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HAYNES,J.G. Arizona Nuclear Power Project (formerly Arizona Public Serv
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161-01458-JGH/ACR/KMC
November 9, 1988

Dr. Thomas E. Murley
Director of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Mail Station P1-137
Washington, DC 20555

Dear Sir:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Unit 2
Docket No. STN 50-529 (License NPF-51)
Unit 2 Reactor Containment Building Integrated Leak Rate Test
File: 88-056-026

Pursuant to 10CFR50, Appendix J, attached is the PVNGS Unit 2 Reactor Containment Building Integrated Leak Rate Test summary report. This report includes all the Type B and Type C test results performed since the last Type A test as well as the "as found" Type A test results.

If you should have any questions, please contact Mr. Carter Rogers at (602) 371-4041.

Very truly yours,

JG Haynes

J. G. Haynes
Vice President
Nuclear Production

JGH/ACR/kj

Attachment

cc: D. B. Karner (all w/attachment)
J. B. Martin
T. J. Polich
T. L. Chan
M. J. Davis
A. C. Gehr

A017
1/1

ARIZONA PUBLIC SERVICE COMPANY
PALO VERDE
NUCLEAR GENERATING STATION
UNIT 2

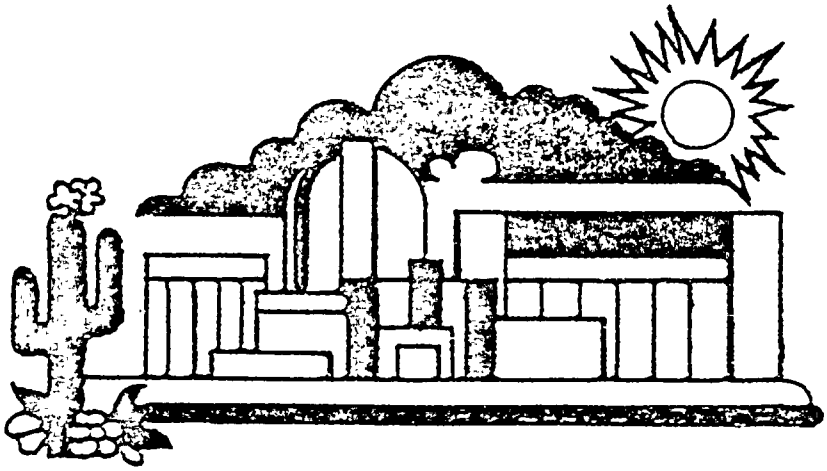
REACTOR CONTAINMENT BUILDING INTEGRATED LEAK RATE TEST

MAY 1988

Ron Kiggs 9/14/88
PREPARED BY

REVIEWED BY

APPROVED BY



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1.0 INTRODUCTION

A periodic Type "A" Integrated Leak Rate Test (ILRT) was performed on the Containment structure of the Arizona Public Service Company (APS), Palo Verde Nuclear Generating Station (PVNGS) - Unit 2 in May of 1988.

This test was performed for a period of twenty four (24) hours at a pressure equal to or greater than the calculated peak containment internal pressure (Pa) specified in the PVNGS Technical Specifications.

This report documents the test results which are reported in accordance with the requirements of 10CFR50, Appendix J, Section V.B.2, ANSI N45.4 (1972), and ANSI/ANS 56.8 (1981).

2.0 SUMMARY

An ILRT, utilizing the Absolute Method, was performed at PVNGS Unit 2. The first order least-squares fit analysis utilizing the Total-Time leak rate yielded a leak rate of 0.0463 % per day with a 95 % upper confidence limit of 0.0599 % per day. These values are well within the allowable Technical Specification limit of 0.075 % per day.

3.0 GENERAL DATA

Owner:	Arizona Public Service Company
Docket No:	STN 50-529
Plant:	Palo Verde Nuclear Generating Station, Unit 2
Operating License:	NPF-51
Location:	Wintersburg, Arizona
Containment Description:	See Appendix A, Section IIIA
Date Test Completed:	May 27, 1988

4.0 TECHNICAL DATA

Containment Net Free Volume:	2,600,000 scf
Design Pressure:	60.0 psig
Design Temperature	
High Mean (Operation):	120 F
Maximum DBA:	300 F
Calculated Accident Peak Pressure:	49.5 psig
Calculated Accident Peak Temperature:	398.5 F (MSLB)

5.0 TEST DATA

Test Method:	Absolute
Data Analysis Technique:	Total Time
Test Pressure:	49.5 psig
Maximum Allowable Leakage (La):	0.1 % / day
Test Acceptance Criteria (Tech Spec 4.6.1.2b):	0.075 % / day
Calculated Leakage Rate (UCL):	0.0599 % / day
Calculated Leakage Rate (Lam):	0.0463 % / day

6.0 Verification Test Data

Calibrated Leak Superimposed:	0.1 % / day (La) 7.6 SCFM
Calculated Leakrate (% / day):	0.132 % / day
Calculated Leakrate (95 % UCL):	0.141 % / day

7.0 Data Summary and Analysis

7.1 Local Leak Rate Test (LLRT) Results

Testing of individual containment Penetrations is required by 10CFR50, Appendix J and ANSI N45.4 (1972). These tests are referred to as Type "B" & "C" tests. Type "B" tests are those tests conducted to measure leakage on penetrations other than valves, such as PVNGS airlock doors and electrical penetrations whose design incorporates resilient seals. Type "C" tests are those tests conducted to measure leakage of the containment isolation valves of the PVNGS containment structure.

Test results are tabulated in terms of the **"As-Found"** and **"As-Left"** leakage rates for each individual valve, door or penetration. Test results can be reported in three (3) ways, ie. 1) Summation of all test results, 2) Summation of Maximum Leakage Path through the penetration, and 3) Summation of the Minimum Leakage path through the penetration. Listed below are all three values for both **"As-Found"** and **"As-Left"**. All values are listed in standard cubic centimeters per minute (sccm). Test data is found in Appendix A, Section VII.B.3.

LLRT "B" & "C" TEST RESULTS

	As-Found	As-Left
Summation:	> 34,215	1,260.5
Max Path Leakage:	> 29,336.5	1,229.5
Min Path Leakage:	> 4,887.75	45.25
Total Allowable (0.60 La):		134.001

7.2 Analysis of "B" & "C" Results

The combined leakage rate of all Type "B" & "C" tests in the As-Left condition is well below the acceptance limit. The As-Found results appear to be indeterminate since seven (7) valves had leak rates which indicated "off-scale" on the leakage instrumentation. Test results in the As-Found condition may be acceptable even if an individual valve is leaking indeterminately high provided the overall leakage of the penetration is determinate (ie. minimum path leakage is known). In short, at least one of two valves in series must be acceptable. This did not occur during the recent LLRT testing on Unit 2 Penetration 42B, consisting of valve 2JSSBUV0202 and 2JSSAUV0205 in the Nuclear Sampling system. Both valves indicated offscale > 2000 sccm. These valves are 3/8" globe solenoid valves.
An engineering analysis was performed to quantify the leakage through Penetration 42B in the As-Found condition. The analysis determined that the maximum flowrate through a single valve would not exceed 0.6 scfm (16990 sccm) for Penetration 42B. This discrete value was utilized in the minimum path leakage calculation for As-Found ILRT.

7.3 Integrated Leak Rate Test Results

ILRT testing is required to be performed per 10CFR50, Appendix J and ANSI N45.4 (1972). ILRT testing is referred to as Type "A" testing. Type A test results are reported as a "measured" leakage rate (based on a least squares analysis) and as a statistically determined 95 % Upper Confidence level (UCL) Leakage for the "As-Left" condition. The UCL needs to be corrected by adding the minimum path leakage for any penetrations not vented or drained (ie. in service during the ILRT) and corrected by adding the minimum path leakage for any penetrations/equipment repaired during the ILRT.

7.3 Integrated Leak Rate Test Results (cont.)

10CFR50, Appendix J and IEIN 85-71 further require that an **"As-Found"** ILRT result be calculated. This calculated **"As-Found"** ILRT is representative of the condition of the containment structure during plant operation. The **"As-Found"** ILRT is computed by adding to the calculated UCL value the difference between the minimum path leakage "As-found" LLRT results and the minimum path leakage "As-Left" LLRT results.

7.3 Integrated Leak Rate Test Results (cont.)

TYPE "A" TEST RESULTS

As-Left

Calculated (least squares): 0.0463 % / day
Calculated (UCL): 0.0599 % / day
Corrected (UCL):
Sum(UCL + α + β): 0.0599 % / day
where α = min path leakage of penetration 26, 27, 40, 60, & 61
= 0 sccm
and
where β = min path leakage of repaired penetrations during ILRT
= 0 sccm

As-Found

As-found ILRT =
Sum (UCL + γ − ϵ)
where γ = min path Leakage of As-Found LLRT
= 19878 sccm
and
where ϵ = min path Leakage of As-Left LLRT
= 45.25 sccm

AS-FOUND ILRT = 0.0688 % / day

7.4 Analysis of Type "A" Test Results

The combined leakage rate of the Type A test (UCL) in the As-Left condition is well below the acceptance limit. The As-Found Type A results are also acceptable.

Additional Type "A" test data analysis, the actual test data and calculated As-Left Type "A" leakage is contained in Appendix A, Section VII.A.

7.5 Verification Test Results

Subsequent to the conduct of the ILRT, a verification test was performed for ten and three quarter (10.75) hours. A leak rate of 7.6 scfm (0.1 % / day) was superimposed using a fixed orifice leak. The calculated Total-Time Leak Rate for the Verification Test was 0.132 % / day with a 95 % UCL of 0.141 % / day.

The Acceptance Criteria for the Verification Test is that the instrumentation is sensitive and accurate enough to detect a leak rate equal to "La" superimposed over the existing ILRT results within +/- 25 %.

The results of this verification test demonstrated the capability to accurately detect and quantify the leakrate. The expected verification test results needed to lie between 0.1349 % / day and 0.1849 % / day with an expected result at 0.1599 % / day. Actual results (UCL) were 0.141 % / day.

8.0 CONCLUSIONS

8.1 LLRT Results

"As-Left" test results were well within acceptable limits.
"As-Found" test results were acceptable since the leakage through penetration 42B was calculated to be no greater than 0.6 scfm.

8.2 ILRT Results

"As-Left" test results were well within acceptable limits.
"As-Found" test results were acceptable.

8.3 Verification Test Results

The results of the Verification Test demonstrated the capability of the ILRT Measurement system to accurately detect and quantify Containment Leakage.

Containment Integrated Leak Rate Test Report

Prepared by

Southwest Power Consultant

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I. INTRODUCTION

A periodic Type "A" Integrated Leakage Rate Test (ILRT) was performed on the containment structure of the Arizona Public Service Company, Palo Verde Nuclear Generating Station (PVNGS) - Unit No. 2 Pressurized Water Reactor in May of 1988. The results of this test were analyzed utilizing the "Absolute Method". This test was performed for a period of twenty-four (24) hours at a pressure equal to or greater than the calculated peak containment internal pressure related to the design bases accident (P_a) and specified in the Technical Specifications. This report describes and presents the results of this periodic Type "A" Leakage Rate Test including the supplemental test method (Controlled Leakage Rate Test or CLRT) utilized for verification.

The test results are reported in accordance with the requirements of 10CFR50, Appendix J, Section V.B.2., ANSI N45.4 (1972) and ANSI/ANS 56.8 (1981).

II. SUMMARY

Prior to performance of the ILRT, Local Leakage Rate Test (LLRTs) were performed to verify containment integrity. These Type "B" and Type "C" tests were performed on containment electrical penetrations, mechanical penetrations, containment isolation valves, fuel transfer tube, equipment hatch and air locks. The acceptance criteria for the LLRT is that the total leakage from these tests does not exceed 0.60 (L_a) where L_a is the maximum allowable leakage rate at pressure P_a stated as a percent of containment free volume per day (24 hours). The total leakage from these tests was well within these limits and the results are presented in the official copy of surveillance test procedure 73ST-9CL01, Local Leak Rate Test, which is on file at PVNGS.

At the start of the Type "A" test, all valves were in their normal position for accident conditions. Exceptions to this valve lineup were noted and corrected prior to test start and are listed in the official copy of surveillance test procedure 73ST-9CL02, Integrated Leak Rate Test, which is also on file at PVNGS.

The first order least-squares fit analysis of the data utilizing the Total-Time leak rate yielded a leak rate of 0.0463% per day with a 95% upper confidence limit of 0.0599% per day. These values are well within the allowable limit of 0.075% per day.

III. TEST DISCUSSION

A. Descripton of Containment

The containment design basis is to limit release of radioactive materials, subsequent to postulated accidents, such that resulting calculated offsite doses are less than the guideline values of 10CFR100. In order to meet this requirement, a design (maximum) containment leakage rate has been defined in conjuction with performance requirements placed on the engineered safety features (ESF) systems.

The capability of the containment structure to maintain design leaktight integrity and to provide a predictable environment for operation of ESF systems is ensured by a comprehensive design analysis and testing program that includes consideration of:

- °The peak containment pressure and temperature associated with the severe postulated accident coincident with the operating basis earthquake (OBE) or safe shutdown earthquake (SSE).
- °Maximum external pressure loading condition to which the containment may be subjected as a result of inadvertent containment systems operations that potentially reduce containment internal pressure below outside atmospheric pressure.

The bases in determining design are containment peak pressure (and temperature) and external pressure. For the containment structure peak pressure analysis, it is assumed that each postulated accident is concurrent with the most limiting single active failure in systems required to mitigate the consequence of the accident or to shutdown the plant. No two accidents are postulated to occur simultaneously or consecutively.

A. Description of Containment (Cont'd)

The design basis accident (DBA) for each of the categories of: containment peak pressure (and temperature) and containment maximum external pressure is defined as the most severe accident postulated for each case. The difference between the design pressure (60 psig) and the calculated peak pressure of the as-constructed design (49.5 psig) results in a design margin of approximately 20%.

The containment structure is designed to house the reactor coolant system (RCS) and is referred to as the containment. The containment is part of the containment system whose functional requirements are summarized by the following criteria:

- The containment must withstand the peak pressure and time-varying thermal gradient resulting from a hypothetical failure of the RCS or main steam system.
- The containment must provide biological shielding during normal operation and following a postulated loss-of-coolant accident (LOCA) to minimize radiation exposure.
- The containment must be leaktight in order to minimize leakage of airborne radioactive materials.
- The containment must provide approximately 150 penetrations for piping and electrical cabling, as well as, personnel and equipment access, and provides rigid anchor points for piping entering or leaving.

The containment consists of three basic parts:

- Flat base slab with a central cavity and an instrumentation tunnel.
- Right circular cylinder
- Hemispherical dome

A. Description of Containment (Cont'd)

Principal nominal dimensions of the containment are as follows:

- Interior diameter.....146 ft.
- Interior height (above filler slab).....206 ft. - 6 in.
- Cylindrical wall thickness.....4 ft. - 0 in.
- Dome thickness.....3 ft. - 6 in. at dome apex
  4 ft. - 0 in. at wall springline
- Base mat thickness.....10 ft. - 6 in.
- Liner plate thickness.....1/4 in.
- Internal free volume.....,2,600,000 ft^3 net

The containment is constructed of reinforced concrete prestressed by post-tensioned tendons in the cylinder and the dome. The base mat is designed and constructed of conventionally reinforced concrete. Special reinforcing details are provided at discontinuities and at openings in the shell.

A welded steel liner attached to the inside face of the concrete limits the release of radioactivity from the containment. The base liner is installed on the top of the base mat and is covered by a 2 ft. - 9 in. thick concrete slab. The containment building provides biological shielding during normal operation and following a LOCA It also functions as a leaktight barrier following an accident inside the containment.

The post-tensioning or tendon system consists of high strength wires which are used with button-head anchorage techniques. There are 186 one-quarter inch diameter wires per tendon.

Each tendon assembly consists of wires together with end anchor heads and ring nuts. The tendons transfer load to the structure through shims and a bearing plate.

A. Description of Containment (Cont'd)

Tendons are installed in sheaths that form ducts through the concrete between anchorage points. Trumpets, which are enlarged ducts attached to the bearing plate, allow the wires to spread out at the anchorage to suit button-head spacing requirements. Further, trumpets facilitate field button-heading of wires.

Tendon sheathing provides an enclosed space surrounding each tendon. A valved vent at the highest points of curvature permits release of entrapped air during greasing operations. Drains are provided at the lowest points of curvature to remove accumulated water prior to installing tendons. After the greasing operation, the vents and drains are closed and sealed.

The prestressing tendons are protected against atmospheric corrosion during shipment and installation, and during the life of containment. Prior to shipment, the tendons are coated with a thin film of petrolatum containing rust inhibitors. The sheathing filler material used for permanent corrosion protection is a modified, refined petroleum-base product. The material is pumped into the sheathing after stressing.

Prestressing of the cylindrical wall is achieved by a post-tensioning system consisting of both vertical inverted U-shaped and circumferential (hoop) tendons. Vertical tendons are anchored at the base slab and extended up and over the dome to form an inverted U shape. Three buttresses are equally spaced at 120° around the cylinder and extend over the dome joining together at the crown. The hoop tendons are anchored at buttresses located at 240° apart. The successive hoop tendons are anchored at alternate buttresses so that two complete horizontal loops are achieved by three consecutive horizontal tendons.

A. Description of Containment (Cont'd)

Prestressing of the hemispherical dome is achieved by a two-way pattern of tendons, which are in extension of the continuous vertical tendons and are anchored at the base slab. They are arranged to produce two families of tendons mutually intersecting each other at 90° on the horizontal projected plane. Hoop tendons extend into the hemispherical region to provide a two-way pattern up to the 90° solid angle of the dome.

A welded steel liner plate covers the entire inside surface of the containment (excluding penetrations) to satisfy the leaktight criteria. The liner is typically 1/4 inch thick and is thickened locally around penetration sleeves, large brackets, and attachments to the basemat and shell wall. The stability of the liner plate, including the thickened plate, is controlled by anchoring it to the concrete structure. The shell wall and dome liner plate system is also used as a form for construction.

A circular equipment hatch and two personnel airlock assemblies (100' and 140' elevations) penetrate the concrete cylinder walls. Penetration assemblies consist of steel sleeves or nozzles, reinforcing plates and anchors. They are anchored to the concrete walls and are welded to the steel liner. Hatch and airlock doors are provided with double-gasketed flanges with provisions for leak testing the flange-gasket combinations.

The 100' elevation personnel airlock is for the emergency access. Each personnel airlock has a door at each end and is an ASME Code stamped pressure vessel. A quick-acting equalizing valve connects the personnel airlock with the interior or exterior of the containment to equalize pressure in the two systems.

A. Description of Containment (Cont'd)

During plant operation, the two doors of each personnel air lock are interlocked to prevent both being opened simultaneously. Remote indicating lights and annunciators in the control room indicate the operational status of the doors. Provision is made to bypass the interlock system during plant cold shutdown.

Single barrier piping penetrations are provided for all piping passing through the containment walls. The closure for process piping to the liner plate is accomplished with a special flued head welded into the piping system and to the penetration sleeve which is in turn, welded to a reinforced section of the liner plate. In the case of piping carrying hot fluid, the pipe is insulated to prevent excessive concrete temperatures and to prevent excessive heat loss from the fluid. Closures to these penetration assemblies are provided by the piping systems that are served by the penetrations.

Electrical penetration assemblies provide means for carrying one or more electric circuits through a single aperture (nozzle) in the containment pressure barrier while maintaining the integrity of the pressure barrier.

Medium voltage power penetrations are configured in the form of tubular canisters slightly shorter than the containment structure nozzle into which it will be installed. The penetration assemblies are installed in 24-inch diameter nozzles. The canister is used as a pressure chamber to monitor penetration leakage rate by pressurizing the interior space with nitrogen and measuring the leak rate with a pressure gauge. The medium voltage power penetration is flange-mounted to the outside containment wall with nuts, bolts, washers, and lock-washers. The aperture seal is formed between the header plate and the flange with two concentric Viton O-rings.

A. Description of Containment (Cont'd)

The low voltage power, control and instrumentation penetrations are also flange-mounted to the outside containment wall in the manner described for the medium voltage power penetrations. Each penetration in this category has a stainless steel header plate at the outside containment end. Stainless steel feed-through sub-assemblies, containing electrical conductors, pass through the header plate and are secured and sealed with special stainless steel compression fittings. The interstices between the seals and feed-through sub-assemblies provide a pressure chamber which is used to monitor the leakage rate.

A fuel transfer tube penetration is provided for refueling. An inner pipe acts as the refueling tube with an outer pipe as the housing. The tube is fitted with a double-gasketed blind flange in the refueling canal and a standard gate valve in the spent fuel pool. This arrangement prevents leakage through the refueling tube. Outer sleeves permit the transfer tube to penetrate the refueling canal wall, the containment shell, and the exterior wall of the fuel handling building, while maintaining a pressure-tight boundary at each wall. The sleeves are anchored into each wall respectively and welded to each wall's liner plate. The housing is supported by the sleeves in the vertical and horizontal directions. Bellows at both the interior and exterior faces of the containment shell and of the fuel handling building permit thermal expansion of the transfer tube and of the housing. The same expansion bellows permit differential movement between structures.

The structural acceptance criteria complies with ASME Section III, Division 2, Article CC-3300. The fundamental acceptance criteria for the complete containment is successful completion of the structural integrity test with measured responses within the limits predicted by analyses.

A. Description of Containment (Cont'd)

Prediction of limits are based on test load combinations and code values for stress, strain, or gross deformation for the range of material properties and construction tolerances specified.

The structural integrity test is planned to yield information on both the overall response of the containment and the response of localized areas, such as major penetrations or buttresses, which are important to its design functions.

The design and analysis methods, as well as the type of construction and construction materials, are chosen to allow assessment of the structure's capability throughout its service life. Additionally, surveillance testing provides further assurances of the structure's continuing ability to meet its design functions.

B. Description of Instrumentation

A "state-of-the-art" ILRT instrumentation package was utilized to allow leak rate determination by the "Absolute Method". The primary measurement variables include containment pressure, dewpoint temperature and drybulb temperature as a function of time. Ancillary measurements include outside ambient temperature and barometric pressure. During the supplemental CLRT, containment verification (fixed-orifice) flow is also measured. Instrument readings were output at 15 minute intervals via a data acquisition system and line printer. The measurement system is shown in Figure 8. The mass of air (Q) is calculated by the Perfect Gas Law as follows:

$$Q = \frac{P_a V}{RT} = \frac{(P_t - P_{wv})\ V}{RT}$$

where: P_a = air partial pressure

V = free volume

R = gas constant

T = temperature

P_t = total pressure, psia

P_{wv} = water vapor pressure, psia

1. Temperature Instrumentation

Twenty-four (24) precision platinum Resistance Temperature Detectors (RTD's) were located throughout containment to allow measurement of the volumetrically weighted average drybulb temperature. The specified accuracy of the RTD's is ±0.1°F (40°F to 120°F range). The specified repeatability for each sensor is 0.025% of temperature or 0.05°C, whichever is greater.

B. Description of Instrumentation (Cont'd)

2. Dewpoint Instrumentation

Six (6) chilled-mirror Dewcells were located throughout the containment to allow measurement of volumetrically weighted dewpoint temperatures. The specified accuracy of each of the sensors is ± 0.3°C (±0.54°F), nominal over a range of -50°C to +100°C (-58°F to 212°F).

3. Pressure Instrumentation

Two (2) precision fused quartz bourdon tube pressure indicators (0-100 psia) were provided for the determination of containment absolute pressure. One pressure indicator was utilized as a primary while the second indicator was available as a backup. The specified accuracy of the indicators is ± 0.010% of reading ± 0.002% full scale or ± 0.00095 psia. The repeatability of the indicator is ± 0.0005% full scale.

4. Flow Instrumentation

Two (2) thermal mass flowmeters with a range of 0 to 10scfm were utilized during the supplemental CLRT for verification flow. The specified accuracy of the instrument is ± 1.0% full scale.

5. Ancillary Instrumentation

The outside ambient temperature and barometric pressure as well as wind speed and wind direction were measured utilizing the site meteorological tower and portable instrumentation.

C. Description of the Computer Program

The ILRT computer program is an APS-specified vendor-supplied program which performs the leak rate calculation utilizing a mini-computer (LSI 11/23). The computer is connected via a data link to the Data Acquisition System (DAS). The drybulb temperature, dewpoint temperature and absolute pressure data that are scanned by the DAS are fed to the computer for storage and printing. The ILRT computer system consists of the following:

- Volumetrics A-100 DAS
- DEC VT55 FE graphics terminal with hard copy unit
- LSI 11/23 ILRT computer system with dual double-density disk drives
- Parallel line printer, Data Royal 5000

After every scan by the DAS, the computer will print a "Raw Data Summary Report" (RDSR). The computer stores the data and, on demand, prints the "ILRT Program Report" (PR). From this report, temperature stabilization can be calculated from average temperature. The ILRT computer uses the Total-Time or Mass-Plot analysis technique to calculate the measured leak rate, calculated leak rate, and 95% upper confidence limit leak rate. The 95% upper confidence limit leak rate is used to determine if the test has met the acceptance criteria. During the verification test or CLRT, the computer will calculate the composite leak rate (L_c). To aid the Test Director in data analysis, plots of the data are made. The RDSR, PR and plots are contained in Appendix A. The ILRT computer hardware consists of the following:

- DEC LSI 11/23 processor with KEV 11 option
- 128K bytes of memory
- two double-density disk drives (RX02 format)
- two serial line interfaces
  - one for console device
  - one for serial link to DAS

C. Description of the Computer Program (Cont'd)

- DEC VT55-FE graphics terminal with hard copy unit
- TCU-50D timing control unit
- Parallel line printer

The system software consists of an operating system and an application package. The operating system is supplied by DEC as the RT-11 version 4.0 Foreground/Background monitor with the appropriate RT-11 version 4.0 device handlers.

The applications package consists of the following programs (not including special maintenance and editing programs):

- LOOK
- SCAN
- EXAM
- CONWEI
- CALPRE
- CALC
- RELHUM
- INERR
- PLOT
- INLEAK

Program LOOK will read data from the A-100 DAS (Data Acquisition System). These data are displayed on the console device. The data output from the DAS are in the same form as is output during the ILRT (i.e., 24 RTD temperatures, 6 dewpoint temperatures, 2 pressure readings, time and date). This program is used during the initial phases of the equipment set-up. The program is a never-ending loop and requires operator intervention to exit.

C. Description of the Computer Program (Cont'd)

Program SCAN is designed to read data from the A-100 DAS and re-format the data into a form more digestable to the other programs in the application package. The program will run continuously until a total of 257 data scans have been received or halted by operator intervention. This program will also run concurrently with the other programs in the application package; it has priority in execution if a conflict arises. The operation of the program is transparent to the user.

Program EXAM is designed to display the contents of the raw data files acquired by the program SCAN. This program will inspect the data files to determine if the raw data file needs editing before being utilized in the calculation sequence.

Program CONWEI is used to create or modify the containment weighting factors of the sensors used in the calculation program. The containment is divided into various sub-volumes. The sub-volume is represented by RTD's and Dewcells. Their readings are proportionally applied to the total volume.

Program CALPRE is designed to compute the calibration constants for pressure gauges. The program requests the true pressure and gauge readings for both pressure gauges, then derives the multiplication factor and correction constant for each gauge.

Program CALC is the main application module in the applications package. This program takes the pre-formatted data from the raw data files and performs various calculations with it to produce the various parameters required in the final report of leak rate. The results of these calculations are stored in two data files for use in the plot routines.

C. Description of Computer Program (Cont'd)

Upon execution, the program CALC reads the scan data files, containment weighting factors and the pressure gauge calibration constants (see Appendix A-General). The RTD and Dewcell temperatures are then multiplied by their corresponding weighting factors and summed. The program checks each sensor reading to insure that it is within the allowable deviation for that set of readings. The elapsed time from "time zero" is calculated and a true pressure is determined from the gauge readings and calibration constants. The pressure is then corrected for the effects of the water vapor pressure. The weighted average containment temperature, average weighted Dewcell temperature and containment pressure are used to compute the measured and calculated leak rate for the Point-to-Point, Total-Time and Mass-Plot methods.

From these values, a regression line is calculated by the least-squares fit method to compute a calculated leak rate for each of the methods. The upper confidence limit is calculated with the "Students T" analysis of n-2 degrees of freedom where n is the number of data samples utilized at each time n.

Program RELHUM is designed to read the average containment dry-bulb and dewpoint temperatures and compute a value of the relative humidity in the containment.

Program INERR is designed to compute the instrument error as a function of average containment temperature, number of RTD sensors, average corrected containment pressure, number of Dewcell sensors, elapsed time and the accuracy of the various sensors used.

Program PLOT is designed to accept computed data from the programs: CALC, RELHUM, INERR, and display the results on the DEC VT55-FE graphics terminal.

C. Description of the Computer Program (Cont'd)

Program INLEAK is designed to calculate the value of the installed leak for the CLRT as measured by ILRT system. The program requires the operator to enter the various leak rate parameters.

This program interacts with the user to convert the leak rates obtained in weight percent per day to standard cubic feet per minute. The conversion is obtained by calculating the initial containment mass and applying the measured leak rate to this mass. The program also calculates the installed leak.

D. Error Analysis

The instrument system error analysis is based on the Instrument Selection Guide (ISG) formula ANSI/ANS 56.8-1981 "Containment System Leakage Testing Requirements". The formula is:

$$ISG = \pm \frac{2400}{t}\left[2\left(\frac{ep}{p}\right)^2 + 2\left(\frac{epv}{p}\right)^2 + 2\left(\frac{et}{T}\right)^2\right]^{\frac{1}{2}} \quad \%/day$$

where:

ep = absolute pressure measurement repeatability error divided by the square root of the number of sensors.
= $(0.002\%)\ (100\ psia)/(1)^{\frac{1}{2}}$
= 0.002 psia

epv = vapor pressure measurement accuracy error divided by the square root of the number of sensors.
= $(0.54°F)\ (0.0124\ psia/°F)*/(6)^{\frac{1}{2}}$
= 0.00273 psia
* From steam tables at dewpoint temperature range 69-71°F

et = drybulb temperature measurement repeatability error divided by the square root of the number of sensors.
= $(0.1°F)/(24)^{\frac{1}{2}} = 0.0204°F$

P = Test pressure
= 64.2 psia

T = Test temperature (nominal)
= 540° R

t = Test duration in hours
= 24 hours

Therefore, the ISG is:

$$ISG = \frac{2400}{24}\left[2\left(\frac{0.002}{64.2}\right)^2 + 2\left(\frac{0.00273}{64.2}\right)^2 + 2\left(\frac{0.0204}{540}\right)^2\right]^{\frac{1}{2}} \quad \%/day$$

ISG = ± 0.009% per day for 24 hour ILRT

Additional error calculations are discussed in Section III.C.

E. Description of Tests

The containment was made ready for the ILRT with final inspection, closure and exclusion areas established by 0700 hours on 05-25-88. Prior to this, various tasks were completed such as instrument sensor installation, in-situ testing, temperature survey, Type B and C testing, valve line-ups, etc. Various problems were encountered and resolved during this period. These problems primarily concerned the connecting link (ribbon cable) between the A-100 Data Acquisition System (DAS) and the PDP 11/23 computer. The details concerning these items can be found in surveillance test procedure 73ST-9CL02 (Rev. 3), Integrated Leak Rate Test and/or the corresponding Test Log on file at PVNGS. Dewcell number 3 (located at the 178' elevation) and RTD number 16 (located at the 153' elevation) exhibited erratic behavior during this period and were to be closely observed for possible future deletion if the condition continued. Additionally, containment cleanup and decontamination directly impacted actual pressurization since these evolutions prevented the closure of the equipment hatch/airlocks thus preventing the use of containment ventilation systems for temperature stabilization. As a result, the containment atmosphere just prior to pressurization was non-adiabatic with a base to dome temperature differential approaching 30°F. Consequently, the concern existed that a short duration ILRT was questionable and a 24 hour test may have to be performed.

Six (6) portable circulating fans were installed in containment to prevent stratification. These fans each utilized 1.5 HP motors to minimize heat input to containment atmosphere. A pneumatic test (nitrogen) was satisfactorily performed prior to ILRT start on the steam generators (secondary-side) up to the MSIVs at approximately 70 psig to identify and correct any resultant leakage detected. This pressure was then reduced to approximately 5-10 psig to assure no potential adverse effects on the ILRT test results. Temporary pressure gauges (located on the main steam lines external to containment) were in-place to monitor secondary-side pressure.

E. Description of Tests (Cont'd)

The RCS was vented to containment atmosphere with shutdown cooling (penetrations 26 and 27) in-service. Both as-found and as-left Type "C" test minimum path leakages for these two (2) penentrations were zero. Just prior to containment pressurization, an additional test was performed on the containment personnel lock (140' elevation) and the emergency lock (100' elevation) seals to reverify their integrity. Both locks tested satisfactorily with no measurable seal leakage. All non-essential loads in containment were de-energized.

At 0800 hours on 05-25-88, pressurization of the containment commenced with all eight (8) mobile air compressors in-service having a total capacity of 10,200 cfm. The compressors were oil-free, diesel-driven, rotary screw-type units. These units were connected to the containment as shown in Figures 9, 10 and 11. An average rate of approximately 3.3 psi/hr was achieved with an average air inlet temperature to containment of approximately 65°F to 75°F maintained by adjusting cooling water flow to the after-cooler and chiller-dryer units. Dewcell ME-03 was deleted from the computer program during this period since further troubleshooting revealed an "open" in the cable and containment entry would be required for repair. Sensor volume fraction was set to zero with its previous value distributed amongst the remaining five (5) dewcells. Additionally, several problems were also encountered concerning loss of compressors but were ultimately resolved by repair and/or replacement. The leak survey team was deployed at pressurization start with no significant leakage observed.

Pressurization to the containment was secured at 0115 hours on 05-26-88 at 50.5 psig. A 1.0 psig "buffer" was intentionally installed to assure pressure did not fall below Pa (49.5 psig) due to temperature stabilization and/or potential leakage. At this time, the pressurization line was depressurized and vented to atmosphere. The leak survey team remained active and preparations were in progress to begin the stabilization period.

E. Description of Tests (Cont'd)

Stabilization commenced at 0145 hours with temperature criteria satisfied at 0545 hours. However, containment mass remained unstable due to the high base to dome temperature differential (approximately 23°F) which, although improved, was a result of initial conditions. A thorough analysis of all instrumentation (sensor by sensor and elevation by elevation) was performed to assure this was not a major contributor. This analysis confirmed that mass remained unstable. The stabilization period was extended for a total duration of nine (9) hours and ended at 1045 hours.

The ILRT officially commenced immediately after stabilization or 1045 hours. All six (6) portable circulating fans were verified to be operating by measuring amperage at the electrical panels external to containment to assure this had no adverse effect on mass. The temporary pressure gauges located on the main steam lines to monitor steam generator secondary-side pressure were constantly monitored by the leak survey team and indicated no increase in pressure. All instrumentation was again analyzed in detail due to the leakage rate "coming in" very slowly. RTD-16 was deleted from the computer program during this period due to erractic behavior and exceeding its error limits. Sensor volume fraction was set to zero and its previous value divided amongst the remaining three (3) sensors at the 153' elevation. It was becoming more apparent during this period (approximately 8 hours) that a short duration test may not be possible. Pressurizer level decreased from approximately 14% to approximately 6% between 1900 hours and 2200 hours (approximately 850 gallons). This was attributed to a leak external to containment which was isolated and pressurizer level was returned to approximately 13.5%. No further changes occurred with pressurizer level which remained constant throughout the test period. Although the Total-Time UCL leakage rate was acceptable at 0300 hours on 05-27-88, the decision was made to perform a twenty-four (24) hour test. At 1045 hours, the ILRT was successfully completed for a total duration of twenty-four (24) hours. The results yielded a calculated Total-Time leak rate of 0.0463% per day by weight with a 95% upper confidence limit of 0.0599% per day by weight.

E. Description of Tests (Cont'd)

The CLRT stabilization period commenced immediately following the successful completion of the ILRT at 1045 hours. A fixed orifice "leak" for verification of the ILRT data of approximately 7.6 scfm (corrected for actual pressure) was imposed. This flow was approximately equivalent to 0.1% per day by weight (La) at actual test pressure conditions. The CLRT discharge flow to the Auxiliary Building was checked by installation of a CAM (Constant Air Monitor). At approximately 1145 hours it was observed that the discharge air hose was inadvertently restricted (pinched) by a floor drain cover plate with a corresponding reduction in flow. As a result, the stabilization period was reinitiated with the actual CLRT commencing at 1245 hours at 7.6 scfm following a satisfactory stabilization period. Again, leak rate data was "coming in" very slowly. At 2330 hours the CLRT was satisfactorily completed with a total duration of ten and three-quarter (10.75) hours excluding the time for stabilization. The results yielded a calculated Total-Time leak rate of 0.132% per day by weight and 0.141% per day by weight at the 95% upper confidence limit. It should be noted that no data sets or individual data points were rejected for either the ILRT or CLRT.

Exclusion area control, Security and leak survey team personnel were released and upon notification from the Effluents Group that the containment atmospheric sample was satisfactory, depressurization commenced at 0012 hours on 05-28-88. A CAM was connected to the exhaust line to atmosphere and a release permit was in effect. Depressuriation was maintained at a rate less than 10.0 psig per hour. At 1600 hours, 0 psig containment pressure was achieved followed by containment air sampling for entry and inspection. Due to a scheduled electrical outage and resultant loss of lighting in containment, entry was delayed

E. Description of Tests (Cont'd)

until 0100 hours on 05-29-88 from a personnel safety consideration. At this time, a containment inspection was performed and all sumps were verified to be dry with no abnormalities observed. System and component restoration commenced with the ILRT Test Log closed at 1000 hours on 06-10-88.

IV. RESULTS AND VERIFICATION

The Type A Integrated Leak Rate Test was conducted for a period of twenty-four (24) hours starting at 63.984 psia (49.780 psig) with a total of ninety-seven (97) samples or data sets taken and ending at 63.793 psia (49.589 psig). The results of a computed least-squares statistical fit of all data revealed a fitted Total-Time Leak Rate of 0.0463% per day with a 95% upper confidence limit of 0.0599% per day.

Following satisfactory completion of the ILRT at P_a, a ten and three quarter (10.75) hour verification flow or CLRT was performed with a total of forty-four (44) samples or data sets taken. This test was conducted by super imposing a known fixed-orifice leak approximately equivalent to L_a (0.1% per day) of 7.6 scfm. The calculated Total-Time Leak Rate for the CLRT was 0.132% per day with a 95% upper confidence limit of 0.141% per day.

No data samples were rejected in computing the results for either the ILRT or the CLRT and all data were recorded at equal fifteen (15) minute intervals.

V. CONCLUSIONS

The Integrated Leak Rate Test at P_a (49.5 psig) provided acceptable results as evidenced by the computer printouts in Appendix A of this report. The computed leak rate is well within the specified limit. The acceptance criteria for the ILRT is as follows.

1 - The maximum allowable operational leak rate shall not exceed 75% of L_a (0.1% per day) at a pressure of not less than P_a (49.5 psig):

- 0.075% per day

2 - The accuracy of the ILRT is verified by a supplemental test (CLRT) where the difference between the containment leakage rate measured during the CLRT and the ILRT must be within 0.25 (L_a):

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

	Leak Rate (L_{am})	
	% per 24 hrs by weight	
ILRT	Fitted	95% UCL
° Total-Time Analysis	0.0463	0.0599
CLRT		
° Induced Flow	7.6 scfm (L_a or 0.1%)	
CLRT	% per 24 hrs by weight	
° Total-Time Analysis	0.132	0.141

V. CONCLUSIONS (Cont'd)

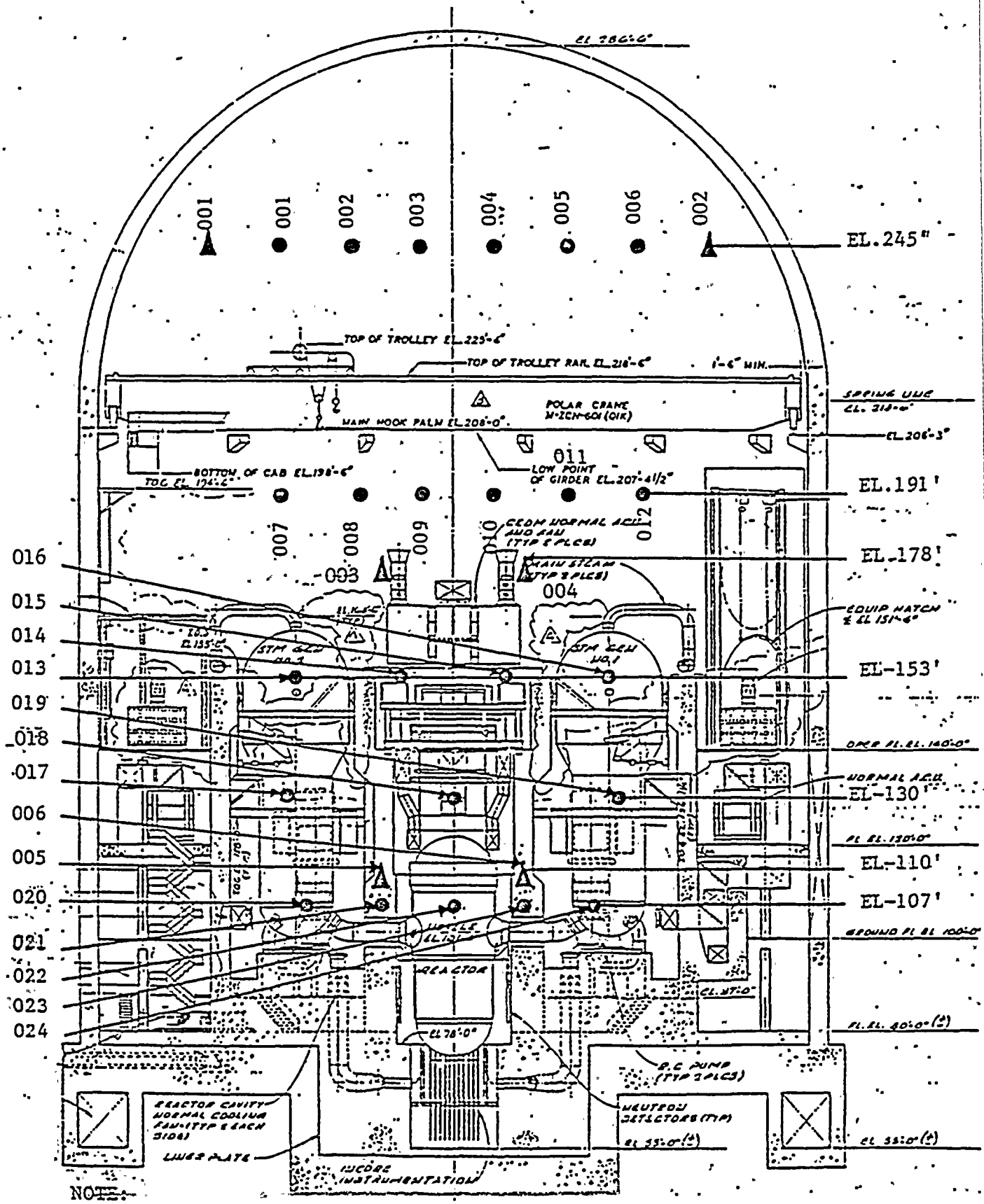
CLRT Limits	CLRT Limits % per 24 hrs by weight
Total-Time Fitted Analysis	
° Upper Limit	0.1713
° Lower Limit	0.1213
Total-Time UCL	
° Upper Limit	0.1849
° Lower Limit	0.1349

The computer generated reports based upon verified data substantiate for both the ILRT and CLRT that an acceptable test has been performed in accordance with 10CFR50, Appendix J, ANSI N45.4 (1972) and ANSI/ANS 56.8 (1981).

VI. FIGURES

Figure 1

RTD & ME LOCATION



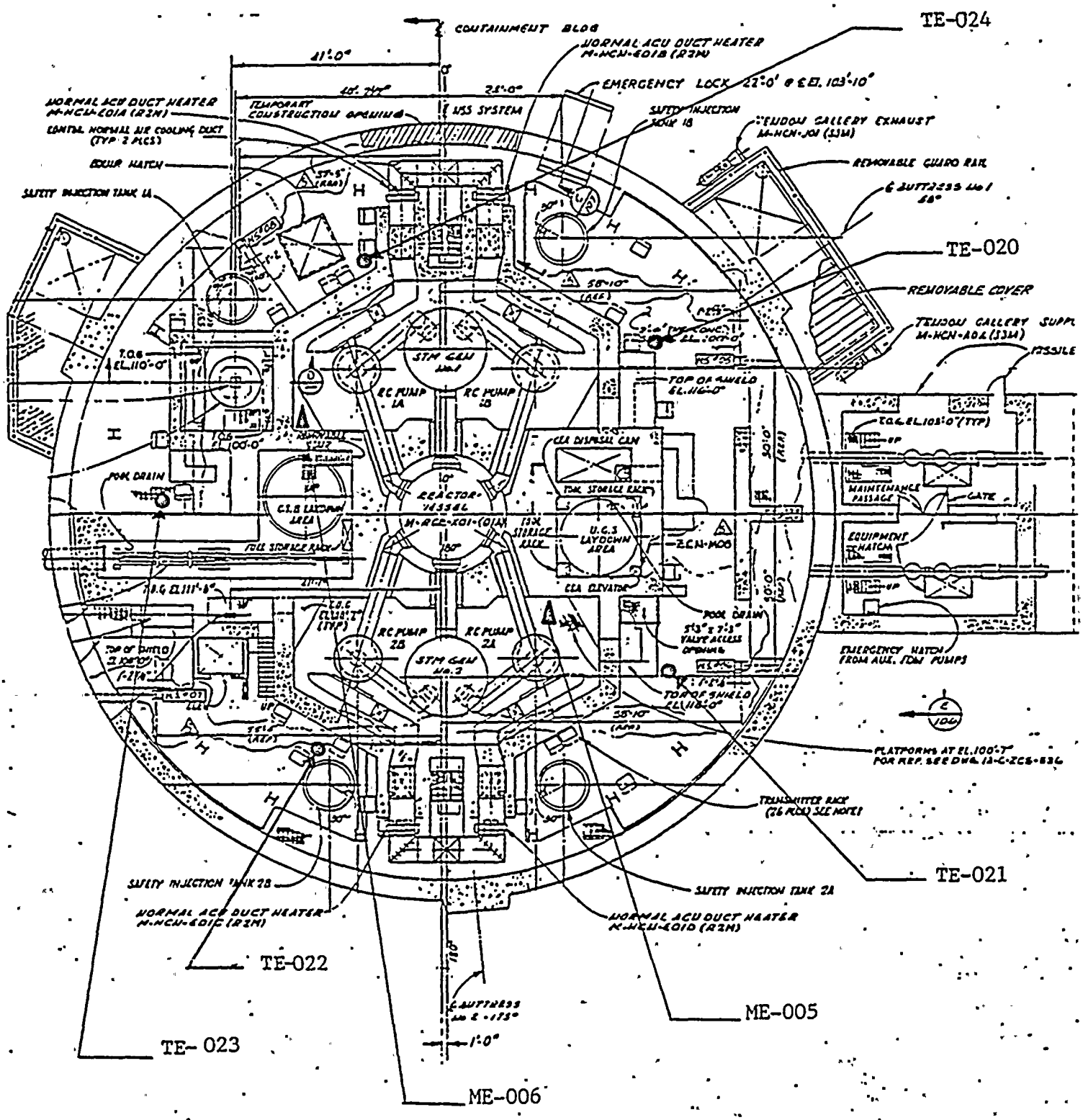
NOTE:-
RTD's 1-6 are elevated above the polar crane at approximately elevation 245' (suspended from containment spray headers)

⊙ TEMPERATURE ELEMENT (RTD)

▲ DEWCELL ELEMENT (ME)

Figure 2

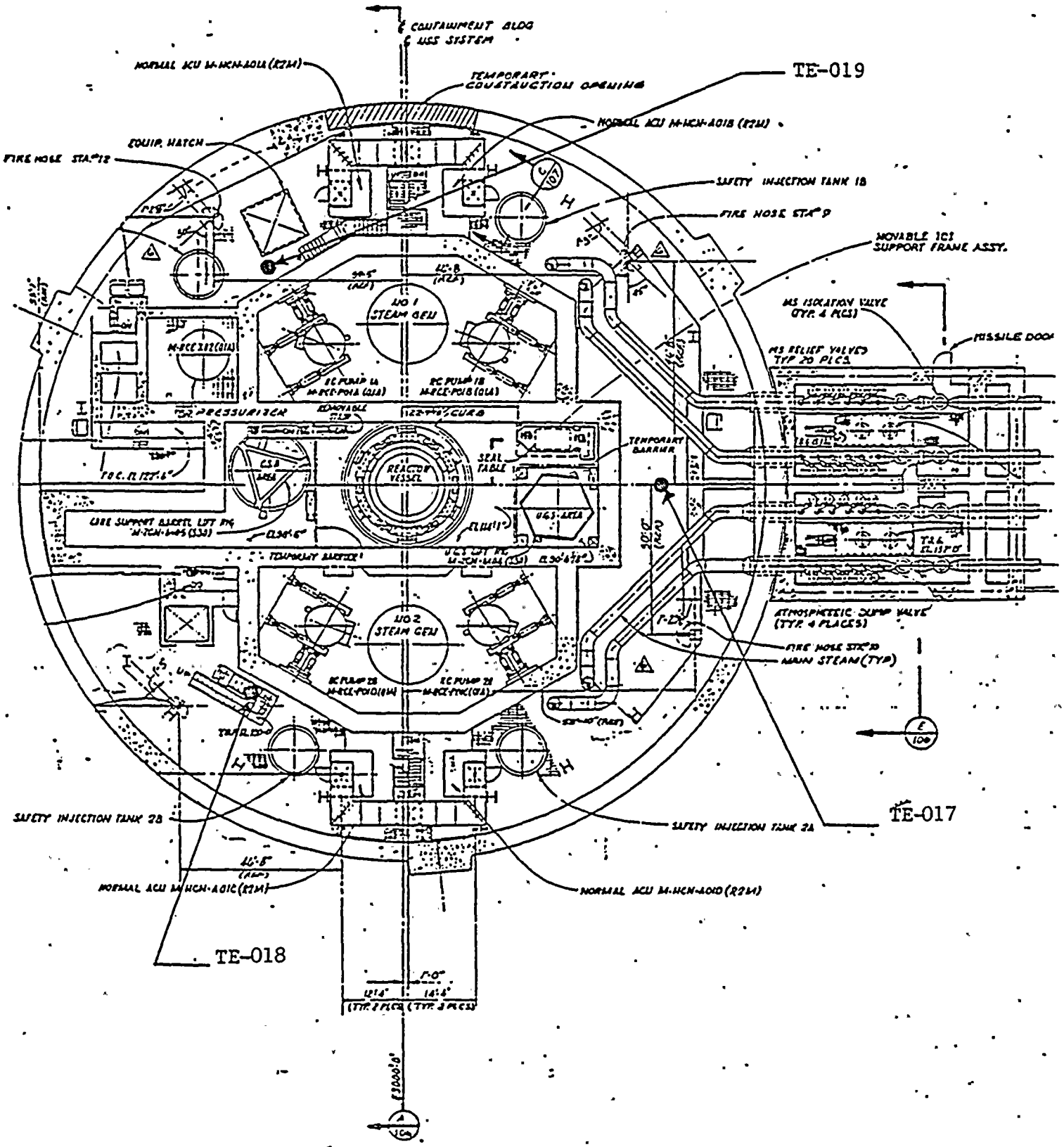
RTD & ME LOCATION



PLAN AT EL 100'-0"

TE's 020 through 024 are located at EL.107'
ME 005 and 006 are located at EL. 110'

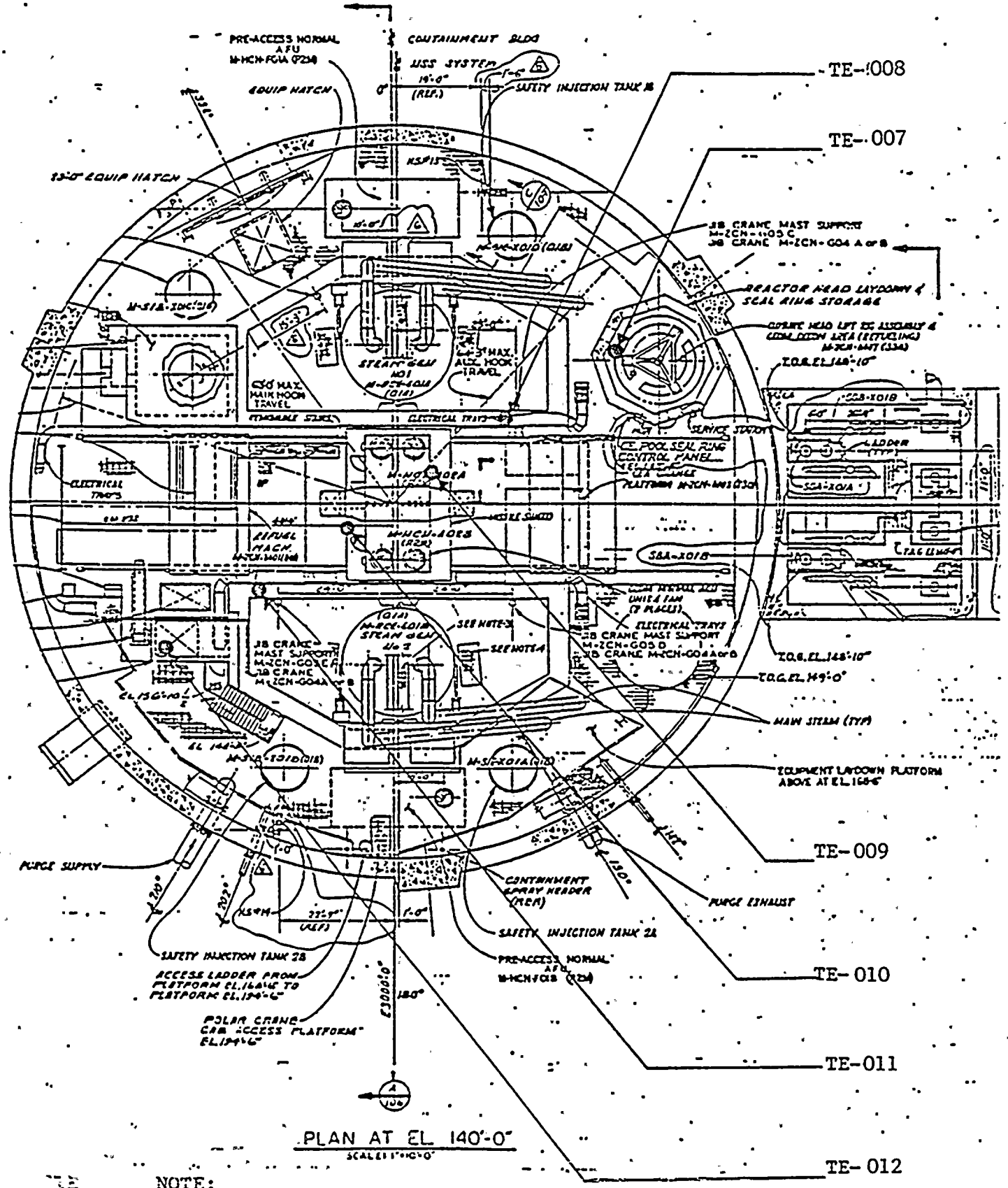
RTD & ME LOCATION



TE's 017 through 019 are located at EL.130'

Figure 4

RTD & ME LOCATION



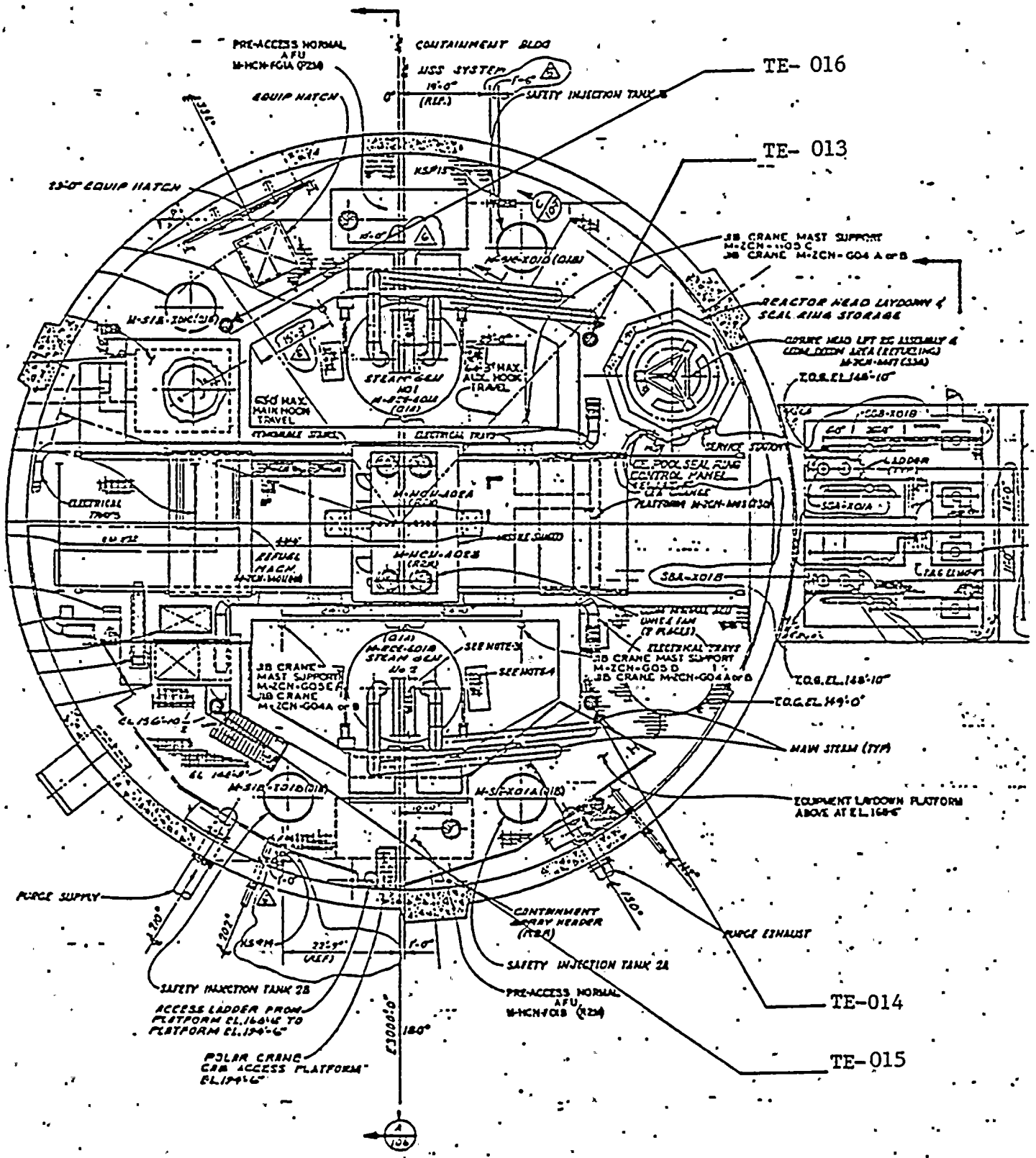
NOTE:

RTD's 7-12 are lowered from the crane to an elevation approximately 30' below the top of the crane rail.

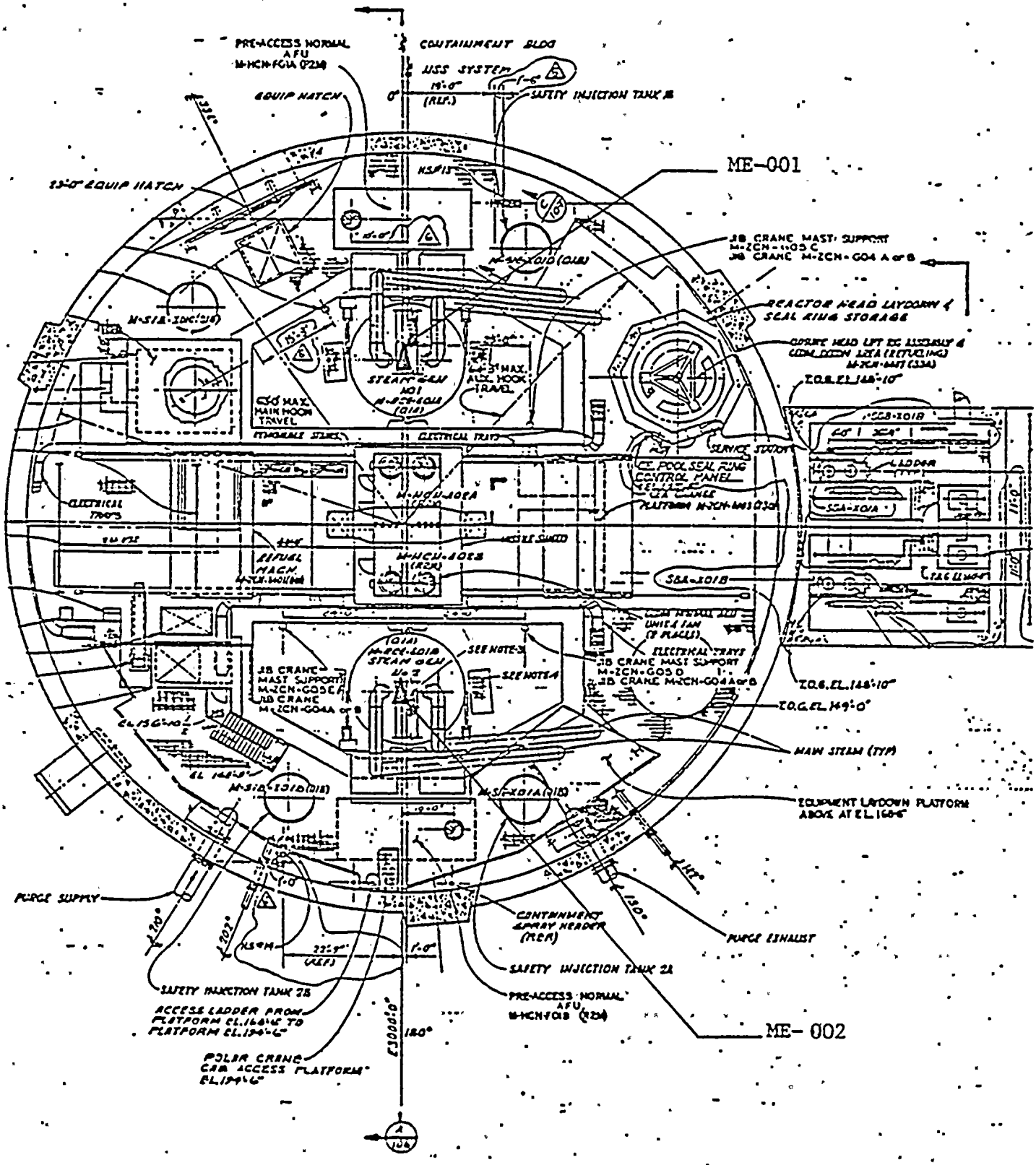
TE's 007 through 012 are located at EL.191'

Figure 5

RTD & ME LOCATION



TE's 013, 014, 015 and 016 are located at EL.153"



PLAN AT EL 140'-0"

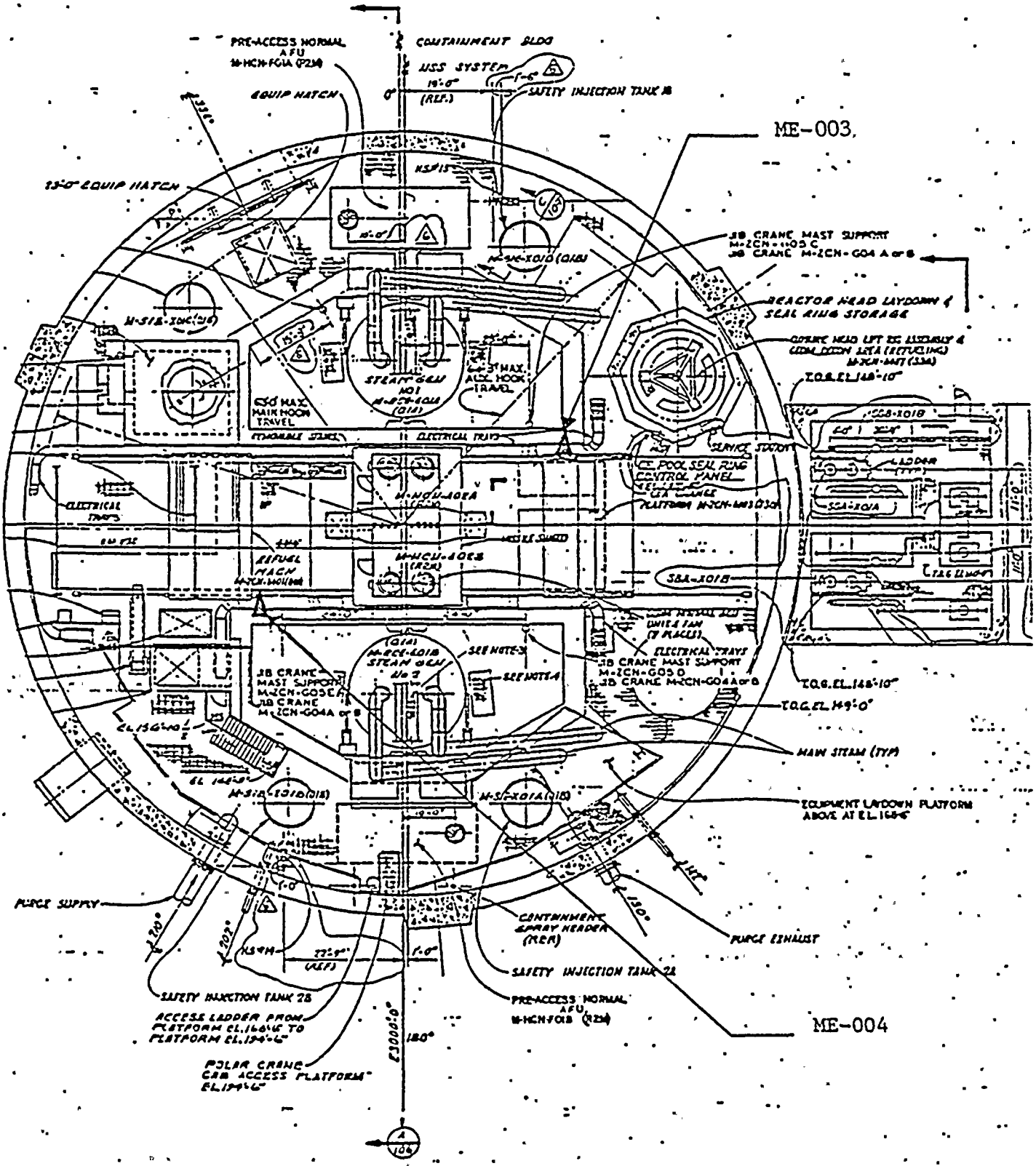
NOTE:

ME's 1 and 2 are elevated above the polar crane at approximately elevation 245' (suspended from containment spray headers)

ME's 001 and 002 are located at EL.245'

Figure 7

RTD & ME LOCATION



PLAN AT EL 140'-0"

NOTE:

ME's 3 and 4 are lowered from the crane to an elevation approximately 30' below the top of the crane rail.

ME's 003 and 004 are located at EL.178'

Figure 8

ILRT MEASUREMENT SYSTEM
SCHEMATIC

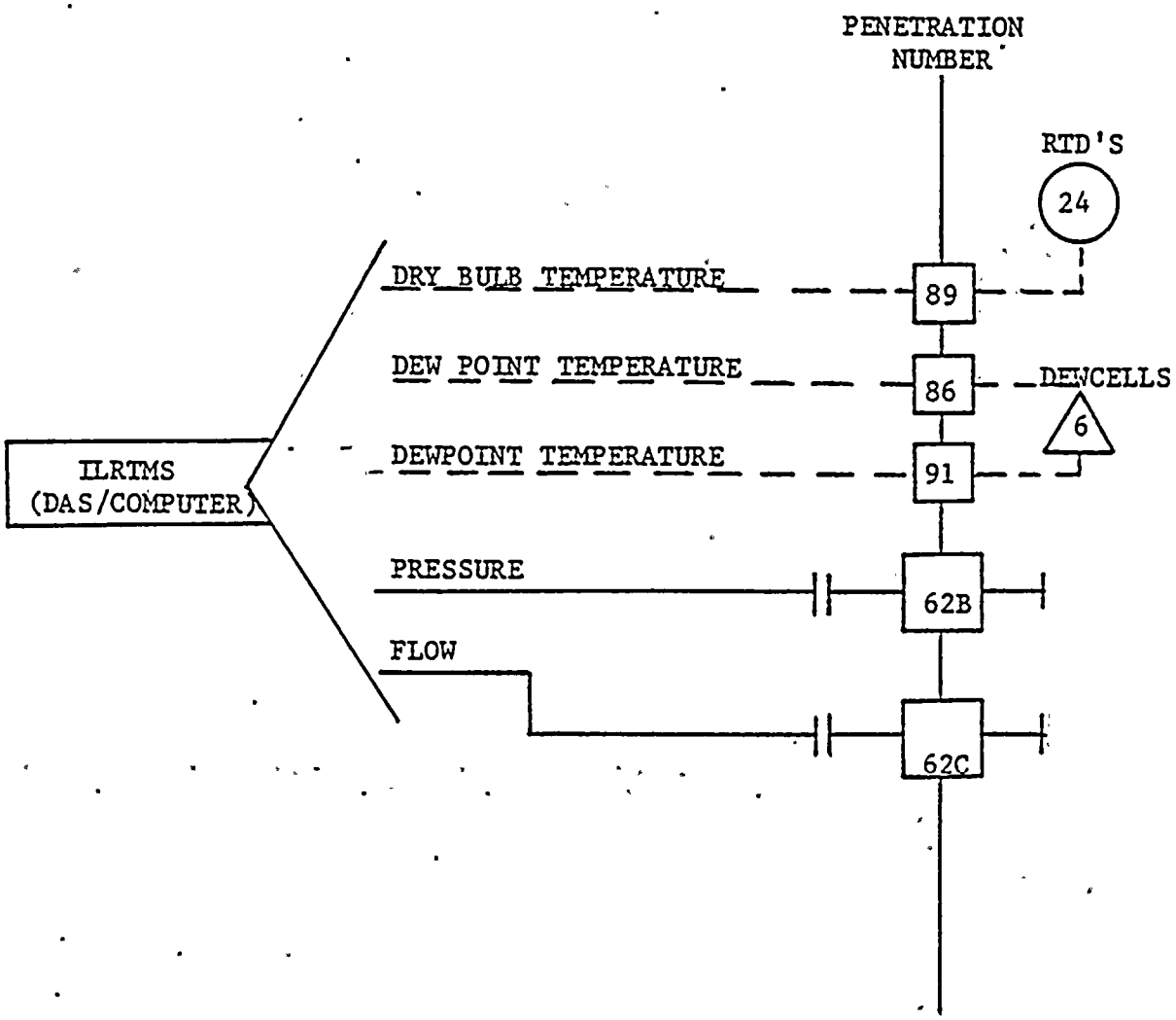


Figure 9

PRESSURIZATION SYSTEM

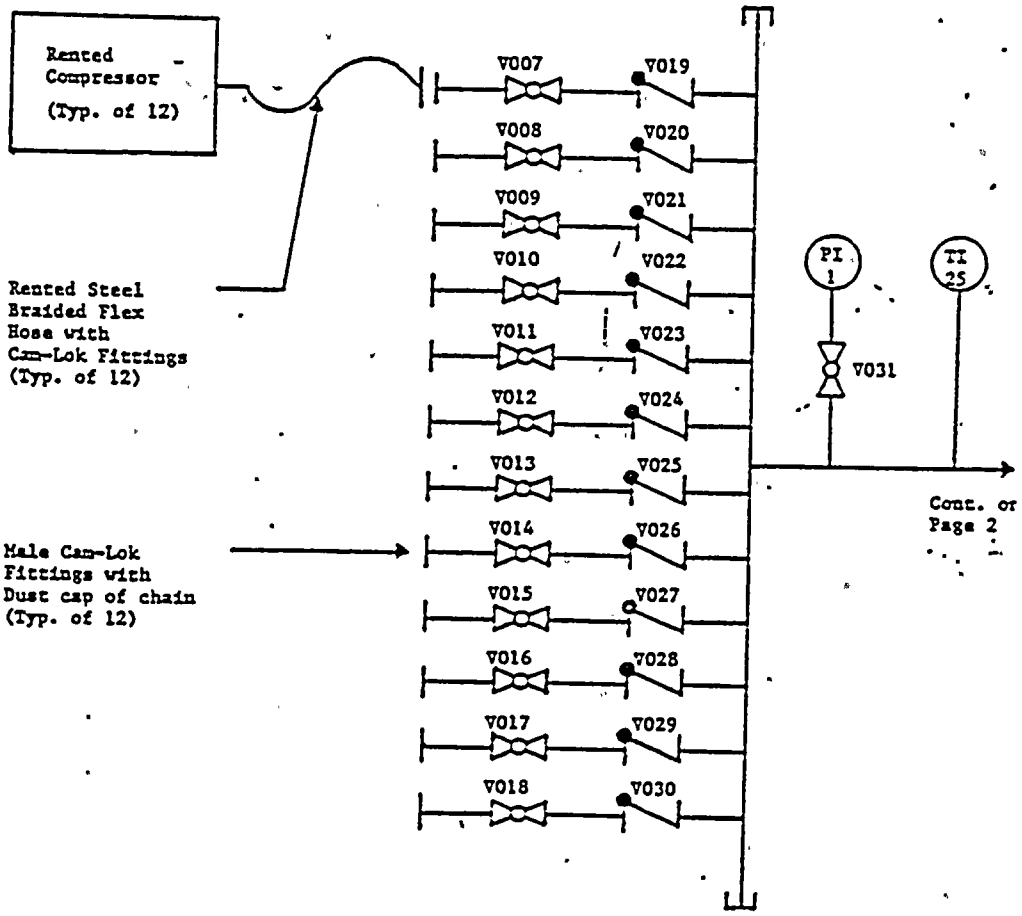


Figure 10

PRESSURIZATION SYSTEM

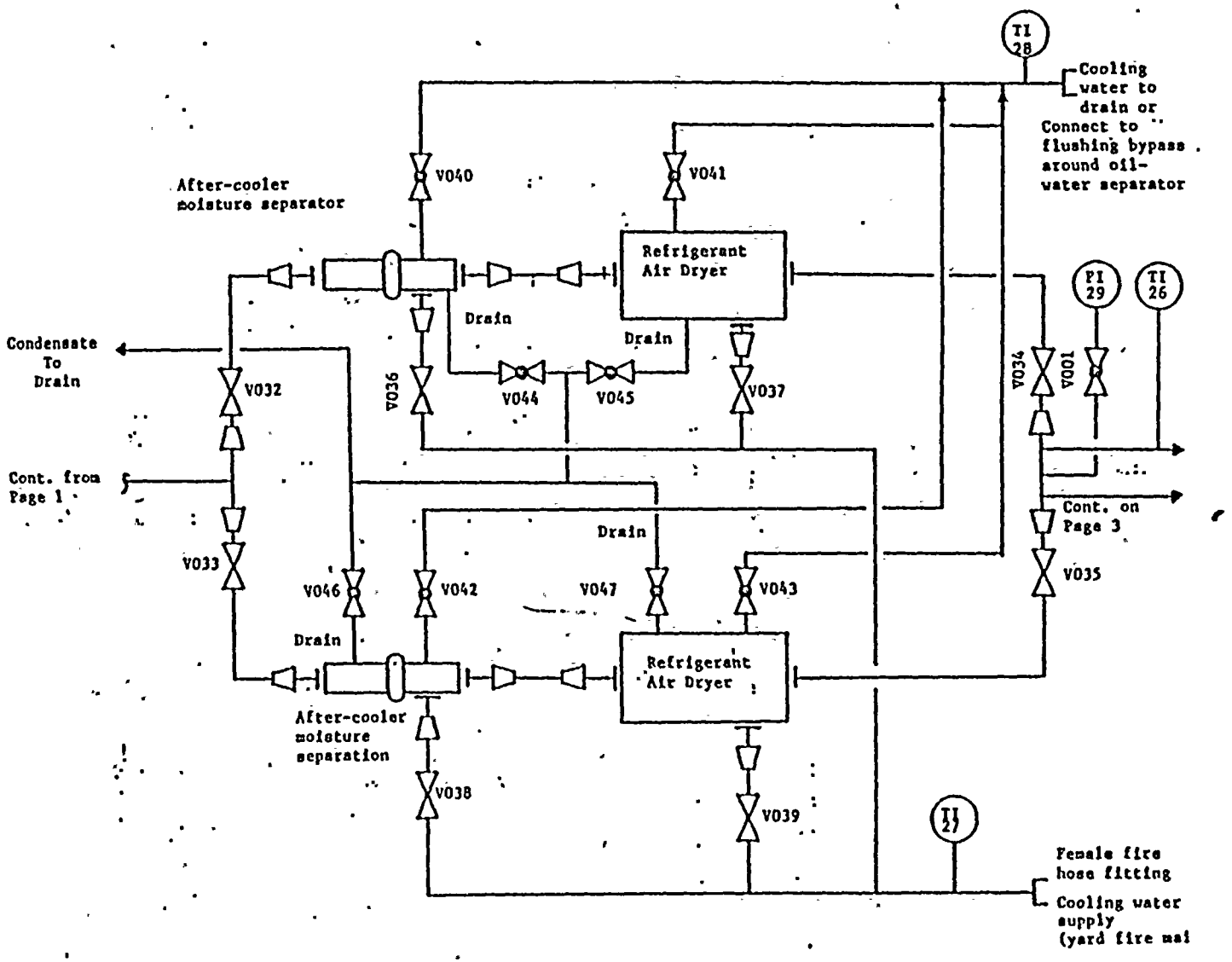
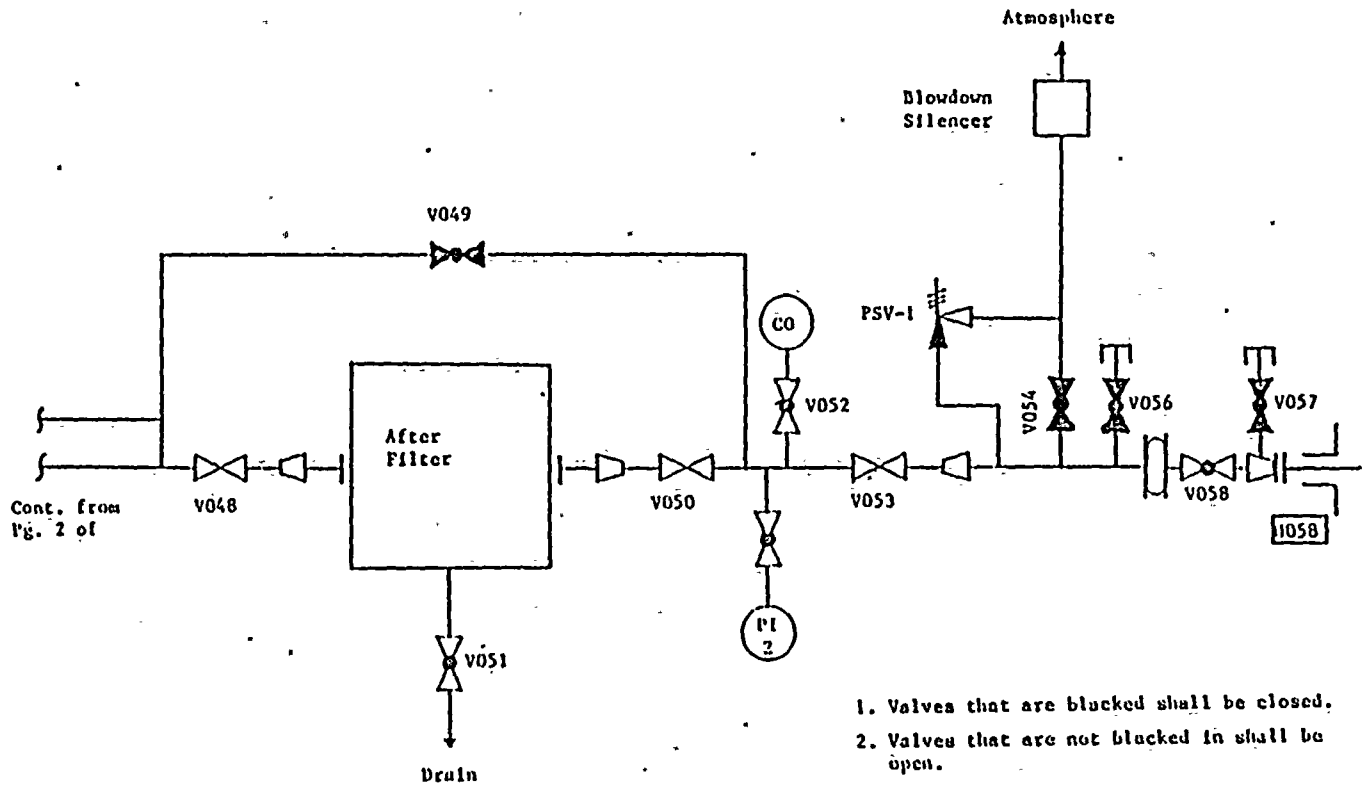


Figure 11

PRESSURIZATION SYSTEM



1. Valves that are blacked shall be closed.
2. Valves that are not blacked in shall be open.

VII. APPENDICES

APPENDIX A

COMPUTER - GENERATED REPORT

1.

STABILIZATION

ARIZONA PUBLIC SERVICE COMPANY
PALO VERDE NUCLEAR GENERATING STATION
ILRT PROGRAM REPORT

STARTING DAY - 147 STARTING TIME - 1:45: 0 STARTING SCAN - SD.104 ENDING SCAN - SD.140

SCAN NO.	ELAPSED TIME (HR)	AVERAGE TEMP. (F)	AVERAGE PRESSURE (PSIA)	POINT TO POINT MEASURED LEAK RATE	POINT TO POINT CALCULATED LEAK RATE	TOTAL TIME MEASURED LEAK RATE	TOTAL TIME CALCULATED LEAK RATE	TOTAL TIME UPPER CONFIDENCE	MASS PLOT MEASURED LEAK RATE	MASS PLOT CALCULATED LEAK RATE	MASS PLOT UPPER CONFIDENCE
				(WEIGHT PERCENT PER DAY)							
SD.104	0.00	89.95	64.458								
SD.105	0.25	89.47	64.402	-0.229E-02	-0.229E-02	-0.229E-02	-0.229E-02	0.000E+00	-0.220E-02	-0.220E-02	0.000E+00
SD.106	0.50	89.11	64.359	-0.291E+00	-0.291E+00	-0.146E+00	-0.146E+00	0.000E+00	-0.147E+00	-0.147E+00	0.000E+00
SD.107	0.75	88.81	64.324	0.150E+00	0.289E-01	-0.477E-01	-0.882E-01	0.228E+00	-0.477E-01	-0.704E-01	0.102E+01
SD.108	1.00	88.57	64.296	-0.159E+00	-0.798E-01	-0.755E-01	-0.861E-01	-0.133E-01	-0.758E-01	-0.740E-01	0.938E-01
SD.109	1.25	88.36	64.273	-0.378E+00	-0.260E+00	-0.136E+00	-0.121E+00	-0.740E-01	-0.136E+00	-0.136E+00	-0.201E-01
SD.110	1.50	88.17	64.251	-0.240E-01	-0.166E+00	-0.117E+00	-0.128E+00	-0.930E-01	-0.117E+00	-0.137E+00	-0.692E-01
SD.111	1.75	88.02	64.232	0.174E+00	-0.184E-01	-0.757E-01	-0.113E+00	-0.765E-01	-0.758E-01	-0.104E+00	-0.452E-01
SD.112	2.00	87.89	64.214	0.442E+00	0.185E+00	-0.112E-01	-0.756E-01	-0.309E-01	-0.111E-01	-0.453E-01	0.337E-01
SD.113	2.25	87.76	64.198	-0.412E-01	0.134E+00	-0.144E-01	-0.523E-01	-0.104E-01	-0.144E-01	-0.181E-01	0.490E-01
SD.114	2.50	87.67	64.184	0.469E+00	0.274E+00	0.340E-01	-0.196E-01	0.226E-01	0.340E-01	0.226E-01	0.912E-01
SD.115	2.75	87.55	64.171	-0.286E+00	0.132E+00	0.494E-02	-0.581E-02	0.320E-01	0.494E-02	0.310E-01	0.868E-01
SD.116	3.00	87.45	64.159	-0.343E-01	0.101E+00	0.162E-02	0.310E-02	0.373E-01	0.159E-02	0.333E-01	0.792E-01
SD.117	3.25	87.37	64.148	0.257E+00	0.157E+00	0.213E-01	0.149E-01	0.461E-01	0.212E-01	0.419E-01	0.814E-01
SD.118	3.50	87.29	64.137	0.160E+00	0.175E+00	0.312E-01	0.263E-01	0.551E-01	0.312E-01	0.505E-01	0.883E-01
SD.119	3.75	87.21	64.127	0.251E+00	0.210E+00	0.458E-01	0.386E-01	0.652E-01	0.458E-01	0.615E-01	0.934E-01
SD.120	4.00	87.15	64.116	0.300E+00	0.248E+00	0.617E-01	0.517E-01	0.766E-01	0.617E-01	0.740E-01	0.105E+00
SD.121	4.25	87.06	64.108	-0.490E+00	0.109E+00	0.293E-01	0.550E-01	0.789E-01	0.293E-01	0.715E-01	0.984E-01
SD.122	4.50	87.00	64.099	0.300E+00	0.156E+00	0.443E-01	0.606E-01	0.833E-01	0.444E-01	0.734E-01	0.973E-01
SD.123	4.75	86.95	64.091	0.422E+00	0.218E+00	0.642E-01	0.689E-01	0.903E-01	0.643E-01	0.813E-01	0.104E+00
SD.124	5.00	86.88	64.083	-0.263E-01	0.187E+00	0.597E-01	0.748E-01	0.953E-01	0.597E-01	0.845E-01	0.105E+00
SD.125	5.25	86.83	64.075	0.192E+00	0.199E+00	0.660E-01	0.807E-01	0.100E+00	0.660E-01	0.887E-01	0.108E+00
SD.126	5.50	86.77	64.067	0.178E+00	0.206E+00	0.711E-01	0.864E-01	0.105E+00	0.711E-01	0.932E-01	0.111E+00
SD.127	5.75	86.72	64.060	0.973E-01	0.199E+00	0.722E-01	0.913E-01	0.109E+00	0.721E-01	0.961E-01	0.112E+00
SD.128	6.00	86.68	64.053	0.927E-01	0.192E+00	0.730E-01	0.955E-01	0.113E+00	0.730E-01	0.987E-01	0.114E+00
SD.129	6.25	86.65	64.046	0.511E+00	0.249E+00	0.905E-01	0.102E+00	0.119E+00	0.905E-01	0.104E+00	0.119E+00
SD.130	6.50	86.60	64.039	0.145E+00	0.245E+00	0.926E-01	0.107E+00	0.124E+00	0.926E-01	0.109E+00	0.124E+00
SD.131	6.75	86.55	64.032	0.148E+00	0.242E+00	0.946E-01	0.112E+00	0.128E+00	0.946E-01	0.113E+00	0.127E+00
SD.132	7.00	86.52	64.026	0.307E+00	0.261E+00	0.102E+00	0.117E+00	0.133E+00	0.102E+00	0.118E+00	0.132E+00
SD.133	7.25	86.47	64.021	-0.104E+00	0.223E+00	0.951E-01	0.121E+00	0.136E+00	0.951E-01	0.120E+00	0.133E+00
SD.134	7.50	86.45	64.015	0.506E+00	0.267E+00	0.109E+00	0.126E+00	0.141E+00	0.109E+00	0.124E+00	0.137E+00
SD.135	7.75	86.39	64.011	-0.339E+00	0.202E+00	0.943E-01	0.128E+00	0.143E+00	0.943E-01	0.125E+00	0.137E+00
SD.136	8.00	86.35	64.005	0.156E+00	0.203E+00	0.963E-01	0.131E+00	0.145E+00	0.962E-01	0.126E+00	0.137E+00
SD.137	8.25	86.32	64.000	0.196E+00	0.208E+00	0.993E-01	0.133E+00	0.148E+00	0.993E-01	0.127E+00	0.138E+00
SD.138	8.50	86.28	63.995	0.343E-02	0.191E+00	0.965E-01	0.135E+00	0.150E+00	0.965E-01	0.127E+00	0.137E+00
SD.139	8.75	86.26	63.989	0.381E+00	0.217E+00	0.105E+00	0.137E+00	0.152E+00	0.105E+00	0.129E+00	0.138E+00
SD.140	9.00	86.22	63.984	-0.190E+00	0.180E+00	0.964E-01	0.138E+00	0.153E+00	0.964E-01	0.128E+00	0.137E+00

ARIZONA PUBLIC SERVICE COMPANY
PALO VERDE NUCLEAR GENERATING STATION
ILRT PROGRAM REPORT

STARTING DAY - 147 STARTING TIME - 1:45: 0 STARTING SCAN - SD.104 ENDING SCAN - SD.140

ILRT RESULTS AFTER 9.00 HRS.

POINT TO POINT	TOTAL TIME		MASS PLOT	
AVERAGE MEASURED LEAK RATES (WEIGHT PERCENT PER DAY)				
LEAK RATE	LEAK RATE	STD.DEV.	LEAK RATE	STD.DEV.
0.965E-01	0.340E-01	0.709E-01	0.340E-01	0.709E-01

CALCULATED LEAK RATES (WEIGHT PERCENT PER DAY)						
LEAK RATE	LEAK RATE	STD.DEV.	UPPER CON. LIMIT	LEAK RATE	STD.DEV.	UPPER CON.LIMIT
0.180E+00	0.138E+00	0.871E-02	0.153E+00	0.128E+00	0.536E-02	0.137E+00

ARIZONA PUBLIC SERVICE COMPANY
PALO VERDE NUCLEAR GENERATING STATION
RAW DATA SUMMARY REPORT

SCAN NO.	DATE	TIME	PRESS 1	PRESS 2	RTD #1	RTD #2	RTD #3	RTD #4	RTD #5	RTD #6	RTD #7	RTD #8	RTD #9
SD.104	147	1:45	63.593	63.678	98.400	99.180	99.380	98.660	99.180	99.700	95.910	95.560	96.200
SD.105	147	2: 0	63.537	63.623	97.560	98.260	98.490	97.770	98.200	98.780	95.230	94.890	95.560
SD.106	147	2:15	63.495	63.582	96.800	97.590	97.770	97.070	97.470	98.090	94.600	94.390	95.070
SD.107	147	2:30	63.460	63.548	96.230	97.000	97.180	96.450	96.920	97.470	94.250	93.990	94.650
SD.108	147	2:45	63.432	63.521	95.740	96.540	96.720	95.970	96.380	97.010	93.900	93.700	94.280
SD.109	147	3: 0	63.409	63.497	95.350	96.110	96.310	95.560	96.020	96.580	93.650	93.360	94.020
SD.110	147	3:15	63.387	63.476	95.000	95.770	95.960	95.190	95.650	96.250	93.360	93.100	93.700
SD.111	147	3:30	63.369	63.458	94.710	95.480	95.650	94.900	95.390	95.960	93.130	92.890	93.520
SD.112	147	3:45	63.351	63.441	94.460	95.240	95.380	94.630	95.160	95.710	92.940	92.710	93.290
SD.113	147	4: 0	63.335	63.425	94.230	95.010	95.150	94.390	94.950	95.480	92.770	92.490	93.090
SD.114	147	4:15	63.321	63.411	94.030	94.830	94.970	94.190	94.800	95.300	92.600	92.340	92.950
SD.115	147	4:30	63.308	63.398	93.840	94.630	94.780	94.020	94.580	95.120	92.390	92.170	92.740
SD.116	147	4:45	63.296	63.386	93.670	94.480	94.550	93.880	94.460	94.950	92.220	92.010	92.590
SD.117	147	5: 0	63.285	63.374	93.520	94.310	94.450	93.700	94.310	94.810	92.110	91.870	92.460
SD.118	147	5:15	63.274	63.363	93.380	94.160	94.290	93.580	94.190	94.660	91.980	91.700	92.360
SD.119	147	5:30	63.264	63.353	93.260	94.020	94.170	93.460	94.030	94.540	91.900	91.610	92.230
SD.120	147	5:45	63.254	63.343	93.150	93.910	94.030	93.350	93.940	94.430	91.730	91.530	92.110
SD.121	147	6: 0	63.246	63.334	93.010	93.790	93.930	93.260	93.840	94.340	91.580	91.380	91.980
SD.122	147	6:15	63.237	63.325	92.910	93.700	93.820	93.130	93.710	94.220	91.490	91.240	91.820
SD.123	147	6:30	63.229	63.317	92.800	93.590	93.730	93.040	93.610	94.100	91.380	91.120	91.760
SD.124	147	6:45	63.221	63.309	92.740	93.500	93.650	92.940	93.550	94.000	91.240	91.060	91.610
SD.125	147	7: 0	63.213	63.301	92.630	93.410	93.560	92.840	93.460	93.930	91.170	90.940	91.520
SD.126	147	7:15	63.205	63.294	92.550	93.320	93.490	92.770	93.380	93.850	91.040	90.820	91.430
SD.127	147	7:30	63.198	63.286	92.480	93.260	93.380	92.680	93.290	93.760	90.980	90.740	91.270
SD.128	147	7:45	63.191	63.280	92.420	93.170	93.320	92.600	93.240	93.700	90.910	90.650	91.240
SD.129	147	8: 0	63.184	63.273	92.360	93.130	93.270	92.550	93.180	93.650	90.800	90.570	91.170
SD.130	147	8:15	63.177	63.266	92.300	93.060	93.210	92.510	93.090	93.580	90.750	90.490	91.070
SD.131	147	8:30	63.170	63.259	92.250	93.000	93.150	92.430	93.030	93.520	90.600	90.400	91.000
SD.132	147	8:45	63.164	63.253	92.170	92.940	93.070	92.370	92.970	93.460	90.590	90.340	90.910
SD.133	147	9: 0	63.159	63.247	92.110	92.880	93.010	92.310	92.910	93.380	90.480	90.220	90.820
SD.134	147	9:15	63.153	63.241	92.070	92.830	92.980	92.260	92.840	93.330	90.420	90.170	90.750
SD.135	147	9:30	63.149	63.236	91.980	92.750	92.910	92.190	92.780	93.270	90.310	90.080	90.660
SD.136	147	9:45	63.143	63.231	91.930	92.690	92.840	92.110	92.740	93.200	90.240	89.990	90.600
SD.137	147	10: 0	63.138	63.226	91.870	92.650	92.780	92.070	92.680	93.150	90.160	89.950	90.530
SD.138	147	10:15	63.133	63.222	91.820	92.570	92.720	91.990	92.630	93.090	90.110	89.870	90.450
SD.139	147	10:30	63.128	63.217	91.780	92.550	92.690	91.960	92.590	93.060	90.050	89.840	90.400
SD.140	147	10:45	63.123	63.212	91.720	92.490	92.620	91.930	92.550	93.010	89.990	89.720	90.360

ARIZONA PUBLIC SERVICE COMPANY
PALO VERDE NUCLEAR GENERATING STATION
RAW DATA SUMMARY REPORT

SCAN NO.	RTD #10	RTD #11	RTD #12	RTD #13	RTD #14	RTD #15	RTD #16	RTD #17	RTD #18	RTD #19	RTD #20
SD.104	95.090	95.410	95.240	85.220	87.060	84.620	84.270	81.840	82.100	81.660	76.720
SD.105	94.370	94.720	94.540	85.090	86.740	84.440	84.040	81.780	82.030	81.540	76.720
SD.106	93.910	94.200	94.020	84.940	86.540	84.320	83.830	81.720	81.970	81.520	76.780
SD.107	93.460	93.810	93.640	84.850	86.410	84.220	83.840	81.690	81.930	81.480	76.780
SD.108	93.130	93.470	93.350	84.790	86.280	84.120	83.830	81.640	81.890	81.450	76.760
SD.109	92.860	93.150	93.030	84.670	86.160	84.040	83.700	81.610	81.860	81.430	76.780
SD.110	92.590	92.890	92.740	84.620	86.040	83.980	83.660	81.580	81.830	81.390	76.750
SD.111	92.400	92.690	92.590	84.560	85.980	83.930	83.640	81.580	81.800	81.340	76.790
SD.112	92.200	92.510	92.370	84.540	85.890	83.900	83.610	81.570	81.780	81.350	76.810
SD.113	91.990	92.300	92.200	84.450	85.810	83.840	83.510	81.520	81.770	81.340	76.840
SD.114	91.820	92.160	92.040	84.440	85.760	83.810	83.310	81.540	81.750	81.340	76.880
SD.115	91.690	91.960	91.840	84.380	85.660	83.770	83.610	81.510	81.720	81.290	76.880
SD.116	91.530	91.820	91.650	84.350	85.580	83.700	83.340	81.480	81.710	81.190	76.870
SD.117	91.410	91.640	91.550	84.280	85.520	83.700	83.220	81.460	81.690	81.350	76.850
SD.118	91.210	91.580	91.380	84.250	85.510	83.660	83.280	81.460	81.680	81.290	76.910
SD.119	91.120	91.380	91.290	84.210	85.430	83.610	83.250	81.430	81.680	81.260	76.900
SD.120	90.970	91.290	91.170	84.180	85.370	83.600	83.170	81.430	81.660	81.290	76.910
SD.121	90.850	91.150	91.000	84.130	85.290	83.570	83.170	81.430	81.640	81.230	76.880
SD.122	90.750	91.030	90.890	84.120	85.280	83.540	83.110	81.430	81.630	81.190	76.910
SD.123	90.650	90.980	90.800	84.090	85.250	83.510	83.160	81.420	81.610	81.290	76.910
SD.124	90.510	90.800	90.720	84.100	85.200	83.480	83.120	81.400	81.600	81.230	76.900
SD.125	90.420	90.720	90.590	84.010	85.150	83.430	82.970	81.400	81.600	81.260	76.930
SD.126	90.360	90.620	90.480	83.990	85.060	83.430	83.000	81.400	81.580	81.280	76.950
SD.127	90.210	90.540	90.400	83.980	85.000	83.400	82.880	81.390	81.580	81.280	76.980
SD.128	90.170	90.450	90.250	83.960	85.000	83.380	82.940	81.370	81.580	81.220	77.010
SD.129	90.130	90.370	90.240	83.960	84.990	83.380	82.790	81.400	81.580	81.280	76.950
SD.130	90.020	90.270	90.140	83.950	84.960	83.350	83.000	81.370	81.580	81.200	76.960
SD.131	89.920	90.190	90.050	83.950	84.890	83.320	82.820	81.350	81.570	81.230	76.950
SD.132	89.820	90.100	89.990	83.890	84.860	83.340	82.940	81.350	81.570	81.230	77.040
SD.133	89.730	90.010	89.930	83.870	84.850	83.310	82.800	81.350	81.580	81.220	77.040
SD.134	89.690	89.960	89.850	83.870	84.850	83.290	83.000	81.390	81.580	81.260	77.070
SD.135	89.590	89.920	89.780	83.810	84.770	83.230	82.880	81.350	81.550	81.230	77.020
SD.136	89.490	89.820	89.670	83.800	84.760	83.250	82.800	81.340	81.540	81.190	77.040
SD.137	89.470	89.750	89.610	83.810	84.740	83.250	82.790	81.340	81.540	81.170	77.040
SD.138	89.380	89.700	89.550	83.810	84.730	83.220	82.880	81.340	81.550	81.200	77.010
SD.139	89.340	89.610	89.490	83.800	84.700	83.250	82.910	81.350	81.550	81.280	77.050
SD.140	89.290	89.530	89.440	83.740	84.650	83.190	82.880	81.340	81.540	81.250	77.050

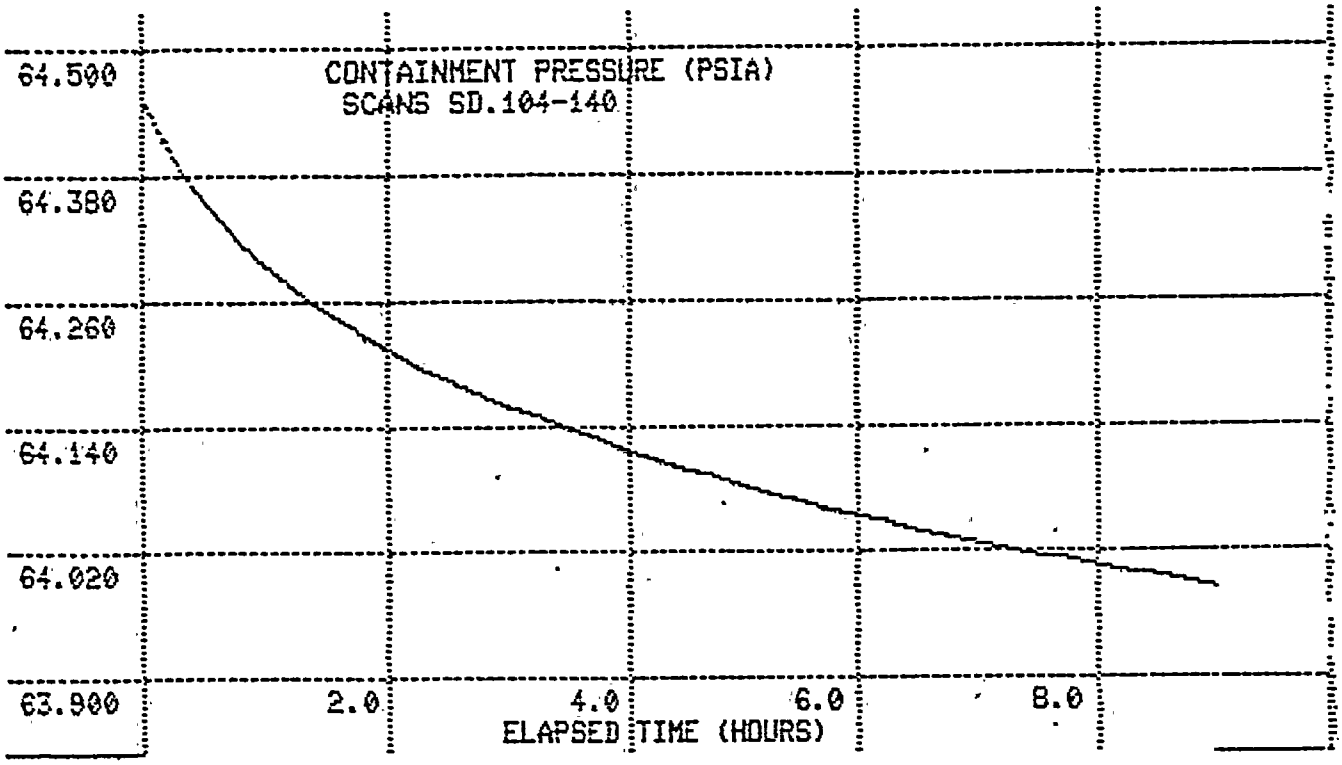
ARIZONA PUBLIC SERVICE COMPANY
PALO VERDE NUCLEAR GENERATING STATION
RAW DATA SUMMARY REPORT

SCAN NO.	RTD #21	RTD #22	RTD #23	RTD #24	DEW CELL #1	DEW CELL #2	DEW CELL #3	DEW CELL #4	DEW CELL #5	DEW CELL #6
SD.104	76.460	76.610	76.750	76.810	77.200	75.950	93.200	75.770	70.630	71.760
SD.105	76.460	76.620	76.730	76.810	77.070	75.910	92.710	75.820	70.580	71.770
SD.106	76.460	76.640	76.700	76.810	76.960	75.820	92.190	75.510	70.580	71.770
SD.107	76.470	76.660	76.690	76.820	76.880	75.830	91.750	75.500	70.580	71.800
SD.108	76.470	76.640	76.670	76.840	76.840	75.920	91.330	75.160	70.600	71.820
SD.109	76.490	76.640	76.660	76.840	76.780	75.660	90.970	75.130	70.580	71.790
SD.110	76.500	76.640	76.670	76.850	76.720	75.630	90.620	75.140	70.580	71.800
SD.111	76.500	76.620	76.670	76.850	76.690	75.750	90.330	75.020	70.580	71.770
SD.112	76.520	76.620	76.700	76.880	76.690	75.690	90.080	74.920	70.610	71.820
SD.113	76.520	76.610	76.670	76.870	76.590	75.740	89.840	74.630	70.580	71.830
SD.114	76.550	76.610	76.670	76.900	76.550	75.650	89.660	74.700	70.600	71.830
SD.115	76.550	76.610	76.670	76.910	76.490	75.340	89.460	74.560	70.610	71.850
SD.116	76.560	76.590	76.690	76.900	76.470	75.430	89.270	74.410	70.630	71.820
SD.117	76.560	76.590	76.690	76.910	76.410	75.470	89.120	74.290	70.640	71.910
SD.118	76.560	76.590	76.690	76.910	76.410	75.190	88.970	74.380	70.610	71.890
SD.119	76.590	76.610	76.700	76.950	76.440	75.340	88.830	74.180	70.700	71.910
SD.120	76.580	76.610	76.730	76.950	76.380	75.450	88.710	74.140	70.610	71.910
SD.121	76.590	76.620	76.690	76.930	76.240	75.080	88.590	74.020	70.600	71.890
SD.122	76.610	76.620	76.730	76.990	76.290	75.130	88.450	73.970	70.570	71.940
SD.123	76.620	76.620	76.730	76.980	76.460	75.470	88.360	73.880	70.610	71.910
SD.124	76.610	76.620	76.700	76.960	76.400	75.450	88.240	73.770	70.600	71.890
SD.125	76.640	76.640	76.720	76.980	76.410	75.310	88.150	73.730	70.580	71.940
SD.126	76.620	76.640	76.730	76.990	76.400	75.340	88.020	73.540	70.580	71.910
SD.127	76.640	76.660	76.730	76.990	76.330	75.330	87.930	73.590	70.550	71.910
SD.128	76.660	76.670	76.700	77.020	75.970	75.300	87.840	73.390	70.570	71.910
SD.129	76.670	76.690	76.750	77.020	75.860	75.180	87.750	73.470	70.510	71.920
SD.130	76.690	76.690	76.780	77.040	75.710	75.210	87.690	73.390	70.520	71.920
SD.131	76.670	76.670	76.780	77.040	75.690	75.220	87.580	73.340	70.460	71.880
SD.132	76.690	76.690	76.780	77.050	75.790	75.270	87.500	73.280	70.460	71.890
SD.133	76.700	76.690	76.790	77.050	75.720	75.220	87.430	73.180	70.490	71.890
SD.134	76.720	76.700	76.790	77.080	75.830	75.300	87.370	73.020	70.480	71.910
SD.135	76.700	76.700	76.790	77.070	76.080	75.310	87.280	73.050	70.440	71.880
SD.136	76.730	76.700	76.790	77.100	76.030	75.300	87.200	73.050	70.410	71.830
SD.137	76.720	76.720	76.780	77.100	76.120	75.250	87.120	72.960	70.410	71.830
SD.138	76.730	76.720	76.810	77.100	76.000	75.160	87.060	72.920	70.380	71.820
SD.139	76.750	76.730	76.820	77.080	75.980	75.070	87.000	72.900	70.380	71.820
SD.140	76.750	76.730	76.810	77.100	75.970	74.820	86.940	72.730	70.320	71.800

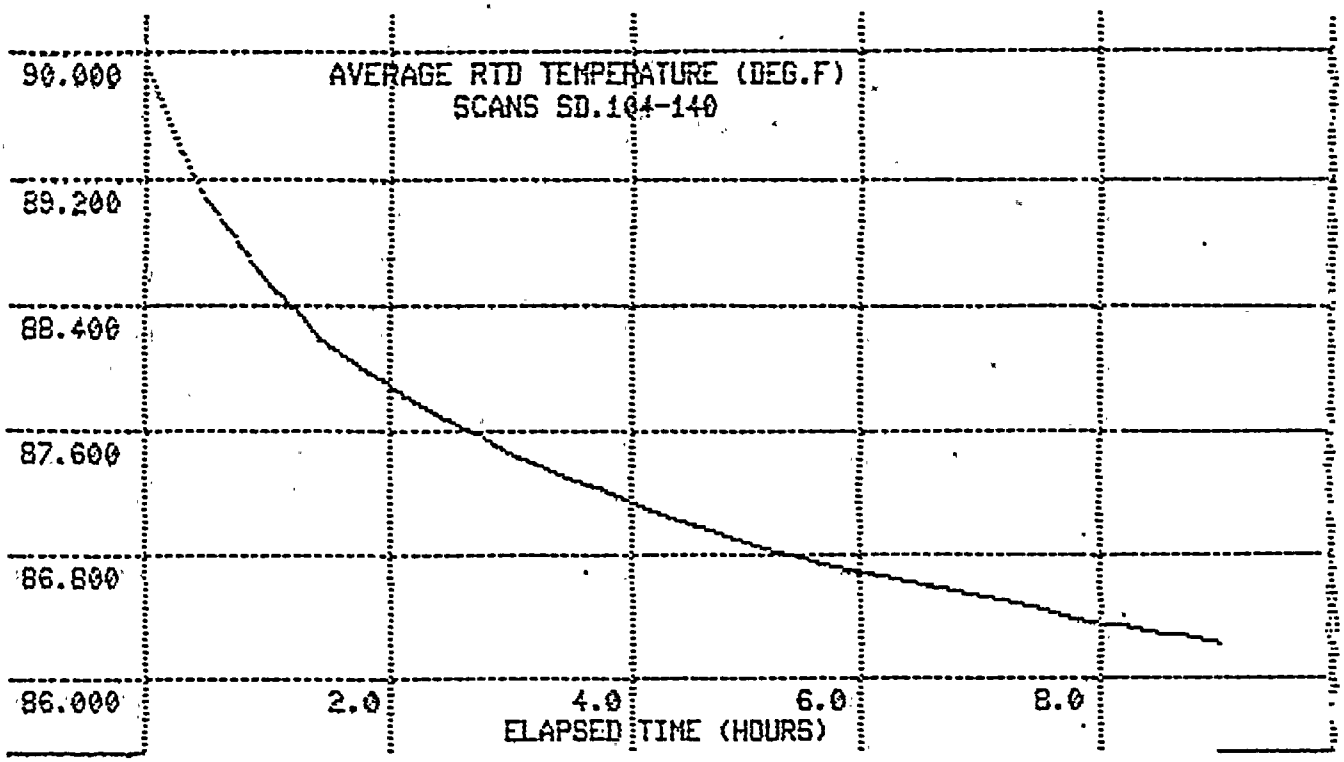
ARIZONA PUBLIC SERVICE COMPANY
PALO VERDE NUCLEAR GENERATING STATION
RELATIVE HUMIDITY PROGRAM

SCAN NO.	AVERAGE DEW POINT TEMPERATURE (F)	AVERAGE CONTAINMENT TEMPERATURE (F)	AVERAGE VAPOR PRESSURE (PSIA)	AVERAGE RELATIVE HUMIDITY (%)
SD.104	74.245	89.954	0.418	60.079
SD.105	74.214	89.473	0.417	60.930
SD.106	74.111	89.105	0.416	61.427
SD.107	74.101	88.812	0.416	61.976
SD.108	74.049	88.567	0.415	62.349
SD.109	73.970	88.356	0.414	62.600
SD.110	73.957	88.166	0.414	62.948
SD.111	73.944	88.022	0.414	63.208
SD.112	73.927	87.893	0.413	63.431
SD.113	73.854	87.761	0.412	63.540
SD.114	73.847	87.668	0.412	63.713
SD.115	73.752	87.551	0.411	63.747
SD.116	73.733	87.447	0.411	63.915
SD.117	73.724	87.367	0.411	64.059
SD.118	73.678	87.287	0.410	64.122
SD.119	73.694	87.213	0.410	64.309
SD.120	73.678	87.145	0.410	64.411
SD.121	73.547	87.064	0.408	64.295
SD.122	73.560	87.001	0.408	64.451
SD.123	73.644	86.946	0.409	64.746
SD.124	73.600	86.881	0.409	64.784
SD.125	73.572	86.826	0.408	64.837
SD.126	73.531	86.772	0.408	64.859
SD.127	73.519	86.718	0.408	64.945
SD.128	73.406	86.676	0.406	64.784
SD.129	73.367	86.649	0.406	64.755
SD.130	73.329	86.601	0.405	64.771
SD.131	73.297	86.553	0.405	64.800
SD.132	73.316	86.516	0.405	64.917
SD.133	73.278	86.471	0.404	64.927
SD.134	73.284	86.447	0.405	64.990
SD.135	73.327	86.388	0.405	65.207
SD.136	73.299	86.349	0.405	65.229
SD.137	73.289	86.318	0.405	65.269
SD.138	73.231	86.282	0.404	65.219
SD.139	73.206	86.263	0.403	65.201
SD.140	73.104	86.221	0.402	65.065

STABILIZATION



STABILIZATION



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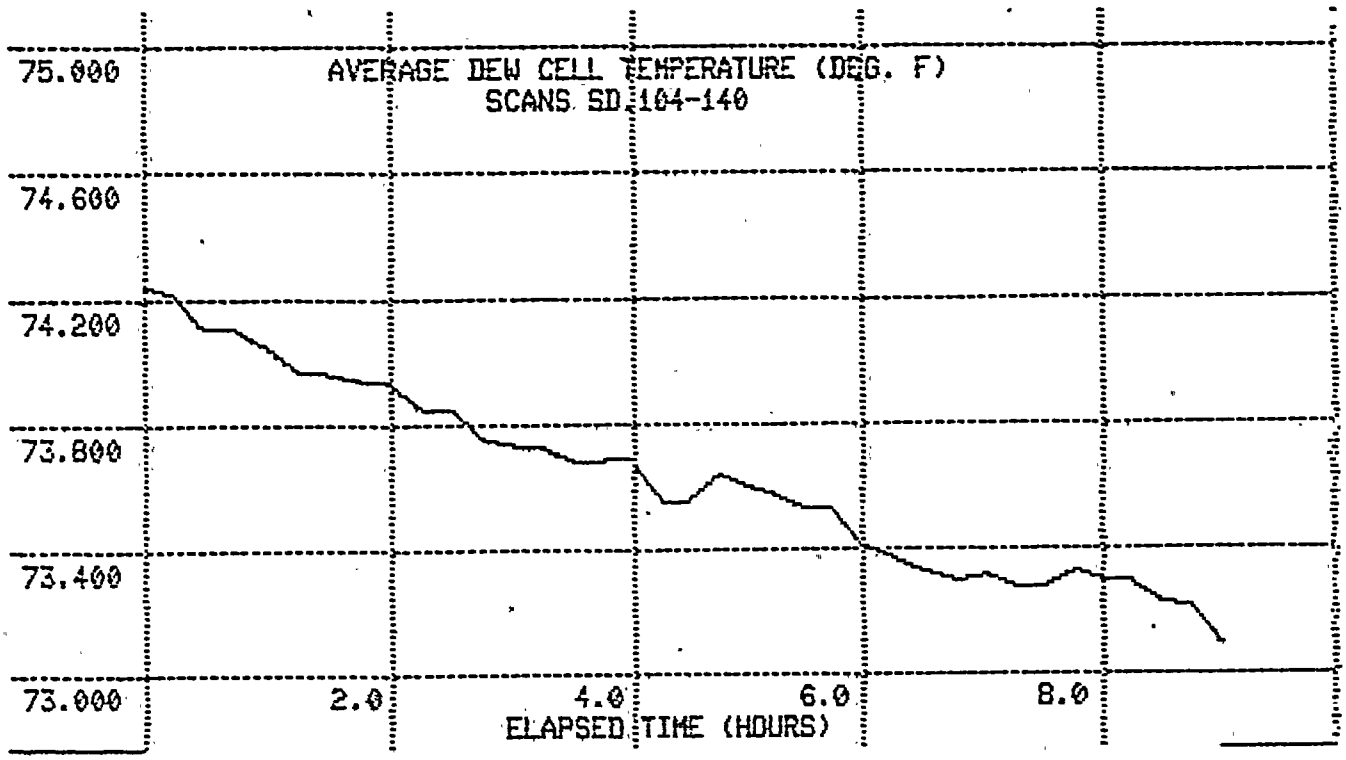
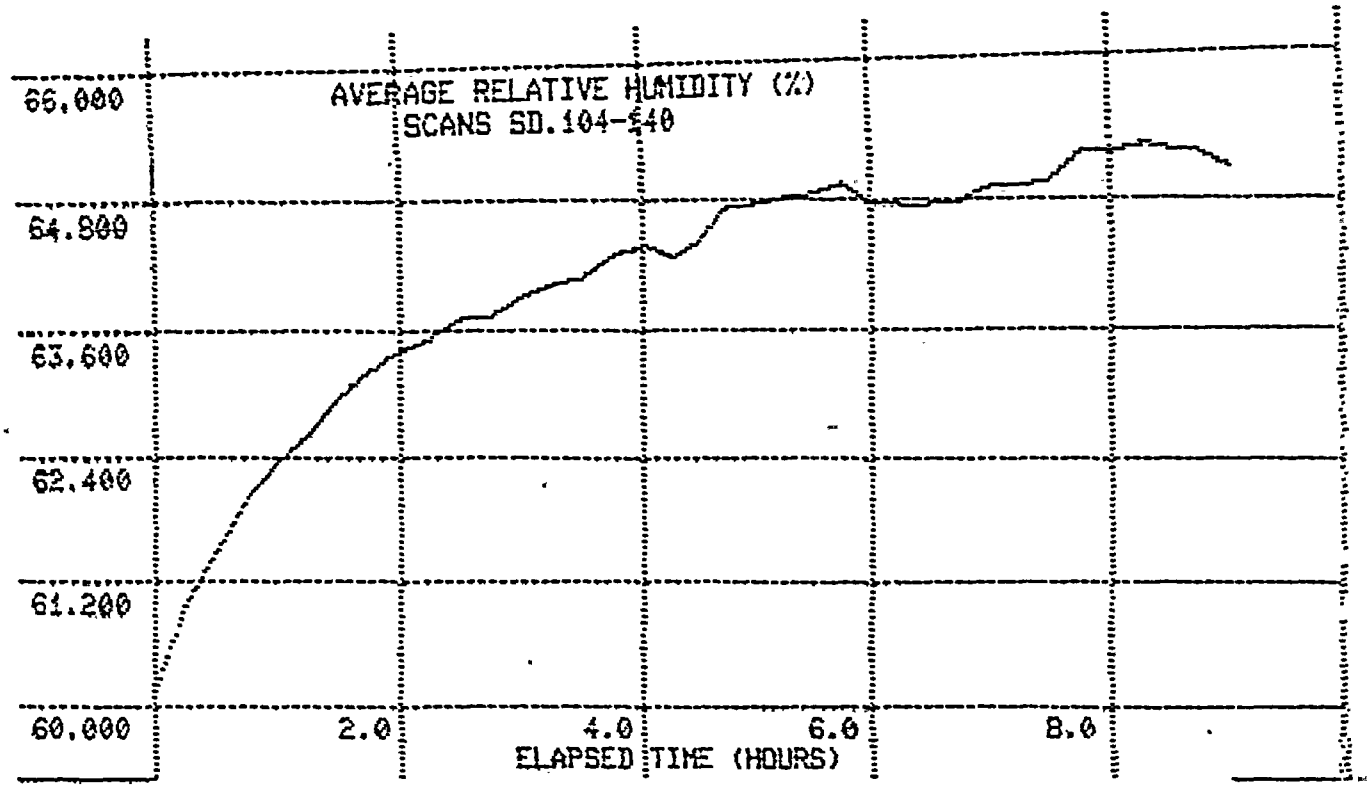
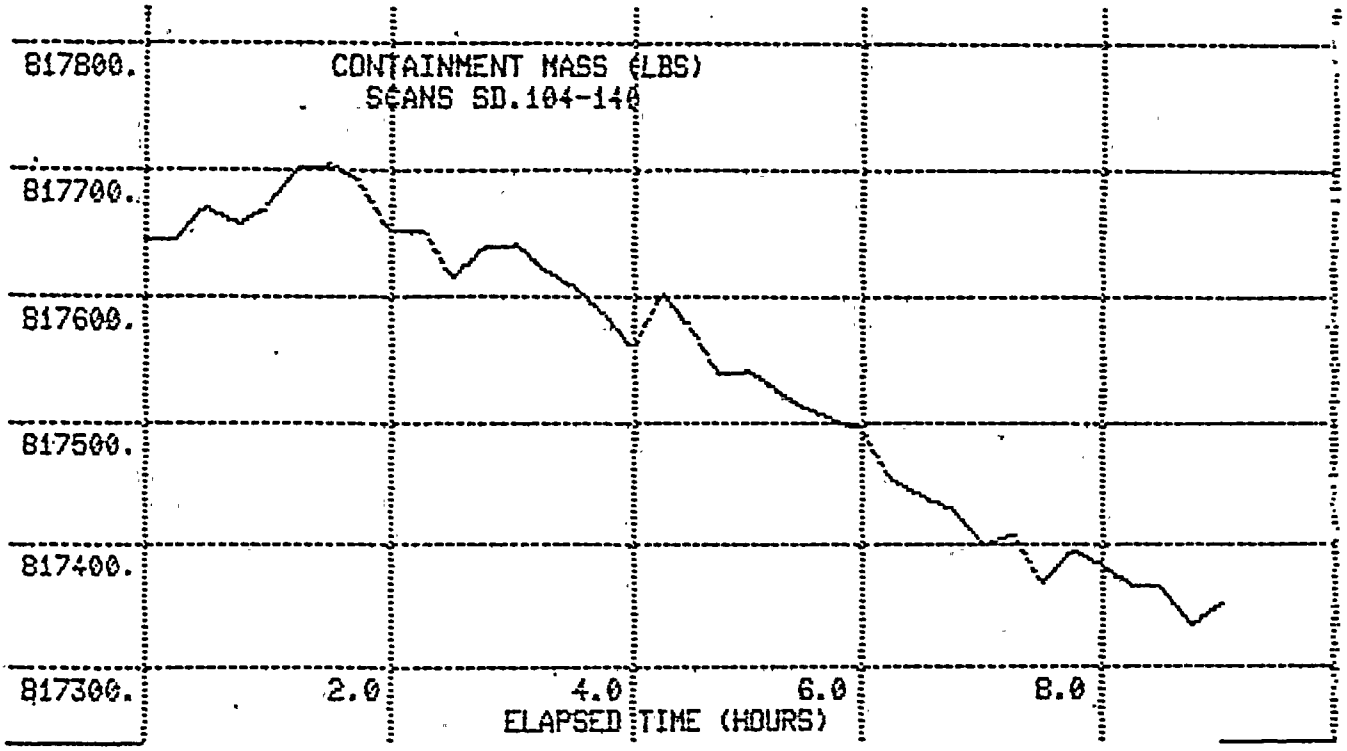


STABILIZATION



STABILIZATION



2.

INTEGRATED LEAK RATE TEST

(ILRT)

ARIZONA PUBLIC SERVICE COMPANY
PALO VERDE NUCLEAR GENERATING STATION
ILRT PROGRAM REPORT

STARTING DAY - 147 STARTING TIME - 10:45: 0 STARTING SCAN - SD.140 ENDING SCAN - SD.236

SCAN NO.	ELAPSED TIME (HR)	AVERAGE TEMP. (F)	AVERAGE PRESSURE (PSIA)	POINT TO POINT MEASURED LEAK RATE	POINT TO POINT CALCULATED LEAK RATE	TOTAL TIME MEASURED LEAK RATE	TOTAL TIME CALCULATED LEAK RATE	TOTAL TIME UPPER CONFIDENCE	MASS PLOT MEASURED LEAK RATE	MASS PLOT CALCULATED LEAK RATE	MASS PLOT UPPER CONFIDENCE
				(WEIGHT PERCENT PER DAY)							
SD.140	0.00	86.22	63.984								
SD.141	0.25	86.19	63.978	0.453E+00	0.453E+00	0.453E+00	0.453E+00	0.000E+00	0.454E+00	0.454E+00	0.000E+00
SD.142	0.50	86.17	63.974	0.192E+00	0.192E+00	0.324E+00	0.324E+00	0.000E+00	0.324E+00	0.324E+00	0.000E+00
SD.143	0.75	86.15	63.970	0.128E+00	0.950E-01	0.258E+00	0.248E+00	0.331E+00	0.258E+00	0.161E+00	0.330E+00
SD.144	1.00	86.12	63.967	0.498E-01	0.146E-01	0.206E+00	0.190E+00	0.224E+00	0.207E+00	0.126E+00	0.192E+00
SD.145	1.25	86.09	63.963	0.203E+00	0.768E-01	0.206E+00	0.167E+00	0.213E+00	0.206E+00	0.132E+00	0.165E+00
SD.146	1.50	86.07	63.959	0.887E-01	0.525E-01	0.186E+00	0.148E+00	0.192E+00	0.186E+00	0.128E+00	0.148E+00
SD.147	1.75	86.04	63.956	-0.260E+00	-0.121E+00	0.123E+00	0.110E+00	0.146E+00	0.123E+00	0.863E-01	0.138E+00
SD.148	2.00	86.01	63.952	0.145E+00	-0.576E-01	0.125E+00	0.887E-01	0.124E+00	0.125E+00	0.733E-01	0.113E+00
SD.149	2.25	85.99	63.948	-0.309E-01	-0.799E-01	0.108E+00	0.699E-01	0.105E+00	0.108E+00	0.599E-01	0.932E-01
SD.150	2.50	85.98	63.945	0.304E+00	0.220E-01	0.128E+00	0.651E-01	0.104E+00	0.128E+00	0.665E-01	0.936E-01
SD.151	2.75	85.95	63.942	-0.565E+00	-0.181E+00	0.645E-01	0.427E-01	0.783E-01	0.645E-01	0.416E-01	0.760E-01
SD.152	3.00	85.93	63.938	0.134E+00	-0.123E+00	0.703E-01	0.289E-01	0.636E-01	0.704E-01	0.307E-01	0.611E-01
SD.153	3.25	85.91	63.934	0.126E+00	-0.796E-01	0.747E-01	0.206E-01	0.557E-01	0.748E-01	0.273E-01	0.531E-01
SD.154	3.50	85.89	63.931	0.220E+00	-0.217E-01	0.850E-01	0.175E-01	0.543E-01	0.851E-01	0.307E-01	0.528E-01
SD.155	3.75	85.89	63.927	0.580E+00	0.111E+00	0.118E+00	0.238E-01	0.647E-01	0.118E+00	0.465E-01	0.716E-01
SD.156	4.00	85.86	63.924	-0.286E+00	0.199E-01	0.928E-01	0.236E-01	0.647E-01	0.928E-01	0.500E-01	0.721E-01
SD.157	4.25	85.83	63.922	-0.137E-01	0.508E-02	0.865E-01	0.225E-01	0.633E-01	0.865E-01	0.512E-01	0.706E-01
SD.158	4.50	85.82	63.920	0.549E-01	0.721E-02	0.847E-01	0.216E-01	0.619E-01	0.848E-01	0.517E-01	0.689E-01
SD.159	4.75	85.80	63.917	0.208E+00	0.389E-01	0.912E-01	0.225E-01	0.626E-01	0.913E-01	0.547E-01	0.703E-01
SD.160	5.00	85.78	63.915	-0.109E+00	0.680E-02	0.813E-01	0.217E-01	0.611E-01	0.813E-01	0.543E-01	0.683E-01
SD.161	5.25	85.79	63.912	0.264E+00	0.461E-01	0.899E-01	0.229E-01	0.619E-01	0.900E-01	0.571E-01	0.700E-01
SD.162	5.50	85.76	63.909	0.315E-01	0.400E-01	0.873E-01	0.237E-01	0.621E-01	0.873E-01	0.590E-01	0.708E-01
SD.163	5.75	85.75	63.905	0.301E+00	0.788E-01	0.966E-01	0.261E-01	0.642E-01	0.966E-01	0.630E-01	0.745E-01
SD.164	6.00	85.74	63.903	0.113E+00	0.827E-01	0.973E-01	0.284E-01	0.662E-01	0.973E-01	0.665E-01	0.775E-01
SD.165	6.25	85.73	63.901	-0.744E-01	0.580E-01	0.904E-01	0.296E-01	0.668E-01	0.904E-01	0.677E-01	0.779E-01
SD.166	6.50	85.72	63.899	0.486E+00	0.118E+00	0.106E+00	0.330E-01	0.699E-01	0.106E+00	0.726E-01	0.831E-01
SD.167	6.75	85.71	63.897	0.509E-01	0.109E+00	0.104E+00	0.358E-01	0.724E-01	0.104E+00	0.761E-01	0.865E-01
SD.168	7.00	85.69	63.896	-0.406E+00	0.399E-01	0.854E-01	0.360E-01	0.717E-01	0.854E-01	0.752E-01	0.848E-01
SD.169	7.25	85.68	63.894	0.264E+00	0.664E-01	0.916E-01	0.370E-01	0.720E-01	0.916E-01	0.760E-01	0.850E-01
SD.170	7.50	85.68	63.892	0.238E+00	0.867E-01	0.964E-01	0.387E-01	0.731E-01	0.965E-01	0.774E-01	0.859E-01
SD.171	7.75	85.68	63.891	0.996E-01	0.877E-01	0.966E-01	0.402E-01	0.741E-01	0.966E-01	0.788E-01	0.869E-01
SD.172	8.00	85.65	63.889	-0.142E+00	0.597E-01	0.891E-01	0.408E-01	0.740E-01	0.891E-01	0.789E-01	0.865E-01
SD.173	8.25	85.63	63.886	-0.133E+00	0.358E-01	0.824E-01	0.407E-01	0.731E-01	0.824E-01	0.778E-01	0.850E-01
SD.174	8.50	85.63	63.883	0.472E+00	0.823E-01	0.938E-01	0.419E-01	0.737E-01	0.939E-01	0.789E-01	0.857E-01
SD.175	8.75	85.61	63.880	0.238E+00	0.988E-01	0.980E-01	0.435E-01	0.749E-01	0.980E-01	0.805E-01	0.871E-01
SD.176	9.00	85.62	63.878	0.101E+00	0.990E-01	0.980E-01	0.451E-01	0.759E-01	0.981E-01	0.819E-01	0.883E-01
SD.177	9.25	85.59	63.876	-0.276E+00	0.602E-01	0.879E-01	0.455E-01	0.757E-01	0.880E-01	0.817E-01	0.878E-01
SD.178	9.50	85.58	63.874	0.215E+00	0.744E-01	0.912E-01	0.462E-01	0.759E-01	0.913E-01	0.817E-01	0.875E-01
SD.179	9.75	85.57	63.870	0.222E+00	0.882E-01	0.946E-01	0.473E-01	0.765E-01	0.946E-01	0.824E-01	0.879E-01
SD.180	10.00	85.56	63.869	-0.106E+00	0.691E-01	0.896E-01	0.478E-01	0.765E-01	0.896E-01	0.825E-01	0.877E-01
SD.181	10.25	85.54	63.867	0.864E-01	0.698E-01	0.895E-01	0.484E-01	0.765E-01	0.895E-01	0.826E-01	0.875E-01
SD.182	10.50	85.53	63.863	0.163E+00	0.774E-01	0.912E-01	0.491E-01	0.767E-01	0.913E-01	0.828E-01	0.875E-01
SD.183	10.75	85.52	63.860	0.887E-01	0.778E-01	0.912E-01	0.497E-01	0.769E-01	0.912E-01	0.831E-01	0.876E-01

ARIZONA PUBLIC SERVICE COMPANY
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ILRT PROGRAM REPORT

STARTING DAY - 147 STARTING TIME - 10:45: 0 STARTING SCAN - SD.140 ENDING SCAN - SD.236

SCAN NO.	ELAPSED TIME (HR)	AVERAGE TEMP. (F)	AVERAGE PRESSURE (PSIA)	POINT TO POINT MEASURED LEAK RATE	POINT TO POINT CALCULATED LEAK RATE	TOTAL TIME MEASURED LEAK RATE	TOTAL TIME CALCULATED LEAK RATE	TOTAL TIME UPPER CONFIDENCE	MASS PLOT MEASURED LEAK RATE	MASS PLOT CALCULATED LEAK RATE	MASS PLOT UPPER CONFIDENCE
						(WEIGHT PERCENT PER DAY)					
SD.184	11.00	85.50	63.858	0.572E-01	0.754E-01	0.904E-01	0.503E-01	0.770E-01	0.904E-01	0.834E-01	0.877E-01
SD.185	11.25	85.49	63.856	0.110E+00	0.778E-01	0.909E-01	0.509E-01	0.772E-01	0.909E-01	0.835E-01	0.876E-01
SD.186	11.50	85.48	63.855	0.136E+00	0.821E-01	0.918E-01	0.516E-01	0.775E-01	0.918E-01	0.837E-01	0.877E-01
SD.187	11.75	85.48	63.852	0.568E+00	0.122E+00	0.102E+00	0.531E-01	0.786E-01	0.102E+00	0.852E-01	0.893E-01
SD.188	12.00	85.48	63.851	-0.927E-01	0.105E+00	0.979E-01	0.542E-01	0.794E-01	0.979E-01	0.862E-01	0.902E-01
SD.189	12.25	85.46	63.849	-0.523E+00	0.558E-01	0.852E-01	0.542E-01	0.790E-01	0.852E-01	0.855E-01	0.894E-01
SD.190	12.50	85.46	63.849	0.330E+00	0.759E-01	0.901E-01	0.546E-01	0.790E-01	0.901E-01	0.855E-01	0.892E-01
SD.191	12.75	85.45	63.847	0.566E-01	0.739E-01	0.895E-01	0.550E-01	0.790E-01	0.895E-01	0.854E-01	0.890E-01
SD.192	13.00	85.44	63.845	0.338E+00	0.931E-01	0.942E-01	0.557E-01	0.794E-01	0.943E-01	0.859E-01	0.894E-01
SD.193	13.25	85.43	63.844	0.360E-01	0.889E-01	0.932E-01	0.564E-01	0.797E-01	0.932E-01	0.863E-01	0.897E-01
SD.194	13.50	85.43	63.843	-0.469E-01	0.789E-01	0.906E-01	0.568E-01	0.797E-01	0.906E-01	0.863E-01	0.896E-01
SD.195	13.75	85.43	63.841	0.196E+00	0.868E-01	0.925E-01	0.573E-01	0.800E-01	0.925E-01	0.865E-01	0.896E-01
SD.196	14.00	85.40	63.839	-0.156E+00	0.698E-01	0.880E-01	0.575E-01	0.798E-01	0.881E-01	0.863E-01	0.893E-01
SD.197	14.25	85.39	63.838	-0.252E+00	0.472E-01	0.821E-01	0.574E-01	0.793E-01	0.821E-01	0.855E-01	0.885E-01
SD.198	14.50	85.39	63.836	0.159E+00	0.535E-01	0.834E-01	0.573E-01	0.789E-01	0.834E-01	0.848E-01	0.878E-01
SD.199	14.75	85.38	63.835	-0.526E-01	0.455E-01	0.811E-01	0.571E-01	0.784E-01	0.811E-01	0.840E-01	0.870E-01
SD.200	15.00	85.37	63.833	0.143E+00	0.507E-01	0.821E-01	0.570E-01	0.780E-01	0.821E-01	0.833E-01	0.863E-01
SD.201	15.25	85.36	63.832	-0.847E-01	0.411E-01	0.794E-01	0.567E-01	0.774E-01	0.794E-01	0.825E-01	0.855E-01
SD.202	15.50	85.36	63.832	-0.168E+00	0.267E-01	0.754E-01	0.562E-01	0.766E-01	0.754E-01	0.814E-01	0.844E-01
SD.203	15.75	85.35	63.830	0.131E+00	0.317E-01	0.763E-01	0.558E-01	0.759E-01	0.763E-01	0.804E-01	0.835E-01
SD.204	16.00	85.34	63.828	0.178E+00	0.392E-01	0.779E-01	0.556E-01	0.753E-01	0.779E-01	0.796E-01	0.827E-01
SD.205	16.25	85.34	63.827	0.190E+00	0.472E-01	0.796E-01	0.555E-01	0.749E-01	0.796E-01	0.792E-01	0.822E-01
SD.206	16.50	85.32	63.825	-0.343E-01	0.414E-01	0.779E-01	0.552E-01	0.745E-01	0.779E-01	0.786E-01	0.816E-01
SD.207	16.75	85.32	63.824	0.544E-01	0.411E-01	0.775E-01	0.550E-01	0.740E-01	0.775E-01	0.779E-01	0.809E-01
SD.208	17.00	85.31	63.823	0.412E-01	0.400E-01	0.770E-01	0.548E-01	0.735E-01	0.770E-01	0.773E-01	0.803E-01
SD.209	17.25	85.31	63.821	0.280E+00	0.526E-01	0.799E-01	0.548E-01	0.733E-01	0.799E-01	0.770E-01	0.799E-01
SD.210	17.50	85.30	63.820	-0.216E+00	0.368E-01	0.757E-01	0.545E-01	0.728E-01	0.757E-01	0.765E-01	0.793E-01
SD.211	17.75	85.30	63.819	0.292E+00	0.498E-01	0.787E-01	0.545E-01	0.725E-01	0.787E-01	0.762E-01	0.790E-01
SD.212	18.00	85.28	63.818	-0.311E+00	0.294E-01	0.733E-01	0.541E-01	0.719E-01	0.733E-01	0.754E-01	0.782E-01
SD.213	18.25	85.27	63.817	-0.217E-01	0.255E-01	0.720E-01	0.537E-01	0.713E-01	0.720E-01	0.746E-01	0.774E-01
SD.214	18.50	85.28	63.816	0.270E+00	0.372E-01	0.747E-01	0.535E-01	0.708E-01	0.747E-01	0.741E-01	0.769E-01
SD.215	18.75	85.27	63.815	0.555E-01	0.372E-01	0.744E-01	0.533E-01	0.704E-01	0.744E-01	0.736E-01	0.763E-01
SD.216	19.00	85.26	63.813	-0.320E-01	0.327E-01	0.730E-01	0.530E-01	0.699E-01	0.731E-01	0.730E-01	0.758E-01
SD.217	19.25	85.25	63.813	-0.101E+00	0.249E-01	0.708E-01	0.526E-01	0.693E-01	0.708E-01	0.723E-01	0.750E-01
SD.218	19.50	85.24	63.812	-0.458E-01	0.202E-01	0.693E-01	0.522E-01	0.687E-01	0.693E-01	0.715E-01	0.743E-01
SD.219	19.75	85.23	63.810	0.167E+00	0.262E-01	0.705E-01	0.519E-01	0.682E-01	0.705E-01	0.710E-01	0.737E-01
SD.220	20.00	85.24	63.809	0.241E+00	0.357E-01	0.726E-01	0.517E-01	0.678E-01	0.726E-01	0.706E-01	0.733E-01
SD.221	20.25	85.23	63.808	0.109E-01	0.336E-01	0.719E-01	0.514E-01	0.674E-01	0.719E-01	0.701E-01	0.728E-01
SD.222	20.50	85.23	63.807	-0.240E-01	0.299E-01	0.707E-01	0.512E-01	0.670E-01	0.707E-01	0.697E-01	0.723E-01
SD.223	20.75	85.22	63.806	0.121E+00	0.333E-01	0.713E-01	0.510E-01	0.666E-01	0.714E-01	0.693E-01	0.719E-01
SD.224	21.00	85.22	63.806	-0.145E+00	0.241E-01	0.688E-01	0.506E-01	0.661E-01	0.688E-01	0.688E-01	0.714E-01
SD.225	21.25	85.20	63.805	-0.105E+00	0.171E-01	0.667E-01	0.502E-01	0.655E-01	0.667E-01	0.681E-01	0.707E-01
SD.226	21.50	85.20	63.803	0.161E+00	0.225E-01	0.678E-01	0.499E-01	0.650E-01	0.678E-01	0.676E-01	0.702E-01
SD.227	21.75	85.19	63.802	0.858E-02	0.209E-01	0.671E-01	0.496E-01	0.645E-01	0.671E-01	0.670E-01	0.696E-01

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SCAN NO.	ELAPSED TIME (HR)	AVERAGE TEMP. (F)	AVERAGE PRESSURE (PSIA)	POINT TO POINT MEASURED LEAK RATE	POINT TO POINT CALCULATED LEAK RATE	TOTAL TIME MEASURED LEAK RATE	TOTAL TIME CALCULATED LEAK RATE	TOTAL TIME UPPER CONFIDENCE	MASS FLOT MEASURED LEAK RATE	MASS FLOT CALCULATED LEAK RATE	MASS FLOT UPPER CONFIDENCE
						(WEIGHT PERCENT PER DAY)					
SD.228	22.00	85.18	63.802	-0.216E+00	0.923E-02	0.639E-01	0.491E-01	0.639E-01	0.639E-01	0.662E-01	0.689E-01
SD.229	22.25	85.20	63.801	0.417E+00	0.260E-01	0.679E-01	0.489E-01	0.635E-01	0.679E-01	0.658E-01	0.684E-01
SD.230	22.50	85.17	63.799	-0.319E+00	0.100E-01	0.636E-01	0.484E-01	0.629E-01	0.636E-01	0.651E-01	0.678E-01
SD.231	22.75	85.17	63.798	0.113E+00	0.133E-01	0.641E-01	0.481E-01	0.624E-01	0.641E-01	0.646E-01	0.673E-01
SD.232	23.00	85.17	63.797	0.197E+00	0.201E-01	0.655E-01	0.477E-01	0.619E-01	0.656E-01	0.641E-01	0.667E-01
SD.233	23.25	85.16	63.797	-0.184E+00	0.105E-01	0.629E-01	0.473E-01	0.614E-01	0.629E-01	0.634E-01	0.661E-01
SD.234	23.50	85.15	63.796	-0.698E-01	0.606E-02	0.615E-01	0.469E-01	0.608E-01	0.615E-01	0.628E-01	0.654E-01
SD.235	23.75	85.15	63.795	0.247E+00	0.149E-01	0.634E-01	0.466E-01	0.603E-01	0.634E-01	0.622E-01	0.649E-01
SD.236	24.00	85.15	63.793	0.175E+00	0.205E-01	0.646E-01	0.463E-01	0.599E-01	0.646E-01	0.619E-01	0.645E-01

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ILRT RESULTS AFTER 24.00 HRS.

POINT TO POINT	TOTAL TIME		MASS PLOT	
	AVERAGE MEASURED LEAK RATES (WEIGHT PERCENT PER DAY)			
LEAK RATE	LEAK RATE	STD.DEV.	LEAK RATE	STD.DEV.
0.645E-01	0.958E-01	0.538E-01	0.958E-01	0.539E-01

	CALCULATED LEAK RATES (WEIGHT PERCENT PER DAY)					
LEAK RATE	LEAK RATE	STD.DEV.	UPPER CON. LIMIT	LEAK RATE	STD.DEV.	UPPER CON.LIMIT
0.205E-01	0.463E-01	0.819E-02	0.599E-01	0.619E-01	0.158E-02	0.645E-01

ARIZONA PUBLIC SERVICE COMPANY
PALO VERDE NUCLEAR GENERATING STATION
RAW DATA SUMMARY REPORT

SCAN NO.	DATE	TIME	PRESS 1	PRESS 2	RTD #1	RTD #2	RTD #3	RTD #4	RTD #5	RTD #6	RTD #7	RTD #8	RTD #9
SD.140	147	10:45	63.123	63.212	91.720	92.490	92.620	91.930	92.550	93.010	89.990	89.720	90.360
SD.141	147	11: 0	63.117	63.207	91.690	92.450	92.590	91.910	92.510	92.970	89.900	89.660	90.270
SD.142	147	11:15	63.113	63.202	91.610	92.400	92.550	91.850	92.460	92.920	89.880	89.610	90.240
SD.143	147	11:30	63.109	63.198	91.590	92.370	92.510	91.780	92.420	92.880	89.820	89.590	90.160
SD.144	147	11:45	63.106	63.194	91.550	92.310	92.450	91.750	92.390	92.830	89.720	89.530	90.130
SD.145	147	12: 0	63.102	63.189	91.500	92.260	92.420	91.720	92.340	92.810	89.760	89.500	90.080
SD.146	147	12:15	63.098	63.186	91.460	92.230	92.400	91.690	92.310	92.770	89.690	89.440	89.990
SD.147	147	12:30	63.095	63.182	91.430	92.190	92.340	91.640	92.280	92.720	89.590	89.400	89.930
SD.148	147	12:45	63.091	63.178	91.380	92.160	92.300	91.590	92.230	92.680	89.530	89.270	89.930
SD.149	147	13: 0	63.087	63.175	91.330	92.110	92.250	91.580	92.200	92.630	89.490	89.270	89.820
SD.150	147	13:15	63.084	63.171	91.320	92.080	92.230	91.550	92.170	92.620	89.460	89.230	89.810
SD.151	147	13:30	63.081	63.168	91.290	92.040	92.190	91.500	92.110	92.550	89.380	89.180	89.720
SD.152	147	13:45	63.077	63.164	91.270	92.010	92.170	91.470	92.100	92.520	89.300	89.090	89.670
SD.153	147	14: 0	63.073	63.161	91.240	91.980	92.140	91.460	92.070	92.510	89.300	89.050	89.670
SD.154	147	14:15	63.070	63.157	91.230	91.940	92.130	91.380	92.010	92.490	89.230	89.010	89.630
SD.155	147	14:30	63.066	63.154	91.200	91.930	92.110	91.400	92.010	92.430	89.230	89.010	89.580
SD.156	147	14:45	63.063	63.151	91.150	91.870	92.070	91.330	91.960	92.420	89.210	88.970	89.530
SD.157	147	15: 0	63.061	63.148	91.120	91.850	92.040	91.290	91.930	92.400	89.120	88.890	89.470
SD.158	147	15:15	63.059	63.146	91.090	91.820	91.990	91.270	91.910	92.360	89.090	88.880	89.490
SD.159	147	15:30	63.056	63.143	91.040	91.790	91.980	91.240	91.880	92.300	89.010	88.830	89.370
SD.160	147	15:45	63.054	63.141	91.010	91.750	91.930	91.200	91.840	92.300	89.010	88.800	89.400
SD.161	147	16: 0	63.051	63.138	91.010	91.730	91.930	91.200	91.840	92.250	89.000	88.790	89.300
SD.162	147	16:15	63.048	63.136	90.980	91.700	91.880	91.150	91.810	92.200	88.970	88.760	89.300
SD.163	147	16:30	63.044	63.133	90.970	91.690	91.870	91.170	91.780	92.220	88.970	88.690	89.230
SD.164	147	16:45	63.042	63.130	90.940	91.670	91.850	91.120	91.760	92.220	88.950	88.630	89.260
SD.165	147	17: 0	63.040	63.128	90.920	91.640	91.840	91.090	91.750	92.190	88.890	88.630	89.210
SD.166	147	17:15	63.038	63.126	90.910	91.610	91.820	91.090	91.720	92.160	88.830	88.600	89.200
SD.167	147	17:30	63.036	63.124	90.860	91.580	91.810	91.060	91.700	92.130	88.800	88.560	89.170
SD.168	147	17:45	63.035	63.122	90.830	91.530	91.760	91.030	91.670	92.100	88.760	88.560	89.120
SD.169	147	18: 0	63.033	63.120	90.820	91.520	91.750	90.980	91.640	92.050	88.760	88.530	89.090
SD.170	147	18:15	63.031	63.118	90.800	91.520	91.690	90.970	91.610	92.050	88.740	88.560	89.080
SD.171	147	18:30	63.030	63.116	90.800	91.520	91.690	90.950	91.610	92.050	88.710	88.480	89.050
SD.172	147	18:45	63.028	63.114	90.750	91.440	91.640	90.940	91.580	92.020	88.690	88.480	89.010
SD.173	147	19: 0	63.025	63.112	90.740	91.440	91.590	90.890	91.560	91.990	88.660	88.430	89.010
SD.174	147	19:15	63.022	63.109	90.720	91.410	91.580	90.880	91.530	91.980	88.630	88.400	89.000
SD.175	147	19:30	63.019	63.106	90.690	91.410	91.560	90.850	91.500	91.980	88.590	88.360	88.970
SD.176	147	19:45	63.017	63.105	90.690	91.380	91.560	90.850	91.500	91.940	88.590	88.370	88.980
SD.177	147	20: 0	63.015	63.102	90.630	91.330	91.530	90.780	91.460	91.900	88.540	88.330	88.880
SD.178	147	20:15	63.013	63.099	90.620	91.320	91.520	90.770	91.440	91.880	88.540	88.330	88.860
SD.179	147	20:30	63.009	63.097	90.600	91.300	91.500	90.750	91.430	91.850	88.480	88.270	88.820
SD.180	147	20:45	63.008	63.095	90.590	91.290	91.470	90.720	91.410	91.840	88.470	88.240	88.800
SD.181	147	21: 0	63.006	63.092	90.570	91.260	91.440	90.720	91.400	91.810	88.470	88.220	88.760
SD.182	147	21:15	63.003	63.089	90.540	91.240	91.440	90.680	91.350	91.790	88.420	88.180	88.720
SD.183	147	21:30	63.000	63.087	90.530	91.230	91.410	90.680	91.350	91.790	88.390	88.150	88.680
SD.184	147	21:45	62.998	63.085	90.510	91.200	91.360	90.650	91.320	91.780	88.330	88.150	88.720
SD.185	147	22: 0	62.996	63.083	90.480	91.200	91.360	90.630	91.300	91.730	88.310	88.110	88.650
SD.186	147	22:15	62.995	63.081	90.460	91.180	91.330	90.620	91.270	91.700	88.280	88.100	88.620
SD.187	147	22:30	62.992	63.079	90.430	91.150	91.330	90.600	91.270	91.690	88.360	88.050	88.600
SD.188	147	22:45	62.991	63.077	90.420	91.120	91.330	90.590	91.260	91.690	88.280	88.050	88.630

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RAW DATA SUMMARY REPORT

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SD.189	147	23: 0	62.989	63.076	90.390	91.120	91.300	90.590	91.240	91.690	88.280	88.010	88.540
SD.190	147	23:15	62.989	63.076	90.400	91.120	91.300	90.570	91.260	91.690	88.250	87.990	88.570
SD.191	147	23:30	62.987	63.074	90.400	91.110	91.290	90.560	91.230	91.650	88.190	88.010	88.510
SD.192	147	23:45	62.985	63.072	90.370	91.090	91.260	90.540	91.210	91.640	88.150	87.980	88.520
SD.193	148	0: 0	62.984	63.070	90.360	91.070	91.240	90.530	91.180	91.610	88.180	87.950	88.500
SD.194	148	0:15	62.983	63.068	90.360	91.070	91.240	90.530	91.170	91.590	88.180	87.960	88.510
SD.195	148	0:30	62.981	63.066	90.360	91.040	91.230	90.490	91.170	91.610	88.210	87.950	88.480
SD.196	148	0:45	62.979	63.065	90.330	91.010	91.210	90.480	91.140	91.560	88.080	87.930	88.420
SD.197	148	1: 0	62.978	63.063	90.330	91.010	91.180	90.460	91.120	91.560	88.070	87.860	88.400
SD.198	148	1:15	62.976	63.062	90.300	91.000	91.170	90.430	91.110	91.530	88.050	87.890	88.390
SD.199	148	1:30	62.975	63.060	90.300	90.980	91.170	90.450	91.110	91.520	88.040	87.810	88.370
SD.200	148	1:45	62.973	63.059	90.270	90.970	91.140	90.430	91.070	91.490	88.040	87.790	88.330
SD.201	148	2: 0	62.972	63.058	90.250	90.940	91.140	90.420	91.070	91.470	88.010	87.760	88.330
SD.202	148	2:15	62.972	63.058	90.250	90.940	91.120	90.390	91.060	91.470	88.020	87.790	88.310
SD.203	148	2:30	62.970	63.056	90.240	90.920	91.110	90.390	91.060	91.460	88.010	87.760	88.300
SD.204	148	2:45	62.968	63.055	90.210	90.910	91.090	90.360	91.030	91.460	87.930	87.760	88.300
SD.205	148	3: 0	62.967	63.053	90.220	90.880	91.060	90.340	91.010	91.430	87.990	87.720	88.280
SD.206	148	3:15	62.965	63.052	90.190	90.890	91.060	90.360	91.010	91.430	87.890	87.660	88.250
SD.207	148	3:30	62.964	63.050	90.160	90.860	91.040	90.330	91.000	91.410	87.890	87.700	88.280
SD.208	148	3:45	62.963	63.049	90.160	90.850	91.030	90.310	90.970	91.400	87.930	87.690	88.190
SD.209	148	4: 0	62.961	63.048	90.160	90.850	91.030	90.310	90.980	91.360	87.930	87.660	88.210
SD.210	148	4:15	62.960	63.046	90.140	90.850	91.000	90.280	90.950	91.360	87.870	87.670	88.160
SD.211	148	4:30	62.959	63.045	90.130	90.820	91.000	90.280	90.940	91.360	87.930	87.630	88.210
SD.212	148	4:45	62.958	63.043	90.110	90.820	90.980	90.270	90.920	91.360	87.820	87.580	88.130
SD.213	148	5: 0	62.957	63.042	90.110	90.820	90.970	90.240	90.890	91.350	87.810	87.570	88.070
SD.214	148	5:15	62.956	63.041	90.080	90.780	90.970	90.240	90.890	91.330	87.810	87.580	88.150
SD.215	148	5:30	62.955	63.040	90.080	90.770	90.940	90.250	90.890	91.320	87.840	87.570	88.110
SD.216	148	5:45	62.953	63.039	90.080	90.750	90.920	90.210	90.860	91.300	87.810	87.570	88.080
SD.217	148	6: 0	62.953	63.038	90.050	90.740	90.920	90.190	90.850	91.290	87.730	87.530	88.080
SD.218	148	6:15	62.952	63.037	90.020	90.720	90.910	90.190	90.850	91.260	87.720	87.490	88.040
SD.219	148	6:30	62.950	63.036	90.020	90.710	90.880	90.130	90.830	91.240	87.720	87.490	88.020
SD.220	148	6:45	62.949	63.034	89.990	90.710	90.910	90.160	90.830	91.260	87.780	87.500	88.010
SD.221	148	7: 0	62.948	63.033	89.990	90.710	90.880	90.160	90.830	91.260	87.690	87.500	88.020
SD.222	148	7:15	62.947	63.032	90.010	90.690	90.860	90.140	90.820	91.230	87.690	87.440	87.990
SD.223	148	7:30	62.946	63.031	89.980	90.690	90.860	90.140	90.800	91.230	87.720	87.440	87.990
SD.224	148	7:45	62.946	63.030	89.960	90.680	90.850	90.110	90.800	91.210	87.690	87.440	87.920
SD.225	148	8: 0	62.945	63.029	89.950	90.660	90.830	90.100	90.770	91.200	87.660	87.430	87.960
SD.226	148	8:15	62.943	63.028	89.920	90.630	90.820	90.080	90.750	91.170	87.610	87.430	87.960
SD.227	148	8:30	62.942	63.027	89.900	90.620	90.780	90.070	90.750	91.170	87.610	87.400	87.950
SD.228	148	8:45	62.942	63.027	89.900	90.620	90.770	90.080	90.720	91.140	87.630	87.370	87.920
SD.229	148	9: 0	62.941	63.026	89.900	90.600	90.780	90.080	90.740	91.120	87.610	87.440	87.950
SD.230	148	9:15	62.939	63.024	89.870	90.600	90.770	90.050	90.690	91.090	87.580	87.350	87.960
SD.231	148	9:30	62.938	63.024	89.870	90.590	90.740	90.040	90.710	91.090	87.570	87.350	87.900
SD.232	148	9:45	62.937	63.023	89.850	90.560	90.720	90.010	90.690	91.070	87.610	87.350	87.900
SD.233	148	10: 0	62.937	63.022	89.850	90.560	90.720	90.010	90.690	91.070	87.530	87.320	87.890
SD.234	148	10:15	62.936	63.021	89.870	90.540	90.710	89.980	90.690	91.070	87.500	87.340	87.810
SD.235	148	10:30	62.935	63.020	89.840	90.540	90.710	89.990	90.680	91.070	87.500	87.290	87.790
SD.236	148	10:45	62.933	63.019	89.820	90.540	90.720	89.980	90.680	91.060	87.470	87.310	87.810

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SCAN NO.	RTD #10	RTD #11	RTD #12	RTD #13	RTD #14	RTD #15	RTD #16	RTD #17	RTD #18	RTD #19	RTD #20
SD.140	89.290	89.530	89.440	83.740	84.650	83.190	82.880	81.340	81.540	81.250	77.050
SD.141	89.230	89.460	89.380	83.720	84.610	83.200	82.870	81.340	81.550	81.250	77.040
SD.142	89.140	89.440	89.300	83.720	84.640	83.190	82.800	81.320	81.550	81.200	77.110
SD.143	89.120	89.410	89.210	83.740	84.620	83.200	82.880	81.340	81.550	81.200	77.110
SD.144	88.980	89.350	89.210	83.690	84.620	83.190	82.840	81.340	81.570	81.220	77.100
SD.145	88.970	89.240	89.150	83.690	84.570	83.160	82.760	81.340	81.550	81.200	77.100
SD.146	88.910	89.200	89.090	83.740	84.560	83.160	82.880	81.340	81.540	81.230	77.130
SD.147	88.880	89.140	89.050	83.700	84.510	83.160	82.770	81.350	81.550	81.230	77.140
SD.148	88.820	89.090	89.000	83.660	84.500	83.140	82.820	81.350	81.550	81.230	77.140
SD.149	88.770	89.050	88.940	83.630	84.510	83.140	82.820	81.340	81.540	81.170	77.140
SD.150	88.740	89.030	88.890	83.660	84.510	83.160	82.680	81.370	81.570	81.220	77.160
SD.151	88.680	88.980	88.850	83.640	84.500	83.140	82.880	81.370	81.540	81.260	77.190
SD.152	88.630	88.910	88.800	83.660	84.470	83.160	82.650	81.350	81.550	81.260	77.170
SD.153	88.590	88.890	88.770	83.660	84.470	83.110	82.610	81.350	81.550	81.220	77.200
SD.154	88.530	88.800	88.690	83.640	84.450	83.140	82.800	81.350	81.550	81.220	77.220
SD.155	88.530	88.740	88.650	83.640	84.500	83.140	82.770	81.390	81.580	81.230	77.270
SD.156	88.450	88.720	88.620	83.630	84.390	83.110	82.770	81.370	81.570	81.230	77.240
SD.157	88.420	88.680	88.570	83.610	84.420	83.080	82.740	81.370	81.570	81.220	77.240
SD.158	88.340	88.660	88.540	83.610	84.410	83.110	82.760	81.390	81.570	81.250	77.270
SD.159	88.340	88.620	88.530	83.610	84.420	83.110	82.730	81.370	81.570	81.220	77.270
SD.160	88.310	88.570	88.480	83.610	84.390	83.110	82.770	81.390	81.570	81.230	77.300
SD.161	88.280	88.590	88.430	83.630	84.450	83.140	82.800	81.400	81.580	81.250	77.310
SD.162	88.210	88.500	88.420	83.600	84.440	83.090	82.910	81.390	81.580	81.280	77.300
SD.163	88.220	88.480	88.390	83.600	84.420	83.120	82.840	81.400	81.580	81.230	77.330
SD.164	88.180	88.450	88.310	83.630	84.420	83.110	82.710	81.400	81.600	81.290	77.360
SD.165	88.150	88.400	88.280	83.610	84.420	83.090	82.680	81.400	81.580	81.280	77.360
SD.166	88.130	88.390	88.300	83.580	84.410	83.110	82.790	81.420	81.600	81.290	77.370
SD.167	88.110	88.370	88.270	83.600	84.450	83.110	82.760	81.420	81.630	81.340	77.420
SD.168	88.070	88.370	88.240	83.570	84.470	83.110	83.020	81.420	81.630	81.250	77.370
SD.169	88.050	88.280	88.210	83.600	84.420	83.140	82.940	81.420	81.630	81.280	77.430
SD.170	88.050	88.300	88.160	83.640	84.450	83.140	83.060	81.430	81.630	81.290	77.400
SD.171	88.020	88.280	88.160	83.670	84.480	83.140	83.050	81.450	81.640	81.320	77.450
SD.172	87.980	88.270	88.130	83.580	84.440	83.140	83.020	81.450	81.640	81.290	77.450
SD.173	87.950	88.210	88.110	83.580	84.390	83.140	83.000	81.450	81.640	81.290	77.430
SD.174	87.950	88.190	88.080	83.610	84.450	83.120	82.770	81.460	81.640	81.320	77.480
SD.175	87.900	88.150	88.040	83.580	84.420	83.120	82.740	81.460	81.640	81.310	77.450
SD.176	87.870	88.160	88.050	83.580	84.390	83.140	82.850	81.480	81.680	81.310	77.460
SD.177	87.860	88.100	87.960	83.580	84.360	83.140	82.770	81.460	81.640	81.320	77.490
SD.178	87.820	88.050	87.980	83.570	84.350	83.110	82.850	81.460	81.640	81.350	77.520
SD.179	87.760	88.040	87.980	83.600	84.330	83.140	82.760	81.460	81.640	81.310	77.540
SD.180	87.780	88.020	87.950	83.550	84.330	83.120	82.820	81.460	81.660	81.340	77.560
SD.181	87.720	88.020	87.920	83.550	84.300	83.110	82.880	81.480	81.680	81.320	77.540
SD.182	87.670	88.010	87.890	83.540	84.300	83.120	83.030	81.490	81.660	81.390	77.520
SD.183	87.660	87.960	87.820	83.570	84.300	83.110	82.940	81.480	81.660	81.320	77.560
SD.184	87.640	87.900	87.810	83.540	84.270	83.080	82.790	81.490	81.680	81.390	77.560
SD.185	87.640	87.900	87.790	83.570	84.250	83.090	82.800	81.480	81.680	81.320	77.540
SD.186	87.600	87.890	87.780	83.550	84.250	83.090	82.790	81.490	81.680	81.320	77.590
SD.187	87.570	87.840	87.730	83.550	84.240	83.110	82.900	81.510	81.690	81.400	77.570
SD.188	87.600	87.820	87.730	83.550	84.270	83.120	82.710	81.510	81.690	81.320	77.620

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RAW DATA SUMMARY REPORT

SCAN NO.	RTD #10	RTD #11	RTD #12	RTD #13	RTD #14	RTD #15	RTD #16	RTD #17	RTD #18	RTD #19	RTD #20
SD.189	87.520	87.810	87.730	83.540	84.190	83.060	82.880	81.490	81.680	81.350	77.620
SD.190	87.520	87.780	87.690	83.550	84.220	83.090	82.960	81.510	81.690	81.400	77.620
SD.191	87.490	87.760	87.670	83.550	84.190	83.060	82.840	81.520	81.710	81.350	77.630
SD.192	87.460	87.730	87.610	83.550	84.190	83.090	82.770	81.520	81.710	81.400	77.660
SD.193	87.470	87.700	87.610	83.550	84.180	83.090	82.790	81.520	81.710	81.450	77.630
SD.194	87.460	87.690	87.600	83.550	84.190	83.080	82.700	81.520	81.710	81.420	77.630
SD.195	87.430	87.720	87.610	83.550	84.160	83.110	82.800	81.540	81.720	81.340	77.690
SD.196	87.380	87.640	87.550	83.540	84.160	83.060	82.820	81.540	81.720	81.350	77.680
SD.197	87.350	87.640	87.500	83.520	84.150	83.050	82.820	81.520	81.720	81.320	77.660
SD.198	87.350	87.600	87.500	83.520	84.160	83.090	82.880	81.520	81.720	81.420	77.680
SD.199	87.320	87.570	87.460	83.540	84.100	83.080	82.800	81.540	81.720	81.400	77.680
SD.200	87.280	87.570	87.500	83.540	84.130	83.060	82.910	81.540	81.740	81.430	77.690
SD.201	87.310	87.550	87.460	83.550	84.130	83.050	82.800	81.540	81.720	81.400	77.680
SD.202	87.260	87.530	87.460	83.540	84.120	83.050	82.760	81.540	81.720	81.420	77.650
SD.203	87.290	87.500	87.410	83.520	84.100	83.060	82.880	81.540	81.720	81.370	77.690
SD.204	87.240	87.520	87.410	83.520	84.070	83.060	82.710	81.550	81.740	81.420	77.710
SD.205	87.200	87.460	87.410	83.520	84.100	83.060	82.730	81.550	81.740	81.420	77.720
SD.206	87.230	87.470	87.350	83.520	84.060	83.060	82.680	81.550	81.740	81.430	77.720
SD.207	87.180	87.460	87.380	83.510	84.070	83.080	82.730	81.550	81.750	81.430	77.740
SD.208	87.180	87.440	87.320	83.520	84.070	83.050	82.740	81.550	81.750	81.420	77.720
SD.209	87.150	87.400	87.340	83.520	84.100	83.060	82.790	81.550	81.750	81.450	77.750
SD.210	87.150	87.400	87.280	83.520	84.060	83.050	82.770	81.550	81.750	81.480	77.740
SD.211	87.140	87.400	87.310	83.520	84.090	83.030	82.730	81.570	81.770	81.460	77.770
SD.212	87.090	87.380	87.290	83.510	84.060	83.060	82.730	81.570	81.770	81.430	77.770
SD.213	87.090	87.320	87.280	83.490	84.040	83.050	82.710	81.570	81.770	81.450	77.770
SD.214	87.060	87.320	87.260	83.520	84.040	83.060	82.680	81.570	81.770	81.490	77.810
SD.215	87.060	87.340	87.240	83.490	84.040	83.060	82.700	81.580	81.770	81.480	77.780
SD.216	87.050	87.320	87.200	83.480	84.040	83.050	82.840	81.580	81.770	81.430	77.810
SD.217	87.050	87.290	87.210	83.510	84.010	83.030	82.710	81.580	81.780	81.480	77.800
SD.218	87.030	87.290	87.200	83.480	83.990	83.030	82.870	81.580	81.770	81.480	77.810
SD.219	86.990	87.290	87.170	83.480	83.980	83.030	82.760	81.580	81.780	81.480	77.810
SD.220	86.990	87.240	87.140	83.490	84.030	83.030	82.790	81.580	81.780	81.510	77.810
SD.221	86.990	87.240	87.170	83.490	83.990	83.020	82.820	81.580	81.780	81.490	77.830
SD.222	86.950	87.230	87.150	83.480	84.030	83.030	82.840	81.600	81.780	81.520	77.810
SD.223	86.920	87.210	87.120	83.510	83.990	83.050	82.770	81.600	81.800	81.490	77.810
SD.224	86.920	87.210	87.150	83.480	84.010	83.080	82.680	81.600	81.780	81.460	77.850
SD.225	86.920	87.180	87.060	83.460	84.010	83.030	82.850	81.600	81.800	81.490	77.830
SD.226	86.910	87.180	87.080	83.460	83.950	83.030	82.790	81.610	81.800	81.490	77.860
SD.227	86.890	87.150	87.050	83.490	83.980	83.030	82.870	81.610	81.780	81.510	77.850
SD.228	86.890	87.120	87.050	83.460	83.960	83.030	82.900	81.610	81.800	81.520	77.830
SD.229	86.860	87.140	87.030	83.510	84.010	83.030	82.910	81.630	81.800	81.550	77.890
SD.230	86.860	87.110	87.030	83.480	83.980	83.000	82.840	81.610	81.780	81.490	77.890
SD.231	86.880	87.140	87.020	83.480	83.960	83.030	82.820	81.630	81.800	81.490	77.880
SD.232	86.830	87.140	87.000	83.480	83.960	83.050	82.790	81.630	81.800	81.510	77.890
SD.233	86.850	87.080	87.000	83.460	83.980	83.030	82.680	81.630	81.810	81.510	77.890
SD.234	86.830	87.080	86.990	83.480	83.950	83.030	82.700	81.630	81.800	81.490	77.890
SD.235	86.790	87.060	86.990	83.480	83.990	83.050	82.840	81.640	81.810	81.540	77.890
SD.236	86.820	87.050	86.950	83.480	83.930	83.020	82.840	81.640	81.810	81.540	77.920

ARIZONA PUBLIC SERVICE COMPANY
PALO VERDE NUCLEAR GENERATING STATION
RAW DATA SUMMARY REPORT

SCAN NO.	RTD #21	RTD #22	RTD #23	RTD #24	DEW CELL #1	DEW CELL #2	DEW CELL #3	DEW CELL #4	DEW CELL #5	DEW CELL #6
SD.140	76.750	76.730	76.810	77.100	75.970	74.820	86.940	72.730	70.320	71.800
SD.141	76.760	76.730	76.840	77.100	76.010	74.820	86.880	72.780	70.340	71.820
SD.142	76.780	76.760	76.810	77.160	76.080	74.890	86.820	72.730	70.290	71.800
SD.143	76.780	76.780	76.870	77.140	75.940	74.890	86.770	72.630	70.290	71.770
SD.144	76.790	76.780	76.850	77.170	76.200	74.960	86.710	72.670	70.250	71.790
SD.145	76.790	76.790	76.880	77.200	76.140	75.070	86.660	72.630	70.250	71.790
SD.146	76.810	76.790	76.880	77.190	75.860	75.040	86.600	72.580	70.250	71.790
SD.147	76.810	76.790	76.900	77.190	75.950	74.660	86.540	72.440	70.250	71.740
SD.148	76.820	76.810	76.910	77.220	76.170	74.550	86.480	72.460	70.220	71.730
SD.149	76.840	76.810	76.910	77.220	75.830	74.500	86.440	72.500	70.200	71.710
SD.150	76.850	76.840	76.910	77.220	75.800	74.460	86.410	72.440	70.200	71.700
SD.151	76.850	76.840	76.910	77.220	74.810	74.410	86.340	72.370	70.120	71.700
SD.152	76.870	76.840	76.950	77.240	74.690	74.290	86.300	72.380	70.120	71.670
SD.153	76.880	76.840	76.950	77.270	74.230	74.320	86.250	72.260	70.090	71.640
SD.154	76.880	76.870	76.950	77.280	74.700	74.380	86.210	72.280	70.080	71.620
SD.155	76.910	76.900	76.980	77.300	74.550	74.530	86.180	72.250	70.050	71.600
SD.156	76.910	76.880	76.990	77.300	74.240	74.580	86.120	72.200	70.030	71.570
SD.157	76.910	76.900	76.990	77.300	74.530	74.600	86.090	72.170	70.020	71.560
SD.158	76.930	76.900	76.980	77.310	74.460	74.580	86.040	72.140	70.000	71.560
SD.159	76.930	76.910	77.010	77.330	75.070	74.460	86.010	72.050	69.970	71.540
SD.160	76.930	76.910	77.010	77.340	74.750	74.400	85.960	72.080	69.940	71.510
SD.161	76.980	76.950	77.020	77.360	74.400	74.180	85.950	72.090	69.970	71.510
SD.162	76.960	76.930	77.020	77.370	74.500	74.340	85.890	72.050	69.910	71.480
SD.163	76.990	76.950	77.050	77.390	74.180	74.150	85.860	72.030	69.870	71.470
SD.164	76.990	76.960	77.050	77.400	73.910	74.380	85.830	71.990	69.900	71.470
SD.165	77.020	76.990	77.070	77.400	73.940	74.210	85.800	71.960	69.830	71.450
SD.166	77.020	76.990	77.100	77.420	74.730	74.340	85.760	71.880	69.800	71.440
SD.167	77.040	77.010	77.080	77.450	74.320	74.410	85.730	71.850	69.820	71.410
SD.168	77.050	77.020	77.080	77.450	74.140	74.240	85.700	71.850	69.770	71.390
SD.169	77.050	77.040	77.110	77.430	74.370	74.520	85.690	71.800	69.730	71.380
SD.170	77.050	77.040	77.100	77.480	74.520	74.370	85.660	71.760	69.730	71.360
SD.171	77.070	77.070	77.140	77.520	74.140	74.410	85.640	71.850	69.740	71.330
SD.172	77.070	77.050	77.140	77.510	74.240	74.440	85.610	71.820	69.710	71.330
SD.173	77.080	77.050	77.130	77.480	73.980	74.270	85.580	71.710	69.700	71.300
SD.174	77.100	77.070	77.140	77.490	74.110	74.340	85.570	71.650	69.680	71.280
SD.175	77.100	77.080	77.160	77.510	74.340	74.320	85.550	71.730	69.650	71.280
SD.176	77.110	77.100	77.190	77.560	73.800	74.270	85.520	71.650	69.650	71.280
SD.177	77.130	77.100	77.160	77.560	73.800	74.240	85.470	71.680	69.620	71.250
SD.178	77.160	77.100	77.160	77.560	74.050	74.210	85.460	71.600	69.590	71.220
SD.179	77.140	77.110	77.190	77.560	73.770	74.140	85.440	71.560	69.610	71.210
SD.180	77.160	77.130	77.200	77.600	73.540	74.060	85.400	71.560	69.560	71.210
SD.181	77.160	77.140	77.190	77.570	73.740	73.970	85.380	71.570	69.580	71.210
SD.182	77.170	77.140	77.200	77.590	73.500	74.200	85.350	71.530	69.560	71.180
SD.183	77.170	77.160	77.220	77.590	73.250	74.050	85.320	71.530	69.510	71.180
SD.184	77.170	77.170	77.200	77.590	73.340	74.020	85.310	71.510	69.510	71.160
SD.185	77.190	77.160	77.240	77.630	73.330	74.030	85.260	71.510	69.510	71.150
SD.186	77.220	77.170	77.240	77.650	73.800	73.970	85.250	71.500	69.500	71.130
SD.187	77.240	77.200	77.270	77.660	74.350	73.890	85.230	71.420	69.480	71.160
SD.188	77.240	77.220	77.300	77.680	73.860	73.770	85.220	71.440	69.500	71.130

ARIZONA PUBLIC SERVICE COMPANY
PALO VERDE NUCLEAR GENERATING STATION
RAW DATA SUMMARY REPORT

SCAN NO.	RTD #21	RTD #22	RTD #23	RTD #24	DEW CELL #1	DEW CELL #2	DEW CELL #3	DEW CELL #4	DEW CELL #5	DEW CELL #6
SD.189	77.240	77.200	77.280	77.680	73.150	73.480	85.170	71.310	69.500	71.150
SD.190	77.270	77.220	77.280	77.660	73.470	73.730	85.150	71.410	69.450	71.160
SD.191	77.270	77.240	77.310	77.690	73.410	73.790	85.140	71.360	69.470	71.150
SD.192	77.270	77.240	77.300	77.710	73.730	74.020	85.110	71.310	69.450	71.160
SD.193	77.270	77.250	77.300	77.710	74.000	73.830	85.090	71.310	69.420	71.150
SD.194	77.280	77.250	77.310	77.720	73.530	73.880	85.080	71.330	69.410	71.130
SD.195	77.300	77.280	77.330	77.740	73.270	73.820	85.060	71.270	69.420	71.160
SD.196	77.280	77.280	77.330	77.710	73.600	73.700	85.030	71.300	69.410	71.130
SD.197	77.300	77.280	77.340	77.740	73.370	73.650	85.000	71.150	69.390	71.150
SD.198	77.310	77.280	77.340	77.740	73.120	73.600	84.990	71.150	69.380	71.100
SD.199	77.300	77.300	77.360	77.720	73.390	73.410	84.970	71.100	69.350	71.100
SD.200	77.310	77.280	77.340	77.740	73.300	73.390	84.960	71.180	69.330	71.100
SD.201	77.300	77.300	77.360	77.720	73.100	73.450	84.930	71.150	69.330	71.090
SD.202	77.330	77.310	77.340	77.740	72.960	73.370	84.910	71.090	69.330	71.090
SD.203	77.340	77.310	77.330	77.750	72.990	73.370	84.890	71.120	69.290	71.060
SD.204	77.340	77.310	77.370	77.740	73.040	73.450	84.860	71.040	69.250	71.060
SD.205	77.360	77.330	77.400	77.770	73.240	73.480	84.850	71.100	69.270	71.040
SD.206	77.340	77.340	77.390	77.770	72.960	73.440	84.820	71.090	69.250	71.040
SD.207	77.370	77.340	77.370	77.750	73.070	73.360	84.820	70.960	69.270	71.020
SD.208	77.390	77.340	77.420	77.780	73.120	73.340	84.790	71.060	69.220	71.020
SD.209	77.390	77.340	77.420	77.800	73.080	73.340	84.790	71.010	69.210	71.010
SD.210	77.390	77.370	77.420	77.780	72.860	73.250	84.760	70.990	69.240	70.980
SD.211	77.390	77.370	77.420	77.800	72.950	73.340	84.740	70.990	69.210	70.980
SD.212	77.390	77.370	77.420	77.770	72.730	73.340	84.740	70.960	69.190	70.980
SD.213	77.400	77.370	77.420	77.780	72.870	73.330	84.730	70.960	69.180	70.930
SD.214	77.430	77.390	77.430	77.800	73.050	73.310	84.710	70.870	69.150	70.950
SD.215	77.420	77.400	77.450	77.830	72.960	73.330	84.680	70.870	69.150	70.930
SD.216	77.420	77.400	77.430	77.830	72.700	73.310	84.650	70.900	69.150	70.950
SD.217	77.420	77.390	77.430	77.810	73.020	73.300	84.650	70.920	69.070	70.920
SD.218	77.430	77.400	77.460	77.850	72.900	73.280	84.640	70.900	69.120	70.900
SD.219	77.430	77.420	77.480	77.830	73.020	73.300	84.620	70.890	69.100	70.890
SD.220	77.450	77.430	77.450	77.850	73.020	73.240	84.610	70.890	69.100	70.890
SD.221	77.460	77.430	77.480	77.860	72.950	73.210	84.590	70.840	69.090	70.870
SD.222	77.480	77.450	77.490	77.850	72.890	73.150	84.570	70.830	69.060	70.860
SD.223	77.460	77.450	77.490	77.880	73.020	73.190	84.560	70.800	69.030	70.860
SD.224	77.480	77.450	77.520	77.890	72.960	73.160	84.540	70.720	69.040	70.830
SD.225	77.480	77.460	77.460	77.860	73.040	73.050	84.540	70.830	69.010	70.830
SD.226	77.490	77.460	77.490	77.880	73.120	73.050	84.510	70.720	69.040	70.810
SD.227	77.480	77.460	77.510	77.880	73.100	72.930	84.500	70.780	69.030	70.800
SD.228	77.490	77.460	77.510	77.880	73.080	72.890	84.480	70.730	68.960	70.780
SD.229	77.520	77.480	77.510	77.920	73.070	72.900	84.480	70.690	69.010	70.800
SD.230	77.510	77.480	77.510	77.910	72.860	72.780	84.470	70.670	68.960	70.780
SD.231	77.510	77.490	77.510	77.910	72.660	72.810	84.440	70.670	68.920	70.730
SD.232	77.510	77.490	77.520	77.920	72.960	72.900	84.440	70.610	68.930	70.750
SD.233	77.520	77.490	77.540	77.920	72.640	73.020	84.420	70.670	68.900	70.730
SD.234	77.520	77.510	77.520	77.940	72.600	72.860	84.410	70.630	68.930	70.720
SD.235	77.540	77.510	77.560	77.940	72.950	72.790	84.410	70.600	68.920	70.700
SD.236	77.560	77.520	77.560	77.920	72.890	72.700	84.390	70.630	68.900	70.720

ARIZONA PUBLIC SERVICE COMPANY
PALO VERDE NUCLEAR GENERATING STATION
RELATIVE HUMIDITY PROGRAM

SCAN NO.	AVERAGE DEW POINT TEMPERATURE (F)	AVERAGE CONTAINMENT TEMPERATURE (F)	AVERAGE VAPOR PRESSURE (PSIA)	AVERAGE RELATIVE HUMIDITY (%)
SD.140	73.104	86.221	0.402	65.065
SD.141	73.130	86.192	0.402	65.183
SD.142	73.133	86.168	0.402	65.239
SD.143	73.079	86.147	0.402	65.165
SD.144	73.148	86.115	0.403	65.381
SD.145	73.150	86.092	0.403	65.433
SD.146	73.078	86.071	0.402	65.321
SD.147	72.983	86.041	0.400	65.172
SD.148	73.000	86.013	0.401	65.270
SD.149	72.924	85.985	0.400	65.159
SD.150	72.896	85.980	0.399	65.109
SD.151	72.661	85.949	0.396	64.660
SD.152	72.610	85.928	0.395	64.592
SD.153	72.489	85.914	0.394	64.356
SD.154	72.591	85.889	0.395	64.630
SD.155	72.575	85.889	0.395	64.595
SD.156	72.504	85.855	0.394	64.509
SD.157	72.554	85.831	0.395	64.669
SD.158	72.527	85.820	0.394	64.631
SD.159	72.594	85.799	0.395	64.824
SD.160	72.514	85.784	0.394	64.678
SD.161	72.410	85.785	0.393	64.450
SD.162	72.435	85.758	0.393	64.559
SD.163	72.321	85.754	0.392	64.319
SD.164	72.310	85.744	0.391	64.318
SD.165	72.259	85.728	0.391	64.237
SD.166	72.415	85.721	0.393	64.592
SD.167	72.340	85.715	0.392	64.441
SD.168	72.257	85.693	0.391	64.307
SD.169	72.337	85.681	0.392	64.504
SD.170	72.325	85.679	0.392	64.483
SD.171	72.272	85.682	0.391	64.363
SD.172	72.286	85.655	0.391	64.447
SD.173	72.171	85.635	0.390	64.239
SD.174	72.190	85.633	0.390	64.282
SD.175	72.241	85.615	0.391	64.432
SD.176	72.109	85.618	0.389	64.138
SD.177	72.097	85.587	0.389	64.177
SD.178	72.112	85.580	0.389	64.223
SD.179	72.037	85.566	0.388	64.088
SD.180	71.966	85.560	0.387	63.948
SD.181	71.994	85.544	0.387	64.040
SD.182	71.974	85.530	0.387	64.026
SD.183	71.885	85.519	0.386	63.856
SD.184	71.889	85.504	0.386	63.894
SD.185	71.887	85.493	0.386	63.912

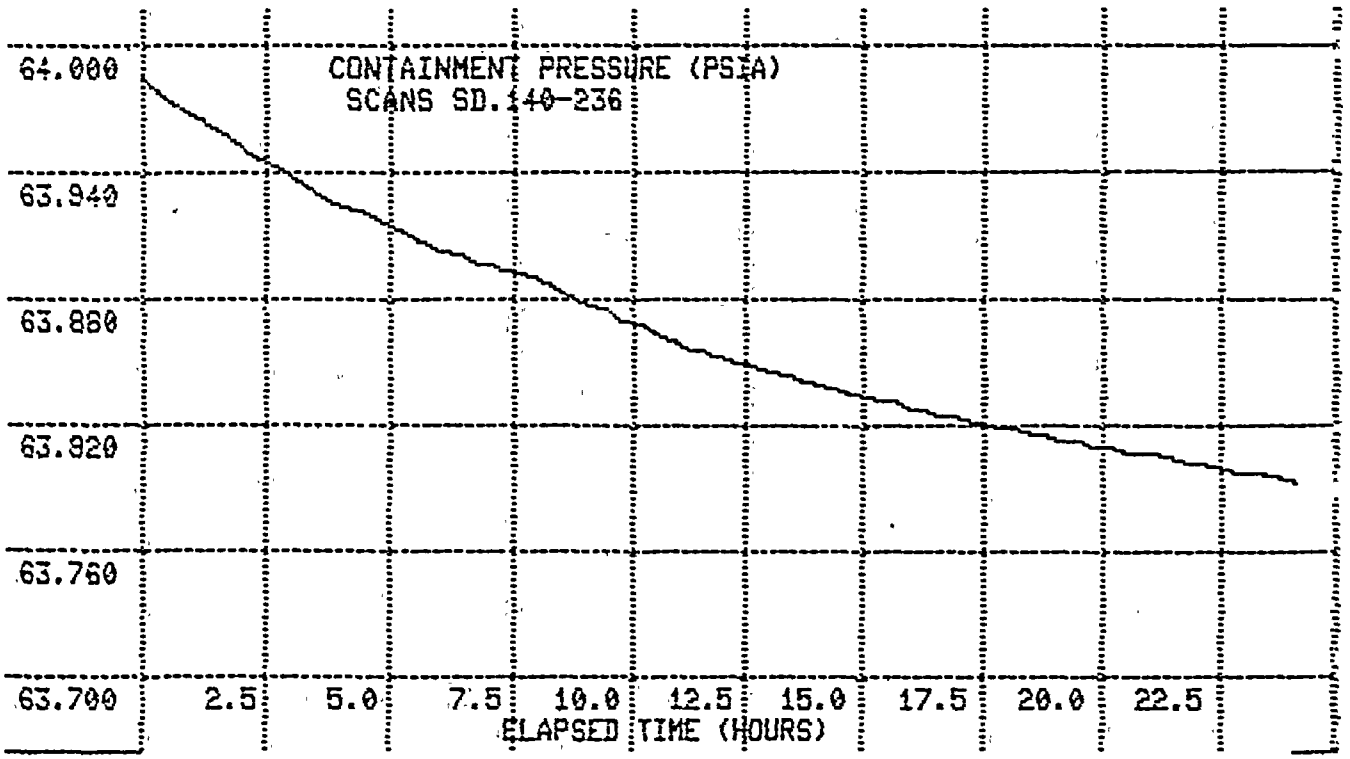
ARIZONA PUBLIC SERVICE COMPANY
PALO VERDE NUCLEAR GENERATING STATION
RELATIVE HUMIDITY PROGRAM

SCAN NO.	AVERAGE DEW POINT TEMPERATURE (F)	AVERAGE CONTAINMENT TEMPERATURE (F)	AVERAGE VAPOR PRESSURE (PSIA)	AVERAGE RELATIVE HUMIDITY (%)
SD.186	71.959	85.484	0.387	64.087
SD.187	72.037	85.482	0.388	64.261
SD.188	71.919	85.481	0.386	64.007
SD.189	71.700	85.459	0.383	63.580
SD.190	71.825	85.464	0.385	63.839
SD.191	71.816	85.450	0.385	63.848
SD.192	71.912	85.442	0.386	64.073
SD.193	71.920	85.434	0.386	64.105
SD.194	71.835	85.432	0.385	63.926
SD.195	71.768	85.434	0.384	63.778
SD.196	71.808	85.403	0.385	63.925
SD.197	71.722	85.390	0.384	63.767
SD.198	71.651	85.389	0.383	63.615
SD.199	71.650	85.378	0.383	63.637
SD.200	71.641	85.369	0.383	63.634
SD.201	71.606	85.360	0.382	63.577
SD.202	71.550	85.357	0.382	63.464
SD.203	71.548	85.347	0.381	63.479
SD.204	71.549	85.340	0.381	63.496
SD.205	71.607	85.335	0.382	63.629
SD.206	71.538	85.324	0.381	63.504
SD.207	71.517	85.321	0.381	63.466
SD.208	71.533	85.312	0.381	63.517
SD.209	71.511	85.313	0.381	63.468
SD.210	71.446	85.300	0.380	63.356
SD.211	71.475	85.304	0.381	63.410
SD.212	71.422	85.284	0.380	63.336
SD.213	71.436	85.273	0.380	63.388
SD.214	71.446	85.278	0.380	63.401
SD.215	71.429	85.275	0.380	63.369
SD.216	71.384	85.260	0.379	63.302
SD.217	71.427	85.250	0.380	63.416
SD.218	71.401	85.241	0.380	63.378
SD.219	71.421	85.231	0.380	63.440
SD.220	71.409	85.238	0.380	63.401
SD.221	71.373	85.234	0.379	63.332
SD.222	71.339	85.227	0.379	63.273
SD.223	71.360	85.223	0.379	63.326
SD.224	71.322	85.219	0.379	63.253
SD.225	71.333	85.204	0.379	63.308
SD.226	71.328	85.196	0.379	63.313
SD.227	71.309	85.190	0.378	63.284
SD.228	71.269	85.182	0.378	63.213
SD.229	71.275	85.196	0.378	63.197
SD.230	71.192	85.170	0.377	63.072
SD.231	71.140	85.174	0.376	62.955

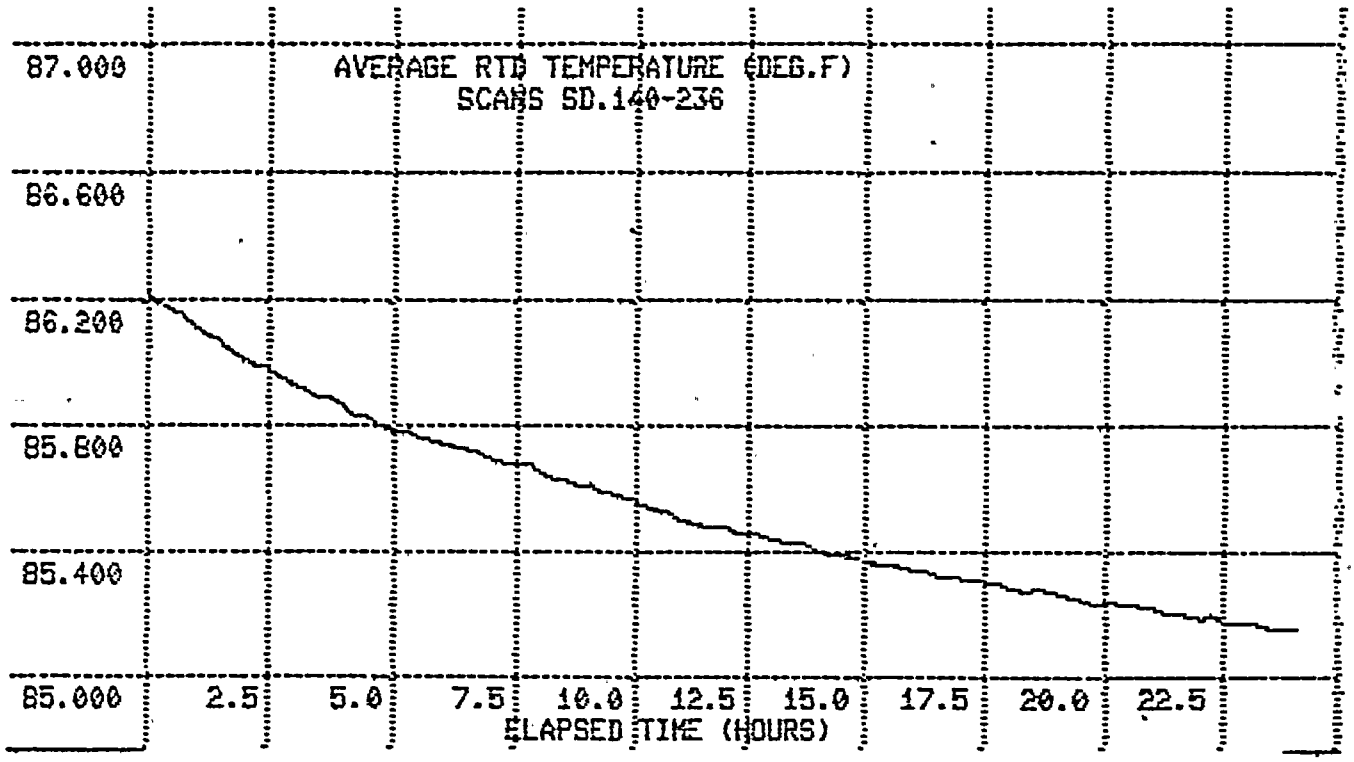
ARIZONA PUBLIC SERVICE COMPANY
PALO VERDE NUCLEAR GENERATING STATION
RELATIVE HUMIDITY PROGRAM

SCAN NO.	AVERAGE DEW POINT TEMPERATURE (F)	AVERAGE CONTAINMENT TEMPERATURE (F)	AVERAGE VAPOR PRESSURE (PSIA)	AVERAGE RELATIVE HUMIDITY (%)
SD.232	71.211	85.168	0.377	63.116
SD.233	71.174	85.162	0.377	63.050
SD.234	71.130	85.154	0.376	62.973
SD.235	71.173	85.155	0.377	63.063
SD.236	71.150	85.150	0.376	63.023

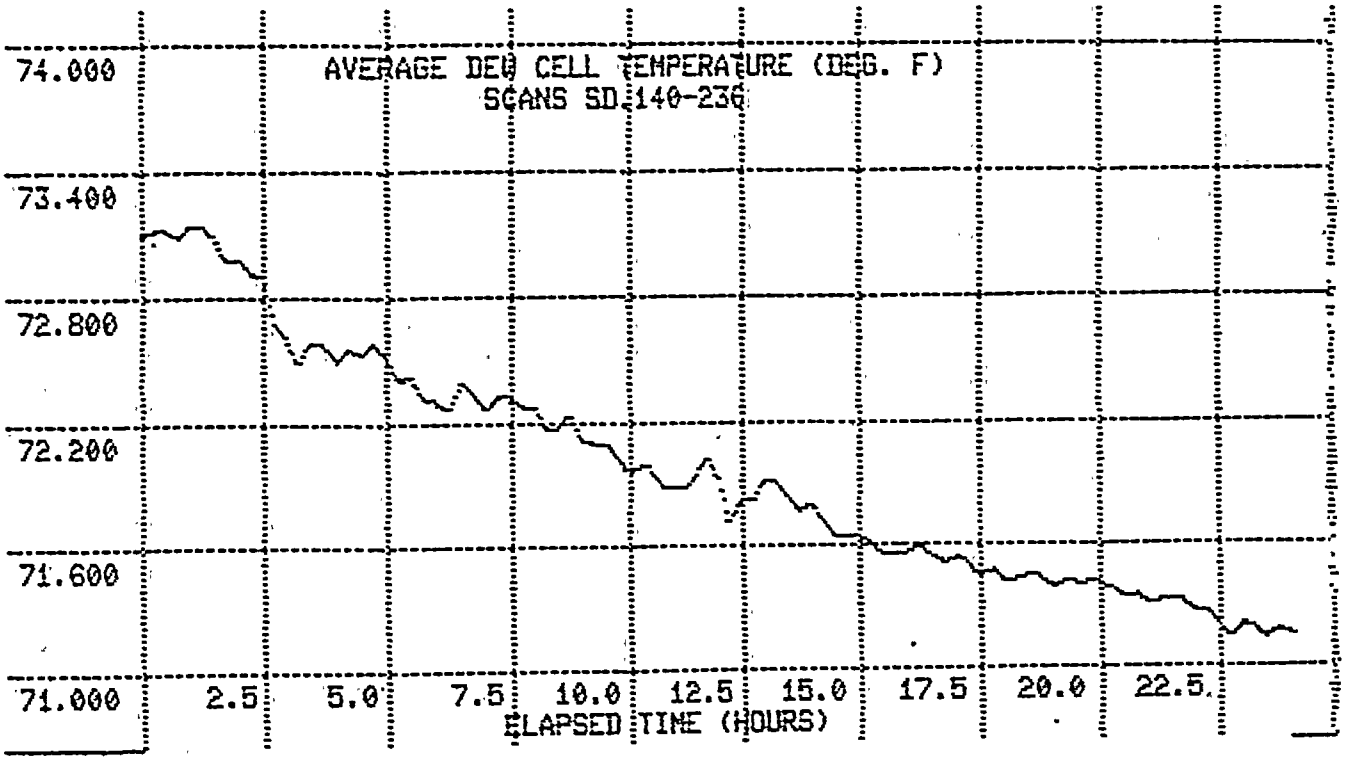
ILRT


CONTAINMENT PRESSURE (PSIA)
SCANS SD.140-236
64.000
63.940
63.880
63.820
63.760
63.700
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
22.5
ELAPSED TIME (HOURS)

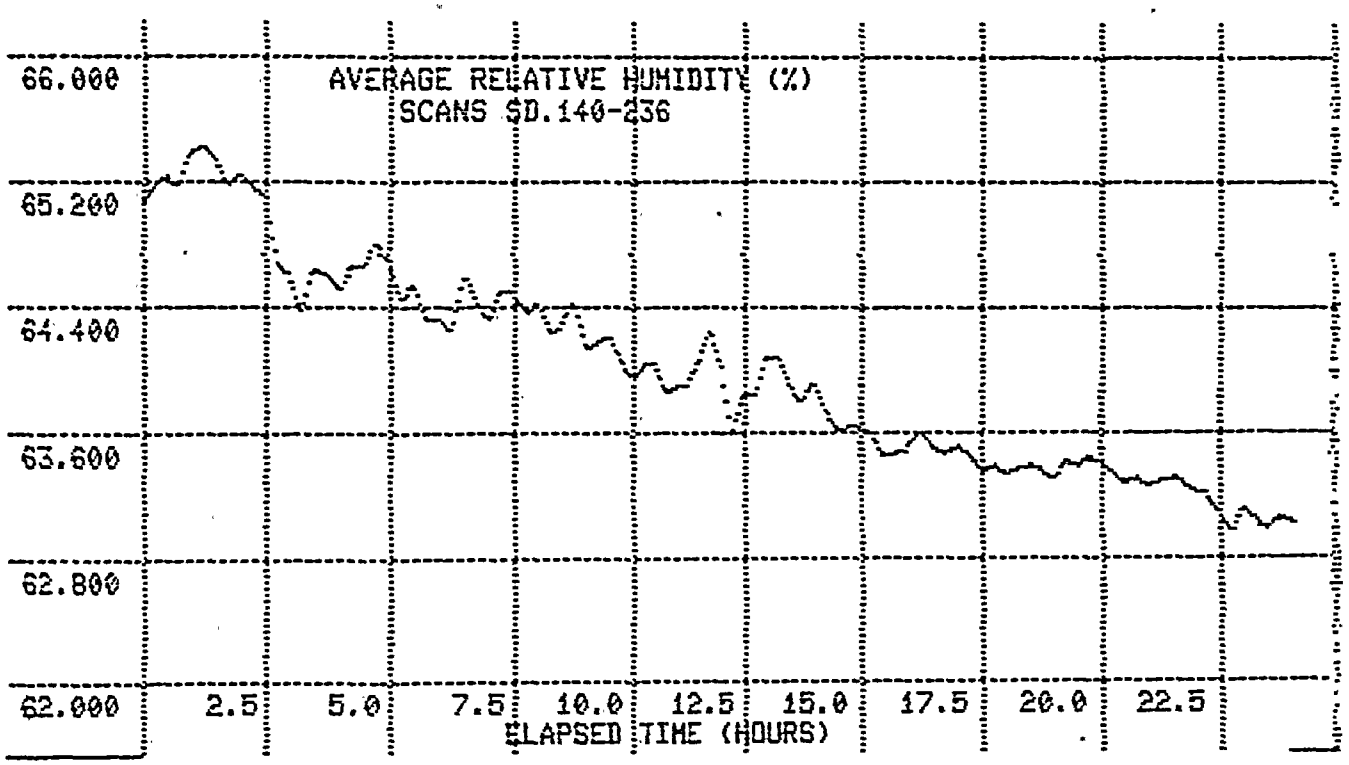
ILRT


AVERAGE RTD TEMPERATURE (DEG.F)
SCABS SD.140-236
87.000
86.600
86.200
85.800
85.400
85.000
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
22.5
ELAPSED TIME (HOURS)

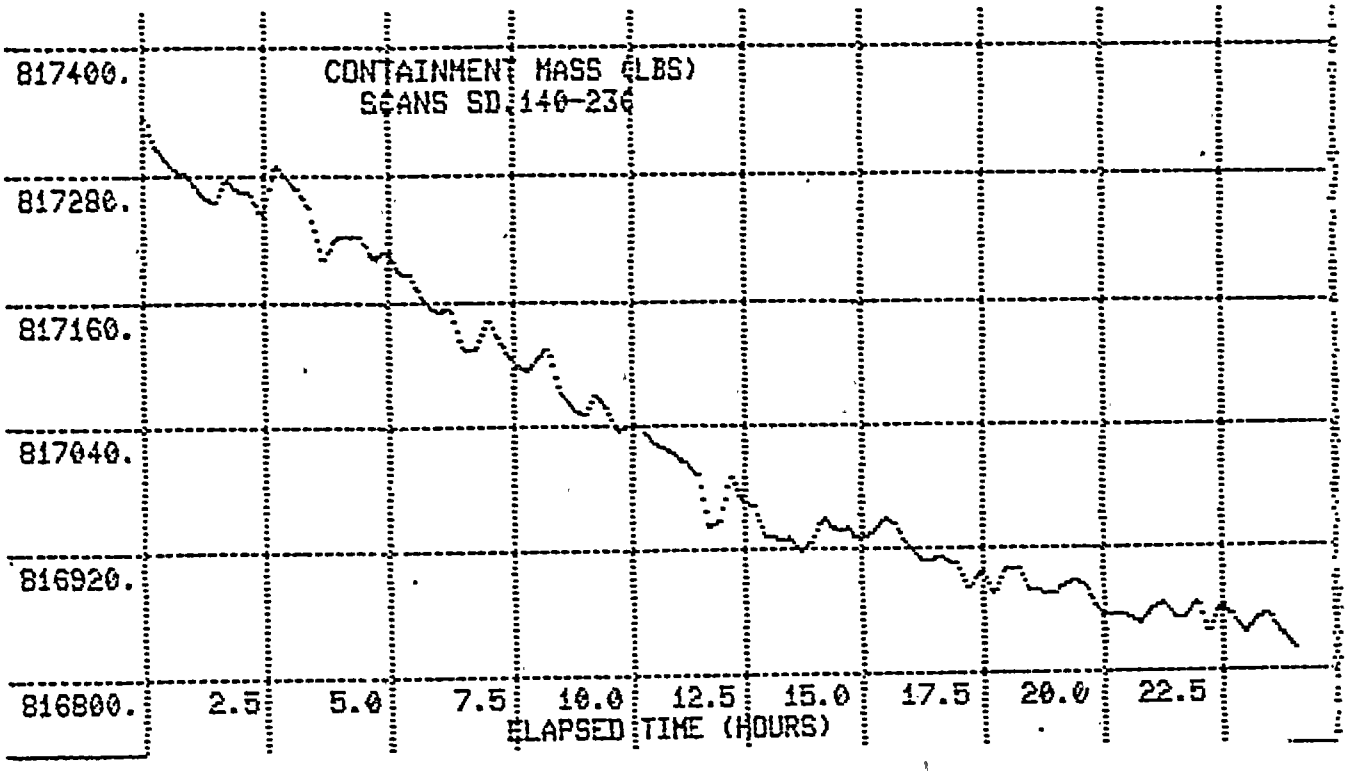
ILRT


AVERAGE DEW CELL TEMPERATURE (DEG. F)
SCANS SD.140-236
74.000
73.400
72.800
72.200
71.600
71.000
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
22.5
ELAPSED TIME (HOURS)

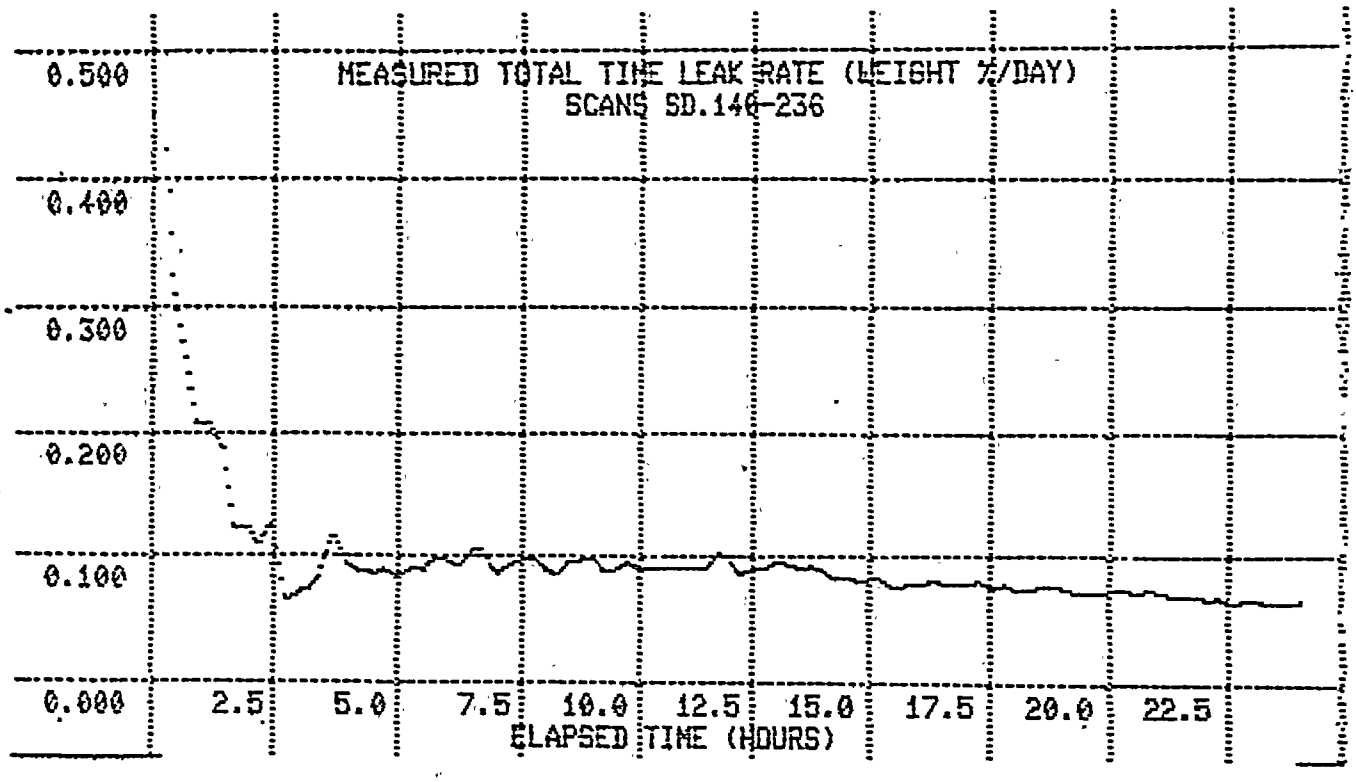
ILRT


AVERAGE RELATIVE HUMIDITY (%)
SCANS SD.140-236
66.000
65.200
64.400
63.600
62.800
62.000
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
22.5
ELAPSED TIME (HOURS)

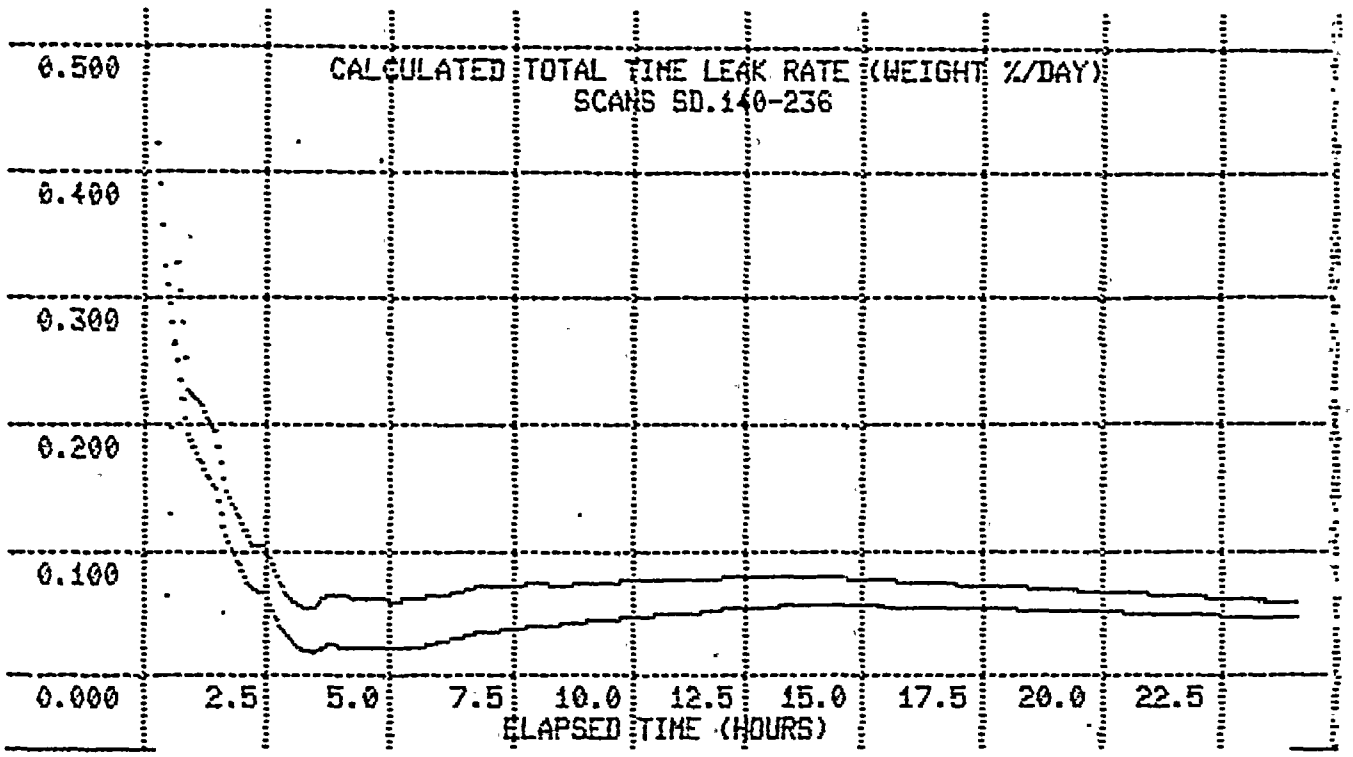
ILRT


CONTAINMENT MASS (LBS)
SCANS SD 140-236
817400.
817280.
817160.
817040.
816920.
816800.
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
22.5
ELAPSED TIME (HOURS)

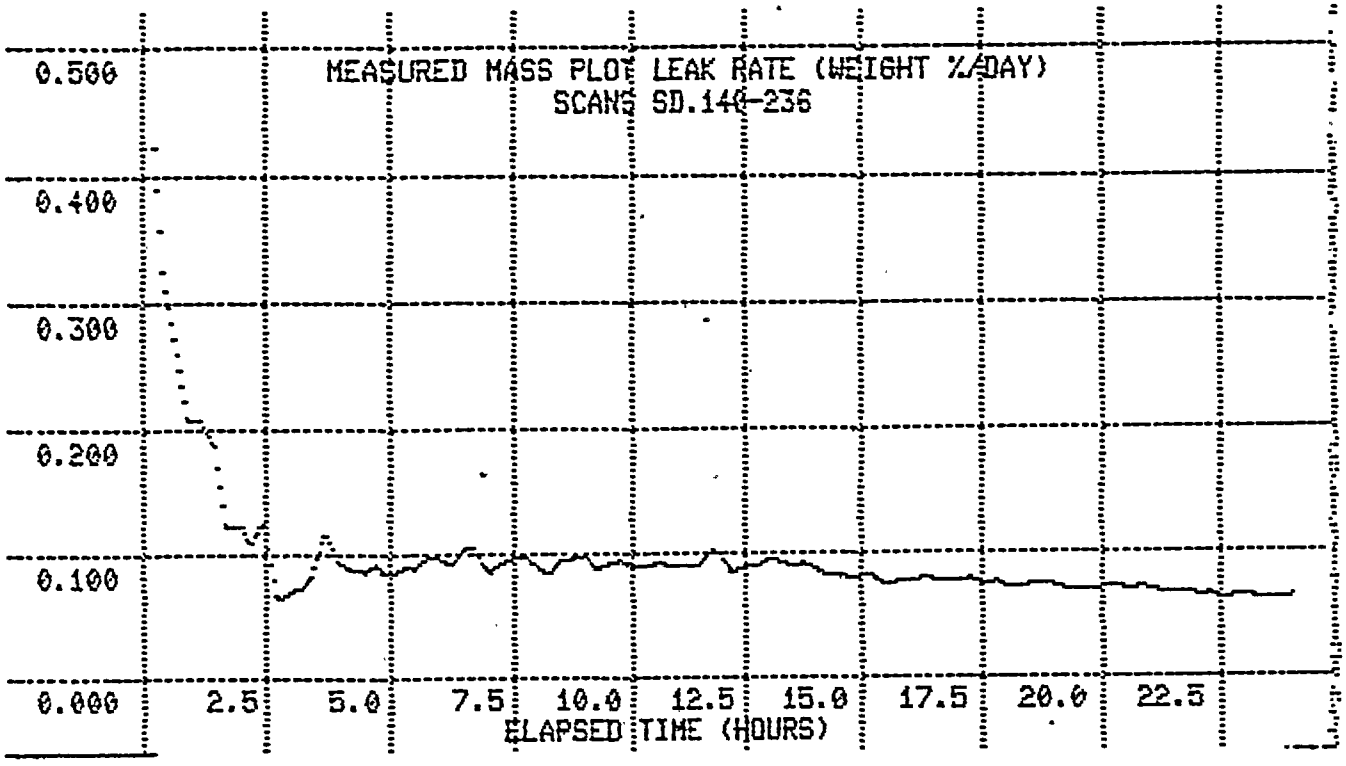
ILRT


MEASURED TOTAL TIME LEAK RATE (WEIGHT %/DAY)
SCANS SD.146-236
0.500
0.400
0.300
0.200
0.100
0.000
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
22.5
ELAPSED TIME (HOURS)

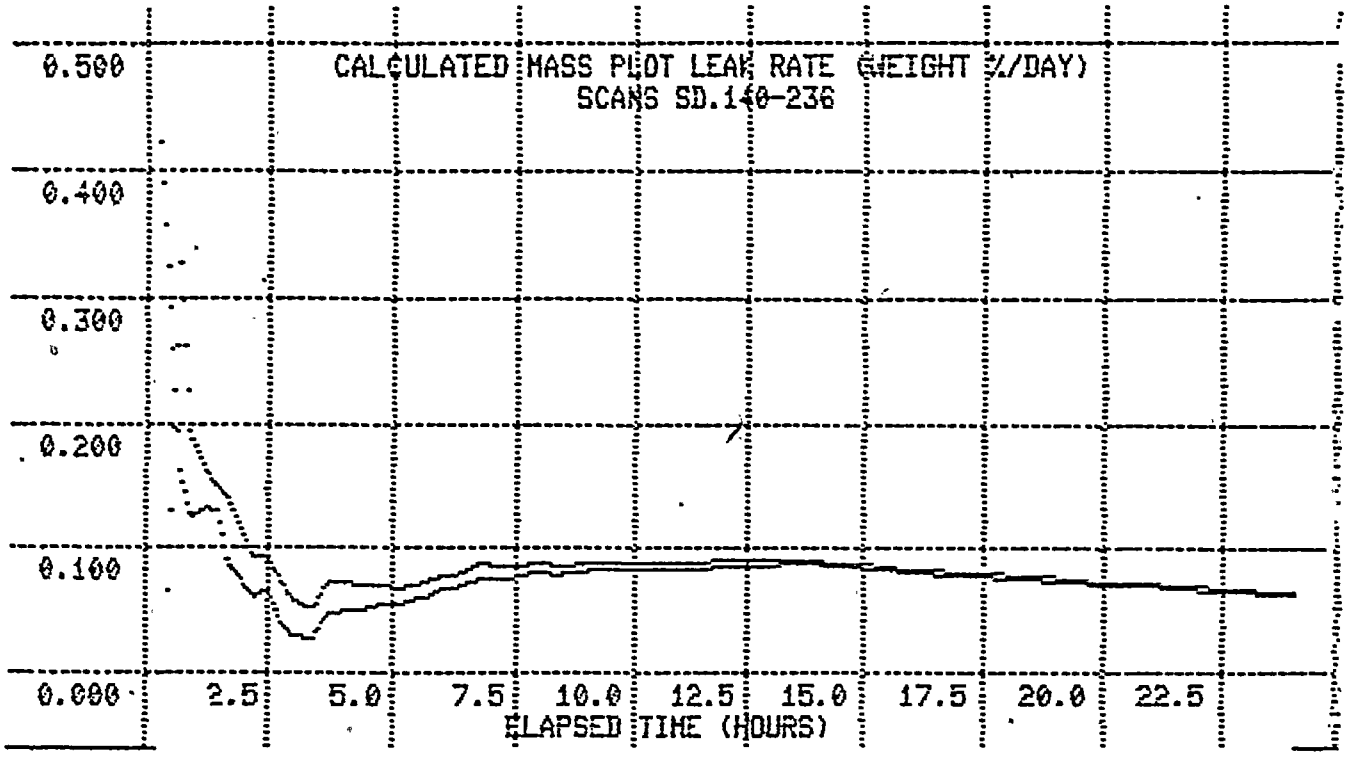
ILRT


CALCULATED TOTAL TIME LEAK RATE (WEIGHT %/DAY)
SCANS SD.140-236
0.500
0.400
0.300
0.200
0.100
0.000
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
22.5
ELAPSED TIME (HOURS)

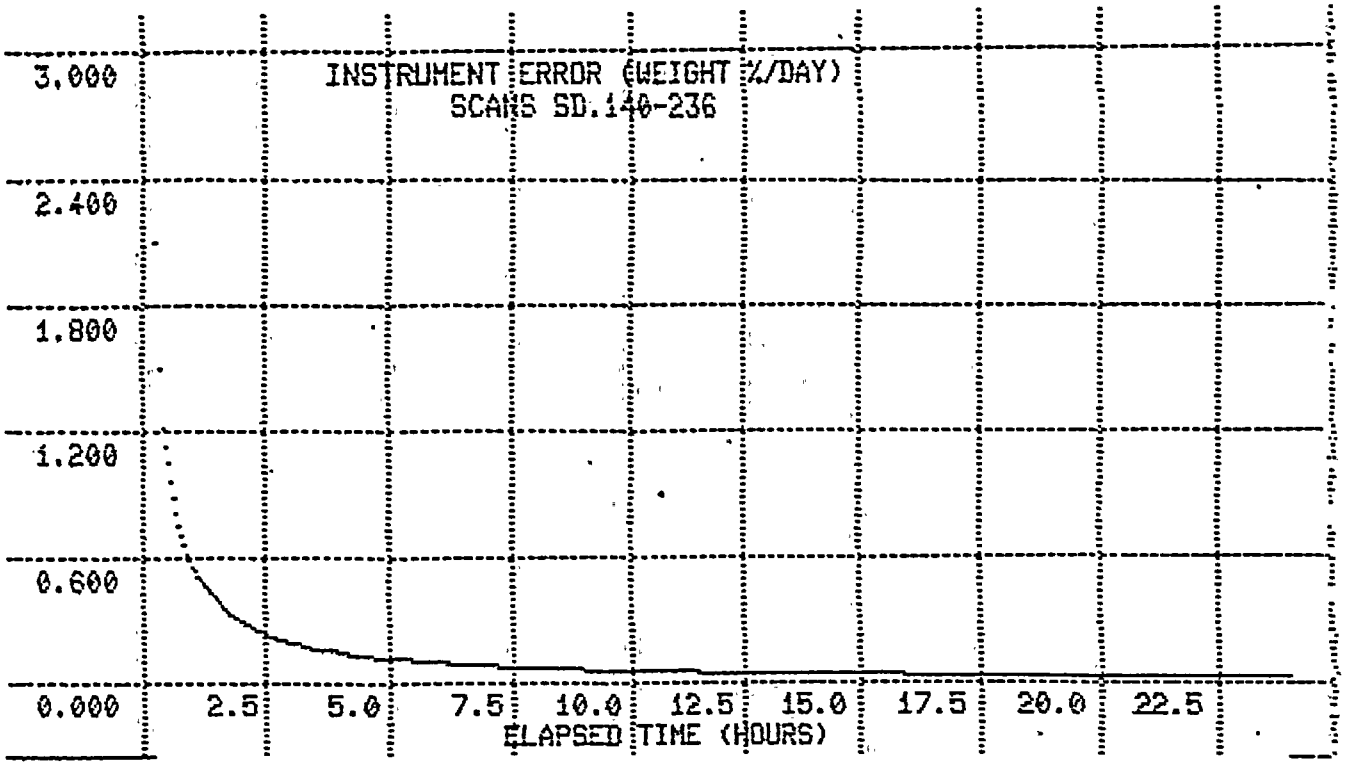
ILRT


MEASURED MASS PLOT LEAK RATE (WEIGHT %/DAY)
SCANS SD.140-236
0.500
0.400
0.300
0.200
0.100
0.000
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
22.5
ELAPSED TIME (HOURS)

ILRT


CALCULATED MASS PLOT LEAK RATE (WEIGHT %/DAY)
SCANS SD.140-236
0.500
0.400
0.300
0.200
0.100
0.000
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
22.5
ELAPSED TIME (HOURS)

ILRT


INSTRUMENT ERROR (WEIGHT %/DAY)
SCANS SD.140-236
3.000
2.400
1.800
1.200
0.600
0.000
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
22.5
ELAPSED TIME (HOURS)

3.

CONTROLLED LEAK RATE TEST

(CLRT)

ARIZONA PUBLIC SERVICE COMPANY
PALO VERDE NUCLEAR GENERATING STATION
ILRT PROGRAM REPORT

STARTING DAY - 148 STARTING TIME - 12:45: 0 STARTING SCAN - SD.244 ENDING SCAN - SD.287

SCAN NO.	ELAPSED TIME (HR)	AVERAGE TEMP. (F)	AVERAGE PRESSURE (PSIA)	POINT TO POINT MEASURED LEAK RATE	POINT TO POINT CALCULATED LEAK RATE	TOTAL TIME MEASURED LEAK RATE	TOTAL TIME CALCULATED LEAK RATE	TOTAL TIME UPPER CONFIDENCE	MASS PLOT MEASURED LEAK RATE	MASS PLOT CALCULATED LEAK RATE	MASS PLOT UPPER CONFIDENCE
				(WEIGHT PERCENT PER DAY)							
SD.244	0.00	85.15	63.782								
SD.245	0.25	85.14	63.780	0.195E+00	0.195E+00	0.195E+00	0.195E+00	0.000E+00	0.194E+00	0.194E+00	0.000E+00
SD.246	0.50	85.13	63.780	-0.212E+00	-0.212E+00	-0.801E-02	-0.801E-02	0.000E+00	-0.808E-02	-0.808E-02	0.000E+00
SD.247	0.75	85.12	63.778	0.149E+00	0.210E-01	0.441E-01	0.162E-02	0.333E+00	0.443E-01	-0.333E-01	0.853E+00
SD.248	1.00	85.12	63.777	0.801E-01	0.555E-01	0.532E-01	0.152E-01	0.114E+00	0.534E-01	0.188E-01	0.181E+00
SD.249	1.25	85.12	63.775	0.330E+00	0.221E+00	0.109E+00	0.564E-01	0.138E+00	0.109E+00	0.922E-01	0.216E+00
SD.250	1.50	85.12	63.773	0.978E-01	0.183E+00	0.107E+00	0.776E-01	0.141E+00	0.107E+00	0.115E+00	0.192E+00
SD.251	1.75	85.13	63.772	0.431E+00	0.315E+00	0.153E+00	0.111E+00	0.168E+00	0.153E+00	0.156E+00	0.227E+00
SD.252	2.00	85.12	63.772	-0.315E+00	0.839E-01	0.948E-01	0.108E+00	0.156E+00	0.950E-01	0.134E+00	0.191E+00
SD.253	2.25	85.12	63.771	0.154E+00	0.108E+00	0.101E+00	0.108E+00	0.149E+00	0.101E+00	0.125E+00	0.169E+00
SD.254	2.50	85.11	63.770	-0.355E-01	0.599E-01	0.877E-01	0.103E+00	0.140E+00	0.876E-01	0.112E+00	0.149E+00
SD.255	2.75	85.10	63.770	0.469E-01	0.516E-01	0.840E-01	0.987E-01	0.132E+00	0.840E-01	0.102E+00	0.134E+00
SD.256	3.00	85.10	63.768	0.146E+00	0.751E-01	0.891E-01	0.967E-01	0.127E+00	0.891E-01	0.978E-01	0.124E+00
SD.257	3.25	85.10	63.768	-0.137E+00	0.149E-01	0.717E-01	0.904E-01	0.118E+00	0.717E-01	0.874E-01	0.112E+00
SD.258	3.50	85.10	63.766	0.277E+00	0.753E-01	0.864E-01	0.893E-01	0.115E+00	0.864E-01	0.864E-01	0.107E+00
SD.259	3.75	85.12	63.766	0.449E+00	0.164E+00	0.111E+00	0.943E-01	0.118E+00	0.111E+00	0.946E-01	0.115E+00
SD.260	4.00	85.12	63.765	0.160E-01	0.136E+00	0.105E+00	0.969E-01	0.119E+00	0.105E+00	0.987E-01	0.117E+00
SD.261	4.25	85.12	63.765	0.110E+00	0.134E+00	0.105E+00	0.991E-01	0.120E+00	0.105E+00	0.102E+00	0.117E+00
SD.262	4.50	85.12	63.764	0.486E-01	0.119E+00	0.102E+00	0.100E+00	0.120E+00	0.102E+00	0.102E+00	0.117E+00
SD.263	4.75	85.12	63.764	0.155E+00	0.128E+00	0.105E+00	0.102E+00	0.120E+00	0.105E+00	0.104E+00	0.117E+00
SD.264	5.00	85.13	63.763	0.154E+00	0.135E+00	0.107E+00	0.103E+00	0.121E+00	0.107E+00	0.106E+00	0.118E+00
SD.265	5.25	85.13	63.762	0.138E+00	0.138E+00	0.109E+00	0.105E+00	0.122E+00	0.109E+00	0.108E+00	0.118E+00
SD.266	5.50	85.13	63.762	0.292E-01	0.122E+00	0.105E+00	0.106E+00	0.122E+00	0.105E+00	0.108E+00	0.118E+00
SD.267	5.75	85.13	63.760	0.342E+00	0.159E+00	0.115E+00	0.108E+00	0.123E+00	0.115E+00	0.111E+00	0.121E+00
SD.268	6.00	85.14	63.759	0.221E+00	0.172E+00	0.120E+00	0.111E+00	0.125E+00	0.120E+00	0.115E+00	0.124E+00
SD.269	6.25	85.14	63.758	0.196E+00	0.180E+00	0.123E+00	0.114E+00	0.128E+00	0.123E+00	0.118E+00	0.127E+00
SD.270	6.50	85.13	63.758	-0.152E+00	0.136E+00	0.112E+00	0.114E+00	0.128E+00	0.112E+00	0.118E+00	0.127E+00
SD.271	6.75	85.13	63.757	0.641E-01	0.127E+00	0.110E+00	0.115E+00	0.128E+00	0.110E+00	0.118E+00	0.126E+00
SD.272	7.00	85.13	63.755	0.207E+00	0.139E+00	0.114E+00	0.116E+00	0.128E+00	0.114E+00	0.119E+00	0.126E+00
SD.273	7.25	85.13	63.754	0.142E+00	0.141E+00	0.115E+00	0.117E+00	0.129E+00	0.115E+00	0.119E+00	0.126E+00
SD.274	7.50	85.12	63.752	0.175E+00	0.147E+00	0.117E+00	0.118E+00	0.129E+00	0.117E+00	0.120E+00	0.126E+00
SD.275	7.75	85.12	63.751	0.664E-01	0.139E+00	0.115E+00	0.118E+00	0.130E+00	0.115E+00	0.120E+00	0.126E+00
SD.276	8.00	85.12	63.750	0.102E+00	0.136E+00	0.115E+00	0.119E+00	0.130E+00	0.115E+00	0.121E+00	0.126E+00
SD.277	8.25	85.11	63.748	0.275E+00	0.153E+00	0.120E+00	0.120E+00	0.130E+00	0.120E+00	0.122E+00	0.127E+00
SD.278	8.50	85.12	63.746	0.355E+00	0.178E+00	0.127E+00	0.122E+00	0.132E+00	0.127E+00	0.124E+00	0.129E+00
SD.279	8.75	85.12	63.746	-0.767E-01	0.153E+00	0.121E+00	0.122E+00	0.132E+00	0.121E+00	0.124E+00	0.129E+00
SD.280	9.00	85.12	63.744	0.282E+00	0.168E+00	0.125E+00	0.124E+00	0.133E+00	0.125E+00	0.125E+00	0.130E+00
SD.281	9.25	85.12	63.742	0.255E+00	0.180E+00	0.129E+00	0.125E+00	0.135E+00	0.129E+00	0.127E+00	0.132E+00
SD.282	9.50	85.11	63.741	0.847E-01	0.172E+00	0.128E+00	0.126E+00	0.136E+00	0.128E+00	0.129E+00	0.133E+00
SD.283	9.75	85.11	63.739	0.331E+00	0.190E+00	0.133E+00	0.128E+00	0.137E+00	0.133E+00	0.130E+00	0.135E+00
SD.284	10.00	85.12	63.738	0.486E-01	0.179E+00	0.131E+00	0.129E+00	0.138E+00	0.131E+00	0.132E+00	0.136E+00
SD.285	10.25	85.12	63.736	0.236E+00	0.187E+00	0.133E+00	0.131E+00	0.139E+00	0.133E+00	0.133E+00	0.138E+00
SD.286	10.50	85.11	63.734	0.303E-01	0.175E+00	0.131E+00	0.132E+00	0.140E+00	0.131E+00	0.134E+00	0.139E+00
SD.287	10.75	85.10	63.733	-0.172E-01	0.160E+00	0.127E+00	0.132E+00	0.141E+00	0.127E+00	0.134E+00	0.139E+00

ARIZONA PUBLIC SERVICE COMPANY
PALO VERDE NUCLEAR GENERATING STATION
ILRT PROGRAM REPORT

STARTING DAY - 148 STARTING TIME - 12:45: 0 STARTING SCAN - SD.244 ENDING SCAN - SD.287

ILRT RESULTS AFTER 10.75 HRS.

POINT TO POINT	TOTAL TIME		MASS PLOT	
AVERAGE MEASURED LEAK RATES (WEIGHT PERCENT PER DAY)				
LEAK RATE	LEAK RATE	STD.DEV.	LEAK RATE	STD.DEV.
0.127E+00	0.109E+00	0.342E-01	0.109E+00	0.342E-01

CALCULATED LEAK RATES (WEIGHT PERCENT PER DAY)						
LEAK RATE	LEAK RATE	STD.DEV.	UPPER CON. LIMIT	LEAK RATE	STD.DEV.	UPPER CON.LIMIT
0.160E+00	0.132E+00	0.477E-02	0.141E+00	0.134E+00	0.264E-02	0.139E+00

ARIZONA PUBLIC SERVICE COMPANY
PALO VERDE NUCLEAR GENERATING STATION
RAW DATA SUMMARY REPORT

SCAN NO.	DATE	TIME	PRESS 1	PRESS 2	RTD #1	RTD #2	RTD #3	RTD #4	RTD #5	RTD #6	RTD #7	RTD #8	RTD #9
SD.244	148	12:45	62.922	63.007	89.760	90.480	90.630	89.950	90.620	91.040	87.430	87.240	87.780
SD.245	148	13: 0	62.920	63.006	89.750	90.460	90.620	89.900	90.600	91.010	87.460	87.210	87.780
SD.246	148	13:15	62.920	63.005	89.750	90.450	90.590	89.880	90.590	90.980	87.410	87.180	87.750
SD.247	148	13:30	62.918	63.004	89.720	90.450	90.590	89.870	90.560	90.970	87.430	87.200	87.670
SD.248	148	13:45	62.917	63.002	89.700	90.450	90.570	89.870	90.570	90.940	87.400	87.200	87.670
SD.249	148	14: 0	62.915	63.001	89.700	90.400	90.590	89.870	90.570	90.950	87.380	87.180	87.690
SD.250	148	14:15	62.913	62.999	89.720	90.430	90.570	89.850	90.560	90.940	87.370	87.180	87.670
SD.251	148	14:30	62.912	62.998	89.720	90.430	90.560	89.850	90.530	90.940	87.440	87.180	87.670
SD.252	148	14:45	62.912	62.998	89.690	90.390	90.560	89.820	90.530	90.920	87.410	87.150	87.670
SD.253	148	15: 0	62.911	62.997	89.670	90.370	90.560	89.850	90.510	90.910	87.380	87.170	87.700
SD.254	148	15:15	62.910	62.996	89.640	90.370	90.540	89.820	90.490	90.860	87.350	87.120	87.640
SD.255	148	15:30	62.910	62.995	89.640	90.360	90.510	89.790	90.480	90.880	87.350	87.150	87.660
SD.256	148	15:45	62.908	62.995	89.630	90.340	90.510	89.790	90.480	90.860	87.410	87.140	87.660
SD.257	148	16: 0	62.908	62.993	89.630	90.330	90.490	89.790	90.480	90.850	87.320	87.150	87.660
SD.258	148	16:15	62.906	62.993	89.630	90.340	90.490	89.780	90.460	90.830	87.320	87.080	87.580
SD.259	148	16:30	62.906	62.992	89.640	90.360	90.530	89.810	90.490	90.860	87.310	87.120	87.670
SD.260	148	16:45	62.905	62.990	89.630	90.340	90.490	89.790	90.450	90.850	87.310	87.150	87.670
SD.261	148	17: 0	62.905	62.990	89.630	90.340	90.490	89.780	90.450	90.860	87.380	87.140	87.670
SD.262	148	17:15	62.904	62.989	89.610	90.340	90.490	89.760	90.430	90.860	87.310	87.090	87.640
SD.263	148	17:30	62.904	62.988	89.590	90.330	90.490	89.780	90.450	90.850	87.290	87.140	87.630
SD.264	148	17:45	62.903	62.988	89.610	90.330	90.490	89.760	90.430	90.850	87.380	87.090	87.630
SD.265	148	18: 0	62.902	62.986	89.590	90.310	90.490	89.750	90.420	90.850	87.320	87.110	87.660
SD.266	148	18:15	62.902	62.985	89.590	90.300	90.480	89.750	90.420	90.830	87.320	87.120	87.670
SD.267	148	18:30	62.900	62.984	89.590	90.280	90.460	89.760	90.430	90.830	87.320	87.120	87.630
SD.268	148	18:45	62.899	62.983	89.580	90.280	90.480	89.730	90.400	90.830	87.340	87.120	87.700
SD.269	148	19: 0	62.898	62.982	89.580	90.280	90.480	89.760	90.420	90.830	87.340	87.150	87.660
SD.270	148	19:15	62.898	62.981	89.560	90.280	90.460	89.750	90.390	90.830	87.340	87.110	87.660
SD.271	148	19:30	62.897	62.980	89.550	90.250	90.430	89.720	90.400	90.830	87.320	87.140	87.610
SD.272	148	19:45	62.895	62.978	89.530	90.280	90.420	89.700	90.390	90.820	87.310	87.120	87.610
SD.273	148	20: 0	62.894	62.977	89.550	90.280	90.400	89.700	90.400	90.800	87.320	87.110	87.600
SD.274	148	20:15	62.892	62.976	89.530	90.280	90.400	89.690	90.370	90.780	87.290	87.110	87.600
SD.275	148	20:30	62.891	62.975	89.530	90.240	90.400	89.690	90.390	90.770	87.320	87.090	87.630
SD.276	148	20:45	62.890	62.973	89.520	90.250	90.400	89.700	90.370	90.770	87.320	87.110	87.570
SD.277	148	21: 0	62.888	62.971	89.530	90.240	90.420	89.690	90.370	90.780	87.240	87.110	87.530
SD.278	148	21:15	62.886	62.970	89.500	90.240	90.390	89.670	90.370	90.780	87.290	87.080	87.610
SD.279	148	21:30	62.886	62.969	89.500	90.240	90.390	89.690	90.370	90.750	87.280	87.080	87.570
SD.280	148	21:45	62.884	62.968	89.500	90.240	90.400	89.660	90.370	90.750	87.280	87.050	87.580
SD.281	148	22: 0	62.882	62.966	89.520	90.220	90.390	89.670	90.360	90.770	87.280	87.050	87.550
SD.282	148	22:15	62.881	62.964	89.500	90.220	90.390	89.660	90.360	90.780	87.230	87.020	87.570
SD.283	148	22:30	62.879	62.963	89.490	90.210	90.390	89.670	90.340	90.770	87.280	87.000	87.570
SD.284	148	22:45	62.878	62.961	89.470	90.190	90.360	89.660	90.330	90.750	87.310	87.050	87.550
SD.285	148	23: 0	62.876	62.960	89.490	90.210	90.360	89.670	90.340	90.750	87.310	87.030	87.550
SD.286	148	23:15	62.875	62.959	89.470	90.190	90.370	89.670	90.330	90.750	87.240	87.030	87.570
SD.287	148	23:30	62.874	62.958	89.460	90.170	90.360	89.660	90.310	90.710	87.260	87.000	87.500

ARIZONA PUBLIC SERVICE COMPANY
PALO VERDE NUCLEAR GENERATING STATION
RAW DATA SUMMARY REPORT

SCAN NO.	RTD #10	RTD #11	RTD #12	RTD #13	RTD #14	RTD #15	RTD #16	RTD #17	RTD #18	RTD #19	RTD #20
SD.244	86.730	86.990	86.910	83.520	83.980	83.060	82.820	81.680	81.870	81.580	77.970
SD.245	86.710	86.990	86.880	83.490	83.960	83.090	82.880	81.680	81.870	81.580	78.000
SD.246	86.710	86.940	86.880	83.510	83.990	83.060	82.770	81.680	81.860	81.580	78.010
SD.247	86.700	86.970	86.830	83.490	83.950	83.060	82.840	81.690	81.860	81.610	78.000
SD.248	86.680	86.950	86.850	83.520	83.980	83.090	82.710	81.690	81.860	81.570	78.000
SD.249	86.650	86.940	86.860	83.540	83.950	83.080	82.870	81.710	81.870	81.610	78.030
SD.250	86.700	86.950	86.850	83.520	83.980	83.110	82.790	81.710	81.900	81.600	78.030
SD.251	86.680	86.940	86.850	83.520	84.030	83.110	82.990	81.710	81.900	81.610	78.040
SD.252	86.660	86.950	86.850	83.520	84.010	83.090	82.900	81.710	81.900	81.600	78.060
SD.253	86.650	86.920	86.850	83.550	84.010	83.090	82.760	81.720	81.900	81.610	78.070
SD.254	86.650	86.940	86.820	83.550	84.030	83.090	82.930	81.740	81.900	81.580	78.060
SD.255	86.630	86.920	86.790	83.540	84.010	83.110	82.940	81.740	81.900	81.580	78.090
SD.256	86.630	86.910	86.800	83.520	84.040	83.110	82.840	81.740	81.920	81.600	78.040
SD.257	86.620	86.860	86.820	83.540	84.010	83.090	82.910	81.740	81.920	81.610	78.070
SD.258	86.630	86.910	86.790	83.570	84.030	83.090	82.910	81.750	81.920	81.640	78.100
SD.259	86.630	86.910	86.790	83.570	84.090	83.160	82.900	81.770	81.950	81.640	78.100
SD.260	86.620	86.860	86.820	83.570	84.090	83.140	82.840	81.770	81.950	81.640	78.140
SD.261	86.600	86.890	86.800	83.580	84.070	83.140	83.060	81.770	81.950	81.660	78.140
SD.262	86.660	86.880	86.790	83.570	84.100	83.140	83.050	81.780	81.970	81.640	78.150
SD.263	86.650	86.890	86.800	83.610	84.150	83.160	82.900	81.780	81.970	81.680	78.150
SD.264	86.600	86.920	86.790	83.630	84.150	83.170	82.990	81.800	81.970	81.680	78.170
SD.265	86.630	86.890	86.800	83.630	84.150	83.160	83.050	81.800	82.000	81.690	78.180
SD.266	86.660	86.910	86.790	83.630	84.160	83.160	83.020	81.800	82.000	81.710	78.200
SD.267	86.600	86.910	86.820	83.640	84.180	83.190	83.170	81.810	82.010	81.710	78.200
SD.268	86.620	86.910	86.820	83.660	84.180	83.170	83.110	81.810	82.030	81.740	78.210
SD.269	86.590	86.880	86.790	83.640	84.210	83.200	83.030	81.830	82.040	81.680	78.210
SD.270	86.650	86.880	86.790	83.640	84.160	83.190	83.080	81.830	82.030	81.690	78.200
SD.271	86.570	86.890	86.770	83.670	84.150	83.140	82.970	81.840	82.030	81.740	78.230
SD.272	86.620	86.890	86.790	83.640	84.150	83.190	83.050	81.840	82.040	81.750	78.230
SD.273	86.630	86.890	86.790	83.640	84.130	83.190	83.050	81.840	82.040	81.710	78.240
SD.274	86.590	86.850	86.790	83.610	84.120	83.230	83.110	81.840	82.060	81.740	78.240
SD.275	86.560	86.850	86.760	83.600	84.120	83.200	83.160	81.840	82.060	81.800	78.260
SD.276	86.560	86.850	86.760	83.610	84.120	83.170	83.050	81.860	82.040	81.780	78.210
SD.277	86.540	86.830	86.740	83.600	84.120	83.200	83.000	81.870	82.060	81.740	78.240
SD.278	86.600	86.820	86.740	83.610	84.100	83.190	82.930	81.870	82.060	81.710	78.240
SD.279	86.570	86.820	86.760	83.610	84.070	83.200	82.990	81.890	82.070	81.750	78.290
SD.280	86.570	86.830	86.760	83.630	84.090	83.220	82.840	81.890	82.090	81.750	78.270
SD.281	86.510	86.850	86.760	83.610	84.130	83.190	82.960	81.890	82.090	81.780	78.290
SD.282	86.500	86.800	86.730	83.640	84.070	83.190	83.140	81.890	82.070	81.740	78.290
SD.283	86.530	86.800	86.730	83.640	84.070	83.220	83.030	81.890	82.090	81.770	78.270
SD.284	86.540	86.770	86.740	83.640	84.120	83.190	82.910	81.890	82.090	81.800	78.290
SD.285	86.530	86.800	86.710	83.660	84.070	83.190	83.090	81.890	82.100	81.800	78.300
SD.286	86.530	86.790	86.680	83.630	84.060	83.190	82.840	81.900	82.100	81.830	78.330
SD.287	86.540	86.760	86.700	83.660	84.040	83.190	83.060	81.900	82.100	81.800	78.320

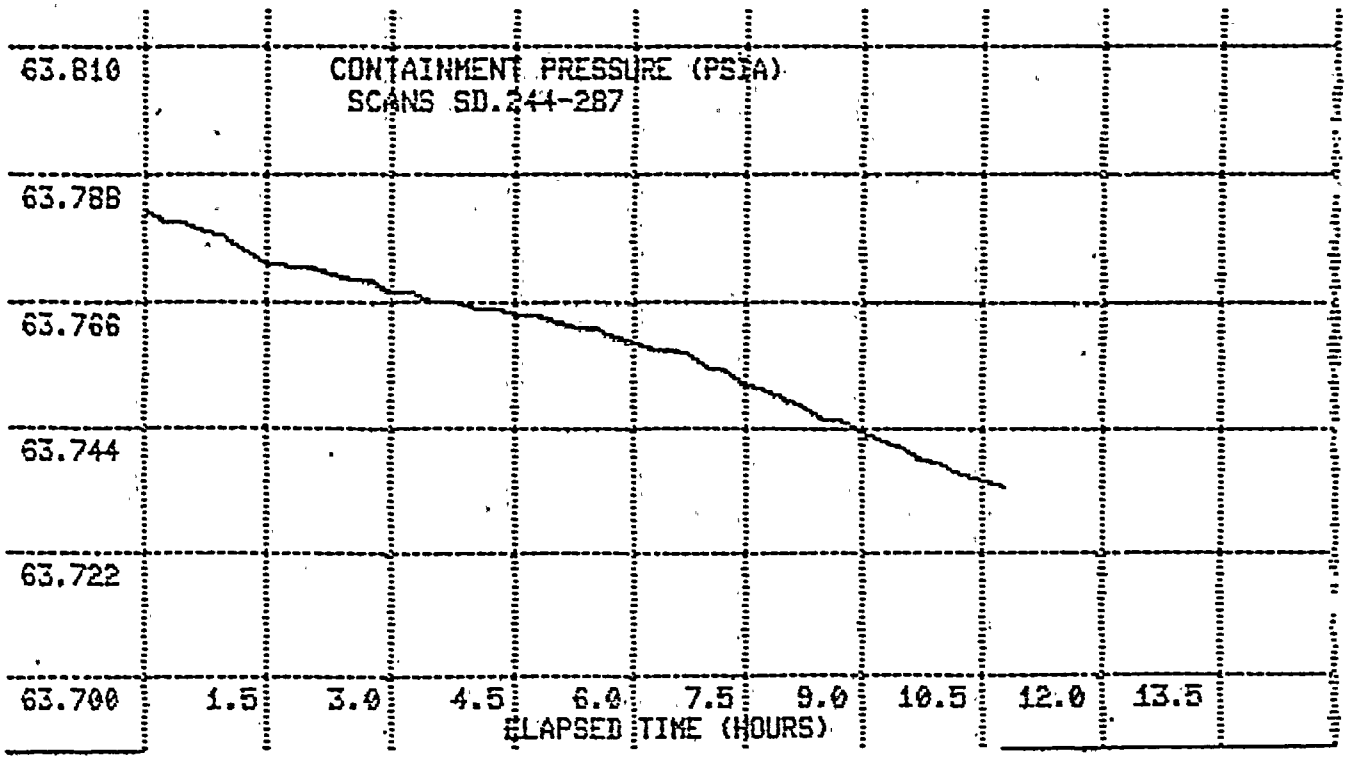
ARIZONA PUBLIC SERVICE COMPANY
PALO VERDE NUCLEAR GENERATING STATION
RAW DATA SUMMARY REPORT

SCAN NO.	RTD #21	RTD #22	RTD #23	RTD #24	DEW CELL #1	DEW CELL #2	DEW CELL #3	DEW CELL #4	DEW CELL #5	DEW CELL #6
SD.244	77.620	77.600	77.650	78.030	72.580	72.380	84.300	70.490	68.810	70.640
SD.245	77.630	77.600	77.630	78.010	72.630	72.540	84.300	70.490	68.800	70.610
SD.246	77.630	77.600	77.630	78.010	72.490	72.630	84.300	70.480	68.800	70.610
SD.247	77.630	77.600	77.650	78.030	72.540	72.540	84.280	70.480	68.780	70.600
SD.248	77.630	77.620	77.650	78.040	72.570	72.490	84.250	70.400	68.750	70.580
SD.249	77.630	77.630	77.650	78.030	72.540	72.540	84.250	70.460	68.770	70.570
SD.250	77.660	77.630	77.660	78.060	71.860	72.470	84.250	70.400	68.750	70.580
SD.251	77.660	77.630	77.680	78.060	72.550	72.350	84.250	70.400	68.750	70.570
SD.252	77.680	77.660	77.680	78.070	72.180	72.260	84.250	70.430	68.720	70.570
SD.253	77.680	77.650	77.690	78.090	72.380	72.150	84.240	70.370	68.720	70.520
SD.254	77.690	77.660	77.690	78.070	72.540	72.140	84.220	70.380	68.720	70.490
SD.255	77.680	77.660	77.680	78.100	72.670	72.250	84.220	70.350	68.740	70.510
SD.256	77.690	77.660	77.690	78.100	72.400	72.120	84.210	70.380	68.690	70.490
SD.257	77.710	77.680	77.690	78.120	72.370	72.120	84.210	70.290	68.670	70.490
SD.258	77.720	77.690	77.690	78.100	72.340	72.170	84.210	70.310	68.660	70.480
SD.259	77.740	77.710	77.720	78.140	72.310	72.210	84.210	70.290	68.690	70.440
SD.260	77.750	77.710	77.720	78.140	72.310	72.170	84.190	70.260	68.670	70.450
SD.261	77.740	77.720	77.750	78.150	72.340	72.280	84.210	70.290	68.630	70.440
SD.262	77.770	77.740	77.750	78.150	72.260	72.280	84.190	70.280	68.630	70.440
SD.263	77.750	77.740	77.750	78.150	72.230	72.410	84.190	70.280	68.610	70.430
SD.264	77.770	77.740	77.770	78.170	72.150	72.320	84.210	70.230	68.630	70.410
SD.265	77.780	77.750	77.750	78.180	72.170	72.380	84.190	70.230	68.610	70.370
SD.266	77.780	77.770	77.770	78.180	72.180	72.280	84.190	70.200	68.610	70.370
SD.267	77.800	77.780	77.780	78.180	72.280	72.200	84.190	70.220	68.600	70.380
SD.268	77.800	77.780	77.780	78.210	72.250	72.230	84.190	70.230	68.570	70.320
SD.269	77.810	77.780	77.800	78.210	72.310	72.280	84.210	70.190	68.570	70.350
SD.270	77.810	77.800	77.810	78.210	72.150	72.280	84.190	70.220	68.570	70.320
SD.271	77.810	77.810	77.810	78.230	72.380	72.250	84.190	70.170	68.550	70.290
SD.272	77.810	77.810	77.800	78.230	72.120	72.260	84.190	70.110	68.550	70.290
SD.273	77.830	77.810	77.800	78.240	72.110	72.210	84.190	70.200	68.550	70.290
SD.274	77.860	77.830	77.830	78.260	72.050	72.120	84.180	70.170	68.550	70.260
SD.275	77.860	77.810	77.810	78.260	72.080	72.140	84.180	70.120	68.510	70.220
SD.276	77.860	77.830	77.850	78.260	72.200	72.030	84.160	70.110	68.510	70.250
SD.277	77.880	77.850	77.850	78.270	72.340	71.970	84.160	70.110	68.520	70.220
SD.278	77.860	77.850	77.880	78.270	72.580	71.890	84.150	70.060	68.490	70.230
SD.279	77.910	77.860	77.880	78.270	72.280	71.850	84.150	70.110	68.490	70.190
SD.280	77.910	77.890	77.910	78.300	71.940	71.910	84.150	70.090	68.490	70.190
SD.281	77.890	77.890	77.890	78.300	72.030	71.910	84.130	70.060	68.480	70.140
SD.282	77.910	77.880	77.890	78.300	72.340	71.920	84.130	70.080	68.480	70.120
SD.283	77.910	77.880	77.910	78.290	72.350	71.910	84.120	70.050	68.430	70.110
SD.284	77.920	77.910	77.920	78.330	72.110	71.710	84.120	70.050	68.430	70.120
SD.285	77.920	77.890	77.910	78.330	71.970	71.730	84.120	70.080	68.380	70.090
SD.286	77.920	77.910	77.920	78.320	71.880	71.790	84.100	69.990	68.430	70.050
SD.287	77.950	77.920	77.920	78.320	71.940	71.740	84.090	69.960	68.380	70.050

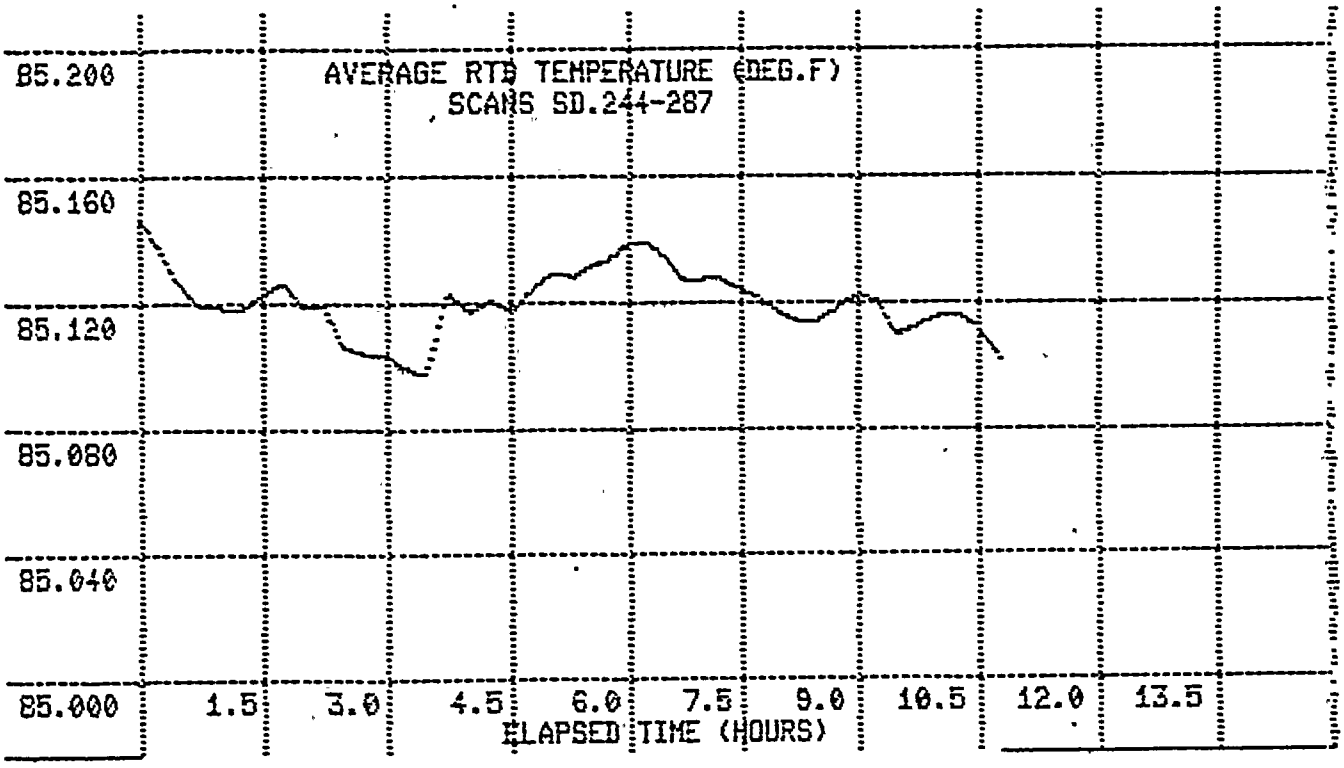
ARIZONA PUBLIC SERVICE COMPANY
PALO VERDE NUCLEAR GENERATING STATION
RELATIVE HUMIDITY PROGRAM

SCAN NO.	AVERAGE DEW POINT TEMPERATURE (F)	AVERAGE CONTAINMENT TEMPERATURE (F)	AVERAGE VAPOR PRESSURE (PSIA)	AVERAGE RELATIVE HUMIDITY (%)
SD.244	70.963	85.147	0.374	62.631
SD.245	70.996	85.137	0.374	62.721
SD.246	70.984	85.126	0.374	62.717
SD.247	70.970	85.119	0.374	62.703
SD.248	70.940	85.118	0.374	62.639
SD.249	70.958	85.118	0.374	62.679
SD.250	70.797	85.123	0.372	62.324
SD.251	70.907	85.127	0.373	62.550
SD.252	70.817	85.119	0.372	62.374
SD.253	70.812	85.120	0.372	62.363
SD.254	70.837	85.106	0.372	62.444
SD.255	70.886	85.104	0.373	62.554
SD.256	70.800	85.104	0.372	62.369
SD.257	70.771	85.099	0.372	62.318
SD.258	70.775	85.097	0.372	62.331
SD.259	70.775	85.123	0.372	62.280
SD.260	70.757	85.117	0.371	62.253
SD.261	70.779	85.121	0.372	62.291
SD.262	70.761	85.117	0.371	62.261
SD.263	70.775	85.124	0.372	62.276
SD.264	70.731	85.129	0.371	62.174
SD.265	70.735	85.128	0.371	62.184
SD.266	70.711	85.132	0.371	62.125
SD.267	70.719	85.134	0.371	62.139
SD.268	70.703	85.139	0.371	62.094
SD.269	70.722	85.139	0.371	62.135
SD.270	70.691	85.134	0.371	62.079
SD.271	70.710	85.127	0.371	62.133
SD.272	70.649	85.128	0.370	62.001
SD.273	70.655	85.127	0.370	62.018
SD.274	70.614	85.124	0.370	61.936
SD.275	70.597	85.121	0.369	61.907
SD.276	70.603	85.117	0.369	61.927
SD.277	70.615	85.114	0.370	61.957
SD.278	70.632	85.115	0.370	61.991
SD.279	70.567	85.118	0.369	61.850
SD.280	70.508	85.123	0.368	61.716
SD.281	70.509	85.120	0.368	61.720
SD.282	70.571	85.110	0.369	61.874
SD.283	70.552	85.113	0.369	61.828
SD.284	70.468	85.116	0.368	61.645
SD.285	70.435	85.116	0.367	61.575
SD.286	70.412	85.112	0.367	61.537
SD.287	70.398	85.103	0.367	61.523

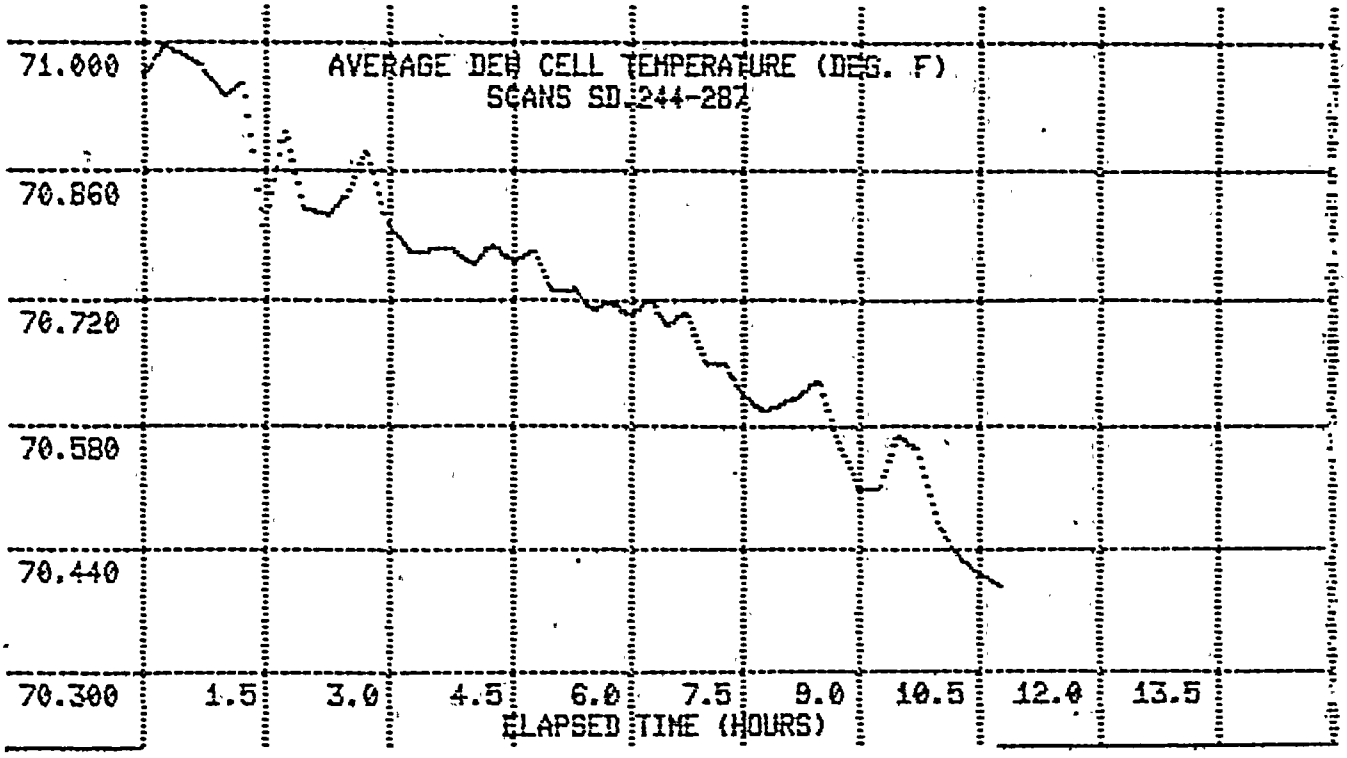
CLRT


CONTAINMENT PRESSURE (PSIA)
SCANS SD.244-287
63.810
63.788
63.766
63.744
63.722
63.700
1.5
3.0
4.5
6.0
7.5
9.0
10.5
12.0
13.5
ELAPSED TIME (HOURS)

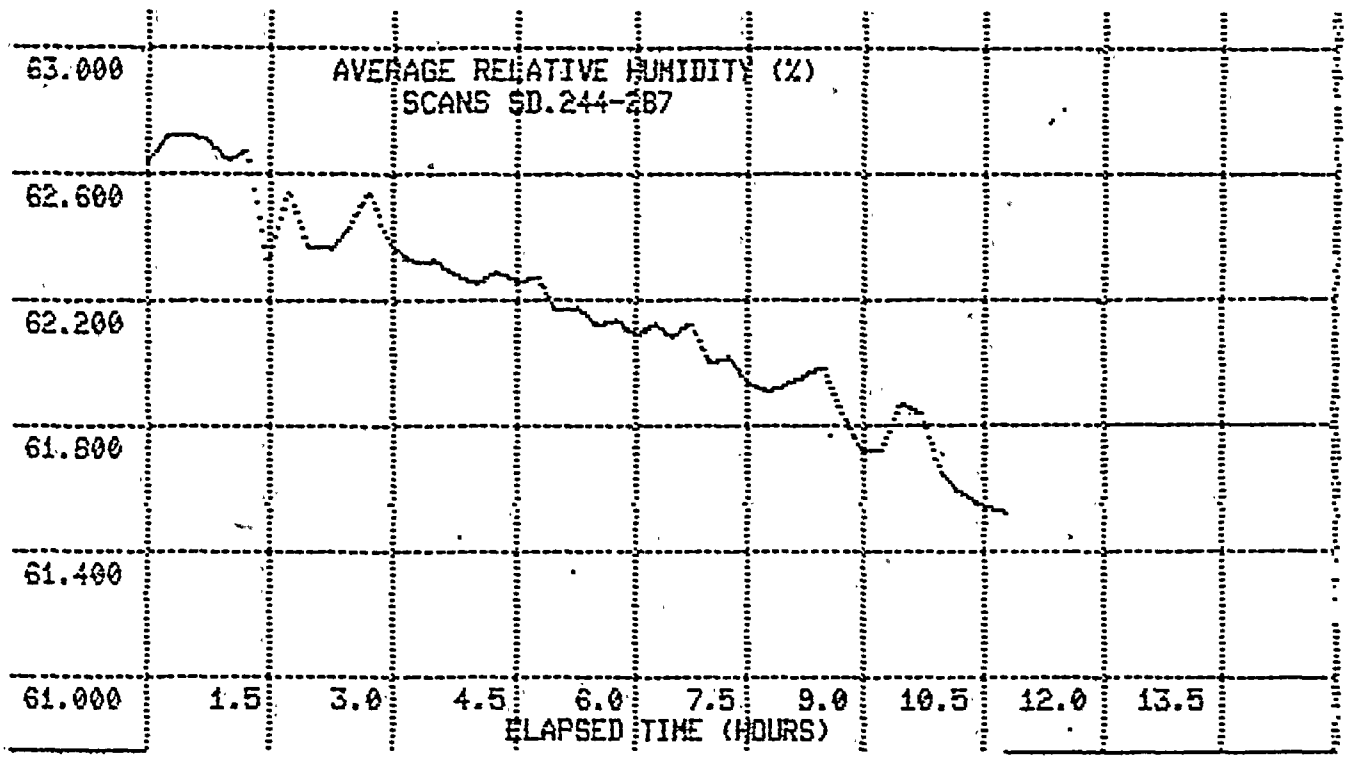
CLRT


AVERAGE RTD TEMPERATURE (DEG.F)
SCANS SD.244-287
85.200
85.160
85.120
85.080
85.040
85.000
1.5
3.0
4.5
6.0
7.5
9.0
10.5
12.0
13.5
ELAPSED TIME (HOURS)

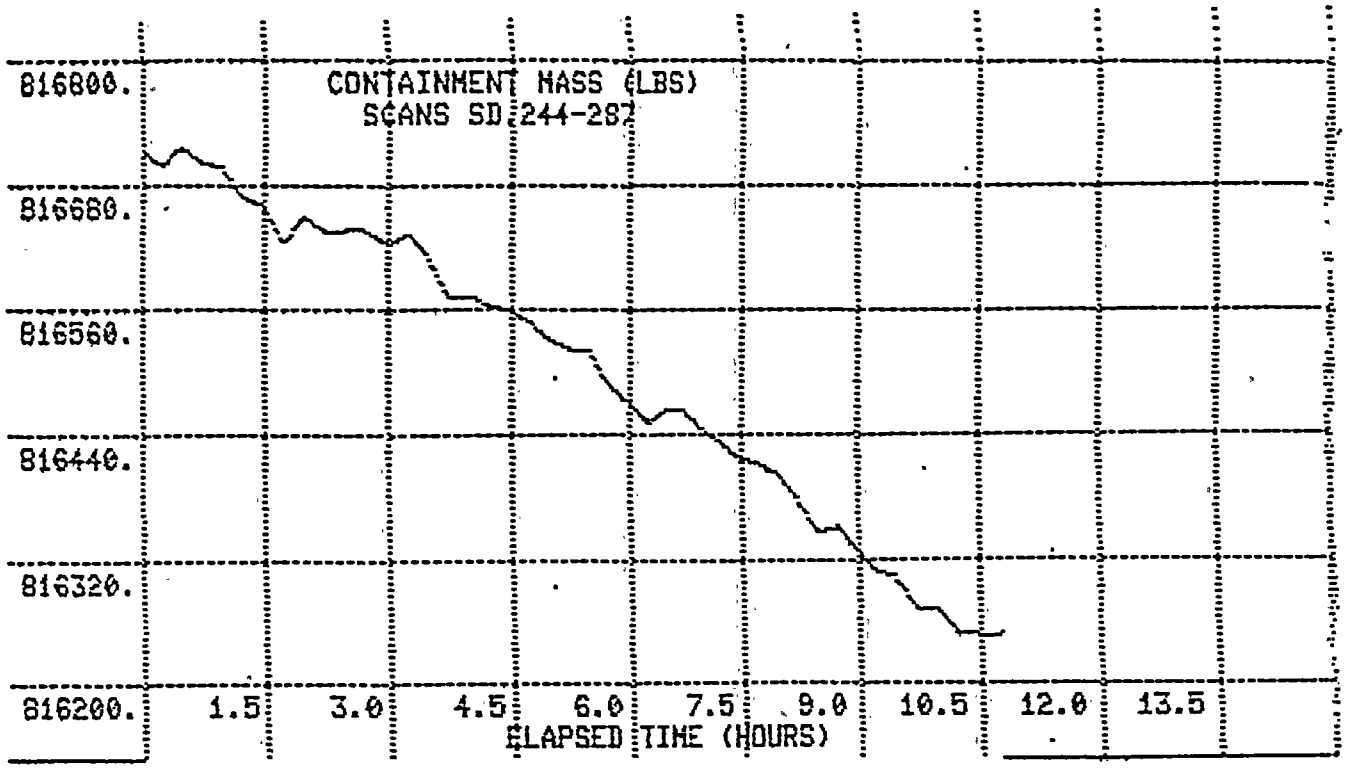
CLRT


AVERAGE DEW CELL TEMPERATURE (DEG. F)
SCANS SD 244-287
71.000
70.860
70.720
70.580
70.440
70.300
1.5
3.0
4.5
6.0
7.5
9.0
10.5
12.0
13.5
ELAPSED TIME (HOURS)

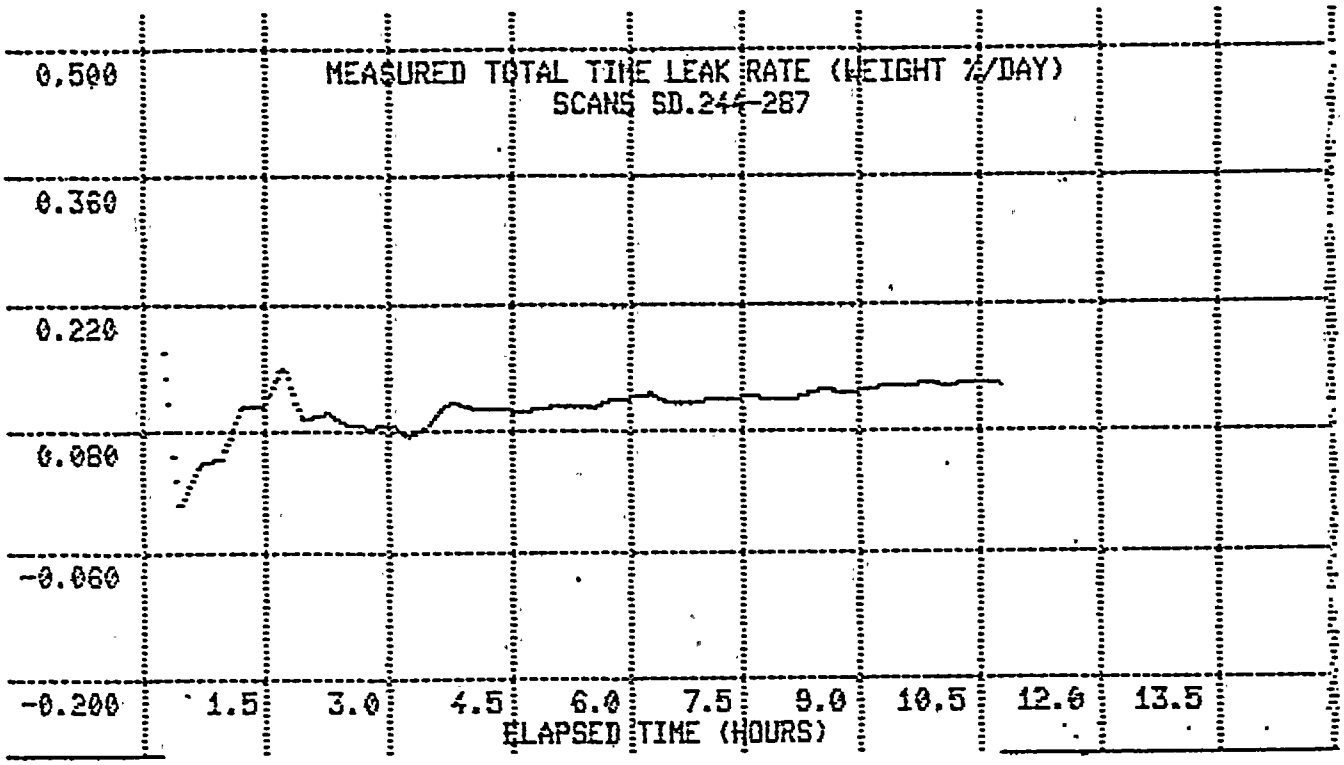
CLRT


AVERAGE RELATIVE HUMIDITY (%)
SCANS SD.244-287
63.000
62.600
62.200
61.800
61.400
61.000
1.5
3.0
4.5
6.0
7.5
9.0
10.5
12.0
13.5
ELAPSED TIME (HOURS)

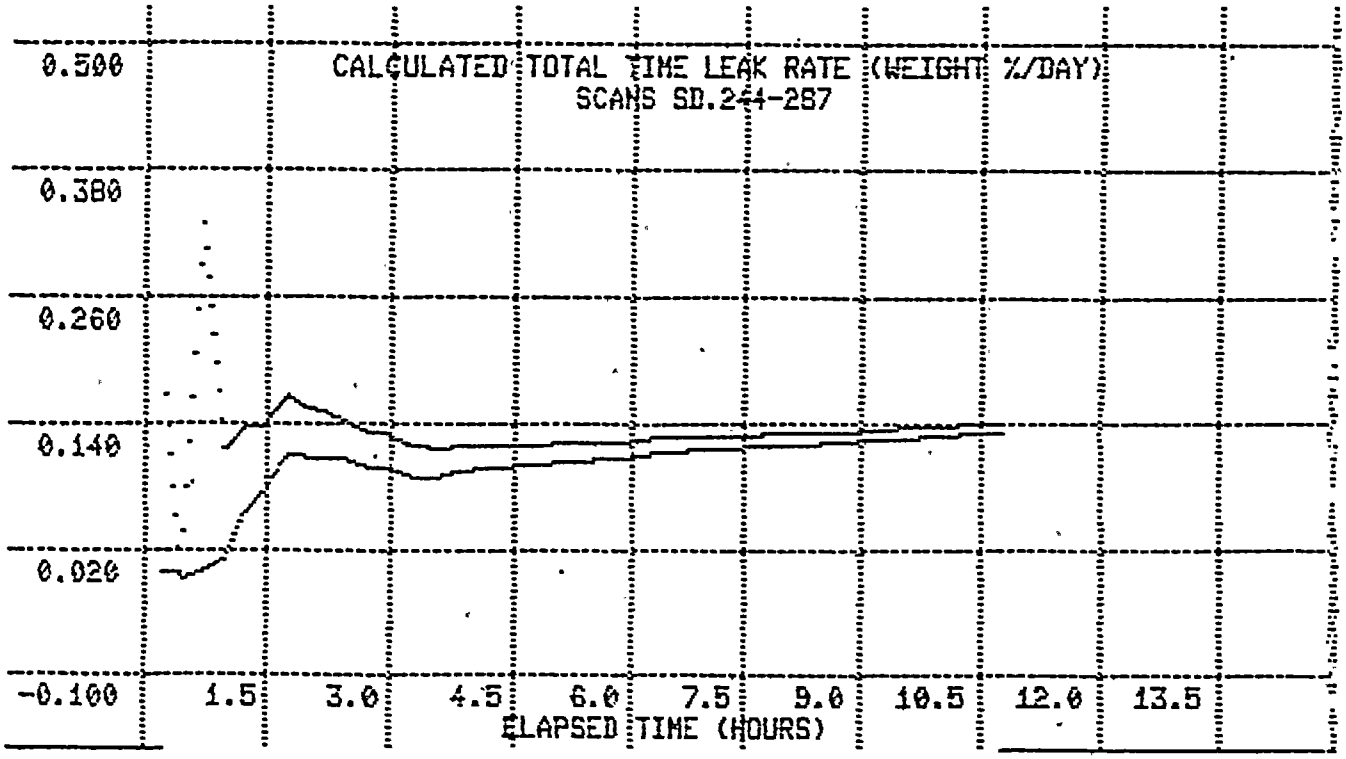
CLRT


CONTAINMENT MASS (LBS)
SCANS SD 244-287
816800.
816680.
816560.
816440.
816320.
816200.
1.5
3.0
4.5
6.0
7.5
9.0
10.5
12.0
13.5
ELAPSED TIME (HOURS)

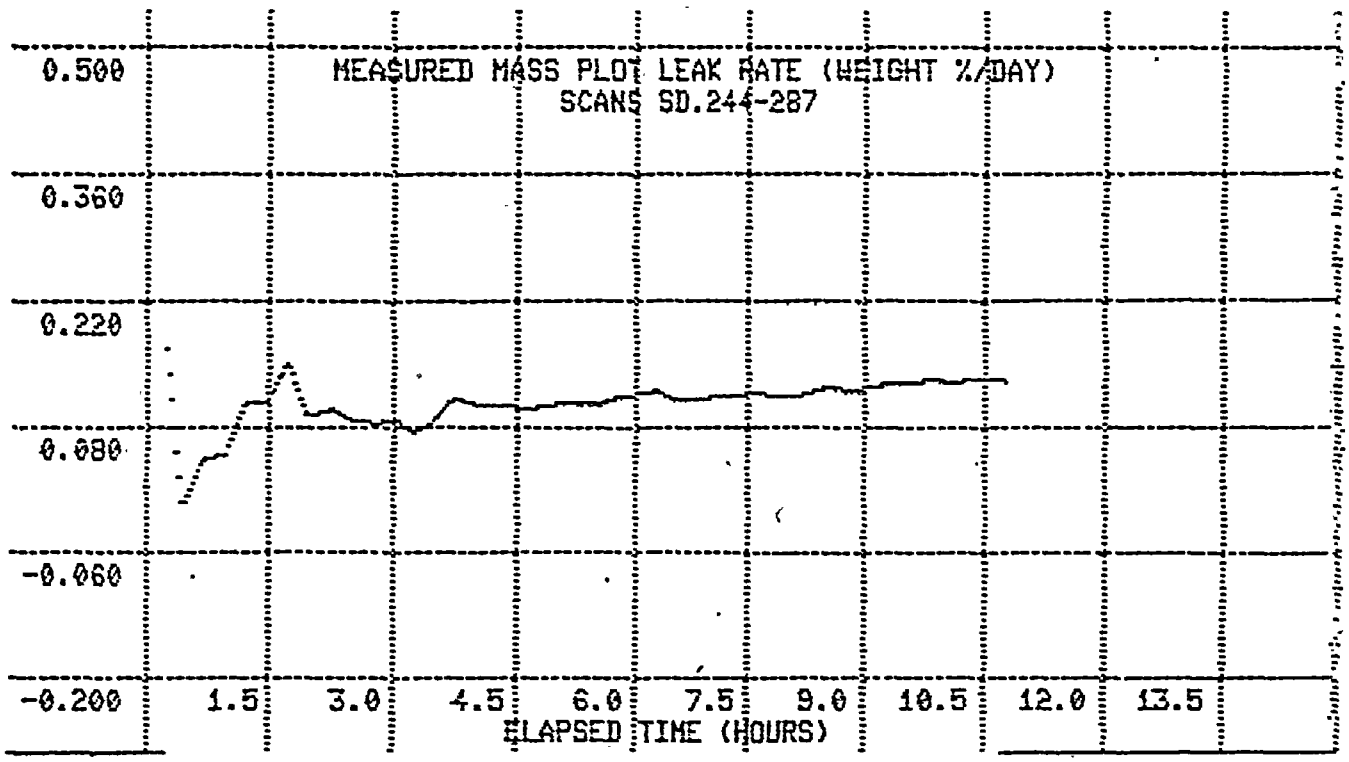
CLRT


MEASURED TOTAL TIME LEAK RATE (WEIGHT %/DAY)
SCANS SD.244-287
0.500
0.360
0.220
0.080
-0.060
-0.200
1.5
3.0
4.5
6.0
7.5
9.0
10.5
12.0
13.5
ELAPSED TIME (HOURS)

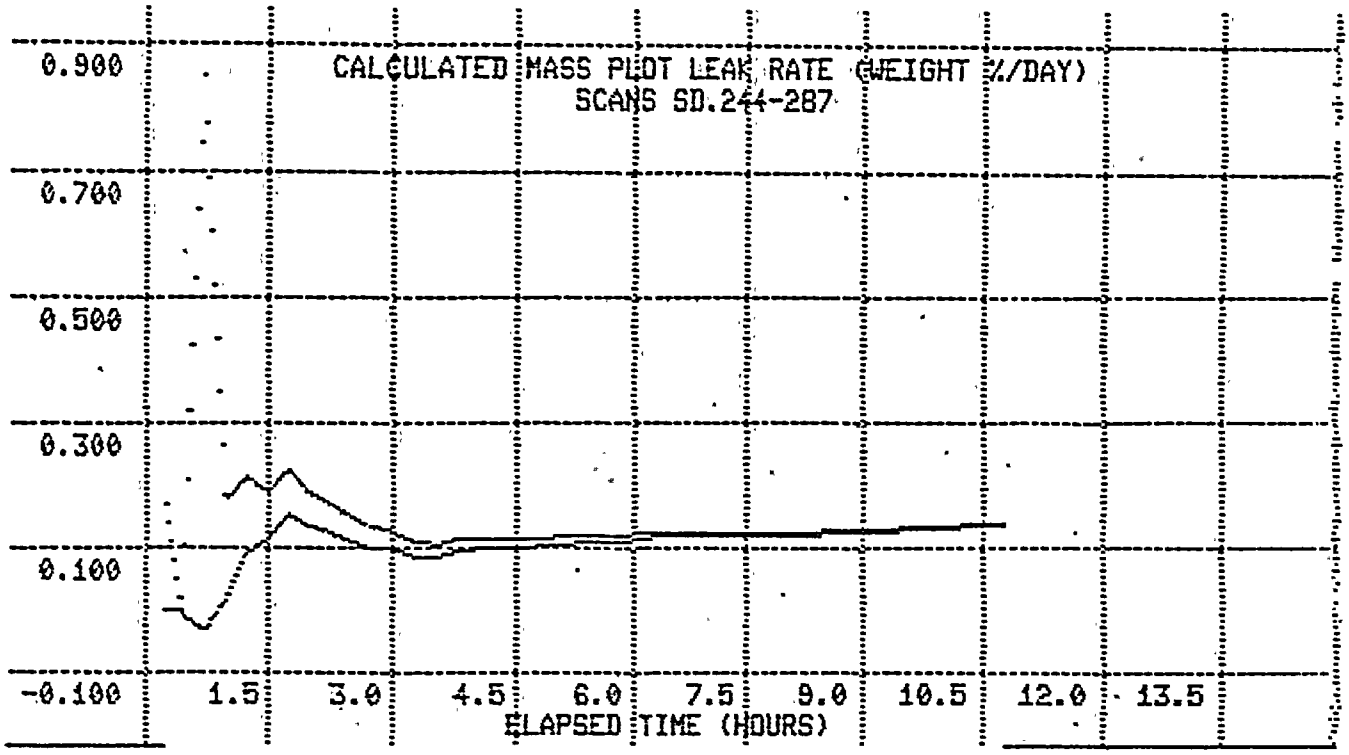
CLRT


CALCULATED TOTAL TIME LEAK RATE (WEIGHT %/DAY)
SCANS SD.244-287
0.500
0.380
0.260
0.140
0.020
-0.100
1.5
3.0
4.5
6.0
7.5
9.0
10.5
12.0
13.5
ELAPSED TIME (HOURS)

CLRT


MEASURED MASS PLOT LEAK RATE (WEIGHT %/DAY)
SCANS SD.244-287
0.500
0.360
0.220
0.080
-0.060
-0.200
1.5
3.0
4.5
6.0
7.5
9.0
10.5
12.0
13.5
ELAPSED TIME (HOURS)

CLRT


CALCULATED MASS PLOT LEAK RATE (WEIGHT %/DAY)
SCANS SD.244-287
0.900
0.700
0.500
0.300
0.100
-0.100
1.5
3.0
4.5
6.0
7.5
9.0
10.5
12.0
13.5
ELAPSED TIME (HOURS)

4.

GENERAL

ARIZONA PUBLIC SERVICE COMPANY

PALO VERDE NUCLEAR GENERATING STATION

PRESSURE GAUGE CALIBRATION PROGRAM

CALIBRATION POINT	TRUE PRESSURE	PRESSURE GAUGE 1 GAUGE READING	PRESSURE GAUGE 1 MULTIPLICATION FACTOR	PRESSURE GAUGE 1 CORRECTION CONSTANT	PRESSURE GAUGE 2 GAUGE READING	PRESSURE GAUGE 2 MULTIPLICATION FACTOR	PRESSURE GAUGE 2 CORRECTION CONSTANT
1	0.000	0.000			0.000		
			1.01937	0.000		1.00990	0.000
2	5.000	4.905			4.951		
			1.01916	0.001		1.00929	0.003
3	10.000	9.811			9.905		
			1.01569	0.035		1.01116	-0.016
4	14.984	14.718			14.834		
			1.01733	0.011		1.01464	-0.067
5	19.973	19.622			19.751		
			1.01441	0.068		1.01174	-0.010
6	24.972	24.550			24.692		
			1.01543	0.043		1.01338	-0.050
7	29.972	29.474			29.626		
			1.01231	0.135		1.01272	-0.031
8	34.989	34.430			34.580		
			1.01298	0.112		1.01196	-0.004
9	39.983	39.360			39.515		
			1.01093	0.193		1.01319	-0.053
10	44.977	44.300			44.444		
			1.01093	0.193		1.01669	-0.209
11	49.971	49.240			49.356		
			1.01155	0.162		1.01442	-0.097
12	54.965	54.177			54.279		
			1.00848	0.329		1.00828	0.237
13	59.959	59.129			59.232		
			1.00787	0.364		1.01319	-0.054
14	64.951	64.082			64.159		
			1.00706	0.417		1.01032	0.130
15	69.945	69.041			69.102		
			1.00378	0.643		1.00819	0.277
16	74.990	74.067			74.106		
			1.00402	0.625		1.00828	0.270
17	79.984	79.041			79.059		
			1.00422	0.609		1.00261	0.719
18	84.978	84.014			84.040		
			1.00281	0.728		0.99621	1.256
19	89.972	88.994			89.053		
			0.99960	1.014		0.99820	1.079
20	94.963	93.987			94.053		
			0.99901	1.069		0.99507	1.374
21	100.007	99.036			99.122		

ARIZONA PUBLIC SERVIC COMPANY

PALO VERDE NUCLEAR GENERATING STATION

ILRT SUB-VOLUME WEIGHTING PROGRAM

DAS CHANNEL NO.	TYPE OF SENSOR	CONTAINMENT WEIGHTING FACTOR(%)	DAS CHANNEL NO.	TYPE OF SENSOR	CONTAINMENT WEIGHTING FACTOR(%)
1	RTD# 1	4.83	2	RTD# 2	4.83
3	RTD# 3	4.83	4	RTD# 4	4.83
5	RTD# 5	4.83	6	RTD# 6	4.83
7	RTD# 7	4.33	8	RTD# 8	4.33
9	RTD# 9	4.33	10	RTD#10	4.33
11	RTD#11	4.33	12	RTD#12	4.33
13	RTD#13	5.02	14	RTD#14	5.02
15	RTD#15	5.02	16	RTD#16	00.00
17	RTD#17	3.41	18	RTD#18	3.41
19	RTD#19	3.41	20	RTD#20	3.95
21	RTD#21	3.95	22	RTD#22	3.95
23	RTD#23	3.95	24	RTD#24	3.95
25	DEW CELL# 1	19.62	26	DEW CELL# 2	19.62
27	DEW CELL# 3	00.00	28	DEW CELL# 4	20.52
29	DEW CELL# 5	20.12	30	DEW CELL# 6	20.12

FAULTY PRESSURE GUAGE-- 2.
THE CONTAINMENT VOLUME IS 0.2600E+07 CUBIC FEET
THE NUMBER OF RTDS IN USE ARE 23.
THE TOTAL PERCENT FOR RTDS IS 100.000 %
THE NUMBER OF DEW CELLS IN USE IS 5.
THE TOTAL PERCENT FOR DEW CELLS IS 100.000 %

APPENDIX B

Type "B" and "C" Test Results

1.

FIRST SURVEILLANCE TEST

FIRST SURVEILLANCE TEST

MECHANICAL PENETRATIONS

PENETRATION NUMBER	COMPONENT ID. NO	AS FOUND		AS LEFT	
		LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
6	PDWEV061	200	10-16-85	0	10-25-85
6	PDWEV062	0	10-25-85	0	10-25-85
7	PFPEV089	660	12-5-85	0	12-6-85
7	PFPEV090	120	12-5-85	24.5	2-15-86
9	JRDAUV0023	0	10-25-85	0	10-25-85
9	JRDBUV0024	0	10-25-85	0	10-25-85
9	JRDBUV0407	0	10-25-85	0	10-25-85
21	PSIAV164	0	9-25-85	0	9-25-85
21	JSIAUV0672	0	9-27-85	0	9-27-85
22	PSIBV165	100	9-26-85	24.5	1-8-86
22	JSIBUV0671	0	9-26-85	0	9-26-85
25A	JHCBUV0044	0	10-17-85	0	10-17-85
25A	JHCAUV0045	0	10-17-85	0	10-17-85
25B	JHCAUV0046	0	10-17-85	0	10-17-85
25B	JHCBUV0047	0	10-17-85	0	10-17-85
26	JSIDUV0654	0	10-3-85	0	10-3-85
26	JSIBUV0656	0	10-3-85	0	10-3-85
26	JSIBHV0690	0	10-3-85	0	10-3-85
26	JSIBPSV0189	0	10-1-85	0	10-1-85
27	JSICUV0653	0	10-8-85	0	10-8-85

FIRST SURVEILLANCE TEST

MECHANICAL PENETRATIONS

PENETRATION NUMBER	COMPONENT ID. NO	AS FOUND		AS LEFT	
		LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
27	JSIAUV0655	0	02-09-86	0	02-09-86
27	JSIAHV0691	0	10-02-85	0	10-02-85
27	JSIAPSV0179	0	10-02-85	0	10-02-85
28	JSIAUV0682	0	10-9-85	0	10-09-85
28	PSIEV463	0	10-09-85	0	10-09-85
28	JSIEPSV0474	0	10-09-85	0	10-09-85
29	PGAEV015	0	10-21-85	0	10-21-85
29	JGAAUV0002	0	10-21-85	0	10-21-85
30	PGAEV011	70	10-11-85	3	11-05-85
30	JGAAUV0001	3.5	10-11-85	3.5	10-11-85
31	PIAEV021	40	11-06-85	0	12-30-85
31	JIAAUV0002	0	11-06-85	0	11-06-85
33	PNCEV118	0	10-04-85	0	02-15-86
33	JNCBUV0401	0	10-04-85	0	10-04-85
34	JNCAUV0402	0	10-07-85	0	10-07-85
34	JNCBUV0403	>6600	10-04-85	0	03-05-86
35	JHPAUV0001	0	10-18-85	0	10-18-85
35	JHPAUV0003	0	10-18-85	0	10-18-85
35	JHPAUV0007A	0	10-18-85	0	10-18-85
35	JHPAUV0024	0	02-11-86	0	02-11-86

FIRST SURVEILLANCE TEST

MECHANICAL PENETRATIONS

PENETRATION NUMBER	COMPONENT ID. NO	AS FOUND		AS LEFT	
		LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
36	JHPBUV0002	700	10-16-85	0	11-26-85
36	JHPBUV0004	0	10-16-85	0	10-16-85
36	JHPBHV0008A	0	10-16-85	0	10-16-85
38	PHPAV002	660	10-18-85	0	11-26-85
38	JHPAUV0005	120	10-18-85	0	11-26-85
38	JHPAHV0007B	0	10-18-85	0	10-18-85
38	JHPAUV0023	0	02-11-86	0	02-11-86
39	PHPBV004	45	10-17-85	0	11-26-85
39	JHPBUV0006	30	10-17-85	0	11-26-85
39	JHPBHV0008B	0	10-17-85	0	10-17-85
40	JHCHAUV0516	0	10-09-85	0	10-09-85
40	JCHBUV0523	0	10-10-85	0	10-10-85
40	JCHBUV0924	0	10-10-85	0	10-10-85
41	PCHEVM70	0	10-07-85	0	10-07-85
41	JCHAHV0524	0	10-07-85	0	10-07-85
41	PCHEV854	0	10-07-85	0	10-07-85
42A	JSSBUV0201	0	10-11-85	0	10-11-85
42A	JSSAUV0204	0	10-10-85	0	10-10-85
42B	JSSBUV0202	0	10-11-85	0	10-11-85
42B	JSSAUV0205	0	10-10-85	0	10-10-85

FIRST SURVEILLANCE TEST

MECHANICAL PENETRATIONS

PENETRATION NUMBER	COMPONENT ID. NO	AS FOUND		AS LEFT	
		LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
42C	JSSBUV0200	0	10-11-85	0	10-11-85
42C	JSSAUV0203	0	10-11-85	0	10-11-85
43	JCHBUV0505	0	10-8-85	0	10-8-85
43	JCHAUV0506	0	10-8-85	0	10-8-85
44	JCHAUV0560	0	9-30-85	0	9-30-85
44	JCHBUV0561	0	10-1-85	0	10-1-85
45	PCHNV494	0	9-30-85	0	9-30-85
45	JCHAUV0580	0	9-30-85	0	9-30-85
45	JCHAUV0715	0	9-30-85	0	9-30-85
50	PPCEV070	0	10-15-85	0	10-15-85
50	PPCEV071	0	10-15-85	0	10-15-85
51	PPCEV075	0	1-16-86	0	1-16-86
51	PPCEV076	0	1-16-86	0	1-16-86
52	JGRAUV0001	0	10-14-85	0	10-14-85
52	JGRBUV0002	0	10-14-85	0	10-14-85
53 (1)	MPCEU53	0	1-29-86	0	1-29-86
56	JCPAUV0002A	0(a)	every 6 months	0	N/A
56	JCPBUV0003A	0(a)	every 6 months	0	N/A
57	JCPAUV0003B	0(a)	every 6 months	0	N/A
57	JCPBUV0003B	0(a)	every 6 months	0	N/A

FIRST SURVEILLANCE TEST

MECHANICAL PENETRATIONS

PENETRATION NUMBER	COMPONENT ID. NO	AS FOUND		AS LEFT	
		LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
58 (2)	MCLEU58	0	12-26-85	0	12-26-85
59	PIAEV072	0	10-22-85	0	10-22-85
59	PIAEV073	1600	10-22-85	0	2-15-86
60	PWCEV039	660	10-15-85	0	2-15-86
60	JWCBUV0063	200	10-15-85	0	11-6-85
61	JWCBUV0061	0	10-16-85	0	10-16-85
61	JWCAUV0062	>6600	10-16-85	24.5	2-12-86
62B (3)	MCLEU62B	0	10-22-85	0	10-22-85
62C (4)	MCLEU62C	0	10-22-85	0	10-22-85
67	PSIBV533	0	9-24-85	0	9-24-85
67	JSIDHV0331	0	9-24-85	0	9-24-85
72	PCHNV835	0	10-2-85	0	10-2-85
72	JCHBHV0255	0	10-8-85	0	10-8-85
77	PSIAV523	>6600	9-24-85	8	12-10-85
77	JSICHV0321	0	9-27-85	0	9-27-85
78	JCPAUV0004A	0(a)	every 92d	0	N/A
78	JCPBUV0005A	0(a)	every 92d	0	N/A
79	JCPAUV0004B	0(a)	every 92d	0	N/A
79	JCPBUV0005B	0(a)	every 92d	0	N/A
L-1 (5)	CZCNM02	0(a)	every 6 months	0	N/A

FIRST SURVEILLANCE TEST

MECHANICAL PENETRATIONS

PENETRATION NUMBER	COMPONENT ID. NO	AS FOUND		AS LEFT	
		LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
L-2 (6)	CZCNM03	0	2-10-86	0	2-10-86
L-3 (7)	CZCNM01	0(a)	every 6 months	0	N/A

NOTES:

(1) Fuel Transfer Tube flange.
(2) ILRT Test Connection (pressurization/depressurization) flange.
(3) ILRT Pressure Sensing Line flange.
(4) ILRT Flow Test Verification (CLRT) flange.
(5) Personnel Lock (140' elevation).
(6) Equipment Hatch.
(7) Emergency Lock (100' elevation).

(a) All as-found/as-left surveillance tests leakage results were 0 SCCM.

FIRST SURVEILLANCE TEST

ELECTRICAL PENETRATIONS

PENETRATION NUMBER	AS FOUND		AS LEFT	
	LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
ENGNZ010	0	9-18-85	0	9-18-85
ESFNZ020	0	9-18-85	0	9-18-85
ENGNZ030	0	9-18-85	0	9-18-85
ESFNZ040	0	9-18-85	0	9-18-85
ENGNZ050	0	9-18-85	0	9-18-85
ENHNZ060	0	9-18-85	0	9-18-85
ENGNZ070	0	9-18-85	0	9-18-85
ENHNZ080	0	9-18-85	0	9-18-85
ENHNZ090	0	9-18-85	0	9-18-85
ENHNZ100	0	9-18-85	0	9-18-85
ENGNZ110	0	9-18-85	0	9-18-85
ENHNZ120	0	9-18-85	0	9-18-85
ENGNZ130	0	9-19-85	0	9-19-85
EQFNZ140	0	9-19-85	0	9-19-85
ENHNZ150	0	9-19-85	0	9-19-85
ENHNZ160	0	9-19-85	0	9-19-85
ENHNZ170	0	9-19-85	0	9-19-85
ESFNZ180	0	9-19-85	0	9-19-85
ENHNZ190	0	9-20-85	0	9-20-85
ENHNZ200	0	9-20-85	0	9-20-85

FIRST SURVEILLANCE TEST

ELECTRICAL PENETRATIONS

PENETRATION NUMBER	AS FOUND		AS LEFT	
	LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
ENHNZ210	0	9-20-85	0	9-20-85
ESFCZ220	0	9-20-85	0	9-20-85
EPHCZ230	0	9-20-85	0	9-20-85
EPHCZ240	0	9-20-85	0	9-20-85
ESFCZ250	0	9-20-85	0	9-20-85
ESFCZ260	0	9-23-85	0	9-23-85
ESFCZ270	0	9-23-85	0	9-23-85
ESACZ280	0	9-23-85	0	9-23-85
EPHCZ290	0	9-23-85	0	9-23-85
ERICZ300	0	9-23-85	0	9-23-85
ENANZ310	0	9-23-85	0	9-23-85
ENGNZ320	0	9-23-85	0	9-23-85
ENANZ330	0	9-23-85	0	9-23-85
EPHBZ340	0	9-23-85	0	9-23-85
ERIBZ350	0	9-23-85	0	9-23-85
ESEBZ360	0	9-23-85	0	9-23-85
ESABZ370	0	9-23-85	0	9-23-85
ESFBZ380	0	9-24-85	0	9-24-85
EPHBZ390	0	9-24-85	0	9-24-85
EPHBZ400	0	9-24-85	0	9-24-85

FIRST SURVEILLANCE TEST

ELECTRICAL PENETRATIONS

PENETRATION NUMBER	AS FOUND		AS LEFT	
	LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
EPHBZ410	0	9-24-85	0	9-24-85
ESFBZ420	0	9-24-85	0	9-24-85
EPHNZ430	0	9-24-85	0	9-24-85
ENANZ440	0	9-24-85	0	9-24-85
ENANZ450	0	9-24-85	0	9-24-85
EPHAZ460	0	9-26-85	0	9-26-85
ESAAZ470	0	9-26-85	0	9-26-85
EPHAZ480	0	9-26-85	0	9-26-85
ERIAZ490	0	9-26-85	0	9-26-85
ESFAZ500	0	9-26-85	0	9-26-85
ESEAZ510	0	9-27-85	0	9-27-85
EPHAZ520	0	9-27-85	0	9-27-85
EHCNZ530	0	9-27-85	0	9-27-85
ENGNZ540	0	9-27-85	0	9-27-85
ENHNZ550	0	9-27-85	0	9-27-85
ESFNZ560	0	9-27-85	0	9-27-85
EOFNZ570	0	9-27-85	0	9-27-85
ESFNZ580	0	9-27-85	0	9-27-85
ENHNZ590	0	9-27-85	0	9-27-85
ENGNZ600	0	9-27-85	0	9-27-85

FIRST SURVEILLANCE TEST

ELECTRICAL PENETRATIONS

PENETRATION NUMBER	AS FOUND		AS LEFT	
	LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
ENHNZ610	0	9-27-85	0	9-27-85
ENGNZ620	0	9-27-85	0	9-27-85
ENHNZ630	0	9-27-85	0	9-27-85
ESFNZ640	0	10-1-85	0	10-1-85
ENHNZ650	0	10-1-85	0	10-1-85
ESFNZ660	0	10-1-85	0	10-1-85
ENHNZ670	0	10-1-85	0	10-1-85
ENGNZ680	0	10-1-85	0	10-1-85
ENGNZ690	0	10-1-85	0	10-1-85
ENANZ700	0	10-1-85	0	10-1-85
ENGNZ710	0	10-1-85	0	10-1-85
ESFNZ720	0	10-1-85	0	10-1-85
ENHNZ730	0	10-1-85	0	10-1-85
ESFNZ740	0	10-1-85	0	10-1-85
ESENZ750	0	10-1-85	0	10-1-85
ESFNZ740	0	10-1-85	0	10-1-85
ESFDZ770	0	10-1-85	0	10-1-85
EFSDZ780	0	10-1-85	0	10-1-85
ERIDZ790	0	10-1-85	0	10-1-85
ESFNZ800	0	10-2-85	0	10-2-85

FIRST SURVEILLANCE TEST

ELECTRICAL PENETRATIONS

PENETRATION NUMBER	AS FOUND		AS LEFT	
	LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
ESADZ810	0	10-2-85	0	10-2-85
ESFNZ820	0	10-2-85	0	10-2-85
ESFDZ830	0	10-2-85	0	10-2-85
ESFNZ840	0	10-2-85	0	10-2-85
ESADZ850	0	10-2-85	0	10-2-85
EPHNZ860	0	10-2-85	0	10-2-85
ESFNZ870	0	10-2-85	0	10-2-85
ENGNZ880	0	10-2-85	0	10-2-85
ESFNZ890	0	10-2-85	0	10-2-85
ENGNZ900	0	10-2-85	0	10-2-85
ESFNZ910	0	10-2-85	0	10-2-85

FIRST SURVEILLANCE TEST

TYPE "B" AND "C" TEST RESULTS

SUMMARY:

All tests were performed utilizing air or nitrogen as the test media at a minimum pressure of 49.2 psig (P_a) for a minimum duration of 15 minutes after stabilization.

DATA SUMMARY:

- total allowable (0.60 La) .....133,373 SCCM
- total "as-found" .....>25,008.5 SCCM
- total "as-left" .....88 SCCM

ACCEPTANCE CRITERIA:

The combined leakage rate of all Type B and C tests shall be less than 0.60 La or < 133,373 SCCM.

CONCLUSIONS:

The combined leakage rate of all Type B or C tests was 88 SCCM which is well within the acceptance limit. The data substantiates that an acceptable test was performed in accordance with the requirements of 10CFR50, Appendix J.

2.

SECOND SURVEILLANCE TEST

SECOND SURVEILLANCE TEST

MECHANICAL PENETRATIONS

PENETRATION NUMBER	COMPONENT ID. NO	AS FOUND		AS LEFT	
		LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
6	PDWEV061	0	1-21-87	0	1-21-87
6	PDWEV062	0	1-21-87	0	1-21-87
7	PFPEV089	210	1-11-87	0	2-03-87
7	PFPEV090	1600	1-11-87	0	2-06-87
9	JRDAUV0023	0	1-23-87	0	1-23-87
9	JRDBUV0024	0	1-23-87	0	1-23-87
9	JRDBUV0407	3900	1-23-87	0	1-28-87
21	PSIAV164	0	1-14-87	660	3-04-87
21	JSIAUV0672	0	1-14-87	0	3-04-87
22	PSIBV165	0	1-20-87	0	1-20-87
22	JSIBUV0671	0	1-20-87	0	1-20-87
25A	JHCBUV0044	0	1-22-87	0	1-22-87
25A	JHCAUV0045	0	1-22-87	0	1-22-87
25B	JHCAUV0046	0	1-22-87	0	1-22-87
25B	JHCBUV0047	0	1-22-87	0	1-22-87
26	JSIDUV0654	0	1-23-87	0	1-23-87
26	JSIBUV0656	0	1-23-87	0	1-23-87
26	JSIBHV0690	0	1-24-87	0	1-24-87
26	JSIBPSV0189	0	1-23-87	0	1-23-87
27	JSICUV0653	0	1-13-87	0	1-13-87

SECOND SURVEILLANCE TEST

MECHANICAL PENETRATIONS

PENETRATION NUMBER	COMPONENT ID. NO	AS FOUND		AS LEFT	
		LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
27	JSIAUV0655	0	1-15-87	0	1-15-87
27	JSIAHV0691	0	1-15-87	0	1-15-87
27	JSIAPSV0179	2300	1-13-87	0	1-14-87
28	JSIAUV0682	0	1-21-87	0	1-21-87
28	PSIEV463	0	1-21-87	0	1-21-87
28	JSIEPSV0474	0	1-21-87	0	1-21-87
29	PGAEV015	0	1-17-87	0	1-17-87
29	JGAAUV0002	0	1-17-87	0	1-17-87
30	PGAEV011	210	1-17-87	0	1-21-87
30	JGAAUV0001	0	1-17-87	0	1-17-87
31	PIAEV021	0	1-17-87	0	1-17-87
31	JIAAUV0002	0	1-17-87	0	1-17-87
33	PNCEV118	0	1-17-87	0	1-17-87
33	JNCBUV0401	0	1-17-87	0	1-17-87
34	JNCAUV0402	0	1-17-87	0	1-17-87
34	JNCBUV0403	0	1-17-87	0	1-17-87
35	JHPAUV0001	24.5	1-19-87	24.5	1-19-87
35	JHPAUV0003	0	12-10-86	0	12-10-86
35	JHPAUV0007A	0	12-10-86	0	12-10-86
35	JHPAUV0024	20	12-10-86	20	12-10-86

SECOND SURVEILLANCE TEST

MECHANICAL PENETRATIONS

PENETRATION NUMBER	COMPONENT ID. NO	AS FOUND		AS LEFT	
		LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
36	JHPBUV0002	0	1-21-87	0	1-21-87
36	JHPBUV0004	0	12-11-86	0	12-11-86
36	JHPBHV0008A	0	12-11-86	0	12-11-86
38	PHPAV002	10	1-19-87	10	1-19-87
38	JHPAUV0005	24.5	1-19-87	24.5	1-19-87
38	JHPAHV0007B	0	1-19-87	0	1-19-87
38	JHPAUV0023	0	1-19-87	0	1-19-87
39	PHPBV004	210	1-20-87	210	1-20-87
39	JHPBUV0006	0	1-21-87	0	1-21-87
39	JHPBHV0008B	0	1-21-87	0	1-21-87
40	JCHAUV0516	0	1-17-87	0	1-17-87
40	JCHBUV0523	0	1-18-87	0	1-18-87
40	JCHBUV0924	0	1-18-87	0	1-18-87
41	PCHEVM70	0	1-18-87	0	1-18-87
41	JCHAHV0524	0	1-18-87	0	1-18-87
41	PCHEV854	0	1-18-87	0	1-18-87
42A	JSSBUV0201	60	1-15-87	60	1-15-87
42A	JSSAUV0204	240	1-15-87	240	1-15-87
42B	JSSBUV0202	60	1-15-87	60	1-15-87
42B	JSSAUV0205	40	1-15-87	40	1-15-87

SECOND SURVEILLANCE TEST

MECHANICAL PENETRATIONS

PENETRATION NUMBER	COMPONENT ID. NO	AS FOUND		AS LEFT	
		LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
42C	JSSBUV0200	0	1-15-87	0	1-15-87
42C	JSSAUV0203	0	1-15-87	0	1-15-87
43	JCHBUV0505	0	1-16-87	0	1-16-87
43	JCHAUV0506	0	1-16-87	0	1-16-87
44	JCHAUV0560	0	1-16-87	0	1-16-87
44	JCHBUV0561	0	1-16-87	0	1-16-87
45	PCHNV494	24.5	1-16-87	24.5	1-16-87
45	JCHAUV0580	0	1-16-87	0	1-16-87
45	JCHAUV0715	0	1-16-87	0	1-16-87
50	PPCEV070	1000	12-10-86	0	12-16-86
50	PPCEV071	2400	1-19-87	0	1-21-87
51	PPCEV075	0	1-19-87	0	1-19-87
51	PPCEV076	0	12-10-86	0	12-10-86
52	JGRAUV0001	65	1-21-87	65	1-21-87
52	JGRBUV0002	0	1-21-87	0	1-21-87
53 (1)	MPCEU53	0	1-14-87	0	1-14-87
56	JCPAUV0002A	0 (a)	every 6 months	0	N/A
56	JCPBUV0003A	0 (a)	every 6 months	0	N/A
57	JCPAUV0003B	0 (a)	every 6 months	0	N/A
57	JCPBUV0003B	0 (a)	every 6 months	0	N/A

SECOND SURVEILLANCE TEST

MECHANICAL PENETRATIONS

PENETRATION NUMBER	COMPONENT ID. NO	AS FOUND		AS LEFT	
		LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
58 (2)	MCLEU58	0	1-11-87	0	2-23-87
59	PIAEV072	0	1-12-87	0	1-12-87
59	PIAEV073	660	1-12-87	0	1-19-87
60	PWCEV039	0	1-20-87	0	1-20-87
60	JWCBUV0063	0	1-20-87	0	1-20-87
61	JWCBUV0061	0	1-20-87	0	1-20-87
61	JWCAUV0062	0	1-20-87	0	1-20-87
62B (3)	MCLEU62B	0	1-11-87	0	1-11-87
62C (4)	MCLEU62C	0	1-11-87	0	1-11-87
67	PSIBV533	0	1-22-87	0	1-22-87
67	JSIDHV0331	0	1-22-87	0	2-19-87
72	PCHNV835	0	1-18-87	0	1-18-87
72	JCHBHV0255	0	1-18-87	0	1-18-87
77	PSIAV523	80	1-13-87	80	1-13-87
77	JSICHV0321	0	1-13-87	0	2-19-87
78	JCPAUV0004A	0 (a)	every 92d	0	N/A
78	JCPBUV0005A	0 (a)	every 92d	0	N/A
79	JCPAUV0004B	0 (a)	every 92d	0	N/A
79	JCPBUV0005B	0 (a)	every 92d	0	N/A
L-1 (5)	CZCNM02	0 (a)	every 6 months	0	N/A

SECOND SURVEILLANCE TEST

MECHANICAL PENETRATIONS

PENETRATION NUMBER	COMPONENT ID. NO	AS FOUND		AS LEFT	
		LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
L-2 (6)	CZCNM03	0	1-12-87	4	2-23-87
L-3 (7)	CZCNM01	0 (a)	every 6 months	0	N/A

NOTES:

(1) Fuel Transfer Tube flange.
(2) ILRT Test Connection (pressurization/depressurization) flange.
(3) ILRT Pressure Sensing Line flange.
(4) ILRT Flow Test Verification (CLRT) flange.
(5) Personnel Lock (140'elevation).
(6) Equipment Hatch.
(7) Emergency Lock (100' elevation).

(a) All as-found/as-left surveillance tests leakage results were 0 SCCM.

SECOND SURVEILLANCE TEST

ELECTRICAL PENETRATIONS

PENETRATION NUMBER	AS FOUND		AS LEFT	
	LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
ENGNZ010	0	2-11-87	0	2-11-87
ESFNZ020	0	2-11-87	0	2-11-87
ENGNZ030	0	2-11-87	0	2-11-87
ESFNZ040	0	2-11-87	0	2-11-87
ENGNZ050	0	2-11-87	0	2-11-87
ENHNZ060	0	2-11-87	0	2-11-87
ENGNZ070	0	2-11-87	0	2-11-87
ENHNZ080	0	2-11-87	0	2-11-87
ENHNZ090	0	2-11-87	0	2-11-87
ENHNZ100	0	2-11-87	0	2-11-87
ENGNZ110	0	2-11-87	0	2-11-87
ENHNZ120	0	2-11-87	0	2-11-87
ENGNZ130	0	2-11-87	0	2-11-87
EQFNZ140	0	2-11-87	0	2-11-87
ENHNZ150	0	2-11-87	0	2-11-87
ENHNZ160	0	2-11-87	0	2-11-87
ENHNZ170	0	2-11-87	0	2-11-87
ESFNZ180	0	2-11-87	0	2-11-87
ENHNZ190	0	2-11-87	0	2-11-87
ENHNZ200	0	2-11-87	0	2-11-87

SECOND SURVEILLANCE TEST

ELECTRICAL PENETRATIONS

PENETRATION NUMBER	AS FOUND		AS LEFT	
	LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
ENHNZ210	0	2-12-87	0	2-12-87
ESFCZ220	0	2-12-87	0	2-12-87
EPHCZ230	0	2-12-87	0	2-12-87
EPHCZ240	0	2-12-87	0	2-12-87
ESFCZ250	0	2-12-87	0	2-12-87
ESFCZ260	0	2-12-87	0	2-12-87
ESFCZ270	0	2-12-87	0	2-12-87
ESACZ280	0	2-12-87	0	2-12-87
EPHCZ290	0	2-12-87	0	2-12-87
ERICZ300	0	2-12-87	0	2-12-87
ENANZ310	0	2-12-87	0	2-12-87
ENGNZ320	0	2-12-87	0	2-12-87
ENANZ330	0	2-12-87	0	2-12-87
EPHBZ340	0	2-12-87	0	2-12-87
ERIBZ350	0	2-12-87	0	2-12-87
ESEBZ360	0	2-12-87	0	2-12-87
ESABZ370	0	2-12-87	0	2-12-87
ESFBZ380	0	2-12-87	0	2-12-87
EPHBZ390	0	2-12-87	0	2-12-87
EPHBZ400	0	2-12-87	0	2-12-87

SECOND SURVEILLANCE TEST

ELECTRICAL PENETRATIONS

PENETRATION NUMBER	AS FOUND		AS LEFT	
	LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
EPHBZ410	0	2-12-87	0	2-12-87
ESFBZ420	0	2-12-87	0	2-12-87
EPHNZ430	0	2-12-87	0	2-12-87
ENANZ440	0	2-12-87	0	2-12-87
ENANZ450	0	2-13-87	0	2-13-87
EPHAZ460	0	2-13-87	0	2-13-87
ESAAZ470	0	2-13-87	0	2-13-87
EPHAZ480	0	2-13-87	0	2-13-87
ERIAZ490	0	2-13-87	0	2-13-87
ESFAZ500	0	2-13-87	0	2-13-87
ESEAZ510	0	2-13-87	0	2-13-87
EPHAZ520	0	2-13-87	0	2-13-87
EHCNZ530	0	2-13-87	0	2-13-87
ENGNZ540	0	2-13-87	0	2-13-87
ENHNZ550	0	2-13-87	0	2-13-87
ESFNZ560	0	2-13-87	0	2-13-87
EOFNZ570	0	2-13-87	0	2-13-87
ESFNZ580	0	2-13-87	0	2-13-87
ENHNZ590	0	2-13-87	0	2-13-87
ENGNZ600	0	2-13-87	0	2-13-87

SECOND SURVEILLANCE TEST

ELECTRICAL PENETRATIONS

PENETRATION NUMBER	AS FOUND		AS LEFT	
	LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
ENHNZ610	0	2-13-87	0	2-13-87
ENGNZ620	0	2-13-87	0	2-13-87
ENHNZ630	0	2-13-87	0	2-13-87
ESFNZ640	0	2-13-87	0	2-13-87
ENHNZ650	0	2-13-87	0	2-13-87
ESFNZ660	0	2-13-87	0	2-13-87
ENHNZ670	0	2-13-87	0	2-13-87
ENGNZ680	0	2-13-87	0	2-13-87
ENGNZ690	0	2-13-87	0	2-13-87
ENANZ700	0	2-17-87	0	2-17-87
ENGNZ710	0	2-17-87	0	2-17-87
ESFNZ720	0	2-17-87	0	2-17-87
ENHNZ730	0	2-17-87	0	2-17-87
ESFNZ740	0	2-17-87	0	2-17-87
ESENZ750	0	2-17-87	0	2-17-87
ESFNZ740	0	2-17-87	0	2-17-87
ESFDZ770	0	2-17-87	0	2-17-87
EFSDZ780	0	2-17-87	0	2-17-87
ERIDZ790	0	2-17-87	0	2-17-87
ESFNZ800	0	2-17-87	0	2-17-87

SECOND SURVEILLANCE TEST

ELECTRICAL PENETRATIONS

PENETRATION NUMBER	AS FOUND		AS LEFT	
	LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
ESADZ810	0	2-17-87	0	2-17-87
ESFNZ820	0	2-17-87	0	2-17-87
ESFDZ830	0	2-17-87	0	2-17-87
ESFNZ840	0	2-17-87	0	2-17-87
ESADZ850	0	2-17-87	0	2-17-87
EPHNZ860	0	2-17-87	0	2-17-87
ESFNZ870	0	2-17-87	0	2-17-87
ENGNZ880	0	2-17-87	0	2-17-87
ESFNZ890	0	2-17-87	0	2-17-87
ENGNZ900	0	2-17-87	0	2-17-87
ESFNZ910	0	2-17-87	0	2-17-87

SECOND SURVEILLANCE TEST

TYPE "B" AND "C" TEST RESULTS

SUMMARY:

All tests were performed utilizing air or nitrogen as the test media at a minimum pressure of 49.5 psig (P_a) for a minimum duration of 15 minutes after stabilization.

DATA SUMMARY:

° total allowable (0.60 La) .....134,001 SCCM

° total "as-found" .....13,138.5 SCCM

° total "as-left" .....1,522.5 SCCM

ACCEPTANCE CRITERIA:

The combined leakage rate of all Type B and C tests shall be less than 0.60 La or < 134,001 SCCM.

CONCLUSIONS:

The combined leakage rate of all Type B or C tests was 1,522.5 SCCM which is well within the acceptance limit. The data substantiates that an acceptable test was performed in accordance with the requirements of 10CFR50, Appendix J.

3.

THIRD SURVEILLANCE TEST

THIRD SURVEILLANCE TEST

MECHANICAL PENETRATIONS

PENETRATION NUMBER	COMPONENT ID. NO	AS FOUND		AS LEFT	
		LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
6	PDWEV061	0	3-16-88	0	3-16-88
6	PDWEV062	0	3-16-88	0	3-16-88
7	PFPEV089	0	2-25-88	0	2-25-88
7	PFPEV090	0	2-25-88	0	2-25-88
9	JRDAUV0023	0	3-06-88	0	3-06-88
9	JRDBUV0024	40	3-06-88	40	3-06-88
9	JRDBUV0407	0	3-06-88	0	3-06-88
21	PSIAV164	1500	2-26-88	0	3-19-88
21	JSIAUV0672	0	2-26-88	0	2-26-88
22	PSIBV165	900	3-12-88	6	3-24-88
22	JSIBUV0671	0	3-12-88	0	3-12-88
25A	JHCBUV0044	0	3-08-88	0	3-08-88
25A	JHCAUV0045	0	3-08-88	0	3-08-88
25B	JHCAUV0046	0	3-08-88	0	3-08-88
25B	JHCBUV0047	0	3-08-88	0	3-08-88
26	JSIDUV0654	0	3-24-88	0	3-24-88
26	JSIBUV0656	700	3-25-88	700	3-25-88
26	JSIBHV0690	0	3-25-88	0	3-25-88
26	JSIBPSV0189	0	3-27-88	0	3-27-88
27	JSICUV0653	40	4-05-88	40	4-05-88

THIRD SURVEILLANCE TEST

MECHANICAL PENETRATIONS

PENETRATION NUMBER	COMPONENT ID. NO	AS FOUND		AS LEFT	
		LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
27	JSIAUV0655	0	4-04-88	0	4-12-88
27	JSIAHV0691	0	4-04-88	0	4-04-88
27	JSIAPSV0179	0	4-07-88	0	4-07-88
28	JSIAUV0682	0	3-09-88	0	4-05-88
28	PSIEV463	0	3-09-88	0	3-09-88
28	JSIEPSV0474	0	3-10-88	0	3-10-88
29	PGAEV015	0	2-29-88	0	2-29-88
29	JGAAUV0002	0	2-29-88	0	2-29-88
30	PGAEV011	1500	2-29-88	0	3-10-88
30	JGAAUV0001	6.5	2-29-88	6.5	2-29-88
31	PIAEV021	12	2-29-88	12	2-29-88
31	JIAAUV0002	0	2-29-88	0	2-29-88
33	PNCEV118	4500	3-09-88	60	3-21-88
33	JNCBUV0401	0	3-09-88	0	3-09-88
34	JNCAUV0402	0	3-09-88	0	3-09-88
34	JNCBUV0403	0	3-09-88	0	3-09-88
35	JHPAUV0001	24.5	3-03-88	24.5	3-03-88
35	JHPAUV0003	0	3-03-88	0	3-03-88
35	JHPAUV0007A	0	3-03-88	0	3-03-88
35	JHPAUV0024	40	3-03-88	40	3-03-88

THIRD SURVEILLANCE TEST

MECHANICAL PENETRATIONS

PENETRATION NUMBER	COMPONENT ID. NO	AS FOUND		AS LEFT	
		LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
36	JHPBUV0002	18	3-07-88	0	6-11-88
36	JHPBUV0004	0	3-06-88	0	3-06-88
36	JHPBHV0008A	0	3-06-88	0	3-06-88
38	PHPAV002	180	3-02-88	0	3-27-88
38	JHPAUV0005	220	3-02-88	0	3-27-88
38	JHPAHV0007B	0	3-02-88	0	3-02-88
38	JHPAUV0023	3	3-02-88	3	3-02-88
39	PHPBV004	660	3-07-88	6.5	3-12-88
39	JHPBUV0006	24.5	3-07-88	24.5	3-07-88
39	JHPBHV0008B	0	3-07-88	0	3-07-88
40	JCHAUV0516	0	3-04-88	0	3-04-88
40	JCHBUV0523	0	3-04-88	0	3-04-88
40	JCHBUV0924	0	3-04-88	0	3-04-88
41	PCHEVM70	0	3-15-88	0	3-15-88
41	JCHAHV0524	0	3-15-88	0	3-15-88
41	PCHEV854	0	3-15-88	0	3-15-88
42A	JSSBUV0201	>2000	2-27-88	0	4-02-88
42A	JSSAUV0204	1200	2-27-88	0	4-02-88
42B	JSSBUV0202	>2000	2-27-88	0	4-02-88
42B	JSSAUV0205	>2000	2-27-88	24.5	4-02-88

THIRD SURVEILLANCE TEST

MECHANICAL PENETRATIONS

PENETRATION NUMBER	COMPONENT ID. NO	AS FOUND		AS LEFT	
		LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
42C	JSSBUV0200	>2000	02-27-88	0	05-21-88
42C	JSSAUV0203	800	02-27-88	0	05-21-88
43	JCHBUV0505	0	03-01-88	0	03-01-88
43	JCHAUV0506	0	03-01-88	0	03-01-88
44	JCHAUV0560	0	02-29-88	0	02-29-88
44	JCHBUV0561	0	02-29-88	0	02-29-88
45	PCHNV494	500	02-28-88	0	03-30-88
45	JCHAUV0580	0	02-28-88	0	02-28-88
45	JCHAUV0715	>2000	02-28-88	0	03-28-88
50	PPCEV070	0	02-28-88	0	02-28-88
50	PPCEV071	60	02-28-88	0	03-10-88
51	PPCEV075	0	02-28-88	0	02-28-88
51	PPCEV076	>2000	02-28-88	0	03-06-88
52	JGRAUV0001	0	03-05-88	0	03-05-88
52	JGRBUV0002	120	03-05-88	120	03-05-88
53 (1)	MPCEU53	0	02-23-88	0	06-03-88
56	JCPAUV0002A	12.25 (b)	every 6 months	12.25 (b)	N/A
56	JCPBUV0003A	12.25 (b)	every 6 months	12.25 (b)	N/A
57	JCPAUV0003B	0 (a)	every 6 months	0 (a)	N/A
57	JCPBUV0003B	0 (a)	every 6 months	0 (a)	N/A

THIRD SURVEILLANCE TEST

MECHANICAL PENETRATIONS

PENETRATION NUMBER	COMPONENT ID. NO	AS FOUND		AS LEFT	
		LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
58 (2)	MCLEU58	0	2-23-88	0	5-30-88
59	PIAEV072	1400	2-24-88	0	5-21-88
59	PIAEV073	140	2-24-88	0	5-21-88
60	PWCEV039	0	3-10-88	0	3-10-88
60	JWCBUV0063	0	3-10-88	0	3-10-88
61	JWCBUV0061	0	3-11-88	0	3-11-88
61	JWCAUV0062	1000	3-11-88	95	4-16-88
62B (3)	MCLEU62B	0	2-24-88	0	5-30-88
62C (4)	MCLEU62C	0	2-24-88	0	5-30-88
67	PSIBV533	0	3-18-88	0	3-18-88
67	JSIDHV0331	0	3-18-88	0	5-06-88
72	PCHNV835	0	3-03-88	0	3-03-88
72	JCHBHV0255	0	3-03-88	1.5	4-12-88
77	PSIAV523	>6600	3-01-88	30	3-12-88
77	JSICHV0321	0	3-01-88	0	3-01-88
78	JCPAUV0004A	0	every 92d	0	N/A
78	JCPBUV0005A	0	every 92d	0	N/A
79	JCPAUV0004B	0	every 92d	0	N/A
79	JCPBUV0005B	0	every 92d	0	N/A
L-1 (5)	CZCNM02	0	every 6 months	0	N/A

THIRD SURVEILLANCE TEST

MECHANICAL PENETRATIONS

PENETRATION NUMBER	COMPONENT ID. NO	AS FOUND		AS LEFT	
		LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
L-2 (6)	CZCNM03	0	2-22-88	0	6-06-88
L-3 (7)	CZCNM01	0 (a)	every 6 months	0	N/A

NOTES:

(1) Fuel Transfer Tube flange.
(2) ILRT Test Connection (pressurization/depressurization) flange.
(3) ILRT Pressure Sensing Line flange.
(4) ILRT Flow Test Verification (CLRT) flange.
(5) Personnel Lock (140' elevation).
(6) Equipment Hatch.
(7) Emergency Lock (100' elevation).

(a) All as-found/as-left surveillance tests leakage results were 0 SCCM.

(b) All other as-found/as-left surveillance tests leakage results were 0 SCCM.

THIRD SURVEILLANCE TEST

ELECTRICAL PENETRATIONS

PENETRATION NUMBER	AS FOUND		AS LEFT	
	LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
ENGNZ010	0	2-21-88	0	2-21-88
ESFNZ020	0	2-21-88	0	2-21-88
ENGNZ030	0	2-22-88	0	2-22-88
ESFNZ040	0	2-22-88	0	2-22-88
ENGNZ050	0	2-22-88	0	2-22-88
ENHNZ060	0	2-21-88	0	2-21-88
ENGNZ070	0	2-22-88	0	2-22-88
ENHNZ080	0	2-22-88	0	2-22-88
ENHNZ090	0	2-22-88	0	2-22-88
ENHNZ100	0	2-22-88	0	2-22-88
ENGNZ110	0	2-22-88	0	2-22-88
ENHNZ120	0	2-22-88	0	2-22-88
ENGNZ130	0	2-22-88	0	2-22-88
EOFNZ140	0	2-22-88	0	2-22-88
ENHNZ150	0	2-22-88	0	2-22-88
ENHNZ160	0	2-22-88	0	2-22-88
ENHNZ170	0	2-22-88	0	2-22-88
ESFNZ180	0	2-22-88	0	2-22-88
ENHNZ190	0	2-23-88	0	2-23-88
ENHNZ200	0	2-23-88	0	2-23-88

THIRD SURVEILLANCE TEST

ELECTRICAL PENETRATIONS

PENETRATION NUMBER	AS FOUND		AS LEFT	
	LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
ENHNZ210	0	2-23-88	0	2-23-88
ESFCZ220	0	2-23-88	0	2-23-88
EPHCZ230	0	2-23-88	0	2-23-88
EPHCZ240	0	2-23-88	0	2-23-88
ESFCZ250	0	2-23-88	0	2-23-88
ESFCZ260	0	2-23-88	0	2-23-88
ESFCZ270	0	2-23-88	0	2-23-88
ESACZ280	0	2-23-88	0	2-23-88
EPHCZ290	0	2-23-88	0	2-23-88
ERICZ300	0	2-23-88	0	2-23-88
ENANZ310	0	3-06-88	0	3-06-88
ENGNZ320	2	3-06-88	2	3-06-88
ENANZ330	0	3-06-88	0	3-06-88
EPHBZ340	0	3-06-88	0	3-06-88
ERIBZ350	0	3-06-88	0	3-06-88
ESEBZ360	0	3-06-88	0	3-06-88
ESABZ370	0	3-07-88	0	3-07-88
ESFBZ380	0	3-07-88	0	3-07-88
EPHBZ390	0	3-07-88	0	3-07-88
EPHBZ400	0	3-07-88	0	3-07-88

THIRD SURVEILLANCE TEST

ELECTRICAL PENETRATIONS

PENETRATION NUMBER	AS FOUND		AS LEFT	
	LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
EPHBZ410	0	3-07-88	0	3-07-88
ESFBZ420	0	3-07-88	0	3-07-88
EPHNZ430	0	3-07-88	0	3-07-88
ENANZ440	0	3-07-88	0	3-07-88
ENANZ450	0	3-13-88	0	3-13-88
EPHAZ460	0	3-13-88	0	3-13-88
ESAAZ470	0	3-13-88	0	3-13-88
EPHAZ480	0	3-13-88	0	3-13-88
ERIAZ490	0	3-13-88	0	3-13-88
ESFAZ500	0	3-13-88	0	3-13-88
ESEAZ510	0	3-13-88	0	3-13-88
EPHAZ520	0	3-13-88	0	3-13-88
EHCNZ530	0	3-13-88	0	3-13-88
ENGNZ540	0	3-14-88	0	3-14-88
ENHNZ550	0	3-14-88	0	3-14-88
ESFNZ560	0	3-14-88	0	3-14-88
EQFNZ570	0	3-14-88	0	3-14-88
ESFNZ580	0	3-14-88	0	3-14-88
ENHNZ590	0	3-14-88	0	3-14-88
ENGNZ600	0	3-14-88	0	3-14-88

THIRD SURVEILLANCE TEST

ELECTRICAL PENETRATIONS

PENETRATION NUMBER	AS FOUND		AS LEFT	
	LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
ENHNZ610	0	3-14-88	0	3-14-88
ENGNZ620	0	3-14-88	0	3-14-88
ENHNZ630	0	3-14-88	0	3-14-88
ESFNZ640	0	3-14-88	0	3-14-88
ENHNZ650	0	3-14-88	0	3-14-88
ESFNZ660	0	3-14-88	0	3-14-88
ENHNZ670	0	3-14-88	0	3-14-88
ENGNZ680	0	3-14-88	0	3-14-88
ENGNZ690	0	3-14-88	0	3-14-88
ENANZ700	0	3-15-88	0	3-15-88
ENGNZ710	0	3-15-88	0	3-15-88
ESFNZ720	0	3-15-88	0	3-15-88
ENHNZ730	0	3-15-88	0	3-15-88
ESFNZ740	0	3-15-88	0	3-15-88
ESENZ750	0	3-15-88	0	3-15-88
ESFNZ740	0	3-15-88	0	3-15-88
ESFDZ770	0	3-15-88	0	3-15-88
EFSDZ780	0	3-15-88	0	3-15-88
ERIDZ790	0	3-16-88	0	3-16-88
ESFNZ800	0	3-16-88	0	3-16-88

THIRD SURVEILLANCE TEST

ELECTRICAL PENETRATIONS

PENETRATION NUMBER	AS FOUND		AS LEFT	
	LEAKAGE SCCM	DATE TESTED	LEAKAGE SCCM	DATE TESTED
ESADZ810	0	3-16-88	0	3-16-88
ESFNZ820	0	3-16-88	0	3-16-88
ESFDZ830	0	3-16-88	0	3-16-88
ESFNZ840	0	3-16-88	0	3-16-88
ESADZ850	0	3-16-88	0	3-16-88
EPHNZ860	0	3-16-88	0	3-16-88
ESFNZ870	0	3-16-88	0	3-16-88
ENGNZ880	0	3-16-88	0	3-16-88
ESFNZ890	0	3-16-88	0	3-16-88
ENGNZ900	0	3-16-88	0	3-16-88
ESFNZ910	0	3-16-88	0	3-16-88

THIRD SURVEILLANCE TEST

TYPE "B" AND "C" TEST RESULTS

SUMMARY:

All tests were performed utilizing air or nitrogen as the test media at a minimum pressure of 49.5 psig (P_a) for a minimum duration of 15 minutes after stabilization.

DATA SUMMARY:

° total allowable (0.60 La) .....134,001 SCCM

° total "as-found" .....>34,215 SCCM

° total "as-left" .....1,260.5 SCCM

ACCEPTANCE CRITERIA:

The combined leakage rate of all Type B and C tests shall be less than 0.60 La or < 134,001 SCCM.

CONCLUSIONS:

Mechanical penetration 42B - Pressurizer Steam Line Sample (3/8") had excessive leakage (>2000 SCCM, limit of rotameter utilized) past each containment isolation valve upon initial Type C testing of UV-202 and UV-205. This specific as-found condition is presently being evaluated. The as-left combined leakage rate of all Type B and C tests was 1,260.5 SCCM which is well within the acceptance limit. The data substantiates that an acceptable as-left test was performed in accordance with the requirements of 10CFR50, Appendix J.