

COLLATING INSTRUCTIONS FOR AMENDMENT 1 TO THE
VEPCO SURRY POWER STATION, UNIT NO. 2, REACTOR
CONTAINMENT BUILDING INTEGRATED LEAK RATE TEST
TYPES A, B AND C REPORT.

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transistor malfunction in the plant computer which was corrected by replacement of a computer card. The manometers resumed recording pressures at 0355 hours on May 26, 1980. The following 12 hours of data yielded a calculated leakage rate (0.3 La) below the acceptable limit and satisfied the requirements of Bechtel Topical Report, BN-TOP-1 (Reference 2).

At 1723 hours, the mass pumpback verification test commenced. At 1910 hours, approximately 555 pounds of air had been pumped into the containment via the service air line.

The computer calculated mass increase compared to the total metered air reading was within the acceptable limit and the test was secured.

Depressurization of the containment at approximately 5 psi/hr commenced at 2145 hours. At 0707 hours, on May 27, 1980, the containment was at atmospheric pressure.

- D. The difference in the leak rates between the two unsuccessful ILRT attempts and successful attempt was approximately .8 La or 220 scfh. The result of the local leak rate testing prior to the successful attempt reduced reportable leakage by approximately 40 scfh (all penetrations were tested). The leakage through the steam generator was not quantified, however, only minor packing leaks were identified and the total reduced leakage attributed to packing repairs is 20 scfh. Even if these items had been repaired prior to the first two attempts, the ILRT's probably still would have been unsuccessful.

The only other repair made to containment boundaries between the second and third attempts was the repair of the holes in the liner. Of the eight holes discovered, five had threaded bolts in them and are assumed to have been tight. The remaining three holes were open. Calculations show that each hole could have had a maximum flow rate of approximately 1275 scfh assuming no resistance to flow due to the concrete. Although restriction of flow due to the proximity of the concrete cannot be accurately quantified, it is our position that such leakage was sufficient by itself to prevent a successful test. The intent of the CILRT is to meaningfully assess the extent of containment deterioration since the last (1975) Type A Test. The construction related deficiency (holes in liner) that was responsible for the unsuccessful attempts was created during the 1980 SGRP Construction Outage specifically for the purpose of mounting an additional RTD for the Type A Test. Therefore, these holes do not represent structural deterioration as a result of normal operation. The procedure for installing the RTDs was

ammended to specifically prohibit direct attachment of an RTD to the liner.

Increasing the frequency of the CILRT will not necessarily provide greater assurance of containment integrity, especially since appropriate corrective action has been effected as demonstrated during the successful 1981 Unit 1 SGRP Construction Outage and subsequent Type A Test.

2.2 LOCAL LEAK RATE TEST (TYPES B AND C)

The local leak rate testing of containment isolation valves and primary containment penetrations was conducted as required by station procedures, commencing in December 1979. The penetrations tested and their associated leak rates are listed in Section 4 of this report.

<u>2 / 0</u>	<u>17 / 0</u>	<u>80,84/ 0.3</u>
<u>4 /1.218</u>	<u>18 / 0</u>	<u>81,85/ 1.4</u>
<u>5 / 0</u>	<u>24 / 0</u>	<u>82,86/ 0.15</u>
<u>8 / 0</u>	<u>25 /0.25</u>	
<u>9 / 0</u>	<u>26 /0.4</u>	
<u>10 / 0</u>	<u>27 / 0</u>	
<u>11 / 0</u>	<u>28 /0.6</u>	
<u>12 / 0</u>	<u>45 / 0</u>	<u>97A / 0</u>
<u>13 /6.0</u>	<u>55A / 0</u>	<u>97D / 0</u>
<u>14 /4.0</u>	<u>57A / 0</u>	<u>105D / 0</u>

Total Type C leakage to be added 15.018 SCFH

Total Type B leakage to be added 0 SCFH

Total Types B and C leakage to
be added 15.018 SCFH

0.005 percent/day

NOTE: The above penetrations were in a non-vented valve lineup configuration for this test, with their respective leak rates per 2-PT-16.3B and 2-PT-16.4.

APPENDIX 4A
1978 TYPE B DATA SUMMARY

<u>PENETRATION</u>	<u>EQUIPMENT TESTED</u>	<u>PREREPAIR LEAKAGE (SCFH)</u>	<u>POST REPAIR LEAKAGE (SCFH)</u>	<u>REMARKS</u>
PERSONNEL AIR LOCK	O-RING	48.0	0.0	
EQUIPMENT HATCH	O-RING	0.0	N/A	N/A

1977 TYPE B DATA SUMMARY

<u>PENETRATION</u>	<u>EQUIPMENT TESTED</u>	<u>PREREPAIR LEAKAGE (SCFH)</u>	<u>POST REPAIR LEAKAGE (SCFH)</u>	<u>REMARKS</u>
PERSONNEL AIR LOCK	O-RING	1.0	N/A	N/A
EQUIPMENT HATCH	O-RING	0.0		

1976 TYPE B DATA SUMMARY

<u>PENETRATION</u>	<u>EQUIPMENT TESTED</u>	<u>PREREPAIR LEAKAGE (SCFH)</u>	<u>POST REPAIR LEAKAGE (SCFH)</u>	<u>REMARKS</u>
PERSONNEL AIR LOCK	O-RING	22.3	0.0	
		5.2		
EQUIPMENT HATCH	O-RING	0.0	N/A	N/A

1975 TYPE B DATA SUMMARY

<u>PENETRATION</u>	<u>EQUIPMENT TESTED</u>	<u>PREREPAIR LEAKAGE (SCFH)</u>	<u>POST REPAIR LEAKAGE (SCFH)</u>	<u>REMARKS</u>
PERSONNEL AIR LOCK	O-RING	0.0	N/A	N/A
EQUIPMENT HATCH	O-RING	0.0	N/A	N/A

All electrical penetrations were tested from 1975 to 1978 with no significant leakages noted or repairs required.

1978 TYPE C DATA SUMMARY

<u>Penetration No.</u>	<u>Valves Tested</u>	<u>Prerepair Leakage (scfh)</u>	<u>Post-Repair Leakage (scfh)</u>	<u>Remarks</u>
64	Containment Spray (CS) MOV-CS-201A MOV-CS-201B	38.316	16.0	Lapped seats and disk (201A) Set limit switches (201A) Lapped seats and disk (201B) Set limit switches (201B)
63	Containment Spray (CS) MOV-CS-201C MOV-CS-201D	35	20 5 6 13.02	Set limits Disassembled cleaned valve Disassembled cleaned valve Set limits
56	Sample System (SS) TV-SS-200A TV-SS-200B	0 0	0 0	Replaced valves; Design Change 78-01
56	Sample System (SS) TV-SS-202A TV-SS-202B	120 0	0 0	Replaced valves; Design Change 78-01
56	Sample System (SS) TV-SS-206A TV-SS-206B	167 0	0 0	Replaced valves; Design Change 78-01
57	Sample System (SS) TV-SS-201A TV-SS-201B	1.488 0	0 0	Replaced valves; Design Change 78-01
70	Recirculation Spray (RS) MOV-RS-256B	15.996	7.44	Adjusted limits, cleaned valve

1977 TYPE C DATA SUMMARY (CONT)

<u>Penetration No.</u>	<u>Valves Tested</u>	<u>Prerepair Leakage (scfh)</u>	<u>Post-Repair Leakage (scfh)</u>	<u>Remarks</u>
19	Charging (CH) MOV-2381	10.0	0	Reset limit switches
36	Charging (CH) 2-CH-323	0.05	N/A	N/A
37	Charging (CH) 2-CH-333	0.25	N/A	N/A
35	Charging (CH) 2-CH-349	3.8	N/A	N/A
60	Safety Injection (SI) MOV-2890A	1.55	N/A	N/A
62	Safety Injection (SI) MOV-2890B	1.48	N/A	N/A
61	Safety Injection (SI) MOV-2890C MOV-2864A&B	4.8 0	N/A N/A	N/A N/A
21	Safety Injection (SI) MOV-2842	1.52	N/A	N/A
113	Safety Injection (SI) 2-SI-174 MOV-2869A	0	N/A	N/A
23	Safety Injection (SI) MOV-2869B	74	3.3	Renewed valve
7	Safety Injection (SI) 2-SI-150 MOV-2867C&D	40	19 3.3	Lapped seat and disk 2867C Lapped disks and seats 2867C&D Lapped disks and seats 2867D
46	Charging (CH) FCV-2160	0.35	N/A	N/A
20	Safety Injection (SI) 2-SI-32	0	N/A	N/A
106	Safety Injection (SI) 2-SI-73	0	N/A	N/A
97	Sample System (SS) TV-SS-203	3.0	N/A	N/A

1977 TYPE C DATA SUMMARY (CONT)

<u>Penetration No.</u>	<u>Valves Tested</u>	<u>Prerepair Leakage (scfh)</u>	<u>Post-Repair Leakage (scfh)</u>	<u>Remarks</u>	
24	Residual Heat Removal (RH)	MOV-RH-200	5.0	N/A	N/A
66, 69	Recirculation Spray (RS)	MOV-RS-255A&B	370 550	N/A	Tightened flange
67, 68	Safety Injection (SI)	MOV-RS-2860A&B	175	0	Lapped seat and disk, replaced packing and bonnet gasket
53	Safety Injection (SI)	TV-SI-200 TV-SI-234	0 0	N/A N/A	N/A N/A
105	Liquid Monitoring (LM)	TV-LM-201A	0	N/A	N/A
105	Liquid Monitoring (LM)	TV-LM-201B	0	N/A	N/A
93	Gaseous Waste (GW)	2-GW-166	0	N/A	N/A
92	Gaseous Waste (GW)	2-GW-175	0	N/A	N/A
15	Charging (CH)	2-CH-309 MOV-2289A	180 8	0.9 .17	Lapped seat and disk, replaced packing and bonnet gasket
28	Chemical & Volume Control	HCV-2200A,B,C TV-2204	0.38 0	N/A N/A	N/A N/A
55	Sample System (SS)	TV-SS-204A TV-SS-204B	74 72	0 0	Adjusted stem travel Adjusted stem travel
56	Sample System (SS)	TV-SS-200A TV-SS-200B	0 0	N/A	
56	Sample System (SS)	TV-SS-202A TV-SS-202B	0.27 0.04	0 1.1	
56	Sample System (SS)	TV-SS-206A TV-SS-206B	72 0	0 0	Adjusted stem travel
57	Sample System (SS)	TV-SS-201A TV-SS-201B	3.5 0	1.37 0.6	Adjusted stem travel Cleaned valve
33	Gaseous Drains (DG)	TV-DG-208A TV-DG-208B	6.2 2.0	N/A N/A	N/A N/A

1977 TYPE C DATA SUMMARY (CONT)

<u>Penetration No.</u>	<u>Valves Tested</u>	<u>Prerepair Leakage (scfh)</u>	<u>Post-Repair Leakage (scfh)</u>	<u>Remarks</u>
45	Primary Grade Water (PG) 2-RC-160 TV-2519A	0 0.18	N/A N/A	N/A Renewed diaphragm
103	Reactor Cavity Purification (RL) 2-RL-3 2-RL-5	0	N/A	N/A
104	Reactor Cavity Purification (RL) 2-RL-13 2-RL-15	0 0.06	N/A N/A	N/A N/A
63	Containment Spray (CS) 2-CS-24 MOV-CS-201C&D	0.1 48	N/A 6.5	N/A Lapped seat and disk, replaced bonnet gasket valves. Replace cam assembly on limit switch
64	Containment Spray (CS) 2-CS-13 MOV-CS-201A,B	0 22	N/A N/A	N/A N/A
70	Recirculation Spray (RS) 2-RS-11 MOV-RS-256B	1.2 12	0 N/A	Repacked valve N/A
71	Recirculation Spray (RS) 2-RS-17 MOV-RS-256A	0 60	N/A 6.9	N/A Renewed disk
38	Aerated Drain (DA) TV-DA-200A TV-DA-200B	0 3.5	N/A N/A	N/A N/A
48	Vent & Drain (VG) TV-VG-209A TV-VG-209B	0 0	N/A N/A	N/A N/A
54	Primary Vent (VA) 2-VA-1 2-VA-9	0 0.32	N/A N/A	N/A N/A
50	Safety Injection (SI) TV-SI-201A TV-SI-201B	0.3 9	N/A 1.2	N/A Adjusted for more seat pressure
47	Instrument Air (IA) 1-IA-704 2-IA-868	0 9	N/A 0	Lapped seat and disk
58	Instrument Air (IA) 2-IA-704 2-IA-864	180 3.7	0 2.4	Lapped seat and disk Lapped seat and disk
42	Service Air (SA) 2-SA-81 2-SA-82	0.05 1.5	N/A N/A	N/A N/A
43	Air Monitoring (RM) 2-RM-3 TV-RM-200A	1.43 6.9	N/A N/A	N/A N/A

1977 TYPE C DATA SUMMARY (CONT)

<u>Penetration No.</u>		<u>Valves Tested</u>	<u>Prerepair Leakage (scfh)</u>	<u>Post-Repair Leakage (scfh)</u>	<u>Remarks</u>
44	Air Monitoring (RM)	TV-RM-200B TV-RM-200C	0 0	N/A N/A	N/A N/A
91	Ventilation (VS)	MOV-VS-200A MOV-VS-200B MOV-VS-202	6.8 8.8	N/A N/A	N/A N/A
90	Ventilation (VS)	MOV-VS-200C MOV-VS-200D MOV-VS-201	0.25 13	N/A N/A	N/A N/A
93	Containment Vacuum (CV)	TV-CV-250A TV-CV-250B	0.28 0.05	N/A N/A	N/A N/A
92	Containment Vacuum (CV)	TV-CV-250C TV-CV-250D	0 0	N/A N/A	N/A N/A
94	Containment Vacuum (CV)	HCV-CV-200 2-CV-2	0 0	N/A N/A	
89	Air Ejector Discharge	2-VP-12 TV-SV-202	320 0		Lapped seat and disk
97, 105, 55, 57	Leakage Monitoring (LM)	TV-LM-200A TV-LM-200C TV-LM-200E TV-LM-200G TV-LM-200B TV-LM-200D TV-LM-200F TV-LM-200H	0 0 0	N/A N/A	

1976 TYPE C DATA SUMMARY

<u>Penetration No.</u>	<u>Valves Tested</u>	<u>Prerepair Leakage (scfh)</u>	<u>Post-Repair Leakage (scfh)</u>	<u>Remarks</u>
19	Charging (CH) NOV-2381	1.1	N/A	N/A
36	Charging (CH) 2-CH-323	0	N/A	N/A
37	Charging (CH) 2-CH-333	2.36	N/A	N/A
35	Charging (CH) 2-CH-349	0.47	N/A	N/A
61	Safety Injection (SI) MOV-2864A&B MOV-2890C	0 N/A	N/A N/A	N/A N/A
7	Safety Injection (SI) MOV-2867C&D 2-SI-150	11.9	N/A	N/A
46	Charging (CH) FCV-2160	93	0	Cleaned valve seat, disk, and internals
20	Safety Injection (SI) 2-SI-32	0	N/A	N/A
106	Safety Injection (SI) 2-SI-73	0	N/A	N/A
97	Sample System (SS) TV-SS-203	0.71	N/A	N/A
24	Containment Spray (CS) 2-CS-34	13.2	N/A	N/A
66, 69	Recirculation Spray (RS) MOV-RS-255A,B	1000	0	Valves renewed; Design Change 75-44 Aligned valve plug with operator (255A) Aligned valve plug with operator (255B)
67, 68	Safety Injection (SI) MOV-2860A&B	10.0		Lapped valves and disk prior to test
53	Safety Injection (SI) TV-SI-200 2-SI-234	50.64 0	0 N/A	Replaced gaskets and packing, adjusted stroke
105	Leakage Monitoring (LM) TV-LM-101A TV-LM-101B	0 0	N/A N/A	N/A N/A

1976 TYPE C DATA SUMMARY (CONT)

<u>Penetration No.</u>	<u>Valves Tested</u>	<u>Prerepair Leakage (scfh)</u>	<u>Post-Repair Leakage (scfh)</u>	<u>Remarks</u>
93	Gaseous Waste (GW) 2-CW-166	0	N/A	N/A
92	Gaseous Waste (GW) 2-GW-175	0	N/A	N/A
15	Chemical & Volume Control (CH) 2-CH-309 MOV-2289A	2.76 0	N/A N/A	N/A N/A
28	Chemical & Volume Control (CH) TV-2204 HCV-2200A,B;C	0 3.7	N/A N/A	N/A N/A
55D	Sample System (SS) TV-204A TV-204B	0 0	N/A N/A	N/A N/A
56C	Sample System (SS) TV-200A TV-200B	0 0	N/A N/A	N/A N/A
56D	Sample System (SS) TV-202A TV-202B	0 5.5	N/A 4.81	N/A N/A
56B	Sample System (SS) TV-206A TV-206B	0 0	N/A N/A	N/A N/A
57B	Sample System (SS) TV-201A TV-201B	20 .08	0 0	Replaced closing spring Replaced bellows
33	Drains & Vents (DG) TV-DG-208A TV-DG-208B	2.34 .95	N/A N/A	N/A N/A
45	Primary Grade Water (PG) TV-2519A 2-RC-160	48.36 149.73	0	Replaced diaphragm Lapped valve, replaced bonnet gasket Lapped valve (2-RC-160)
103	Reactor Cavity Purification (RL) 2-RL-3 2-RL-5	25	0	(2-RL-5) Replaced diaphragm
63	Containment Spray (CS) 2-CS-24 MOV-CS-201C&D	0 4.2	N/A 0	N/A Stoned gates and seats both valves Adjusted limit switches (201D) Adjusted limit switches (201C)
64	Containment Spray (CS) 2-CS-13 MOV-CS-210A&B	0 3.27	N/A 13.8	N/A Lapped seats Adjusted stroke Adjusted stroke

1976 TYPE C DATA SUMMARY (CONT)

<u>Penetration No.</u>	<u>Valves Tested</u>	<u>Prerepair Leakage (scfh)</u>	<u>Post-Repair Leakage (scfh)</u>	<u>Remarks</u>
70	Recirculation Spray (RS) 2-RS-11 MOV-RS-256B	14.8 9.75	.67	Repaired seat and flapper; renewed gaskets N/A
71	Recirculation Spray (RS) 2-RS-17 MOV-RS-256A	0 55.8	N/A 1.66	N/A Lapped seat and disk
38	Aerated Drain (DA) TV-DA-200A TV-DA-200B	0 0	N/A N/A	N/A N/A
48	Vent & Drain (VG) TV-VG-209A TV-VG-209B	0.9 0	N/A N/A	N/A N/A
54	Primary Vent Pot (VA) 2-VA-1 2-VA-9	0 3.1	N/A 0	N/A Lapped disk and seat
50	Safety Injection (SI) TV-SI-201A TV-SI-201B	13.39 12.9	.165 4.36	Machined disk and seat Lapped disk and seat
47	Instrument Air (IA) 2-IA-704 2-IA-864	.74 .1	N/A 0	N/A Lapped valve
58	Instrument Air (IA) 2-IA-868 1-IA-704	.12 0	N/A N/A	N/A N/A
42	Service Air (SA) 2-SA-81 2-SA-82	0 0	N/A N/A	N/A N/A
43	Air Monitoring (RM) 2-RM-3 TV-RM-200A	4.53 0	N/A N/A	N/A N/A
44	Air Monitoring (RM) TV-RM-200B TV-RM-200C	37.2 0	0 0	Adjusted valve stroke N/A
91	Ventilation (VS) MOV-VS-200A MOV-VS-200B MOV-VS-202	0 0	N/A N/A	N/A N/A
90	Ventilation (VS) MOV-VS-200C MOV-VS-200D MOV-VS-201	0.63 52.08	N/A 0.86	N/A Cleaned rubber seat, emery clothed metal disk, replaced gaskets
93	Containment Vacuum (CV) TV-CV-250A TV-CV-250B	0 0	N/A N/A	N/A N/A
92	Containment Vacuum (CV) TV-CV-250C TV-CV-250D	0 0	N/A N/A	N/A N/A

1976 TYPE C DATA SUMMARY (CONT)

<u>Penetration No.</u>	<u>Valves Tested</u>	<u>Prerepair Leakage (scfh)</u>	<u>Post-Repair Leakage (scfh)</u>	<u>Remarks</u>
94	Containment Vacuum (CV) HCV-CV-200 2-CV-2	3.9 14.6	N/A .25	N/A Cleaned valve seat and disk
89	Air Ejector Discharge (VP) TV-SV-202 2-VP-12	0 44.64	N/A 2.0	N/A Lapped seat and disk
97, 105, 55, 57	Leakage Monitoring (LM) TV-LM-200A TV-LM-200C TV-LM-200E TV-LM-200G TV-LM-200B TV-LM-200D TV-LM-200F TV-LM-200H	0 0	N/A N/A	N/A N/A