



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION III  
799 ROOSEVELT ROAD  
GLEN ELLYN, ILLINOIS 60137

*S Hare -  
for your records*

AUG 23 1984

MEMORANDUM FOR: James G. Keppler, Regional Administrator  
FROM: R. L. Spessard, Director, Division of Reactor Safety  
SUBJECT: CONTAINMENT INTEGRATED LEAK RATE TESTING AT ZION

The enclosures to this memorandum provide background information and conclusions reached concerning Containment Integrated Leak Rate Tests (CILRT's) performed at the Zion facility in 1980, 1981, 1983, and 1984 and a petition for Emergency Relief filed by the Citizens Against Nuclear Power on June 5, 1984. Enclosure 1 provides a brief summary of applicable regulatory requirements. Enclosure 2 provides a brief history of testing and inspection activities at Zion from 1980 to date.

Based on this information, we have reached the following conclusions:

1. The integrated leak rates for both units at Zion are well within Technical Specification limits.
2. Supplemental tests performed on Zion Unit 1 in 1981 and 1983 failed to demonstrate the accuracy of the CILRT's, therefore, these CILRT's were not performed in accordance with either the Technical Specifications or 10 CFR 50, Appendix J.
3. Some findings contained in the Petition for Emergency Relief were correct. When verified by Region III, the licensee voluntarily shut down Zion Unit 1 to conduct another CILRT. However, the conclusions reached by the petitioner were not valid.

R. L. Spessard, Director  
Division of Reactor Safety

Enclosures: As Stated

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PDR FOIA  
REYTB LAB5-136 PDR

## Enclosure 1

### Regulatory Requirements

Zion Technical Specifications 3.10.1 and 4.10.1 require the performance of periodic Primary Containment Integrated Leak Rate Tests (Type A tests) in accordance with 10 CFR 50, Appendix J and ANSI N45.4-1972. A maximum leakage rate of 0.1 volume % per 24 hours is specified at peak accident pressure.

10 CFR 50, Appendix J, in addition to establishing requirements for the performance of Type A tests, requires the performance of a supplemental test to verify the accuracy of the Type A test. The supplemental test is performed by imposing a measured leakage (on the containment) through a calibrated flowmeter and comparing the calculated containment leakage from the instruments used during the Type A test (including the imposed leakage) to the calculated leakage from the Type A test. To be acceptable, the difference between the supplemental test data, after subtraction of the superimposed leak rate, and the Type A test data must be within 25% of the maximum allowable leakage for the test pressure employed.

ANSI N45.4-1972, in addition to other requirements, states, "The leakage-rate test period, for any method, shall extend to 24h of retained internal pressure. If it can be demonstrated to the satisfaction of those responsible for the acceptance of the containment structure that the leakage rate can be accurately determined during a shorter test period, the agreed-upon shorter period may be used." It is Region III's position, with the support of NRR, that NRR is the organization responsible for the acceptance of the containment structure and hence is the only organization possessing the authority to approve a Type A test of less than 24h duration. This position was clearly established in a November 9, 1973 memorandum from Mr. B. H. Grier, Assistant Director for Construction and Operation, Directorate of Regulatory Operations to Mr. A. Giambusso, Deputy Director for Reactor Projects, and Mr. J. M. Hendrie, Deputy Director for Technical Review, and reaffirmed since then in other internal memoranda as well as in correspondence with several licensees such as the June 25, 1982 letter from Mr. D. G. Eisenhut, Director, Division of Licensing NRR to Mr. C. W. Fay, Assistant Vice President of Wisconsin Electric Power Company (copies attached). Both documents endorse a Bechtel Topical Report, BN-TOP-1, as the only approved methodology for performing Type A tests of less than 24h duration, and the latter requires written commitments to BN-TOP-1 as a prerequisite to performing a test of less than 24h duration. It should be noted that Zion has not committed to BN-TOP-1.

Zion is required to perform Type A tests in accordance with 10 CFR 50, Appendix J and ANSI N45.4-1972. Per Technical Specifications these tests are to be conducted at reduced pressure. Per 10 CFR 50, Appendix J the tests must include a satisfactory supplemental test. Per ANSI N45.4-1972, and, in the absence of a commitment to Bechtel Topical Report BN-TOP-1, the tests, exclusive of supplemental tests, must be at least 24h in duration.

## Enclosure 2

### Zion Type A Test Experience 1980 to Date

#### A. Discussion

##### 1. 1980 Testing:

In June 1980 a Type A test was performed on Zion Unit 2. The test was witnessed by Mr. J. Kohler, then the Senior Resident Inspector at the Zion facility. The results of the inspection were documented in Inspection Report 50-304/80-14 which states simply that, "the leak rate was well below the allowable limit of .0465 w/o day."

The licensee independently provided the results of the test to NRR in a report dated October 22, 1980. This report indicated that the test was performed at reduced pressure for 12 hours of acceptable data and followed by a successful supplemental test. The report states in part, "The test was terminated at hour 12 test time. Since the test had already been running much longer than 24 hours, the requirement to keep the containment pressurized longer than 24 hours had already been met. Twelve hours of data were sufficient to determine the leak rate of the containment."

The containment was at test pressure for approximately 48 hours. During the first 36 hours of the test, several manipulations of the containment boundary were performed in order to determine the location of leaking penetrations so that corrective action could be taken prior to performing a satisfactory CILRT. It should be noted that while these manipulations are allowed, their effect must be quantified in order to accurately characterize the "as-found" leak tight integrity of the containment building.

##### 2. 1981 Testing:

In March 1981 a Type A test was performed on Zion Unit 1. The test was witnessed by Mr. J. Kohler, then the Senior Resident Inspector at the Zion facility. The results of the inspection were documented in Inspection Report 50-295/81-06 which states, "Inspector review of the procedure, the events log, the containment mass plots, and leakage calculation, and instrument calibration, as well as independent calculation made by the inspector indicates that all acceptance criteria were met....At the conclusion of the Type A test, a supplemental test was conducted...at the conclusion of the supplemental test the licensee measured .0422 w/o/day which, therefore, verified the accuracy of the Type A measurement."

The licensee independently reported the results of the test to NRR in a report dated June 19, 1981. This report indicated that the test was performed at reduced pressure for 13 hours of acceptable data followed by a successful supplemental test. The containment



was at test pressure for approximately 10 days. During the first nine and a half days, many manipulations of the containment boundary were performed similar to those already noted for the 1980 Unit 2 test.

The Events Log section of the licensee's report indicated that the supplemental test was commenced at 4:29 a.m. on March 12, 1981. However, (at approximately 2:00 p.m.) the test was reinitialized to 10:41 a.m. following discovery of a leaking valve on the hold up tank cover gas system which was allowing gas to leak into containment. At 5:00 p.m. the verification test was reinitialized for a second time to 10:21 a.m. with no reason given.

3. 1983 Testing:

Between November 26 and December 5, 1983 a Type A test was performed on Zion Unit 1. Portions of the test were witnessed by the Resident Inspectors including procedure review, instrument calibration records, procedure compliance, valve and system lineups, and containment post-test inspections. The results of this inspection were documented in Inspection Report 50-295/84-02.

The licensee independently provided the results of the test to NRR in a report dated May 8, 1984. This report indicated that the test was performed at reduced pressure. The Event Log portion of the report states that the test was run until 11 hours and 50 minutes of acceptable data were obtained. The supplemental test was performed prior to the Type A test of record. The containment was at test pressure for approximately 8 days. During the first seven and a half days, numerous manipulations were performed to the containment boundary as previously noted for the 1980 Unit 2 test.

4. 1984 Receipt of a Petition for Emergency Relief:

On June 5, 1984, the Citizens Against Nuclear Power filed a Petition for Emergency Relief with the Commissioners. The purpose of the petition was, "(1) To give formal notification to the NRC that the Zion Unit 1 reactor of the Commonwealth Edison Company is currently in violation of both NRC regulations and federal law, and presents a grave and immediate health risk and danger to public safety. (2) To request emergency relief as appropriate."

The petition alleged that the Type A test performed on Zion Unit 1 in 1981 was scientifically invalid and was not performed in accordance with ANSI N45.4-1972. The basis for the allegation was that the licensee only obtained a satisfactory supplemental test after two unsuccessful attempts and an extended period of time during which the containment environment was modified by injection of some 44 gallons of water through a seal injection system. The petition concludes that



the difficulties in obtaining a satisfactory supplemental test demonstrated the inadequacy of the Type A test itself and requested the NRC to require and supervise an immediate retest of the Zion Unit 1 containment. The petition was forwarded to NRR for disposition.

5. 1984 Region III Inspection:

During the week of June 25, 1984, NRR requested that Region III perform an inspection at Zion Unit 1 to determine the validity of the allegations contained in the petition. This requested inspection was coupled with an inspection of a recent LER regarding a flow path left open between the Unit 2 containment and the auxiliary building, and commenced on July 2, 1984.

The initial thrust of the Region III inspection was to review the Zion Unit 1 1983 Type A test. The rationale was that if the 1983 test was valid, no immediate health and safety issues existed. If problems existed with the 1981 test, they could be handled through the normal review process.

Review of the 1983 test revealed the following deficiencies:

- a. The test duration was only approximately 12 hours. The methodology employed to perform the test and reduce the data was not that prescribed in BN-TOP-1.
- b. When that data was reduced using the BN-TOP-1 methodology, a calculated leakage of approximately 0.2 weight % per day was obtained. This exceeds the allowable value of approximately 0.07 weight % per day.
- c. The supplemental test was performed before the Type A test. While test sequencing is not specified in the regulations, this is considered poor practice based on the fact that containment conditions may not have been well characterized at the time of the supplemental test.
- d. The licensee applied the wrong calibration factor to the flow meter used to establish the imposed leakage rate during the supplemental test. When the correct calibration factor was applied, the agreement between the supplemental test results and the calculated leakage was 47% of the maximum allowable leakage rather than the required 25%.

Based on these deficiencies and the fact that the licensee, on September 21, 1982 placed on the docket a letter to J. G. Keppler acknowledging that the only acceptable methodology for performing a Type A test of less than 24 hours duration was BN-TOP-1, Region III concluded that the 1983 test was not performed in accordance with either the Technical Specifications or 10 CFR 50, Appendix J. Further, it was concluded that the error made in the supplemental test invalidated that test as the accuracy of the Type A test could not be verified. NRR concurred in these conclusions.

Based on these conclusions, Region III began a re-review of the Unit 1 1981 Type A test to assess its validity. This review revealed the following deficiencies:

- a. The test duration was only approximately 12 hours. The methodology employed to perform the test and reduce the data was not that prescribed in BN-TOP-1.
- b. When that data was reduced using BN-TOP-1, a calculated leakage of approximately 0.15 weight % per day was obtained. This exceeds the allowable value of approximately 0.07 weight % per day.
- c. Two attempts were made to perform a satisfactory supplemental test. The first attempt yielded unacceptably low results. The second test yielded acceptable results only after a careful choice of test start time. The inspectors independently calculated supplemental test results using two data points less than the licensee and obtained unacceptable results, indicating that a judicious choice of data can affect the statistical validity of test results.

Based on these deficiencies Region III concluded that the 1981 test was not performed in accordance with either the Technical Specifications or 10 CFR 50, Appendix J. NRR concurred in these conclusions.

On July 17, 1984, a meeting was convened in Region III between members of the Region III, NRR, and licensee staffs. The purpose of the meeting was to present the inspection conclusions to the licensee, the basis for those conclusions, and to afford the licensee the opportunity to provide justification of the validity of either the 1981 or 1983 Zion Unit 1 Type A tests. As a result of the items discussed during the meeting, and on the basis of further discussions between the licensee, Region III, IE, and NRR staffs on July 18, 1984, the conclusion was reached that the Zion Unit 1 leak rate test had not demonstrated compliance with Technical Specifications. The licensee voluntarily placed the unit in shutdown on July 18, 1984, and during the period July 27 - August 1, 1984, completed a satisfactory leak test on the Unit 1 containment. This test was witnessed by a Region III specialist inspector.

Because of the problems discovered with the 1981 and 1983 Type A tests on Unit 1, Region III also re-reviewed the 1980 Type A test performed on Unit 2. The only deficiency discovered with this test was the duration - 12 hours. Based on discussions with NRR, this test was judged acceptable for the following reasons:

- a. The NRC had not, prior to 1982, clearly promulgated to the licensee the requirements to use BN-TOP-1 for tests of less than 24 hours duration, and

- b. The test was witnessed and approved by a Region III specialist inspector. This constituted tacit approval of the test duration.
- c. NRC had been in possession of the test results since October 22, 1980 and had made no adverse findings with respect to its acceptability.

B. Conclusions

1. Type A tests performed on the Zion Unit 1 containment in 1981 and 1983 failed to demonstrate that the integrated containment leakage rate was in compliance with Technical Specification requirements in that the tests were of shorter duration than required by ANSI N45.4-1972 and the supplemental tests failed to demonstrate the accuracy of the Type A tests. NRR concurred in these findings.
2. The findings with respect to the supplemental test performed following the 1981 Type A test were consistent with those contained in the Petition for Emergency Relief filed by the Citizens Against Nuclear Power; however, the conclusions reached in the petition are not valid. Those conclusions were:
  - a. Failure of the first two supplemental tests proves that the Type A test itself was deficient. This was not the case. 10 CFR 50, Appendix J, paragraph III.A.3(b) allows for additional supplemental tests following a failure of a prior test.
  - b. Fourteen hours elapsed between the completion of the Type A test and completion of the "acceptable" supplemental test. This time may have allowed for significant changes in the containment environment which could invalidate the supplemental test. While the concerns expressed by the petitions are not without merit, the regulation requires sufficient duration to establish the accuracy of the supplemental test. Furthermore, containment conditions were continuously monitored throughout the period and changes in conditions were compensated for.
3. A satisfactory Type A test was performed on Zion Unit 1 during the period July 27-August 5, 1984 prior to returning the unit to power.
4. The Type A test performed on Unit 2 in 1980 was re-reviewed, and following discussions with NRR, judged to be acceptable.
5. Injection of water through the penetration seal water system is allowed and in compliance with the Technical Specifications.



## RAW AND PRIMARY DATA

Temp. Stabilization  
DATA  
(DS. 1 → )

DATASET# 1

: .166666667 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.58 P2= 43.084 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=HV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0-DOS,1-WB,2-DB)

1 (12)= 89.736	2 (22)= 90.428	3 (42)= 77.597	4 (22)= 90.367	5 (32)= 89.95
6 (32)= 89.788	7 (12)= 90.31	8 (22)= 90.31	9 (22)= 90.248	10 (32)= 90.586
11 (32)= 90.205	12 (12)= 89.863	13 (22)= 90.208	14 (22)= 90.179	15 (32)= 89.5120001
16 (42)= 83.515	17 (12)= 90.103	18 (22)= 89.921	19 (22)= 89.912	20 (32)= 90.034
21 (32)= 89.836	22 (42)= 90.17	23 (42)= 81.317	24 (52)= 91.452	25 (52)= 89.866
26 (52)= 90.626	27 (52)= 90.173	28 (21)= 72.47	29 (31)= 69.331	30 (11)= 69.86
31 (11)= 72.065	32 (21)= 72.032	33 (51)= 71.139	34 (21)= 71.957	35 (31)= 72.503
36 (41)= 72.091				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.375175753
2	.390606461
3	.374596726
4	.389789371
5	.377429272

AVERAGE VAPOR PRESSURE= .381446333

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	90.003
2	90.196625
3	89.9872858
4	83.14975
5	90.52925

AVERAGE CONTAINMENT TEMP= 89.4905014 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 71.44635 (DEG F.)

CORRECTED PRESSURES: P1= 43.1149096 PSIA P2= 43.1141496 PSIA

AVG. CORRECTED PRESS.= 43.1145296 PSIA

CONT. DRY AIR PRESSURE= 42.7330833 PSIA

CONT. DRY AIR MASS= 570307.004 LRS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 10

DRY ALARM= 10

PRESS ALARM= 10

PRESSURE CALIBRATION CONSTANTS

= 1.01012 B1= .104 M2= .9994 B2= .056

FOIA-85-136

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295-2678

Limit. 75 LRS

.0547001

Mass = 31200 LRS

## RAW AND PRIMARY DATA

DATASET# 2

: .333888889 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.554 P2= 43.057 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0=OOS,1=WB,2=DB)

1 (12)= 89.178	2 (22)= 89.95	3 (42)= 77.616	4 (22)= 89.903	5 (32)= 89.473
6 (32)= 89.38700017	12 (12)= 89.799	8 (22)= 89.805	9 (22)= 89.776	10 (32)= 90.081
11 (32)= 89.796	12 (12)= 89.537	13 (22)= 89.769	14 (22)= 89.701	15 (32)= 88.868
16 (42)= 83.424	17 (12)= 89.543	18 (22)= 89.439	19 (22)= 89.578	20 (32)= 89.645
21 (32)= 89.573	22 (42)= 89.924	23 (42)= 81.283	24 (52)= 91.108	25 (52)= 89.685
26 (52)= 90.448	27 (52)= 69.961	28 (21)= 72.523	29 (31)= 69.354	30 (11)= 69.406
31 (11)= 71.472	32 (21)= 72.755	33 (51)= 70.828	34 (21)= 70.803	35 (31)= 71.453
36 (41)= 71.971				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.368560807
2	.38894749
3	.368115943
4	.388212149
5	.373466384

AVERAGE VAPOR PRESSURE= .377152312

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	89.51425
2	89.7401251
3	89.5461428
4	83.06175
5	90.3005

AVERAGE CONTAINMENT TEMP= 89.0867733 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 71.10869 (DEG F.)

CORRECTED PRESSURES: P1= 43.0886465 PSIA P2= 43.0871658 PSIA

AVG. CORRECTED PRESS.= 43.0879062 PSIA

CONT. DRY AIR PRESSURE= 42.7107538 PSIA

CONT. DRY AIR MASS= 570428.349 LBS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 10

DRY ALARM= 10

PRESS ALARM= 10

SURE CALIBRATION CONSTANTS

= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA

DATASET# 3

: .500555556 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.537 P2= 43.041 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0=00S,1=WB,2=DB)

1 (12)= 88.893	2 (22)= 89.63700013	4 (22)= 89.428	5 (32)= 89.247
6 (32)= 89.125	7 (12)= 89.685	8 (22)= 89.558	9 (22)= 89.563
10 (32)= 89.84	11 (32)= 89.48	12 (12)= 89.146	13 (22)= 89.506
14 (22)= 89.495	15 (32)= 88.803	16 (42)= 83.554	17 (12)= 89.263
18 (22)= 89.152	19 (22)= 89.218	20 (32)= 89.314	21 (32)= 89.108
22 (42)= 89.706	23 (42)= 81.341	24 (52)= 90.965	25 (52)= 89.572
26 (52)= 90.208	27 (52)= 89.729000128	28 (21)= 71.797	29 (31)= 69.74
30 (11)= 70.326	31 (11)= 72.042	32 (21)= 72.58	33 (51)= 71.051
34 (21)= 70.838	35 (31)= 71.333	36 (41)= 72.05	

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.378005712
2	.385169972
3	.369785036
4	.389249858
5	.37630423

AVERAGE VAPOR PRESSURE= .378526499

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	89.24675
2	89.444625
3	89.2738572
4	83.02225
5	90.1185

AVERAGE CONTAINMENT TEMP= 88.8369968 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 71.2201567 (DEG F.)

CORRECTED PRESSURES: P1= 43.0714744 PSIA P2= 43.0711754 PSIA

AVG. CORRECTED PRESS.= 43.0713249 PSIA

CONT. DRY AIR PRESSURE= 42.6927984 PSIA

CONT. DRY AIR MASS= 570448.183 LBS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 10

DRY ALARM= 10

PRESS ALARM= 10

PRESSURE CALIBRATION CONSTANTS

A1= 1.01012 B1= .104 M2= .9994 B2= .056



## RAW AND PRIMARY DATA

DATASET# 4

.66722222 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.523 P2= 43.028 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0-DOS,1-WB,2-DB)

1 (12)= 88.702	2 (22)= 89.47400013 (42)= 77.56	4 (22)= 89.317	5 (32)= 89.073
6 (32)= 88.858	7 (12)= 89.331 8 (22)= 89.343	9 (22)= 89.437	10 (32)= 89.683
11 (32)= 89.477	12 (12)= 89.006 13 (22)= 89.303	14 (22)= 89.259	15 (32)= 88.537
16 (42)= 83.425	17 (12)= 89.137000118 (22)= 89.067	19 (22)= 89.138	20 (32)= 89.16
21 (32)= 88.99	22 (42)= 89.521 23 (42)= 81.335	24 (52)= 90.747	25 (52)= 89.424
26 (52)= 90.119	27 (52)= 89.634 28 (21)= 72.335	29 (31)= 69.58	30 (11)= 69.693
31 (11)= 71.075	32 (21)= 71.913 33 (51)= 70.845	34 (21)= 71.64	35 (31)= 70.986
36 (41)= 71.698			

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.367871781
2	.388102827
3	.366609409
4	.381644727
5	.373682062

AVERAGE VAPOR PRESSURE= .375974247

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	89.044
2	89.29225
3	89.1111429
4	82.96025
5	89.9810001

AVERAGE CONTAINMENT TEMP= 88.6817183 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 71.0166033 (DEG F.)

CORRECTED PRESSURES: P1= 43.0573328 PSIA P2= 43.0581832 PSIA

AVG. CORRECTED PRESS.= 43.057758 PSIA

CONT. DRY AIR PRESSURE= 42.6817838 PSIA

CONT. DRY AIR MASS= 570462.496 LRS.

-----  
CHANNELS LOCKED OUT: NONE

WET ALARM= 10

DRY ALARM= 10

PRESS ALARM= 10

SURE CALIBRATION CONSTANTS

A= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA

TASET# 5

: .833888889 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.516 P2= 43.019 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0=OOS,1=WB,2=DB)

1 (12)= 88.58	2 (22)= 89.27	3 (42)= 77.473	4 (22)= 89.227	5 (32)= 89.032
6 (32)= 88.809	7 (12)= 89.006	8 (22)= 89.196	9 (22)= 89.199	10 (32)= 89.611
11 (32)= 89.407	12 (12)= 88.978	13 (22)= 89.26	14 (22)= 89.209	15 (32)= 88.394
16 (42)= 83.4	17 (12)= 88.822	18 (22)= 88.795	19 (22)= 89.016	20 (32)= 89.161
21 (32)= 89.149	22 (42)= 89.59	23 (42)= 81.381	24 (52)= 90.606	25 (52)= 89.3
26 (52)= 89.956	27 (52)= 89.506	28 (21)= 72.401	29 (31)= 69.56	30 (11)= 69.543
31 (11)= 71.136	32 (21)= 71.128	33 (51)= 71.369	34 (21)= 71.206	35 (31)= 70.565
36 (41)= 71.687				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.36731512
2	.383090038
3	.363866586
4	.384501587
5	.380383614

AVERAGE VAPOR PRESSURE= .373982509

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.8465
2	89.1465
3	89.0804286
4	82.961
5	89.842

AVERAGE CONTAINMENT TEMP= 88.5772572 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.8612167 (DEG F.)

CORRECTED PRESSURES: P1= 43.0502619 PSIA P2= 43.0491886 PSIA

AVG. CORRECTED PRESS.= 43.0497253 PSIA

CONT. DRY AIR PRESSURE= 42.6757428 PSIA

CONT. DRY AIR MASS= 570490.43 LBS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 10

DRY ALARM= 10

PRESS ALARM= 10

SURE CALIBRATION CONSTANTS

= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA

DATA SET# 6  
: 1.00055556 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.509 P2= 43.011 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)-->S=SUBVOLUME,T=TYPE(0-DOS,1-WB,2-DB)

1 (12)= 88.461	2 (22)= 89.169	3 (42)= 77.439	4 (22)= 89.119	5 (32)= 88.919
6 (32)= 88.697	7 (12)= 88.955	8 (22)= 89.102	9 (22)= 89.102	10 (32)= 89.421
11 (32)= 89.12	12 (12)= 88.882000	113 (22)= 89.181	14 (22)= 89.093	15 (32)= 88.333
16 (42)= 83.377	17 (12)= 88.769	18 (22)= 88.761	19 (22)= 88.89	20 (32)= 89.015
21 (32)= 89.099000	122 (42)= 89.358	23 (42)= 81.422	24 (52)= 90.499	25 (52)= 89.204
26 (52)= 89.888	27 (52)= 89.444	28 (21)= 71.713	29 (31)= 69.455	30 (11)= 69.657
31 (11)= 71.669	32 (21)= 72.207	33 (51)= 70.938	34 (21)= 71.672	35 (31)= 70.835
36 (41)= 72.088				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.371378689
2	.386810499
3	.364890705
4	.389749872
5	.374863873

AVERAGE VAPOR PRESSURE= .376207786

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.7667501
2	89.052125
3	88.9434286
4	82.899
5	89.75875

AVERAGE CONTAINMENT TEMP= 88.4757897 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 71.03456 (DEG F.)

CORRECTED PRESSURES: P1= 43.0431911 PSIA P2= 43.0411934 PSIA

AVG. CORRECTED PRESS.= 43.0421923 PSIA

CONT. DRY AIR PRESSURE= 42.6659845 PSIA

CONT. DRY AIR MASS= 570465.557 LBS.

-----  
CHANNELS LOCKED OUT: NONE

WET ALARM= 10

DRY ALARM= 10

PRESS ALARM= 10

PRESSURE CALIBRATION CONSTANTS

A1= 1.01012 B1= .104 M2= .9994 B2= .056



## RAW AND PRIMARY DATA

DATASET# 7

TIME: 1.16722222 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.504 P2= 43.005 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=HV. (ST)--&gt;S=SUBVOLUME,T=TYPE(O=OOS,1-WB,2-DB)

1 (12)= 88.375	2 (22)= 89.065	3 (42)= 77.41	4 (22)= 89.016	5 (32)= 88.842
6 (32)= 88.717	7 (12)= 88.929	8 (22)= 89.041	9 (22)= 89.004	10 (32)= 89.389
11 (32)= 89.079	12 (12)= 88.757000	113 (22)= 89.105	14 (22)= 89.119	15 (32)= 88.281
16 (42)= 83.384	17 (12)= 88.671	18 (22)= 88.629	19 (22)= 88.812	20 (32)= 88.971
21 (32)= 88.952	22 (42)= 89.399	23 (42)= 81.43	24 (52)= 90.44	25 (52)= 89.178
26 (52)= 89.83	27 (52)= 89.343	28 (21)= 72.09	29 (31)= 69.987	30 (11)= 70.069
31 (11)= 71.121	32 (21)= 72.151	33 (51)= 70.68	34 (21)= 71.858	35 (31)= 70.925
36 (41)= 71.624				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.370521277
2	.389026349
3	.368774007
4	.383682682
5	.371593312

AVERAGE VAPOR PRESSURE= .377164783

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.683
2	88.973875
3	88.8901428
4	82.90625
5	89.6977501

AVERAGE CONTAINMENT TEMP= 88.4137858 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 71.11094 (DEG F.)

CORRECTED PRESSURES: P1= 43.0381405 PSIA P2= 43.035197 PSIA

AVG. CORRECTED PRESS.= 43.0366688 PSIA

CONT. DRY AIR PRESSURE= 42.659504 PSIA

CONT. DRY AIR MASS= 570443.433 LBS.

-----  
CHANNELS LOCKED OUT: NONE

WET ALARM= 10

DRY ALARM= 10

PRESS ALARM= 10

PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA

DATASET# 8

TIME: 1.33388889 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.498 P2= 43 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0=00S,1-WB,2-DB)

1 (12)= 88.348	2 (22)= 89.061	3 (42)= 77.487	4 (22)= 88.954	5 (32)= 88.818
6 (32)= 88.569	7 (12)= 88.758	8 (22)= 88.961	9 (22)= 88.957	10 (32)= 89.244
11 (32)= 89.041	12 (12)= 88.743	13 (22)= 89.022000114	14 (22)= 88.923	15 (32)= 88.101
16 (42)= 83.354000117	17 (12)= 88.623	18 (22)= 88.63	19 (22)= 88.853	20 (32)= 88.932
21 (32)= 88.906	22 (42)= 89.3	23 (42)= 81.424	24 (52)= 90.37	25 (52)= 89.201
26 (52)= 89.735	27 (52)= 89.332	28 (21)= 71.794	29 (31)= 69.004	30 (11)= 69.436
31 (11)= 70.698	32 (21)= 72.898	33 (51)= 70.826	34 (21)= 71.841	35 (31)= 70.61
36 (41)= 71.826				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.363922383
2	.390931955
3	.360710841
4	.386313782
5	.373441018

AVERAGE VAPOR PRESSURE= .374409655

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.618
2	88.9201251
3	88.8015714
4	82.89125
5	89.6595

AVERAGE CONTAINMENT TEMP= 88.3517503 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.8858334 (DEG F.)

CORRECTED PRESSURES: P1= 43.0320798 PSIA P2= 43.0302 PSIA

AVG. CORRECTED PRESS.= 43.0311399 PSIA

CONT. DRY AIR PRESSURE= 42.6567302 PSIA

CONT. DRY AIR MASS= 570470.909 LBS.

-----  
CHANNELS LOCKED OUT: NONE

WET ALARM= 10

DRY ALARM= 10

PRESS ALARM= 10

PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA

DATASET# 9

: 1.50055556 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.494 P2= 42.996 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0=0DS,1=WB,2=DB)

1 (12)= 88.305	2 (22)= 88.937	3 (42)= 77.418	4 (22)= 88.793	5 (32)= 88.775
6 (32)= 88.52200017	12 (12)= 88.801	8 (22)= 88.954	9 (22)= 88.911	10 (32)= 89.247
11 (32)= 88.931	12 (12)= 88.638	13 (22)= 88.983	14 (22)= 88.978	15 (32)= 88.209
16 (42)= 83.4	17 (12)= 88.548	18 (22)= 88.514	19 (22)= 88.71	20 (32)= 88.8870001
21 (32)= 88.897000122	22 (42)= 89.271	23 (42)= 81.52	24 (52)= 90.315	25 (52)= 88.992
26 (52)= 89.697	27 (52)= 89.253	28 (21)= 71.107	29 (31)= 69.749	30 (11)= 69.551
31 (11)= 71.392	32 (21)= 71.019	33 (51)= 70.768	34 (21)= 71.336	35 (31)= 70.562
36 (41)= 71.35				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.368968489
2	.377621334
3	.365021229
4	.380138796
5	.372706039

AVERAGE VAPOR PRESSURE= .371815983

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.573
2	88.8475
3	88.7811429
4	82.90225
5	89.56425

AVERAGE CONTAINMENT TEMP= 88.3062908 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.69453 (DEG F.)

CORRECTED PRESSURES: P1= 43.0280393 PSIA P2= 43.0262024 PSIA

AVG. CORRECTED PRESS.= 43.0271208 PSIA

CONT. DRY AIR PRESSURE= 42.6553049 PSIA

CONT. DRY AIR MASS= 570499.17 LRS.

-----  
CHANNELS LOCKED OUT: NONE

WET ALARM= 10

DRY ALARM= 10

PRESS ALARM= 10

SURE CALIBRATION CONSTANTS

B1= 1.01012 B2= .104 M2= .9994 B2= .056



## RAW AND PRIMARY DATA

DATASET# 10

: 1.66722222 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.491 P2= 42.992 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0-DOS,I-WB,2-DB)

1 (12)= 88.22	2 (22)= 88.905	3 (42)= 77.471	4 (22)= 88.8	5 (32)= 88.748
6 (32)= 88.50700017	12 (12)= 88.621	8 (22)= 88.896	9 (22)= 88.879	10 (32)= 89.216
11 (32)= 89.016	12 (12)= 88.63	13 (22)= 88.935	14 (22)= 88.913	15 (32)= 88.05
16 (42)= 83.343	17 (12)= 88.528	18 (22)= 88.562	19 (22)= 88.769	20 (32)= 88.848
21 (32)= 88.935	22 (42)= 89.267000123	42)= 81.471	24 (52)= 90.277	25 (52)= 89.067
26 (52)= 89.691	27 (52)= 89.218	28 (21)= 71.267	29 (31)= 69.429	30 (11)= 69.413
31 (11)= 71.336	32 (21)= 73.289	33 (51)= 70.616	34 (21)= 71.148	35 (31)= 70.985
36 (41)= 71.997				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.367752882
2	.387299045
3	.365662004
4	.388553407
5	.37078588

AVERAGE VAPOR PRESSURE= .37548359

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.49975
2	88.8323751
3	88.76
4	82.888
5	89.5632501

AVERAGE CONTAINMENT TEMP= 88.2801275 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.9772467 (DEG F.)

CORRECTED PRESSURES: P1= 43.0250089 PSIA P2= 43.0222048 PSIA

AVG. CORRECTED PRESS.= 43.0236069 PSIA

CONT. DRY AIR PRESSURE= 42.6481233 PSIA

CONT. DRY AIR MASS= 570430.353 LBS.

-----  
CHANNELS LOCKED OUT: NONE

WET ALARM= 10

DRY ALARM= 10

PRESS ALARM= 10

SURE CALIBRATION CONSTANTS

= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA

DATASET# 11

TIME: 1.83388889 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.487 P2= 42.989 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0-00S,1-WB,2-DB)

1 (12)= 88.192	2 (22)= 88.876	3 (12)= 77.465	4 (22)= 88.732	5 (32)= 88.578
6 (32)= 88.488	7 (12)= 88.774	8 (22)= 88.88	9 (22)= 88.879	10 (32)= 89.166
11 (32)= 88.801	12 (12)= 88.485	13 (22)= 88.884	14 (22)= 88.909	15 (32)= 88.33
16 (12)= 83.525	17 (12)= 88.513	18 (22)= 88.423	19 (22)= 88.572	20 (32)= 88.635
21 (32)= 88.569	22 (12)= 89.083	23 (12)= 81.533	24 (52)= 90.339	25 (52)= 89.035
26 (52)= 89.668	27 (52)= 89.164	28 (21)= 71.246	29 (31)= 69.722	30 (11)= 69.487
31 (11)= 70.565	32 (21)= 72.273	33 (51)= 70.832	34 (21)= 71.92	35 (31)= 71.51
36 (11)= 71.855				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.363414294
2	.38614398
3	.37078588
4	.386692805
5	.373517122

AVERAGE VAPOR PRESSURE= .376051022

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.491
2	88.769375
3	88.6524286
4	82.9015
5	89.5515001

AVERAGE CONTAINMENT TEMP= 88.2241272 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 71.02379 (DEG F.)

CORRECTED PRESSURES: P1= 43.0209685 PSIA P2= 43.0192066 PSIA

AVG. CORRECTED PRESS.= 43.0200875 PSIA

CONT. DRY AIR PRESSURE= 42.6440365 PSIA

CONT. DRY AIR MASS= 570433.988 LBS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 10

DRY ALARM= 10

PRESS ALARM= 10

PRESSURE CALIBRATION CONSTANTS

B1= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA

DATASET# 12

: 2.00055556 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.485 P2= 42.987 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0-DOS,1-WB,2-DB)

1 (12)= 88.232	2 (22)= 88.961	3 (42)= 77.574	4 (22)= 88.758	5 (32)= 88.534
6 (32)= 88.362	7 (12)= 88.658	8 (22)= 88.821	9 (22)= 88.902	10 (32)= 89.201
11 (32)= 89.013	12 (12)= 88.508	13 (22)= 88.8	14 (22)= 88.732	15 (32)= 87.992
16 (42)= 83.416	17 (12)= 88.56	18 (22)= 88.52	19 (22)= 88.688	20 (32)= 88.755
21 (32)= 88.598	22 (42)= 88.992	23 (42)= 81.472	24 (52)= 90.255	25 (52)= 88.996
26 (52)= 89.698	27 (52)= 89.181	28 (21)= 71.975	29 (31)= 69.139	30 (11)= 69.276
31 (11)= 71.409	32 (21)= 72.483	33 (51)= 70.947	34 (21)= 70.788	35 (31)= 70.539
36 (41)= 71.963				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.367352625
2	.38530464
3	.361104765
4	.388107199
5	.374978415

AVERAGE VAPOR PRESSURE= .373652187

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.4895
2	88.77275
3	88.6364286
4	82.8635
5	89.5325

AVERAGE CONTAINMENT TEMP= 88.2146872 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.8316034 (DEG F.)

CORRECTED PRESSURES: P1= 43.0189482 PSIA P2= 43.0172078 PSIA

AVG. CORRECTED PRESS.= 43.018078 PSIA

CONT. DRY AIR PRESSURE= 42.6444258 PSIA

CONT. DRY AIR MASS= 570449.023 LBS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 10

DRY ALARM= 10

PRESS ALARM= 10

PRESSURE CALIBRATION CONSTANTS

A= 1.01012 B1= .104 M2= .9994 B2= .056



## RAW AND PRIMARY DATA

DATASET# 13

TIME: 2.16722222 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.483 P2= 42.985 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0=00S,1-WB,2-DB)

1 (12)= 88.159	2 (22)= 88.824	3 (42)= 77.478	4 (22)= 88.694	5 (32)= 88.661
6 (32)= 88.447	7 (12)= 88.578	8 (22)= 88.827	9 (22)= 88.806	10 (32)= 89.073
11 (32)= 88.766	12 (12)= 88.484000	13 (22)= 88.855	14 (22)= 88.864000	15 (32)= 88.188
16 (42)= 83.416	17 (12)= 88.423	18 (22)= 88.382000	19 (22)= 88.581	20 (32)= 88.684
21 (32)= 88.684	22 (42)= 89.053	23 (42)= 81.576	24 (52)= 90.22	25 (52)= 88.993
26 (52)= 89.567	27 (52)= 89.141	28 (21)= 71.539	29 (31)= 68.193	30 (11)= 69.386
31 (11)= 70.573	32 (21)= 71.557	33 (51)= 70.529	34 (21)= 71.196	35 (31)= 71.356
36 (41)= 71.077				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.362838797
2	.381179147
3	.360311144
4	.376636323
5	.369690738

AVERAGE VAPOR PRESSURE= .369757312

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.411
2	88.729125
3	88.6432857
4	82.88075
5	89.48025

AVERAGE CONTAINMENT TEMP= 88.1856414 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.5265034 (DEG F.)

CORRECTED PRESSURES: P1= 43.016928 PSIA P2= 43.015209 PSIA

AVG. CORRECTED PRESS.= 43.0160685 PSIA

CONT. DRY AIR PRESSURE= 42.6463112 PSIA

CONT. DRY AIR MASS= 570504.488 LBS.

-----  
CHANNELS LOCKED OUT: NONE

WET ALARM= 10

DRY ALARM= 10

PRESS ALARM= 10

PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056

RAW AND PRIMARY DATA

TASET# 14

: 2.50055556 HRS.

\*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.479 P2= 42.982 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)-->S=SUBVOLUME,T=TYPE(0-QOS,1-WB,2-DB)

1 (12)= 88.118	2 (22)= 88.761	3 (42)= 77.529	4 (22)= 88.696	5 (32)= 88.6090001
6 (32)= 88.374	7 (12)= 88.656	8 (22)= 88.743	9 (22)= 88.777	10 (32)= 89.083
11 (32)= 88.83	12 (12)= 88.475	13 (22)= 88.819	14 (22)= 88.792	15 (32)= 87.988
16 (42)= 83.346	17 (12)= 88.388	18 (22)= 88.343	19 (22)= 88.586	20 (32)= 88.691
21 (32)= 88.693	22 (42)= 89.119	23 (42)= 81.59	24 (52)= 90.17	25 (52)= 88.975
26 (52)= 89.588	27 (52)= 89.146	28 (21)= 71.467	29 (31)= 68.774	30 (11)= 69.392
31 (11)= 70.739	32 (21)= 71.875	33 (51)= 70.564	34 (21)= 69.827	35 (31)= 70.874
36 (41)= 71.559				

\*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.363903783
2	.376372331
3	.360920066
4	.382839378
5	.370130972

AVERAGE VAPOR PRESSURE= .36920358

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.40925
2	88.689625
3	88.6097144
4	82.896
5	89.46975

AVERAGE CONTAINMENT TEMP= 88.1623711 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.4845667 (DEG F.)

CORRECTED PRESSURES: P1= 43.0128875 PSIA P2= 43.0122108 PSIA

AVG. CORRECTED PRESS.= 43.0125491 PSIA

CONT. DRY AIR PRESSURE= 42.6433456 PSIA

CONT. DRY AIR MASS= 570489.046 LBS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 10

DRY ALARM= 10

PRESS ALARM= 10

SURE CALIBRATION CONSTANTS

= 1.01012 B1= .104 M2= .9994 B2= .056

# RAW AND PRIMARY DATA

DATA SET# 15

: 2.66722223 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.478 P2= 42.981 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV, (ST)-->S-SUBVOLUME,T=TYPE(0-00S,1-WB,2-DB)

1 (12)= 88.14	2 (22)= 88.793	3 (42)= 77.584	4 (22)= 88.737	5 (32)= 88.58
6 (32)= 88.36	7 (12)= 88.581	8 (22)= 88.742	9 (22)= 88.78	10 (32)= 89.1
11 (32)= 88.879	12 (12)= 88.476	13 (22)= 88.742	14 (22)= 88.633	15 (32)= 87.98
16 (42)= 83.422	17 (12)= 88.398	18 (22)= 88.398	19 (22)= 88.584	20 (32)= 88.653
21 (32)= 88.661	22 (42)= 88.935	23 (42)= 81.57	24 (52)= 90.165	25 (52)= 88.952
26 (52)= 89.636	27 (52)= 89.181	28 (21)= 72.473	29 (31)= 68.598	30 (11)= 69.822
31 (11)= 70.277	32 (21)= 71.946	33 (51)= 70.463	34 (21)= 71.083	35 (31)= 70.779
36 (41)= 71.35				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.36370544
2	.386418308
3	.359255354
4	.380138796
5	.368861826

AVERAGE VAPOR PRESSURE= .371492607

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.39875
2	88.676125
3	88.6018572
4	82.87775
5	89.4835

AVERAGE CONTAINMENT TEMP= 88.1532418 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.65928 (DEG F.)

CORRECTED PRESSURES: P1= 43.0118774 PSIA P2= 43.0112114 PSIA

AVG. CORRECTED PRESS.= 43.0115444 PSIA

CONT. DRY AIR PRESSURE= 42.6400518 PSIA

CONT. DRY AIR MASS= 570454.487 LBS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 10

DRY ALARM= 10

PRESS ALARM= 10

SURE CALIBRATION CONSTANTS

A= 1.01012 B1= .104 M2= .9994 B2= .056



## RAW AND PRIMARY DATA

DATASET# 16

: 2.83388889 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.477 P2= 42.98 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0=00S,1=WB,2=DB)

1 (12)= 88.101	2 (22)= 88.778	3 (42)= 77.604	4 (22)= 88.748	5 (32)= 88.534
6 (32)= 88.38	7 (12)= 88.542	8 (22)= 88.71	9 (22)= 88.7310001	10 (32)= 89.056
11 (32)= 88.829	12 (12)= 88.5070001	13 (22)= 88.768	14 (22)= 88.7	15 (32)= 87.904
16 (42)= 83.499	17 (12)= 88.363	18 (22)= 88.412	19 (22)= 88.629	20 (32)= 88.697
21 (32)= 88.78	22 (42)= 89.035	23 (42)= 81.573	24 (52)= 90.152	25 (52)= 88.951
26 (52)= 89.613	27 (52)= 89.151	28 (21)= 71.266	29 (31)= 68.733	30 (11)= 69.584
31 (11)= 70.468	32 (21)= 72.039	33 (51)= 70.695	34 (21)= 71.385	35 (31)= 71.443
36 (41)= 71.71				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.363414294
2	.382895548
3	.364182864
4	.384800932
5	.371782776

AVERAGE VAPOR PRESSURE= .372572198

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.3782501
2	88.684875
3	88.5971429
4	82.92775
5	89.46675

AVERAGE CONTAINMENT TEMP= 88.1538357 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.7495567 (DEG F.)

CORRECTED PRESSURES: P1= 43.0108673 PSIA P2= 43.010212 PSIA

AVG. CORRECTED PRESS.= 43.0105396 PSIA

CONT. DRY AIR PRESSURE= 42.6379674 PSIA

CONT. DRY AIR MASS= 570425.983 LBS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 10

DRY ALARM= 10

PRESS ALARM= 10

PRESSURE CALIBRATION CONSTANTS

A1= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA

DATASET# 17

TIME: 3.00083334 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.476 P2= 42.979 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0-00S,1-WB,2-DB)

1 (12)= 88.105	2 (22)= 88.795	3 (42)= 77.642	4 (22)= 88.719	5 (32)= 88.536
6 (32)= 88.324	7 (12)= 88.56	8 (22)= 88.751	9 (22)= 88.728	10 (32)= 89.097
11 (32)= 88.827	12 (12)= 88.439	13 (22)= 88.748	14 (22)= 88.642000	15 (32)= 87.957
16 (42)= 83.509	17 (12)= 88.441	18 (22)= 88.421	19 (22)= 88.607	20 (32)= 88.67
21 (32)= 88.681	22 (42)= 89.061	23 (42)= 81.597	24 (52)= 90.15	25 (52)= 88.952
26 (52)= 89.604000	27 (52)= 89.157	28 (21)= 71.92	29 (31)= 68.841	30 (11)= 69.508
31 (11)= 71.128	32 (21)= 71.862	33 (51)= 70.396	34 (21)= 70.909	35 (31)= 70.55
36 (41)= 71.386				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.367046436
2	.382899869
3	.35934119
4	.380602778
5	.368022018

AVERAGE VAPOR PRESSURE= .370961729

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.38625
2	88.6763751
3	88.5845714
4	82.95225
5	89.4657501

AVERAGE CONTAINMENT TEMP= 88.1506478 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.6205534 (DEG F.)

CORRECTED PRESSURES: P1= 43.0098572 PSIA P2= 43.0092126 PSIA

AVG. CORRECTED PRESS.= 43.0095349 PSIA

CONT. DRY AIR PRESSURE= 42.6385732 PSIA

CONT. DRY AIR MASS= 570437.406 LBS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 10

DRY ALARM= 10

PRESS ALARM= 10

PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA

DATASET# 13

TIME: 3.1675 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.475 P2= 42.978 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (GT)--&gt;S-SUBVOLUME,T=TYPE(0-00S,1-WB,2-DB)

1 (12)= 88.128	2 (22)= 88.78	3 (42)= 77.768	4 (22)= 88.525	5 (32)= 88.443
6 (32)= 88.25	7 (12)= 88.6	8 (22)= 88.749	9 (22)= 88.798	10 (32)= 89.1090001
11 (32)= 88.78	12 (12)= 88.342	13 (22)= 88.708	14 (22)= 88.659	15 (32)= 88.182
16 (42)= 83.619	17 (12)= 88.519	18 (22)= 88.371	19 (22)= 88.45	20 (32)= 88.519
21 (32)= 88.371	22 (42)= 88.723	23 (42)= 81.634	24 (52)= 90.22	25 (52)= 88.972
26 (52)= 89.576	27 (52)= 89.093	28 (21)= 71.737	29 (31)= 69.178	30 (11)= 69.345
31 (11)= 70.863	32 (21)= 71.71	33 (51)= 70.581	34 (21)= 69.74	35 (31)= 69.874
36 (41)= 71.463				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.364381435
2	.376457472
3	.357267783
4	.391596845
5	.370344966

AVERAGE VAPOR PRESSURE= .368055503

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.39725
2	88.63
3	89.5220001
4	82.886
5	89.46525

AVERAGE CONTAINMENT TEMP= 88.1117575 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 76.39116 (DEG F.)

CORRECTED PRESSURES: P1= 43.0078369 PSIA P2= 43.0082132 PSIA

AVG. CORRECTED PRESS.= 43.0080251 PSIA

CONT. DRY AIR PRESSURE= 42.6399695 PSIA

CONT. DRY AIR MASS= 570496.586 LBS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 10

DRY ALARM= 10

PRESS ALARM= 10

PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056



## RAW AND PRIMARY DATA

DATASET# 19

TIME: 3.33416667 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.476 P2= 42.976 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=HV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0-QDS,1-WB,2-DB)

1 (12)= 88.092	2 (22)= 88.784	3 (42)= 77.644	4 (22)= 88.736	5 (32)= 88.575
6 (32)= 88.281	7 (12)= 88.43	8 (22)= 88.716	9 (22)= 88.678	10 (32)= 89.021
11 (32)= 88.803	12 (12)= 88.459	13 (22)= 88.71	14 (22)= 88.615	15 (32)= 87.941
16 (42)= 83.506	17 (12)= 88.418	18 (22)= 88.415	19 (22)= 88.568	20 (32)= 88.62
21 (32)= 88.598	22 (42)= 88.942	23 (42)= 81.634	24 (52)= 90.126	25 (52)= 88.926
26 (52)= 89.587	27 (52)= 89.119	28 (21)= 71.223	29 (31)= 69.264	30 (11)= 69.493
31 (11)= 69.821	32 (21)= 71.64	33 (51)= 70.457	34 (21)= 70.82	35 (31)= 70.3870001
36 (41)= 71.397				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.358869318
2	.378565808
3	.360938533
4	.380744649
5	.368786552

AVERAGE VAPOR PRESSURE= .368695674

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.34975
2	88.65275
3	88.5484286
4	82.9315
5	89.4395001

AVERAGE CONTAINMENT TEMP= 88.1207222 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.4421333 (DEG F.)

CORRECTED PRESSURES: P1= 43.0098572 PSIA P2= 43.0062144 PSIA

AVG. CORRECTED PRESS.= 43.0080358 PSIA

CONT. DRY AIR PRESSURE= 42.6393401 PSIA

CONT. DRY AIR MASS= 570478.829 LBS.

-----  
CHANNELS LOCKED OUT: NONE

WET ALARM= 10

DRY ALARM= 10

PRESS ALARM= 10

PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA

SET# 20

TIME: 3.50083333 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.473 P2= 42.975 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0-DOS,1-WB,2-DB)

1 (12)= 88.284	2 (22)= 88.821	3 (42)= 77.682	4 (22)= 88.671	5 (32)= 88.5220001
6 (32)= 88.38200017	12 (12)= 88.597	8 (22)= 88.72	9 (22)= 88.754	10 (32)= 89.076
11 (32)= 88.765	12 (12)= 88.388	13 (22)= 88.76	14 (22)= 88.69	15 (32)= 88.09
16 (42)= 83.541	17 (12)= 88.385	18 (22)= 88.34	19 (22)= 88.507000120	20 (32)= 88.584
21 (32)= 88.545	22 (42)= 88.888	23 (42)= 81.655	24 (52)= 90.185	25 (52)= 88.943
26 (52)= 89.625	27 (52)= 89.102	28 (21)= 71.397	29 (31)= 69.2	30 (11)= 68.371
31 (11)= 71.424	32 (21)= 71.768	33 (51)= 70.623	34 (21)= 71.328	35 (31)= 70.301
36 (41)= 71.353				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.361825882
2	.382045131
3	.360016233
4	.380177442
5	.370874119

AVERAGE VAPOR PRESSURE= .370182936

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.4135
2	88.657875
3	88.5662858
4	82.9415
5	89.46375

AVERAGE CONTAINMENT TEMP= 88.1426339 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.5588033 (DEG F.)

CORRECTED PRESSURES: P1= 43.0068268 PSIA P2= 43.005215 PSIA

AVG. CORRECTED PRESS.= 43.0060209 PSIA

CONT. DRY AIR PRESSURE= 42.635838 PSIA

CONT. DRY AIR MASS= 570409.158 LBS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 10

DRY ALARM= 10

PRESS ALARM= 10

PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA

SET# 21

TIME: 3.6675 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.472 P2= 42.975 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0-00S,1-WB,2-DB)

1 (12)= 88.316	2 (22)= 88.829	3 (42)= 77.688	4 (22)= 88.681	5 (32)= 88.549
6 (32)= 88.285	7 (12)= 88.716	8 (22)= 88.713	9 (22)= 88.716	10 (32)= 88.9840001
11 (32)= 88.723	12 (12)= 88.3920001	13 (22)= 88.7340001	14 (22)= 88.67	15 (32)= 88.023
16 (42)= 83.564	17 (12)= 88.423	18 (22)= 88.395	19 (22)= 88.533	20 (32)= 88.537
21 (32)= 88.478	22 (42)= 88.824	23 (42)= 81.68	24 (52)= 90.179	25 (52)= 88.926
26 (52)= 89.607	27 (52)= 89.117	28 (21)= 71.402	29 (31)= 69.14	30 (11)= 69.368
31 (11)= 71.707	32 (21)= 71.067	33 (51)= 70.62	34 (21)= 71.4	35 (31)= 70.7620001
36 (41)= 71.331				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.36979761
2	.379362305
3	.362486467
4	.379894116
5	.3708363

AVERAGE VAPOR PRESSURE= .371520914

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.46175
2	88.6626251
3	88.5112858
4	82.9390001
5	89.45725

AVERAGE CONTAINMENT TEMP= 88.1344289 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.6693534 (DEG F.)

CORRECTED PRESSURES: P1= 43.0058167 PSIA P2= 43.005215 PSIA

AVG. CORRECTED PRESS.= 43.0055158 PSIA

CONT. DRY AIR PRESSURE= 42.6339949 PSIA

CONT. DRY AIR MASS= 570393.043 LBS.

-----  
CHANNELS LOCKED OUT: NONE

WET ALARM= 10

DRY ALARM= 10

PRESS ALARM= 10

PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056



## RAW AND PRIMARY DATA

SET# 22

E: 3.83416667 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DEJECTORS P1= 42.471 P2= 42.974 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0-QOS,1-WB,2-DB)

1 (12)= 88.34	2 (22)= 88.826	3 (42)= 77.71	4 (22)= 88.673	5 (32)= 88.525
6 (32)= 88.287	7 (12)= 88.496	8 (22)= 88.725	9 (22)= 88.743	10 (32)= 89.073
11 (32)= 88.804	12 (12)= 88.406	13 (22)= 88.732	14 (22)= 88.673	15 (32)= 88.096
16 (42)= 83.549	17 (12)= 88.412	18 (22)= 88.34	19 (22)= 88.497	20 (32)= 88.56
21 (32)= 88.459	22 (42)= 88.885	23 (42)= 81.691	24 (52)= 90.171	25 (52)= 88.975
26 (52)= 89.59	27 (52)= 89.126	28 (21)= 71.868	29 (31)= 69.348	30 (11)= 70.06
31 (11)= 70.401	32 (21)= 71.658	33 (51)= 70.407	34 (21)= 71.315	35 (31)= 70.546
36 (41)= 71.189				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.365954723
2	.38354851
3	.362437041
4	.378069809
5	.368159782

AVERAGE VAPOR PRESSURE= .371747889

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.4135
2	88.651125
3	88.5434286
4	82.95875
5	89.4655

AVERAGE CONTAINMENT TEMP= 88.1348697 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.6845433 (DEG F.)

CORRECTED PRESSURES: P1= 43.0048065 PSIA P2= 43.0042156 PSIA

AVG. CORRECTED PRESS.= 43.0045111 PSIA

CONT. DRY AIR PRESSURE= 42.6327632 PSIA

CONT. DRY AIR MASS= 570376.105 LBS.

-----  
CHANNELS LOCKED OUT: NONE

WET ALARM= 10

DRY ALARM= 10

PRESS ALARM= 10

PRESSURE CALIBRATION CONSTANTS

A1= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA

0 TASET# 23  
 ME: 4.33416667 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.472 P2= 42.974 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)-->S-SUBVOLUME,T=TYPE(O-OOS,1-WB,2-DB)

1 (12)= 88.314	2 (22)= 88.845	3 (42)= 77.735	4 (22)= 88.688	5 (32)= 88.493
6 (32)= 88.263	7 (12)= 88.516	8 (22)= 88.732	9 (22)= 88.775	10 (32)= 89.065
11 (32)= 88.804	12 (12)= 88.407	13 (22)= 88.748	14 (22)= 88.671	15 (32)= 88.015
16 (42)= 83.549	17 (12)= 88.401	18 (22)= 88.378	19 (22)= 88.528	20 (32)= 88.6040001
21 (32)= 88.568	22 (42)= 88.977	23 (42)= 81.707	24 (52)= 90.156	25 (52)= 88.923
26 (52)= 89.608	27 (52)= 89.114000128	28 (21)= 71.437	29 (31)= 69.125	30 (11)= 69.053
31 (11)= 71.118	32 (21)= 71.939	33 (51)= 70.294	34 (21)= 71.275	35 (31)= 71.025
36 (41)= 71.2570001				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.364151846
2	.38272706
3	.364021595
4	.378942463
5	.366746712

AVERAGE VAPOR PRESSURE= .371618928

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.4095
2	88.670625
3	88.5445714
4	82.992
5	89.45025

AVERAGE CONTAINMENT TEMP= 88.1423753 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.6750867 (DEG F.)

CORRECTED PRESSURES: P1= 43.0058167 PSIA P2= 43.0042156 PSIA

AVG. CORRECTED PRESS.= 43.0050162 PSIA

CONT. DRY AIR PRESSURE= 42.6333972 PSIA

CONT. DRY AIR MASS= 570376.773 LBS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 1

DRY ALARM= .5

PRESS ALARM= .2

0 PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA

Q TASET# 24  
 ME: 4.50083333 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.47 P2= 42.973 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=HV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0=00S,1=WB,2=DB)

1 (12)= 88.31	2 (22)= 88.838	3 (42)= 77.737	4 (22)= 88.645	5 (32)= 88.51
6 (32)= 88.317	7 (12)= 88.407	8 (22)= 88.72900019	9 (22)= 88.719	10 (32)= 89.041
11 (32)= 88.732	12 (12)= 88.375	13 (22)= 88.736	14 (22)= 88.673	15 (32)= 88.055
16 (42)= 83.552	17 (12)= 88.404	18 (22)= 88.366	19 (22)= 88.54	20 (32)= 88.54
21 (32)= 88.476	22 (42)= 89.012000123	23 (42)= 81.73	24 (52)= 90.176	25 (52)= 88.96
26 (52)= 89.53	27 (52)= 89.108	28 (21)= 71.98	29 (31)= 68.634	30 (11)= 69.242
31 (11)= 70.565	32 (21)= 72.2	33 (51)= 70.33	34 (21)= 69.899	35 (31)= 70.886
36 (41)= 71.611				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.361899914
2	.380263335
3	.360132944
4	.383513891
5	.367196377

AVERAGE VAPOR PRESSURE= .369632718

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.374
2	88.65575
3	88.5244286
4	83.00775
5	89.4435

AVERAGE CONTAINMENT TEMP= 88.1255896 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.5156134 (DEG F.)

CORRECTED PRESSURES: P1= 43.0037964 PSIA P2= 43.0032162 PSIA

AVG. CORRECTED PRESS.= 43.0035043 PSIA

CONT. DRY AIR PRESSURE= 42.6338736 PSIA

CONT. DRY AIR MASS= 570400.623 LBS.

-----  
CHANNELS LOCKED OUT: NONE

WET ALARM= 1

DRY ALARM= .5

PRESS ALARM= .2

Q PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056



## RAW AND PRIMARY DATA

0 TASET# 25  
ME: 4.6675 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.47 P2= 42.973 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0=00S,1=WB,2=DB)

1 (12)= 88.295	2 (22)= 88.833	3 (42)= 77.737	4 (22)= 88.652	5 (32)= 88.577
6 (32)= 88.324	7 (12)= 88.411	8 (22)= 88.736	9 (22)= 88.732	10 (32)= 88.978
11 (32)= 88.705	12 (12)= 88.377	13 (22)= 88.723	14 (22)= 88.661	15 (32)= 88.061
16 (42)= 83.606	17 (12)= 88.386	18 (22)= 88.36	19 (22)= 88.519	20 (32)= 88.601
21 (32)= 88.504	22 (42)= 88.865	23 (42)= 81.747	24 (52)= 90.182	25 (52)= 88.981
26 (52)= 89.624	27 (52)= 89.117	28 (21)= 71.046	29 (31)= 69.335	30 (11)= 68.533
31 (11)= 70.121	32 (21)= 71.678	33 (51)= 70.405	34 (21)= 70.117	35 (31)= 69.7
36 (41)= 71.112				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.354846868
2	.374978415
3	.357164082
4	.377083777
5	.368134731

AVERAGE VAPOR PRESSURE= .365227701

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.36725
2	88.652
3	88.5357143
4	82.98875
5	89.476

AVERAGE CONTAINMENT TEMP= 88.1280011 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.16403 (DEG F.)

CORRECTED PRESSURES: P1= 43.0037964 PSIA P2= 43.0032162 PSIA

AVG. CORRECTED PRESS.= 43.0035063 PSIA

CONT. DRY AIR PRESSURE= 42.6382786 PSIA

CONT. DRY AIR MASS= 570457.047 LBS.

-----  
CHANNELS LOCKED OUT: NONE

WET ALARM= 1

DRY ALARM= .5

PRESS ALARM= .2

0 PRESSURE CALIBRATION CONSTANTS

H1= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA

0 TASET# 26  
 ME: 4.83416667 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.471 P2= 42.973 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)-->S-SUBVOLUME,T=TYPE(0-OOS,1-WB,2-DB)

1 (12)= 88.35900012 (22)= 88.855	3 (42)= 77.752	4 (22)= 88.636	5 (32)= 88.5070001
6 (32)= 88.243	7 (12)= 88.536	8 (22)= 88.749	9 (22)= 88.752
10 (32)= 89.059	11 (32)= 88.778	12 (12)= 88.383	13 (22)= 88.755
14 (22)= 88.69	15 (32)= 88.122	16 (42)= 83.634	17 (12)= 88.409
18 (22)= 88.3590001	19 (22)= 88.519	20 (32)= 88.577	21 (32)= 88.539
22 (42)= 88.94	23 (42)= 81.787	24 (52)= 90.19	25 (52)= 88.9840001
26 (52)= 89.54	27 (52)= 89.106	28 (21)= 71.679	29 (31)= 69.374
30 (11)= 69.175	31 (11)= 70.605	32 (21)= 70.024	33 (51)= 70.207
34 (21)= 70.428	35 (31)= 71.113	36 (41)= 71.371	

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.361733361
2	.371976537
3	.36611674
4	.380409392
5	.365662004

AVERAGE VAPOR PRESSURE= .368448279

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.42175
2	88.664375
3	88.5464286
4	83.02825
5	89.455

AVERAGE CONTAINMENT TEMP= 88.1468646 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.4274467 (DEG F.)

CORRECTED PRESSURES: P1= 43.0048065 PSIA P2= 43.0032162 PSIA

AVG. CORRECTED PRESS.= 43.0040114 PSIA

CONT. DRY AIR PRESSURE= 42.6355631 PSIA

CONT. DRY AIR MASS= 570401.075 LBS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 1

DRY ALARM= .5

PRESS ALARM= .2

PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA

Q TASET# 27  
ME: 5.00083333 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.477 P2= 42.974 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0-QOS,1-WB,2-DB)

1 (12)= 88.342	2 (22)= 88.851	3 (42)= 77.789	4 (22)= 88.693	5 (32)= 88.516
6 (32)= 88.362	7 (12)= 88.537	8 (22)= 88.731	9 (22)= 88.749	10 (32)= 89.028
11 (32)= 88.737	12 (12)= 88.4	13 (22)= 88.748	14 (22)= 88.661	15 (32)= 88.076
16 (42)= 83.65	17 (12)= 88.426	18 (22)= 88.351	19 (22)= 88.523	20 (32)= 88.569
21 (32)= 88.569	22 (42)= 88.908	23 (42)= 81.794	24 (52)= 90.182	25 (52)= 88.969
26 (52)= 89.593	27 (52)= 89.119	28 (21)= 71.76	29 (31)= 68.922	30 (11)= 69.671
31 (11)= 69.644	32 (21)= 71.415	33 (51)= 70.477	34 (21)= 71.769	35 (31)= 71.07
36 (41)= 71.2570001				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.358875443
2	.383994466
3	.363042914
4	.378942463
5	.36903752

AVERAGE VAPOR PRESSURE= .37096774

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.42625
2	88.663375
3	88.551
4	83.03525
5	89.4657501

AVERAGE CONTAINMENT TEMP= 88.150415 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.62019 (DEG F.)

CORRECTED PRESSURES: P1= 43.0108673 PSIA P2= 43.0042156 PSIA

AVG. CORRECTED PRESS.= 43.0075414 PSIA

CONT. DRY AIR PRESSURE= 42.6365737 PSIA

CONT. DRY AIR MASS= 570410.899 LBS.

-----  
CHANNELS LOCKED OUT: NONE

WET ALARM= 1

DRY ALARM= .5

PRESS ALARM= .2

PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056



## RAW AND PRIMARY DATA

0 TASET# 28  
 ME: 5.1675 HRS.

≈ 1124 hrs.  
 7/29/84

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.47 P2= 42.973 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)-->S=SUBVOLUME,T=TYPE(0-QDS,1-WB,2-DB)

1 (12)= 88.307	2 (22)= 88.833	3 (42)= 77.795	4 (22)= 88.674	5 (32)= 88.557
6 (32)= 88.31	7 (12)= 88.417	8 (22)= 88.73400019	9 (22)= 88.76	10 (32)= 89.044
11 (32)= 88.777	12 (12)= 88.406	13 (22)= 88.723	14 (22)= 88.676	15 (32)= 88.063
16 (42)= 83.714	17 (12)= 88.432	18 (22)= 88.385	19 (22)= 88.504	20 (32)= 88.6
21 (32)= 88.566	22 (42)= 88.891	23 (42)= 81.814	24 (52)= 90.193	25 (52)= 88.969
26 (52)= 89.637000127	27 (52)= 89.151	28 (21)= 72.07	29 (31)= 68.837	30 (11)= 69.039
31 (11)= 70.352	32 (21)= 71.762000133	33 (51)= 70.283	34 (21)= 70.179	35 (31)= 71.804
36 (41)= 71.276				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.35934119
2	.379971369
3	.367077669
4	.379186608
5	.366609409

AVERAGE VAPOR PRESSURE= .370858748

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.3905
2	88.661125
3	88.5595715
4	83.0535
5	89.4875

AVERAGE CONTAINMENT TEMP= 88.1496028 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.6159 (DEG F.)

CORRECTED PRESSURES: P1= 43.0037964 PSIA P2= 43.0032162 PSIA

AVG. CORRECTED PRESS.= 43.0035063 PSIA

CONT. DRY AIR PRESSURE= 42.6326476 PSIA

CONT. DRY AIR MASS= 570359.219 LBS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 1

DRY ALARM= .5

PRESS ALARM= .2

0 PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA

TASET# 29  
TIME: 5.50083333 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.471 P2= 42.973 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=HV, (ST)-->S=SUBVOLUME,T=TYPE(0=00S,1=WB,2=DB)

1 (12)= 88.342	2 (22)= 88.85900013	(42)= 77.854	4 (22)= 88.659	5 (32)= 88.539
6 (32)= 88.313	7 (12)= 88.482	8 (22)= 88.731	9 (22)= 88.784	10 (32)= 89.106
11 (32)= 88.85900011	12 (12)= 88.427	13 (22)= 88.76	14 (22)= 88.682	15 (32)= 88.089
16 (42)= 83.692	17 (12)= 88.443	18 (22)= 88.39700011	19 (22)= 88.58	20 (32)= 88.594
21 (32)= 88.589	22 (42)= 89.01	23 (42)= 81.852	24 (52)= 90.188	25 (52)= 88.952
26 (52)= 89.656	27 (52)= 89.126	28 (21)= 70.599	29 (31)= 68.829	30 (11)= 68.661
31 (11)= 70.919	32 (21)= 72.244	33 (51)= 70.309	34 (21)= 71.389	35 (31)= 70.651
36 (41)= 71.086				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.360501721
2	.380920977
3	.359887276
4	.376751339
5	.366934014

AVERAGE VAPOR PRESSURE= .368880632

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.4235
2	88.6815
3	88.5841429
4	83.102
5	89.4805

AVERAGE CONTAINMENT TEMP= 88.1736608 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.1559633 (DEG F.)

CORRECTED PRESSURES: P1= 43.0048065 PSIA P2= 43.0032162 PSIA

AVG. CORRECTED PRESS.= 43.0040114 PSIA

CONT. DRY AIR PRESSURE= 42.6351308 PSIA

CONT. DRY AIR MASS= 570367.393 LBS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 1

DRY ALARM= .5

PRESS ALARM= .2

PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA

DATA SET# 30  
TIME: 5.6675 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.472 P2= 42.973 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0-DOS,1-WB,2-DB)

1 (12)= 88.33	2 (22)= 88.85900013	4 (22)= 88.693	5 (32)= 88.592
6 (32)= 88.343	7 (12)= 88.668	8 (22)= 88.766	9 (22)= 88.775
10 (32)= 89.0220001	11 (32)= 88.766	12 (12)= 88.43	13 (22)= 88.748
14 (22)= 88.674	15 (32)= 88.044	16 (42)= 83.674	17 (12)= 88.436
18 (22)= 88.372	19 (22)= 88.557	20 (32)= 88.626	21 (32)= 88.595
22 (42)= 89.013	23 (42)= 81.843	24 (52)= 90.222	25 (52)= 88.998
26 (52)= 89.619	27 (52)= 89.138	28 (21)= 71.003	29 (31)= 67.889
30 (11)= 69.139	31 (11)= 71.015	32 (21)= 71.463	33 (51)= 70.553
34 (21)= 70.986	35 (31)= 71.339	36 (41)= 71.362	

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.364046401
2	.377578646
3	.358342933
4	.380293402
5	.369992564

AVERAGE VAPOR PRESSURE= .368548995

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.466
2	88.6805
3	88.5697143
4	83.09275
5	89.49425

AVERAGE CONTAINMENT TEMP= 88.1767786 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.4309033 (DEG F.)

CORRECTED PRESSURES: P1= 43.0058167 PSIA P2= 43.0032162 PSIA

AVG. CORRECTED PRESS.= 43.0045164 PSIA

CONT. DRY AIR PRESSURE= 42.6359674 PSIA

CONT. DRY AIR MASS= 570375.34 LBS.

-----  
CHANNELS LOCKED OUT: NONE

WET ALARM= 2

DRY ALARM= 1

PRESS ALARM= .2

PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056



## RAW AND PRIMARY DATA

DATA SET# 31  
TIME: 6.1675 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.475 P2= 42.973 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0=00S,1=WB,2=DB)

1 (12)= 88.394	2 (22)= 88.874	3 (42)= 77.905	4 (22)= 88.691	5 (32)= 88.54
6 (32)= 88.247	7 (12)= 88.443	8 (22)= 88.777	9 (22)= 88.793	10 (32)= 89.155
11 (32)= 88.89	12 (12)= 88.415	13 (22)= 88.751	14 (22)= 88.696	15 (32)= 88.188
16 (42)= 83.74	17 (12)= 88.452	18 (22)= 88.375	19 (22)= 88.571	20 (32)= 88.612
21 (32)= 88.589	22 (42)= 88.868	23 (42)= 81.906	24 (52)= 90.239000	125 (52)= 89.01
26 (52)= 89.691	27 (52)= 89.167	28 (21)= 70.933	29 (31)= 68.025	30 (11)= 69.372
31 (11)= 70.651	32 (21)= 70.185	33 (51)= 70.407	34 (21)= 71.06	35 (31)= 70.259
36 (41)= 70.953				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.363234752
2	.372174602
3	.352609144
4	.375054792
5	.368159782

AVERAGE VAPOR PRESSURE= .364202366

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.426
2	88.691
3	88.603
4	83.10475
5	89.52675

AVERAGE CONTAINMENT TEMP= 88.187595 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.08223 (DEG F.)

CORRECTED PRESSURES: P1= 43.008847 PSIA P2= 43.0032162 PSIA

AVG. CORRECTED PRESS.= 43.0060316 PSIA

CONT. DRY AIR PRESSURE= 42.6418292 PSIA

CONT. DRY AIR MASS= 570442.496 LBS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 2

DRY ALARM= 1

PRESS ALARM= .2

PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA

TASET# 32  
TIME: 6.33416667 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.472 P2= 42.974 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S-SUBVOLUME,T-TYPE(0-00S,1-WB,2-DB)

1 (12)= 88.348	2 (22)= 88.874	3 (42)= 77.908	4 (22)= 88.722	5 (32)= 88.531
6 (32)= 88.342	7 (12)= 88.502	8 (22)= 88.78	9 (22)= 88.766	10 (32)= 89.053
11 (32)= 88.732	12 (12)= 88.43	13 (22)= 88.787	14 (22)= 88.734000	115 (32)= 88.118
16 (42)= 83.663	17 (12)= 88.439	18 (22)= 88.403	19 (22)= 88.565	20 (32)= 88.6420001
21 (32)= 88.551	22 (42)= 88.987	23 (42)= 81.924	24 (52)= 90.239000	125 (52)= 89.054
26 (52)= 89.656	27 (52)= 89.183	28 (21)= 71.421	29 (31)= 69.346	30 (11)= 69.175
31 (11)= 70.813	32 (21)= 71.595	33 (51)= 70.398	34 (21)= 71.112	35 (31)= 70.866
36 (41)= 71.298				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.363018167
2	.380473845
3	.364406263
4	.379469473
5	.368047062

AVERAGE VAPOR PRESSURE= .370981393

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.42975
2	88.7038751
3	88.567
4	83.1205
5	89.533

AVERAGE CONTAINMENT TEMP= 88.18285 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.6258 (DEG F.)

CORRECTED PRESSURES: P1= 43.0058167 PSIA P2= 43.0042156 PSIA

AVG. CORRECTED PRESS.= 43.0050162 PSIA

CONT. DRY AIR PRESSURE= 42.6340348 PSIA

CONT. DRY AIR MASS= 570343.164 LBS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 2

DRY ALARM= 1

PRESS ALARM= .2

PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA

TASET# 33  
TIME: 6.50083333 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.471 P2= 42.974 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S-SUBVOLUME,T=TYPE(0-00S,1-WB,2-DB)

1 (12)= 88.374	2 (22)= 88.894	3 (42)= 77.961	4 (22)= 88.719	5 (32)= 88.543
6 (32)= 88.372	7 (12)= 88.48400018	(22)= 88.78	9 (22)= 88.789	10 (32)= 89.157
11 (32)= 88.888	12 (12)= 88.435	13 (22)= 88.786	14 (22)= 88.72	15 (32)= 88.139
16 (42)= 83.773	17 (12)= 88.502	18 (22)= 88.42	19 (22)= 88.591	20 (32)= 88.662
21 (32)= 88.633	22 (42)= 89.073	23 (42)= 81.933	24 (52)= 90.254	25 (52)= 89.044
26 (52)= 89.741	27 (52)= 89.202	28 (21)= 71.563	29 (31)= 68.881	30 (11)= 68.873
31 (11)= 70.227	32 (21)= 71.983	33 (51)= 70.3	34 (21)= 70.126	35 (31)= 70.732
36 (41)= 71.231				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.357560726
2	.37851875
3	.360704688
4	.378608594
5	.366821622

AVERAGE VAPOR PRESSURE= .36800115

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.44875
2	88.712375
3	88.6277143
4	83.185
5	89.56025

AVERAGE CONTAINMENT TEMP= 88.2166761 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.38655 (DEG F.)

CORRECTED PRESSURES: P1= 43.0048065 PSIA P2= 43.0042156 PSIA

AVG. CORRECTED PRESS.= 43.0045111 PSIA

CONT. DRY AIR PRESSURE= 42.6365099 PSIA

CONT. DRY AIR MASS= 570341.063 LBS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 2

DRY ALARM= 1

PRESS ALARM= .2

PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056



## RAW AND PRIMARY DATA

TASET# 34  
 ME: 6.66777778 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.466 P2= 42.974 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0-00S,1-WB,2-DB)

1 (12)= 88.39200012	(22)= 88.911	3 (42)= 77.94	4 (22)= 88.728	5 (32)= 88.559
6 (32)= 88.398	7 (12)= 88.674	8 (22)= 88.8	9 (22)= 88.822	10 (32)= 89.112
11 (32)= 88.78	12 (12)= 88.456	13 (22)= 88.806	14 (22)= 88.745	15 (32)= 88.186
16 (42)= 83.792	17 (12)= 88.479000118	(22)= 88.395	19 (22)= 88.607	20 (32)= 88.664
21 (32)= 88.607	22 (42)= 89.015	23 (42)= 81.962	24 (52)= 90.277	25 (52)= 89.038
26 (52)= 89.743	27 (52)= 89.186	28 (21)= 71.244	29 (31)= 69.117	30 (11)= 68.693
31 (11)= 70.327	32 (21)= 71.165	33 (51)= 70.341	34 (21)= 69.744	35 (31)= 70.616
36 (41)= 71.159				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.357072604
2	.372069237
3	.361443595
4	.377685372
5	.367333872

AVERAGE VAPOR PRESSURE= .366048907

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.5002501
2	88.72675
3	88.6151428
4	83.17725
5	89.561

AVERAGE CONTAINMENT TEMP= 88.2258933 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.2337334 (DEG F.)

CORRECTED PRESSURES: P1= 42.9997559 PSIA P2= 43.0042156 PSIA

AVG. CORRECTED PRESS.= 43.0019858 PSIA

CONT. DRY AIR PRESSURE= 42.6359369 PSIA

CONT. DRY AIR MASS= 570323.804 LBS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 2

DRY ALARM= 1

PRESS ALARM= .2

PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA

DATASET# 35

TIME: 6.83444445 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.473 P2= 42.975 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0=00S,1=WB,2=DB)

1 (12)= 88.39700012	2 (22)= 88.906	3 (42)= 77.944	4 (22)= 88.751	5 (32)= 88.621
6 (32)= 88.357	7 (12)= 88.569	8 (22)= 88.807	9 (22)= 88.826	10 (32)= 89.152
11 (32)= 88.844	12 (12)= 88.478	13 (22)= 88.824	14 (22)= 88.758	15 (32)= 88.159
16 (42)= 83.824	17 (12)= 88.472	18 (22)= 88.388	19 (22)= 88.636	20 (32)= 88.678
21 (32)= 88.658	22 (42)= 88.867	23 (42)= 81.991	24 (52)= 90.274	25 (52)= 89.051
26 (52)= 89.732	27 (52)= 89.189	28 (21)= 71.675	29 (31)= 68.429	30 (11)= 69.277
31 (11)= 70.426	32 (21)= 70.782	33 (51)= 69.989	34 (21)= 70.156	35 (31)= 71.33
36 (41)= 71.084				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.361258745
2	.374012132
3	.361603867
4	.376725777
5	.362956307

AVERAGE VAPOR PRESSURE= .366995081

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.479
2	88.737
3	88.6384286
4	83.1565001
5	89.5615

AVERAGE CONTAINMENT TEMP= 88.2309772 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.31 (DEG F.)

CORRECTED PRESSURES: P1= 43.0068268 PSIA P2= 43.005215 PSIA

AVG. CORRECTED PRESS.= 43.0060209 PSIA

CONT. DRY AIR PRESSURE= 42.6390258 PSIA

CONT. DRY AIR MASS= 570359.831 LBS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 2

DRY ALARM= 1

PRESS ALARM= .2

PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA

0 TASET# 36  
 ME: 7.00111111 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.482 P2= 42.975 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)-->S=SUBVOLUME,T=TYPE(O=OOS,1-WB,2-DB)

1 (12)= 88.388	2 (22)= 88.923	3 (42)= 77.996	4 (22)= 88.742	5 (32)= 88.63
6 (32)= 88.404	7 (12)= 88.587	8 (22)= 88.833	9 (22)= 88.838	10 (32)= 89.117
11 (32)= 88.858	12 (12)= 88.485	13 (22)= 88.827	14 (22)= 88.768	15 (32)= 88.131
16 (42)= 83.88	17 (12)= 88.465	18 (22)= 88.439	19 (22)= 88.626	20 (32)= 88.69
21 (32)= 88.673	22 (42)= 89.122	23 (42)= 82.012000	24 (52)= 90.284	25 (52)= 89.051
26 (52)= 89.726	27 (52)= 89.218	28 (21)= 70.681	29 (31)= 69.189	30 (11)= 68.916
31 (11)= 70.071	32 (21)= 71.043	33 (51)= 70.831	34 (21)= 70.312	35 (31)= 70.428
36 (41)= 71.279				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.356871424
2	.371576475
3	.360729297
4	.379225169
5	.373504437

AVERAGE VAPOR PRESSURE= .366320368

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.48125
2	88.7495
3	88.6432858
4	83.2525
5	89.56975

AVERAGE CONTAINMENT TEMP= 88.246319 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.2546233 (DEG F.)

CORRECTED PRESSURES: P1= 43.0159178 PSIA P2= 43.005215 PSIA

AVG. CORRECTED PRESS.= 43.0105664 PSIA

CONT. DRY AIR PRESSURE= 42.6442461 PSIA

CONT. DRY AIR MASS= 570413.688 LBS.

-----  
 CHANNELS LOCKED OUT: NONE

WET ALARM= 2

DRY ALARM= 1

PRESS ALARM= .2

0 PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056



## RAW AND PRIMARY DATA

DATA SET# 37  
TIME: 7.16777778 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.478 P2= 42.977 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0=00S,1=WB,2=DB)

1 (12)= 88.47	2 (22)= 88.94	3 (42)= 78.006	4 (22)= 88.682	5 (32)= 88.612
6 (32)= 88.372	7 (12)= 88.668	8 (22)= 88.847	9 (22)= 88.848	10 (32)= 89.161
11 (32)= 88.841	12 (12)= 88.497	13 (22)= 88.842	14 (22)= 88.778	15 (32)= 88.185
16 (42)= 83.886	17 (12)= 88.507000118	18 (22)= 88.447	19 (22)= 88.629	20 (32)= 88.688
21 (32)= 88.653	22 (42)= 88.963	23 (42)= 82.019	24 (52)= 90.292	25 (52)= 89.006
26 (52)= 89.751	27 (52)= 89.239000128	28 (21)= 70.982	29 (31)= 68.55	30 (11)= 68.676
31 (11)= 70.117	32 (21)= 71.426	33 (51)= 70.44	34 (21)= 70.649	35 (31)= 70.817
36 (41)= 71.2570001				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.355690729
2	.375895852
3	.359194055
4	.378942463
5	.368573345

AVERAGE VAPOR PRESSURE= .366529524

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.5355
2	88.751625
3	88.6445715
4	83.2185
5	89.57175

AVERAGE CONTAINMENT TEMP= 88.2542954 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.2689 (DEG F.)

CORRECTED PRESSURES: P1= 43.0118774 PSIA P2= 43.0072138 PSIA

AVG. CORRECTED PRESS.= 43.0095456 PSIA

CONT. DRY AIR PRESSURE= 42.6430161 PSIA

CONT. DRY AIR MASS= 570388.932 LBS.

-----  
CHANNELS LOCKED OUT: NONE

WET ALARM= 2


DRY ALARM= 1

PRESS ALARM= .2

PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA


 TASET# 38  
 TIME: 7.33444445 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.475 P2= 42.977 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0-00S,1-WB,2-DB)

1 (12)= 88.446	2 (22)= 88.945	3 (42)= 78.047	4 (22)= 88.813	5 (32)= 88.61
6 (32)= 88.432	7 (12)= 88.676	8 (22)= 88.838	9 (22)= 88.845	10 (32)= 89.096
11 (32)= 88.865	12 (12)= 88.51	13 (22)= 88.83	14 (22)= 88.754	15 (32)= 88.192
16 (42)= 83.906	17 (12)= 88.543	18 (22)= 88.508	19 (22)= 88.63	20 (32)= 88.699
21 (32)= 88.674	22 (42)= 89.144	23 (42)= 82.049	24 (52)= 90.306	25 (52)= 89.108
26 (52)= 89.753	27 (52)= 89.256	28 (21)= 70.326	29 (31)= 68.681	30 (11)= 68.457
31 (11)= 70.549	32 (21)= 71.775	33 (51)= 70.05	34 (21)= 71.203	35 (1)= 69.586
36 (41)= 71.293				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.356987243
2	.376917361
3	.352506627
4	.379405168
5	.363711636

AVERAGE VAPOR PRESSURE= .364563492

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.54375
2	88.770375
3	88.6525714
4	83.2865
5	89.60575

AVERAGE CONTAINMENT TEMP= 88.2735203 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.1065567 (DEG F.)

CORRECTED PRESSURES: P1= 43.008847 PSIA P2= 43.0072138 PSIA

AVG. CORRECTED PRESS.= 43.0080304 PSIA

CONT. DRY AIR PRESSURE= 42.6434669 PSIA


CONT. DRY AIR MASS= 570374.95 LBS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 2

DRY ALARM= 1

PRESS ALARM= .2


 PRESSURE CALIBRATION CONSTANTS
 

M1= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA

0 TASET# 39  
 TIME: 7.50111111 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.475 P2= 42.978 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0=00S,1=WB,2=DB)

1 (12)= 88.458	2 (22)= 88.97400013	(42)= 78.067	4 (22)= 88.717	5 (32)= 88.633
6 (32)= 88.446	7 (12)= 88.60400018	(22)= 88.873	9 (22)= 88.874	10 (32)= 89.173
11 (32)= 88.891	12 (12)= 88.494	13 (22)= 88.86400011	14 (22)= 88.81	15 (32)= 88.139
16 (42)= 83.902	17 (12)= 88.516	18 (22)= 88.156	19 (22)= 88.64200012	20 (32)= 88.728
21 (32)= 88.71	22 (42)= 89.131	23 (42)= 82.046	24 (52)= 90.315	25 (52)= 89.079
26 (52)= 89.793	27 (52)= 89.242	28 (21)= 71.627	29 (31)= 68.338	30 (11)= 69.421
31 (11)= 70.776	32 (21)= 71.65	33 (51)= 70.332	34 (21)= 70.907	35 (31)= 70.497
36 (41)= 70.909				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.364313166
2	.380714551
3	.355946054
4	.374495
5	.367221374

AVERAGE VAPOR PRESSURE= .368062237

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.518
2	88.77625
3	88.6742858
4	83.2865
5	89.60725

AVERAGE CONTAINMENT TEMP= 88.2778489 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.3893133 (DEG F.)

CORRECTED PRESSURES: P1= 43.008847 PSIA P2= 43.0082132 PSIA

AVG. CORRECTED PRESS.= 43.0085301 PSIA

CONT. DRY AIR PRESSURE= 42.6404679 PSIA

CONT. DRY AIR MASS= 570330.332 LBS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 2

DRY ALARM= 1

PRESS ALARM= .2

PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056



## RAW AND PRIMARY DATA

TASET# 40  
 ME: 7.66777778 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.48 P2= 42.979 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)-->S-SUBVOLUME,T=TYPE(0-00S,1-WB,2-DB)

1 (12)= 88.49	2 (22)= 88.972	3 (42)= 78.064	4 (22)= 88.749	5 (32)= 88.627
6 (32)= 88.426	7 (12)= 88.638	8 (22)= 88.877	9 (22)= 88.853	10 (32)= 89.122
11 (32)= 88.826	12 (12)= 88.526	13 (22)= 88.847	14 (22)= 88.784	15 (32)= 88.148
16 (42)= 83.952	17 (12)= 88.54	18 (22)= 88.497	19 (22)= 88.661	20 (32)= 88.731
21 (32)= 88.723	22 (42)= 89.111	23 (42)= 82.075	24 (52)= 90.325	25 (52)= 89.093
26 (52)= 89.773	27 (52)= 89.283	28 (21)= 71.058	29 (31)= 68.806	30 (11)= 69.169
31 (11)= 70.494	32 (21)= 71.385	33 (51)= 69.83	34 (21)= 70.085	35 (31)= 70.616
36 (41)= 71.064				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.361012406
2	.373652452
3	.359531317
4	.376470245
5	.360993936

AVERAGE VAPOR PRESSURE= .365972816

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.5485
2	88.78
3	88.6575714
4	83.3005
5	89.6185

AVERAGE CONTAINMENT TEMP= 88.2814629 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.2273033 (DEG F.)

CORRECTED PRESSURES: P1= 43.0138976 PSIA P2= 43.0092126 PSIA

AVG. CORRECTED PRESS.= 43.0115551 PSIA

CONT. DRY AIR PRESSURE= 42.6455823 PSIA

CONT. DRY AIR MASS= 570394.977 LBS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 2

DRY ALARM= 1

PRESS ALARM= .2

PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA

TASET# 41

TIME: 7.83444445 HRS.

~ 1402 hrs

Just before this data set  
 Dampening adjusted on P1<sup>a</sup> to  
 minimize oscillations & make it  
 comparable to P2. *ML*

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.476 P2= 42.979 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0=00S,1=WB,2=DB)

1 (12)= 88.455	2 (22)= 88.972	3 (42)= 78.059	4 (22)= 88.822	5 (32)= 88.6090001
6 (32)= 88.35900017	12 (12)= 88.87	8 (22)= 88.873	9 (22)= 88.873	10 (32)= 89.2240001
11 (32)= 88.952	12 (12)= 88.52	13 (22)= 88.861	14 (22)= 88.79	15 (32)= 88.221
16 (42)= 84.002	17 (12)= 88.563	18 (22)= 88.485	19 (22)= 88.681	20 (32)= 88.742
21 (32)= 88.703	22 (42)= 89.097	23 (42)= 82.087	24 (52)= 90.348	25 (52)= 89.138
26 (52)= 89.823	27 (52)= 89.271	28 (21)= 71.42	29 (31)= 68.763	30 (11)= 68.588
31 (11)= 70.221	32 (21)= 70.723	33 (51)= 70.059	34 (21)= 70.216	35 (31)= 70.506
36 (41)= 71.075				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.355787977
2	.372938223
3	.3585938
4	.376610768
5	.363823195

AVERAGE VAPOR PRESSURE= .36477114

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.602
2	88.794625
3	88.6871429
4	83.31125
5	89.645

AVERAGE CONTAINMENT TEMP= 88.3085883 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.1295367 (DEG F.)

CORRECTED PRESSURES: P1= 43.0098572 PSIA P2= 43.0092126 PSIA

AVG. CORRECTED PRESS.= 43.0095349 PSIA

CONT. DRY AIR PRESSURE= 42.6447637 PSIA

CONT. DRY AIR MASS= 570355.795 LBS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 2

DRY ALARM= 1

PRESS ALARM= .2

PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA

TASET# 42  
TIME: 8.00111112 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.477 P2= 42.98 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV. (ST)--&gt;S=SUBVOLUME,T=TYPE(0=00S,1=WB,2=DB)

1 (12)= 88.485	2 (22)= 88.987	3 (42)= 78.117	4 (22)= 88.842	5 (32)= 88.62
6 (32)= 88.429	7 (12)= 88.552	8 (22)= 88.896	9 (22)= 88.877	10 (32)= 89.187
11 (32)= 88.893	12 (12)= 88.533	13 (22)= 88.867	14 (22)= 88.819	15 (32)= 88.252
16 (42)= 83.958	17 (12)= 88.54	18 (22)= 88.482	19 (22)= 88.685	20 (32)= 88.7290001
21 (32)= 88.65	22 (42)= 89.187	23 (42)= 82.139	24 (52)= 90.348	25 (52)= 89.131
26 (52)= 89.836	27 (52)= 89.299	28 (21)= 71.577	29 (31)= 68.537	30 (11)= 68.466
31 (11)= 70.639	32 (21)= 70.858	33 (51)= 70.289	34 (21)= 70.315	35 (31)= 70.723
36 (41)= 70.777				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.357591252
2	.374592488
3	.358538718
4	.372820004
5	.366684295

AVERAGE VAPOR PRESSURE= .365523798

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.5275
2	88.806875
3	88.68
4	83.35025
5	89.6535

AVERAGE CONTAINMENT TEMP= 88.3010875 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.1903233 (DEG F.)

CORRECTED PRESSURES: P1= 43.0108673 PSIA P2= 43.010212 PSIA

AVG. CORRECTED PRESS.= 43.0105396 PSIA

CONT. DRY AIR PRESSURE= 42.6450158 PSIA

CONT. DRY AIR MASS= 570366.973 LBS.

-----  
CHANNELS LOCKED OUT: NONE

WET ALARM= 2

DRY ALARM= 1

PRESS ALARM= .2

PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056



## RAW AND PRIMARY DATA

TASET# 43

TIME: 8.16777778 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.478 P2= 42.981 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=MV, (ST)--&gt;S=SUBVOLUME,T=TYPE(0-DOS,1-WB,2-DB)

1 (12)= 88.51700012	2 (22)= 89.009	3 (42)= 78.12	4 (22)= 88.774	5 (32)= 88.638
6 (32)= 88.412	7 (12)= 88.758	8 (22)= 88.899	9 (22)= 88.902	10 (32)= 89.265
11 (32)= 89.004	12 (12)= 88.554	13 (22)= 88.9	14 (22)= 88.851	15 (32)= 88.2240001
16 (42)= 84.016	17 (12)= 88.516	18 (22)= 88.502	19 (22)= 88.702	20 (32)= 88.7570001
21 (32)= 88.707	22 (42)= 89.102	23 (42)= 82.139	24 (52)= 90.3820001	25 (52)= 89.19
26 (52)= 89.804	27 (52)= 89.32	28 (21)= 71.473	29 (31)= 69.213	30 (11)= 68.678
31 (11)= 71.028	32 (21)= 71.742	33 (51)= 70.117	34 (21)= 70.986	35 (31)= 70.556
36 (41)= 70.906				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.361277226
2	.380787649
3	.361665526
4	.37445686
5	.364542844

AVERAGE VAPOR PRESSURE= .36912489

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	88.58625
2	88.817375
3	88.7152858
4	83.34425
5	89.674

AVERAGE CONTAINMENT TEMP= 88.327619 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.4767567 (DEG F.)

CORRECTED PRESSURES: P1= 43.0118774 PSIA P2= 43.0112114 PSIA

AVG. CORRECTED PRESS.= 43.0115444 PSIA

CONT. DRY AIR PRESSURE= 42.6424195 PSIA

CONT. DRY AIR MASS= 570304.637 LBS.

CHANNELS LOCKED OUT: NONE

WET ALARM= 2

DRY ALARM= 1

PRESS ALARM= .2

PRESSURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056

## RAW AND PRIMARY DATA

VSET# 159

Z: 27.8361111 HRS.

## \*\*\* RAW DATA \*\*\*

PRESSURE DETECTORS P1= 42.571 P2= 43.076 P.MANUAL= 0

TEMPERATURE CHANNELS 1 TO 36 UNITS=HV, (ST)--&gt;S=SUBVOLUME,T=TYPE(0=00S,1=WB,2=DB)

1 (12)= 89.863	2 (22)= 90.348	3 (42)= 79.785	4 (22)= 90.242	5 (32)= 89.91
6 (32)= 89.888	7 (12)= 90.17	8 (22)= 90.275	9 (22)= 90.254	10 (32)= 90.557
11 (32)= 90.261	12 (12)= 89.947	13 (22)= 90.255	14 (22)= 90.176	15 (32)= 89.607
16 (42)= 85.372	17 (12)= 89.866	18 (22)= 89.839	19 (22)= 90.095	20 (32)= 90.089
21 (32)= 90.01	22 (42)= 90.623	23 (42)= 83.761	24 (52)= 91.77	25 (52)= 90.544
26 (52)= 91.183	27 (52)= 90.754	28 (21)= 71.075	29 (31)= 69.216	30 (11)= 68.429
31 (11)= 70.683	32 (21)= 72.29	33 (51)= 69.471	34 (21)= 71.188	35 (31)= 69.642
36 (41)= 71.118				

## \*\*\* PRIMARY VALUES \*\*\*

SUBVOLUME AVG SUBV. VAPOR PRESSURE

1	.357633994
2	.382303966
3	.356085942
4	.377160529
5	.356597247

AVERAGE VAPOR PRESSURE= .366697089

SUBVOLUME AVG. SUBVOLUME TEMP (DEG F.)

1	89.9615
2	90.1855
3	90.046
4	84.88525
5	91.06275

AVERAGE CONTAINMENT TEMP= 89.70247 (DEG F.)

AVERAGE CONTAINMENT DEWPOINT= 70.2760233 (DEG F.)

CORRECTED PRESSURES: P1= 43.1058185 PSIA P2= 43.1061544 PSIA

AVG. CORRECTED PRESS.= 43.1059865 PSIA

CONT. DRY AIR PRESSURE= 42.7392894 PSIA

CONT. DRY AIR MASS= 570169.76 LBS.

-----  
CHANNELS LOCKED OUT: NONE

WET ALARM= 1.5

DRY ALARM= 1

PRESS ALARM= 7E-03

SURE CALIBRATION CONSTANTS

M1= 1.01012 B1= .104 M2= .9994 B2= .056

STATISTICAL LEAKRATE CALCULATIONS

NORMAL TEST

STARTING DATASET#..... 372  
ENDING DATASET#..... 452  
STARTING TIME..... 51.0877778 HOURS  
ENDING TIME..... 60.5833333 HOURS  
TOTAL TEST TIME..... 9.4955555 HOURS  
NUMBER OF DATASETS..... 8  
STARTING CONTAINMENT MASS (B).. 569884.845 LBS.  
MASS LEAKRATE PER HOUR (A)..... 6.99341817 LBS./HR  
APPROX. LEAK FLOWRATE..... 1.61813083 SCFM  
ALLOWABLE LEAKRATE %/DAY..... .0729 %/DAY  
TOTAL % LEAKRATE/DAY (ASL)..... .0294519213 %/DAY  
STANDARD DEVIATION..... 6.20429586E-03 %/DAY  
STUDENT T DISTRIBUTION..... 1.66573434  
95% UPPER CONFIDENCE LIMIT .... .0397866299 %/DAY

9.5 hour Test

Tuesday

0918 — 1848 hrs.

FOIA-85-136

B/10



0068

CECO ZION STATION INTEGRATED LEAKRATE TEST UNIT 1 08/01/84

.0656  
.0588

# STATISTICAL LEAKRATE CALCULATIONS

## IMPOSED LEAK TEST

STARTING DATASET#..... 7  
ENDING DATASET#..... 71  
STARTING TIME ..... 1.33361111 HOURS  
ENDING TIME ..... 12.3475 HOURS  
TOTAL TEST TIME ..... 11.013889 HOURS -  
NUMBER OF DATASETS..... 65  
STARTING CONTAINMENT MASS (P) 569795.944 LBS.  
MASS LEAKRATE PER HOUR (A)..... 25.6913001 LBS./HR  
ALLOWABLE LEAKRATE %/DAY ..... .0729 %/DAY

IMPOSED LEAK (SCFM)..... 4.37245976 SCFM  
STARTING PRESSURE ..... 42.8348607 PSIA  
TOTAL % LEAKRATE/DAY (IASL).... .108212635 %/DAY  
IMPOSED % LEAKRATE/DAY (IL).... .0795863249 %/DAY  
% LKRATE OF NORMAL TEST (ASL).... .0239831369 %/DAY  
IMPOSED LEAKRATE % ERROR..... 6.36923589 %  
STANDARD DEVIATION ..... 5.53531644E-03 %/DAY  
STUDENT T DISTRIBUTION..... 1.6705931  
95% UPPER CONFIDENCE LIMIT .... .117459896 %/DAY

24 hr Test

Sun afternoon → Mon afternoon

.0240

STATISTICAL LEAKRATE CALCULATIONS

Sunday  
24hr. test.

NORMAL TEST

22<sup>33</sup>  
1633 → 0723 Sunday

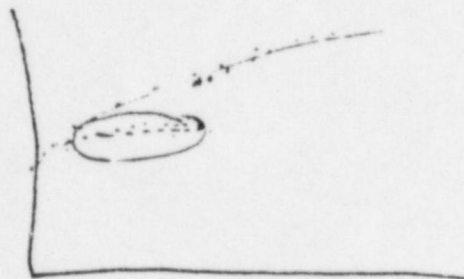
STARTING DATASET#..... 55  
ENDING DATASET#..... 143  
STARTING TIME ..... 10.3347222 HOURS  
ENDING TIME ..... 25.1691667 HOURS  
TOTAL TEST TIME ..... 14.8344445 HOURS  
NUMBER OF DATASETS..... 89  
STARTING CONTAINMENT MASS (B).. 570292.803 LBS.  
MASS LEAKRATE PER HOUR (A)..... 4.82891036 LBS./HR  
APPROX. LEAK FLOWRATE..... 1.11368394 SCFM  
ALLOWABLE LEAKRATE %/DAY ..... .0729 %/DAY  
  
TOTAL % LEAKRATE/DAY (ASL)..... .020321815 %/DAY  
STANDARD DEVIATION ..... 3.57782383E-03 %/DAY  
STUDENT T DISTRIBUTION..... 1.6639852  
95% UPPER CONFIDENCE LIMIT .... .0262752609 %/DAY

NORMAL TEST

0723 → 1443 Monday

STARTING DATASET#..... 143  
ENDING DATASET#..... 187  
STARTING TIME ..... 25.1691667 HOURS  
ENDING TIME ..... 32.5030556 HOURS  
TOTAL TEST TIME ..... 7.3338889 HOURS  
NUMBER OF DATASETS..... 45  
STARTING CONTAINMENT MASS (B).. 570226.361 LBS.  
MASS LEAKRATE PER HOUR (A)..... 7.69749921 LBS./HR  
APPROX. LEAK FLOWRATE..... 1.77696921 SCFM  
ALLOWABLE LEAKRATE %/DAY ..... .0729 %/DAY  
  
TOTAL % LEAKRATE/DAY (ASL)..... .0323976571 %/DAY  
STANDARD DEVIATION ..... 8.4430327E-03 %/DAY  
STUDENT T DISTRIBUTION..... 1.6819059  
95% UPPER CONFIDENCE LIMIT .... .0465980436 %/DAY

- 0324



.0324  
.0203  
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.0121

# FISCHER & PORTER

Commonwealth Edison Co.  
Quad City Nuclear Power Plt.  
22710 - 206th Ave. North  
Cordova, Ill. 61242

Date: 15 June 1984  
Subject: CERTIFICATION  
Re : 8405A0348A1

## FLOWMETER CALIBRATION ACCURACY CERTIFICATE

### A. METER IDENTIFICATION:

- (1) Customer Purchase Order Number 904572
- (2) F&P Serial Number 8405A0348A1
- (3) Model Number 10A3555A

### B. CALIBRATION SPECIFICATIONS:

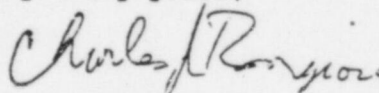
- (1) Date: 14 June 1984
- (2) Flow Range 11.1 To 1.1 Units SCFM
- (3) Metering Fluid Air
  - (a) Viscosity 0.0181 CPS
  - (b) Specific Gravity 1.0 60/60 F. Density 0.0012 gms/cc.
  - (c) Temperature 70° F
  - (d) Pressure 14.7 PSIA

C. ACCURACY:  $\pm$  1 % of Max. flow.

### D. CALIBRATION FACILITIES:

- (1) The equipment and associated procedures used in the calibration of said meter are in accordance with Mil-STD-45662.
  - (a) Through establishment of values of physical constants for primary standards using tools of NBS accuracy pedigree.
  - (b) Through direct, dynamic comparison of Fischer & Porter and NBS flow facilities using Fischer & Porter Turbine Flowmeters as transfer standards. NBS Test No. 213.31/193098.
  - (c) Through inter-laboratory comparison of compatible Fischer & Porter flow facilities.

Very truly yours,



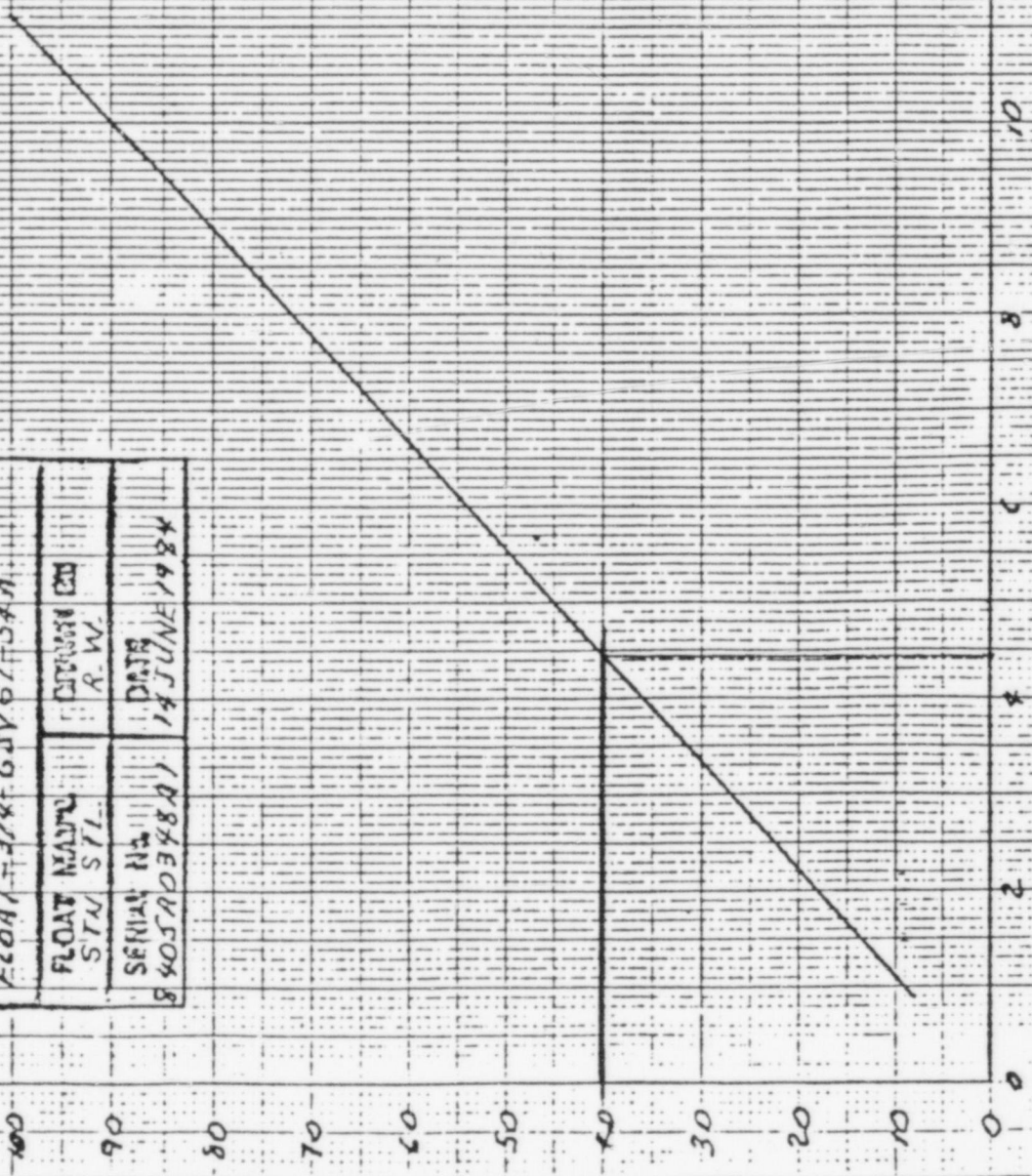
Charles J. Rongione  
Sr. Flow Stds. Engineer

CJR:mdt



FISCHER & PORTER CO. WARMINSTER, PA.	
CORRELATION CURVE	
TUBE - FP-3/4-27-G-10	
FLOAT - 3/4-GJVGT-54A	
FLOAT MAKE STN. STI.	DATE 14 JUNE 1984
SERIAL NO. 8405A0348A1	DATE 14 JUNE 1984

TUBE SCALE READING PERCENT



SCFM GAS 5A GR. 1.0 MET. @ 14.7 PSIA @ 70°F



12.251 !  
12.334 (66 !  
12.417 !  
12.501 (67 !  
12.584 !  
12.667 (68 !  
12.751 !  
12.834 (69 !  
12.917 !  
13.001 (70 !  
13.084 !  
13.167 (71 !  
13.251 !  
13.334 (72 !  
13.417 !  
13.501 (73 !  
13.584 !  
13.667 (74 !  
13.751 !  
13.834 (75 !  
13.917 !  
14.001 (76 !  
14.084 !  
14.167 (77 !  
14.251 !  
14.334 (78 !  
14.417 !  
14.501 (79 !  
14.584 !  
14.667 (80 !  
14.751 !  
14.834 (81 !  
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15.167 (83 !  
15.251 !  
15.334 (84 !  
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15.501 (85 !  
15.584 !  
15.667 (86 !  
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15.834 (87 !  
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16.667 (92 !  
16.751 !  
16.834 (93 !  
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17.334 (96 !  
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18.667 (104!  
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18.834 (105!  
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19.001 (106!  
19.084 !  
19.167 (107!  
19.251 !  
19.334 (108!  
19.417 !  
19.501 (109!  
19.584 !  
19.667 (110!  
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19.834 (111!  
19.917 !  
20.001 (112!  
20.084 !  
20.167 (113!  
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20.334 (114!  
20.417 !  
20.501 (115!  
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20.667 (116!  
20.751 !  
20.834 (117!  
20.917 !  
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21.084 !  
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21.334 (120!  
21.417 !  
21.501 (121!  
21.584 !  
21.667 (122!  
21.751 !  
21.834 (123!  
21.917 !  
22.001 (124!  
22.084 !  
22.167 (125!  
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22.417 !  
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22.917 !  
23.001 (130!

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23.251 !  
23.334 (132)!  
23.417 !  
23.501 (133)!  
23.584 !  
23.667 (134)!  
23.751 !  
23.834 (135)!  
23.917 !  
24.001 (136)!  
24.084 !  
24.167 (137)!  
24.251 !  
24.334 (138)!  
24.417 !  
24.501 (139)!  
24.584 !  
24.667 (140)!  
24.751 !  
24.834 (141)!  
24.917 !  
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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION III  
799 ROOSEVELT ROAD  
GLEN ELLYN, ILLINOIS 60137

AUG 29 1984

MEMORANDUM FOR: James G. Keppler, Regional Administrator  
FROM: R. L. Spessard, Director, Division of Reactor Safety  
SUBJECT: CONTAINMENT INTEGRATED LEAK RATE TESTING AT ZION

The enclosures to this memorandum provide background information and conclusions reached concerning Containment Integrated Leak Rate Tests (CILRT's) performed at the Zion facility in 1980, 1981, 1983, and 1984 and a petition for Emergency Relief filed by the Citizens Against Nuclear Power on June 5, 1984. Enclosure 1 provides a brief summary of applicable regulatory requirements. Enclosure 2 provides a brief history of testing and inspection activities at Zion from 1980 to date.

Based on this information, we have reached the following conclusions:

1. The integrated leak rates for both units at Zion are well within Technical Specification limits.
2. Supplemental tests performed on Zion Unit 1 in 1981 and 1983 failed to demonstrate the accuracy of the CILRT's, therefore, these CILRT's were not performed in accordance with either the Technical Specifications or 10 CFR 50, Appendix J.
3. Some findings contained in the Petition for Emergency Relief were correct. When verified by Region III, the licensee voluntarily shut down Zion Unit 1 to conduct another CILRT. However, the conclusions reached by the petitioner were not valid.

R. L. Spessard, Director  
Division of Reactor Safety

Enclosures: As Stated

cc w/encls:

A. B. Davis  
C. E. Norelius  
W. S. Little  
F. Maura  
S. Hare  
W. Guldemon  
L. Reyes  
D. G. Eisenhut, NRR  
R. H. Vollmer, NRR  
E. L. Jordan, IE

*Dupe of preceding*

FOIA-85-136

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## Enclosure 1

### Regulatory Requirements

Zion Technical Specifications 3.10.1 and 4.10.1 require the performance of periodic Primary Containment Integrated Leak Rate Tests (Type A tests) in accordance with 10 CFR 50, Appendix J and ANSI N45.4-1972. A maximum leakage rate of 0.1 volume % per 24 hours is specified at peak accident pressure.

10 CFR 50, Appendix J, in addition to establishing requirements for the performance of Type A tests, requires the performance of a supplemental test to verify the accuracy of the Type A test. The supplemental test is performed by imposing a measured leakage (on the containment) through a calibrated flowmeter and comparing the calculated containment leakage from the instruments used during the Type A test (including the imposed leakage) to the calculated leakage from the Type A test. To be acceptable, the difference between the supplemental test data, after subtraction of the superimposed leak rate, and the Type A test data must be within 25% of the maximum allowable leakage for the test pressure employed.

ANSI N45.4-1972, in addition to other requirements, states, "The leakage-rate test period, for any method, shall extend to 24h of retained internal pressure. If it can be demonstrated to the satisfaction of those responsible for the acceptance of the containment structure that the leakage rate can be accurately determined during a shorter test period, the agreed-upon shorter period may be used." It is Region III's position, with the support of NRR, that NRR is the organization responsible for the acceptance of the containment structure and hence is the only organization possessing the authority to approve a Type A test of less than 24h duration. This position was clearly established in a November 9, 1973 memorandum from Mr. B. H. Grier, Assistant Director for Construction and Operation, Directorate of Regulatory Operations to Mr. A. Giambusso, Deputy Director for Reactor Projects, and Mr. J. M. Hendrie, Deputy Director for Technical Review, and reaffirmed since then in other internal memoranda as well as in correspondence with several licensees such as the June 25, 1982 letter from Mr. D. G. Eisenhut, Director, Division of Licensing NRR to Mr. C. W. Fay, Assistant Vice President of Wisconsin Electric Power Company (copies attached). Both documents endorse a Bechtel Topical Report, BN-TOP-1, as the only approved methodology for performing Type A tests of less than 24h duration, and the latter requires written commitments to BN-TOP-1 as a prerequisite to performing a test of less than 24h duration. It should be noted that Zion has not committed to BN-TOP-1.

Zion is required to perform Type A tests in accordance with 10 CFR 50, Appendix J and ANSI N45.4-1972. Per Technical Specifications these tests are to be conducted at reduced pressure. Per 10 CFR 50, Appendix J the tests must include a satisfactory supplemental test. Per ANSI N45.4-1972, and, in the absence of a commitment to Bechtel Topical Report BN-TOP-1, the tests, exclusive of supplemental tests, must be at least 24h in duration.

## Enclosure 2

### Zion Type A Test Experience 1980 to Date

#### A. Discussion

##### 1. 1980 Testing:

In June 1980 a Type A test was performed on Zion Unit 2. The test was witnessed by Mr. J. Kohler, then the Senior Resident Inspector at the Zion facility. The results of the inspection were documented in Inspection Report 50-304/80-14 which states simply that, "the leak rate was well below the allowable limit of .0465 w/o day."

The licensee independently provided the results of the test to NRR in a report dated October 22, 1980. This report indicated that the test was performed at reduced pressure for 12 hours of acceptable data and followed by a successful supplemental test. The report states in part, "The test was terminated at hour 12 test time. Since the test had already been running much longer than 24 hours, the requirement to keep the containment pressurized longer than 24 hours had already been met. Twelve hours of data were sufficient to determine the leak rate of the containment."

The containment was at test pressure for approximately 48 hours. During the first 36 hours of the test, several manipulations of the containment boundary were performed in order to determine the location of leaking penetrations so that corrective action could be taken prior to performing a satisfactory CILRT. It should be noted that while these manipulations are allowed, their effect must be quantified in order to accurately characterize the "as-found" leak tight integrity of the containment building.

##### 2. 1981 Testing:

In March 1981 a Type A test was performed on Zion Unit 1. The test was witnessed by Mr. J. Kohler, then the Senior Resident Inspector at the Zion facility. The results of the inspection were documented in Inspection Report 50-295/81-06 which states, "Inspector review of the procedure, the events log, the containment mass plots, and leakage calculation, and instrument calibration, as well as independent calculation made by the inspector indicates that all acceptance criteria were met....At the conclusion of the Type A test, a supplemental test was conducted...at the conclusion of the supplemental test the licensee measured .0422 w/o/day which, therefore, verified the accuracy of the Type A measurement."

The licensee independently reported the results of the test to NRR in a report dated June 19, 1981. This report indicated that the test was performed at reduced pressure for 13 hours of acceptable data followed by a successful supplemental test. The containment



was at test pressure for approximately 10 days. During the first nine and a half days, many manipulations of the containment boundary were performed similar to those already noted for the 1980 Unit 2 test.

The Events Log section of the licensee's report indicated that the supplemental test was commenced at 4:29 a.m. on March 12, 1981. However, (at approximately 2:00 p.m.) the test was reinitialized to 10:41 a.m. following discovery of a leaking valve on the hold up tank cover gas system which was allowing gas to leak into containment. At 5:00 p.m. the verification test was reinitialized for a second time to 10:21 a.m. with no reason given.

3. 1983 Testing:

Between November 26 and December 5, 1983 a Type A test was performed on Zion Unit 1. Portions of the test were witnessed by the Resident Inspectors including procedure review, instrument calibration records, procedure compliance, valve and system lineups, and containment post-test inspections. The results of this inspection were documented in Inspection Report 50-295/84-02.

The licensee independently provided the results of the test to NRR in a report dated May 8, 1984. This report indicated that the test was performed at reduced pressure. The Event Log portion of the report states that the test was run until 11 hours and 50 minutes of acceptable data were obtained. The supplemental test was performed prior to the Type A test of record. The containment was at test pressure for approximately 8 days. During the first seven and a half days, numerous manipulations were performed to the containment boundary as previously noted for the 1980 Unit 2 test.

4. 1984 Receipt of a Petition for Emergency Relief:

On June 5, 1984, the Citizens Against Nuclear Power filed a Petition for Emergency Relief with the Commissioners. The purpose of the petition was, "(1) To give formal notification to the NRC that the Zion Unit 1 reactor of the Commonwealth Edison Company is currently in violation of both NRC regulations and federal law, and presents a grave and immediate health risk and danger to public safety. (2) To request emergency relief as appropriate."

The petition alleged that the Type A test performed on Zion Unit 1 in 1981 was scientifically invalid and was not performed in accordance with ANSI N45.4-1972. The basis for the allegation was that the licensee only obtained a satisfactory supplemental test after two unsuccessful attempts and an extended period of time during which the containment environment was modified by injection of some 44 gallons of water through a seal injection system. The petition concludes that

the difficulties in obtaining a satisfactory supplemental test demonstrated the inadequacy of the Type A test itself and requested the NRC to require and supervise an immediate retest of the Zion Unit 1 containment. The petition was forwarded to NRR for disposition.

5. 1984 Region III Inspection:

During the week of June 25, 1984, NRR requested that Region III perform an inspection at Zion Unit 1 to determine the validity of the allegations contained in the petition. This requested inspection was coupled with an inspection of a recent LER regarding a flow path left open between the Unit 2 containment and the auxiliary building, and commenced on July 2, 1984.

The initial thrust of the Region III inspection was to review the Zion Unit 1 1983 Type A test. The rationale was that if the 1983 test was valid, no immediate health and safety issues existed. If problems existed with the 1981 test, they could be handled through the normal review process.

Review of the 1983 test revealed the following deficiencies:

- a. The test duration was only approximately 12 hours. The methodology employed to perform the test and reduce the data was not that prescribed in BN-TOP-1.
- b. When that data was reduced using the BN-TOP-1 methodology, a calculated leakage of approximately 0.2 weight % per day was obtained. This exceeds the allowable value of approximately 0.07 weight % per day.
- c. The supplemental test was performed before the Type A test. While test sequencing is not specified in the regulations, this is considered poor practice based on the fact that containment conditions may not have been well characterized at the time of the supplemental test.
- d. The licensee applied the wrong calibration factor to the flow meter used to establish the imposed leakage rate during the supplemental test. When the correct calibration factor was applied, the agreement between the supplemental test results and the calculated leakage was 47% of the maximum allowable leakage rather than the required 25%.

Based on these deficiencies and the fact that the licensee, on September 21, 1982 placed on the docket a letter to J. G. Keppler acknowledging that the only acceptable methodology for performing a Type A test of less than 24 hours duration was BN-TOP-1, Region III concluded that the 1983 test was not performed in accordance with either the Technical Specifications or 10 CFR 50, Appendix J. Further, it was concluded that the error made in the supplemental test invalidated that test as the accuracy of the Type A test could not be verified. NRR concurred in these conclusions.

Based on these conclusions, Region III began a re-review of the Unit 1 1981 Type A test to assess its validity. This review revealed the following deficiencies:

- a. The test duration was only approximately 12 hours. The methodology employed to perform the test and reduce the data was not that prescribed in BN-TOP-1.
- b. When that data was reduced using BN-TOP-1, a calculated leakage of approximately 0.15 weight % per day was obtained. This exceeds the allowable value of approximately 0.07 weight % per day.
- c. Two attempts were made to perform a satisfactory supplemental test. The first attempt yielded unacceptably low results. The second test yielded acceptable results only after a careful choice of test start time. The inspectors independently calculated supplemental test results using two data points less than the licensee and obtained unacceptable results, indicating that a judicious choice of data can affect the statistical validity of test results.

Based on these deficiencies Region III concluded that the 1981 test was not performed in accordance with either the Technical Specifications or 10 CFR 50, Appendix J. NRR concurred in these conclusions.

On July 17, 1984, a meeting was convened in Region III between members of the Region III, NRR, and licensee staffs. The purpose of the meeting was to present the inspection conclusions to the licensee, the basis for those conclusions, and to afford the licensee the opportunity to provide justification of the validity of either the 1981 or 1983 Zion Unit 1 Type A tests. As a result of the items discussed during the meeting, and on the basis of further discussions between the licensee, Region III, IE, and NRR staffs on July 18, 1984, the conclusion was reached that the Zion Unit 1 leak rate test had not demonstrated compliance with Technical Specifications. The licensee voluntarily placed the unit in shutdown on July 18, 1984, and during the period July 27 - August 1, 1984, completed a satisfactory leak test on the Unit 1 containment. This test was witnessed by a Region III specialist inspector.

Because of the problems discovered with the 1981 and 1983 Type A tests on Unit 1, Region III also re-reviewed the 1980 Type A test performed on Unit 2. The only deficiency discovered with this test was the duration - 12 hours. Based on discussions with NRR, this test was judged acceptable for the following reasons:

- a. The NRC had not, prior to 1982, clearly promulgated to the licensee the requirements to use BN-TOP-1 for tests of less than 24 hours duration, and



- b. The test was witnessed and approved by a Region III specialist inspector. This constituted tacit approval of the test duration.
- c. NRC had been in possession of the test results since October 22, 1980 and had made no adverse findings with respect to its acceptability.

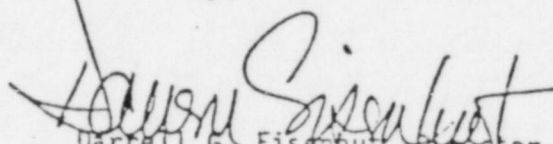
B. Conclusions

1. Type A tests performed on the Zion Unit 1 containment in 1981 and 1983 failed to demonstrate that the integrated containment leakage rate was in compliance with Technical Specification requirements in that the tests were of shorter duration than required by ANSI N45.4-1972 and the supplemental tests failed to demonstrate the accuracy of the Type A tests. NRR concurred in these findings.
2. The findings with respect to the supplemental test performed following the 1981 Type A test were consistent with those contained in the Petition for Emergency Relief filed by the Citizens Against Nuclear Power; however, the conclusions reached in the petition are not valid. Those conclusions were:
  - a. Failure of the first two supplemental tests proves that the Type A test itself was deficient. This was not the case. 10 CFR 50, Appendix J, paragraph III.A.3(b) allows for additional supplemental tests following a failure of a prior test.
  - b. Fourteen hours elapsed between the completion of the Type A test and completion of the "acceptable" supplemental test. This time may have allowed for significant changes in the containment environment which could invalidate the supplemental test. While the concerns expressed by the petitions are not without merit, the regulation requires sufficient duration to establish the accuracy of the supplemental test. Furthermore, containment conditions were continuously monitored throughout the period and changes in conditions were compensated for.
3. A satisfactory Type A test was performed on Zion Unit 1 during the period July 27-August 5, 1984 prior to returning the unit to power.
4. The Type A test performed on Unit 2 in 1980 was re-reviewed, and following discussions with NRR, judged to be acceptable.
5. Injection of water through the penetration seal water system is allowed and in compliance with the Technical Specifications.

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With regard to your exemption requests that have been denied, we request that you inform us within 45 days of receipt of this letter regarding your plans for meeting the requirements of Appendix J including submission of a Technical Specification change, as necessary. This request for information affects fewer than 10 respondents, therefore OMB clearance is not required under P.L. 96-511.

Sincerely,

  
Darrell G. Eisenhut, Director  
Division of Licensing

Enclosures:

1. Exemption
2. Safety Evaluation

cc: See next page