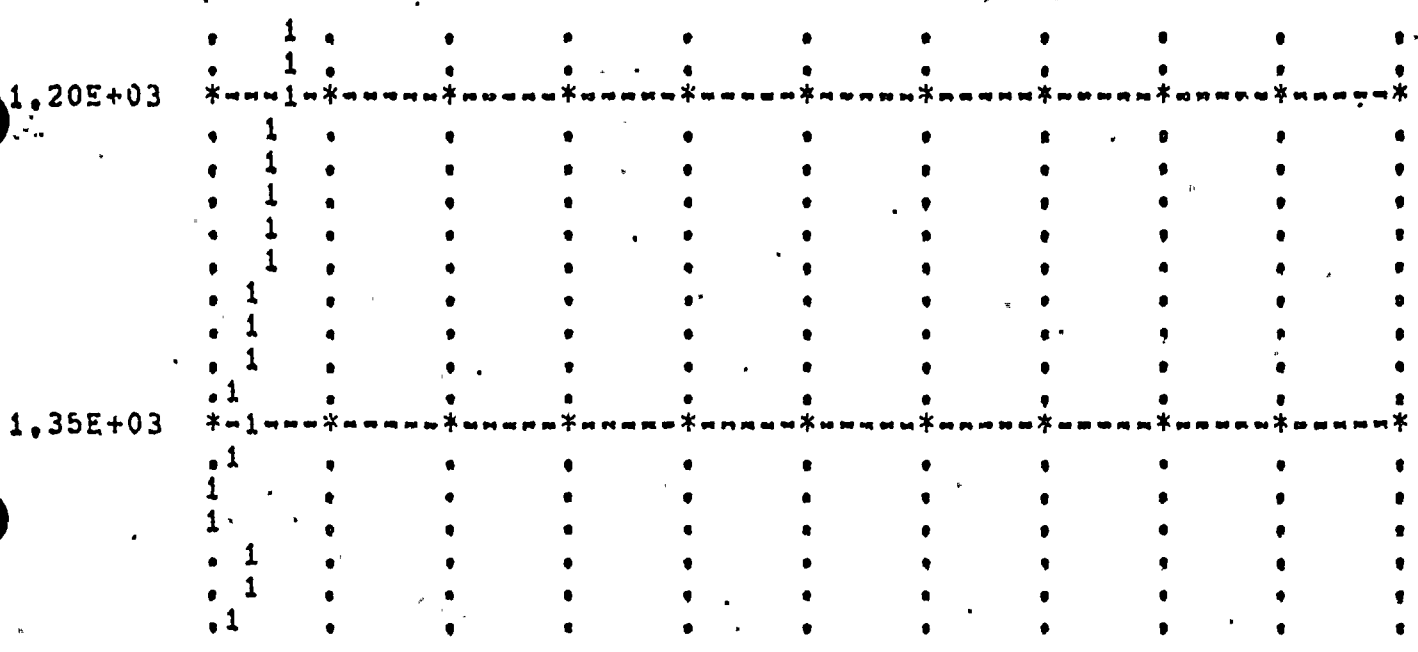
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6.00E+02

7.50E+02

9.00E+02

1.05E+03

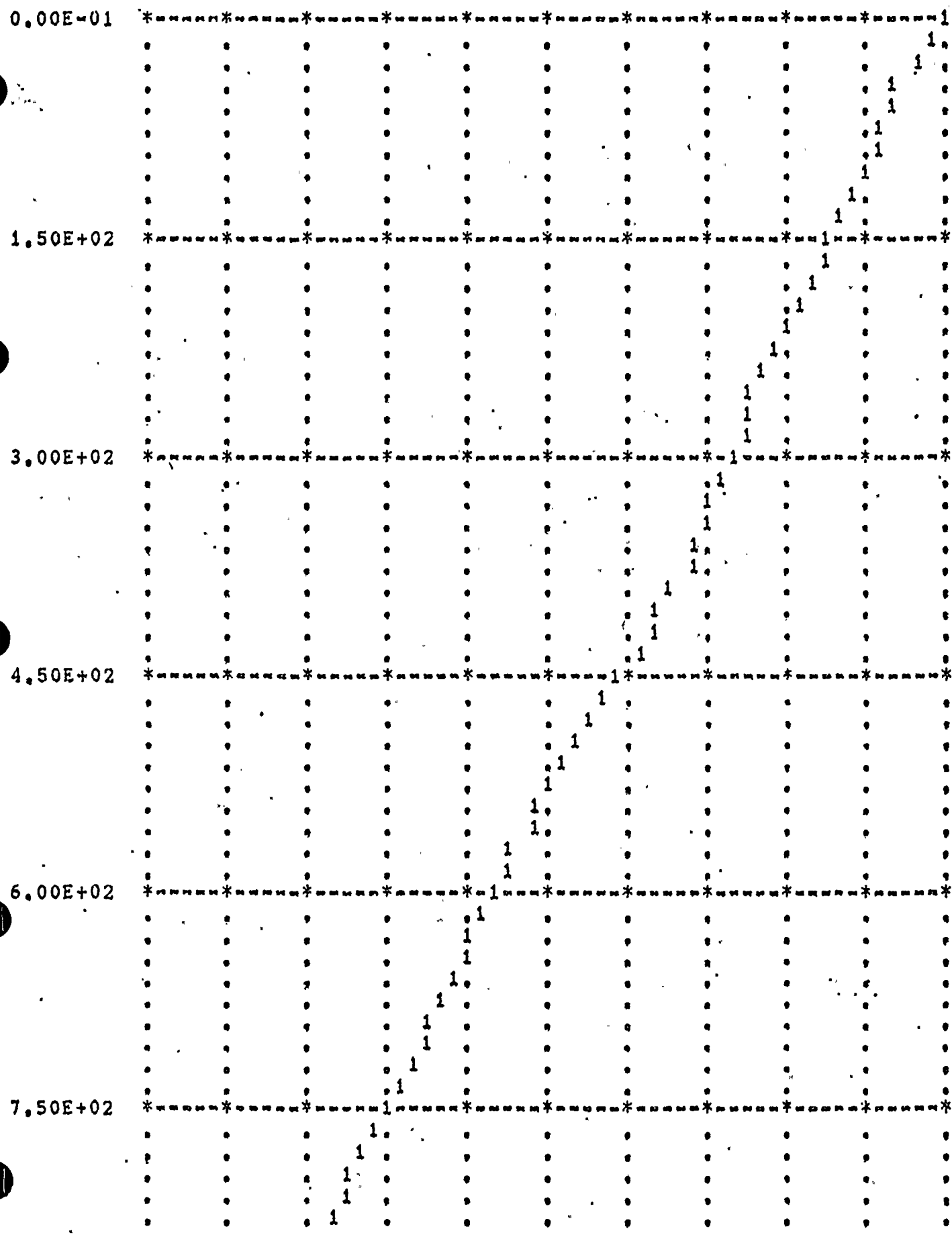


NOTE FOR PLOT - TIME INCREASES DOWN THE PAGE.
VARIABLES(S) INCREASE TO THE RIGHT.
D DENOTES A DELETED SENSOR.
LOWER VALUE INDICES MAY BE COVERED
BY HIGHER VALUE INDICES IF THE
NUMERICAL VALUES ARE CLOSE.

PLOT VARIABLE INDEX

1 - AVG. PRE (PSIA)

3.73E+01 3.74E+01 3.74E+01 3.74E+01 3.75E+01 3.75E+01
3.74E+01 3.74E+01 3.74E+01 3.74E+01 3.75E+01



9.00E+02

1.05E+03

1.20E+03

1.35E+03

NOTE FOR PLOT - TIME INCREASES DOWN THE PAGE.
VARIABLES(S) INCREASE TO THE RIGHT.
D INDICATES A DELETED SENSOR.
LOWER VALUE INDICES MAY BE COVERED
BY HIGHER VALUE INDICES IF THE
NUMERICAL VALUES ARE CLOSE.

PLGT VARIABLE INDEX

1 - VAP, PRE (PSIA)

[illegible]

6.00E+02

7.50E+02

9.00E+02

1.05E+03

1.20E+03

1.35E+03

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*1-----*-----*-----*-----*-----*-----*-----*-----*
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NOTE FOR TABULAR DATA -
 TABLE VALUES OF ZERO SIGNIFY EITHER
 1. DATA IS NOT APPLICABLE TO THE CALCULATION OR
 2. SENSOR HAS BEEN DELETED FROM THE SCAN.

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	AVG. TEM DEG. F	AVG. PRE PSIA	VAP. PRE PSIA	LEAK COM PER CENT	LEAK TRA PER CENT	ERRCH(T) PER CENT
1	0	89.248	37.483	0.564	-0.016	0.000	0.000
2	15	89.227	37.481	0.564	-0.015	0.113	0.000
3	30	89.204	37.479	0.563	-0.015	-2.554	0.099
4	45	89.172	37.476	0.563	-0.015	-0.614	0.029
	60	89.137	37.475	0.562	-0.015	-5.340	0.035
	75	89.114	37.473	0.562	-0.014	-4.227	0.025
7	90	89.079	37.472	0.562	-0.014	-3.873	0.013
8	105	89.062	37.469	0.562	-0.014	-2.751	0.008
9	120	89.022	37.468	0.562	-0.014	-2.498	0.001
10	135	89.004	37.466	0.561	-0.013	-2.066	-0.002
11	150	88.972	37.464	0.561	-0.013	-1.828	-0.006
12	165	88.955	37.463	0.560	-0.013	-1.649	-0.010
13	180	88.924	37.460	0.561	-0.013	-1.377	-0.010
14	195	88.908	37.458	0.560	-0.012	-1.163	-0.010
15	210	88.875	37.457	0.560	-0.012	-1.027	-0.011
16	225	88.858	37.455	0.559	-0.012	-0.902	-0.011
	240	88.833	37.453	0.559	-0.012	-0.797	-0.011
	255	88.819	37.451	0.559	-0.012	-0.662	-0.009
19	270	88.799	37.450	0.559	-0.011	-0.565	-0.008

20	285	88.778	37.449	0.558	-0.011	-0.506	-0.008
21	300	88.763	37.448	0.558	-0.011	-0.456	-0.008
22	315	88.739	37.446	0.558	-0.011	-0.411	-0.007
23	330	88.720	37.444	0.558	-0.010	-0.364	-0.006
24	345	88.700	37.442	0.557	-0.010	-0.326	-0.006
25	360	88.670	37.441	0.557	-0.010	-0.296	-0.006
26	375	88.655	37.440	0.557	-0.010	-0.272	-0.005
27	390	88.638	37.437	0.557	-0.009	-0.238	-0.004
28	405	88.611	37.435	0.556	-0.009	-0.211	-0.004
29	420	88.588	37.433	0.556	-0.009	-0.187	-0.003
30	435	88.580	37.431	0.557	-0.009	-0.151	-0.002
31	450	88.556	37.428	0.557	-0.008	-0.116	-0.001
32	465	88.526	37.426	0.558	-0.008	-0.084	-0.000
33	480	88.500	37.424	0.556	-0.008	-0.059	-0.000
34	495	88.471	37.421	0.557	-0.008	-0.036	-0.000
35	510	88.452	37.419	0.557	-0.007	-0.013	-0.000
36	525	88.440	37.416	0.557	-0.007	0.011	-0.000
37	540	88.420	37.415	0.556	-0.007	0.029	-0.000
38	555	88.400	37.413	0.556	-0.007	0.044	-0.001
39	570	88.365	37.410	0.555	-0.006	0.055	-0.001
40	585	88.359	37.409	0.555	-0.006	0.066	-0.001
41	600	88.335	37.407	0.554	-0.006	0.073	-0.001
42	615	88.319	37.405	0.554	-0.006	0.080	-0.001
43	630	88.288	37.403	0.553	-0.005	0.084	-0.001
44	645	88.282	37.402	0.553	-0.005	0.088	-0.001
45	660	88.192	37.400	0.552	-0.005	0.084	-0.001
46	675	88.175	37.398	0.552	-0.005	0.080	-0.001
47	690	88.160	37.396	0.552	-0.004	0.078	-0.001
48	705	88.132	37.395	0.552	-0.004	0.075	-0.001
49	720	88.116	37.394	0.552	-0.004	0.073	-0.001
50	735	88.111	37.391	0.553	-0.004	0.074	-0.001
51	750	88.033	37.389	0.552	-0.003	0.073	-0.001
52	765	88.066	37.387	0.551	-0.003	0.073	-0.001
53	780	88.059	37.385	0.551	-0.003	0.074	-0.001
54	795	88.022	37.383	0.550	-0.003	0.072	-0.001
55	810	88.013	37.382	0.550	-0.003	0.071	-0.001
56	825	88.010	37.381	0.550	-0.002	0.071	-0.001
57	840	87.999	37.380	0.549	-0.002	0.070	-0.001
58	855	87.979	37.379	0.549	-0.002	0.068	-0.001
59	870	87.954	37.378	0.548	-0.002	0.066	-0.001
60	885	87.953	37.377	0.548	-0.001	0.064	-0.001
61	900	87.945	37.377	0.548	-0.001	0.062	-0.001
62	917	87.936	37.376	0.548	-0.001	0.060	-0.001
63	930	87.911	37.375	0.547	-0.001	0.057	-0.001
64	945	87.896	37.375	0.547	-0.000	0.054	-0.001
65	960	87.892	37.374	0.547	-0.000	0.051	-0.001
66	975	87.877	37.373	0.546	0.000	0.049	-0.001
67	990	87.850	37.372	0.546	0.000	0.046	-0.000
68	1005	87.846	37.371	0.546	0.001	0.043	-0.000
69	1020	87.845	37.370	0.546	0.001	0.041	-0.000
70	1035	87.823	37.369	0.545	0.001	0.039	-0.000
71	1050	87.814	37.368	0.545	0.001	0.037	-0.000
72	1065	87.794	37.367	0.545	0.002	0.035	-0.000
73	1080	87.775	37.366	0.544	0.002	0.033	-0.000
74	1095	87.760	37.366	0.544	0.002	0.031	-0.000
75	1110	87.765	37.364	0.543	0.002	0.029	-0.000

76	1125	87.763	37.364	0.544	0.003	0.028	-0.000
77	1140	87.741	37.361	0.543	0.003	0.026	-0.000
78	1155	87.738	37.361	0.543	0.003	0.025	-0.000
	1170	87.719	37.361	0.543	0.003	0.023	-0.000
80	1185	87.703	37.361	0.542	0.004	0.022	-0.000
81	1200	87.703	37.359	0.542	0.004	0.020	-0.000
82	1215	87.678	37.359	0.542	0.004	0.019	-0.000
83	1230	87.692	37.358	0.542	0.004	0.018	-0.000
84	1245	87.684	37.358	0.542	0.005	0.017	-0.000
85	1260	87.677	37.357	0.542	0.005	0.016	-0.000
86	1275	87.682	37.357	0.542	0.005	0.015	-0.000
87	1290	87.659	37.356	0.541	0.005	0.014	-0.000
88	1305	87.660	37.356	0.541	0.006	0.013	-0.000
89	1320	87.654	37.355	0.541	0.006	0.012	-0.000
90	1335	87.646	37.355	0.540	0.006	0.011	-0.000
	1350	87.650	37.354	0.540	0.006	0.010	-0.000
92	1365	87.627	37.353	0.540	0.006	0.009	-0.000
93	1380	87.611	37.353	0.539	0.007	0.008	-0.000
94	1395	87.605	37.352	0.540	0.007	0.007	-0.000
95	1410	87.670	37.350	0.541	0.007	0.007	-0.000
96	1425	87.651	37.349	0.540	0.007	0.007	-0.000
97	1440	87.634	37.349	0.545	0.008	0.008	-0.000

END OF TABLE

DESCRIPTION OF VARIABLES

AVG. TEM - VOLUMETRICALLY WEIGHTED TEMPERATURE.
 AVG. PRE - AVERAGE PRESSURE.
 VAP. PRE - VOLUMETRICALLY WEIGHTED VAPOUR PRESSURE.
 LEAK COM - LEAK RATE COMPUTED FROM FIRST ORDER REGRESSION.
 LEAK TRA - LEAK RATE BASED ON TOTAL TIME CALCULATIONS.
 ERROR(T) - STATISTICAL ERROR ON TOTAL TIME LEAK RATE.

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP DEG. F	TEMP DEG. F	TEMP DEG. F	TEMP DEG. F	TEMP DEG. F	TEMP DEG. F
1	0	87.310	88.310	87.740	88.730	87.420	87.440
2	15	87.310	88.290	87.740	88.720	87.430	87.440
3	30	87.340	88.300	87.750	88.730	87.490	87.480
4	45	87.310	88.280	87.740	88.710	87.420	87.460
5	60	87.320	88.280	87.740	88.720	87.490	87.450

6	75	87.320	88.290	87.740	88.720	87.440	87.450
7	90	87.310	88.280	87.730	88.710	87.430	87.460
8	105	87.370	88.290	87.720	88.760	87.410	87.470
9	120	87.280	88.270	87.720	88.700	87.400	87.450
10	135	87.290	88.260	87.710	88.690	87.420	87.440
11	150	87.340	88.270	87.720	88.700	87.490	87.460
12	165	87.330	88.260	87.710	88.690	87.410	87.440
13	180	87.300	88.260	87.720	88.690	87.440	87.460
14	195	87.320	88.250	87.710	88.690	87.460	87.430
15	210	87.310	88.240	87.710	88.680	87.420	87.390
16	225	87.300	88.240	87.700	88.680	87.410	87.430
17	240	87.280	88.240	87.710	88.680	87.410	87.450
18	255	87.280	88.230	87.700	88.690	87.400	87.450
19	270	87.290	88.230	87.710	88.680	87.380	87.460
20	285	87.270	88.220	87.700	88.670	87.390	87.450
21	300	87.290	88.220	87.700	88.670	87.390	87.450
22	315	87.300	88.210	87.700	88.670	87.400	87.430
23	330	87.290	88.220	87.690	88.670	87.380	87.440
24	345	87.290	88.220	87.700	88.670	87.390	87.450
25	360	87.280	88.210	87.690	88.660	87.350	87.400
26	375	87.290	88.200	87.680	88.660	87.380	87.440
27	390	87.280	88.210	87.670	88.650	87.380	87.420
28	405	87.300	88.180	87.670	88.640	87.450	87.440
29	420	87.270	88.180	87.660	88.640	87.380	87.420
30	435	87.330	88.180	87.670	88.640	87.440	87.440
31	450	87.320	88.170	87.650	88.640	87.340	87.370
32	465	87.240	88.140	87.640	88.620	87.340	87.370
33	480	87.240	88.130	87.630	88.600	87.360	87.350
34	495	87.220	88.120	87.610	88.590	87.320	87.320
35	510	87.210	88.110	87.610	88.590	87.350	87.330
36	525	87.200	88.090	87.600	88.580	87.320	87.300
37	540	87.230	88.090	87.590	88.570	87.400	87.320
38	555	87.220	88.080	87.580	88.560	87.350	87.310
39	570	87.180	88.050	87.560	88.550	87.290	87.240
40	585	87.170	88.050	87.550	88.540	87.300	87.240
41	600	87.220	88.040	87.540	88.540	87.310	87.260
42	615	87.240	88.040	87.540	88.540	87.360	87.250
43	630	87.150	88.000	87.510	88.520	87.290	87.210
44	645	87.100	88.030	87.520	88.520	87.350	87.220
45	660	87.130	87.980	87.490	88.490	87.260	87.160
46	675	87.110	87.970	87.480	88.480	87.260	87.150
47	690	87.110	87.970	87.480	88.480	87.250	87.140
48	705	87.080	87.950	87.460	88.460	87.230	87.130
49	720	87.070	87.930	87.450	88.450	87.230	87.110
50	735	87.120	87.950	87.460	88.450	87.300	87.130
51	750	87.070	87.930	87.440	88.440	87.220	87.040
52	765	87.050	87.920	87.440	88.430	87.190	87.070
53	780	87.140	87.930	87.450	88.430	87.280	87.090
54	795	87.040	87.910	87.420	88.400	87.180	87.030
55	810	87.030	87.890	87.410	88.400	87.170	87.030
56	825	87.010	87.880	87.400	88.380	87.160	87.020
57	840	87.010	87.870	87.390	88.380	87.140	87.010
58	855	87.090	87.880	87.390	88.420	87.230	87.030
59	870	87.000	87.860	87.370	88.370	87.140	87.000
60	885	86.990	87.850	87.360	88.360	87.160	87.040
61	900	87.080	87.860	87.380	88.370	87.220	87.030

62	917	87.050	87.850	87.360	88.360	87.220	87.030
63	930	86.970	87.840	87.350	88.340	87.110	86.990
64	945	86.960	87.820	87.330	88.330	87.090	86.980
65	960	87.010	87.820	87.340	88.340	87.110	86.980
66	975	86.990	87.810	87.330	88.330	87.180	87.010
67	990	86.930	87.800	87.320	88.320	87.080	86.950
68	1005	87.060	87.830	87.340	88.340	87.110	86.970
69	1020	87.010	87.810	87.320	88.320	87.140	86.970
70	1035	87.050	87.820	87.350	88.330	87.150	87.000
71	1050	86.900	87.780	87.290	88.300	87.060	86.950
72	1065	86.920	87.770	87.280	88.280	87.040	86.930
73	1080	86.960	87.790	87.290	88.290	87.030	86.960
74	1095	86.890	87.750	87.250	88.250	86.990	86.890
75	1110	86.900	87.740	87.250	88.260	87.010	86.920
76	1125	86.910	87.750	87.250	88.260	87.050	86.970
77	1140	86.910	87.730	87.240	88.250	87.020	86.900
78	1155	86.910	87.740	87.250	88.260	86.990	86.890
79	1170	86.840	87.720	87.230	88.240	86.990	86.880
80	1185	86.900	87.730	87.230	88.240	87.040	86.870
81	1200	86.840	87.710	87.220	88.230	86.990	86.920
82	1215	86.830	87.700	87.220	88.220	86.980	86.890
83	1230	86.840	87.700	87.220	88.220	86.960	86.880
84	1245	86.870	87.700	87.220	88.220	87.000	86.930
85	1260	86.930	87.750	87.250	88.240	86.990	86.920
86	1275	86.880	87.700	87.720	88.220	87.040	86.900
87	1290	86.910	87.720	87.230	88.230	86.950	86.900
88	1305	86.850	87.710	87.220	88.210	86.960	86.900
89	1320	86.860	87.700	87.220	88.210	86.920	86.920
90	1335	86.920	87.720	87.240	88.240	86.960	86.720
91	1350	86.890	87.710	87.230	88.230	86.960	86.920
92	1365	86.900	87.700	87.230	88.220	86.970	86.960
93	1380	86.830	87.680	87.220	88.210	86.940	86.930
94	1395	86.840	87.680	87.220	88.210	86.940	86.920
95	1410	86.940	87.710	87.240	88.230	86.970	86.960
96	1425	86.850	87.690	87.220	88.190	86.900	86.930
97	1440	86.850	87.680	87.210	88.200	86.910	86.910

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP 7 DEG. F	TEMP 8 DEG. F	TEMP 9 DEG. F	TEMP 10 DEG. F	TEMP 11 DEG. F	TEMP 12 DEG. F
1	0	87.220	90.010	89.760	89.770	90.080	89.950
2	15	87.190	89.960	89.710	89.720	90.020	89.890
3	30	87.180	89.930	89.680	89.700	89.970	89.860
4	45	87.260	89.880	89.630	89.650	89.940	89.820
5	60	87.250	89.850	89.590	89.620	89.920	89.790

6	75	87.420	89.800	89.550	89.580	89.860	89.750
7	90	87.210	89.760	89.510	89.530	89.810	89.700
8	105	87.190	89.730	89.490	89.500	89.780	89.660
9	120	87.190	89.680	89.430	89.460	89.740	89.630
10	135	87.200	89.630	89.390	89.420	89.700	89.590
11	150	87.170	89.620	89.370	89.400	89.680	89.570
12	165	87.210	89.570	89.320	89.360	89.640	89.520
13	180	87.220	89.530	89.280	89.310	89.590	89.480
14	195	87.220	89.490	89.250	89.280	89.560	89.450
15	210	87.200	89.450	89.210	89.240	89.530	89.420
16	225	87.210	89.430	89.180	89.210	89.490	89.390
17	240	87.230	89.400	89.150	89.180	89.460	89.350
18	255	87.220	89.360	89.120	89.150	89.430	89.330
19	270	87.230	89.340	89.090	89.120	89.410	89.300
20	285	87.220	89.310	89.050	89.090	89.380	89.260
21	300	87.220	89.280	89.030	89.060	89.360	89.260
22	315	87.180	89.250	89.000	89.030	89.320	89.210
23	330	87.230	89.220	88.970	89.000	89.300	89.190
24	345	87.210	89.190	88.940	88.980	89.260	89.160
25	360	87.200	89.160	88.910	88.940	89.230	89.120
26	375	87.250	89.130	88.870	88.930	89.200	89.120
27	390	87.200	89.100	88.840	88.880	89.170	89.050
28	405	87.220	89.070	88.820	88.870	89.150	89.050
29	420	87.210	89.040	88.790	88.820	89.120	89.010
30	435	87.280	89.020	88.780	88.830	89.120	89.030
31	450	87.120	88.990	88.730	88.770	89.070	88.960
32	465	87.120	88.960	88.700	88.740	89.040	88.920
33	480	87.160	88.930	88.670	88.710	89.010	88.900
34	495	87.130	88.890	88.640	88.670	88.970	88.860
35	510	87.120	88.870	88.610	88.650	88.950	88.840
36	525	87.130	88.840	88.590	88.620	88.930	88.800
37	540	87.140	88.820	88.560	88.600	88.910	88.790
38	555	87.150	88.790	88.530	88.580	88.880	88.770
39	570	87.080	88.760	88.500	88.550	88.840	88.730
40	585	87.080	88.730	88.480	88.520	88.820	88.690
41	600	87.070	88.710	88.460	88.500	88.800	88.680
42	615	87.070	88.700	88.440	88.480	88.790	88.670
43	630	87.030	88.670	88.400	88.450	88.740	88.630
44	645	87.050	88.650	88.390	88.430	88.730	88.620
45	660	86.990	88.620	88.360	88.410	88.700	88.600
46	675	87.010	88.600	88.340	88.380	88.680	88.580
47	690	86.990	88.580	88.320	88.360	88.660	88.560
48	705	86.960	88.550	88.300	88.330	88.630	88.540
49	720	86.950	88.530	88.270	88.310	88.620	88.510
50	735	86.960	88.520	88.260	88.300	88.600	88.490
51	750	86.910	88.490	88.230	88.260	88.570	88.480
52	765	86.890	88.470	88.210	88.240	88.550	88.450
53	780	86.930	88.460	88.200	88.230	88.540	88.440
54	795	86.790	88.420	88.160	88.200	88.500	88.410
55	810	86.870	88.410	88.150	88.180	88.490	88.390
56	825	86.850	88.390	88.130	88.160	88.470	88.370
57	840	86.840	88.380	88.110	88.150	88.460	88.360
58	855	86.870	88.370	88.100	88.140	88.450	88.350
59	870	86.830	88.340	88.060	88.110	88.430	88.320
60	885	86.850	88.330	88.050	88.110	88.420	88.320
61	900	86.860	88.320	88.040	88.090	88.410	88.300

62	917	86.870	88.300	88.020	88.100	88.390	88.290
63	930	86.820	88.280	87.990	88.060	88.360	88.260
64	945	86.800	88.250	87.960	88.030	88.340	88.240
65	960	86.800	88.260	87.960	88.030	88.330	88.250
66	975	86.840	88.250	87.950	88.020	88.330	88.230
67	990	86.730	88.220	87.920	88.000	88.300	88.200
68	1005	86.830	88.220	87.920	88.000	88.300	88.210
69	1020	86.820	88.210	87.910	87.980	88.210	88.190
70	1035	86.780	88.200	87.900	87.970	88.260	88.170
71	1050	86.770	88.170	87.870	87.950	88.250	88.150
72	1065	86.770	88.150	87.860	87.930	88.230	88.130
73	1080	86.660	88.150	87.850	87.930	88.230	88.130
74	1095	86.680	88.110	87.830	87.900	88.200	88.100
75	1110	86.740	88.110	87.820	87.890	88.190	88.100
76	1125	86.760	88.090	87.920	87.890	88.180	88.080
77	1140	86.650	88.080	87.810	87.850	88.160	88.070
78	1155	86.670	88.070	87.910	87.850	88.150	88.060
79	1170	86.650	88.060	87.790	87.830	88.140	88.040
80	1185	86.700	88.050	87.780	87.830	88.130	88.040
81	1200	86.730	88.030	87.760	87.810	88.120	88.030
82	1215	86.690	88.020	87.750	87.810	88.100	88.010
83	1230	86.710	88.010	87.740	87.800	88.090	88.000
84	1245	86.710	88.010	87.740	87.810	88.090	88.000
85	1260	86.720	88.000	87.730	87.800	88.070	87.990
86	1275	86.610	87.990	87.720	87.790	88.070	87.980
87	1290	86.640	87.970	87.700	87.770	88.050	87.970
88	1305	86.690	87.960	87.700	87.760	88.030	87.950
89	1320	86.700	87.950	87.690	87.750	88.020	87.950
90	1335	86.700	87.960	87.690	87.750	88.020	87.960
91	1350	86.740	87.940	87.670	87.730	88.010	87.940
92	1365	86.680	87.930	87.660	87.720	87.930	87.820
93	1380	86.740	87.910	87.650	87.700	87.980	87.920
94	1395	86.710	87.890	87.640	87.690	87.960	87.900
95	1410	86.730	87.900	87.660	87.700	87.970	87.910
96	1425	86.660	87.880	87.620	87.670	87.940	87.890
97	1440	86.720	87.860	87.610	87.660	87.930	87.870

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP 13 DEG. F	TEMP 14 DEG. F	TEMP 15 DEG. F	TEMP 16 DEG. F	TEMP 17 DEG. F	TEMP 18 DEG. F
1	0	89.860	89.770	90.190	89.540	90.070	89.280
2	15	89.800	89.710	90.140	89.480	90.020	89.290
3	30	89.780	89.690	90.220	89.470	89.990	89.270
4	45	89.730	89.640	90.070	89.410	89.950	89.260
5	60	89.700	89.600	90.060	89.390	89.910	89.240

6	75	89.650	89.570	89.990	89.330	89.860	89.210
7	90	89.610	89.510	89.950	89.280	89.820	89.190
8	105	89.570	89.480	89.910	89.240	89.780	89.180
9	120	89.540	89.430	89.880	89.210	89.740	89.170
10	135	89.490	89.390	89.830	89.170	89.700	89.150
11	150	89.470	89.370	89.840	89.150	89.690	89.150
12	165	89.430	89.340	89.770	89.110	89.640	89.130
13	180	89.390	89.290	89.730	89.060	89.600	89.110
14	195	89.350	89.250	89.700	89.030	89.560	89.100
15	210	89.320	89.220	89.690	89.010	89.540	89.080
16	225	89.290	89.180	89.630	88.960	89.500	89.070
17	240	89.260	89.160	89.610	88.930	89.470	89.060
18	255	89.230	89.120	89.580	88.900	89.440	89.050
19	270	89.200	89.100	89.550	88.880	89.420	89.050
20	285	89.170	89.070	89.520	88.840	89.380	89.030
21	300	89.150	89.050	89.500	88.820	89.360	89.020
22	315	89.120	89.010	89.470	88.790	89.330	89.010
23	330	89.090	88.970	89.440	88.760	89.300	88.990
24	345	89.060	88.960	89.410	88.730	89.270	88.980
25	360	89.020	88.920	89.380	88.700	89.240	88.960
26	375	89.020	88.900	89.360	88.670	89.200	88.950
27	390	88.960	88.860	89.320	88.630	89.180	88.940
28	405	88.940	88.830	89.290	88.610	89.150	88.920
29	420	88.910	88.830	89.260	88.570	89.110	88.910
30	435	88.930	88.800	89.250	88.560	89.090	88.900
31	450	88.860	88.740	89.200	88.520	89.060	88.920
32	465	88.830	88.720	89.200	88.510	89.040	88.870
33	480	88.800	88.700	89.140	88.460	89.000	88.850
34	495	88.760	88.650	89.100	88.420	88.970	88.830
35	510	88.750	88.640	89.090	88.400	88.950	88.820
36	525	88.710	88.610	89.050	88.370	88.920	88.800
37	540	88.700	88.590	89.040	88.350	88.890	88.780
38	555	88.670	88.590	89.020	88.330	88.870	88.760
39	570	88.640	88.540	88.980	88.290	88.840	88.740
40	585	88.600	88.510	88.950	88.270	88.820	88.720
41	600	88.600	88.510	88.930	88.250	88.800	88.700
42	615	88.570	88.480	88.920	88.230	88.780	88.690
43	630	88.540	88.450	88.880	88.200	88.750	88.660
44	645	88.520	88.440	88.880	88.180	88.730	88.650
45	660	88.490	88.400	88.840	88.150	88.700	88.630
46	675	88.470	88.370	88.820	88.130	88.670	88.610
47	690	88.450	88.350	88.800	88.120	88.660	88.600
48	705	88.430	88.330	88.780	88.090	88.630	88.570
49	720	88.400	88.300	88.770	88.070	88.610	88.550
50	735	88.390	88.290	88.770	88.070	88.610	88.550
51	750	88.360	88.260	88.730	88.030	88.570	88.520
52	765	88.340	88.240	88.740	88.030	88.570	88.520
53	780	88.320	88.250	88.700	88.000	88.530	88.490
54	795	88.280	88.200	88.670	87.970	88.510	88.470
55	810	88.270	88.180	88.660	87.960	88.490	88.460
56	825	88.250	88.160	88.630	87.930	88.470	88.450
57	840	88.230	88.150	88.610	87.910	88.450	88.430
58	855	88.220	88.130	88.600	87.900	88.440	88.430
59	870	88.190	88.110	88.580	87.870	88.410	88.410
60	885	88.200	88.110	88.590	87.890	88.420	88.420
61	900	88.190	88.100	88.560	87.860	88.400	88.400



62	917	88.180	88.090	88.560	87.860	88.390	88.400
63	930	88.120	88.050	88.520	87.820	88.350	88.370
64	945	88.090	88.040	88.510	87.810	88.340	88.360
65	960	88.100	88.040	88.490	87.790	88.330	88.350
66	975	88.080	88.020	88.500	87.790	88.330	88.350
67	990	88.050	88.000	88.500	87.770	88.000	88.340
68	1005	88.050	88.000	88.450	87.750	88.290	88.330
69	1020	88.040	87.990	88.450	87.750	88.280	88.320
70	1035	88.020	87.970	88.440	87.730	88.260	88.310
71	1050	88.000	87.940	88.410	87.710	88.230	88.310
72	1065	87.990	87.930	88.400	87.690	88.220	88.290
73	1080	87.990	87.920	88.400	87.700	88.220	88.290
74	1095	87.960	87.900	88.380	87.660	88.190	88.260
75	1110	87.960	87.890	88.370	87.650	88.180	88.260
76	1125	87.940	87.870	88.360	87.640	88.170	88.230
77	1140	87.920	87.850	88.400	87.650	88.180	88.250
78	1155	87.920	87.840	88.350	87.620	88.150	88.210
79	1170	87.910	87.830	88.370	87.630	88.150	88.210
80	1185	87.900	87.820	88.310	87.590	88.130	88.190
81	1200	87.870	87.810	88.320	87.600	88.120	88.190
82	1215	87.870	87.790	88.270	87.560	88.100	88.170
83	1230	87.870	87.780	88.260	87.550	88.090	88.160
84	1245	87.870	87.780	88.250	87.540	88.080	88.150
85	1260	87.850	87.770	88.230	87.530	88.070	88.140
86	1275	87.850	87.760	88.220	87.520	88.060	88.140
87	1290	87.840	87.740	88.200	87.510	88.050	88.130
88	1305	87.830	87.730	88.190	87.490	88.040	88.120
89	1320	87.820	87.730	88.200	87.490	88.040	88.120
90	1335	87.930	87.730	88.200	87.490	88.040	88.120
91	1350	87.830	87.720	88.170	87.480	88.020	88.110
92	1365	87.850	87.720	88.210	87.480	88.020	88.130
93	1380	87.810	87.690	88.150	87.460	88.000	88.040
94	1395	87.800	87.680	88.160	87.450	88.000	88.060
95	1410	87.800	87.690	88.160	87.450	88.000	88.080
96	1425	87.780	87.660	88.120	87.420	87.970	88.060
97	1440	87.770	87.650	88.110	87.410	87.960	88.050

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP 19 DEG. F	TEMP 20 DEG. F	TEMP 21 DEG. F	TEMP 22 DEG. F	TEMP 23 DEG. F	TEMP 24 DEG. F
1	0	89.160	88.940	88.760	89.080	89.160	89.330
2	15	89.170	88.950	88.820	89.080	89.160	89.330
3	30	89.140	88.920	88.720	89.050	89.140	89.300
4	45	89.130	88.920	88.760	89.040	89.120	89.290
5	60	89.120	88.890	88.690	89.020	89.100	89.270



6	75	89.100	88.870	88.660	89.000	89.080	89.250
7	90	89.080	88.850	88.670	88.980	89.060	89.230
8	105	89.070	88.840	88.680	88.970	89.050	89.220
9	120	89.050	88.820	88.620	88.960	89.040	89.210
10	135	89.040	88.800	88.640	88.940	89.010	89.190
11	150	89.030	88.800	88.600	88.930	89.010	88.800
12	165	89.020	88.780	88.580	88.910	88.990	89.160
13	180	89.000	88.760	88.570	88.890	88.970	89.140
14	195	88.990	88.750	88.580	88.890	88.960	89.120
15	210	88.980	88.740	88.540	88.880	88.960	89.100
16	225	88.960	88.730	88.550	88.870	88.950	89.110
17	240	88.950	88.720	88.560	88.860	88.930	89.090
18	255	88.950	88.700	88.600	88.860	88.930	89.070
19	270	88.940	88.700	88.530	88.840	88.900	89.060
20	285	88.920	88.670	88.500	88.820	88.890	89.040
21	300	88.910	88.670	88.490	88.810	88.880	89.040
22	315	88.900	88.660	88.510	88.800	88.870	89.020
23	330	88.880	88.640	88.460	88.780	88.860	89.010
24	345	88.880	88.630	88.440	88.770	88.850	89.000
25	360	88.850	88.610	88.430	88.760	88.830	88.980
26	375	88.830	88.590	88.380	88.740	88.820	88.950
27	390	88.820	88.590	88.420	88.740	88.900	88.950
28	405	88.800	88.560	88.380	88.710	88.780	88.920
29	420	88.790	88.550	88.340	88.690	88.760	88.920
30	435	88.770	88.540	88.320	88.690	88.760	88.900
31	450	88.780	88.530	88.370	88.680	88.740	88.920
32	465	88.750	88.510	88.270	88.660	88.720	88.870
33	480	88.720	88.480	88.280	88.630	88.700	88.850
34	495	88.700	88.460	88.270	88.610	88.670	88.830
35	510	88.680	88.450	88.230	88.590	88.650	88.820
36	525	88.670	88.430	88.230	88.580	88.640	88.800
37	540	88.650	88.410	88.200	88.560	88.620	88.780
38	555	88.640	88.400	88.210	88.540	88.610	88.770
39	570	88.610	88.370	88.180	88.520	88.590	88.750
40	585	88.590	88.560	88.160	88.500	88.570	88.730
41	600	88.570	88.340	88.110	88.490	88.550	88.710
42	615	88.550	88.320	88.110	88.480	88.540	88.690
43	630	88.540	88.300	88.110	88.450	88.520	88.680
44	645	88.530	88.290	88.070	88.440	88.510	88.660
45	660	88.510	88.270	88.090	88.420	88.490	88.640
46	675	88.490	88.250	88.050	88.400	88.470	88.620
47	690	88.480	88.240	88.020	88.390	88.460	88.610
48	705	88.470	88.220	87.990	88.380	88.440	88.590
49	720	88.450	88.210	87.970	88.360	88.420	88.570
50	735	88.430	88.200	87.990	88.350	88.410	88.560
51	750	88.420	88.170	87.940	88.330	88.390	88.540
52	765	88.400	88.160	87.930	88.310	88.380	88.520
53	780	88.380	88.140	87.900	88.290	88.360	88.500
54	795	88.360	88.120	87.880	88.270	88.340	88.470
55	810	88.350	88.110	87.920	88.260	88.340	88.450
56	825	88.380	88.120	87.880	88.250	88.330	88.460
57	840	88.340	88.090	87.900	88.240	88.320	88.430
58	855	88.320	88.070	87.840	88.220	88.300	88.410
59	870	88.290	88.060	87.810	88.200	88.290	88.390
60	885	88.310	88.070	87.820	88.210	88.280	88.400
61	900	88.300	88.050	87.800	88.190	88.270	88.390

62	917	88.300	88.030	87.810	88.180	88.260	88.390
63	930	88.280	88.010	87.900	88.160	88.230	88.380
64	945	88.270	88.000	87.790	88.150	88.220	88.380
65	960	88.270	87.990	87.740	88.150	88.220	88.380
66	975	88.260	87.990	87.820	88.150	88.220	88.370
67	990	88.240	88.000	87.820	88.140	88.200	88.360
68	1005	88.230	87.960	87.740	88.130	88.190	88.360
69	1020	88.220	87.950	87.750	88.120	88.180	88.340
70	1035	88.200	87.940	87.730	88.100	88.150	88.330
71	1050	88.200	87.930	87.750	88.090	88.140	88.320
72	1065	88.180	87.910	87.730	88.080	88.130	88.310
73	1080	88.180	87.910	87.760	88.070	88.130	88.300
74	1095	88.150	87.890	87.690	88.040	88.110	88.280
75	1110	88.160	87.880	87.680	88.030	88.100	88.270
76	1125	88.120	87.860	87.680	88.020	88.080	88.250
77	1140	88.130	87.870	87.670	88.020	88.080	88.250
78	1155	88.110	87.850	87.720	88.010	88.060	88.230
79	1170	88.110	87.850	87.720	88.010	88.060	88.230
80	1185	88.090	87.830	87.650	87.990	88.040	88.220
81	1200	88.090	87.830	87.670	87.990	88.040	88.200
82	1215	88.070	87.810	87.660	87.980	88.030	88.200
83	1230	88.070	87.810	87.630	87.970	88.020	88.180
84	1245	88.080	87.810	87.690	87.980	88.030	88.170
85	1260	88.070	87.900	87.710	87.970	88.020	88.170
86	1275	88.070	87.800	87.670	87.970	88.010	88.160
87	1290	88.070	87.790	87.700	87.990	88.010	88.160
88	1305	88.060	87.780	87.660	87.950	88.000	88.140
89	1320	88.060	87.780	87.700	87.960	88.000	88.140
90	1335	88.060	87.780	87.640	87.950	88.000	88.140
91	1350	88.060	87.780	87.650	87.960	87.990	88.130
92	1365	88.060	87.770	87.690	87.950	87.990	88.120
93	1380	88.030	87.750	87.630	87.930	87.980	88.100
94	1395	88.020	87.740	87.580	87.930	87.960	88.090
95	1410	88.030	87.750	87.590	87.930	87.960	88.090
96	1425	88.010	87.730	87.610	87.910	87.950	88.070
97	1440	88.010	87.720	87.550	87.900	87.940	88.070

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP 25 DEG. F	TEMP 26 DEG. F	TEMP 27 DEG. F	TEMP 28 DEG. F	TEMP 29 DEG. F	TEMP 30 DEG. F
1	0	89.060	88.520	89.000	89.830	90.180	89.800
2	15	89.060	88.680	88.990	89.840	90.140	89.740
	30	89.040	88.620	88.980	89.650	90.090	89.710
	45	89.030	88.620	88.970	89.680	90.050	89.660
5	60	89.000	88.510	88.940	89.580	89.990	89.600

6	75	88.980	88.550	88.930	89.590	89.950	89.540
7	90	88.960	88.440	88.910	89.560	89.910	89.540
	105	88.950	88.550	88.900	89.470	89.860	89.460
	120	88.930	88.470	88.890	89.520	89.830	89.420
10	135	88.920	88.520	88.870	89.450	89.780	89.370
11	150	88.910	88.550	88.860	89.410	89.750	89.350
12	165	88.900	88.580	88.850	89.400	89.710	89.310
13	180	88.870	88.520	88.820	89.290	89.660	89.260
14	195	88.860	88.410	88.810	89.320	89.630	89.230
15	210	88.850	88.400	88.790	89.270	89.590	89.220
16	225	88.850	88.440	88.770	89.250	89.570	89.180
17	240	88.830	88.430	88.760	89.220	89.530	89.130
18	255	88.830	88.430	88.740	89.190	89.490	89.100
19	270	88.810	88.350	88.740	89.150	89.460	89.080
	285	88.800	88.470	88.720	89.110	89.430	89.050
	300	88.790	88.370	88.710	89.080	89.400	89.010
22	315	88.780	88.380	88.690	89.050	89.370	89.000
23	330	88.750	88.370	88.670	89.010	89.340	88.950
24	345	88.760	88.350	88.660	88.990	89.310	88.930
25	360	88.740	88.250	88.640	88.880	89.280	88.910
26	375	88.720	88.380	88.620	88.860	89.240	88.870
27	390	88.720	88.300	88.600	88.920	89.210	88.850
28	405	88.680	88.230	88.570	88.810	89.180	88.810
29	420	88.670	88.260	88.550	88.830	89.150	88.750
30	435	88.660	88.160	88.530	88.820	89.130	88.750
31	450	88.660	88.230	88.540	88.810	89.110	88.730
32	465	88.620	88.100	88.490	88.730	89.070	88.690
	480	88.600	88.110	88.470	88.710	89.040	88.660
	495	88.580	88.170	88.430	88.690	89.000	88.620
35	510	88.560	88.130	88.420	88.660	88.980	88.590
36	525	88.550	88.180	88.400	88.680	88.960	88.570
37	540	88.530	88.180	88.380	88.610	88.930	88.580
38	555	88.520	88.140	88.360	88.580	88.900	88.520
39	570	88.490	88.060	88.330	88.530	88.880	88.490
40	585	88.500	88.070	88.310	88.560	88.950	88.470
41	600	88.450	88.130	88.270	88.510	88.830	88.440
42	615	88.440	88.070	88.250	88.490	88.810	88.430
43	630	88.420	88.050	88.220	88.460	88.780	88.400
44	645	88.400	88.000	88.220	88.460	88.760	88.380
45	660	88.370	87.970	88.190	88.430	88.740	88.350
	675	88.350	87.940	88.170	88.390	88.710	88.320
	690	88.450	87.900	88.140	88.370	88.700	88.320
48	705	88.330	87.870	88.130	88.350	88.670	88.290
49	720	88.310	87.880	88.110	88.270	88.660	88.280
50	735	88.290	87.900	88.090	88.310	88.640	88.270
51	750	88.270	87.800	88.060	88.270	88.620	88.230
52	765	88.250	87.760	88.050	88.280	88.600	88.210
53	780	88.230	87.880	88.020	88.260	88.570	88.200
54	795	88.210	87.740	88.010	88.230	88.550	88.180
55	810	88.200	87.750	88.000	88.220	88.540	88.160
56	825	88.190	87.810	87.990	88.260	88.530	88.140
57	840	88.180	87.810	87.980	88.240	88.520	88.130
	855	88.150	87.770	87.960	88.160	88.480	88.090
	870	88.150	87.670	87.940	88.130	88.460	88.080
60	885	88.140	87.730	87.930	88.120	88.450	88.080
61	900	88.130	87.770	87.930	88.120	88.430	88.060

62	917	88.130	87.740	87.950	88.110	88.420	88.040
63	930	88.120	87.670	87.940	88.110	88.400	88.040
64	945	88.100	87.670	87.930	88.090	88.380	88.000
65	960	88.100	87.570	87.930	88.010	88.380	88.080
66	975	88.100	87.540	87.940	88.040	88.360	87.990
67	990	88.090	87.710	87.940	88.080	88.360	87.980
68	1005	88.090	87.570	87.940	87.990	88.340	87.980
69	1020	88.080	87.690	87.960	87.980	88.320	87.950
70	1035	88.060	87.490	87.960	87.940	88.300	87.920
71	1050	88.070	87.630	87.950	87.960	88.280	87.900
72	1065	88.040	87.660	87.940	87.930	88.270	87.920
73	1080	88.040	87.510	87.960	87.940	88.260	87.940
74	1095	88.010	87.470	87.930	87.870	88.240	87.890
75	1110	88.000	87.570	87.940	87.910	88.220	87.850
76	1125	87.990	87.650	87.950	87.900	88.200	87.870
77	1140	87.980	87.450	87.950	87.850	88.190	87.820
78	1155	87.970	87.470	87.960	87.880	88.180	87.810
79	1170	87.970	87.570	87.960	87.870	88.160	87.810
80	1185	87.950	87.550	87.960	87.770	88.150	87.780
81	1200	87.950	87.470	87.950	87.750	88.140	87.800
82	1215	87.940	87.340	87.940	87.780	88.130	87.750
83	1230	87.930	87.520	87.920	87.760	88.110	87.740
84	1245	87.930	87.490	87.930	87.750	88.110	87.720
85	1260	87.930	87.390	87.930	87.770	88.100	87.720
86	1275	87.930	87.480	87.940	87.610	88.090	87.700
87	1290	87.930	87.440	87.930	87.740	88.080	87.690
88	1305	87.910	87.400	87.930	87.770	88.060	87.760
89	1320	87.910	87.550	87.930	87.750	88.060	87.710
90	1335	87.920	87.430	87.930	87.660	88.050	87.670
91	1350	87.910	87.600	87.930	87.790	88.040	87.670
92	1365	87.910	87.550	87.910	87.720	88.020	87.630
93	1380	87.890	87.610	87.900	87.630	88.010	87.670
94	1395	87.880	87.550	87.890	87.620	88.000	87.630
95	1410	87.870	87.490	87.890	87.660	87.990	87.630
96	1425	87.860	87.360	87.870	87.600	87.970	87.610
97	1440	87.850	87.320	87.860	87.510	87.970	87.600

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP DEG. F 31	TEMP DEG. F 32	TEMP DEG. F 33	TEMP DEG. F 34	TEMP DEG. F 35	TEMP DEG. F 36
1	0	89.900	89.980	89.860	90.440	89.790	89.880
2	15	89.840	89.920	89.810	90.410	89.740	89.840
3	30	89.800	89.880	89.760	90.340	89.690	89.780
4	45	89.750	89.830	89.710	90.290	89.650	89.730
5	60	89.700	89.780	89.660	90.240	89.590	89.680

6	75	89.650	89.730	89.610	90.230	89.550	89.640
7	90	89.630	89.710	89.570	90.140	89.510	89.600
8	105	89.560	89.650	89.520	90.180	89.460	89.550
9	120	89.540	89.630	89.490	90.160	89.440	89.520
10	135	89.480	89.570	89.440	90.100	89.390	89.480
11	150	89.440	89.530	89.410	89.990	89.350	89.430
12	165	89.410	89.500	89.370	89.980	89.310	89.400
13	180	89.360	89.450	89.320	89.890	89.260	89.350
14	195	89.330	89.420	89.300	89.920	89.230	89.340
15	210	89.300	89.390	89.250	89.870	89.190	89.290
16	225	89.260	89.350	89.230	89.840	89.160	89.250
17	240	89.230	89.320	89.190	89.820	89.130	89.220
18	255	89.200	89.280	89.150	89.800	89.090	89.180
19	270	89.170	89.250	89.120	89.730	89.060	89.150
20	285	89.130	89.220	89.090	89.720	89.030	89.120
21	300	89.100	89.190	89.060	89.720	89.000	89.090
22	315	89.080	89.170	89.030	89.670	88.970	89.060
23	330	89.030	89.130	89.000	89.630	88.940	89.030
24	345	89.010	89.110	88.970	89.610	88.920	89.010
25	360	88.990	89.080	88.940	89.560	88.890	88.970
26	375	88.950	89.040	88.900	89.490	88.840	88.940
27	390	88.940	89.020	88.880	89.490	88.820	88.910
28	405	88.880	88.980	88.840	89.460	88.790	88.870
29	420	88.850	88.950	88.810	89.450	88.750	88.850
30	435	88.830	88.930	88.800	89.390	88.740	88.830
31	450	88.810	88.920	88.770	89.420	88.710	88.810
32	465	88.780	88.870	88.730	89.340	88.680	88.770
33	480	88.750	88.840	88.700	89.320	88.650	88.740
34	495	88.700	88.800	88.670	89.340	88.610	88.700
35	510	88.680	88.780	88.640	89.270	88.590	88.680
36	525	88.660	88.760	88.640	89.280	88.570	88.670
37	540	88.630	88.730	88.590	89.220	88.540	88.620
38	555	88.610	88.700	88.570	89.180	88.510	88.600
39	570	88.580	88.670	88.540	89.170	88.480	88.570
40	585	88.560	88.650	88.520	89.180	88.460	88.550
41	600	88.540	88.630	88.500	89.110	88.440	88.530
42	615	88.510	88.600	88.470	89.130	88.410	88.500
43	630	88.480	88.580	88.440	89.060	88.390	88.480
44	645	88.470	88.560	88.420	89.030	88.370	88.460
45	660	88.440	88.540	88.400	89.040	88.340	88.430
46	675	88.410	88.510	88.380	89.050	88.320	88.410
47	690	88.400	88.500	88.370	88.980	88.310	88.400
48	705	88.370	88.470	88.340	88.960	88.280	88.370
49	720	88.350	88.450	88.320	88.940	88.260	88.350
50	735	88.340	88.440	88.300	88.910	88.240	88.330
51	750	88.320	88.410	88.280	88.900	88.220	88.310
52	765	88.290	88.390	88.260	88.880	88.200	88.290
53	780	88.270	88.370	88.240	88.840	88.180	88.270
54	795	88.250	88.350	88.220	88.850	88.160	88.250
55	810	88.230	88.330	88.200	88.840	88.140	88.230
56	825	88.220	88.320	88.190	88.880	88.140	88.220
57	840	88.210	88.300	88.190	88.830	88.120	88.210
58	855	88.180	88.270	88.140	88.730	88.090	88.180
59	870	88.160	88.250	88.120	88.740	88.070	88.160
60	885	88.150	88.240	88.110	88.700	88.060	88.150
61	900	88.130	88.230	88.100	88.680	88.040	88.130

62	917	88.120	88.210	88.080	88.650	88.030	88.120
63	930	88.110	88.200	88.070	88.780	86.010	88.100
64	945	88.080	88.180	88.040	88.680	87.990	88.090
65	960	88.130	88.210	88.070	88.660	86.000	88.090
66	975	88.060	88.160	88.030	88.620	87.970	88.070
67	990	88.050	88.160	88.010	88.710	87.970	88.050
68	1005	88.050	88.140	88.010	88.570	87.950	88.040
69	1020	88.020	88.120	87.980	88.610	87.930	88.020
70	1035	87.990	88.100	87.960	88.550	87.910	88.010
71	1050	87.970	88.080	87.950	88.640	87.900	88.000
72	1065	87.970	88.070	87.940	88.510	87.880	87.980
73	1080	87.950	88.050	87.930	88.480	87.870	87.970
74	1095	87.930	88.040	87.910	88.480	87.850	87.950
75	1110	87.920	88.020	87.890	88.520	87.840	87.930
76	1125	87.910	88.080	87.880	88.500	87.820	87.910
77	1140	87.880	87.990	87.860	88.450	87.800	87.890
78	1155	87.870	87.980	87.850	88.500	87.790	87.890
79	1170	87.870	87.970	87.840	88.480	87.780	87.900
80	1185	87.840	87.950	87.820	88.410	87.760	87.860
81	1200	87.840	87.950	87.810	88.440	87.750	87.840
82	1215	87.820	87.930	87.790	88.440	87.740	87.830
83	1230	87.800	87.910	87.780	88.440	87.720	87.820
84	1245	87.790	87.900	87.770	88.380	87.710	87.810
85	1260	87.780	87.890	87.760	88.380	87.700	87.790
86	1275	87.770	87.900	87.750	88.360	87.690	87.790
87	1290	87.760	87.870	87.740	88.400	87.680	87.780
88	1305	87.770	87.870	87.750	88.380	87.670	87.770
89	1320	87.750	87.860	87.720	88.380	87.660	87.770
90	1335	87.740	87.850	87.720	88.340	87.660	87.750
91	1350	87.730	87.840	87.710	88.370	87.660	87.750
92	1365	87.700	87.810	87.680	88.320	87.630	87.730
93	1380	87.720	87.820	87.690	88.300	87.630	87.720
94	1395	87.690	87.800	87.660	88.270	87.610	87.710
95	1410	87.680	87.780	87.650	88.250	87.600	87.690
96	1425	87.660	87.770	87.630	88.240	87.580	87.680
97	1440	87.660	87.760	87.630	88.290	87.570	87.670

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP 37 DEG. F	TEMP 38 DEG. F	TEMP 39 DEG. F	PRES 1 PSIA	HUM 1 FRACTION	HUM 2 FRACTION
1	0	88.960	89.350	0.000	37.483	0.858	0.772
2	15	88.800	89.440	0.000	37.481	0.857	0.772
3	30	88.910	89.400	0.000	37.479	0.857	0.771
4	45	88.800	89.360	0.000	37.476	0.857	0.771
5	60	89.150	88.790	0.000	37.475	0.857	0.772

6	75	88.950	88.960	0.000	37.473	0.857	0.771
7	90	88.640	89.200	0.000	37.472	0.858	0.772
8	105	88.560	89.340	0.000	37.469	0.858	0.772
	120	89.000	88.370	0.000	37.468	0.857	0.773
	135	88.270	89.410	0.000	37.466	0.858	0.773
11	150	88.280	89.030	0.000	37.464	0.859	0.773
12	165	88.250	89.000	0.000	37.463	0.857	0.772
13	180	88.300	88.970	0.000	37.460	0.859	0.774
14	195	88.760	88.570	0.000	37.458	0.858	0.773
15	210	88.150	88.830	0.000	37.457	0.859	0.773
16	225	88.140	88.850	0.000	37.455	0.858	0.773
17	240	88.180	88.520	0.000	37.453	0.858	0.773
18	255	88.690	88.170	0.000	37.451	0.858	0.773
19	270	88.600	88.270	0.000	37.450	0.859	0.774
20	285	88.600	88.220	0.000	37.449	0.859	0.773
	300	88.560	88.260	0.000	37.448	0.859	0.773
	315	88.550	88.100	0.000	37.446	0.859	0.773
23	330	88.500	88.220	0.000	37.444	0.859	0.773
24	345	88.490	88.050	0.000	37.442	0.859	0.773
25	360	88.460	88.030	0.000	37.441	0.860	0.774
26	375	88.490	87.980	0.000	37.440	0.859	0.774
27	390	88.420	88.090	0.000	37.437	0.860	0.774
28	405	88.440	37.930	0.000	37.435	0.859	0.774
29	420	88.420	87.890	0.000	37.433	0.861	0.775
30	435	88.390	87.820	0.000	37.431	0.863	0.777
31	450	88.370	87.800	0.000	37.428	0.863	0.777
32	465	88.320	88.010	0.000	37.426	0.865	0.779
33	480	88.360	87.750	0.000	37.424	0.863	0.778
	495	88.300	87.680	0.000	37.421	0.865	0.779
	510	88.260	87.620	0.000	37.419	0.866	0.779
36	525	88.260	87.730	0.000	37.416	0.866	0.780
37	540	88.320	87.520	0.000	37.415	0.865	0.779
38	555	88.240	87.570	0.000	37.413	0.866	0.780
39	570	88.210	87.500	0.000	37.410	0.865	0.780
40	585	88.190	87.610	0.000	37.409	0.865	0.780
41	600	88.160	87.490	0.000	37.407	0.865	0.779
42	615	88.180	87.370	0.000	37.405	0.865	0.780
43	630	88.150	87.370	0.000	37.403	0.865	0.779
44	645	88.120	87.570	0.000	37.402	0.865	0.780
45	660	88.090	87.400	0.000	37.400	0.866	0.780
46	675	88.090	87.460	0.000	37.398	0.866	0.780
	690	88.080	87.300	0.000	37.396	0.867	0.781
	705	88.050	87.250	0.000	37.395	0.867	0.782
49	720	88.070	87.270	0.000	37.394	0.869	0.782
50	735	88.040	87.200	0.000	37.391	0.869	0.783
51	750	88.090	87.250	0.000	37.389	0.869	0.783
52	765	88.000	87.250	0.000	37.387	0.868	0.783
53	780	88.080	87.100	0.000	37.385	0.868	0.783
54	795	87.970	87.100	0.000	37.383	0.866	0.782
55	810	87.970	87.050	0.000	37.382	0.867	0.782
56	825	88.000	87.200	0.000	37.381	0.867	0.782
57	840	88.240	87.020	0.000	37.380	0.867	0.782
58	855	88.020	87.000	0.000	37.379	0.867	0.782
	870	87.920	87.200	0.000	37.378	0.867	0.782
	885	87.980	87.050	0.000	37.377	0.866	0.782
61	900	87.930	87.010	0.000	37.377	0.866	0.782



62	917	87.890	87.010	0.000	37.376	0.866	0.782
63	930	87.880	86.960	0.000	37.375	0.866	0.782
64	945	87.830	87.150	0.000	37.375	0.866	0.782
	960	87.870	86.930	0.000	37.374	0.866	0.782
	975	87.090	87.450	0.000	37.373	0.867	0.782
67	990	87.110	87.120	0.000	37.372	0.867	0.782
68	1005	87.060	87.040	0.000	37.371	0.868	0.783
69	1020	86.950	87.450	0.000	37.370	0.867	0.782
70	1035	86.710	87.460	0.000	37.369	0.867	0.782
71	1050	86.930	87.440	0.000	37.368	0.865	0.781
72	1065	86.730	87.440	0.000	37.367	0.868	0.782
73	1080	86.900	86.750	0.000	37.366	0.867	0.782
74	1095	86.880	87.340	0.000	37.366	0.866	0.782
75	1110	86.900	87.440	0.000	37.364	0.867	0.782
76	1125	87.320	86.900	0.000	37.364	0.867	0.782
	1140	87.000	87.330	0.000	37.361	0.867	0.781
	1155	86.970	87.330	0.000	37.361	0.866	0.781
79	1170	86.500	87.390	0.000	37.361	0.867	0.781
80	1185	86.480	87.380	0.000	37.361	0.865	0.781
81	1200	86.720	87.410	0.000	37.359	0.866	0.781
82	1215	86.500	87.350	0.000	37.359	0.867	0.781
83	1230	87.180	87.350	0.000	37.358	0.866	0.781
84	1245	86.820	87.380	0.000	37.358	0.867	0.782
85	1260	86.780	87.320	0.000	37.357	0.867	0.782
86	1275	86.970	87.330	0.000	37.357	0.867	0.782
87	1290	86.630	87.370	0.000	37.356	0.865	0.780
88	1305	87.000	87.360	0.000	37.356	0.866	0.781
89	1320	86.800	87.310	0.000	37.355	0.866	0.780
	1335	86.810	87.280	0.000	37.355	0.864	0.779
	1350	86.790	87.280	0.000	37.354	0.864	0.779
92	1365	86.390	87.340	0.000	37.353	0.865	0.779
93	1380	86.600	86.990	0.000	37.353	0.865	0.779
94	1395	86.550	87.260	0.000	37.352	0.865	0.780
95	1410	86.470	87.350	0.000	37.350	0.865	0.779
96	1425	86.950	87.230	0.000	37.349	0.864	0.778
97	1440	86.590	87.250	0.000	37.349	0.866	0.780

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	HUM 3 FRACTION	HUM 4 FRACTION	HUM 5 FRACTION	HUM 6 FRACTION	HUM 7 FRACTION	HUM 8 FRACTION
1	0	0.831	0.790	0.799	0.829	0.851	0.000
2	15	0.830	0.790	0.799	0.828	0.851	0.000
	30	0.829	0.789	0.799	0.828	0.850	0.000
	45	0.830	0.790	0.799	0.828	0.851	0.000
5	60	0.830	0.789	0.799	0.828	0.851	0.000

6	75	0.830	0.790	0.799	0.828	0.851	0.000
7	90	0.831	0.791	0.800	0.830	0.852	0.000
8	105	0.831	0.791	0.800	0.831	0.853	0.000
9	120	0.831	0.792	0.800	0.831	0.854	0.000
10	135	0.831	0.792	0.800	0.831	0.854	0.000
11	150	0.832	0.792	0.800	0.832	0.854	0.000
12	165	0.831	0.791	0.799	0.831	0.853	0.000
13	180	0.833	0.793	0.801	0.833	0.855	0.000
14	195	0.831	0.792	0.800	0.832	0.854	0.000
15	210	0.832	0.792	0.801	0.833	0.855	0.000
16	225	0.831	0.791	0.800	0.832	0.855	0.000
17	240	0.831	0.792	0.801	0.833	0.854	0.000
18	255	0.832	0.792	0.801	0.833	0.855	0.000
19	270	0.833	0.794	0.801	0.834	0.855	0.000
20	285	0.832	0.793	0.801	0.833	0.854	0.000
21	300	0.832	0.792	0.801	0.834	0.855	0.000
22	315	0.832	0.793	0.801	0.834	0.856	0.000
23	330	0.833	0.793	0.802	0.836	0.856	0.000
24	345	0.831	0.794	0.802	0.834	0.857	0.000
25	360	0.833	0.794	0.802	0.837	0.857	0.000
26	375	0.832	0.794	0.802	0.837	0.857	0.000
27	390	0.833	0.794	0.803	0.837	0.857	0.000
28	405	0.832	0.795	0.803	0.837	0.857	0.000
29	420	0.833	0.796	0.804	0.838	0.858	0.000
30	435	0.835	0.797	0.805	0.840	0.860	0.000
31	450	0.835	0.798	0.806	0.840	0.860	0.000
32	465	0.838	0.800	0.808	0.843	0.863	0.000
33	480	0.835	0.799	0.806	0.841	0.861	0.000
34	495	0.837	0.800	0.808	0.843	0.864	0.000
35	510	0.838	0.801	0.808	0.844	0.865	0.000
36	525	0.838	0.802	0.809	0.845	0.866	0.000
37	540	0.836	0.801	0.808	0.843	0.866	0.000
38	555	0.837	0.802	0.809	0.844	0.866	0.000
39	570	0.836	0.802	0.809	0.844	0.865	0.000
40	585	0.836	0.801	0.809	0.844	0.866	0.000
41	600	0.835	0.801	0.808	0.844	0.866	0.000
42	615	0.835	0.802	0.808	0.845	0.865	0.000
43	630	0.835	0.802	0.808	0.844	0.865	0.000
44	645	0.835	0.802	0.809	0.845	0.866	0.000
45	660	0.836	0.802	0.810	0.846	0.867	0.000
46	675	0.836	0.803	0.810	0.846	0.868	0.000
47	690	0.837	0.803	0.811	0.849	0.869	0.000
48	705	0.838	0.804	0.811	0.849	0.871	0.000
49	720	0.839	0.805	0.812	0.850	0.871	0.000
50	735	0.839	0.805	0.813	0.851	0.872	0.000
51	750	0.839	0.805	0.813	0.851	0.872	0.000
52	765	0.839	0.805	0.812	0.851	0.872	0.000
53	780	0.839	0.805	0.812	0.851	0.873	0.000
54	795	0.838	0.804	0.812	0.850	0.872	0.000
55	810	0.837	0.804	0.812	0.851	0.871	0.000
56	825	0.838	0.804	0.812	0.851	0.871	0.000
57	840	0.837	0.804	0.812	0.851	0.871	0.000
58	855	0.837	0.804	0.812	0.851	0.871	0.000
59	870	0.837	0.804	0.812	0.850	0.871	0.000
60	885	0.837	0.803	0.811	0.849	0.870	0.000
61	900	0.837	0.804	0.811	0.849	0.869	0.000



62	917	0.837	0.804	0.811	0.849	0.870	0.000
63	930	0.837	0.804	0.811	0.848	0.870	0.000
64	945	0.837	0.804	0.811	0.848	0.870	0.000
65	960	0.837	0.804	0.812	0.849	0.870	0.000
66	975	0.838	0.804	0.811	0.848	0.870	0.000
67	990	0.838	0.804	0.811	0.848	0.870	0.000
68	1005	0.838	0.804	0.812	0.848	0.870	0.000
69	1020	0.838	0.805	0.812	0.848	0.870	0.000
70	1035	0.838	0.804	0.812	0.848	0.870	0.000
71	1050	0.837	0.803	0.811	0.846	0.869	0.000
72	1065	0.839	0.805	0.812	0.849	0.870	0.000
73	1080	0.839	0.804	0.812	0.848	0.870	0.000
74	1095	0.838	0.804	0.811	0.847	0.869	0.000
75	1110	0.830	0.804	0.812	0.847	0.869	0.000
76	1125	0.839	0.805	0.812	0.847	0.869	0.000
77	1140	0.838	0.804	0.811	0.845	0.868	0.000
78	1155	0.838	0.804	0.811	0.846	0.868	0.000
79	1170	0.839	0.804	0.811	0.846	0.869	0.000
80	1185	0.837	0.803	0.811	0.845	0.867	0.000
81	1200	0.838	0.804	0.811	0.845	0.870	0.000
82	1215	0.837	0.804	0.811	0.845	0.868	0.000
83	1230	0.838	0.804	0.811	0.845	0.867	0.000
84	1245	0.839	0.804	0.811	0.846	0.869	0.000
85	1260	0.839	0.805	0.811	0.846	0.868	0.000
86	1275	0.839	0.805	0.811	0.846	0.868	0.000
87	1290	0.836	0.803	0.810	0.843	0.866	0.000
88	1305	0.837	0.804	0.810	0.844	0.867	0.000
89	1320	0.837	0.803	0.810	0.844	0.866	0.000
90	1335	0.836	0.802	0.809	0.843	0.866	0.000
91	1350	0.836	0.803	0.809	0.843	0.865	0.000
92	1365	0.837	0.803	0.809	0.843	0.865	0.000
93	1380	0.837	0.803	0.809	0.843	0.866	0.000
94	1395	0.837	0.804	0.809	0.844	0.866	0.000
95	1410	0.837	0.803	0.809	0.843	0.865	0.000
96	1425	0.835	0.802	0.809	0.842	0.865	0.000
97	1440	0.839	0.805	0.810	0.895	0.867	0.000

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	HUM 9 FRACTION	HUM 10 FRACTION
1	0	0.844	0.876
2	15	0.844	0.876
3	30	0.844	0.876
4	45	0.844	0.877
5	60	0.844	0.877



6	75	0.845	0.878
7	90	0.846	0.881
8	105	0.847	0.881
9	120	0.847	0.882
10	135	0.847	0.881
11	150	0.848	0.882
12	165	0.847	0.882
13	180	0.849	0.884
14	195	0.847	0.883
15	210	0.848	0.883
16	225	0.848	0.882
17	240	0.847	0.883
18	255	0.848	0.883
19	270	0.848	0.884
20	285	0.847	0.883
21	300	0.847	0.884
22	315	0.847	0.864
23	330	0.848	0.884
24	345	0.847	0.884
25	360	0.848	0.885
26	375	0.847	0.884
27	390	0.848	0.884
28	405	0.847	0.884
29	420	0.847	0.884
30	435	0.850	0.885
31	450	0.850	0.886
32	465	0.851	0.887
33	480	0.849	0.885
34	495	0.851	0.885
35	510	0.851	0.886
36	525	0.851	0.886
37	540	0.848	0.884
38	555	0.849	0.885
39	570	0.848	0.884
40	585	0.848	0.884
41	600	0.847	0.883
42	615	0.847	0.883
43	630	0.846	0.882
44	645	0.846	0.882
45	660	0.846	0.881
46	675	0.845	0.881
47	690	0.846	0.882
48	705	0.846	0.881
49	720	0.846	0.880
50	735	0.846	0.881
51	750	0.845	0.881
52	765	0.844	0.879
53	780	0.844	0.879
54	795	0.843	0.878
55	810	0.842	0.877
56	825	0.841	0.877
57	840	0.840	0.876
58	855	0.840	0.876
59	870	0.839	0.875
60	885	0.838	0.874
61	900	0.838	0.874

62	917	0.838	0.874
63	930	0.837	0.874
64	945	0.836	0.873
65	960	0.836	0.872
66	975	0.836	0.872
67	990	0.836	0.872
68	1005	0.836	0.872
69	1020	0.836	0.872
70	1035	0.836	0.871
71	1050	0.836	0.870
72	1065	0.837	0.870
73	1080	0.836	0.869
74	1095	0.836	0.869
75	1110	0.836	0.869
76	1125	0.836	0.869
77	1140	0.836	0.866
78	1155	0.835	0.867
79	1170	0.836	0.867
80	1185	0.834	0.866
81	1200	0.835	0.866
82	1215	0.835	0.866
83	1230	0.834	0.866
84	1245	0.836	0.865
85	1260	0.835	0.866
86	1275	0.835	0.866
87	1290	0.833	0.865
88	1305	0.833	0.865
89	1320	0.833	0.865
90	1335	0.833	0.864
91	1350	0.832	0.864
92	1365	0.832	0.864
93	1380	0.832	0.863
94	1395	0.832	0.864
95	1410	0.832	0.864
96	1425	0.831	0.864
97	1440	0.834	0.865

END OF TABLE

END OF REPORT ON CONTAINMENT LEAK RATE TEST TO NRC

2.
LOW PRESSURE
CONTROLLED LEAK RATE TEST



LEAK RATE COMPUTED USING TOTAL TIME METHOD
AS RECOMMENDED BY APPENDIX J FOR 10 CFR 50
(REACTOR CONTAINMENT LEAKAGE TESTING FOR WATER COOLED POWER REACTORS)

TEST PERIOD STARTED AT 1700 HOURS ON JULY 2, 1975

A LEAST SQUARES FIRST ORDER FIT OF LEAK RATE TO TIME
SHOULD YIELD A SLOPE OF ZERO AND AN INTERCEPT EQUAL
TO THE LEAK RATE AS COMPUTED AT THE INITIAL START TIME

THE EQUATION HAS THE FORM $L = ST + R$

WHERE L = CORRELATED LEAK RATE

S = SLOPE OF CORRELATION

T = TIME IN HOURS

R = INTERCEPT LEAK RATE

LEAK RATE = -0.005 HOURS + 0.211 PER CENT

MEAN = 0.203 PER CENT

ERROR COEFFICIENT = 0.016

WHERE COEFFICIENT OF 1.0 MEANS A PERFECT FIT &

COEFFICIENT OF 0.0 MEANS NO CORRELATION.

INITIAL CONTAINMENT AIR WEIGHT = 453622 LBS.

FINAL CONTAINMENT AIR WEIGHT = 453518 LBS.

LEAK RATE FOR 3.25 HOUR PERIOD IS 0.023 PER CENT BY WEIGHT.

MAXIMUM NRC LEAK RATE OF 0.280 PER CENT PER DAY

GIVEN FOR LOW PRESSURE TEST AT 37.33 PSIA

TEMPERATURE LOOP ERROR = 0.300 DEGREES F. PRESSURE LOOP ERROR = 0.002 PSIA.
HUMIDITY LOOP ERROR = 2.50 PERCENT

INSTRUMENT ERROR CONTRIBUTES $.0938$ PERCENT PER DAY



TO ESTABLISH 95 PERCENT CONFIDENCE BOUND

NOTE FOR PLOT - TIME INCREASES DOWN THE PAGE.
 VARIABLE(S) INCREASE TO THE RIGHT.
 D DENOTES A DELETED SENSOR.
 LOWER VALUE INDICES MAY BE COVERED
 BY HIGHER VALUE INDICES IF THE
 NUMERICAL VALUES ARE CLOSE.

PLOT VARIABLE INDEX

- 1 - STATISTICAL LEAK RATE BASED ON TOTAL TIME METHOD
- 2 - MAXIMUM LEAK RATE (PER CENT)
- 3 - NRC TECHNICAL SPECIFICATION LIMIT FOR LEAK RATE
- 4 - 95 PER CENT CONFIDENCE LIMIT FOR INSTRUMENT ERROR
- 5 - LEAK RATE COMPUTED FROM FIRST ORDER EQUATION FIT

	-8.38E+00	-6.46E+00	-4.55E+00	-2.63E+00	-7.10E-01	1.21E+00	
	-7.42E+00	-5.50E+00	-3.59E+00	-1.67E+00	2.49E-01		
0.00E-01	*-----*	*-----*	*-----*	*-----*	*-----*	*-----*	5-2----
	.	.	.	.	.	.	5 2 .
1	.	.	.	.	.	.	5 2 .
.	.	.	.	.	.	.	5 2 1 .
.	.	.	.	.	.	.	512 .
.	.	.	.	.	.	.	5 2 1 .
.	.	.	.	.	.	.	5 2 .
.	.	.	.	.	.	.	5 21 .
.	.	.	.	.	.	.	512 .
.	.	.	.	.	.	.	512 .
1.50E+02	*-----*	*-----*	*-----*	*-----*	*-----*	*-----*	512----
.	.	.	.	.	.	.	512 .
.	.	.	.	.	.	.	5 2 .
.	.	.	.	.	.	.	15 2 .

NOTE FOR PLOT - TIME INCREASES DOWN THE PAGE.
 VARIABLE(S) INCREASE TO THE RIGHT.
 D DENOTES A DELETED SENSOR.

LOWER VALUE INDICES MAY BE COVERED
BY HIGHER VALUE INDICES IF THE
NUMERICAL VALUES ARE CLOSE.

PLCT VARIABLE INDEX

- 1 - MAXIMUM LEAK RATE (PER CENT)
- 2 - NRC TECHNICAL SPECIFICATION LIMIT FOR LEAK RATE
- 3 - 95 PER CENT CONFIDENCE LIMIT FOR INSTRUMENT ERROR
- 4 - LEAK RATE COMPUTED FROM FIRST ORDER EQUATION FIT

	1.87E-01	2.49E-01	3.12E-01	3.75E-01	4.37E-01	5.00E-01	
	2.18E-01	2.81E-01	3.43E-01	4.06E-01	4.69E-01		
0.00E+01	3	4	2	2	2	2	1
	3	4	2	2	2	2	1
	3	4	2	2	2	2	1
	3	4	2	2	2	2	1
	3	4	2	2	2	2	1
	3	4	2	2	2	2	1
	3	4	2	2	2	2	1
	3	4	2	2	2	2	1
	3	4	2	2	2	2	1
1.50E+02	3	4	2	2	2	2	1
	3	4	2	2	2	2	1
	3	4	2	2	2	2	1
	3	4	2	2	2	2	1

NOTE FOR PLCT - TIME INCREASES DOWN THE PAGE.
VARIABLE(S) INCREASE TO THE RIGHT.
D DENOTES A DELETED SENSOR.
LOWER VALUE INDICES MAY BE COVERED
BY HIGHER VALUE INDICES IF THE
NUMERICAL VALUES ARE CLOSE.

PLCT VARIABLE INDEX

- 1 - AVG. TEM (DEG. F)

[illegible]

NOTE FOR PLOT - TIME INCREASES DOWN THE PAGE.
VARIABLE(S) INCREASE TO THE RIGHT.
D DENOTES A DELETED SENSOR.
LOWER VALUE INDICES MAY BE COVERED
BY HIGHER VALUE INDICES IF THE
NUMERICAL VALUES ARE CLOSE.

PLCT VARIABLE INDEX

1 - AVG, FRE (PSIA)

[illegible]

NOTE FOR PLOT - TIME INCREASES DOWN THE PAGE.
VARIABLES(S) INCREASE TO THE RIGHT.
D DENOTES A DELETED SENSOR.
LOWER VALUE INDICES MAY BE COVERED
BY HIGHER VALUE INDICES IF THE
NUMERICAL VALUES ARE CLOSE.

PLC'T VARIABLE INDEX

1 - VAP, PRE (FSIA)

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      5.40E-01  5.40E-01  5.41E-01  5.41E-01  5.41E-01  5.42E-01
      5.40E-01  5.40E-01  5.41E-01  5.41E-01  5.42E-01
0.00E-01  *-----*-----*-----*-----*-----*-----*-----*

```


14 195 87.426 37.313 0.540 0.196 0.101 0.003

END OF TABLE

DESCRIPTION OF VARIABLES

AVG. TEM - VOLUMETRICALLY WEIGHTED TEMPERATURE.
 AVG. PRE - AVERAGE PRESSURE.
 VAP. PRE - VOLUMETRICALLY WEIGHTED VAPOUR PRESSURE.
 LEAK COM - LEAK RATE COMPUTED FROM FIRST ORDER REGRESSION.
 LEAK TRA - LEAK RATE BASED ON TOTAL TIME CALCULATIONS.
 ERRCR(T) - STATISTICAL ERROR ON TOTAL TIME LEAK RATE.

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP 1 DEG. F	TEMP 2 DEG. F	TEMP 3 DEG. F	TEMP 4 DEG. F	TEMP 5 DEG. F	TEMP 6 DEG. F
1	0	87.340	87.660	87.190	88.190	86.970	86.930
2	15	86.830	87.650	87.190	88.180	86.890	86.910
3	30	86.850	87.630	87.180	88.170	86.890	86.940
4	45	86.870	87.640	87.180	88.170	86.910	86.970
5	60	86.820	87.620	87.170	88.160	86.900	86.950
6	75	86.880	87.620	87.170	88.160	86.890	86.930
7	90	86.820	87.620	87.170	88.160	86.900	86.940
8	105	86.800	87.610	87.160	88.150	86.880	86.940
9	120	86.800	87.610	87.150	88.150	86.880	86.940
10	135	86.860	87.610	87.170	88.160	86.960	86.960
11	150	86.800	87.600	87.160	88.140	86.870	86.940
12	165	86.790	87.590	87.150	88.140	86.860	86.900
13	180	86.860	87.630	87.170	88.150	86.880	86.950
14	195	86.790	87.580	87.140	88.120	86.880	86.930

END OF TABLE

VARIABLE TABLE SUMMARY

AMPLE NUMBER	DELTA MINS	TEMP 7 DEG. F	TEMP 8 DEG. F	TEMP 9 DEG. F	TEMP 10 DEG. F	TEMP 11 DEG. F	TEMP 12 DEG. F
1	0	86.730	87.750	87.500	87.540	87.800	87.760
2	15	86.520	87.750	87.490	87.530	87.800	87.750
3	30	86.690	87.730	87.480	87.520	87.790	87.750
4	45	86.720	87.730	87.480	87.510	87.780	87.740
5	60	86.690	87.710	87.460	87.490	87.760	87.730
6	75	86.710	87.710	87.460	87.490	87.760	87.720
7	90	86.700	87.690	87.440	87.480	87.740	87.710
8	105	86.700	87.690	87.440	87.470	87.730	87.700
9	120	86.710	87.680	87.430	87.460	87.720	87.700
10	135	86.730	87.680	87.430	87.460	87.720	87.700
11	150	86.650	87.660	87.400	87.440	87.700	87.670
12	165	86.630	87.640	87.390	87.430	87.690	87.670
13	180	86.710	87.640	87.400	87.430	87.690	87.660
14	195	86.700	87.630	87.370	87.410	87.670	87.650

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP 13 DEG. F	TEMP 14 DEG. F	TEMP 15 DEG. F	TEMP 16 DEG. F	TEMP 17 DEG. F	TEMP 18 DEG. F
1	0	87.670	87.530	88.030	87.320	87.860	87.980
2	15	87.670	87.520	87.950	87.260	87.820	88.130
3	30	87.650	87.520	87.960	87.270	87.820	87.960
4	45	87.650	87.510	87.970	87.270	87.820	87.950
5	60	87.640	87.500	87.990	87.270	87.820	87.950
6	75	87.630	87.490	87.960	87.250	87.800	87.940
7	90	87.640	87.480	87.960	87.250	87.790	87.930
8	105	87.610	87.470	87.940	87.230	87.780	87.970
9	120	87.610	87.460	87.940	87.220	87.770	87.920
10	135	87.620	87.480	87.930	87.220	87.770	87.900
11	150	87.590	87.450	87.920	87.200	87.740	87.890
12	165	87.580	87.440	87.910	87.190	87.740	87.880
13	180	87.580	87.440	87.920	87.190	87.730	87.880
14	195	87.550	87.420	87.900	87.170	87.720	87.860

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP 19 DEG. F	TEMP 20 DEG. F	TEMP 21 DEG. F	TEMP 22 DEG. F	TEMP 23 DEG. F	TEMP 24 DEG. F
1	0	87.920	87.650	87.520	87.810	87.850	87.980
2	15	88.000	87.660	87.490	87.820	87.850	87.990
3	30	87.890	87.610	87.460	87.790	87.830	87.960
4	45	87.890	87.610	87.470	87.770	87.820	87.960
5	60	87.880	87.600	87.490	87.770	87.820	87.950
6	75	87.870	87.600	87.450	87.760	87.810	87.940
7	90	87.860	87.590	87.450	87.750	87.790	87.930
8	105	87.870	87.590	87.510	87.750	87.800	87.950
9	120	87.850	87.570	87.410	87.730	87.780	87.920
10	135	87.840	87.560	87.390	87.720	87.780	87.910
11	150	87.830	87.560	87.390	87.710	87.820	87.960
12	165	87.810	87.540	87.440	87.700	87.750	87.900
13	180	87.800	87.530	87.360	87.690	87.740	87.890
14	195	87.790	87.520	87.390	87.670	87.730	87.870

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP 25 DEG. F	TEMP 26 DEG. F	TEMP 27 DEG. F	TEMP 28 DEG. F	TEMP 29 DEG. F	TEMP 30 DEG. F
1	0	87.750	87.290	87.780	87.460	87.830	87.470
2	15	87.750	87.380	87.780	87.530	87.820	87.520
3	30	87.720	87.320	87.770	87.500	87.810	87.430
4	45	87.720	87.410	87.760	87.500	87.800	87.420
5	60	87.710	87.250	87.760	87.510	87.790	87.520
6	75	87.710	87.230	87.750	87.480	87.780	87.420
7	90	87.700	87.340	87.740	87.390	87.770	87.410
8	105	87.700	87.340	87.760	87.530	87.770	87.400
9	120	87.680	87.260	87.720	87.460	87.750	87.390
10	135	87.680	87.340	87.710	87.360	87.750	87.380
11	150	87.710	87.290	87.690	87.380	87.740	87.370
12	165	87.650	87.180	87.680	87.420	87.720	87.360
13	180	87.640	87.320	87.670	87.420	87.710	87.360
14	195	87.630	87.300	87.650	87.400	87.700	87.330

END OF TABLE



VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP 31 DEG. F	TEMP 32 DEG. F	TEMP 33 DEG. F	TEMP 34 DEG. F	TEMP 35 DEG. F	TEMP 36 DEG. F
1	0	87.530	87.630	87.500	88.030	87.450	87.540
2	15	87.540	87.630	87.500	88.140	87.440	87.530
3	30	87.490	87.600	87.470	88.080	87.420	87.520
4	45	87.490	87.590	87.460	88.060	87.410	87.510
5	60	87.490	87.590	87.460	88.130	87.400	87.500
6	75	87.470	87.570	87.440	88.100	87.400	87.490
7	90	87.460	87.560	87.430	88.080	87.380	87.480
8	105	87.460	87.560	87.430	88.080	87.380	87.480
9	120	87.440	87.540	87.410	88.060	87.360	87.460
10	135	87.440	87.530	87.400	88.040	87.350	87.450
11	150	87.430	87.530	87.400	88.100	87.350	87.460
12	165	87.410	87.510	87.380	88.030	87.330	87.430
13	180	87.400	87.500	87.370	88.040	87.320	87.420
14	195	87.390	87.490	87.360	87.990	87.310	87.410

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP 37 DEG. F	TEMP 38 DEG. F	TEMP 39 DEG. F	PRES 1 PSIA	HUM 1 FRACTION	HUM 2 FRACTION
1	0	86.390	87.130	0.000	37.332	0.867	0.780
2	15	86.500	87.130	0.000	37.330	0.868	0.781
3	30	86.450	87.100	0.000	37.329	0.869	0.781
4	45	86.440	87.150	0.000	37.328	0.869	0.781
5	60	86.640	86.710	0.000	37.326	0.869	0.781
6	75	86.920	86.520	0.000	37.324	0.870	0.782
7	90	87.040	86.090	0.000	37.323	0.869	0.781
8	105	86.950	86.470	0.000	37.322	0.869	0.781
9	120	87.050	86.200	0.000	37.320	0.869	0.781
10	135	86.980	86.200	0.000	37.319	0.868	0.781
11	150	86.990	86.250	0.000	37.317	0.869	0.781
12	165	87.000	86.660	0.000	37.316	0.869	0.781
13	180	86.280	86.150	0.000	37.314	0.869	0.781
14	195	86.950	85.810	0.000	37.313	0.868	0.781

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	HUM 3 FRACTION	HUM 4 FRACTION	HUM 5 FRACTION	HUM 6 FRACTION	HUM 7 FRACTION	HUM 8 FRACTION
1	0	0.839	0.812	0.812	0.847	0.869	0.000
2	15	0.840	0.812	0.812	0.848	0.869	0.000
3	30	0.841	0.813	0.813	0.849	0.870	0.000
4	45	0.841	0.814	0.814	0.850	0.871	0.000
5	60	0.841	0.814	0.813	0.849	0.870	0.000
6	75	0.841	0.814	0.814	0.850	0.871	0.000
7	90	0.841	0.814	0.814	0.850	0.871	0.000
8	105	0.842	0.814	0.814	0.851	0.871	0.000
9	120	0.841	0.814	0.813	0.850	0.870	0.000
10	135	0.841	0.813	0.813	0.849	0.870	0.000
11	150	0.841	0.814	0.814	0.851	0.871	0.000
12	165	0.841	0.814	0.814	0.851	0.871	0.000
13	180	0.841	0.814	0.814	0.850	0.871	0.000
14	195	0.841	0.814	0.814	0.849	0.870	0.000

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	HUM 9 FRACTION	HUM 10 FRACTION
1	0	0.837	0.867
2	15	0.837	0.866
3	30	0.838	0.867
4	45	0.839	0.868
5	60	0.839	0.868
6	75	0.839	0.869
7	90	0.839	0.868
8	105	0.839	0.869
9	120	0.839	0.868
10	135	0.840	0.868
11	150	0.840	0.868
12	165	0.840	0.869
13	180	0.841	0.869
14	195	0.839	0.868

END OF TABLE

END OF REPORT ON CONTAINMENT LEAK RATE TEST TO NRC

3.
HIGH PRESSURE
INTEGRATED LEAK RATE TEST



LEAK RATE COMPUTED USING TOTAL TIME METHOD
AS RECOMMENDED BY APPENDIX J FOR 10 CFR 50
(REACTOR CONTAINMENT LEAKAGE TESTING FOR WATER COOLED POWER REACTORS)

TEST PERIOD STARTED AT 2200 HOURS ON JULY 3, 1975

A LEAST SQUARES FIRST ORDER FIT OF LEAK RATE TO TIME
SHOULD YIELD A SLOPE OF ZERO AND AN INTERCEPT EQUAL
TO THE LEAK RATE AS COMPUTED AT THE INITIAL START TIME

THE EQUATION HAS THE FORM - $L = ST + R$

WHERE L - CORRELATED LEAK RATE

S - SLOPE OF CORRELATION

T - TIME IN HOURS

R - INTERCEPT LEAK RATE

LEAK RATE = 0.005 HOURS + -0.052 PER CENT

MEAN = 0.009 PER CENT

ERROR COEFFICIENT = 0.173

WHERE COEFFICIENT OF 1.0 MEANS A PERFECT FIT &

COEFFICIENT OF 0.0 MEANS NO CORRELATION.

INITIAL CONTAINMENT AIR WEIGHT = 702022 LBS.

FINAL CONTAINMENT AIR WEIGHT = 701845 LBS.

LEAK RATE FOR 24.00 HOUR PERIOD IS 0.025 PER CENT BY WEIGHT.

MAXIMUM ARC LEAK RATE OF 0.388 PER CENT PER DAY

GIVEN FOR HIGH PRESSURE TEST AT 57.71 PSIA

TEMPERATURE LOOP ERROR = 0.300 DEGREES F. PRESSURE LOOP ERROR = 0.002 PSIA.

HUMIDITY LOOP ERROR = 2.50 PERCENT

INSTRUMENT ERROR CONTRIBUTES .0856 PERCENT PER DAY

TO ESTABLISH 95 PERCENT CONFIDENCE BOUND

NOTE FOR PLOT - TIME INCREASES DOWN THE PAGE.
 VARIABLES(S) INCREASE TO THE RIGHT.
 D DENOTES A DELETED SENSOR.
 LOWER VALUE INDICES MAY BE COVERED
 BY HIGHER VALUE INDICES IF THE
 NUMERICAL VALUES ARE CLOSE.

PLOT VARIABLE INDEX

- 1 - STATISTICAL LEAK RATE BASED ON TOTAL TIME METHOD
- 2 - MAXIMUM LEAK RATE (PER CENT)
- 3 - NRC TECHNICAL SPECIFICATION LIMIT FOR LEAK RATE
- 4 - 95 PER CENT CONFIDENCE LIMIT FOR INSTRUMENT ERROR
- 5 - LEAK RATE COMPUTED FROM FIRST ORDER EQUATION FIT

		7.32E+01	1.23E+01	2.52E+01	3.82E+01	5.12E+01	6.42E+01
		5.76E+00	1.87E+01	3.17E+01	4.47E+01	5.77E+01	
0.00E+01	D5	*****	*****	*****	*****	*****	*****
	15	.	.	.	.	.	.
	.5	.	.	.	.	.	1
	.5	.	.	1	.	.	.
	.5	.	1	.	.	.	.
	.5	.	.	.	.	.	.
	.5	1	.	.	.	.	.
	.5	.	.	.	.	.	.
	.5	1	.	.	.	.	.
	.5	.	.	.	.	.	.
1.50E+02	*5	1	.	.	.	.	.
	.5	1	.	.	.	.	.
	.5	1	.	.	.	.	.
	.5	1	.	.	.	.	.
	.51	.	.	.	.	.	.
	.51	.	.	.	.	.	.
	.51	.	.	.	.	.	.
	.51	.	.	.	.	.	.
	.51	.	.	.	.	.	.
	.51	.	.	.	.	.	.
3.00E+02	*51	*****	*****	*****	*****	*****	*****
	.51	.	.	.	.	.	.

1.05E+03

[illegible]

1.20E+03

1.35E+03

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85															

NOTE FOR PLOT - TIME INCREASES DOWN THE PAGE.
VARIABLES(S) INCREASE TO THE RIGHT.
) D DENOTES A DELETED SENSOR.
LOWER VALUE INDICES MAY BE COVERED
BY HIGHER VALUE INDICES IF THE
NUMERICAL VALUES ARE CLOSE.

PLCT VARIABLE INDEX

- 1 - MAXIMUM LEAK RATE (PER CENT)
2 - NRC TECHNICAL SPECIFICATION LIMIT FOR LEAK RATE
3 - 95 PER CENT CONFIDENCE LIMIT FOR INSTRUMENT ERROR
4 - LEAK RATE COMPUTED FROM FIRST ORDER EQUATION FIT

	-5.21E-02	5.83E-02	1.69E-01	2.79E-01	3.90E-01	5.00E-01
	3.12E-03	1.14E-01	2.24E-01	3.34E-01	4.45E-01	
0.00E+01	4	4	4	4	4	4
	4	4	4	4	4	4
	4	4	4	4	4	4
	4	4	4	4	4	4
	4	4	4	4	4	4
	4	4	4	4	4	4
	4	4	4	4	4	4
	4	4	4	4	4	4
	4	4	4	4	4	4
1.50E+02	4	4	4	4	4	4

3.00E+02

4.50E+02

6.00E+02

7.50E+02

9.00E+02

	.	.	4	3	.	2	.	1
	.	.	4	3	.	2	.	1
1.05E+03	*	-----	*	-----	*	-----	*	-----	*	-----	*	-----	*
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.	.	.	4	3	.	2	.	1
.	.	.	4	3	.	2	.	1
.	.	.	4	3	.	2	.	1
.	.	.	4	3	.	2	.	1
.	.	.	4	3	.	2	.	1
.	.	.	4	3	.	2	.	1
.	.	.	4	3	.	2	.	1
.	.	.	4	3	.	2	.	1
.	.	.	4	3	.	2	.	1
1.20E+03	*	-----	*	-----	*	-----	*	-----	*	-----	*	-----	*
.	.	.	4	3	.	2	.	1
.	.	.	4	3	.	2	.	1
.	.	.	4	3	.	2	.	1
.	.	.	4	3	.	2	.	1
.	.	.	4	3	.	2	.	1
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.	.	.	4	3	.	2	.	1
1.35E+03	*	-----	*	-----	*	-----	*	-----	*	-----	*	-----	*
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.	.	.	4	3	.	2	.	1
.	.	.	4	3	.	2	.	1
.	.	.	4	3	.	2	.	1
.	.	.	4	3	.	2	.	1
.	.	.	4	3	.	2	.	1
.	.	.	4	3	.	2	.	1

NOTE FOR PLCT - TIME INCREASES DOWN THE PAGE.
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 D DENCIES A DELETED SENSOR,
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 BY HIGHER VALUE INDICES IF THE
 NUMERICAL VALUES ARE CLOSE.

PLCT VARIABLE INDEX

- 1 - SIMPLE TOTAL LEAK RATE PROJECTED TO 24 HOURS
- 2 - LEAK RATE COMPUTED FROM FIRST ORDER EQUATION FIT

3 - 95 PER CENT CONFIDENCE LIMIT FOR INSTRUMENT ERROR

	-7.32E-01	-5.25E-01	-3.18E-01	-1.11E-01	9.58E-02	3.03E-01	
	-6.29E-01	-4.22E-01	-2.15E-01	-7.68E-03	1.99E-01		
0.00E+01	D-----*	-----*	-----*	-----*	-----*	-----*	3
	1	.	.	.	.	2	3
	2	3
	2	3
	21	3
	2 1	3
	1 2	3
	12	3
1 2	3
	12	3
1.50E+02	*-----*	-----*	-----*	-----*	-----*	12-----*	3
	12	3
	2	3
	2	3
	2	3
	2. 1	3
	2.1	3
	2.	3
	21	3
	2.	3
3.00E+02	*-----*	-----*	-----*	-----*	-----*	21-----*	3
	21	3
	21	3
	2.1	3
	21	3
	2.1	3
	2.1	3
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	2. 1	3
	2 1	3
4.50E+02	*-----*	-----*	-----*	-----*	-----*	2-1-----*	3
	2 1	3
	2 1	3
	2 1	3
	2 1	3
	2 1	3
	2 1	3
	2 1	3
	2 1	3
	2 1	3
6.00E+02	*-----*	-----*	-----*	-----*	-----*	2-1-----*	3
	2 1	3
	2 1	3
2 1	3

1.35E+03

[illegible]

4.50E+02

6.00E+02

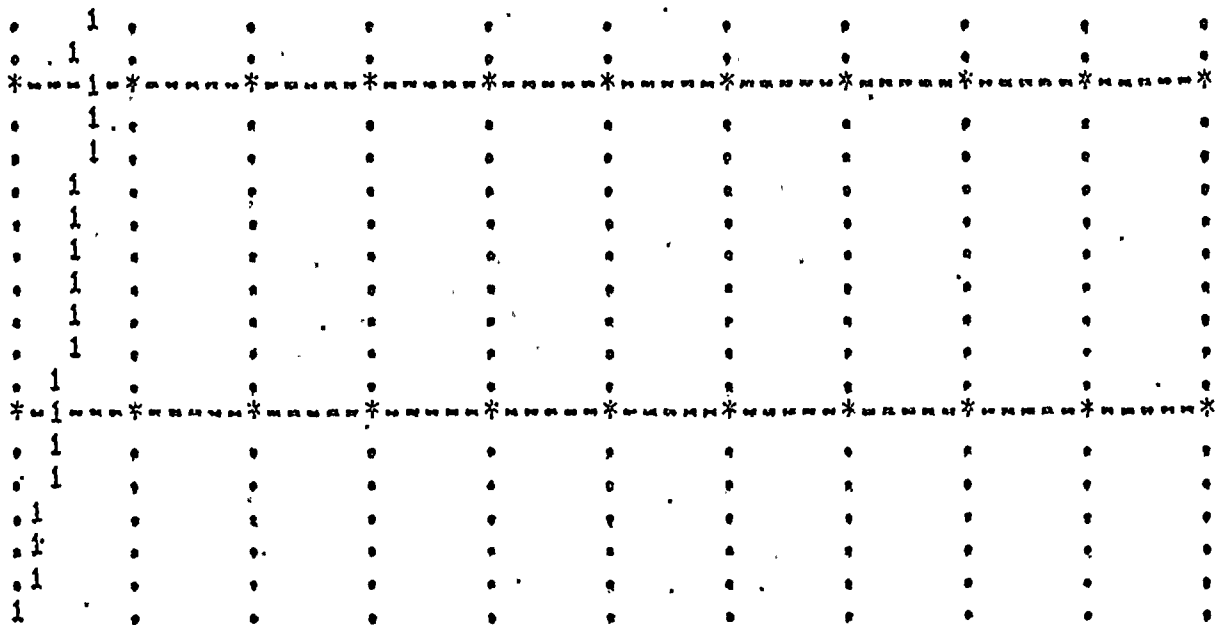
7.50E+02

9.00E+02

1.05E+03

1.20E+03

1.35E+03



NOTE FOR PLOT - TIME INCREASES DOWN THE PAGE.
 VARIABLES(S) INCREASE TO THE RIGHT.
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 LOWER VALUE INDICES MAY BE COVERED
 BY HIGHER VALUE INDICES IF THE
 NUMERICAL VALUES ARE CLOSE.

PLOT VARIABLE INDEX

1 - AVG. PRE (PSIA)

5.74E+01 5.75E+01 5.76E+01 5.76E+01 5.77E+01 5.77E+01
 5.75E+01 5.75E+01 5.76E+01 5.76E+01 5.77E+01

[illegible]

9.00E+02

1.05E+03

1.20E+03

1.35E+03



6.00E+02

7.50E+02

9.00E+02

1.05E+03

1.20E+03

1.35E+03

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*---1-*---*---*---*---*---*---*---*---*---*---*---*
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. 1 . . . . . . . . . . . . . . . . . . . . .
1 . . . . . . . . . . . . . . . . . . . . .

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NOTE FOR TABULAR DATA -

TABLE VALUES OF ZERO SIGNIFY EITHER

1. DATA IS NOT APPLICABLE TO THE CALCULATION OR
2. SENSOR HAS BEEN DELETED FROM THE SCAN.

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	AVG. TEM DEG. F	AVG. PRE PSIA	VAP. PRE PSIA	LEAK COM PER CENT	LEAK TRA PER CENT	ERRCR(T) PER CENT
1	0	89.396	57.715	0.586	-0.052	0.000	0.000
2	15	89.308	57.708	0.585	-0.051	-0.732	0.000
3	30	89.281	57.702	0.585	-0.050	64.200	-0.390
4	45	89.213	57.695	0.583	-0.048	27.384	-0.195
5	60	89.185	57.690	0.583	-0.047	18.609	-0.145
6	75	89.141	57.684	0.582	-0.046	13.579	-0.111
7	90	89.073	57.679	0.580	-0.045	8.813	-0.076
8	105	89.037	57.673	0.580	-0.043	6.598	-0.061
9	120	88.980	57.667	0.578	-0.042	4.878	-0.048
10	135	88.949	57.662	0.578	-0.041	3.920	-0.041
11	150	88.906	57.658	0.577	-0.039	3.237	-0.036
12	165	88.854	57.652	0.576	-0.038	2.668	-0.032
13	180	88.820	57.647	0.576	-0.037	2.311	-0.029
14	195	88.776	57.642	0.575	-0.036	2.023	-0.027
15	210	88.734	57.637	0.575	-0.034	1.770	-0.025
16	225	88.727	57.631	0.575	-0.033	1.710	-0.026
17	240	88.693	57.628	0.574	-0.032	1.591	-0.025
18	255	88.629	57.624	0.573	-0.031	1.412	-0.023
19	270	88.607	57.620	0.573	-0.029	1.288	-0.022



20	285	88.548	57.615	0.571	-0.028	1.147	-0.020
21	300	88.535	57.611	0.571	-0.027	1.061	-0.019
22	315	88.497	57.606	0.571	-0.026	0.987	-0.018
23	330	88.464	57.601	0.570	-0.024	0.921	-0.017
24	345	88.433	57.597	0.570	-0.023	0.868	-0.017
25	360	88.391	57.593	0.569	-0.022	0.809	-0.016
26	375	88.370	57.589	0.569	-0.021	0.763	-0.015
27	390	88.339	57.585	0.568	-0.019	0.721	-0.015
28	405	88.310	57.581	0.568	-0.018	0.683	-0.014
29	420	88.284	57.576	0.567	-0.017	0.651	-0.014
30	435	88.264	57.573	0.567	-0.016	0.623	-0.013
31	450	88.230	57.569	0.567	-0.014	0.597	-0.013
32	465	88.198	57.566	0.566	-0.013	0.569	-0.012
33	480	88.160	57.561	0.566	-0.012	0.543	-0.012
34	495	88.167	57.557	0.566	-0.011	0.530	-0.011
35	510	88.125	57.553	0.566	-0.009	0.513	-0.011
36	525	88.119	57.551	0.566	-0.008	0.500	-0.010
37	540	88.067	57.548	0.565	-0.007	0.480	-0.010
38	555	88.026	57.544	0.565	-0.005	0.460	-0.009
39	570	87.994	57.540	0.565	-0.004	0.440	-0.009
40	585	87.963	57.536	0.565	-0.003	0.425	-0.008
41	600	87.944	57.533	0.564	-0.002	0.408	-0.008
42	615	87.934	57.529	0.564	-0.000	0.395	-0.007
43	630	87.926	57.527	0.564	0.001	0.383	-0.007
44	645	87.877	57.522	0.563	0.002	0.370	-0.007
45	660	87.885	57.521	0.563	0.003	0.360	-0.006
46	675	87.817	57.517	0.562	0.005	0.345	-0.006
47	690	87.803	57.514	0.562	0.006	0.332	-0.005
48	705	87.792	57.511	0.562	0.007	0.320	-0.005
49	720	87.759	57.507	0.562	0.008	0.310	-0.005
50	735	87.757	57.506	0.561	0.010	0.300	-0.004
51	750	87.753	57.502	0.561	0.011	0.292	-0.004
52	765	87.714	57.500	0.561	0.012	0.282	-0.003
53	780	87.665	57.497	0.560	0.013	0.272	-0.003
54	795	87.657	57.495	0.560	0.015	0.262	-0.003
55	810	87.647	57.491	0.560	0.016	0.255	-0.002
56	825	87.641	57.489	0.560	0.017	0.248	-0.002
57	840	87.607	57.489	0.560	0.018	0.239	-0.002
58	855	87.610	57.487	0.559	0.020	0.232	-0.002
59	870	87.581	57.484	0.559	0.021	0.224	-0.001
60	885	87.555	57.482	0.558	0.022	0.216	-0.001
61	900	87.548	57.480	0.558	0.024	0.209	-0.001
62	915	87.515	57.479	0.558	0.025	0.201	-0.001
63	930	87.522	57.478	0.558	0.026	0.195	-0.001
64	945	87.514	57.476	0.558	0.027	0.188	-0.000
65	960	87.503	57.475	0.558	0.029	0.182	-0.000
66	975	87.485	57.473	0.557	0.030	0.176	-0.000
67	990	87.492	57.472	0.557	0.031	0.171	0.000
68	1005	87.470	57.470	0.556	0.032	0.165	0.000
69	1020	87.457	57.469	0.556	0.034	0.160	0.000
70	1035	87.447	57.468	0.556	0.035	0.154	0.000
71	1050	87.424	57.467	0.555	0.036	0.149	0.001
72	1055	87.432	57.466	0.555	0.037	0.144	0.001
73	1080	87.420	57.465	0.555	0.039	0.139	0.001
74	1095	87.407	57.468	0.555	0.040	0.134	0.001
75	1110	87.416	57.467	0.556	0.041	0.130	0.001

76	1125	87.394	57.466	0.556	0.042	0.125	0.001
77	1140	87.394	57.465	0.556	0.044	0.121	0.001
78	1155	87.399	57.465	0.556	0.045	0.117	0.001
79	1170	87.398	57.464	0.556	0.046	0.113	0.001
80	1185	87.376	57.463	0.556	0.047	0.109	0.001
81	1200	87.383	57.463	0.556	0.049	0.106	0.001
82	1215	87.391	57.462	0.556	0.050	0.103	0.001
83	1230	87.386	57.461	0.557	0.051	0.100	0.001
84	1245	87.368	57.461	0.557	0.052	0.097	0.001
85	1260	87.376	57.460	0.557	0.054	0.094	0.001
86	1275	87.350	57.459	0.556	0.055	0.092	0.001
87	1290	87.381	57.458	0.557	0.056	0.089	0.001
88	1305	87.349	57.457	0.556	0.058	0.087	0.001
89	1320	87.354	57.456	0.556	0.059	0.084	0.001
90	1335	87.328	57.454	0.555	0.060	0.082	0.001
91	1350	87.318	57.453	0.555	0.061	0.080	0.001
92	1365	87.321	57.452	0.555	0.063	0.078	0.001
93	1380	87.314	57.449	0.555	0.064	0.076	0.001
94	1395	87.305	57.448	0.554	0.065	0.074	0.001
95	1410	87.300	57.447	0.555	0.066	0.072	0.002
96	1425	87.293	57.446	0.554	0.068	0.071	0.002
97	1440	87.257	57.444	0.553	0.069	0.069	0.002

END OF TABLE

DESCRIPTION OF VARIABLES

AVG. TEM - VOLUMETRICALLY WEIGHTED TEMPERATURE.
 AVG. PRE - AVERAGE PPFESSURE.
 VAP. PRE - VOLUMETRICALLY WEIGHTED VAPOUR PPFESSURE.
 LEAK COM - LEAK RATE COMPUTED FROM FIRST ORDER REGRESSION.
 LEAK TRA - LEAK RATE BASED ON TOTAL TIME CALCULATIONS.
 ERROR(T) - STATISTICAL ERROR ON TOTAL TIME LEAK RATE.

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP 1 DEG. F	TEMP 2 DEG. F	TEMP 3 DEG. F	TEMP 4 DEG. F	TEMP 5 DEG. F	TEMP 6 DEG. F
1	0	87.180	88.000	87.540	88.550	87.340	87.260
2	15	87.160	87.980	87.520	88.530	87.320	87.260
3	30	87.140	87.980	87.510	88.520	87.300	87.240
4	45	87.150	87.970	87.510	88.520	87.290	87.180
5	60	87.140	87.990	87.520	88.510	87.300	87.220

6	75	87.130	87.970	87.510	88.510	87.320	87.230
7	90	87.120	87.940	87.500	88.220	87.300	87.220
8	105	87.150	87.940	87.490	88.510	87.390	87.230
9	120	87.100	87.910	87.480	88.470	87.290	87.200
10	135	87.090	87.900	87.470	88.460	87.270	87.160
11	150	87.140	87.900	87.470	88.490	87.310	87.210
12	165	87.060	87.880	87.450	88.440	87.280	87.170
13	180	87.080	87.880	87.460	88.450	87.260	87.170
14	195	87.080	87.900	87.450	88.440	87.230	87.160
15	210	87.070	87.890	87.450	88.430	87.280	87.130
16	225	87.070	87.880	87.430	88.420	87.200	87.110
17	240	87.030	87.850	87.420	88.400	87.210	87.130
18	255	87.030	87.840	87.410	88.400	87.210	87.130
19	270	87.060	87.830	87.410	88.400	87.300	87.140
20	285	87.010	87.830	87.400	88.390	87.220	87.100
21	300	87.070	87.800	87.380	88.370	87.200	87.120
22	315	86.990	87.800	87.390	88.380	87.220	87.110
23	330	86.980	87.790	87.370	88.300	87.210	87.080
24	345	86.990	87.800	87.380	88.370	87.160	87.090
25	360	87.020	87.770	87.360	88.350	87.200	87.160
26	375	86.990	87.770	87.360	88.350	87.170	87.080
27	390	86.960	87.770	87.360	88.340	87.150	87.060
28	405	86.960	87.770	87.360	88.340	87.160	87.060
29	420	86.940	87.750	87.340	88.330	87.140	87.090
30	435	86.970	87.750	87.340	88.330	87.200	87.100
31	450	86.930	87.730	87.330	88.320	87.130	87.050
32	465	86.940	87.730	87.320	88.310	87.120	87.050
33	480	86.940	87.730	87.320	88.310	87.150	87.050
34	495	87.020	87.740	87.330	88.320	87.170	87.090
35	510	86.930	87.710	87.310	88.300	87.130	87.010
36	525	87.110	87.730	87.320	88.330	87.210	87.060
37	540	86.950	87.690	87.290	88.280	87.190	87.040
38	555	86.890	87.680	87.270	88.270	87.130	87.010
39	570	86.890	87.680	87.270	88.270	87.030	86.960
40	585	86.960	87.660	87.260	88.260	87.100	86.960
41	600	86.950	87.660	87.250	88.260	87.050	86.950
42	615	86.860	87.620	87.220	88.230	87.060	86.960
43	630	86.860	87.620	87.220	88.230	87.030	86.930
44	645	86.880	87.620	87.220	88.220	87.020	86.930
45	660	86.850	87.620	87.210	88.220	87.080	86.910
46	675	86.830	87.600	87.200	88.210	87.070	86.890
47	690	86.840	87.600	87.200	88.210	87.070	86.910
48	705	86.910	87.600	87.200	88.210	87.070	86.930
49	720	86.800	87.610	87.190	88.190	87.010	86.900
50	735	86.870	87.580	87.190	88.200	87.070	86.980
51	750	87.010	87.670	87.250	88.220	87.060	86.920
52	765	86.810	87.570	87.180	88.190	87.050	86.920
53	780	86.830	87.550	87.170	88.170	87.040	86.910
54	795	86.860	87.550	87.160	88.170	87.050	86.910
55	810	86.790	87.560	87.170	88.170	86.990	86.870
56	825	86.790	87.540	87.160	88.150	87.030	86.890
57	840	86.800	87.550	87.160	88.160	87.000	86.890
58	855	86.770	87.540	87.150	88.150	87.030	86.890
59	870	86.780	87.520	87.150	88.150	86.990	86.900
60	885	86.750	87.510	87.130	88.130	87.000	86.870
61	900	86.770	87.520	87.160	88.140	86.950	86.880

62	915	86.750	87.510	87.140	88.130	86.970	86.860
63	930	86.800	87.500	87.140	88.130	87.000	86.860
64	945	86.760	87.500	87.130	88.120	86.940	86.860
65	960	86.750	87.490	87.120	88.120	87.090	86.860
66	975	86.750	87.490	87.130	88.120	86.940	86.860
67	990	86.760	87.500	87.140	88.130	86.940	86.870
68	1005	86.750	87.480	87.130	88.120	86.950	86.890
69	1020	86.750	87.480	87.120	88.110	86.980	86.890
70	1035	86.780	87.490	87.130	88.120	86.950	86.870
71	1050	86.750	87.470	87.120	88.110	86.960	86.890
72	1065	86.750	87.470	87.120	88.100	86.920	86.870
73	1080	86.750	87.460	87.120	88.100	86.970	86.920
74	1095	86.740	87.460	87.120	88.100	86.930	86.890
75	1110	86.760	87.470	87.130	88.110	86.910	86.930
76	1125	86.750	87.470	87.130	88.110	86.890	86.930
77	1140	86.770	87.470	87.130	88.110	86.940	86.930
78	1155	86.770	87.480	87.130	88.110	86.920	86.940
79	1170	86.740	87.460	87.120	88.100	86.930	86.940
80	1185	86.770	87.470	87.140	88.110	86.950	86.930
81	1200	86.800	87.490	87.150	88.120	86.920	86.960
82	1215	86.760	87.490	87.150	88.120	86.970	86.980
83	1230	86.800	87.460	87.140	88.120	86.940	86.970
84	1245	86.800	87.480	87.150	88.120	86.890	86.950
85	1260	86.760	87.580	87.150	88.120	86.980	86.980
86	1275	86.770	87.460	87.140	88.110	86.950	86.970
87	1290	86.870	87.490	87.170	88.180	86.970	87.040
88	1305	86.830	87.470	87.150	88.120	86.970	86.970
89	1320	86.850	87.490	87.160	88.130	86.960	86.970
90	1335	86.750	87.460	87.140	88.110	86.900	86.940
91	1350	86.740	87.460	87.140	88.100	86.880	86.960
92	1365	86.800	87.460	87.150	88.120	86.960	86.940
93	1380	86.770	87.450	87.140	88.100	86.910	86.930
94	1395	86.750	87.450	87.130	88.100	86.880	86.950
95	1410	86.750	87.450	87.120	88.100	86.910	86.920
96	1425	86.810	87.450	87.120	88.090	87.020	86.960
97	1440	86.690	87.410	87.090	88.090	86.890	86.910

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMER	DELTA MINS	TEMP DEG.	7 F	TEMP DEG.	8 F	TEMP DEG.	9 F	TEMP DEG.	10 F	TEMP DEG.	11 F	TEMP DEG.	12 F
1	0	87.090		90.330		90.060		90.140		90.410		90.280	
2	15	87.090		90.260		89.980		90.060		90.360		90.190	
3	30	87.060		90.180		89.910		89.990		90.270		90.120	
4	45	86.960		90.110		89.840		89.920		90.210		90.050	
5	60	87.050		90.070		89.790		89.850		90.160		90.000	

6	75	87.060	90.010	89.710	89.790	90.090	89.940
7	90	87.050	89.940	89.660	89.730	90.030	89.870
8	105	87.070	89.870	89.600	89.680	89.990	89.820
9	120	87.040	89.810	89.530	89.610	89.910	89.750
10	135	86.980	89.740	89.470	89.550	89.820	89.680
11	150	87.050	89.700	89.420	89.500	89.790	89.640
12	165	87.010	89.630	89.360	89.430	89.710	89.580
13	180	87.000	89.570	89.300	89.380	89.660	89.510
14	195	87.000	89.530	89.250	89.320	89.590	89.470
15	210	87.000	89.470	89.190	89.270	89.530	89.400
16	225	86.980	89.390	89.130	89.210	89.480	89.350
17	240	86.980	89.360	89.110	89.170	89.470	89.310
18	255	86.990	89.310	89.040	89.110	89.370	89.250
19	270	87.010	89.250	89.000	89.070	89.370	89.220
20	285	86.480	89.220	88.940	89.010	89.290	89.160
21	300	86.990	89.170	88.910	89.000	89.260	89.120
22	315	86.950	89.120	88.850	88.920	89.200	89.100
23	330	86.950	89.080	88.800	88.870	89.140	89.000
24	345	86.920	89.030	88.760	88.830	89.090	88.980
25	360	86.890	88.950	88.710	88.770	89.030	88.940
26	375	86.870	88.930	88.680	88.740	89.020	88.880
27	390	86.870	88.880	88.630	88.700	88.980	88.850
28	405	86.850	88.860	88.600	88.660	88.940	88.820
29	420	86.880	88.840	88.550	88.610	88.880	88.770
30	435	87.010	88.780	88.520	88.590	88.870	88.760
31	450	86.930	88.740	88.480	88.530	88.820	88.700
32	465	86.880	88.700	88.440	88.490	88.760	88.660
33	480	86.860	88.660	88.400	88.460	88.730	88.620
34	495	86.880	88.630	88.380	88.430	88.690	88.590
35	510	86.840	88.590	88.330	88.380	88.660	88.550
36	525	86.910	88.580	88.310	88.360	88.640	88.520
37	540	86.890	88.530	88.270	88.320	88.610	88.510
38	555	86.820	88.480	88.220	88.270	88.570	88.440
39	570	86.790	88.450	88.190	88.240	88.550	88.420
40	585	86.750	88.420	88.160	88.210	88.510	88.390
41	600	86.780	88.390	88.120	88.180	88.480	88.360
42	615	86.780	88.330	88.070	88.130	88.440	88.330
43	630	86.720	88.320	88.040	88.100	88.400	88.290
44	645	86.640	88.280	88.010	88.070	88.380	88.260
45	660	86.730	88.260	87.990	88.040	88.340	88.240
46	675	86.650	88.220	87.960	88.010	88.310	88.200
47	690	86.670	88.210	87.940	87.990	88.280	88.170
48	705	86.700	88.180	87.910	87.960	88.260	88.140
49	720	86.690	88.130	87.860	87.920	88.210	88.110
50	735	86.900	88.150	87.860	87.920	88.200	88.090
51	750	86.690	88.100	87.820	87.890	88.160	88.060
52	765	86.700	88.060	87.790	87.850	88.130	88.030
53	780	86.750	88.040	87.760	87.820	88.090	88.010
54	795	86.630	88.030	87.740	87.800	88.070	87.990
55	810	86.700	88.000	87.710	87.780	88.050	87.980
56	825	86.710	87.970	87.690	87.760	88.010	87.940
57	840	86.660	87.950	87.670	87.730	88.000	87.930
58	855	86.710	87.930	87.640	87.710	87.970	87.910
59	870	86.790	87.900	87.630	87.710	87.960	87.890
60	885	86.690	87.880	87.600	87.660	87.930	87.860
61	900	86.710	87.870	87.590	87.650	87.920	87.850

62	915	86.620	87.850	87.560	87.630	87.900	87.830
63	930	86.740	87.830	87.550	87.620	87.880	87.810
64	945	86.610	87.810	87.530	87.600	87.860	87.790
65	960	86.670	87.800	87.520	87.580	87.840	87.770
66	975	86.690	87.780	87.510	87.560	87.830	87.750
67	990	86.690	87.770	87.500	87.560	87.820	87.750
68	1005	86.610	87.760	87.490	87.540	87.800	87.730
69	1020	86.720	87.740	87.470	87.520	87.780	87.710
70	1035	86.760	87.730	87.450	87.510	87.770	87.690
71	1050	86.770	87.700	87.440	87.490	87.750	87.670
72	1065	86.710	87.690	87.420	87.480	87.740	87.660
73	1080	86.720	87.680	87.420	87.470	87.730	87.650
74	1095	86.760	87.660	87.400	87.450	87.710	87.630
75	1110	86.670	87.660	87.390	87.450	87.700	87.630
76	1125	86.650	87.650	87.380	87.440	87.690	87.620
77	1140	86.770	87.640	87.370	87.420	87.680	87.610
78	1155	86.800	87.640	87.370	87.420	87.670	87.610
79	1170	86.690	87.630	87.360	87.410	87.660	87.600
80	1185	86.800	87.630	87.360	87.410	87.660	87.600
81	1200	86.780	87.620	87.360	87.410	87.650	87.600
82	1215	86.780	87.620	87.360	87.410	87.650	87.600
83	1230	86.790	87.610	87.340	87.390	87.640	87.580
84	1245	86.710	87.600	87.330	87.380	87.630	87.570
85	1260	86.820	87.600	87.330	87.390	87.630	87.570
86	1275	86.740	87.590	87.320	87.370	87.610	87.560
87	1290	86.750	87.590	87.330	87.380	87.610	87.560
88	1305	86.790	87.580	87.310	87.360	87.600	87.550
89	1320	86.750	87.580	87.310	87.360	87.600	87.540
90	1335	86.810	87.560	87.290	87.340	87.590	87.530
91	1350	86.760	87.550	87.280	87.330	87.570	87.520
92	1365	86.820	87.550	87.290	87.340	87.580	87.520
93	1380	86.710	87.520	87.280	87.320	87.560	87.500
94	1395	86.800	87.520	87.270	87.320	87.560	87.500
95	1410	86.740	87.510	87.260	87.310	87.540	87.480
96	1425	86.780	87.500	87.250	87.330	87.550	87.480
97	1440	86.680	87.480	87.230	87.280	87.520	87.460

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP 13 DEG. F	TEMP 14 DEG. F	TEMP 15 DEG. F	TEMP 16 DEG. F	TEMP 17 DEG. F	TEMP 18 DEG. F
1	0	90.200	90.060	90.590	87.950	90.390	89.540
2	15	90.120	89.990	90.500	87.860	90.310	89.480
3	30	90.050	89.920	90.430	87.790	90.240	89.470
4	45	89.970	89.830	90.380	87.730	90.170	89.410
5	60	89.910	89.780	90.330	87.660	90.120	89.390

6	75	89.840	89.710	90.270	87.620	90.050	89.360
7	90	89.780	89.650	90.190	87.540	89.980	89.310
8	105	89.740	89.560	90.110	87.470	89.920	89.280
9	120	89.670	89.540	90.050	87.410	89.860	89.240
10	135	89.610	89.470	90.010	87.340	89.800	89.210
11	150	89.550	89.410	89.950	87.300	89.740	89.190
12	165	89.490	89.350	89.900	87.240	89.680	89.160
13	180	89.430	89.310	89.820	87.170	89.630	89.130
14	195	89.370	89.240	89.780	87.110	89.570	89.100
15	210	89.320	89.170	89.730	87.050	89.510	89.070
16	225	89.270	89.150	89.690	87.000	89.460	89.040
17	240	89.230	89.110	89.660	86.980	89.430	89.040
18	255	89.170	89.040	89.540	86.890	89.340	88.980
19	270	89.140	89.000	89.530	86.860	89.320	88.960
20	285	89.070	88.940	89.460	86.800	89.260	88.940
21	300	89.030	88.900	89.390	86.740	89.210	88.910
22	315	88.990	88.870	89.360	86.700	89.200	88.900
23	330	88.940	88.800	89.340	86.650	89.120	88.870
24	345	88.890	88.770	89.280	86.600	89.070	88.840
25	360	88.830	88.700	89.130	86.520	89.030	88.810
26	375	88.800	88.660	89.180	86.500	89.000	88.800
27	390	88.750	88.640	89.150	86.460	88.950	88.780
28	405	88.720	88.600	89.110	86.420	88.910	88.760
29	420	88.670	88.550	89.050	86.360	88.860	88.740
30	435	88.630	88.520	89.070	86.340	88.850	88.730
31	450	88.590	88.480	88.990	86.290	88.780	88.690
32	465	88.540	88.440	88.950	86.260	88.750	88.680
33	480	88.510	88.390	88.910	86.220	88.710	88.660
34	495	88.490	88.340	88.930	86.180	88.680	88.640
35	510	88.450	88.320	88.840	86.130	88.640	88.620
36	525	88.430	88.300	88.830	86.100	88.610	88.590
37	540	88.390	88.260	88.800	86.070	88.580	88.570
38	555	88.350	88.220	88.750	86.040	88.530	88.540
39	570	88.300	88.160	88.700	86.010	88.490	88.510
40	585	88.300	88.140	88.690	85.970	88.470	88.500
41	600	88.230	88.120	88.650	85.930	88.430	88.490
42	615	88.210	88.060	88.660	85.920	88.400	88.460
43	630	88.170	88.030	88.580	85.870	88.350	88.500
44	645	88.150	88.000	88.610	85.850	88.340	88.420
45	660	88.130	87.970	88.520	85.800	88.300	88.380
46	675	88.100	87.940	88.530	85.780	88.280	88.360
47	690	88.070	87.920	88.480	85.760	88.260	88.340
48	705	88.050	87.890	88.490	85.730	88.230	88.320
49	720	88.000	87.850	88.410	85.680	88.190	88.290
50	735	87.990	87.840	88.430	85.660	88.180	88.290
51	750	87.940	87.820	88.400	85.640	88.150	88.270
52	765	87.920	87.760	88.330	85.600	88.110	88.230
53	780	87.890	87.760	88.310	85.580	88.100	88.210
54	795	87.860	87.740	88.370	85.590	88.100	88.200
55	810	87.850	87.730	88.270	85.550	88.060	88.170
56	825	87.820	87.700	88.320	85.570	88.060	88.170
57	840	87.800	87.680	88.260	85.510	88.030	88.140
58	855	87.780	87.660	88.380	85.530	88.030	88.130
59	870	87.770	87.640	88.230	85.470	88.000	88.110
60	885	87.730	87.620	88.160	85.430	87.960	88.080
61	900	87.730	87.610	88.150	85.410	87.950	88.070

62	915	87.690	87.580	88.110	85.380	87.920	88.050
63	930	87.680	87.570	88.110	85.380	87.920	88.040
64	945	87.660	87.540	88.080	85.350	87.890	88.020
65	960	87.640	87.520	88.070	85.330	87.870	88.000
66	975	87.630	87.510	88.070	85.330	87.870	87.990
67	990	87.630	87.510	88.210	85.390	87.910	88.020
68	1005	87.620	87.500	88.040	85.290	87.840	87.970
69	1020	87.600	87.480	88.010	85.280	87.820	87.960
70	1035	87.590	87.470	88.010	85.270	87.810	87.950
71	1050	87.570	87.450	87.980	85.240	87.790	87.930
72	1065	87.560	87.440	87.970	85.230	87.780	87.920
73	1080	87.540	87.440	87.960	85.220	87.780	87.910
74	1095	87.540	87.420	87.960	85.210	87.760	87.900
75	1110	87.530	87.410	87.960	85.200	87.750	87.890
76	1125	87.530	87.410	87.950	85.190	87.740	87.880
77	1140	87.520	87.400	87.940	85.160	87.730	87.870
78	1155	87.510	87.400	87.920	85.170	87.730	87.880
79	1170	87.510	87.380	87.940	85.180	87.730	87.870
80	1185	87.510	87.380	87.930	85.160	87.720	87.860
81	1200	87.500	87.380	87.910	85.160	87.720	87.860
82	1215	87.510	87.370	87.920	85.160	87.720	87.880
83	1230	87.500	87.360	87.890	85.140	87.710	87.880
84	1245	87.480	87.350	87.940	85.150	87.700	87.850
85	1260	87.480	87.350	87.900	85.130	87.680	87.840
86	1275	87.470	87.340	87.870	85.120	87.680	87.830
87	1290	87.470	87.340	88.040	85.200	87.730	87.870
88	1305	87.450	87.320	87.860	85.110	87.660	87.820
89	1320	87.450	87.320	87.860	85.100	87.670	87.820
90	1335	87.440	87.310	87.860	85.090	87.660	87.810
91	1350	87.420	87.290	87.840	85.070	87.640	87.790
92	1365	87.430	87.300	87.830	85.080	87.640	87.790
93	1380	87.400	87.280	87.830	85.070	87.630	87.780
94	1395	87.400	87.270	87.840	85.070	87.630	87.780
95	1410	87.380	87.250	87.820	85.050	87.600	87.760
96	1425	87.370	87.250	87.800	85.030	87.600	87.740
97	1440	87.360	87.240	87.800	85.020	87.590	87.730

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP 19 DEG. F	TEMP 20 DEG. F	TEMP 21 DEG. F	TEMP 22 DEG. F	TEMP 23 DEG. F	TEMP 24 DEG. F
1	0	89.390	89.120	89.090	89.240	89.340	89.500
2	15	89.300	89.060	88.940	89.180	89.280	89.450
	30	89.260	89.030	88.980	89.170	89.250	89.420
4	45	89.220	88.990	88.850	89.110	89.210	89.380
5	60	89.200	88.970	88.840	89.080	89.180	89.360



6	75	89.170	88.950	88.840	89.050	89.170	89.320
7	90	89.130	88.890	88.780	89.010	89.110	89.260
8	105	89.090	88.860	88.760	88.970	89.080	89.240
9	120	89.060	88.830	88.710	88.940	89.040	89.210
10	135	89.040	88.810	88.660	88.910	89.020	89.180
11	150	89.000	88.780	88.670	88.880	88.990	89.150
12	165	88.990	88.750	88.620	88.850	88.970	89.130
13	180	88.950	88.720	88.540	88.830	88.940	89.100
14	195	88.920	88.690	88.550	88.800	88.910	89.070
15	210	88.910	88.670	88.530	88.770	88.880	89.040
16	225	88.890	88.640	88.510	88.840	88.910	89.030
17	240	88.860	88.620	88.550	88.800	88.870	89.040
18	255	88.830	88.590	88.460	88.690	88.810	88.970
19	270	88.810	88.570	88.380	88.670	88.790	88.950
20	285	88.790	88.540	88.440	88.650	88.770	88.920
21	300	88.760	88.570	88.370	88.630	88.750	88.890
22	315	88.750	88.500	88.310	88.610	88.720	88.880
23	330	88.720	88.470	88.290	88.590	88.700	88.860
24	345	88.700	88.450	88.310	88.570	88.670	88.830
25	360	88.680	88.420	88.240	88.550	88.640	88.810
26	375	88.660	88.400	88.240	88.540	88.630	88.790
27	390	88.640	88.380	88.190	88.520	88.610	88.770
28	405	88.620	88.360	88.160	88.500	88.590	88.750
29	420	88.600	88.340	88.160	88.490	88.570	88.740
30	435	88.580	88.320	88.140	88.470	88.560	88.710
31	450	88.550	88.300	88.170	88.450	88.540	88.680
32	465	88.530	88.280	88.050	88.420	88.510	88.670
33	480	88.510	88.260	88.050	88.390	88.490	88.640
34	495	88.490	88.240	88.030	88.370	88.460	88.630
35	510	88.470	88.220	88.050	88.340	88.490	88.630
36	525	88.450	88.200	88.010	88.330	88.430	88.580
37	540	88.440	88.170	88.000	88.310	88.410	88.570
38	555	88.410	88.150	87.930	88.280	88.370	88.530
39	570	88.390	88.120	87.890	88.250	88.350	88.510
40	585	88.380	88.100	87.870	88.240	88.330	88.480
41	600	88.370	88.080	87.960	88.210	88.310	88.450
42	615	88.350	88.070	87.890	88.180	88.300	88.430
43	630	88.350	88.060	87.920	88.210	88.300	88.410
44	645	88.330	88.030	87.790	88.140	88.260	88.360
45	660	88.380	88.100	87.950	88.110	88.240	88.350
46	675	88.360	87.990	87.730	88.100	88.220	88.330
47	690	88.310	87.970	87.780	88.080	88.190	88.320
48	705	88.300	87.940	87.730	88.060	88.170	88.290
49	720	88.270	87.900	87.760	88.050	88.160	88.290
50	735	88.250	87.890	87.700	88.010	88.120	88.290
51	750	88.230	87.860	87.810	88.000	88.110	88.270
52	765	88.200	87.870	87.750	87.970	88.080	88.260
53	780	88.180	87.840	87.730	87.940	88.060	88.230
54	795	88.160	87.820	87.630	87.930	88.040	88.220
55	810	88.140	87.820	87.580	87.920	88.020	88.200
56	825	88.150	87.820	87.620	87.900	88.000	88.180
57	840	88.100	87.810	87.550	87.880	87.980	88.160
58	855	88.090	87.800	87.630	87.880	87.960	88.140
59	870	88.070	87.770	87.520	87.860	87.930	88.120
60	885	88.040	87.750	87.510	87.840	87.900	88.090
61	900	88.040	87.730	87.480	87.830	87.900	88.080

62	915	88.020	87.710	87.470	87.820	87.870	88.060
63	930	88.010	87.710	87.450	87.800	87.860	88.040
64	945	88.090	87.680	87.520	87.800	87.850	88.030
65	960	87.970	87.570	87.450	87.780	87.830	88.020
66	975	87.960	87.650	87.450	87.770	87.820	88.010
67	990	87.980	87.660	87.430	87.770	87.820	88.010
68	1005	87.930	87.630	87.460	87.760	87.800	87.980
69	1020	87.910	87.610	87.390	87.740	87.790	87.960
70	1035	87.890	87.610	87.370	87.730	87.780	87.950
71	1050	87.880	87.590	87.360	87.710	87.770	87.930
72	1065	87.910	87.600	87.470	87.710	87.750	87.920
73	1080	87.870	87.580	87.460	87.700	87.750	87.910
74	1095	87.860	87.580	87.400	87.690	87.750	87.900
75	1110	87.900	87.570	87.380	87.690	87.740	87.880
76	1125	87.840	87.550	87.360	87.680	87.730	87.870
77	1140	87.840	87.550	87.380	87.670	87.730	87.860
78	1155	87.840	87.540	87.360	87.670	87.740	87.860
79	1170	87.830	87.540	87.430	87.680	87.740	87.870
80	1185	87.820	87.530	87.310	87.660	87.720	87.840
81	1200	87.820	87.530	87.360	87.660	87.730	87.840
82	1215	87.830	87.540	87.390	87.670	87.740	87.850
83	1230	87.820	87.530	87.390	87.680	87.730	87.840
84	1245	87.810	87.510	87.350	87.650	87.700	87.830
85	1260	87.800	87.510	87.330	87.640	87.690	87.820
86	1275	87.790	87.490	87.320	87.630	87.690	87.810
87	1290	87.810	87.520	87.330	87.650	87.710	87.820
88	1305	87.780	87.480	87.310	87.620	87.690	87.810
89	1320	87.760	87.490	87.330	87.620	87.690	87.800
90	1335	87.760	87.470	87.270	87.610	87.670	87.800
91	1350	87.740	87.450	87.230	87.590	87.650	87.780
92	1365	87.750	87.460	87.260	87.600	87.650	87.790
93	1380	87.740	87.450	87.300	87.590	87.630	87.780
94	1395	87.730	87.450	87.280	87.590	87.630	87.770
95	1410	87.710	87.420	87.260	87.560	87.620	87.760
96	1425	87.700	87.410	87.190	87.550	87.590	87.730
97	1440	87.690	87.400	87.190	87.540	87.590	87.730

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP 25 DEG. F	TEMP 26 DEG. F	TEMP 27 DEG. F	TEMP 28 DEG. F	TEMP 29 DEG. F	TEMP 30 DEG. F
1	0	89.270	88.820	89.280	90.140	90.430	90.040
2	15	89.200	88.710	89.220	89.880	90.320	89.970
3	30	89.250	88.750	89.180	89.980	90.260	89.900
4	45	89.130	88.640	89.120	89.870	90.190	89.820
5	60	89.100	88.370	89.090	89.800	90.120	89.770

6	75	89.100	88.590	89.040	89.810	90.070	89.700
7	90	89.030	88.510	89.000	89.540	90.000	89.600
8	105	89.010	88.560	88.950	89.480	89.940	89.560
9	120	88.980	88.070	88.920	89.540	89.880	89.510
10	135	88.950	88.440	88.890	89.530	89.820	89.460
11	150	88.920	88.440	88.850	89.410	89.750	89.390
12	165	88.890	88.260	88.820	89.440	89.690	89.320
13	180	88.870	88.330	88.780	89.220	89.640	89.270
14	195	88.840	88.180	88.750	89.240	89.570	89.220
15	210	88.820	87.940	88.710	89.090	89.520	89.160
16	225	88.850	88.320	88.690	89.220	89.500	89.120
17	240	88.810	88.340	88.680	89.170	89.430	89.070
18	255	88.750	88.170	88.630	88.990	89.360	89.000
19	270	88.720	88.260	88.600	88.990	89.310	88.950
20	285	88.700	88.090	88.570	88.920	89.270	88.900
21	300	88.680	88.200	88.550	88.820	89.220	88.850
22	315	88.660	88.030	88.520	88.780	89.170	88.780
23	330	88.630	88.040	88.500	88.730	89.130	88.760
24	345	88.610	87.970	88.470	88.670	89.090	88.690
25	360	88.580	87.990	88.440	88.590	89.030	88.640
26	375	88.560	88.100	88.420	88.630	88.990	88.610
27	390	88.550	87.960	88.400	88.600	88.960	88.570
28	405	88.520	87.860	88.380	88.570	88.920	88.570
29	420	88.510	87.850	88.360	88.510	88.870	88.460
30	435	88.490	87.850	88.340	88.480	88.840	88.470
31	450	88.470	87.940	88.320	88.460	88.800	88.410
32	465	88.440	87.820	88.300	88.440	88.760	88.380
33	480	88.420	87.810	88.270	88.330	88.710	88.360
34	495	88.410	87.780	88.260	88.380	88.690	88.360
35	510	88.400	87.930	88.240	88.270	88.650	88.350
36	525	88.360	87.730	88.230	88.190	88.600	88.340
37	540	88.340	87.780	88.190	88.230	88.570	88.300
38	555	88.310	87.690	88.170	88.170	88.530	88.200
39	570	88.280	87.580	88.150	88.110	88.500	88.180
40	585	88.260	87.600	88.110	88.070	88.460	88.100
41	600	88.240	87.430	88.100	88.070	88.430	88.080
42	615	88.220	87.670	88.100	88.080	88.390	88.040
43	630	88.230	87.780	88.080	88.110	88.400	88.040
44	645	88.170	87.490	88.060	87.970	88.330	87.960
45	660	88.140	87.360	88.040	87.710	88.300	87.920
46	675	88.120	87.460	88.030	87.950	88.260	87.890
47	690	88.100	87.470	88.010	87.870	88.240	88.000
48	705	88.090	87.340	87.990	87.860	88.210	87.850
49	720	88.060	87.440	87.980	87.890	88.180	87.850
50	735	88.030	87.360	87.950	87.760	88.150	87.790
51	750	88.010	87.390	87.940	87.770	88.130	87.810
52	765	88.040	87.550	87.920	87.750	88.100	87.790
53	780	87.960	87.200	87.840	87.690	88.070	87.720
54	795	87.950	87.320	87.890	87.680	88.050	87.730
55	810	87.930	87.250	87.870	87.660	88.030	87.690
56	825	87.910	87.280	87.860	87.840	88.050	87.640
57	840	87.890	87.220	87.840	87.620	87.990	87.640
58	855	87.890	87.160	87.830	87.570	87.970	87.620
59	870	87.880	87.120	87.810	87.590	87.950	87.610
60	885	87.860	87.220	87.800	87.540	87.930	87.590
61	900	87.850	87.140	87.810	87.540	87.910	87.560

62	915	87.810	87.130	87.790	87.510	87.880	87.530
63	930	87.820	87.100	87.760	87.520	87.870	87.540
64	945	87.800	87.130	87.770	87.560	87.860	87.560
65	960	87.790	87.160	87.760	87.570	87.840	87.520
66	975	87.780	87.120	87.750	87.430	87.820	87.490
67	990	87.780	87.190	87.760	87.460	87.810	87.600
68	1005	87.760	87.100	87.750	87.460	87.800	87.510
69	1020	87.740	86.980	87.730	87.430	87.780	87.500
70	1035	87.730	87.030	87.720	87.410	87.760	87.540
71	1050	87.720	86.970	87.710	87.410	87.750	87.370
72	1065	87.710	87.080	87.710	87.450	87.740	87.380
73	1080	87.700	86.990	87.710	87.440	87.730	87.450
74	1095	87.700	86.950	87.710	87.390	87.720	87.360
75	1110	87.690	87.180	87.710	87.410	87.700	87.400
76	1125	87.670	87.220	87.710	87.380	87.690	87.330
77	1140	87.670	87.130	87.710	87.400	87.680	87.350
78	1155	87.670	87.150	87.720	87.350	87.670	87.330
79	1170	87.670	87.190	87.730	87.370	87.670	87.320
80	1185	87.660	87.010	87.730	87.370	87.660	87.290
81	1200	87.660	87.110	87.730	87.380	87.660	87.320
82	1215	87.660	87.150	87.750	87.410	87.660	87.320
83	1230	87.660	87.180	87.740	87.450	87.660	87.300
84	1245	87.630	87.160	87.720	87.350	87.630	87.290
85	1260	87.630	87.120	87.720	87.190	87.630	87.270
86	1275	87.620	87.180	87.710	87.340	87.620	87.270
87	1290	87.620	86.980	87.700	87.290	87.620	87.410
88	1305	87.620	87.140	87.690	87.280	87.610	87.260
89	1320	87.620	87.220	87.700	87.370	87.610	87.280
90	1335	87.610	86.980	87.680	87.340	87.600	87.230
91	1350	87.590	87.140	87.660	87.310	87.580	87.220
92	1365	87.590	86.990	87.650	87.280	87.590	87.240
93	1380	87.580	87.090	87.660	87.330	87.580	87.220
94	1395	87.580	86.980	87.630	87.290	87.580	87.210
95	1410	87.560	87.120	87.610	87.260	87.570	87.210
96	1425	87.540	87.190	87.580	87.270	87.550	87.180
97	1440	87.530	86.930	87.560	87.190	87.540	87.170

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP 31 DEG. F	TEMP 32 DEG. F	TEMP 33 DEG. F	TEMP 34 DEG. F	TEMP 35 DEG. F	TEMP 36 DEG. F
1	0	90.140	90.220	90.110	90.690	90.040	90.140
2	15	90.050	90.150	90.030	90.600	89.970	90.050
3	30	89.990	90.070	89.970	90.600	89.910	89.990
4	45	89.910	89.990	89.890	90.540	89.830	89.900
5	60	89.860	89.940	89.830	90.350	89.770	89.850

6	75	89.780	89.870	89.760	90.410	89.710	89.780
7	90	89.710	89.800	89.690	90.230	89.630	89.710
8	105	89.650	89.750	89.630	90.190	89.570	89.650
9	120	89.600	89.680	89.570	90.150	89.520	89.590
10	135	89.540	89.630	89.520	90.180	89.470	89.540
11	150	89.470	89.550	89.440	89.980	89.390	89.470
12	165	89.410	89.500	89.390	89.870	89.330	89.410
13	180	89.360	89.440	89.340	89.840	89.280	89.360
14	195	89.300	89.390	89.280	89.790	89.220	89.290
15	210	89.220	89.320	89.210	89.740	89.160	89.240
16	225	89.200	89.280	89.170	89.840	89.130	89.250
17	240	89.150	89.230	89.120	89.770	89.060	89.140
18	255	89.080	89.160	89.050	89.630	89.000	89.080
19	270	89.030	89.110	89.010	89.610	88.950	89.030
20	285	88.980	89.070	88.960	89.500	88.900	88.990
21	300	88.930	89.020	88.910	89.490	88.860	88.930
22	315	88.870	88.970	88.860	89.400	88.810	88.890
23	330	88.840	88.940	88.820	89.380	88.770	88.850
24	345	88.790	88.880	88.770	89.340	88.720	88.800
25	360	88.730	88.830	88.720	89.280	88.670	88.750
26	375	88.700	88.790	88.680	89.240	88.640	88.710
27	390	88.650	88.750	88.650	89.200	88.600	88.680
28	405	88.620	88.710	88.610	89.190	88.560	88.640
29	420	88.570	88.660	88.560	89.160	88.520	88.600
30	435	88.540	88.640	88.530	89.090	88.480	88.560
31	450	88.490	88.600	88.490	89.070	88.440	88.520
32	465	88.460	88.560	88.450	88.970	88.400	88.480
33	480	88.420	88.520	88.410	88.940	88.350	88.440
34	495	88.400	88.500	88.380	88.910	88.320	88.400
35	510	88.380	88.480	88.360	88.960	88.300	88.370
36	525	88.340	88.440	88.320	88.850	88.250	88.330
37	540	88.300	88.400	88.280	88.860	88.220	88.300
38	555	88.240	88.350	88.230	88.770	88.170	88.260
39	570	88.210	88.320	88.200	88.710	88.130	88.220
40	585	88.160	88.270	88.160	88.680	88.100	88.190
41	600	88.130	88.240	88.130	88.620	88.060	88.150
42	615	88.100	88.210	88.090	88.690	88.030	88.140
43	630	88.070	88.190	88.090	88.740	88.000	88.090
44	645	88.030	88.110	88.030	88.590	87.970	88.060
45	660	88.300	88.050	88.000	88.110	88.000	88.020
46	675	87.950	88.050	87.960	88.340	87.910	88.000
47	690	87.970	88.050	87.940	88.490	87.900	87.970
48	705	87.910	88.020	87.910	88.500	87.860	87.950
49	720	87.900	88.010	87.890	88.560	87.840	87.920
50	735	87.860	87.970	87.860	88.360	87.810	87.890
51	750	87.860	88.000	87.850	88.510	87.790	87.870
52	765	87.830	87.940	87.830	88.390	87.760	87.870
53	780	87.790	87.900	87.770	88.320	87.730	87.810
54	795	87.770	87.880	87.760	88.290	87.710	87.800
55	810	87.750	87.860	87.740	88.270	87.690	87.780
56	825	87.710	87.830	87.720	88.340	87.680	87.760
57	840	87.690	87.810	87.680	88.250	87.640	87.730
58	855	87.680	87.790	87.670	88.260	87.620	87.710
59	870	87.650	87.770	87.650	88.110	87.600	87.690
60	885	87.630	87.750	87.630	88.190	87.580	87.670
61	900	87.610	87.740	87.610	88.180	87.560	87.650

62	915	87.580	87.720	87.590	88.220	87.540	87.620
63	930	87.580	87.710	87.580	88.170	87.530	87.610
64	945	87.580	87.690	87.560	88.150	87.510	87.600
65	960	87.560	87.690	87.550	88.250	87.500	87.580
66	975	87.520	87.650	87.530	88.150	87.480	87.560
67	990	87.550	87.670	87.530	88.010	87.480	87.570
68	1005	87.510	87.630	87.500	88.160	87.460	87.540
69	1020	87.510	87.620	87.490	88.060	87.440	87.520
70	1035	87.490	87.610	87.480	88.080	87.430	87.510
71	1050	87.440	87.570	87.450	88.040	87.410	87.490
72	1065	87.430	87.560	87.440	88.110	87.400	87.480
73	1080	87.450	87.550	87.440	88.120	87.390	87.470
74	1095	87.420	87.540	87.430	88.160	87.390	87.470
75	1110	87.430	87.550	87.420	88.040	87.370	87.450
76	1125	87.390	87.520	87.390	87.960	87.360	87.440
77	1140	87.390	87.500	87.390	87.990	87.350	87.430
78	1155	87.390	87.510	87.390	87.980	87.350	87.420
79	1170	87.370	87.500	87.380	88.120	87.350	87.430
80	1185	87.350	87.470	87.370	87.980	87.340	87.410
81	1200	87.370	87.480	87.370	87.970	87.330	87.400
82	1215	87.360	87.480	87.370	88.090	87.390	87.420
83	1230	87.350	87.480	87.350	88.100	87.320	87.400
84	1245	87.350	87.470	87.350	88.040	87.310	87.390
85	1260	87.330	87.440	87.340	87.900	87.300	87.380
86	1275	87.320	87.430	87.320	87.930	87.290	87.380
87	1290	87.410	87.500	87.360	87.960	87.310	87.400
88	1305	87.310	87.430	87.330	88.010	87.280	87.370
89	1320	87.330	87.450	87.330	87.990	87.290	87.400
90	1335	87.300	87.430	87.310	87.990	87.280	87.350
91	1350	87.280	87.410	87.290	87.900	87.260	87.330
92	1365	87.290	87.430	87.290	87.960	87.250	87.350
93	1380	87.280	87.420	87.280	87.990	87.260	87.340
94	1395	87.270	87.410	87.270	87.920	87.240	87.330
95	1410	87.260	87.400	87.290	87.990	87.230	87.330
96	1425	87.240	87.380	87.240	87.910	87.210	87.290
97	1440	87.230	87.380	87.230	87.920	87.200	87.280

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP 37 DEG. F	TEMP 38 DEG. F	TEMP 39 DEG. F	PRES 1 PSIA	HUM 1 FRACTION	HUM 2 FRACTION
1	0	90.360	88.760	0.000	57.715	0.874	0.783
2	15	89.560	88.730	0.000	57.708	0.874	0.782
3	30	89.590	89.010	0.000	57.702	0.875	0.783
4	45	89.540	88.760	0.000	57.695	0.875	0.784
5	60	90.270	88.500	0.000	57.690	0.874	0.786

6	75	89.470	88.640	0.000	57.684	0.874	0.786
7	90	89.700	88.390	0.000	57.679	0.875	0.786
8	105	89.310	88.320	0.000	57.673	0.874	0.786
9	120	89.210	88.370	0.000	57.667	0.874	0.786
10	135	89.240	88.230	0.000	57.662	0.874	0.786
11	150	89.130	88.020	0.000	57.658	0.876	0.787
12	165	89.050	87.960	0.000	57.652	0.875	0.787
13	180	89.000	88.130	0.000	57.647	0.875	0.787
14	195	88.950	87.920	0.000	57.642	0.876	0.788
15	210	88.920	88.080	0.000	57.637	0.876	0.789
16	225	88.840	88.140	0.000	57.631	0.875	0.788
17	240	88.790	87.920	0.000	57.628	0.875	0.788
18	255	88.730	87.880	0.000	57.624	0.876	0.788
19	270	88.680	87.770	0.000	57.620	0.876	0.789
20	285	88.650	87.700	0.000	57.615	0.876	0.789
21	300	88.590	87.730	0.000	57.611	0.876	0.789
22	315	88.590	87.750	0.000	57.606	0.877	0.789
23	330	88.590	87.730	0.000	57.601	0.876	0.789
24	345	88.470	87.790	0.000	57.597	0.877	0.790
25	360	88.500	87.610	0.000	57.593	0.877	0.790
26	375	88.420	87.540	0.000	57.589	0.877	0.790
27	390	88.400	87.530	0.000	57.585	0.877	0.790
28	405	88.310	87.450	0.000	57.581	0.877	0.790
29	420	88.490	87.390	0.000	57.576	0.877	0.790
30	435	88.290	87.310	0.000	57.573	0.878	0.790
31	450	88.220	87.300	0.000	57.569	0.878	0.791
32	465	88.170	87.420	0.000	57.566	0.878	0.791
33	480	88.180	86.960	0.000	57.561	0.878	0.791
34	495	88.130	87.690	0.000	57.557	0.878	0.791
35	510	87.450	87.660	0.000	57.553	0.880	0.792
36	525	88.020	87.600	0.000	57.551	0.880	0.792
37	540	87.640	87.000	0.000	57.548	0.880	0.792
38	555	87.840	86.910	0.000	57.544	0.879	0.792
39	570	87.880	86.900	0.000	57.540	0.879	0.792
40	585	88.200	86.900	0.000	57.536	0.879	0.791
41	600	87.870	86.660	0.000	57.533	0.879	0.791
42	615	87.880	86.910	0.000	57.529	0.880	0.792
43	630	87.850	87.010	0.000	57.527	0.879	0.791
44	645	87.340	87.370	0.000	57.522	0.879	0.791
45	660	87.940	88.020	0.000	57.521	0.880	0.791
46	675	87.710	86.530	0.000	57.517	0.879	0.791
47	690	87.650	86.280	0.000	57.514	0.879	0.791
48	705	87.690	86.660	0.000	57.511	0.880	0.791
49	720	87.250	86.600	0.000	57.507	0.880	0.792
50	735	87.590	86.730	0.000	57.506	0.880	0.792
51	750	87.850	86.490	0.000	57.502	0.881	0.792
52	765	87.540	86.450	0.000	57.500	0.880	0.793
53	780	87.060	86.450	0.000	57.497	0.880	0.793
54	795	87.190	86.330	0.000	57.495	0.881	0.793
55	810	87.470	86.510	0.000	57.491	0.883	0.794
56	825	87.490	86.280	0.000	57.489	0.881	0.793
57	840	87.430	86.250	0.000	57.489	0.882	0.794
58	855	87.480	86.510	0.000	57.487	0.882	0.794
59	870	87.420	86.350	0.000	57.484	0.882	0.794
60	885	87.400	86.190	0.000	57.482	0.881	0.794
61	900	87.370	86.300	0.000	57.480	0.881	0.794



62	915	86.930	86.300	0.000	57.479	0.881	0.794
63	930	87.290	86.340	0.000	57.478	0.881	0.794
64	945	87.340	86.380	0.000	57.476	0.882	0.795
65	960	87.330	86.250	0.000	57.475	0.882	0.795
66	975	87.350	86.320	0.000	57.473	0.882	0.795
67	990	87.230	86.290	0.000	57.472	0.882	0.795
68	1005	87.340	86.270	0.000	57.470	0.881	0.794
69	1020	87.350	86.390	0.000	57.469	0.881	0.794
70	1035	87.110	86.400	0.000	57.468	0.881	0.794
71	1050	87.220	86.250	0.000	57.467	0.881	0.793
72	1065	87.480	86.240	0.000	57.466	0.881	0.793
73	1080	87.190	86.230	0.000	57.465	0.881	0.794
74	1095	87.160	86.230	0.000	57.468	0.882	0.794
75	1110	87.470	86.260	0.000	57.467	0.883	0.795
76	1125	87.190	86.290	0.000	57.466	0.883	0.795
77	1140	87.180	86.290	0.000	57.465	0.883	0.795
78	1155	87.530	86.240	0.000	57.465	0.884	0.796
79	1170	87.140	86.150	0.000	57.464	0.884	0.796
80	1185	87.120	86.270	0.000	57.463	0.884	0.796
81	1200	87.170	86.260	0.000	57.463	0.884	0.796
82	1215	87.120	86.220	0.000	57.462	0.884	0.796
83	1230	87.090	86.320	0.000	57.461	0.884	0.796
84	1245	87.130	86.250	0.000	57.461	0.885	0.797
85	1260	87.400	86.540	0.000	57.460	0.885	0.797
86	1275	87.060	86.180	0.000	57.459	0.884	0.797
87	1290	87.060	86.440	0.000	57.458	0.885	0.798
88	1305	87.040	86.280	0.000	57.457	0.884	0.798
89	1320	87.090	86.130	0.000	57.456	0.884	0.798
90	1335	87.110	86.100	0.000	57.454	0.884	0.797
91	1350	87.120	86.230	0.000	57.453	0.884	0.798
92	1365	87.060	86.100	0.000	57.452	0.884	0.797
93	1380	87.100	86.120	0.000	57.449	0.884	0.798
94	1395	87.080	86.120	0.000	57.448	0.883	0.797
95	1410	87.090	86.210	0.000	57.447	0.884	0.798
96	1425	87.020	86.250	0.000	57.446	0.884	0.798
97	1440	86.870	86.140	0.000	57.444	0.883	0.797

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	HUM 3 FRACTION	HUM 4 FRACTION	HUM 5 FRACTION	HUM 6 FRACTION	HUM 7 FRACTION	HUM 8 FRACTION
1	0	0.850	0.814	0.829	0.858	0.881	0.000
2	15	0.850	0.814	0.829	0.858	0.882	0.000
3	30	0.851	0.814	0.829	0.859	0.883	0.000
4	45	0.851	0.814	0.828	0.857	0.883	0.000
5	60	0.851	0.814	0.829	0.858	0.883	0.000



6	75	0.851	0.813	0.828	0.858	0.883	0.000
7	90	0.851	0.812	0.828	0.856	0.883	0.000
8	105	0.850	0.811	0.827	0.857	0.883	0.000
9	120	0.850	0.811	0.827	0.856	0.882	0.000
10	135	0.850	0.811	0.826	0.856	0.882	0.000
11	150	0.851	0.811	0.827	0.856	0.883	0.000
12	165	0.851	0.811	0.827	0.856	0.883	0.000
13	180	0.851	0.811	0.827	0.856	0.883	0.000
14	195	0.852	0.812	0.827	0.857	0.883	0.000
15	210	0.852	0.812	0.828	0.858	0.883	0.000
16	225	0.852	0.812	0.828	0.858	0.883	0.000
17	240	0.852	0.812	0.827	0.857	0.884	0.000
18	255	0.853	0.812	0.828	0.857	0.883	0.000
19	270	0.853	0.813	0.828	0.858	0.884	0.000
20	285	0.853	0.813	0.828	0.857	0.884	0.000
21	300	0.853	0.813	0.828	0.859	0.884	0.000
22	315	0.854	0.813	0.828	0.859	0.884	0.000
23	330	0.854	0.813	0.828	0.859	0.884	0.000
24	345	0.855	0.814	0.829	0.860	0.885	0.000
25	360	0.854	0.814	0.828	0.860	0.885	0.000
26	375	0.855	0.814	0.828	0.860	0.885	0.000
27	390	0.855	0.813	0.828	0.860	0.885	0.000
28	405	0.855	0.814	0.829	0.861	0.886	0.000
29	420	0.855	0.814	0.828	0.861	0.886	0.000
30	435	0.855	0.815	0.829	0.863	0.887	0.000
31	450	0.855	0.816	0.829	0.865	0.887	0.000
32	465	0.856	0.817	0.829	0.865	0.889	0.000
33	480	0.856	0.818	0.830	0.866	0.890	0.000
34	495	0.856	0.819	0.831	0.867	0.891	0.000
35	510	0.857	0.820	0.832	0.870	0.894	0.000
36	525	0.857	0.821	0.833	0.871	0.895	0.000
37	540	0.857	0.820	0.833	0.871	0.895	0.000
38	555	0.857	0.823	0.834	0.873	0.897	0.000
39	570	0.858	0.824	0.835	0.876	0.900	0.000
40	585	0.858	0.826	0.835	0.876	0.906	0.000
41	600	0.858	0.825	0.835	0.878	0.907	0.000
42	615	0.858	0.826	0.836	0.878	0.911	0.000
43	630	0.857	0.825	0.836	0.879	0.913	0.000
44	645	0.858	0.827	0.837	0.880	0.914	0.000
45	660	0.858	0.828	0.837	0.880	0.915	0.000
46	675	0.858	0.828	0.839	0.880	0.914	0.000
47	690	0.858	0.828	0.840	0.880	0.914	0.000
48	705	0.859	0.828	0.842	0.880	0.915	0.000
49	720	0.860	0.829	0.844	0.881	0.915	0.000
50	735	0.860	0.829	0.844	0.880	0.915	0.000
51	750	0.860	0.830	0.844	0.880	0.915	0.000
52	765	0.860	0.831	0.845	0.879	0.914	0.000
53	780	0.860	0.832	0.846	0.879	0.914	0.000
54	795	0.861	0.833	0.848	0.878	0.914	0.000
55	810	0.861	0.834	0.849	0.878	0.914	0.000
56	825	0.861	0.833	0.849	0.877	0.913	0.000
57	840	0.862	0.835	0.851	0.878	0.914	0.000
58	855	0.862	0.834	0.850	0.878	0.913	0.000
59	870	0.863	0.834	0.850	0.877	0.913	0.000
60	885	0.863	0.834	0.850	0.878	0.913	0.000
61	900	0.863	0.834	0.849	0.877	0.913	0.000

62	915	0.864	0.834	0.849	0.878	0.913	0.000
63	930	0.864	0.834	0.849	0.877	0.912	0.000
64	945	0.864	0.833	0.849	0.877	0.912	0.000
65	960	0.865	0.834	0.850	0.878	0.912	0.000
66	975	0.864	0.833	0.849	0.877	0.911	0.000
67	990	0.864	0.833	0.849	0.876	0.911	0.000
68	1005	0.864	0.834	0.848	0.876	0.911	0.000
69	1020	0.864	0.834	0.847	0.876	0.910	0.000
70	1035	0.864	0.834	0.847	0.876	0.910	0.000
71	1050	0.863	0.834	0.847	0.875	0.909	0.000
72	1065	0.863	0.835	0.846	0.874	0.908	0.000
73	1080	0.863	0.835	0.847	0.875	0.908	0.000
74	1095	0.864	0.837	0.848	0.875	0.909	0.000
75	1110	0.865	0.839	0.848	0.876	0.909	0.000
76	1125	0.866	0.839	0.849	0.876	0.909	0.000
77	1140	0.865	0.838	0.849	0.876	0.909	0.000
78	1155	0.866	0.839	0.849	0.877	0.909	0.000
79	1170	0.866	0.839	0.849	0.877	0.910	0.000
80	1185	0.866	0.839	0.849	0.877	0.910	0.000
81	1200	0.867	0.841	0.851	0.877	0.910	0.000
82	1215	0.866	0.841	0.849	0.876	0.910	0.000
83	1230	0.866	0.842	0.850	0.876	0.910	0.000
84	1245	0.867	0.842	0.851	0.877	0.910	0.000
85	1260	0.867	0.842	0.850	0.877	0.910	0.000
86	1275	0.866	0.842	0.850	0.876	0.910	0.000
87	1290	0.867	0.843	0.851	0.877	0.910	0.000
88	1305	0.866	0.843	0.849	0.876	0.910	0.000
89	1320	0.866	0.844	0.850	0.876	0.910	0.000
90	1335	0.865	0.844	0.849	0.875	0.909	0.000
91	1350	0.865	0.844	0.849	0.876	0.909	0.000
92	1365	0.865	0.853	0.848	0.875	0.908	0.000
93	1380	0.865	0.843	0.847	0.875	0.909	0.000
94	1395	0.864	0.843	0.847	0.874	0.909	0.000
95	1410	0.865	0.843	0.848	0.875	0.909	0.000
96	1425	0.865	0.842	0.848	0.874	0.909	0.000
97	1440	0.864	0.842	0.847	0.874	0.908	0.000

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	HUM 9 FRACTION	HUM 10 FRACTION
1	0	0.886	0.927
2	15	0.886	0.926
3	30	0.888	0.928
4	45	0.887	0.927
5	60	0.887	0.928



6	75	0.886	0.927
7	90	0.886	0.927
8	105	0.885	0.927
9	120	0.885	0.927
10	135	0.884	0.926
11	150	0.885	0.927
12	165	0.885	0.927
13	180	0.885	0.926
14	195	0.885	0.928
15	210	0.885	0.927
16	225	0.885	0.927
17	240	0.885	0.927
18	255	0.885	0.926
19	270	0.884	0.926
20	285	0.884	0.926
21	300	0.884	0.926
22	315	0.885	0.926
23	330	0.884	0.926
24	345	0.884	0.926
25	360	0.884	0.925
26	375	0.884	0.924
27	390	0.883	0.923
28	405	0.883	0.923
29	420	0.882	0.922
30	435	0.882	0.921
31	450	0.881	0.921
32	465	0.881	0.921
33	480	0.880	0.920
34	495	0.880	0.919
35	510	0.880	0.918
36	525	0.879	0.916
37	540	0.878	0.915
38	555	0.877	0.914
39	570	0.877	0.914
40	585	0.875	0.912
41	600	0.874	0.911
42	615	0.874	0.910
43	630	0.872	0.907
44	645	0.870	0.906
45	660	0.869	0.904
46	675	0.867	0.903
47	690	0.867	0.902
48	705	0.866	0.901
49	720	0.866	0.900
50	735	0.866	0.900
51	750	0.866	0.900
52	765	0.866	0.899
53	780	0.865	0.899
54	795	0.865	0.899
55	810	0.865	0.899
56	825	0.865	0.898
57	840	0.866	0.898
58	855	0.865	0.897
59	870	0.866	0.897
60	885	0.865	0.897
61	900	0.865	0.896

62	915	0.865	0.896
63	930	0.864	0.896
64	945	0.865	0.896
65	960	0.865	0.896
66	975	0.864	0.896
67	990	0.864	0.896
68	1005	0.864	0.896
69	1020	0.864	0.896
70	1035	0.864	0.896
71	1050	0.864	0.896
72	1065	0.864	0.895
73	1080	0.865	0.894
74	1095	0.865	0.895
75	1110	0.866	0.896
76	1125	0.866	0.896
77	1140	0.865	0.896
78	1155	0.866	0.897
79	1170	0.866	0.897
80	1185	0.866	0.897
81	1200	0.867	0.897
82	1215	0.866	0.897
83	1230	0.866	0.898
84	1245	0.867	0.899
85	1260	0.867	0.898
86	1275	0.866	0.897
87	1290	0.867	0.898
88	1305	0.866	0.898
89	1320	0.866	0.898
90	1335	0.866	0.897
91	1350	0.867	0.897
92	1365	0.865	0.896
93	1380	0.865	0.896
94	1395	0.866	0.896
95	1410	0.866	0.896
96	1425	0.865	0.896
97	1440	0.864	0.895

END OF TABLE

END OF REPORT ON CONTAINMENT LEAK RATE TEST TO NRC

4.
HIGH PRESSURE
CONTROLLED LEAK RATE TEST

LEAK RATE COMPUTED USING TOTAL TIME METHOD
AS RECOMMENDED BY APPENDIX J FOR 10 CFR 50
(REACTOR CONTAINMENT LEAKAGE TESTING FOR WATER COOLED POWER REACTORS)

TEST PERIOD STARTED AT 2200 HOURS ON JULY 4, 1975

A LEAST SQUARES FIRST ORDER FIT OF LEAK RATE TO TIME
SHOULD YIELD A SLOPE OF ZERO AND AN INTERCEPT EQUAL
TO THE LEAK RATE AS COMPUTED AT THE INITIAL START TIME
THE EQUATION HAS THE FORM $L = ST + R$
WHERE L ~ CORRELATED LEAK RATE
S ~ SLOPE OF CORRELATION
T ~ TIME IN HOURS
R ~ INTERCEPT LEAK RATE

LEAK RATE = -0.005 HOURS + 0.242 PER CENT
MEAN = 0.222 PER CENT
ERRQR COEFFICIENT = 0.227
WHERE COEFFICIENT OF 1.0 MEANS A PERFECT FIT &
COEFFICIENT OF 0.0 MEANS NO CORRELATION.

INITIAL CONTAINMENT AIR WEIGHT = 701845 LBS.
FINAL CONTAINMENT AIR WEIGHT = 701424 LBS.
LEAK RATE FOR 7.00 HOUR PERIOD IS 0.060 PER CENT BY WEIGHT.

MAXIMUM NRC LEAK RATE OF 0.387 PER CENT PER DAY
GIVEN FOR HIGH PRESSURE TEST AT 57.44 PSIA

TEMPERATURE LOOP ERROR = 0.300 DEGREES F. PRESSURE LOOP ERROR = 0.002 PSIA.
HUMIDITY LOOP ERROR = 2.50 PERCENT

INSTRUMENT ERROR CONTRIBUTES .0851 PERCENT PER DAY

NOTE FOR PLOT - TIME INCREASES DOWN THE PAGE.
VARIABLE(S) INCREASE TO THE RIGHT.
D DENOTES A DELETED SENSOR.
LOWER VALUE INDICES MAY BE COVERED
BY HIGHER VALUE INDICES IF THE
NUMERICAL VALUES ARE CLOSE.

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1 - STATISTICAL LEAK RATE BASED ON TOTAL TIME METHOD
2 - MAXIMUM LEAK RATE (PER CENT)
3 - NRC TECHNICAL SPECIFICATION LIMIT FOR LEAK RATE
4 - 95 PER CENT CONFIDENCE LIMIT FOR INSTRUMENT ERROR
5 - LEAK RATE COMPUTED FROM FIRST ORDER EQUATION FIT

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	-3.66E+00	-2.24E+00	-8.30E-01	5.85E-01	2.00E+00	3.41E+00
	-2.95E+00	-1.54E+00	-1.23E-01	1.29E+00	2.71E+00	
0.00E+01	*-----*	*-----*	*-----*	*-----*	*-----*	*-----*

1	1
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1.50E+02	*-----*	*-----*	*-----*	*-----*	*-----*	*-----*
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3.00E+02	*-----*	*-----*	*-----*	*-----*	*-----*	*-----*
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NOTE FOR PLOT - TIME INCREASES DOWN THE PAGE.
 VARIABLES(S) INCREASE TO THE RIGHT.
 D DENOTES A DELETED SENSOR.
 LOWER VALUE INDICES MAY BE COVERED
 BY HIGHER VALUE INDICES IF THE
 NUMERICAL VALUES ARE CLOSE.

PLOT VARIABLE INDEX

- 1 - MAXIMUM LEAK RATE (PER CENT)
- 2 - NRC TECHNICAL SPECIFICATION LIMIT FOR LEAK RATE
- 3 - 95 PER CENT CONFIDENCE LIMIT FOR INSTRUMENT ERROR
- 4 - LEAK RATE COMPUTED FROM FIRST ORDER EQUATION FIT

	2.03E-01	2.63E-01	3.22E-01	3.81E-01	4.41E-01	5.00E-01
	2.33E-01	2.92E-01	3.52E-01	4.11E-01	4.70E-01	
0.00E+01	*-4-----*	*-3-----*	*-2-----*	*-1-----*	*-----*	*-----*
	.4	.3	.2	.	.	1
	.4	.3	.2	.	.	1
	.4	.3	.2	.	.	1
	.4	.3	.2	.	.	1
	.4	.3	.2	.	.	1
	.4	.3	.2	.	.	1
	.4	.3	.2	.	.	1
	.4	.3	.2	.	.	1
	.4	.3	.2	.	.	1
	.4	.3	.2	.	.	1
	.4	.3	.2	.	.	1
1.50E+02	*-4-----*	*-3-----*	*-2-----*	*-1-----*	*-----*	*-----*
	.4	.3	.2	.	.	1
	.4	.3	.2	.	.	1
	.4	.3	.2	.	.	1
	.4	.3	.2	.	.	1
	.4	.3	.2	.	.	1
	.4	.3	.2	.	.	1
	.4	.3	.2	.	.	1
	.4	.3	.2	.	.	1
	.4	.3	.2	.	.	1
	.4	.3	.2	.	.	1
	.4	.3	.2	.	.	1
3.00E+02	*-4-----*	*-3-----*	*-2-----*	*-1-----*	*-----*	*-----*
	.4	.3	.2	.	.	1
	.4	.3	.2	.	.	1
	.4	.3	.2	.	.	1



4	.	.	.	3	.	.	.	2	.	.	.	1
4	.	.	.	3	.	.	.	2	.	.	.	1
4	.	.	.	3	.	.	.	2	.	.	.	1
4	.	.	.	3	.	.	.	2	.	.	.	1
4	.	.	.	3	.	.	.	2	.	.	.	1

NOTE FOR PLOT - TIME INCREASES DOWN THE PAGE.
 VARIABLES(S) INCREASE TO THE RIGHT.
 D DENOTES A DELETED SENSOR.
 LOWER VALUE INDICES MAY BE COVERED
 BY HIGHER VALUE INDICES IF THE
 NUMERICAL VALUES ARE CLOSE.

PLOT VARIABLE INDEX

- 1 - SIMPLE TOTAL LEAK RATE PROJECTED TO 24 HOURS
- 2 - LEAK RATE COMPUTED FROM FIRST ORDER EQUATION FIT
- 3 - 95 PER CENT CONFIDENCE LIMIT FOR INSTRUMENT ERROR

	1.89E-01	2.12E-01	2.35E-01	2.59E-01	2.82E-01	3.05E-01
0.00E+01	2.00E-01	2.24E-01	2.47E-01	2.70E-01	2.94E-01	
	*****2*****D*****3**					
	.	.	.	2	.	1
	.	.	.	2	.	.
1	.	.	.	2	.	.
.	.	.	.	2	.	1
.	1	.	.	2	.	.
.	.	.	1	2	.	.
.	.	.	1	2	.	.
.	.	1	.	2	.	.
.	.	.	.	2	.	.
1.50E+02	*****21*****3**					
	.	1	.	2	.	.

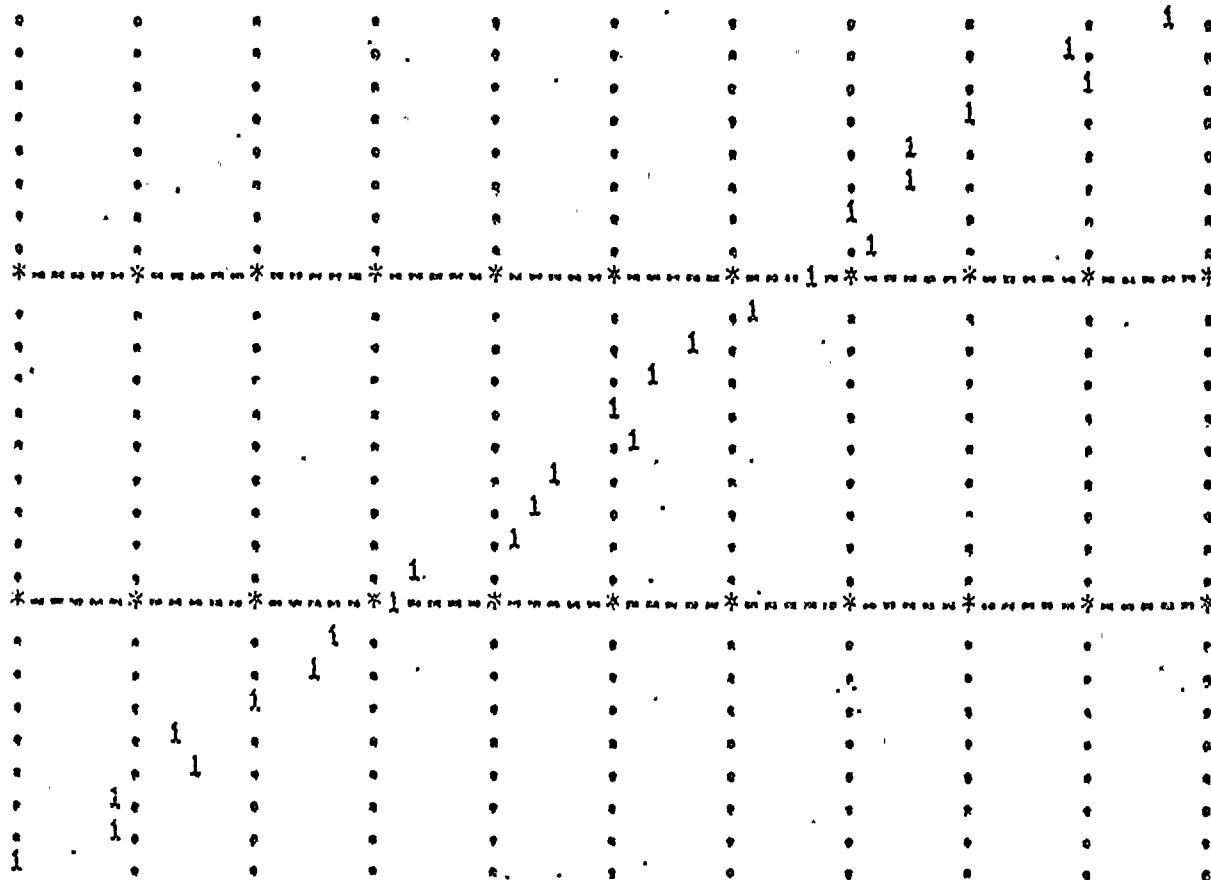
[illegible]

	6.70E+01	8.71E+01	8.71E+01	8.72E+01	8.72E+01	8.73E+01
	8.71E+01	8.71E+01	8.71E+01	8.72E+01	8.72E+01	
0.00E+01	*	*	*	*	*	*



1.50E+02

3.00E+02



NOTE FOR PLOT - TIME INCREASES DOWN THE PAGE.
 VARIABLES(S) INCREASE TO THE RIGHT.
 D DENOTES A DELETED SENSOR.
 LOWER VALUE INDICES MAY BE COVERED
 BY HIGHER VALUE INDICES IF THE
 NUMERICAL VALUES ARE CLOSE.

PLCT VARIABLE INDEX

1 - AVG. PRE. (PSIA)



BY HIGHER VALUE INDICES IF THE
NUMERICAL VALUES ARE CLOSE.

PLOT VARIABLE INDEX

1 - VAF, PRE (PSIA -)

[illegible]

NOTE FOR TABULAR DATA -

TABLE VALUES OF ZERO SIGNIFY EITHER

1. DATA IS NOT APPLICABLE TO THE CALCULATION OR

2. SENSOR HAS BEEN DELETED FROM THE SCAN.

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	AVG. TEM DEG. F	AVG. PRE PSIA	VAP. PRE PSIA	LEAK COM PER CENT	LEAK TRA PER CENT	ERROR(T) PER CENT
1	0	87.257	57.444	0.553	0.242	0.000	0.000
2	15	87.253	57.442	0.553	0.240	0.272	0.000
3	30	87.251	57.440	0.553	0.239	3.415	0.289
4	45	87.231	57.437	0.552	0.238	-3.660	0.123
5	60	87.234	57.435	0.552	0.236	-1.049	0.035
6	75	87.213	57.432	0.552	0.235	-1.496	0.086
7	90	87.202	57.430	0.552	0.233	-1.095	0.083
8	105	87.200	57.427	0.551	0.232	-0.768	0.074
9	120	87.190	57.426	0.552	0.231	-0.670	0.082
10	135	87.195	57.424	0.551	0.229	-0.428	0.064
11	150	87.184	57.421	0.551	0.228	-0.268	0.051
12	165	87.171	57.420	0.551	0.227	-0.242	0.058
13	180	87.160	57.417	0.551	0.225	-0.206	0.061
14	195	87.153	57.415	0.551	0.224	-0.148	0.058
15	210	87.148	57.413	0.551	0.222	-0.108	0.057
16	225	87.150	57.411	0.552	0.221	-0.038	0.045
17	240	87.134	57.409	0.551	0.220	-0.005	0.042
18	255	87.130	57.407	0.552	0.218	0.027	0.037
19	270	87.127	57.405	0.551	0.217	0.055	0.033
20	285	87.110	57.402	0.551	0.216	0.081	0.029
21	300	87.106	57.400	0.551	0.214	0.090	0.029
22	315	87.096	57.399	0.551	0.213	0.093	0.032
23	330	87.089	57.396	0.551	0.212	0.101	0.032
24	345	87.080	57.394	0.551	0.210	0.105	0.034
25	360	87.066	57.393	0.550	0.209	0.101	0.040
26	375	87.066	57.390	0.550	0.207	0.104	0.042
27	390	87.052	57.388	0.550	0.206	0.104	0.046
28	405	87.051	57.386	0.550	0.205	0.109	0.047
29	420	87.034	57.384	0.550	0.203	0.110	0.050

END OF TABLE

DESCRIPTION OF VARIABLES

AVG. TEM - VOLUMETRICALLY WEIGHTED TEMPERATURE.
 AVG. PRE - AVERAGE PRESSURE.
 VAF. PRE - VOLUMETRICALLY WEIGHTED VAPOUR PRESSURE.
 LEAK CCM - LEAK RATE COMPUTED FROM FIRST ORDER REGRESSION.
 LEAK TRA - LEAK RATE BASED ON TOTAL TIME CALCULATIONS.
 ERRPR(T) - STATISTICAL ERROR ON TOTAL TIME LEAK RATE.

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP 1 DEG. F	TEMP 2 DEG. F	TEMP 3 DEG. F	TEMP 4 DEG. F	TEMP 5 DEG. F	TEMP 6 DEG. F
1	0	86.690	87.410	87.090	88.090	86.890	86.910
2	15	86.710	87.410	87.090	88.060	86.880	86.880
3	30	86.710	87.390	87.070	88.050	86.910	86.890
4	45	86.720	87.380	87.070	88.040	86.890	86.870
5	60	86.730	87.380	87.070	88.040	86.950	86.890
6	75	86.690	87.380	87.050	88.020	86.860	86.860
7	90	86.660	87.350	87.030	88.010	86.870	86.830
8	105	86.670	87.350	87.020	88.020	86.860	86.840
9	120	86.680	87.340	87.020	88.000	86.870	86.820
10	135	86.740	87.350	87.020	88.000	86.920	86.840
11	150	86.700	87.330	87.010	87.990	86.900	86.830
12	165	86.650	87.310	87.000	87.980	86.840	86.790
13	180	86.650	87.330	87.000	87.980	86.850	86.790
14	195	86.640	87.300	86.990	87.960	86.840	86.760
15	210	86.610	87.310	86.990	87.960	86.830	86.770
16	225	86.630	87.300	86.980	87.950	86.840	86.760
17	240	86.590	87.290	86.970	87.940	86.810	86.750
18	255	86.590	87.280	86.970	87.930	86.830	86.730
19	270	86.580	87.280	86.950	87.920	86.770	86.730
20	285	86.570	87.250	86.930	87.900	86.780	86.710
21	300	86.560	87.400	86.930	87.890	86.800	86.700
22	315	86.550	87.230	86.920	87.870	86.740	86.690
23	330	86.530	87.230	86.900	87.860	86.750	86.650
24	345	86.530	87.220	86.890	87.850	86.780	86.680
25	360	86.540	87.210	86.880	87.840	86.750	86.540
26	375	86.530	87.210	86.870	87.830	86.730	86.640
27	390	86.490	87.190	86.860	87.810	86.800	86.640
28	405	86.510	87.180	86.850	87.810	86.750	86.620
29	420	86.470	87.150	86.830	87.790	86.730	86.600

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP 7 DEG. F	TEMP 8 DEG. F	TEMP 9 DEG. F	TEMP 10 DEG. F	TEMP 11 DEG. F	TEMP 12 DEG. F
1	0	86.680	87.480	87.230	87.280	87.520	87.460
2	15	86.760	87.470	87.220	87.270	87.500	87.450
3	30	86.760	87.450	87.210	87.260	87.490	87.430
4	45	86.730	87.450	87.190	87.250	87.480	87.430
5	60	86.740	87.450	87.200	87.240	87.480	87.410
6	75	86.720	87.430	87.180	87.230	87.470	87.400
7	90	86.700	87.420	87.170	87.220	87.450	87.390
8	105	86.710	87.410	87.160	87.210	87.450	87.390
9	120	86.700	87.400	87.150	87.200	87.440	87.380
10	135	86.710	87.390	87.160	87.200	87.440	87.400
11	150	86.700	87.380	87.150	87.200	87.430	87.370
12	165	86.670	87.370	87.140	87.190	87.420	87.360
13	180	86.660	87.370	87.140	87.190	87.420	87.350
14	195	86.630	87.360	87.130	87.170	87.410	87.340
15	210	86.620	87.360	87.130	87.170	87.410	87.340
16	225	86.620	87.360	87.120	87.160	87.400	87.340
17	240	86.600	87.340	87.110	87.150	87.390	87.330
18	255	86.590	87.340	87.100	87.140	87.390	87.330
19	270	86.550	87.330	87.100	87.130	87.380	87.320
20	285	86.580	87.320	87.080	87.130	87.370	87.310
21	300	86.520	87.320	87.080	87.120	87.370	87.310
22	315	86.540	87.310	87.070	87.100	87.360	87.300
23	330	86.530	87.300	87.060	87.100	87.350	87.290
24	345	86.520	87.300	87.060	87.120	87.360	87.310
25	360	86.500	87.290	87.050	87.090	87.330	87.280
26	375	86.480	87.260	87.050	87.080	87.340	87.270
27	390	86.480	87.280	87.030	87.070	87.340	87.270
28	405	86.470	87.270	87.020	87.060	87.320	87.250
29	420	86.450	87.260	87.020	87.050	87.310	87.250

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP 13 DEG. F	TEMP 14 DEG. F	TEMP 15 DEG. F	TEMP 16 DEG. F	TEMP 17 DEG. F	TEMP 18 DEG. F
1	0	87.360	87.240	87.800	85.020	87.590	87.730

2	15	87.350	87.220	87.780	85.010	87.570	87.710
3	30	87.330	87.200	87.770	85.000	87.570	87.720
4	45	87.320	87.190	87.750	84.990	87.550	87.700
5	60	87.320	87.190	87.740	84.970	87.540	87.710
6	75	87.310	87.170	87.730	84.960	87.530	87.660
7	90	87.300	87.160	87.720	84.950	87.530	87.660
8	105	87.290	87.160	87.710	84.940	87.510	87.650
9	120	87.280	87.150	87.700	84.930	87.510	87.640
10	135	87.280	87.150	87.700	84.930	87.500	87.630
11	150	87.270	87.130	87.680	84.920	87.490	87.660
12	165	87.250	87.120	87.680	84.910	87.480	87.620
13	180	87.250	87.120	87.670	84.910	87.470	87.610
14	195	87.240	87.110	87.670	84.900	87.470	87.610
15	210	87.240	87.110	87.640	84.890	87.460	87.600
16	225	87.430	87.100	87.660	84.890	87.460	87.590
17	240	87.230	87.090	87.650	84.890	87.450	87.590
18	255	87.220	87.080	87.650	84.880	87.440	87.580
19	270	87.210	87.080	87.620	84.860	87.430	87.560
20	285	87.200	87.060	87.600	84.850	87.420	87.560
21	300	87.200	87.060	87.600	84.840	87.410	87.550
22	315	87.190	87.050	87.590	84.840	87.410	87.550
23	330	87.180	87.040	87.590	84.830	87.400	87.540
24	345	87.180	87.050	87.590	84.840	87.410	87.530
25	360	87.160	87.030	87.590	84.810	87.390	87.520
26	375	87.160	87.020	87.580	84.810	87.380	87.510
27	390	87.160	87.040	87.560	84.800	87.390	87.500
28	405	87.140	87.010	87.560	84.790	87.360	87.490
29	420	87.130	87.000	87.560	84.790	87.360	87.480

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP 19 DEG. F	TEMP 20 DEG. F	TEMP 21 DEG. F	TEMP 22 DEG. F	TEMP 23 DEG. F	TEMP 24 DEG. F
1	0	87.690	87.400	87.190	87.540	87.590	87.730
2	15	87.680	87.380	87.250	87.530	87.570	87.710
3	30	87.690	87.380	87.230	87.520	87.560	87.710
4	45	87.660	87.370	87.220	87.500	87.550	87.690
5	60	87.660	87.370	87.200	87.500	87.540	87.700
6	75	87.640	87.340	87.160	87.480	87.520	87.670
7	90	87.630	87.330	87.110	87.470	87.510	87.660
8	105	87.630	87.320	87.150	87.450	87.510	87.660
9	120	87.610	87.320	87.150	87.450	87.500	87.650
10	135	87.600	87.300	87.120	87.450	87.490	87.640
11	150	87.600	87.300	87.140	87.440	87.490	87.640
12	165	87.590	87.270	87.100	87.420	87.480	87.620
13	180	87.580	87.280	87.100	87.420	87.470	87.620

14	195	87.580	87.260	87.100	87.410	87.460	87.610
15	210	87.570	87.250	87.100	87.410	87.450	87.600
16	225	87.560	87.240	87.100	87.400	87.450	87.590
17	240	87.550	87.240	87.070	87.390	87.440	87.590
18	255	87.550	87.230	87.080	87.380	87.430	87.580
19	270	87.540	87.210	87.020	87.360	87.420	87.570
20	285	87.530	87.200	87.040	87.360	87.420	87.560
21	300	87.520	87.180	87.020	87.350	87.400	87.550
22	315	87.500	87.180	87.020	87.340	87.390	87.540
23	330	87.500	87.180	87.010	87.330	87.390	87.530
24	345	87.490	87.160	86.990	87.330	87.380	87.530
25	360	87.470	87.150	86.990	87.320	87.370	87.510
26	375	87.470	87.140	87.020	87.320	87.360	87.510
27	390	87.450	87.130	86.960	87.300	87.350	87.500
28	405	87.460	87.120	87.020	87.300	87.350	87.490
29	420	87.430	87.110	86.950	87.280	87.330	87.480

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP 25 DEG. F	TEMP 26 DEG. F	TEMP 27 DEG. F	TEMP 28 DEG. F	TEMP 29 DEG. F	TEMP 30 DEG. F
1	0	87.520	86.930	87.560	87.190	87.540	87.170
2	15	87.510	86.950	87.530	87.220	87.530	87.150
3	30	87.510	87.060	87.520	87.250	87.520	87.150
4	45	87.490	86.970	87.480	87.210	87.510	87.140
5	60	87.490	87.010	87.480	87.270	87.520	87.130
6	75	87.470	86.950	87.450	87.200	87.490	87.120
7	90	87.450	86.940	87.430	87.190	87.480	87.130
8	105	87.450	86.930	87.420	87.190	87.470	87.110
9	120	87.450	86.940	87.400	87.190	87.470	87.100
10	135	87.430	87.060	87.390	87.210	87.470	87.090
11	150	87.430	86.970	87.380	87.200	87.470	87.080
12	165	87.410	86.950	87.360	87.170	87.450	87.080
13	180	87.400	86.860	87.350	87.160	87.450	87.080
14	195	87.400	86.890	87.340	87.110	87.450	87.050
15	210	87.390	86.890	87.330	87.140	87.440	87.050
16	225	87.390	86.880	87.330	87.140	87.440	87.080
17	240	87.380	86.890	87.310	87.130	87.430	87.060
18	255	87.360	86.850	87.300	87.130	87.430	87.070
19	270	87.350	86.820	87.490	87.220	87.430	87.040
20	285	87.340	86.870	87.280	87.110	87.410	87.020
21	300	87.330	86.960	87.260	87.100	87.400	87.020
22	315	87.330	86.870	87.250	87.120	87.400	87.020
23	330	87.320	86.830	87.230	87.050	87.390	87.010
24	345	87.310	86.800	87.230	87.070	87.380	87.010
25	360	87.290	86.770	87.200	87.070	87.370	87.030

26	375	87.290	86.770	87.210	87.070	87.370	87.030
27	390	87.260	86.740	87.200	87.050	87.360	86.980
28	405	87.270	86.770	87.200	87.090	87.360	87.010
29	420	87.240	86.720	87.180	87.050	87.350	87.000

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP 31 DEG. F	TEMP 32 DEG. F	TEMP 33 DEG. F	TEMP 34 DEG. F	TEMP 35 DEG. F	TEMP 36 DEG. F
1	0	87.230	87.380	87.230	87.920	87.200	87.280
2	15	87.220	87.370	87.220	87.900	87.180	87.270
3	30	87.210	87.350	87.210	88.000	87.180	87.260
4	45	87.200	87.350	87.200	87.920	87.170	87.260
5	60	87.200	87.340	87.200	87.890	87.160	87.250
6	75	87.190	87.320	87.180	87.860	87.150	87.230
7	90	87.190	87.320	87.180	87.840	87.140	87.220
8	105	87.170	87.310	87.170	87.870	87.140	87.230
9	120	87.170	87.300	87.160	87.870	87.130	87.220
10	135	87.160	87.290	87.150	87.920	87.120	87.210
11	150	87.160	87.290	87.150	87.850	87.110	87.210
12	165	87.150	87.270	87.140	87.830	87.100	87.200
13	180	87.150	87.270	87.140	87.830	87.100	87.200
14	195	87.140	87.260	87.130	87.790	87.090	87.200
15	210	87.130	87.260	87.120	87.810	87.090	87.190
16	225	87.140	87.270	87.130	87.820	87.090	87.190
17	240	87.120	87.250	87.120	87.790	87.080	87.180
18	255	87.120	87.250	87.110	87.800	87.070	87.170
19	270	87.110	87.240	87.110	87.850	87.070	87.170
20	285	87.100	87.240	87.100	87.800	87.060	87.160
21	300	87.090	87.220	87.090	87.770	87.050	87.150
22	315	87.090	87.220	87.090	87.780	87.050	87.150
23	330	87.080	87.210	87.080	87.760	87.040	87.140
24	345	87.070	87.210	87.070	87.750	87.030	87.130
25	360	87.080	87.210	87.070	87.750	87.030	87.120
26	375	87.080	87.210	87.070	87.750	87.020	87.120
27	390	87.050	87.180	87.050	87.710	87.000	87.100
28	405	87.060	87.190	87.050	87.790	87.010	87.100
29	420	87.050	87.170	87.040	87.700	87.000	87.100

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	TEMP 37 DEG. F	TEMP 38 DEG. F	TEMP 39 DEG. F	PRES 1 PSIA	HUM 1 FRACTION	HUM 2 FRACTION
1	0	86.870	86.140	0.000	57.444	0.883	0.797
2	15	87.090	86.010	0.000	57.442	0.883	0.797
3	30	86.980	86.020	0.000	57.440	0.883	0.797
4	45	86.730	86.160	0.000	57.437	0.883	0.796
5	60	86.950	86.080	0.000	57.435	0.883	0.797
6	75	86.930	86.080	0.000	57.432	0.882	0.796
7	90	86.950	86.070	0.000	57.430	0.884	0.797
8	105	86.880	86.180	0.000	57.427	0.883	0.797
9	120	86.880	86.050	0.000	57.426	0.883	0.797
10	135	86.900	86.050	0.000	57.424	0.883	0.796
11	150	86.890	86.070	0.000	57.421	0.884	0.797
12	165	86.880	86.250	0.000	57.420	0.884	0.796
13	180	86.850	86.020	0.000	57.417	0.884	0.797
14	195	86.940	86.080	0.000	57.415	0.885	0.797
15	210	86.900	86.050	0.000	57.413	0.884	0.797
16	225	86.890	85.970	0.000	57.411	0.886	0.798
17	240	86.940	85.950	0.000	57.409	0.885	0.798
18	255	86.920	86.040	0.000	57.407	0.885	0.798
19	270	86.890	86.110	0.000	57.405	0.883	0.798
20	285	86.860	86.100	0.000	57.402	0.886	0.798
21	300	86.910	86.000	0.000	57.400	0.886	0.798
22	315	86.910	86.070	0.000	57.399	0.885	0.798
23	330	87.150	86.030	0.000	57.396	0.885	0.798
24	345	86.870	86.010	0.000	57.394	0.885	0.798
25	360	86.850	86.050	0.000	57.393	0.885	0.798
26	375	86.910	86.030	0.000	57.390	0.885	0.798
27	390	86.870	86.030	0.000	57.388	0.884	0.798
28	405	86.840	86.000	0.000	57.386	0.886	0.798
29	420	86.890	86.000	0.000	57.384	0.886	0.798

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	HUM 3 FRACTION	HUM 4 FRACTION	HUM 5 FRACTION	HUM 6 FRACTION	HUM 7 FRACTION	HUM 8 FRACTION
1	0	0.864	0.842	0.847	0.874	0.908	0.000
2	15	0.863	0.841	0.846	0.873	0.908	0.000
3	30	0.863	0.840	0.846	0.873	0.907	0.000
4	45	0.863	0.840	0.846	0.872	0.907	0.000
5	60	0.863	0.840	0.846	0.873	0.907	0.000



6	75	0.863	0.840	0.845	0.872	0.907	0.000
7	90	0.864	0.841	0.846	0.873	0.908	0.000
8	105	0.863	0.840	0.845	0.872	0.907	0.000
9	120	0.864	0.840	0.846	0.873	0.907	0.000
10	135	0.863	0.839	0.845	0.872	0.906	0.000
11	150	0.863	0.840	0.845	0.873	0.906	0.000
12	165	0.863	0.839	0.845	0.872	0.906	0.000
13	180	0.864	0.840	0.845	0.873	0.906	0.000
14	195	0.865	0.841	0.846	0.873	0.907	0.000
15	210	0.865	0.841	0.846	0.874	0.907	0.000
16	225	0.866	0.842	0.846	0.874	0.908	0.000
17	240	0.866	0.842	0.846	0.874	0.908	0.000
18	255	0.866	0.842	0.847	0.874	0.909	0.000
19	270	0.866	0.842	0.847	0.872	0.909	0.000
20	285	0.867	0.842	0.847	0.875	0.909	0.000
21	300	0.866	0.841	0.846	0.872	0.908	0.000
22	315	0.866	0.840	0.846	0.874	0.908	0.000
23	330	0.867	0.841	0.847	0.874	0.909	0.000
24	345	0.867	0.842	0.847	0.874	0.909	0.000
25	360	0.867	0.841	0.846	0.874	0.908	0.000
26	375	0.867	0.841	0.846	0.874	0.908	0.000
27	390	0.867	0.841	0.846	0.874	0.908	0.000
28	405	0.867	0.840	0.846	0.874	0.908	0.000
29	420	0.867	0.840	0.847	0.874	0.908	0.000

END OF TABLE

VARIABLE TABLE SUMMARY

SAMPLE NUMBER	DELTA MINS	HUM 9 FRACTION	HUM 10 FRACTION
1	0	0.864	0.895
2	15	0.864	0.895
3	30	0.864	0.895
4	45	0.864	0.894
5	60	0.864	0.894
6	75	0.864	0.894
7	90	0.865	0.895
8	105	0.863	0.894
9	120	0.864	0.895
10	135	0.864	0.894
11	150	0.864	0.894
12	165	0.865	0.894
13	180	0.864	0.895
14	195	0.865	0.895
15	210	0.866	0.893
16	225	0.865	0.895
17	240	0.866	0.894

18	255	0.866	0.895
19	270	0.866	0.895
20	285	0.866	0.895
21	300	0.865	0.894
22	315	0.865	0.894
23	330	0.866	0.894
24	345	0.865	0.894
25	360	0.865	0.895
26	375	0.864	0.894
27	390	0.864	0.894
28	405	0.864	0.894
29	420	0.864	0.894

END OF TABLE

END OF REPORT ON CONTAINMENT LEAK RATE TEST TO NRC



APPENDIX B

Preoperational Test Procedure No. 1300080
Integrated Leak Rate Test

FLORIDA POWER & LIGHT COMPANY

ST. LUCIE PLANT NO. 1.

PREOPERATIONAL TEST PROCEDURE NO. 1300080

REVISION 0

COPY 7

TITLE: Integrated Leak-Rate Test

PREPARED BY: W. D. Roman

May 28, 1975

REVIEWED BY:

For Ebasco

For CE

For FP&L

REVIEWED BY PNSC ON

June 20 1975

APPROVED BY:

Plant Manager

REVISION

REVIEWED BY PNSC ON

APPROVED BY

Plant Manager

197

TEST CONDUCTED AND WITNESSED BY:

For Ebasco

For FP&L

RESULTS REVIEWED BY

For FP&L

For Ebasco

For CE

TEST RESULTS REVIEWED BY PNSC, DEFICIENCIES CORRECTED, AND ACCEPTANCE RECOMMENDED

September 19 1975

RESULTS ACCEPTED AND APPROVED BY

Plant Manager

9-19 1975

1.0 TITLE

Florida Power & Light Company

St. Lucie Plant Unit #1

Preoperational Test Procedure No. 1300080, Rev. 0

INTEGRATED LEAK RATE TEST

2.0 PURPOSE

The purpose of this test is to assure that leakage through the primary reactor containment, and systems and component penetrating primary containment shall not exceed the allowable leakage rate values. Values of acceptable leakage rates are given in Section 10.0 "Acceptance Criteria". Also, to establish a base leakage rate at Pt for future containment testing.

2.1 Method and Discussion of Test Techniques

The Integrated Leak Rate Test shall be performed by the absolute method by which the actual mass of contained air is calculated as a function of time:

2.1.1 Corroboration of Measurement

Provisions shall be made within this test whereby the leak rate measurements shall be validated independently by the use of a controlled leakage rate test (CLRT). This validation shall be performed for a sufficient duration to accurately establish validation following the measurements at Pt and Pa. At the end of the overall test, a statistical analyses of the total measurement shall be performed.

2.1.2 Test Computations

The equations used in this test procedure may be found in ORNL - NSIC - 28, "Testing of Containment Systems used with Light-Water-Cooled Power Reactors" (Frank C. Zapp) as well as in the "Proposed Standard for Leakage-Rate Testing of Containment Structures," ANS Standards Committee, October 1970. Basically the leak-rate of a volume may be computed by watching the test pressure decay, while at the same time, compensating for any changes in temperature and humidity. Thus the leak-rate (L) becomes:

$$L\% = \frac{24}{\Delta t} \left(1 - \frac{T_1 (P_2 - W_2)}{T_2 (P_1 - W_1)} \right) (100). \text{ where}$$

T_1 = Temperature (Rankin) at t_0 , weighted average,

T_2 = Temperature (Rankin) at t , weighted average,

P_1 = Pressure, psia, at t_0 ,

COPY 7

2.0 PURPOSE (Cont'd)

2.1 Method and Discussion of Test Techniques (Cont'd)

2.1.2 Test Computations

P_2 = Pressure, psia, at t_1 ,

W_1 = Water vapor partial pressure at t_0 , psia

W_2 = Water vapor partial pressure at t_1 , psia and

$\Delta t = (t_1 - t_0)$ hours of test duration

$L(\%)$ = Percent mass leak-rate computed over the duration
 of the test

Discrete temperature and humidity elements will be placed throughout the containment, each placed spatially to sense within approximately the same fractional volume. The temperature, T_i , therefore, will be weighted average:

$$T_i = \sum_{i=1}^{40} \frac{V_i T_i}{V_{\text{total}}}, \text{ where}$$

V_i = Incremental volume at T_i ; and

V_{tot} = Total containment volume

In practice, it is usual to represent V_i as a fraction, so that $\sum V_i = 1.000$, though V_{tot} in net cubic feet = 2,500,000.

Water vapor pressures can be handled similarly. Forty (40) temperature and ten (10) humidity elements will be required.

Each temperature element will be required to measure temperature in a volume of about 60,000 cubic feet. Each humidity element will be required to measure humidity in a volume of approximately 250,000 cubic feet.

2.1.3 Statistical Handling of Test Data

The leak-rate computed will be written within ± 1.96 standard deviations. The confidence level within these limits is 95 percent.

3.0 REFERENCES

The principal guides for the preparation of this test procedure were the 10 CFR part 50 and the American National Standard document outlining the methods for leak-rate testing. Others were consulted, in addition:



3.0 REFERENCES (Cont'd)

- 3.1 "Leakage Rate Testing of Containment Structures for Nuclear Reactors", American National Standard ANSI N45.4 - 1972.
- 3.2 "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors" Appendix J. Title 10, CFR Part 50.
- 3.3 "Testing Containment Systems used with Light-Water-Cooled Power Reactors" Frank Zapp, et al, ORNL - NSIC - 26 UC - 80 - Reactor Technology.

3.4 Ebasco Mechanical Drawings:

- 8770-G-079 Main Extraction, Auxiliary Steam, and Air Evacuation Rev. 9
- 8770-G-080 Feedwater Condensate & Air Evacuation Rev. 5
- 8770-G-083 Component Cooling System Rev. 7
- 8770-G-084 Firewater, Domestic, & Make-Up System Rev. 7
- 8770-G-085 Service & Instrument Air Rev. 7.
- 8770-G-086 Miscellaneous Systems Rev. 6
- 8770-G-088 Containment Spray & Refueling Water Rev. 6
- 8770-G-089 Turbine Cooling Water Rev. 6
- 8770-G-093 Flow Diagram Miscellaneous System Sh. 3 Rev. 1
- 8770-G-862 HVAC Air Flow Diagram Rev. 8
- 8770-G-864 HVAC Reactor Building Sh. 1 Rev. 8
- 8770-G-866 HVAC Reactor Building Sh. 3 Rev. 6
- 8770-G-875 HVAC Equipment Room Rev. 9
- 8770-G-878 HVAC Control Diagrams Sh. 1 Rev. 9
- 8770-G-880 HVAC Equipment Schedules & Details Rev. 9
- 8770-G-846 Intake Structure Steel Framing Rev. 5
- 8770-G-161 Miscellaneous Piping Reactor Auxiliary Building Rev. 6
- 8770-G-184 Steam Generator Blowdown Piping Rev. 4
- 8770-G-198 Safety Injection System Piping Plan Sh. 1 Rev. 6
- 8770-G-199 Safety Injection System Piping Plan Sh. 2 Rev. 8
- 8770-G-201 Waste Management Piping Sh. 1 Rev. 3
- 8770-G-212 Miscellaneous Piping Reactor Area Sh. 2 Rev. 2
- 8770-G-221 Containment Spray Piping Sections Rev. 7

3.5 Ebasco Electrical Drawings:

- 8770-G-365 Reactor Containment Building EL 18'-0 Conduit Trays & Grounding Plan Rev. 9
- 8770-G-366 Reactor Containment Building EL 45'-0 Conduit Trays & Grounding Plan Rev. 7
- 8770-G-367 Reactor Containment Building EL 62'-0 Conduit, Trays & Grounding Plan Rev. 9
- 8770-G-374 Reactor Auxiliary Building, Penetration Area Conduit Trays & Grounding Rev. 6
- 8770-G-375 Reactor Auxiliary Building, Penetration Area Wireway Terminal Block Arrg't. Rev. 3
- 8770-G-327 Control Wiring Diagrams (Inclusive)

3.0 REFERENCES (Cont'd)

3.6 Vendor's Drawings:

8770-88	Safety Injection System Sh.2 Rev.8
8770-94	Chemical & Volume Control System Rev.6
8770-95	Sampling System Rev.7
8770-97	Safety Injection System Sh.1 Rev.7
8770-167	Waste Management System Sh.1 Rev.7
8770-170	Waste Management System Sh.4 Rev.6

3.7 Integrated Leak Rate Test Penetration Data Sheets, Figure 1.

3.8 "Placement of Resistance Temperature Detectors, Humidity Sensors, and Circulating Fans" ... Ebasco mechanical and electrical drawings will provide suggested permanent locations.

The six coppus blowers purchased specifically for this test are to be located in the containment building as follows:

1. E1.18'-50 between 40° and 45° at 40 ft. radius, directed westerly.
2. E1.27'-25 between 140° and 145° at 65 ft. radius, directed westerly.
3. E1.62' at 0° and 67' radius directed south.
4. E1.62' at 180° and 50' radius directed north.
5. E1.112' at 90° and 65' radius directed west.
6. E1.112' at 180° and 65' radius directed east.

All blowers are to be aimed upward at about 45°.

The detector units are distributed at 5 different elevations as follows:

Drawing Number	Elevation Feet	RTD'S	RHD'S
FSG-8770-AS-163 Sh.1	200	3	0
FSG-8770-AS-163 Sh.1	174	9	3
FSG-8770-AS-163 Sh.2	127	10	0
FSG-8770-AS-163 Sh.2	84	10	4
FSG-8770-AS-163 Sh.2	40	8	3
FSG-8770-AS-163 Sh.3	(Fabrication)		

3.9 St. Lucie Plant Unit #1 Technical Specifications

3.10 Electromanometer and rotometer penetration and installation are defined within the following drawings:

8770-G-213	Reactor Containment Bldg.-Piping Penetrations(Sh.1-Rev.2)
8770-B-231	Instrumentation Detail (Sh.00-3-Rev.0)

4.0 PREREQUISITES

4.1 Prerequisite Preoperational Tests

4.0 PREREQUISITES (Cont'd)

4.1 Prerequisite Preoperational Tests (Cont'd)

4.1.1 Local Leak Rate Test (Test No. 1300082)

Verified by R. Hayes Date 6/27/75

4.1.2 Initial Construction Integrity and Overpressure Test (CB and I Containment Test)

Verified by R. Hayes Date 6/28/75

4.2 System Preparation

4.2.1 All systems associated with the containment must be aligned as required by the CIS/SIAS. Those valves which may be subsequently closed, either by operator action or through response to another control system should be left open. Any such valve in general, which is a block in series with an isolation valve actuated by the CIS/SIAS must be left open and so logged in this procedure. The position of the valves shall be per attached sketches (Fig. 1) entitled "ILRT Penetration Data Sheets" which agree with Table 6.2-16 of the Final Safety Analysis Report. However, certain vent (or drain) valves shall be opened to challenge the integrity of the CIS actuated valves as indicated on the same sketches. Closure of containment isolation valves shall be accomplished by normal operation and without any preliminary exercising or adjustments (e.g., no tightening of valves after closure by valve motor).

Verified by R. Hayes Date 6/28/75

4.2.2 All pressure-damageable equipment should be removed from the containment. NOT included is any instrumentation associated with containment isolation or monitoring of accident conditions. Removed equipment shall be properly stored (ref. QI 13-PR/PSL-1, "Handling, Storage and Shipping"). Included would be the following:

<u>Equipment</u>	<u>Protection</u>	<u>Verified by/Date</u>
Safety Injection Tanks	Vent to Containment	<u>RZH 6/28/75</u>
Quench Tank	Vent to Containment	<u>RZH 6/27/75</u>
Reactor Drain Tank	Vent to Containment	<u>RZH 6/27/75</u>
Steam Generator Snubber		
Oil Reservoir	Vent to Containment	<u>RZH 6/28/75</u>
Refueling Machine Gear		
Boxes	Vent to Containment	<u>RZH 6/28/75</u>
Temporary Barton DP Cells	Vent to Containment	<u>RZH 6/28/75</u>
Refueling Machine Sheet		
Metal enclosures, eg.		
Consoles, Power Centers,		
Junction Boxes	Vent to Containment	<u>RZH 6/28/75</u>

4.0 PREREQUISITES (Cont'd)

4.2 System Preparation (Cont'd)

4.2.2 (Cont'd)

Refueling Machine Equipment

Protection

Verified by/Date

TV Monitor

Remove from Containment

RZ H 6/28/75

PaR Position Readout
Units

Remove from Containment

RZ H 6/28/75

Dillon Load Meters and
Power Supplies

Remove from Containment

RZ H 6/28/75

Dry Sipping System
Console

Remove from Containment

RZ H 6/28/75

Refueling Pool Skimmers
Nitrogen, Argon, Oxygen/
Acetylene, (etc.)
Bottles

Remove from Containment

RZ H 6/28/75

Fire Extinguishers

Remove from Containment

RZ H 6/28/75

Wooden Scaffolding

Remove from Containment

RZ H 6/28/75

- 4.2.3 All wood platforms and wood scaffolding should be removed. The porous nature of wood will complicate the test and may abort it.

Verified by R. Hayer Date 6/28/75

- 4.2.4 Any water standing on floors, in low spots, in open piping and in tankage must be removed as required and the areas left dry. The success of the test depends also on the changes in humidity during the test. These efforts will tend to stabilize the relative humidity.

Verified by R. Hayer Date 6/28/75

- 4.2.5 Circulating fans are installed per section 3.8 with resistance circuits provided for operation at Pa and operate satisfactory.

Verified by RZ Hayer Date 6/28/75

- 4.2.6 Open vents or drains as shown in Figure "1" to simulate those conditions that would be expected during a LOCA. All vented systems shall be drained of water to assure exposure of the containment isolation valves to containment air pressure.

Verified by RZ Hayer Date 6/28/75

- 4.2.7 Verify that low points in the containment are free of water.

Verified by RZ Hayer Date 6/28/75

4.0 PREREQUISITES (Cont'd)4.2 System Preparation (Cont'd)

- 4.2.8 Check proper installation of pressurizing system and blowdown temporary piping without opening inlet valve at penetration.

Verified by R. L. Hayes Date 6/28/75

- 4.2.9 Check that the oil and moisture content of the air downstream of the filters and temperature are satisfactory.

Verified by P. B. Dillon Date 6/28/75

- 4.2.10 Check that installation and calibration of instrumentation for the ILRT is completed.

See Deviation #9

Verified by P. B. Dillon Date 6/28/75

- 4.2.11 Verify the construction completeness of the secondary side of the Steam Generators up to & including the welds at the penetrations.

see Deviation #1

Verified by P. B. Dillon Date 6/28/75

- 4.2.12 Position containment isolation valves as required by CIS/SIAS per Appendix A.

Verified by P. B. Dillon Date 6/28/75

- 4.2.13 Inspect, close, and seal air lock inner and outer doors.

Verified by E. J. Pina Date 6-28-75

- 4.2.14 All electrical equipment shall be de-energized within the containment except for lighting circuits (as required) and power requirements for circulating fans.

Verified by E. J. Pina Date 6-28-75

- 4.2.15 A general inspection of the accessible interior and exterior surfaces of the containment structures and components has been satisfactorily performed with no evidence of structural deterioration that may affect containment structural integrity or leak-tightness.

Verified by E. J. Pina Date 6-28-75

- 4.2.16 As stated under section VII (page 21), a desk calculator or equivalent instrument shall be available in the unlikely event that the computer (or terminal) is deemed inoperable.

Verified by R. L. Hayes Date 6/28/75

5.0 INSTRUMENTATION

5.1 The following instrumentation is required for the Integrated Leak Rate Test.

<u>Instrument</u>	<u>Quantity</u>	<u>Accuracy</u>	<u>Model No.</u>	<u>Range</u>
R. T.D.	40	$\pm 0.2^{\circ}\text{F}$ over specified 200°F span $\pm .5^{\circ}\text{F}$ over remainder	8195-B-10	-100 to $+2$
R.H. D.	10	$2\frac{1}{2}\%$ R.H. for 0-100% R.H. excursion	PCRC-11T	0 to 100%
Electro-manometer	1	± 0.005 inches Hg	LUS1201N-D	0 to $120''$
Rotometer	2	$\pm 1\%$ Full scale	OEI #40	0 to 20scfm 0 to 10scfm
Numatron	1	$\pm 0.05\%$ Full scale (0.02F)	914	-190 to $+20$
Recorder	2	$\pm .25^{\circ}\text{F}$	LN(W-4)	$+40$ to $+12$
Pressure Indicator	1	0.25% Full scale	T-21-713	0 to 60

- 5.2 The data for this test shall be manually acquired from the ILRT cabinet containing the instrumentation listed in Section 5.1 (excluding the PI). These data shall be entered and computed utilizing a Texas Instrument 700 terminal. These calculations and associated data shall be appended to & form a part of this procedure.
- 5.3 Throughout the test, temperatures, pressure and vapor pressure monitored. These data are used to compute the leak rate from the perfect gas law, $PV=nRT$, using either the point-to-point method or the total time method. Leak rate predictions and estimates of error are provided by first order linear regression over the test duration nominally of 24 hours. Further, the sensitivity to sensor inaccuracy is computed and the final NRC report should demonstrate that the test has met the minimum allowable NRC leakage rates within statistical error bounds.

6.0 RELATED SYSTEM STATUS

- 6.1 Containment HVAC system may be complete enough to maintain a temperature of not higher than 90°F or lower than 80°F within the containment. This temperature range should be maintained, if possible, for a matter of days before the beginning of the ILRT. A purge period may be performed whereby the initial volume of "moist" containment air is replaced with "drier" air prior to actual ILRT pressurization.

Verified by  Date 6-22-75

1 @ 45psig
 2 @ 25psig



6.0 RELATED SYSTEM STATUS (Cont'd)

6.2 Shield Bldg. ventilation system shall not be operated during this test.

Verified by [Signature] Date 6-27-75

6.3 Shortly before the ILRT, the Containment HVAC system is to be shut down and isolated from its electrical and cooling water supply.

Verified by [Signature] Date 6-27-75

7.0 SPECIAL MATERIALS OR EQUIPMENT

The required materials or equipment do not include the sensing instrumentation which has been covered in section 5.0 Instrumentation.

<u>Equipment</u>	<u>Quantity</u>	<u>Capacity</u>	<u>Model No.</u>
Aftercooler (American Std.)	2	5000 SCFM/ea.	GT A200
Centrifugal Moisture Separator (American Std.)	2	5000 SCFM/ea.	GT
Mechanical Separator (Coalescent Oil Separator)	2	6500 SCFM/ea.	S10 A30
Air Drier - Chiller (Application Engr.)	1 1	3800 SCFM 4800 SCFM	WC-3800
Air Compressors (Joy)	7	1600 SCFM/ea.	RPS-1600
Blowers (Coppus)	6	1500 SCFM/ea.	HIT-3050-18

8.0 TEMPORARY CONNECTIONS

The following connections (and/or disconnections) shall be made for the ILRT and are considered to be temporary.

8.1 Electrical Changes

Installation of the forty RTD's, ten humidity sensors, and six air circulators are required for the test period. This equipment will be reused for future tests.

8.2 Mechanical Changes

8.2.1 The vent and/or drain valves to those systems having intimate contact with the containment atmosphere or the reactor coolant shall be opened to the containment to simulate the LOCA condition, thereby challenging the integrity of CIS-type valves. The valves to be operated, per Appendix A and Figure 1, are marked on the attached flow sketches. The hatches over the RCPs shall be removed prior to test performance.

See Dev. # 3

8.0 TEMPORARY CONNECTIONS (Cont'd)8.2 Mechanical Changes (Cont'd)

8.2.2 The flow control valves and rotometers shall be operated only during the verification portion of the ILRT. The electromanometer shall be valved-in for the duration of the test.

8.2.3 There are no other mechanical changes that deal directly with containment. Support systems such as compressors, dryers, filters, and coolers are used prior to but not during the test.

9.0 LIMITS AND PRECAUTIONS

Considerable control over factors influencing the Integrated Leak-Rate Test must be exercised.

9.1 The primary containment must be pressurized with air of such quality (oil and humidity) that it can be done safely with the least negative influence on the progress of the test. The air should be oil-free and should be cooled with an aftercooler to 80F to 85F.

9.2 The air in the containment should be circulated so that the presence of absolutely stagnant air can be prevented. Here it is important that the energy given to the circulating air is minimal. A few horsepower are all that are required, no more than two horsepower shall suffice. The reason for this is to maintain a nearly adiabatic condition of the containment environment once the test is started. The less energy introduced, therefore, the smaller the uncertainty in the resulting measurements. An uncontrolled increase in temperature (such as could be produced by large fans) masks the leak rate.

NOTE: Any fan placed in the containment must pump air of density up to three times greater than standard conditions; modifications, either in supply voltage or blade size and pitch must be made.

Verified by [Signature] Date 6-27-75

9.3 At each plateau in the pressurization cycle (22 and 44 psig) a minimum of four (4) hours should be allotted for stabilization of temperature. The stabilization will depend on the difference between the wall-temperatures plus equipment temperatures on one hand, and the other, assuming that no condensation is taking place, that there are no major heat-sinks or heat sources in the volume. *

9.4 Access around the periphery of the containment shall be limited to no closer than 100 feet during periods of pressurization. This area shall be roped-off with danger signs posted during these periods.

Verified by R. Wayne Date 6/28/75

* Conditions would normally be considered stable when the average temperature does not vary by more than 1.0 F per hour for the last two (2) hours.



8.0 TEMPORARY CONNECTIONS (Cont'd)

8.2 Mechanical Changes (Cont'd)

8.2.2 The flow control valves and rotometers shall be operated only during the verification portion of the ILRT. The electromanometer shall be valved-in for the duration of the test.

8.2.3 There are no other mechanical changes that deal directly with containment. Support systems such as compressors, dryers, filters, and coolers are used prior to but not during the test.

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Verified by [Signature] Date 6-27-75

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Verified by R. Wayne Date 6/28/75

* Conditions would normally be considered stable when the average temperature does not vary by more than 1.0 F per hour for the last two (2) hours.



9.0 LIMITS AND PRECAUTIONS (Cont'd)

- 9.5 During containment entry at 10 psig, competent medical personnel shall be available. No personnel shall be allowed to enter the containment above 14.3 psig without conforming to U.S. Navy Diving Manual, NAVSHIPS 250-538, January 1959, stipulations.

Verified by R. Hayes Date 6/28/75

- 9.6 If an instrument should malfunction during the ILRT (RTD or RHD), it may be deleted by utilization of the computer program (modify statement) which shall re-evaluate and re-assign the new weighting factors.

10.0 ACCEPTANCE CRITERIA

10.1 Definition

Description

- | | |
|---|---|
| 10.1.1 $P_a = 44.0$ psig
(Use $P_a = 44.5$ psig or greater) | Calculated peak containment internal pressure related to the design basis accident. |
| 10.1.2 $P_t \geq 22.00$ psig
(Use $P_t = 22.25$ psig or greater) | Containment vessel reduced test pressure selected to measure the integrated leakage rate during periodic Type A tests. |
| 10.1.3 $L_a = 0.5$ | In percent per 24 hours, the maximum leakage rate at pressure P_a as specified for preoperational tests in the Technical Specifications, and as specified for periodic tests in the operating license. |
| 10.1.4 L_t | In percent per 24 hours, the maximum leakage rate at pressure P_t . |
| 10.1.5 L_{am}, L_{tm} | In percent per 24 hours, the total measured containment leakage rates at pressures P_a and P_t , respectively, obtained from testing the containment with components and systems in the state as close as practical to that which would exist under design basis accident conditions. |
| 10.1.6 CLRT | A controlled Leakage Rate Test to verify the accuracy of the ILRT. The difference between the CLRT data and the ILRT data must be within $0.25 L_a$ (or $0.25 L_t$). |



10.0 ACCEPTANCE CRITERIA (Cont'd)10.2 Test Criteria10.2.1 $P_t \geq 0.5$ Pa (gage pressure)10.2.2 $L_m < 0.75 L_a$ (initial test) and not $> L_a$ 10.2.3 $L_t = 0.5 \left(\frac{P_t}{44.0} \right)^{\frac{1}{2}}$ (initial test) or in accordance with App.J, III.A.4 (iii)10.2.4 $L_m < 0.75 L_t$ (initial test)10.3 Acceptance Tolerance

Acceptance criteria of the pre-operational test shall be that:

a - L_m , per Section 10.2.4, is met within 1.96 σ_1 and,b - L_m , per Section 10.2.2, is met within 1.96 σ_2 11.0 RECORDS REQUIRED

The following records are required as part of the Final Report.

11.1 Prior to the initiation of the test, nameplate data shall be read from the following instruments:

11.1.1 Temperature recorders - two

11.1.2 Electromanometer - one (plus spare capsule)

11.1.3 Relative humidity indicator - one

11.1.4 Rotometers - two

11.1.5 Air circulators - six

11.1.6 Pressure gauge - one (redundant)

11.2 The following data shall be recorded during all phases of the test:

11.2.1 Date and time

11.2.2 Data logger's name

11.2.3 Containment temperature - forty

11.2.4 Containment relative humidity - ten

11.2.5 Containment pressure - one

11.2.6 Outside atmospheric temperature - one

11.2.7 Outside atmospheric pressure - one



11.0 RECORDS REQUIRED (Cont'd)

- 11.3 In addition to Section 11.2, the following shall be recorded during the pressurization phase of the test

11.3.1 Containment inlet air temperature

- 11.4 In addition to Section 11.2, the following shall be recorded during the verification phase of the test. (CLRT):

11.4.1 Containment Air Flow

The high range flow meter is calibrated for the peak pressure test; the low range for the low pressure test.

- 11.5 A copy of this procedure with each sign-off step initialed and dated by a Florida Power & Light Company designated witness shall be retained in the plant files.

12.0 DETAILED PROCEDURE

12.1 Pressurization to ten (10) psig

- 12.1.1 Monitor a minimum of once every half hour the physical parameters as outlined in "ILRT Data Sheet." Maximum pressurization rate should be 4 to 6 psi/hr.

- 12.1.2 Start pressurization and continue to pressurize until containment air pressure reaches 10 psig, ± 1 psig, - 0 psig. During pressurization:

a - Maintain moisture and oil content as low as possible

b - Maintain containment temperature above 70°F and below 120°F.

c - Check for leaks

- 12.1.3 When above pressure is achieved, stop the containment pressurizing system, isolate and leak check the pressurizing system valves.

- 12.1.4 Using ultrasonic leak detectors and/or soap solution, check the condition of each suspect local exterior leak area. Perform local leak test measurement for suspect leaks if required and record.

Verified by PBD/llm Date 6-28

12.1.5 Containment Entry

a - Pressurize personnel lock slowly by opening equalizer valve to admit air from the containment.

b - Conduct local leak survey on outer door seals of the personnel lock per above local tests to determine possible leakage from containment.

12.0 DETAILED PROCEDURE (Cont'd)12.1 Pressurization to Ten (10) psig (Cont'd)12.1.5 Containment Entry (Cont'd)

- c - Isolate personnellock and vent to atmosphere.
- d - Open outer door and leak check inner door seals.
- e - Make any repairs to outer door found needed by survey, Paragraph b.
- f - Close outer door and pressurize lock by opening valve to admit air from the containment. Bleed slowly at first and verify quality of air.
- g - When lock pressure is equalized with containment pressure, open inner door.
- h - Make any repairs to inner door found needed by survey, Paragraph d.

CAUTION: PRIOR TO CONTAINMENT ENTRY, AIR SHALL BE SAMPLED AND VERIFIED TO BE SATISFACTORY FOR PERSONNEL ENTRY.

Verified by R. Hayes Date 6/28/75

12.1.6 Internal Leak Survey

Following procedure in Paragraph 12.1.4 above, look for signs of sweating along containment walls and floors.

- 12.1.7 Estimate the leakage after all repairs and remeasurements have been made where that work is possible without reducing containment pressure using the results of 12.1.4.

- 12.1.8 Close and lock inner air lock door, isolate air lock from containment, and depressurize air lock slowly. Check inner door seals of air lock for leakage.

- 12.1.9 Close and lock outer door, repressurize air lock and check outer door seals for leakage.

- 12.1.10 Depressurize and seal air lock volume. Check air lock pressure periodically to verify that there is no pressure buildup.

- 12.1.11 With satisfactory leak survey completed and any leaks repaired and within allowable limits per section 4.2.5, proceed to section 12.2.

Verified by LBuller Date 6-28-75

12.2 Pressurization to Reduced Test Pressure P_r (22 psig)

- 12.2.1 Monitor every half hour physical parameters as outlined in "ILRT Data Sheet". Maximum pressurization rate should be 4 to 6 psi/hr.

- 12.2.2 Start pressurization and continue to pressurize until containment air pressure reaches 22 psig, ± 0.5 psi, $- 0$ psi. During pressurization:

12.0 DETAILED PROCEDURE (Cont'd)

12.2 Pressurization to Reduced Test Pressure P_r (22 psig) (Cont'd)

12.2.2 (Cont'd)

- a - Maintain moisture and oil content as low as possible
- b - Maintain containment temperature above 70° F and below 120° F
- c - Check for leaks.

In any case, the pressure should not fall below 22.0 psig for the duration of this test.

- 12.2.3 When desired pressure is achieved, isolate containment pressurizing system and leak check the pressurizing system valves.

Verified by [Signature] Date 6/28/75

12.3 ILRT at Reduced Test Pressure (22 psig) *Stabilization period begins at 3:40pm on 6/28/75*

- 12.3.1 Make exterior survey as outlined in Section 12.1.4 and record data as outlined in "ILRT Data Sheet" a minimum of once every one (1) hour. No repairs are allowed once the ILRT commences without returning to this point.

- 12.3.2 From the data gathered on an hourly basis, determine that:

- a - The containment conditions are stabilized and trends are predictable
- b - Forecasted leak-rate is significantly better than allowable limits. Perform local leak survey. Stabilization should take a minimum of four (4) hours.

- 12.3.3 Continue ILRT measurements until interpreted data indicates that the ILRT criterion is met for a minimum period of twenty-four (24) hours.

- Deviation #10 12.3.4 Once predictable and allowable trends have been established, verify the test results by superimposing a mass leakage rate of $\geq 25\%$ Ltm. Test duration shall be a minimum of four (4) hours in length to verify the ability to measure the leak.

- 12.3.5 Compare the ILRT leak rate and verification leak rates. If the comparison above indicated that the ILRT leak rate is not substantiated by the verification test (difference within 0.25 L_p) continue the ILRT leak rate and recheck. At the end of the extended test period, repeat the verification test, if required.

Verified by [Signature] Date 7-2-75

12.4 Pressurization to Peak Test Pressure P_a (44 psig)

- 12.4.1 Monitor a minimum of once every one (1) hour the physical parameters as outlined in "ILRT Data Sheet." Maximum pressurization rate should be 4 to 6 psi/hr.

12.0 DETAILED PROCEDURE (Cont'd)

12.4 Pressurization to Peak Test Pressure P_0 (44 psig) Cont'd)

12.4.2 Start pressurization and continue to pressurize until containment air pressure reaches 44 psig, \pm 0.5 psi, -0 psi. During pressurization:

- a - Maintain moisture and oil content as low as possible
- b - Maintain containment temperature above 70° F and below 120° F, and in any case, the pressure should not fall below 44.0 psig for the duration of the test.

12.4.3 When desired pressure is achieved; isolate containment pressurizing system and leak check the pressurizing system valves.

Verified by [Signature] Date 2-3-75

12.5 ILRT at Peak Test Pressure P_0 (44.0 psig)

12.5.1 Make exterior survey as outlined in Section 12.1.4.

12.5.2 From the data gathered on an hourly basis, determine that:

- a - The containment conditions are stabilized and trends are predictable
- b - Forecasted leak rate is within allowable limits.
Perform local leak survey. Stabilization should take a minimum of four (4) hours.

12.5.3 Continue ILRT measurements until interpreted data indicates that the ILRT criterion is met for a minimum period of twenty-four (24) hours.

12.5.4 Once predictable and allowable trends have been established, verify the test results by superimposing a known mass leakage rate of \geq 25% L_m . Test duration shall be a minimum of four (4) hours in length to verify the ability to measure the leak.

12.5.5 Compare the ILRT leak rate and verification leak rates. If the comparison above indicates that the ILRT leak rate is not substantiated by the verification test, (difference within 0.25 L_m) continue the ILRT leak rate and recheck. At the end of the extended test period, repeat the verification test, if required.

Verified by [Signature] Date 7-5-76

12.6 Using blowdown valve, release air from containment utilizing a maximum depressurization rate of approximately 4 to 6 psi/hr.

Verified by [Signature] Date 2-5-75

12.7 Verify that all systems are returned to normal by completing the valve list, Appendix A, and restoration of that equipment delineated in section 4.2.2 and 8.2.2.

Verified by [Signature] Date 7/8/75

13.0 Deviations from Procedure:

1. Valves for penetrations 3, 4, 5, 6, 30 + 49, shall remain in their closed positions due to steam generator lay-up requirements and the fact that the steam generators are the primary to secondary boundary.

R. Hayes PNSC Approved 6/27/75

2. LLRT procedure No. 1300082 has been completed with exceptions on P-51 and P-52 due to faulty valves. These valves will be capped for ILRT and retested after ILRT. Any leakage found shall be additive to the ILRT leakage.

R. Hayes PNSC Approved 6/27/75

3. Hatches over the RCP's - only 2 hatches were removed (one each loop) for ventilation.

R. Hayes PNSC Approved 6/27/75

4. The following changes were made to Appendix A due to additions and/or deletions or position changes necessary to give the required valve alignment.

Penetration	Valve No	Position during ILRT	Position After ILRT
7	I-V-1532 4	closed	open needed as stop valve
9	V-18191	closed	open needed as stop valve
23	I-HCV-14-8A/B	closed	closed - stop valve
	I-V-14368 (625)	Open	closed stop valve
	I-V-14366	closed	closed and valves positioned incorrectly
24	I-HCV-14-9/10	closed	closed - - -
25	Fuel Transfer Tube	delete	(flange is boundary)
29	V-2870	delete	(can be vented elsewhere)
	V-5149	open	closed provide vent
	PI-5550	remove	replace for sample
42	I-V-07171 (1525)	closed	closed - line
48	Carair Stubs	closed	closed - wing position



13.0 Deviations of Procedure: (Cont'd)

Penetration No. Value No.

51 I-PSE-27-9
 8 SH-188601967
 St. Air Valves
 52c all
 54 I-V00103(324)

delete

capped

delete

delete one

delete

Void

Retest complete 9/19/75
 Bad valves will test after ILRT
 open pipe in RAB for leak path
 Bad valves will test after ILRT
 valve not installed pipe open

R. Hayer 6/27/75

BR Lomowski 6/27/75

Deviation # 5

10 I-FCV-25-6

open

(we only take credit for two of three isolation valves here)

11 I-FCV-25-1

open

same as P-10

15 I-SB-1433(5)

closed

16 I-SB-14325(5)

"

17 I-SB-14344(5)

"

18 I-SB-14336(5)

"

19 I-SB-14309(5)

"

20 I-SB-14302(5)

"

21 I-SB-14320(5)

"

22 I-SB-14314(5)

"

P-15 to P-22 these valves would have drained CCW to surge tank. No change to ILRT intent leak path provided by vent or drain between these valves and containment outer wall.

P-52A & P-52B Test Caps

NA

Pipe is open ended on containment side, the position of these valves is of no importance

P-62 I-V18656(324)

Void or

I-V18659(324)

Delete

I-V18658(324)

↓

Valves not installed, none of these lines penetrate containment, only shield building.

R. Hayer 6/27/75

PR Dillon 6/27/76

3.0 Deviations from Procedure (Contd.):

Dev. #6 Penetration 34B V-07191 Cont. Spray
Penetration 35B V-07163 Cont. Spray
Penetration 36 V-3894 drain - HP Header pump side of che
V-3821 drain - LP Header pump side of che
Penetration 37 V-3893 drain - HP Header " " " "
V-3826 drain - LP Header " " " "
Penetration 38 V-3889 drain HP Header " " " "
V-3831 drain - LP Header " " " "
Penetration 39 3850 drain - HP Header " " " "
3836 drain - LP Header " " " "

The above lines were found leaking and the valve closed. This deviation was determined not to violate the intent of this procedure, chapter 6 of FSAR or AppJ to 10CFR50. These lines are part of ESF system and will have water flowing in the lines under accident conditions.

PBDillon 6-29-7
PNSC Approved

Dev. #7 Opened Valves I-V00140(1325), I-V00143(1325),
I-V00139(1322) & I-V00144(1322) on penetration
52D & 52E respectively. These ^{lines} ~~valves~~ are
ILRT instrumentation lines (manometer, rotometer)
therefore have got to be open. Procedural
error in valve position. R. Hayes 6/27/7

PBDillon 6/27/7

2V #8

The PNSC reviewed the attached letter from G.N. Lemmon to K.N. Harris (7-3-75) and recommended continuation of the TURT test with a PA of 4.2 psig.

P.B. Dillon

7-3-75

Dev #9

Calibration of rotameters is complete. Calibration certificates are enroute from vendor but have not yet arrived.

PNSC recommended

E. J. Jones 7-3-75

P.B. Dillon 7-3-75

NOTE: Calibration certificates arrived on site 7/22/75.

R. Hays 7/23/75

Deviation 1 penetrations 5, 6, 30 & 49; the blowdown and sample lines were leak tested July 28, 1975 as follows:

Steam Generator 1A	Steam Gen. 1B
Time start 0945	1320
Time end 1000	1335
Pressure start 44.5 psig	44.1 psig
Pressure end 44.5 psig	44.1 psig
Leakage scfm 0.0	0.0 scfm

R. Hays 7/28/75

Deviation 4 penetration 52 c. valves were repaired by vendor's representative and leak tested 7/29/75 & 7/30/75. no leakage was found. R. Hays 7/30/75.

Deviation #10

Section 12.3.4 and 12.5.4 - CLRTs were run for 3 1/4 and 7 hours, respectively. Per section 2.1.1, these tests should be run for an adequate length of time to validate NET data. As a result, there is no 4 h. minimum requirement for CLRT.


P. Br. Dillow

7-30-75

7-30-75

SAMPLEINTEGRATED LEAK RATE TEST DATA SHEETI. TEMPERATURE

LOCATION	TAG #	TEMPERATURE	%VOLUME	FRACTIONAL TEMPERATURE	COMMENTS
DOME					
CYLINDER ABOVE OPERATING DECK					
BELOW OPERATING DECK					
Average Temp.					

Verified by _____ Date _____

SAMPLE

INTEGRATED LEAK RATE TEST DATA SHEET

II. RELATIVE HUMIDITY

LOCATION	<u>RELATIVE HUMIDITY</u>			<u>TEMPERATURE</u>		<u>VAPOR</u> <u>PRESSURE</u>	% VOLUME	<u>FRACTIONAL</u> <u>VAPOR PRESS.</u>	COMMENTS
	<u>TAG #</u>	<u>READING</u>		<u>TAG #</u>	<u>READING</u>				
DOME									
CYLINDER ABOVE OPERATING DECK									
BELOW OPERATING DECK									

Average WVP _____

Verified by _____ Date _____

SAMPLE

INTEGRATED LEAK RATE TEST DATA SHEET

III. PRESSURE

PRESSURE GAGE _____ psia TAKEN BY: _____

IV. AMBIENT CONDITIONS

BAROMETRIC PRESSURE _____ TIME _____

TEMPERATURE _____ DATE _____

V. DURING PRESSURIZATION PHASE ONLY

INLET AIR TEMPERATURE _____ F

INLET AIR QUALITY _____
(Dry, Oily, Dirty, etc.)
General Inspection

VI. DURING VERIFICATION PHASE ONLY

FLOW RATE _____ S.C.F.M.

FLOW METER RANGE _____
LO/HI

Verified by _____ Date _____

INTEGRATED LEAK RATE TEST DATA SHEET

II. CALCULATIONS

$$L = \left(\frac{100 \times 24}{\Delta t} \right) \left[\frac{\left(\frac{P_i - W_i}{T_i} \right) - \left(\frac{P_f - W_f}{T_f} \right)}{\left(\frac{P_i - W_i}{T_i} \right)} \right]$$

or

$$L = \left(\frac{100 \times 24}{\Delta t} \right) \left[1 - \frac{(P_f - W_f) T_i}{(P_i - W_i) T_f} \right] \quad \% \text{ per day}$$

A. Δt = Duration of test = _____ hours

B. $P_i - W_i$ = _____ psia

C. T_i = _____ F + 459.69 = _____ R

D. $P_f - W_f$ = _____ psia =

E. T_f = _____ F + 459.69 = _____ R

In the unlikely event that the computer is lost, a desk calculator or similar unit may be utilized and shall be available for this purpose.

VIII. Results

$$L = \frac{2400}{(24)} \left[1 - \frac{(\quad)(\quad)}{(\quad)(\quad)} \right] = \quad \% \text{ per day}$$

All parameters to be recorded for all test phases except pressurization and depressurization. All readings taken at one (1) hour intervals, maximum.

Verified by: _____

Date: _____



I.L.R.T. VALVE LIST

APPENDIX "A"

ration ber	Valve Number	Position During Test.	Verif.by Date	Position After Test	Verif.by Date	Valve Type
1 ✓	I-V8101(125)	Closed	PBD 6-25	Closed	RZH 7/8	
	I-V8100(125)	Closed	PBD 6-25	Closed	RZH 7/8	
	I-HCV-08-1A	Open	PBD 6-25	Open	RZH 7/8	Motor
	I-V8115(125)	Open	PBD 6-25	Closed	RZH 7/8	
	I-V8116(125)	Open	PBD 6-25	Closed	RZH 7/8	
2 ✓	I-HCV-08-1B	Open	PBD 6-25	Open	RZH 7/8	Motor
	I-V8133(125)	Closed	PBD 6-25	Closed	RZH 7/8	
	I-V8132(125)	Closed	PBD 6-25	Closed	RZH 7/8	
	I-V8146(125)	Open	PBD 6-25	Closed	RZH 7/8	
	I-V8147(125)	Open	PBD 6-25	Closed	RZH 7/8	
	I-V8147 TYPO RZH					
D-1 3 ✓	I-MV-09-7	all closed	Open	RZH 6/27	Open	RZH 7/8 Motor
	I-V9250(125)	all closed	Open	RZH 6/27	Closed	RZH 7/8
	I-V9251(125)	all closed	Open	RZH 6/27	Closed	RZH 7/8
D-1 4 ✓	I-MV-09-8	all closed	Open	RZH 6/27	Open	RZH 7/8 Motor
	I-V9282(125)	all closed	Open	RZH 6/27	Closed	RZH 7/8
	I-V9283(125)	all closed	Open	RZH 6/27	Closed	RZH 7/8
D-1 5 ✓	I-FCV-23-6	all closed	Open	PBD 6-27	Open	RZH 7/7 Solenoid
	I-FCV-23-5	all closed	Open	PBD 6-27	Open	RZH 7/7 Solenoid
	S.G. root valve	all closed	Closed	PBD 6-27	Closed	RZH 7/7
D-1 6 ✓	I-FCV-23-3	all closed	Open	PBD 6-27	Open	RZH 7/7 Solenoid
	I-FCV-23-4	all closed	Open	PBD 6-27	Open	RZH 7/7 Solenoid
	S.G. root valve	all closed	Closed	PBD 6-27	Closed	RZH 7-7
D-4 7 ✓	V15330(1327)		Open	PBD 6-25	Open	RZH 7/7
	V15329(1625)		Open	PBD 6-25	Closed	RZH 7/7
	I-V15327(1323)		Open	PBD 6-25	Closed	RZH 7/7
	I-MV-15-1		Closed	PBD 6-25	Closed	RZH 7/7 Motor
	I-V-15324		Closed	PBD 6-25	Open	RZH 7/7
D-4 8 ✓	SH-18860(967)		Open	PBD 6-25	Open	RZH 7/7
	Station Air Valves		Open *	on in cont. open pipe	closed	RZH 7/7
	I-V18796(947)		Closed	PBD 6-25	Closed	RZH 7/7 Manual
	I-V18794(947)		Closed	PBD 6-25	Closed	RZH 7/7 Manual
	I-V8795(945)		Closed	PBD 6-25	Closed	RZH 7/7
	SH-18798(965)		Closed	PBD 6-25	Closed	RZH 7/7
	SH-18797(965)		Closed	PBD 6-25	Closed	RZH 7/7
	SH-18763(967) not numbered		Open	PBD 6-25	Open	RZH 7/7

* Open one station air valve inside the containment and one inside the auxiliary building up stream of the isolation valves.

← note this valve
- one inside cont
Ve.



APPENDIX "A"

Penetration Number	Valve Number	Position During Test	Verif.by Date	Position After Test	Verif.by Date	Valve Type
91 D-4	V18529(945) I-MV-18-1 I-V18194(945) V-18191	Open Closed Open Closed	<u>RZH</u> 6/27 <u>RZH</u> 6/27 <u>RZH</u> 6/27 <u>RZH</u> 6/27	Closed Open Closed Open	<u>RZH</u> 7/7 <u>RZH</u> 7/7 <u>RZH</u> 7/7 <u>RZH</u> 7/7	Motor
10 D-5	I-FCV-25-4 I-FCV-25-5 Bleed Off I-FCV-25-6 - Void	Closed Closed Closed Closed	<u>RZH</u> 6/27/75 <u>RZH</u> 6/27/75 <u>RZH</u> 6/27/75 <u>RZH</u> 6/27/75	Open Open Closed Open	<u>RZH</u> 7/7 <u>RZH</u> 7/7 <u>RZH</u> 7/7 <u>RZH</u> 7/7	Solenoid Solenoid
11 D-5	I-FCV-25-3 I-FCV-25-2 Leak Test Bleed Off I-FCV-25-1 - Void	Closed Closed Closed Closed	<u>RZH</u> 6/27/75 <u>RZH</u> 6/27/75 <u>RZH</u> 6/27/75 <u>RZH</u> 6/27/75	Open Open Closed Open	<u>RZH</u> 7/7 <u>RZH</u> 7/7 <u>RZH</u> 7/7 <u>RZH</u> 7/7	Solenoid Solenoid
14 ✓	V6699 V6338 V6340 V6741 V6786 V6615	Open Open Closed Closed Open Open	<u>RZH</u> 6/27 <u>RZH</u> 6/27 <u>PBD</u> 6-26 <u>PBD</u> 6-26 <u>PBD</u> 6-26 <u>PBD</u> 6-26	Open Closed Closed Open Open Closed	<u>RZH</u> 7/7 <u>RZH</u> 7/7 <u>RZH</u> 7/7 <u>RZH</u> 7/7 <u>RZH</u> 7/8 <u>RZH</u> 7/8	Solenoid
15 ✓ D-5	V14328(625) I-V-SB-14335(5) I-V14330(625) I-V14327(625)	Closed Open Open Closed	<u>PBD</u> 6-26 <u>PBD</u> 6/27/75 <u>PBD</u> 6/27/75 <u>PBD</u> 6-26	Closed Open Closed Closed	<u>RZH</u> 7/8 <u>RZH</u> 7/7/75 <u>RZH</u> 7/7 <u>RZH</u> 7/8	Manual
16 ✓ D-5	I-SB-14325(5) I-V14326(625)	Closed Open	<u>PBD</u> 6/27/75 <u>PBD</u> 6/27/75	Open Closed	<u>RZH</u> 7/7 <u>RZH</u> 7/7	Manual
17 ✓ D-5	I-V14340(625) I-V14341(625) I-V14343(625) I-SB-14344(5) I-V14339(625) I-V14338(625)	Closed Closed Open Open Closed Closed	<u>PBD</u> 6-26 <u>PBD</u> 6-26 <u>PBD</u> 6/27/75 <u>PBD</u> 6/27/75 <u>PBD</u> 6-26 <u>PBD</u> 6-26	Closed Closed Closed Open Closed Closed	<u>RZH</u> 7/8 <u>RZH</u> 7/7 <u>RZH</u> 7/7 <u>RZH</u> 7/7 <u>RZH</u> 7/8 <u>RZH</u> 7/8	Manual

I.L.R.T. VALVE LIST

APPENDIX "A"

Penetration Number	Valve Number	Position During Test	Verif.by Date	Position After Test	Verif.by Date	Valve Type
18 ✓ D-5	I-V14337(625) I-SB-14336(5)	Open Closed Open	HA 6/27/75 HA 6/27/75 HA 6/27/75	Closed Open Open	RZH 7/7 RZH 7/7 RZH 7/7	Manual
19 ✓ D-5	I-SB-14309(5) I-V14308(625) I-V14306(625) I-V14305(625)	Closed Open Open Closed Closed	HA 6/27/75 HA 6/27/75 HA 6/27/75 PBD 6-26 PBD 6-26	Open Open Closed Closed Closed	RZH 7/7 RZH 7/7 RZH 7/7 RZH 7/7 RZH 7/7	Manual
20 ✓ D-5	I-SB-14303(5) I-V14304(625)	Closed Open Open	HA 6/27/75 HA 6/27/75 HA 6/27/75	Open Open Closed	RZH 7/7 RZH 7/7 RZH 7/7	Manual
21 ✓ D-5	I-SB-14320(5) I-V14319(625) I-V14317(625) I-V14316(625)	Closed Open Open Closed Closed	HA 6/27/75 HA 6/27/75 HA 6/27/75 PBD 6-26 PBD 6-26	Open Open Closed Closed Closed	RZH 7/7 RZH 7/7 RZH 7/7 RZH 7/7 RZH 7/7	Manual
22 ✓ D-5	I-SB-14314(5) I-V14315(625)	Closed Open Open	HA 6/27/75 HA 6/27/75 HA 6/27/75	Open Open Closed	RZH 7/7 RZH 7/7 RZH 7/7	Manual
23 ✓ D-4	I-HCV-14-7 I-HCV-14-1 I-V14368(625) I-V14367(625) I-V14366(625) V14401(625) SB-14399(7) I-HCV-14-8A I-HCV-14-8B	Closed Closed open closed Open Open Open closed closed	PBD 6-25 PBD 6-25 PBD 6-26 RZH 6/27 PBD 6-26 6-26 PBD RZH 6/27 PBD 6-26 PBD 6-26	Open Open Closed Closed Closed Closed Open closed closed	RZH 7/7 RZH 7/7 RZH 7/7 RZH 7/7 RZH 7/7 RZH 7/7 RZH 7/7 RZH 7/7 RZH 7/7	Solenoid Solenoid Manual
24 ✓ D-4	I-V14415(625) I-V14417(625) I-V14418(625) I-HCV-14-6 I-HCV-14-2 V14403(625) SB-14406(7) I-HCV-14-9 I-HCV-14-10	Closed Closed Open Closed Closed Open Open Open closed closed	RZH 6/25 RZH 6/25 RZH 6/25 PBD 6-25 PBD 6-25 PBD 6-26 RZH 6/27 PBD 6-26 PBD 6-25	Closed Closed Closed Open Open Open Open Open closed closed	RZH 7/7 RZH 7/7 RZH 7/7 RZH 7/7 RZH 7/7 RZH 7/7 RZH 7/7 RZH 7/7 RZH 7/7	Solenoid Solenoid Manual
25 Deleted	Fuel transfer tube valve containment - Locked - Closed					

I.L.R.T. VALVE LIST

APPENDIX "A"

Penetration Number	Valve Number	Position During Test	Verif. by Date	Position After Test	Verif. by Date	Valve Type
26 ✓	V2515	Closed	<i>Beurk. 6/26</i>	Open	<i>RZH 7/8</i>	Solenoid
	V2516	Closed	<i>Beurk. 6/26</i>	Open	<i>RZH 7/8</i>	Solenoid
	V2815	Closed	<i>Beurk. 6/26</i>	Closed	<i>RZH 7/7</i>	
	V2341	Open	<i>Beurk. 6/26</i>	Open	<i>RZH 7/8</i>	
	V2809	Closed	<i>Beurk. 6/26</i>	Closed	<i>RZH 7/7</i>	
	V2810	Closed	<i>Beurk. 6/26</i>	Closed	<i>RZH 7/7</i>	
	V2817	Closed	<i>Beurk. 6/26</i>	Closed	<i>RZH 7/7</i>	
	V2816	Closed	<i>Beurk. 6/26</i>	Closed	<i>RZH 7/7</i>	
	V2814	Open	<i>Beurk. 6/26</i>	Closed	<i>RZH 7/8</i>	
	V2463	Open	<i>Beurk. 6/26</i>	Closed	<i>RZH 7/7</i>	
27 ✓	V2429	Open	<i>Beurk. 6/26</i>	Open	<i>RZH 7/7</i>	Manual
	V2818	Open	<i>Beurk. 6/26</i>	Closed	<i>RZH 7/7</i>	
	V2807	Closed	<i>Beurk. 6/26</i>	Closed	<i>RZH 7/7</i>	
	V2805	Closed	<i>Beurk. 6/26</i>	Closed	<i>RZH 7/7</i>	
	V2804	Closed	<i>Beurk. 6/26</i>	Closed	<i>RZH 7/7</i>	
	V2803	Closed	<i>Beurk. 6/26</i>	Closed	<i>RZH 7/7</i>	
	V2802	Closed	<i>Beurk. 6/26</i>	Closed	<i>RZH 7/7</i>	
	V2801	Closed	<i>Beurk. 6/26</i>	Closed	<i>RZH 7/7</i>	
	V2800	Closed	<i>Beurk. 6/26</i>	Closed	<i>RZH 7/7</i>	
28 ✓	V5100	Open	<i>IRM 6-26</i>	Open	<i>RZH 7/7</i>	
	V5106	Open	<i>IRM 6-26</i>	Open	<i>RZH 7/7</i>	
	V5105	Open	<i>IRM 6-26</i>	Open	<i>RZH 7/7</i>	
	V5206	Open	<i>IRM 6-26</i>	Closed	<i>RZH 7/7</i>	
	V5200	Closed	<i>OPBD 6-26</i>	Open	<i>RZH 7/7</i>	Solenoid
	V5203	Closed	<i>PBD 6-26</i>	Open	<i>RZH 7/7</i>	Solenoid
	V5162	Open	<i>IRM 6-26</i>	Open	<i>RZH 7/7</i>	
	V5152	Open	<i>IRM 6-26</i>	Open	<i>RZH 7/7</i>	
29 ✓	V5207	Open	<i>IRM 6-26</i>	Closed	<i>RZH 7/7</i>	
	V5201	Closed	<i>OPBD 6-26</i>	Open	<i>RZH 7/7</i>	Solenoid
	V5204	Closed	<i>PBD 6-26</i>	Open	<i>RZH 7/7</i>	Solenoid
	V5110	Open	<i>IRM 6-26</i>	Open	<i>RZH 7/7</i>	
	V5163	Open	<i>IRM 6-26</i>	Open	<i>RZH 7/7</i>	
	V5111	Open	<i>IRM 6-26</i>	Open	<i>RZH 7/7</i>	
29 ✓	V5208	Open	<i>IRM 6-26</i>	Closed	<i>RZH 7/7</i>	
	V5202	Closed	<i>OPBD 6-26</i>	Open	<i>RZH 7/7</i>	Solenoid
	V5205	Closed	<i>PBD 6-26</i>	Open	<i>RZH 7/7</i>	Solenoid
	V2870 - delete	Open	<i>IRM 6-26</i>	Closed	<i>RZH 7/7</i>	
	V5113	Open	<i>IRM 6-26</i>	Open	<i>RZH 7/7</i>	
	V5120	Open	<i>IRM 6-26</i>	Open	<i>RZH 7/7</i>	
	V5119	Open	<i>IRM 6-26</i>	Open	<i>RZH 7/7</i>	
	V5154	Open	<i>IRM 6-26</i>	Open	<i>RZH 7/7</i>	
	V-5149	Open	<i>RZH 6/27</i>	Closed	<i>RZH 7/7</i>	
30 ✓	PX-5550	closed	<i>Beurk. 6/27</i>	Replace	<i>RZH 7/7</i>	
	I-FCV-23-7	Open	<i>Beurk. 6/27</i>	Open	<i>RZH 7/7</i>	Solenoid
31 ✓	V6001	Open	<i>RZH 6/27</i>	Closed	<i>RZH 7/7</i>	
	V6554	Closed	<i>PBD 6-26</i>	Open	<i>RZH 7/7</i>	Solenoid
	V6555	Closed	<i>PBD 6-26</i>	Open	<i>RZH 7/7</i>	Solenoid
	V6692	Open	<i>PBD 6-26</i>	Closed	<i>RZH 7/7</i>	

I.L.R.T. VALVE LIST

APPENDIX "A"

Penetration umber	Valve Number	Position During Test	Verif. by Date	Position After Test	Verif. by Date	Valve Type
32 ✓	I-V07177(1525) I-MV-07-2B	Open	<u>R24 6/27</u>	Closed	<u>R24 7/7</u>	Motor
		Closed	<u>R24 6/27</u>	Closed	<u>R24 7/7</u>	
33 ✓	I-MV-07-2A I-V07173(1525)	Closed	<u>R24 6/27</u>	Closed	<u>R24 7/7</u>	Motor
		Open	<u>R24 6/27</u>	Closed	<u>R24 7/8</u>	
34A ✓	I-V07216(1525) I-V07191(1525)	Closed	<u>R24 6/27</u>	Closed	<u>R24 7/8</u>	
		Open	<u>R24 6/27</u>	Closed	<u>R24 7/7</u>	
35A ✓	I-V07217(1525) I-V07163(1525)	Closed	<u>R24 6/27</u>	Closed	<u>R24 7/8</u>	
		Open	<u>R24 6/27</u>	Closed	<u>R24 7/7</u>	
36 ✓	V3614 CR	Closed	<u>PBD 6-26</u>	Open	<u>R24 7/8</u>	
	V3884	Closed	<u>R2 JUN 2 6 1975</u>	Closed	<u>R24 7/7</u>	
	V3804	Closed	<u>R2 JUN 2 6 1975</u>	Closed	<u>R24 7/8</u>	
	V3805	Closed	<u>R2 JUN 2 6 1975</u>	Closed	<u>R24 7/7</u>	
	V3821	Open	<u>R2 JUN 2 6 1975</u>	Closed	<u>R24 7/7</u>	
	V3894	Open	<u>R2 JUN 2 6 1975</u>	Closed	<u>R24 7/7</u>	
	V3611	Closed	<u>R2 JUN 2 6 1975</u>	Closed	<u>R24 7/7</u>	
	V3218	Open	<u>R2 JUN 2 6 1975</u>	Open	<u>R24 7/7</u>	
	V3881	Closed	<u>R2 JUN 2 6 1975</u>	Closed	<u>R24 7/7</u>	
	HCV-3618	Closed	<u>R2 JUN 2 6 1975</u>	Closed	<u>R24 7/7</u>	
	V3118	Closed	<u>R2 JUN 2 6 1975</u>	Open	<u>R24 7/7</u>	
	V3802	Closed	<u>PBD 6-26</u>	Closed	<u>R24 7/7</u>	
	V3801	Closed	<u>PBD 6-26</u>	Closed	<u>R24 7/8</u>	
	V3214	Closed	<u>PBD 6-26</u>	Closed	<u>R24 7/7</u>	
	V3882	Closed	<u>R2 JUN 2 6 1975</u>	Closed	<u>R24 7/7</u>	
	V3885	Closed	<u>R2 JUN 2 6 1975</u>	Closed	<u>R24 7/7</u>	
	V3803	Closed	<u>PBD 6-26</u>	Closed	<u>R24 7/7</u>	
37 ✓	V3826	Open	<u>R2 JUN 2 6 1975</u>	Closed	<u>R24 7/7</u>	
	V3810	Closed	<u>R2 JUN 2 6 1975</u>	Closed	<u>R24 7/7</u>	
	V3893	Open	<u>R2 JUN 2 6 1975</u>	Closed	<u>R24 7/7</u>	
	V3809	Closed	<u>R2 JUN 2 6 1975</u>	Closed	<u>R24 7/7</u>	
	V3807	Closed	<u>PBD 6-26</u>	Closed	<u>R24 7/7</u>	
	V3806	Closed	<u>PBD 6-26</u>	Closed	<u>R24 7/7</u>	
	V3228	Closed	<u>R2 JUN 2 6 1975</u>	Open	<u>R24 7/7</u>	
	V3261	Closed	<u>R2 JUN 2 6 1975</u>	Closed	<u>R24 7/7</u>	
	HCV-3628	Closed	<u>R2 JUN 2 6 1975</u>	Closed	<u>R24 7/7</u>	
	V3128	Closed	<u>R2 JUN 2 6 1975</u>	Open	<u>R24 7/7</u>	
	V3224	Closed	<u>PBD 6-26</u>	Closed	<u>R24 7/7</u>	
	V3863	Closed	<u>PBD 6-26</u>	Closed	<u>R24 7/7</u>	
	V3862	Closed	<u>PBD 6-26</u>	Closed	<u>R24 7/7</u>	
	V3922	Closed	<u>PBD 6-26</u>	Closed	<u>R24 7/7</u>	
	V3808	Closed	<u>PBD 6-26</u>	Closed	<u>R24 7/7</u>	
	V3624 CR	Closed	<u>PBD 6-26</u>	Open	<u>R24 7/8</u>	
	V3228	Closed	<u>R2 JUN 2 6 1975</u>	Open	<u>R24 7/7</u>	
	V3839	Closed	<u>PBD 6-26</u>	Closed	<u>R24 7/7</u>	
	V3834	Closed	<u>R2 JUN 2 6 1975</u>	Closed	<u>R24 7/7</u>	

I.L.R.T. VALVE LIST

APPENDIX "A"

Entration
Number

Valve
Number

Position Verif. by Position Verif. by Valve
During Test Date After Test Date Type

38 ✓

V3813 *Typo*

V3814

V3831

V3889

V3812

V3811

V3634 *CR*

V3234 —

V3238

V3631

HCV-3638

V3138

V3912

V3911

V3909

39 ✓

V3819

V3820

V3836

V3850

V3818

V3816

V3815

V3817

V3644 *CR*

V3641

V3248

HCV-3648

V3148

V3904

V3905

V3906

V3888

40 ✓

V3844

V3845

V3846

V3800

V3651

V3852

41 ✓

I-V-03-1307

V3463

V3895

Test Tap

V3218

V3883

Closed *R 2 JUN 2 6 1975* Closed *R2H 7/8*Closed *R 2 JUN 2 6 1975* Closed *R2H 7/7*Open *R 2 JUN 2 6 1975* Closed *R2H 7/7*Open *R 2 JUN 2 6 1975* Closed *R2H 7/7*Closed *R 2 JUN 2 6 1975* Closed *R2H 7-7*Closed *R 2 JUN 2 6 1975* Closed *R2H 7-7*Closed *R 2 JUN 2 6 1975* Closed *R2H 7-7*Closed *PBD 6-26* Open *R2H 7/8*Closed *PBD 6-26* Closed *R2H 7/8*Closed *R 2 JUN 2 6 1975* Open *R2H 7/7*Closed *R 2 JUN 2 6 1975* Closed *R2H 7/7*Closed *R 2 JUN 2 6 1975* Closed *R2H 7/7*Closed *R 2 JUN 2 6 1975* Closed *R2H 7/8*Closed *R 2 JUN 2 6 1975* Closed *R2H 7/7*Closed *R 2 JUN 2 6 1975* Closed *R2H 7/8*Closed *R 2 JUN 2 6 1975* Closed *R2H 7/7*Closed *R 2 JUN 2 6 1975* Closed *R2H 7/7*Open *R 2 JUN 2 6 1975* Closed *R2H 7/7*Open *R 2 JUN 2 6 1975* Closed *R2H 7/8*Closed *R 2 JUN 2 6 1975* Closed *R2H 7/7*Closed *R 2 JUN 2 6 1975* Closed *R2H 7/7*Closed *R 2 JUN 2 6 1975* Closed *R2H 7/8*Closed *R 2 JUN 2 6 1975* Closed *R2H 7/7*Closed *PBD 6-26* Open *R2H 7/8*Closed *R 2 JUN 2 6 1975* Closed *R2H 7/7*Closed *R 2 JUN 2 6 1975* Open *R2H 7/7*Closed *R 2 JUN 2 6 1975* Closed *R2H 7/7*Closed *R 2 JUN 2 6 1975* Closed *R2H 7/7*Closed *R 2 JUN 2 6 1975* Closed *R2H 7/7*Closed *R 2 JUN 2 6 1975* Closed *R2H 7/7*Closed *R 2 JUN 2 6 1975* Closed *R2H 7/7*Closed *PBD 6-26* Closed *R2H 7/7*Open *PBD 6-26* Closed *R2H 7/7*Closed *PBD 6-26* Closed *R2H 7/7*Closed *PBD 6-26* Closed *R2H 7/8*Closed *PBD 6-26* Closed *R2H 7/7*Closed *PBD 6-26* Closed *R2H 7/7*Closed *PBD 6-26* Closed *R2H 7/8*Closed *PBD 6-26* Closed *R2H 7/7*Closed *PBD 6-26* Closed *R2H 7/7*Open *R2H 6/27* Closed *R2H 7/7*Closed *R2H 6/27* Closed *R2H 7/7*Open *R2H 6/27* Open *R2H 7/7*Open *R2H 6/27* Closed *R2H 7/7*

Motor

Manual

Manual

I.L.R.T. VALVE LIST

APPENDIX "A"

Penetration
NumberValve
NumberPosition
During TestVer. by
DatePosition
After TestVerif. by
DateValve
Type

42 ✓

D-4

V07187(1525)
I-LCV-07-11B
I-LCV-07-11A
I-V07171(1525)
V07185(1525)Closed
Closed
Closed
Open
OpenRXH 6/27
PBD 6-26
PBD 6-26
RXH 6-26
RXH 6-26Closed
Open
Open
Closed
ClosedRXH 7/7
RXH 7/7
RXH 7/7
RXH 7/7
RXH 7/7Solenoid
Solenoid

43 ✓

V6301 w
V6302 w
V6002
V6109
Test Tap wClosed
Closed
Open
Open
OpenRXH 6-26
RXH 6-26
RXH 6/27
RXH 6-26
RXH 6-26Open
Open
Closed
Open
ClosedRXH 7/7
RXH 7/7
RXH 7/7
RXH 7/7
RXH 7/7Solenoid
Solenoid

44 ✓

V2465
V2505
I-SE-01-1
V2198
V2870Open
Closed
Closed
Open
OpenRXH 6/27
RXH 6/27
RXH 6/27
RXH 6/27
RXH 6/27Closed
Open
Open
Open
ClosedRXH 7/7
RXH 7/7
RXH 7/7
RXH 7/7
RXH 7/7Solenoid
Solenoid

46

I-V07189(1609)
I-V07167(1525)
I-V07206(1609)
V4805Closed
Closed
Closed
OpenRXH 6/27
RXH 6/27
RXH 6/27
RXH 6/27Closed
Closed
Closed
ClosedRXH 7/7
RXH 7/7
RXH 7/7
RXH 7/8Manual
Manual
Manual

47

I-V07188(1609)
I-V07169(1525)
I-V07170(1609)
I-V07190(1609)
V07178(1525)Closed
Closed
Closed
Closed
OpenRXH 6/27
RXH 6/27
RXH 6/27
RXH 6/27
RXH 6/27Closed
Closed
Closed
Closed
ClosedRXH 7/7
RXH 7/7
RXH 7/7
RXH 7/7
RXH 7/7Manual
Manual
Manual
Manual

48

D-4

I-FSE-27-01
I-FSE-27-02
I-FSE-27-03
I-FSE-27-04
I-FSE-27-08
Capped StubsClosed
Closed
Closed
Closed
Closed
OpenRXH 6/27
RXH 6/27
RXH 6/27
RXH 6/27
RXH 6/27
RXH 6/27Open
Open
Open
Open
Open
ClosedRXH 7/7
RXH 7/7
RXH 7/7
RXH 7/7
RXH 7/7
RXH 7/7Solenoid
Solenoid
Solenoid
Solenoid
Solenoid

48

D-4

I-FSE-27-09
Capped StubsClosed
OpenRXH 6/27
RXH 6/27Open
ClosedRXH 7/7
RXH 7/7

Solenoid



I.L.R.T. VALVE LIST

APPENDIX "A"

Penetration Number	Valve Number	Position During Test	Ver. by Date	Position After Test	Verif. by Date	Valve Type
49 ✓	I-FCV-23-9	Closed Open	RZH 6/27	Open Open	RZH 7/7	Solenoid
D-2 Tags hung valves capped tags still hanging	51 I-FSE-27-05	Closed	RZH 6/27	Open	RZH 7/7	Solenoid
	I-FSE-27-06	Closed	RZH 6/27	Open	RZH 7/7	Solenoid
	I-FSE-27-07	Closed	RZH 6/27	Open	RZH 7/7	Solenoid
	I-FSE-27-11 9 types RZH	Closed	RZH 6/27	Open	RZH 7/7	Solenoid
	Test Cap	Open	RZH 6/27	Closed	RZH 7/7	
51	I-FSE-27-10 11 types RZH Test Cap down stream of check Test Cap up stream of check	Closed Open Closed	RZH 6/26 RZH 6/26 RZH 6/26	Open Closed Closed	RZH 7/7 RZH 7/7 RZH 7/7	Solenoid
52A ✓ D-5	I-FCV-26-1 CF I-FCV-26-2 Test Cap - Void	Closed Closed Open	CF 6/25 PBD 6-26 NA	Normal Normal Closed	RZH 7/7 RZH 7/7 NA	Solenoid Solenoid
52B ✓ D-5	I-FCV-26-3 CF I-FCV-26-4 Test Cap - Void	Closed Closed Open	CF 6/25 PBD 6-26 NA	Normal Normal Closed	RZH 7/7 RZH 7/7 NA	Solenoid Solenoid
52C ✓ D-2 Tags hung valves capped tags still hanging	I-FCV-26-5 I-FCV-26-6 Test Cap - Void	Closed Closed Open	NA PBD 6-26 NA	Normal Normal Closed	NA RZH 7/7 NA	Solenoid Solenoid
52D ✓ D-7	I-V00140(1325) I-V00143(1325) I-V00142(1324)	Closed Open Closed Open Closed	RZH 6/26 PBD 6-26 RZH 6/26	Closed Closed Closed	RZH 7/7 RZH 7/7 RZH 7/7	Manual Manual
52E ✓ D-7	I-V00139(1322) I-V00144(1322) I-V00141(324)	Closed Open Closed Open Closed	RZH 6/26 PBD 6-26 RZH 6/26	Closed Closed Closed	RZH 7/7 RZH 7/7 RZH 7/7	Manual Manual
54 ✓	I-V00101(612) I-V00103(324) - Void	Closed Open	PBD 6-26 NA	Closed Closed	RZH 7/7 NA	Manual

I.L.R.T. VALVE LIST

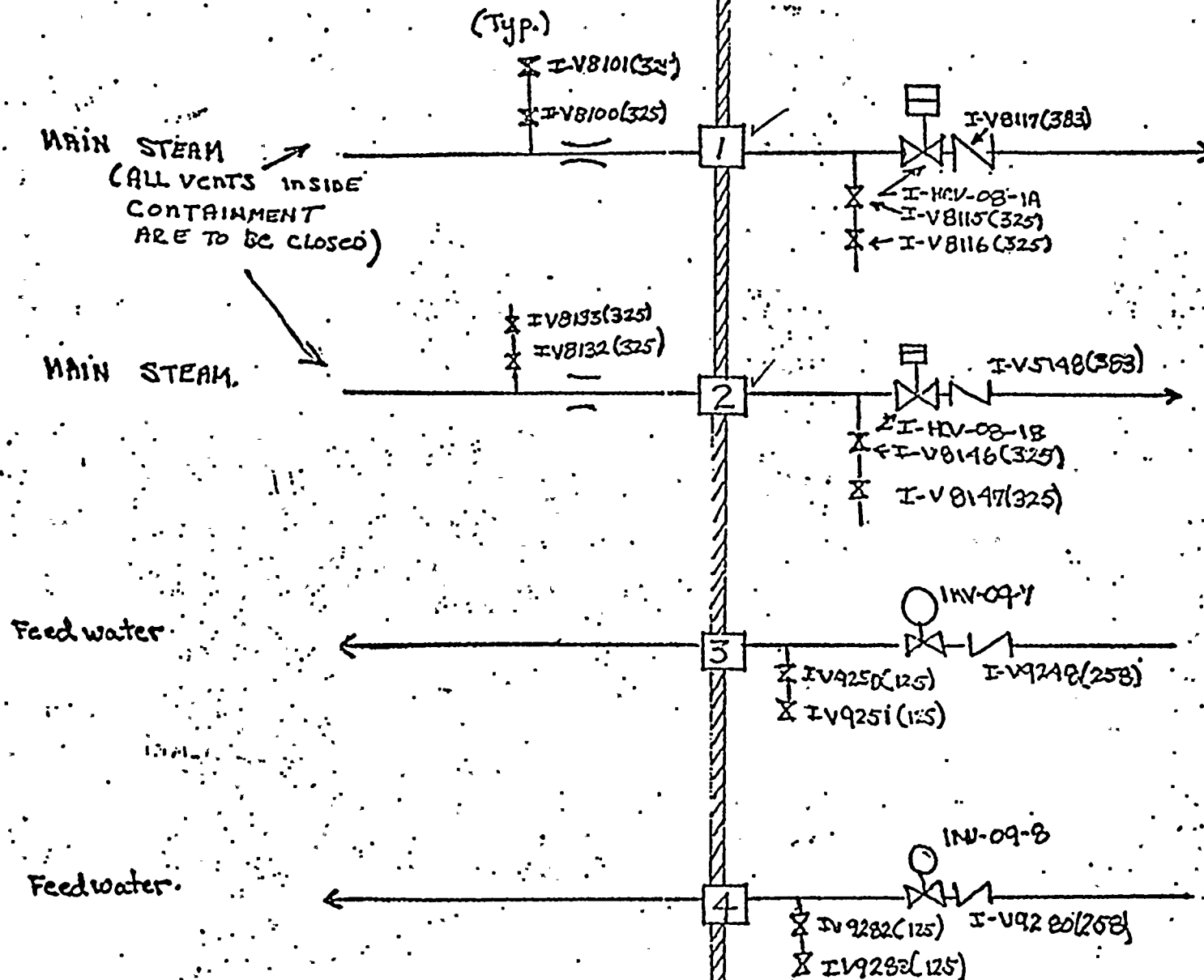
APPENDIX "A"

<u>Penetration</u> <u>Number</u>	<u>Valve</u> <u>Number</u>	<u>Position</u> <u>During Test</u>	<u>Ver.by</u> <u>Date</u>	<u>Position</u> <u>After Test</u>	<u>Verif.by</u> <u>Date</u>	<u>Valve</u> <u>Type</u>
56 ✓	I-V-25-11	Closed	<u>RZH 6/27</u>	Closed	<u>RZH 7/8</u>	Manual
	I-V-25-12	Closed	<u>RZH 6/27</u>	Closed	<u>RZH 7/8</u>	Manual
	Test Cap	Closed	<u>RZH 6/27</u>	Closed	<u>RZH 7/8</u>	
57 ✓	I-V-25-13	Closed	<u>RZH 6-27</u>	Closed	<u>RZH 7/7</u>	Manual
	I-V-25-14	Closed	<u>RZH 6-27</u>	Closed	<u>RZH 7/7</u>	Manual
	Test Cap	Closed	<u>RZH 6-27</u>	Closed	<u>RZH 7/7</u>	
	Sample Conn.	Open	<u>RZH 6-27</u>	Closed	<u>RZH 7/7</u>	
58 ✓	I-V-25-15	Closed	<u>RZH 6-27</u>	Closed	<u>RZH 7/7</u>	Manual
	I-V-25-16	Closed	<u>RZH 6-27</u>	Closed	<u>RZH 7/7</u>	Manual
	Test Cap	Closed	<u>RZH 6-27</u>	Closed	<u>RZH 7/7</u>	
62 ✓	I-V18656(324) <i>Void</i>	Closed	<u>Not instal.</u>	Open	—	
	I-V18659(324) <i>Void</i>	Closed	—	Open	—	
<i>D-#5</i>	I-V18297(944)	Open	<u>RZH 6/27</u>	Closed	<u>RZH 7/8</u>	Manual
	I-V18288(944)	Open	<u>RZH 6/27</u>	Open	<u>RZH 7/8</u>	Manual
	I-V18289(944)	Closed	<u>RZH 6/27</u>	Closed	<u>RZH 7/8</u>	
	I-V18296(944)	Closed	<u>RZH 6/27</u>	Closed	<u>RZH 7/8</u>	
	I-V18658(324) <i>Void</i>	Closed	<u>Not install.</u>	Open	—	
64 ✓	V3843	Open	<u>RZH 6/27</u>	Closed	<u>RZH 7/8</u>	
	V3481	Closed	<u>RZH 6/27</u>	Closed	<u>RZH 7/7</u>	Motor
	V-3842	Closed	<u>RZH 6/27</u>	Closed	<u>RZH 7/7</u>	
	V3481	Closed	<u>RZH 6/27</u>	Closed	<u>RZH 7/7</u>	
	V3480	Closed	<u>RZH 6/27</u>	Closed	<u>RZH 7/7</u>	Motor
67 ✓	I-FCV-25-7	Closed	<u>RZH 6/27</u>	Open	<u>RZH 7/8</u>	Solenoid
	Test Taps	Closed	<u>RZH 6/27</u>	Closed	<u>RZH 7/8</u>	
68 ✓	I-FCV-25-8	Closed	<u>RZH 6/27</u>	Open	<u>RZH 7/8</u>	Solenoid
	Test Taps	Closed	<u>RZH 6/27</u>	Closed	<u>RZH 7/8</u>	

FIG 1

INSIDE CONTAINMENT

OUTSIDE CONTAINMENT





INSIDE CONTAINMENT

OUTSIDE CONTAINMENT

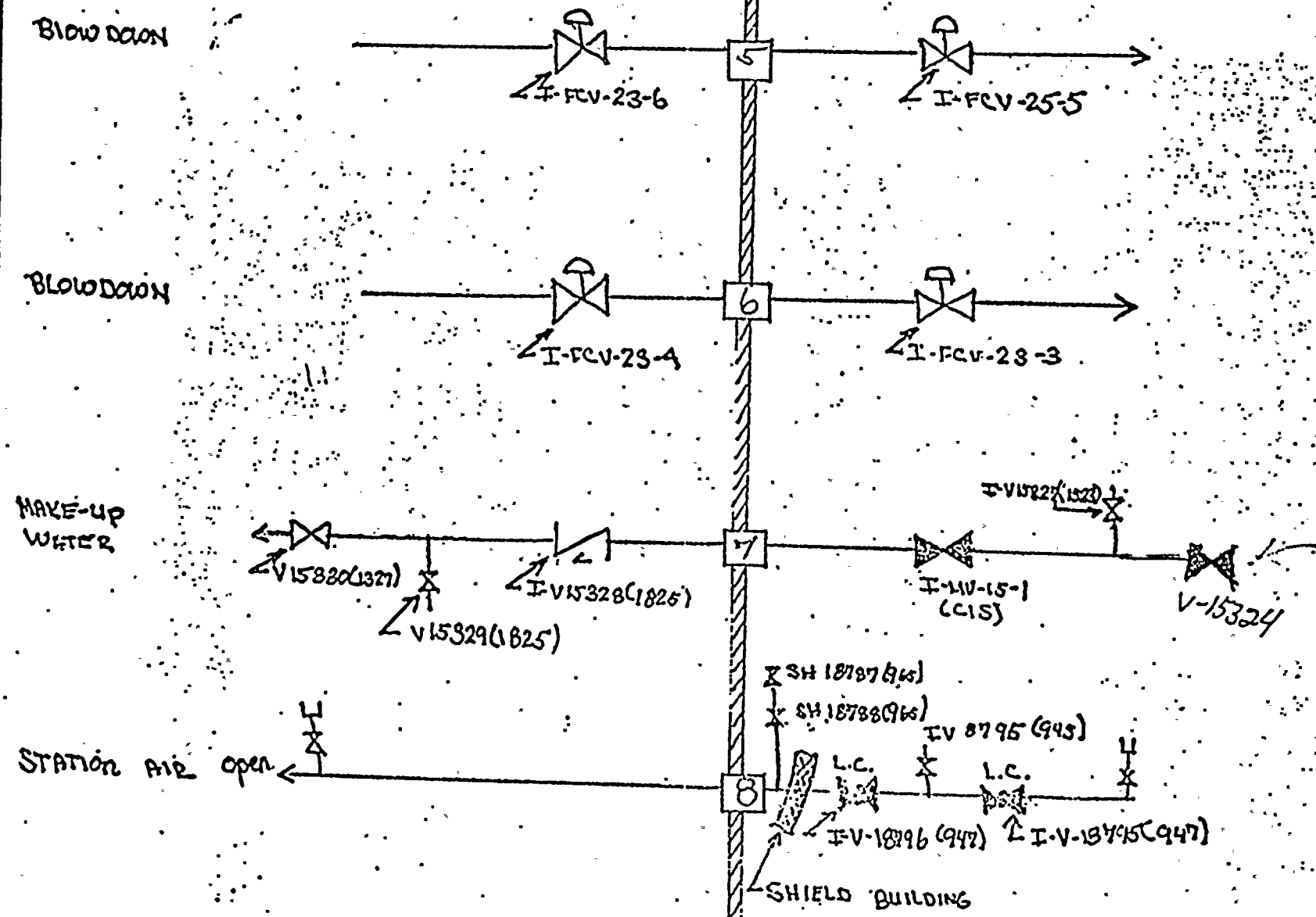
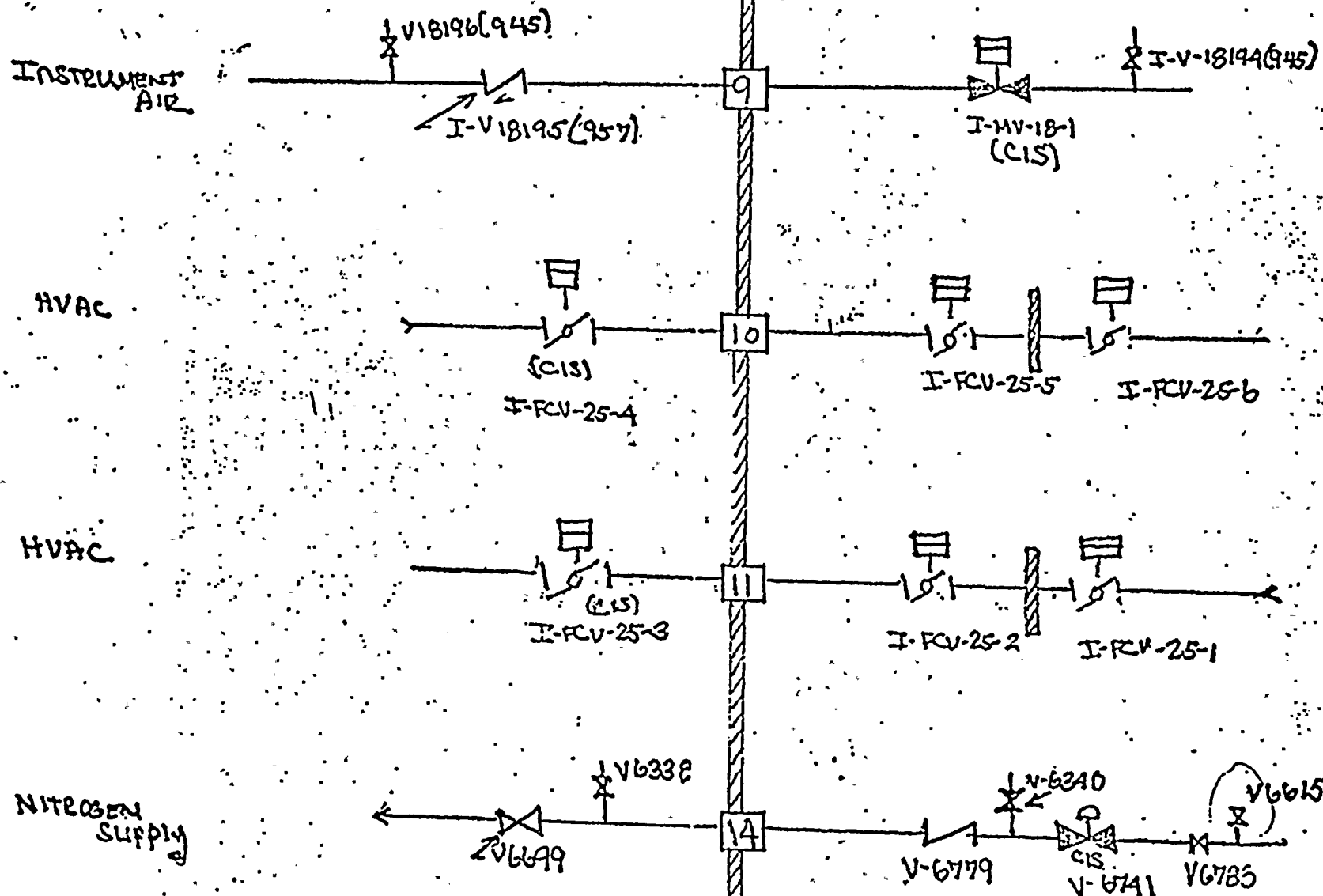
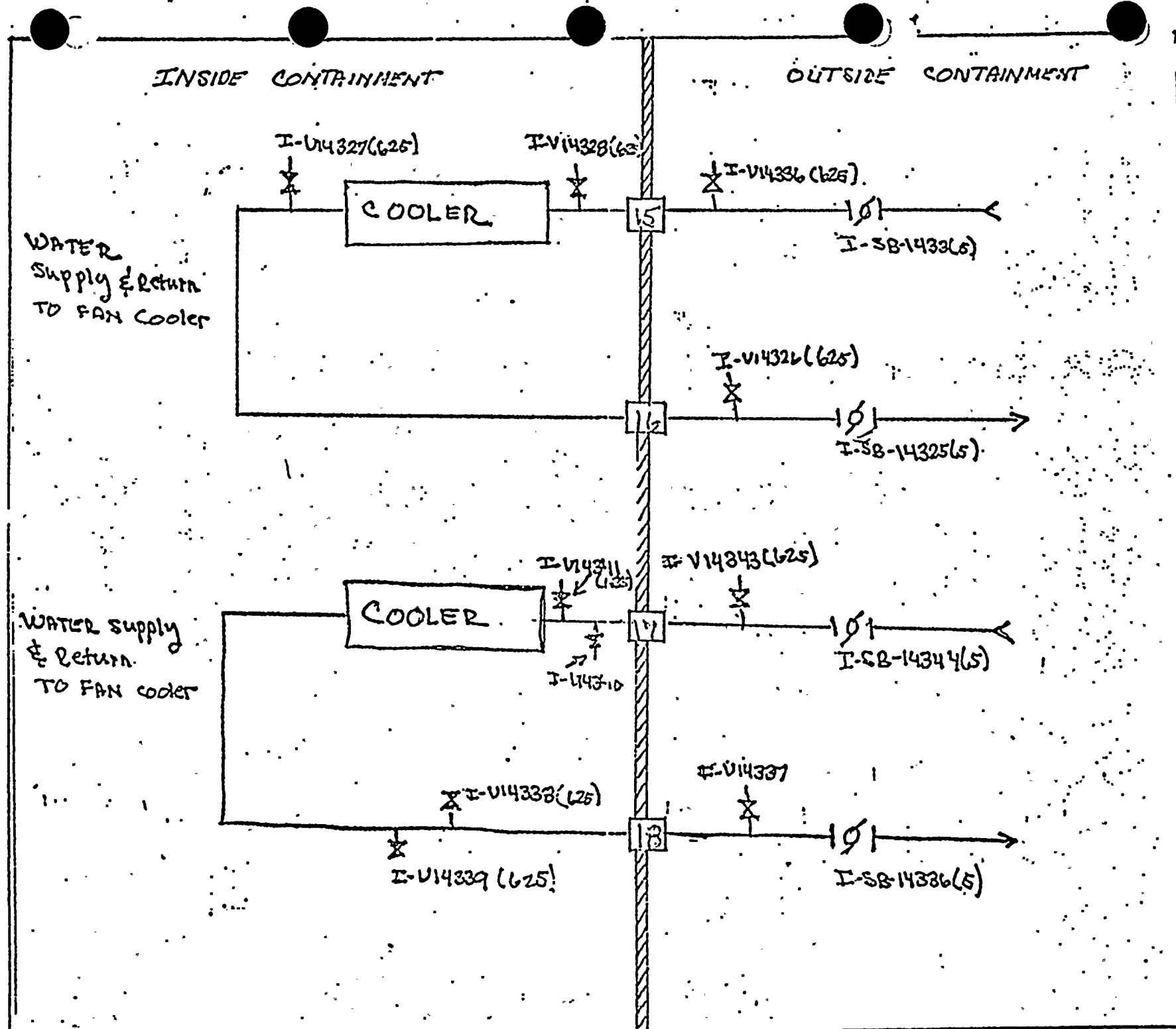


Fig. 1

INSIDE CONTAINMENT

OUTSIDE CONTAINMENT





INSIDE CONTAINMENT

OUTSIDE CONTAINMENT

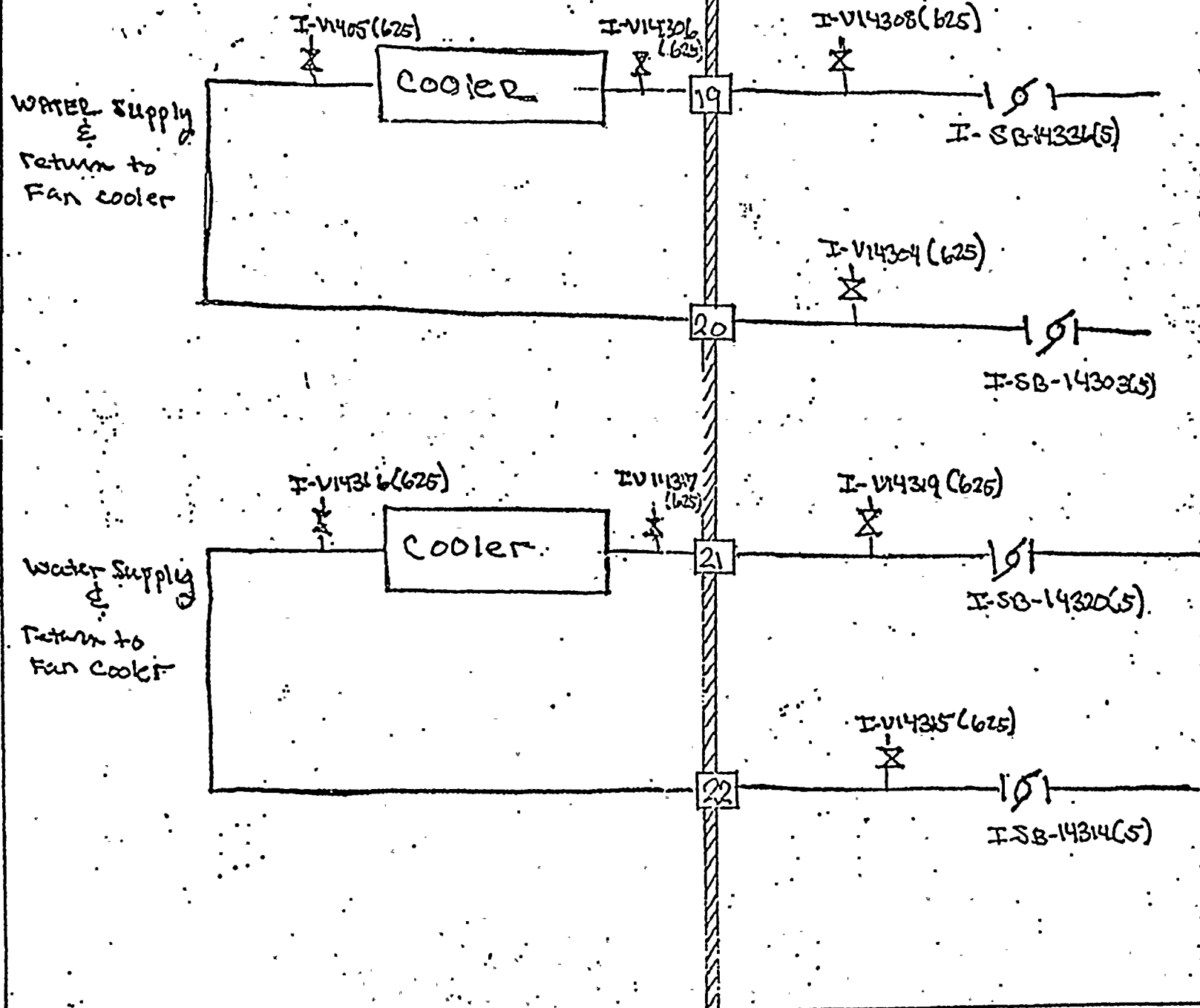


Fig. 1

INSIDE CONTAINMENT

OUTSIDE CONTAINMENT

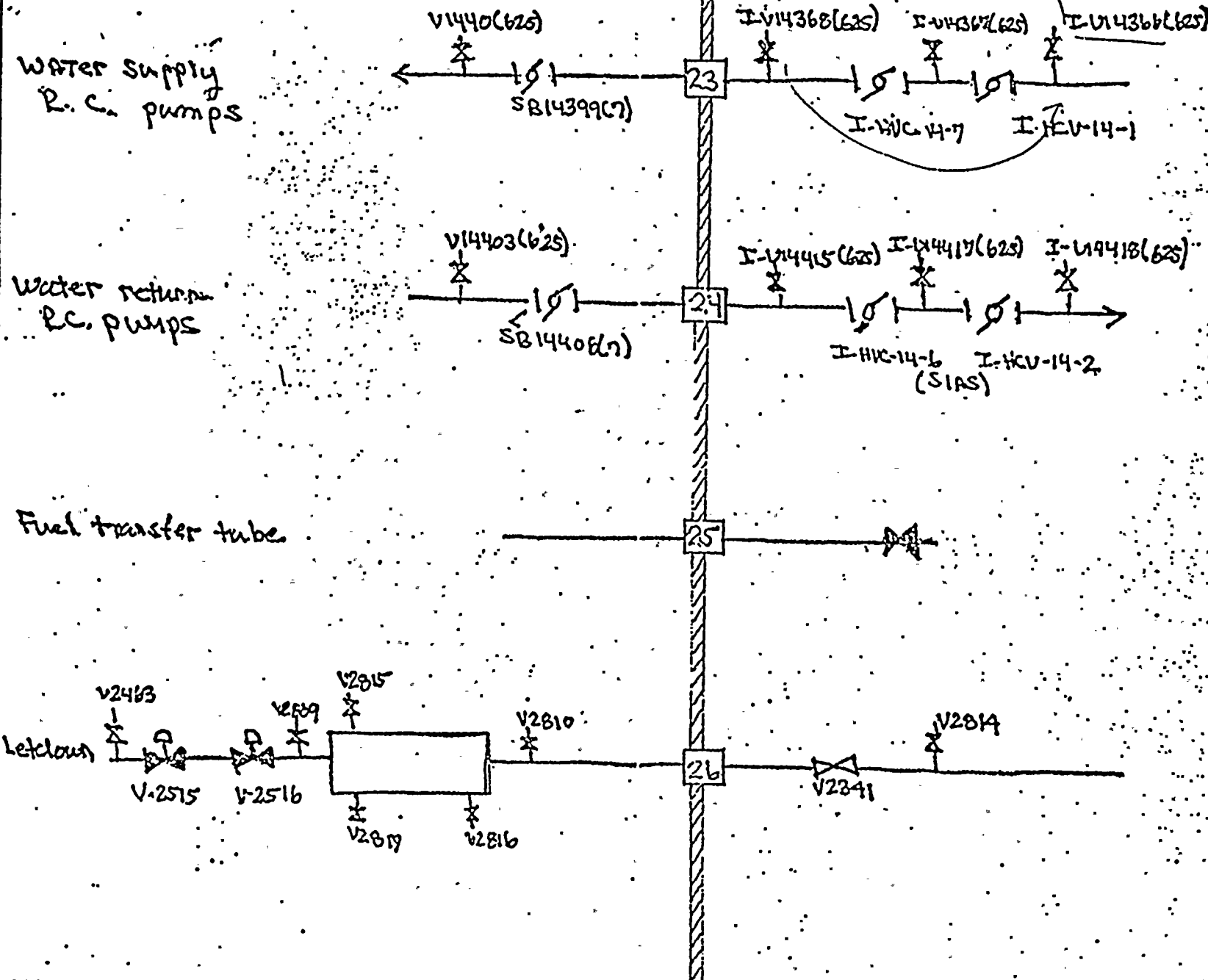




Fig. 1

INSIDE CONTAINMENT

OUTSIDE CONTAINMENT

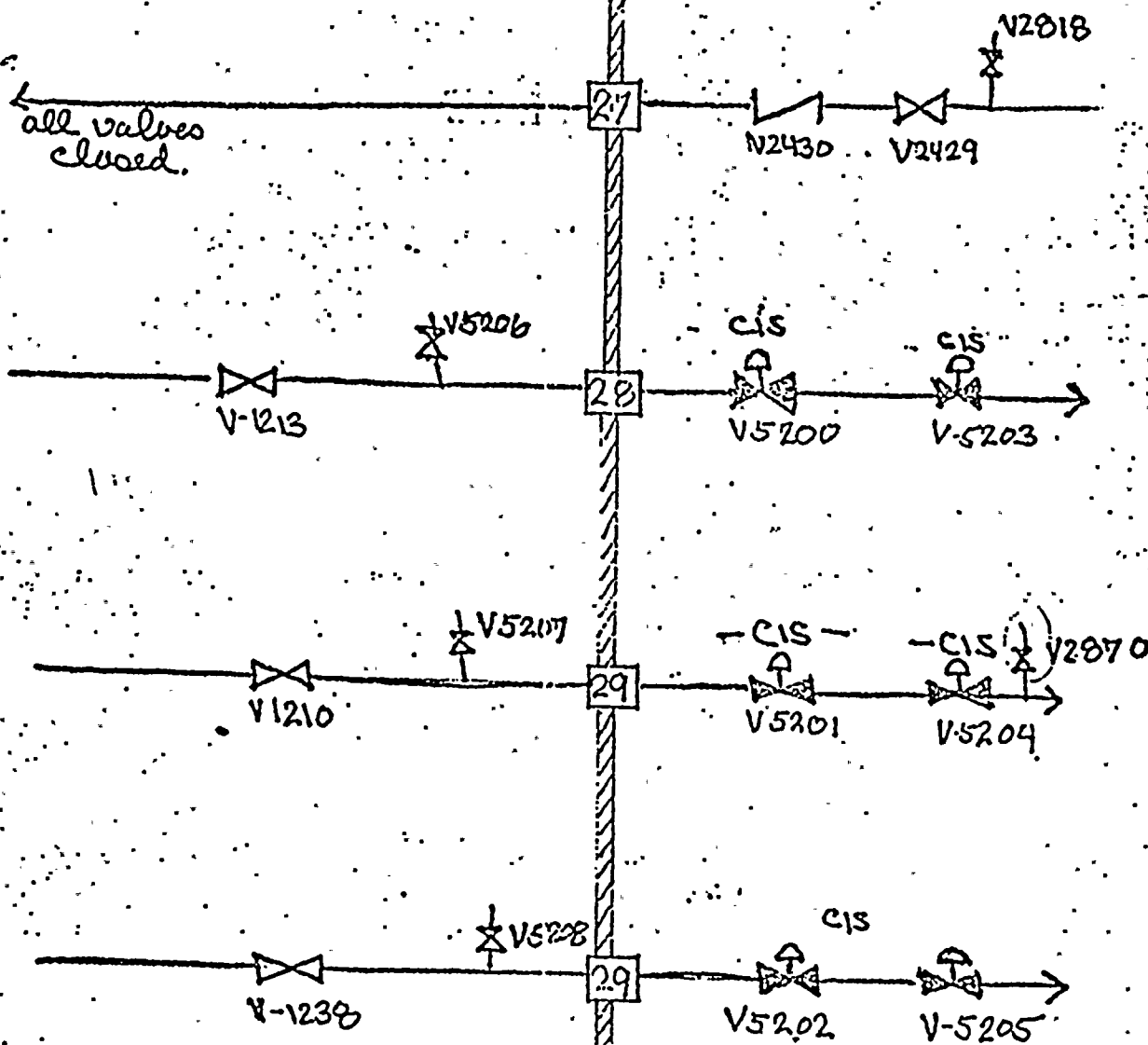
charging line.

all valves closed.

Sampling, hot leg.

Sampling, Pressurizer Surge line.

Sampling, Pressurizer Steam Space.





INSIDE CONTAINMENT

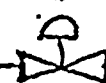
OUTSIDE CONTAINMENT

BLOWDOWN
(S.G. 1A)

(closed)

30

CIS



I-RV-23-7

CONTAINMENT
VENT Header



V-6000

V6001

31

CIS



V-6554

CIS



V-6555

V6602

CONTAINMENT
Sump Suction

32

N.C.



I-MV-07-28

IV07177(1525)

N



I-V07174(1525)

CONTAINMENT
Sump Suction

33

N.C.



I-MV-07-2A

I-V07173(1525)

N



I-V07172(1525)

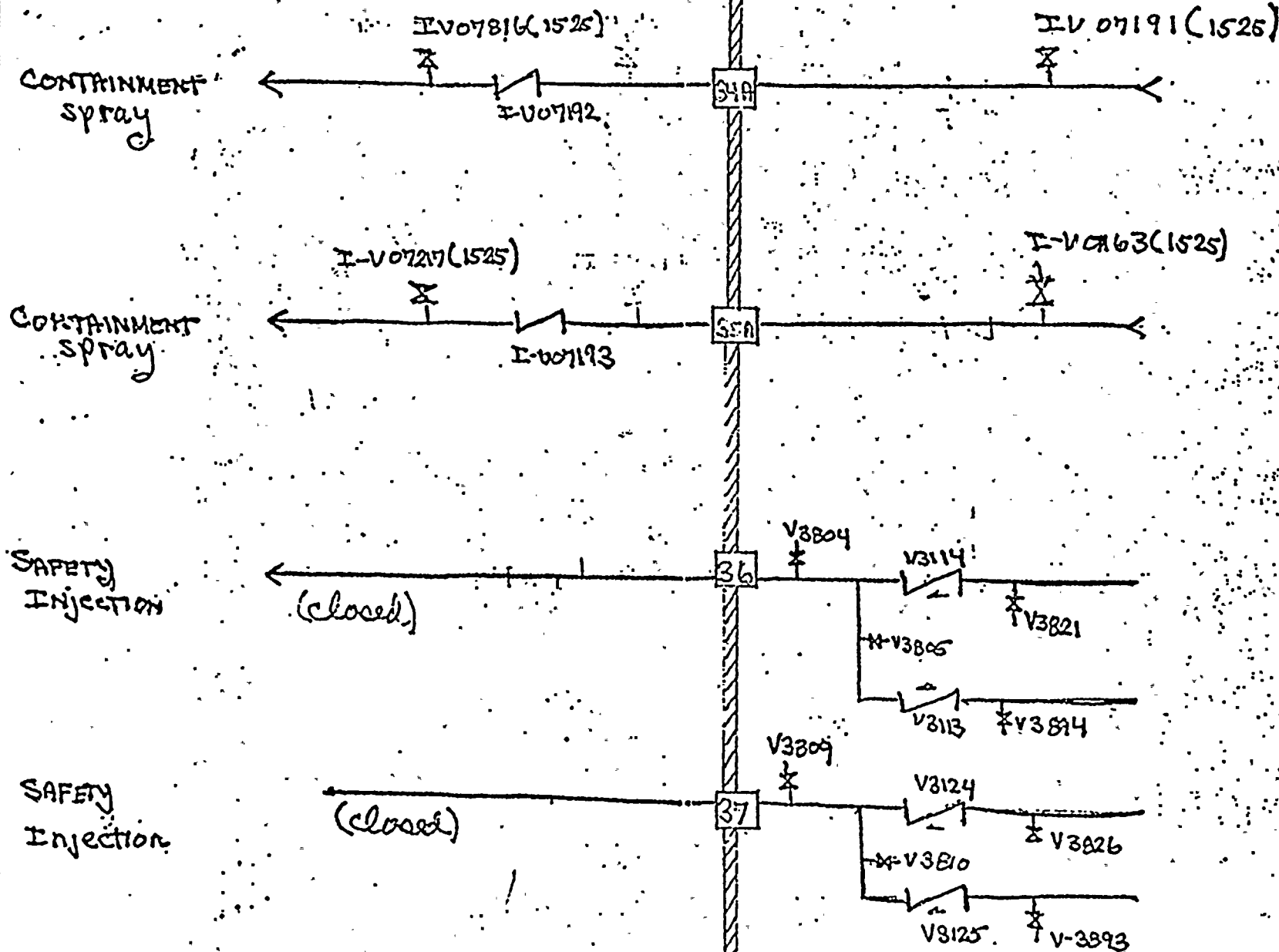
PROPER. ONAL TEST PROCEDURE NO. 130008.
INTEGRATED LEAK RATE TEST

Page 30 of 40
Revision 0



INSIDE CONTAINMENT

OUTSIDE CONTAINMENT



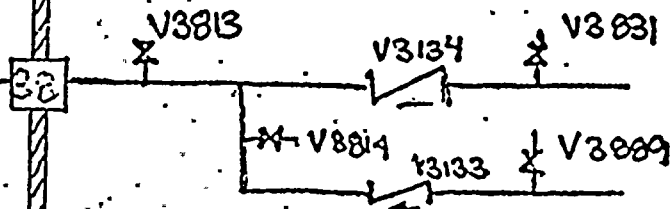
INSIDE CONTAINMENT

OUTSIDE CONTAINMENT

Fig. 1

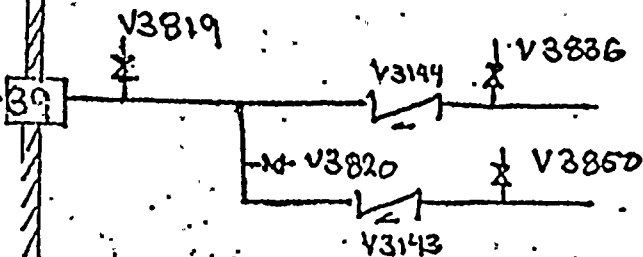
Safety Injection

(closed)

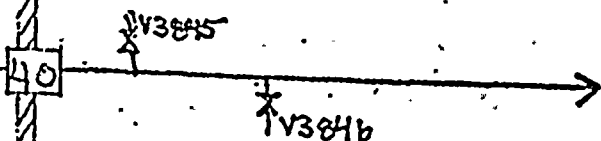
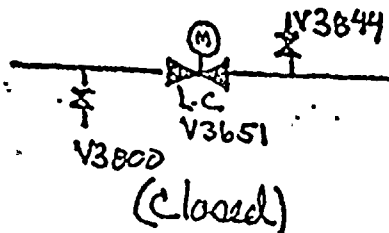


Safety Injection

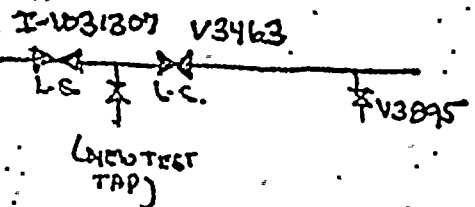
(closed)



Shutdown cooling



Safety Injection Test tank



OPERATIONAL TEST PROCEDURE NO. J00080
INTEGRATED LEAK RATE TEST

INSIDE CONTAINMENT

OUTSIDE CONTAINMENT

Containment
Sump pump
discharge.

Reactor drain
pump suction

R.C. pump
bleed off.

Refuel cavity
inlet

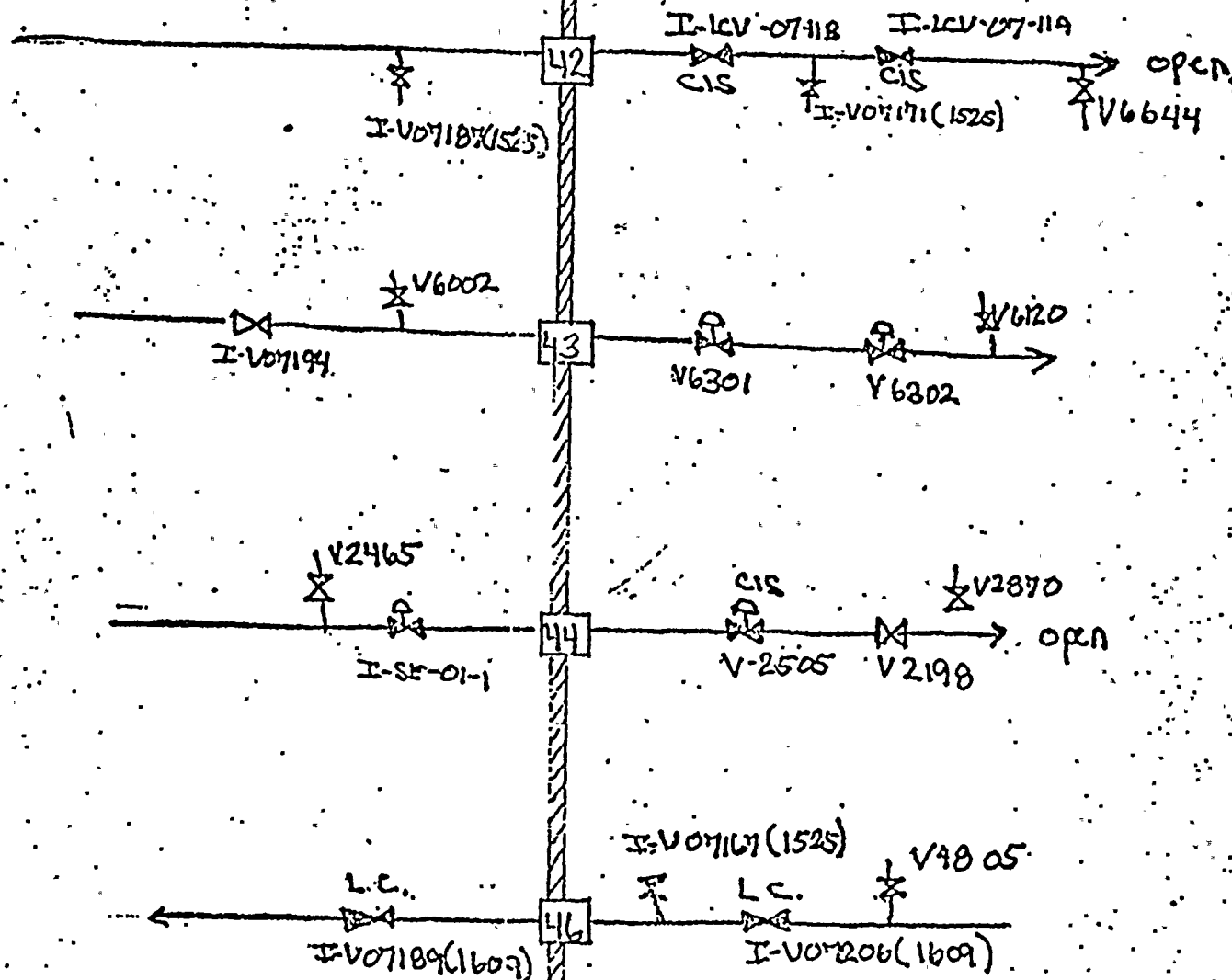




Fig. 1

INSIDE CONTAINMENT

OUTSIDE CONTAINMENT

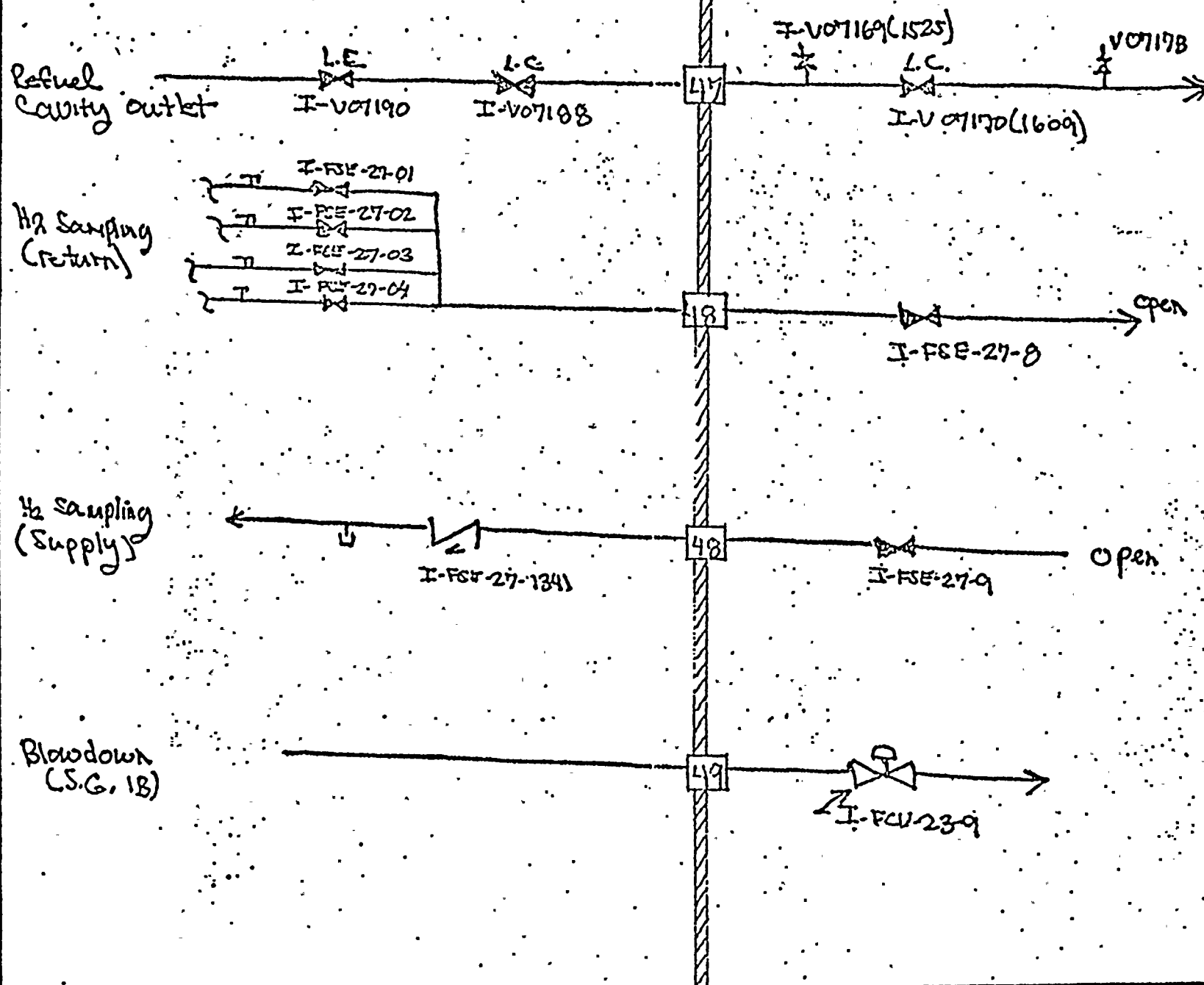
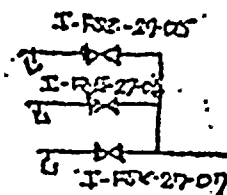


Fig. 1

INSIDE CONTAINMENT

OUTSIDE CONTAINMENT

H₂ sampling
(return)

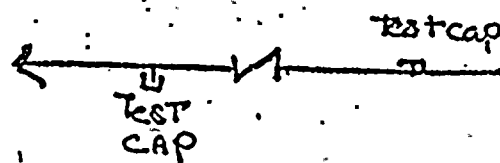


51

I-FSE-27-11

open

H₂ Sampling
(supply)

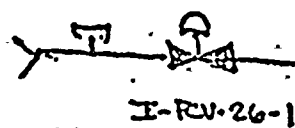


51

I-FSE-27-10

open

Sample radiation
monitoring

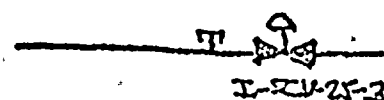


52A

I-FV-26-2

open

Sample radiation
monitoring



53

I-FV-25-4

open

INSIDE CONTAINMENT

OUTSIDE CONTAINMENT

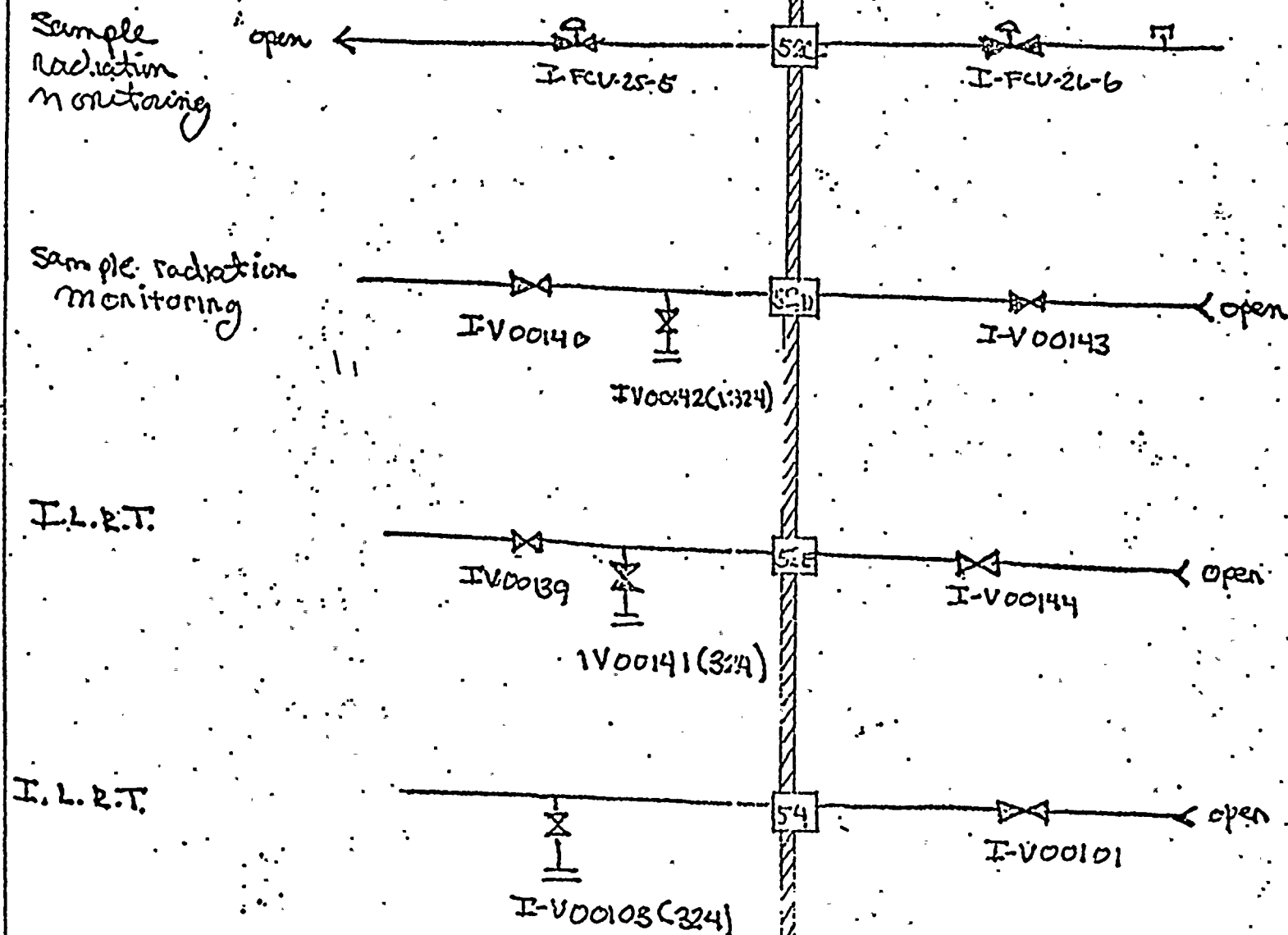


Fig. 1

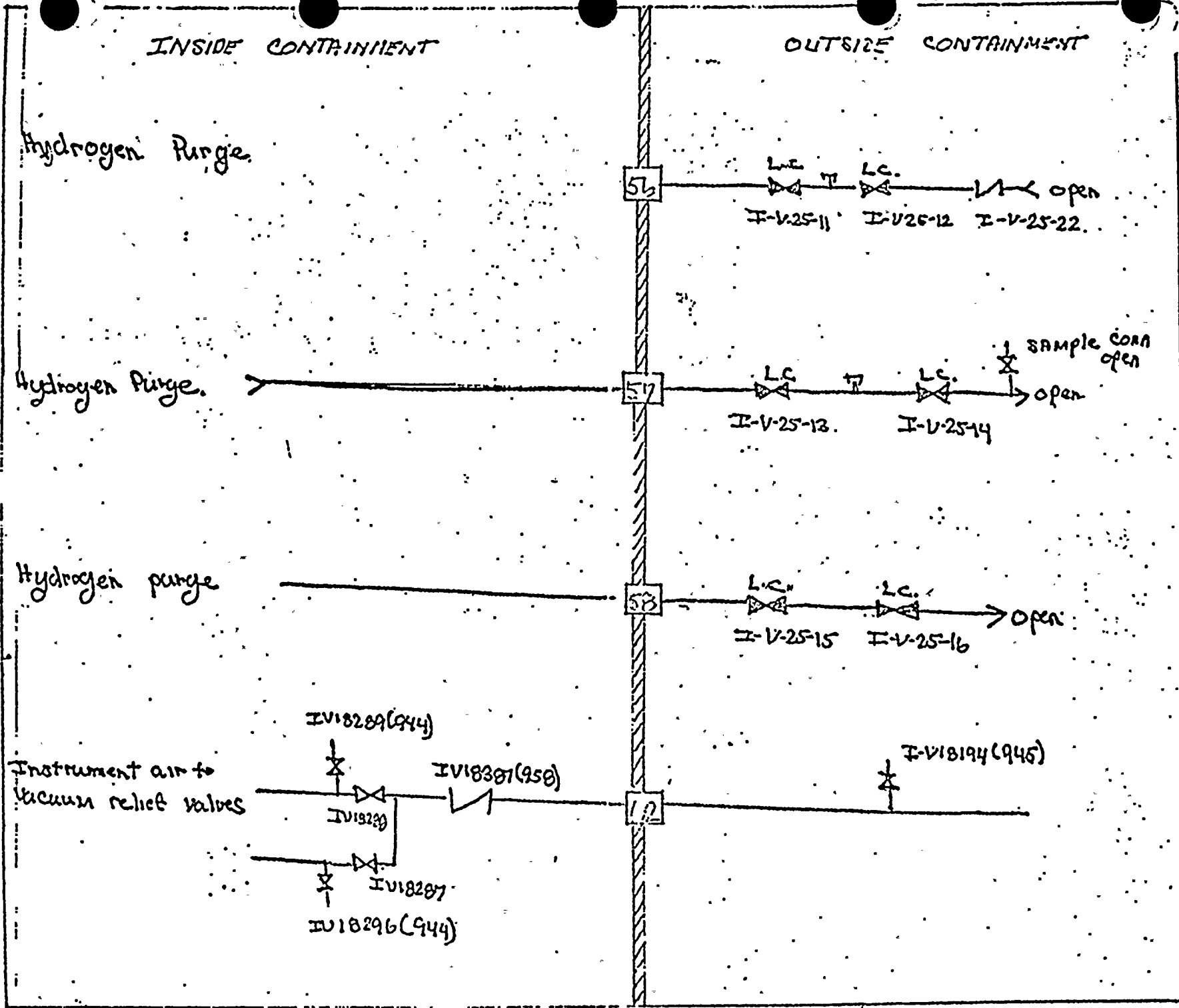
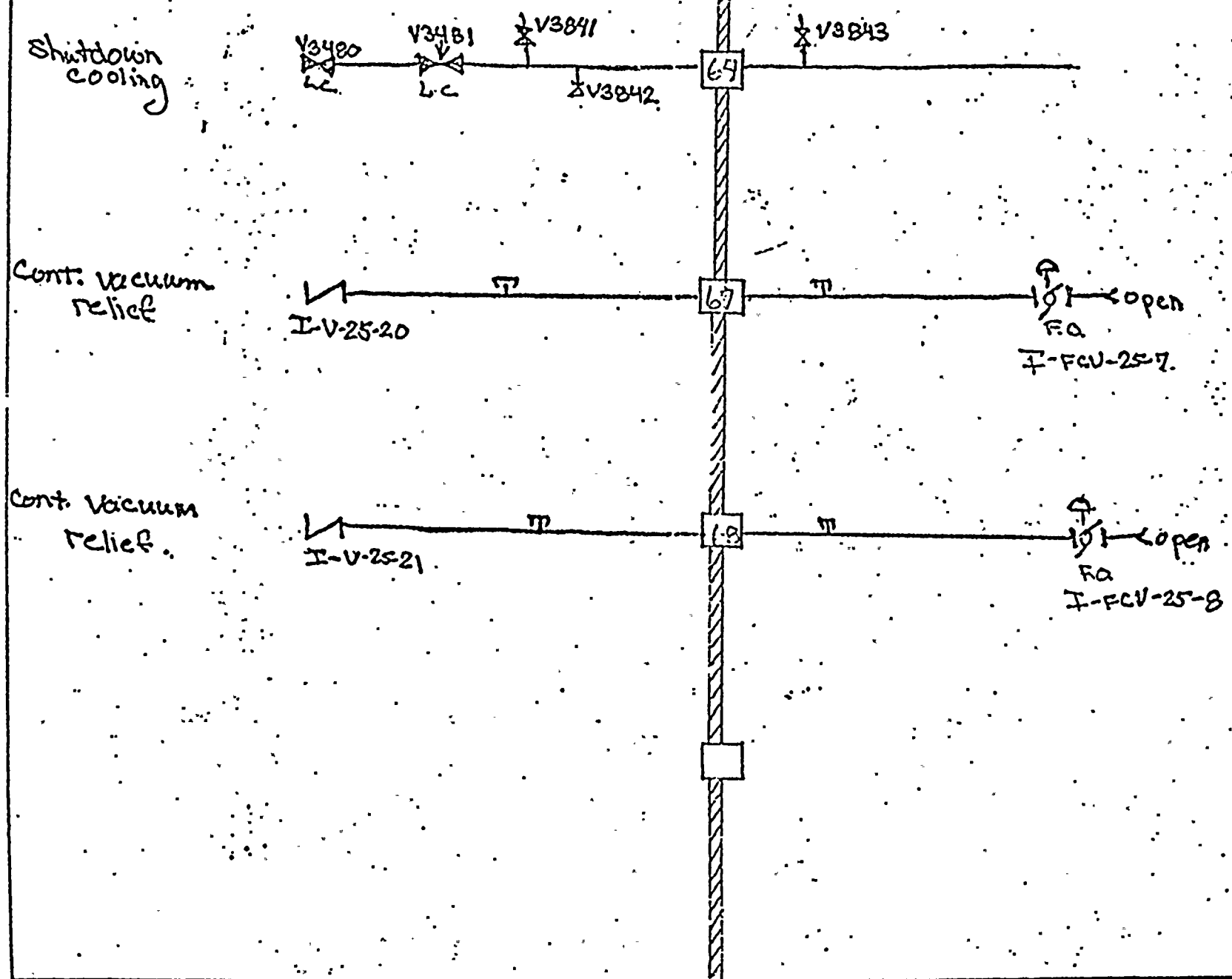




Fig. 1

INSIDE CONTAINMENT

OUTSIDE CONTAINMENT



PREOP. TIONAL TEST PROCEDURE NO. 130C
INTEGRATED LEAK RATE TEST



PREOPERATIONAL TEST PROCEDURE NO. 1300080
INTEGRATED LEAK RATE TEST

ADDENDUM

Eight (8) mechanical penetrations remained outstanding and required additional local leakage rate testing following ILRT completion.

These penetrations were found to have unacceptable indications in the welds joining the containment nozzle and pipe sleeve in the annulus in the course of normal Quality Control procedures following ILRT performance. These are penetrations 5, 27, 29, 37, 40, 44, 53, and 64. The results of these additional tests are satisfactory with zero leakage measured as delineated below:

<u>PENETRATION NUMBER</u>	<u>DATE</u>	<u>START TIME</u>	<u>STOP TIME</u>	<u>START PRESSURE</u>	<u>STOP PRESSURE</u>	<u>LEAKAGE</u>
5	9-17-75	0930	0945	44.0	44.0	0.0 sccm
27	9-5-75	0955	1010	44.0	44.0	0.0 sccm
29	9-9-75	0930	0945	44.0	44.0	0.0 sccm
37	9-6-75	1445	1500	44.0	44.0	0.0 sccm
40	9-25-75	1235	1250	44.0	44.0	0.0 sccm
44	8-30-75	1000	1015	44.0	44.0	0.0 sccm
53	9-3-75	1300	1315	44.1	44.1	0.0 sccm
64	9-26-75	0930	0945	44.0	44.0	0.0 sccm

Verified by [Signature] Date 9-26-75
[Signature] Date 9/26/75



MEMORANDUM

TO: K. N. Harris - FP&L
FROM: G. N. Lemmon *ML*
DATE: July 3, 1975
SUBJECT: FLORIDA POWER & LIGHT COMPANY
ST. LUCIE PLANT
1975 - 890 MW INSTALLATION - UNIT 1
ILRT TEST PRESSURE

Pa as defined by 10CFR50, Appendix J, is the calculated peak containment internal pressure related to the design basis accident and specified either in the technical specification or associated bases.

On St. Lucie 1, this corresponds to a value of 38.4 psig, which is the peak calculated containment internal pressure for a Design Basis Accident for which the containment leak rate must be within the technical specification value. (LOO

The containment vessel was designed in accordance with the ASME Code, Section III, Class B. The "design internal pressure" as defined by that code, was 39.6 psig. The "maximum internal pressure" as defined by the code is 44 psig.

We recommend that the Pa for the St. Lucie Unit 1 ILRT be set at 42.0 psig to account for the 2.4 psig maximum operating pressure being proposed as a technical specification limitation.

GNL/mem

cc: L. Borchardt
D. D. Fiore
L. Skoblar
W. Roman
C. S. Kent - FP&L

6-28-78

2:20 AM

76 pressurization started at 2:20 AM - 5 compressors
 air dry and clean - air temp 84°F - Opsig
 pressurization line pressure ~1 psig
 secure compressors ~1 psig cont. pressure
 deviate from procedure on valve positions for
 penetration 52D & 57E - entry made

3:00 AM

Pressurize at 3:21 AM w/ 5 compressors

3:21 AM

Air Temperature - 87°F pressurization line pressure ~4.5 psig
 containment pressure, 1.4 psig
 control say Flow on 1A MAIN Steam is increasing
 (was 1×10^6 #/hr before test, up to 15×10^6 #/hr now
 full scale is 6×10^6) [FR 80.11 VFP 80.11]

3:30

air temp is 79°F ~5 psig on line 3.2 in containment
 slight amount of water in line because
 lost one compressor - both backup
 started - running 6 compressors

4:00

Target on HVE-1 ^{HEPA} Charcoal DP
 reading (4 - full scale 10)

4:05

cont. press 4.8 psig air temp 85°F
 press. line ~2 psig grain line dripping

4:30

cont. press 5.8 psig air temp 80°F
 press. line ~^{psig} ^{HEPA}

5:00

HVE-1 ^{HEPA} Charcoal, 12P pegged
 Steam flow 3×10^6

7.6 psig 81°F in air press line ~9 psig
 drain line dripping

5:30

8.8 psig press line 10 psig air temp 82°F
 drain line dripping

6:00

10.1 psig 11 lb. air press line 85°F
 drain line dripping all secured

6:30

4:40

P. R. P. R.



628-75

Containment Entry

6/28/75

10 psig

0655

FR8011

FR8011

found pin-hole leak in P. rotometer inlet valve upper well. Permed.

area - leak sat.

Hepa or Charcoal DP Cells Press - Maint. Rate

Leak - cont. per unit 0825 - 6 ft. Zurn chiller - dry

1018 started press. to 22 psig, 5. comp.



6-28-75

10.2 Psig 11 lb air press line off 7:00
drain stopped

10.2 Psig — air press line off 7:30
drain stopped

10.2 Psig Holding Air press off 8:00

10.2 Psig Air press off 8:30

10.2 Psig Air Press off Temp 93.21 in 9:00

Containment Seal Survey 9:00-10:00
Containment internal survey complete
Equalized & ^{isolated} ~~vented~~ above dp cells - Main Steam & HVE-1

10.2 Psig started pressurizing 10:18
~~10.2~~

11.4 Psig - air press - line 12.5 10:30
88° no drain drips

12.3 Psig air line press 13.5 - 14.0 11:00
89° Temp inside drain line dry

6-28-75

13.5 Psig

air press line 14.0 82° f

11:30

drain line dripping containment 89.4

14.5 Psig

air press line 16.0 82.5° f

89.4

12:00

drain line inside not dripping

Containment Temp 84.19°

16.0 Psig

air press. line 17.0 89° f

12:30

drain line inside not dripping

drain line outside - slight trace of oil

containment Temp 84.51°

17.0 Psig

air press line 17.5 88°

~~12:30~~
1:00

drain line inside not dripping

drain line outside almost no trace of oil

containment Temp 84.75

18.0 Psig

air press line 19.1 and 88°

13:30

drain line inside dripping

drain line outside blown closed

contain temp 84.72

19.0 Psig

air press line 20 and 88°

14:00

drain line outside dripping

drain line inside dry

contain temp 85.56

6-28-75

20.6 psig air press 21 and 95°

1430 hrs

drain inside dry -

drain outside dry -

? → Trouble with thermometer

ambient = 85.5° F

21.7 PSIG Air press 22 @ 95° F

1500 hrs.

drain inside dry -

drain outside dry -

ambient = 85.5° F

22.0 Air press 23 @ 95° F

1530

drain inside Dry.

drain outside (air dry) Ambient 85.5°
(slight amt oil)

Secured

76.830" Hg

1600

1540

6/19 Cant. spray vents outside containment leaking. 0000-0130
PNSC approved closing & Flanging - done

03:00 04:30
drain valves on pump side of LPSI & HPSI check valves
leaking. PNSC approved closing of all 8 valves.



Tell Paul (Pump #1)
@ least 2 psi. by line
1 press. for a time. blow
if possible. line

TEST DIRECTOR'S .OTE

© CYPHERNETICS (ANN ARBOR, MICH.)
(313) 769-6800

© Dog Tankelly to call @ 1400. 1/2 hr. him
if we want pipe fitters @ 0100. 2/30. of not.
We only need them if we have a leak.

6/29
lost computer ~ 0930 - called above
back on-line by 1400.

Computer back on line @ 1407
~ 1415 - lost Miami connection - called (Chen) (Chen)
switched air to Atlanta connection while
awaiting repairs. Started inputting data
~ 1650 lost Atlanta & Miami line for 10 min.
~ 1705 back on Miami line

6-30-75

0900 Leak 0.5% +, MS inject; called KWH
0915 started oxygen to ≤ 14.3 psi per
KWH (Note: PWS called at this time per)
commenced leak survey
1013 PCV @ ≈ 1.4 psi
making inject.

Time	Person	Direction	PCV
1042	6 persons	in	PCV
1215	6 "	in	PCV
1345	6 "	out	PCV
1450	6 "	out	"

made again (tightening) of 1/2
"B" manifold which was not properly
torqued. All 4 manways on 5/6 and
all four hand holes on the 5/6 were
torqued or torque checked. The manways
were not torqued but the hand holes were
at light. When B 5/6 was tightened an audible
leak disappeared. When A 5/6 was tightened
no sound change (but no apparent leak on
A before torque). Verified that the M. drains
were not flowing anymore.

- Penetration #45 - containment to annulus. valving
DP sensing line inside containment was found pulling
air out of containment - the equalizer valve was found open
- after subsequent closure, the leak stopped.



3 personnel entered PCV to check Sr. Gen. chemistry levels L. Hayer

1536 above personnel exited cont.

~ 18:50pm compressors started and free blow initiated

~ 19:00pm Lightning struck - construction power blacked out
compressors secured

Re-pressurization to 22#

Partial site power restored after transient containment pressure ~ 14.2 psig

compressors idling -

free blow 5 compressors

pressurize PCV - started
loaded & balanced with 3 compressors

Loaded fourth compressor

PBD

7/1/75

pressurizing to 22 psig - placed 4th compressor
in service ~ 0300

* 0450 found small leak on H.P. (L.P.) rotameter.
one on RT plug & valve @ electro-manometer.

All leaks repaired except valve - requires
new packing. Waiting day in the week.

0548 cut back to three compressors with PCV
inlet temp @ 76 F

0647 resumed pressurizing @ 0641 @ 76.7985
(23 psig)

* 0800 1st data set - awaiting state.

0745 upgrd 400 valve - leak survey in progress
0830 replaced permanent # par
0840 checked PID #40 due to erratic data.

* This leak is very critical - a pin hole leak
on this sensing line could be equivalent
to a very substantial leak in contain-
ment due to the small leakability
(spacing) nature of the sensing line.

all conditions normal and set - continuing
data taking

④

Time	Cont. Std. Press.	Inlet Air		Press	Quality	By	Remarks
		Temp					
0145	14.2	82°F		13.2	NA	REC	
0200	14.5	83.5		14.8	Sat	REC	Data During Pressurization from 14 to 22 psi
0230	15.0	88.0		15.5	Sat	THU	
0300	15.8	88.0		16.3	Sat	THU	
0330	16.8	89.0		17.6	Sat	THU	
0400	17.8	95		18.5	Sat	RDLH	
0430	19.1	95		19.5	Sat	REC	
0500	20.05	95.5		20.8	Sat	THU	
0530	21.0	96		22.0	Sat	RDLH	
0600	22.1	96		22.4	Sat	RDLH	
0630	22.7	86		22.7	Sat	CWMC	
0700	22.8	84.5		23.5	Sat	CWMC	



7-2-75

0244 Spot check of leak rates made using hand calculator shows no apparent leakage.

7-1 2245 - .005 % per day total time

7-2 0200 - 0.0338 % per day total time

0300 continuing data taking to determine time of
1430 time gas returned to a 1200 2/1/75
ending 1200 2/2/75 - $L_{\text{cm}} = .027 \text{ min}$

$L_{\text{cm}} = .029 \text{ min}$ } statistical
conf. interval

1500 started control leak rate test @ 2.5 scfm
by calculation
 $\left. \begin{array}{l} \text{barometric} = 30.100 \\ \text{electro} = 76.039 \end{array} \right\} = 22.56 \text{ psig}$

1600 changed setting on rotameter to 6.2 scfm based
on WPT telecom (rotameter corrected for
 $P = 22.55 \text{ psig}$ 22.55 psig vice cal setting
of 25.0 psig)

1700 mtg with KWH, etc. concerning potential
lossing of P due to potential electrometer
limits. Mtg. to recommence in AM following PWR checkout.

1800 1700 assumes Test Director.

2300 CLRT secured at 2300

The official start of CLRT was
computed from 1700 hrs

for a > 1 hr period - TRA within the
acceptance criteria for CLRT
- compressors started and warmed.

7-3-75 00:30 Pressurization of PCW initiated - 2 compressors
w/ FPL chiller-dryer only.
PSL chiller-dryer isolated and being worked
on.
Electromanometer isolated & Ebasco & FPL
T & C investigating pressure at upper
mechanical stop.

7-3-75 01:30 absolute mechanical stop as it
is 118.250" Hg.

02:30 Electromanometer valved back into system

05:12 Pressurization rate $\sim 1.1 \#/\text{hr}$ for last
 ~ 5 hours.

05:35 - PSL chiller-dryer working and
pressurizing (at) with 5 compressors.

06:00 pressurization rate almost $3 \#/\text{hr}$

06:15 rolled back to 4 compressors
to reduce inlet temp

NOTE: FROM KWH - do not let
CWT level get below 10°

08:30 PWSC - Pa deviation $P_a = 42.0 \text{ psig}$.

continuing pressurization - rolled back
to three compressors to conserve water (CWT)

pressurization rate $\sim 1.0 \text{ mi}/\text{hr}$

10:00 leak survey continues with no leaks
detected



/

TIME	PCV PRESS	INLET AIR		QUALITY	By	Remarks
		TEMP	PRESS			
0030	22.3	84	22.4	Sat	RH	
0100	22.8	85	23.0	Sat	RH	
0130	23.4	87	23.7	Sat	REC	
0200	24.2	87	24.25	Sat	REC	
0230	24.6	87.5	24.7	Sat	REC	
0300	25.1	87.5	25.0	Sat	REC	
0330	25.6	87.5	25.8	Sat	REC	
0400	26.1	87.5	26.25	Sat	RH	
0430	26.8	87.5	26.9	Sat	RH	
0500	27.2	88.0	27.5	Sat	RH	
0530	28.0	88.0	28.3	Sat	REC	
0600	29.9	88.0	31.0	Trace of oil	REC	
0630	31.0	89.0	32.0	Trace of oil	REC	
0700	32.2	94.0	33.0	Sat	PSL	
0730	33.5	91.0	34.0	Sat	REC	
0800	34.5	89.0	35.0	Sat	REC	
0830	35.6	89	36.2	Sat	REC	
0900	36.7	89.5	37.2	Sat	REC	
0930	37.9	93.1	38.5	Trace of oil	REC	
1000	39.0	92	39.3	Sat	REC	
1030	40.0	90	41.0	Sat	REC	
1100	40.6	88	40.7	Sat	REC	
1130	41.2	88	41.2	Sat	REC	
1160	41.7	88	41.8	Sat	REC	
1230	42.2	88	42.3	Sat	REC	



7-3-75

259

Secured pressurization @ 42.795 psig due to fast/low
standard 117.250 "Hg
parametric 30.119 "Hg
(minimum for test 116.168)

Leak survey remains active - pressurization
station being checked as well as ma-
nometer & potentiometer - all is sat-
isfying per leak survey team. Started data taking

1540

started pressurization 2 compressors due to
temp decay (stabilization) & results to pressure
decrease

1655

pressure @ 118.000 "Hg
parametric 30.06 } Secured compressors
43.19 psig

we should be able to stay @ this
plateau without going below 42.0 psig
assuming no additional leaks. AMO

NOTE: CWTs > 10'

1700

Commenced data taking, official start
of stabilization period.

2200

at abt. 2100 computer (terminal) lost carrier signal. after
reconnect it was noticed a lot of spurious hits
on the line (between) on computer output only.
at this time a table of all samples showed ~~some~~
that, around 21:00, the ave. temp showed an anomaly.
The data was checked in the computer and verified
correct for samples between 1915 and 2200. Ave.
temp were hand calculated and don't agree with
the computer ave. temp. values.

7-4-75

0000

Computer down - scheduled down for 30 MIN.

0030

Computer back up - problem not cleared up

but hit problem disappeared = using other terminal
hand calculated leak rates initiated:

for 2000 hrs m7-3 ave. Temp = 89.829°F

Sat pres $90^{\circ} = .698$

Sat pres $89^{\circ} = .6766$

ave Hum = $.85419$

Sat pres $88^{\circ} = .6556$

pressure $117.627''\text{Hg}$

$$W_i = .85419 \left\{ \frac{.6766}{.6556} + \left(\frac{89.829 - 89}{90 - 89} \right) (.6982 - .6766) \right\}$$

$$W_i = .85419 \{ .6766 + (.829) \cdot .0216 \} = .85419 (.6766 + .017)$$

$$W_i = .5932 \text{ psia}$$

$$P_i = 117.627 / 2.03602 = 57.773 \text{ psia}$$

$$P_i - W_i = 57.180 \text{ psia}$$

$$T_i = 89.829 + 459.69 = 549.519$$

for 0030 hrs m7-4 ave. Temp = 88.906°F

ave Hum = $.85567$

pressure = $117.412''\text{Hg}$

$$W_f = .85567 \{ .6556 + (.906) (.6766 - .6556) \} = .85567 (.6746)$$

$$W_f = .5772$$

$$P_i = 117.392 / 2.03602 = 57.657$$

$$P_i - W_f = 57.080$$

$$T_f = 88.906 + 459.69 = 548.596$$

Leak rate between 7-3 @ 2000 and 7-4 @ 0030

$$L = \frac{2400}{4.5} \left[1 - \frac{(57.080)(549.519)}{(57.180)(548.596)} \right] = \frac{2400}{4.5} [1 - .999930671] = .0370 \text{ % per day}$$

0340

ave Temp. data in program checked for samples 1-11-18.
values for samples less than 16 don't agree with hand calculated
ave temp. values. - the difference is on the order of .1 or less.

at 0300

press = 147.2965

P_F = 57.611

ave Num = 85.6969

T_r = ave T_{ave} = 88.536 + 459.69 = 548.226

$$W_F = .85696 \left[.6556 + .536 \times .021 \right] = .57147 \text{ psia}$$

$$P_F = W_F = 57.039$$

Seak rate between 7-3 at 2000 and 7-4 at 0300

$$L = \frac{2400}{7} \left[1 - \frac{549.519}{548.226} \times \frac{57.039}{57.180} \right] = .0375 \text{ per day}$$

calculations in exact agreement to following raw
data comparison

0220

computer combid-out. Operating for to sys = 6

0830

computer back on line sys = 5

entering data taking to determine time

1030

switched from one terminal to another. Due to

space issue, switch back to left terminal

as one on table

1345

backed-up data (USE MOVFIL)

1652

-11

"

"

"

"

"

1700

leakage occuring @ 0 - probably all a month

instrument error. Print calculations indicate

required leakage = to 9.82 scfm @ barometric

of 30.0" Hg and standard of 117.000" Hg.

we do have a tight pcv!

took last set of readings. Time of
shall be 2100 ~~at~~ 2200.
~~read~~ start ORET @ 116.952 ~~at~~ 116.952
29.96 barometric
above = 42.728.952 psig
installed leak of 9.62 scfm
for superheated leak ~~work~~ at
L2.

7/5/75

0507 secured ORET

0615 per to Coppers Blows secured PCP heaters, energized
0630
~~0637~~ work commenced blowdown of PCV to atmosphere.

0730	38.3 psig	(started ~ 42.5 psig)
0800	35.9 psig	
0830	33.1 psig	- blowdown valve ~ 1/2 open
0900	30.4 psig	
0930	27.4 psig	
1000	24.5 psig	
1030	21.7 psig	
1115	17.3 psig	valve wide open
1145	14.4 psig	
1215	12.2 psig	
1250	9.6 psig	
1327	7.4 psig	
1400	4.6 psig	
1510	3.0 psig	
1600	1.5 psig	
1700	.5 psig	



-25

1230 PCV @ 0 pscg

containment entry

several (2 observed) light bulbs

broken and hydraulic oil from

power crane on 62' at labours

to clean-up today. *Paint blistering also observed

shift ends.

* This will be reviewed later by Civil Eng'g per J. Fisher.

7/28/75 Steam Generator blowdown and sample lines

leak tested today. no leakage found. R. Hayes

7/29/75 Penetration 52 c isolation valve # I-FCV-26-06
tested no leakage found. R. Hayes

7/30/75 Penetration 52 c isolation valve # I-FCV-26-05
tested no leakage found. R. Hayes

8/19/75 Penetration #51 isolation valve I-FSE-27-9
tested 0 leakage found R. Hayes

