Commonwealth Edison
One First National Plaza, Chicago, Illinois
Address Reply to: Post Office Box 767
Chicago, Illinois 60690

BBS Ltr. #407-75

Dresden Nuclear Power Station
R. R. #1
Morris, Illinois 60450
July 3, 1975

Mr. James G. Keppler, Regional Director
Directorate of Regulatory Operation-Region III
U. S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

SUBJECT: REPORT OF ABNORMAL OCCURRENCE PER SECTION 6.6.A OF THE TECHNICAL SPECIFICATIONS
UNIT-2 LOCAL LEAK-RATE TEST SUMMARY SUPPLEMENTARY REPORT (1974-75 REFUELING OUTAGE)

References: 1) Regulatory Guide 1.16 Rev. 1 Appendix A

2) Notification of Region III of U. S. Nuclear Regulatory Commission
Telephone: Mr. Johnson, 1130 hours on May 8, 1975
Telegram: Mr. Keppler, 1140 hours on May 8, 1975

3) Drawing Number: M-34

4) Letter dated May 9, 1975 from Mr. B. B. Stephenson to Mr. J. G. Keppler

Report Number: 50-237/75-22

Report Date: July 3, 1975

Occurrence Date: May 7, 1975

Facility: Dresden Nuclear Power Station, Morris, Illinois

IDENTIFICATION OF OCCURRENCE

During local leak-rate testing for the recent Unit-2 refueling outage, the volume bounded by valves 2-301-98 & 99 exceeded the maximum allowable limits.

(The enclosed appendix gives a complete listing of all penetrations and associated leakages for the outage mentioned above. This appendix is included to supplement B. B. Stephenson's letter dated May 9, 1975 with the results of the leak tests which were still pending at that time. These results have been circled for identification).

CONDITIONS PRIOR TO OCCURRENCE

Unit-2 was in the shutdown mode for a refueling outage.

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DESCRIPTION OF OCCURRENCE

At 1900 hours on May 7, 1975 the two check valves in the CRD return line (2-301-95 & 98) were leak-rate tested by the pressure decay method at 48 psig to determine the "as-found" leakage. The two check valves were tested independently by using the 301-99 manual valve as a common boundary. The manual valve was assumed to be leak-tight since a water head was present on the reactor side. Check valve 301-98 had a leakage of 66.788 SCFH which exceeded the limit of 29.38 SCFH.

DESIGNATION OF APPARENT CAUSE OF OCCURRENCE (Equipment Failure)

An inspection of 301-98 following the leak-rate testing revealed that the mating surfaces of the disc and seat were dirty. There were no apparent major defects.

ANALYSIS OF OCCURRENCE

Since check valve 301-95 (in series with valve 301-98) had a leakage of 1.247 SCFH, the total leakage through the penetration would have been well within the Technical Specification limit. Had a line break occurred between the two check valves, the high differential pressure created across valve 301-98 would have seated it adequately in comparison to the 48 psig used for leak testing. Plant personnel and the public were not jeopardized by this occurrence.

CORRECTIVE ACTION

The seating surfaces of the valve were cleaned, and the valve was reassembled and returned to service. The volume was satisfactorily leak-rate tested with a leakage of 11.786 SCFH.

FAILURE DATA

Valve 301-98 is a 4" check valve, body type F-S 900, disc type CR-13, manufactured by Henry Vogt.

Earlier in the refueling outage a modification for installing a test connection between valves 301-98 & 99 was completed. Prior to this modification, valve 301-98 could not be leak-rate tested; consequently, there are no previous failures.

Sincerely,

B. B. Stephenson
Superintendent

BBS:GAR:smp
File/NRC

APPENDIX

Dresden Unit-2 Final Local
Leak-Rate Test Summary for
1974-75 Refueling Outage

Type of Penetration	Max. Allowable Through Leakage (SCFH)	Actual % of Limit
Primary Isol. Valve		57.12
Bellow Seals	178.29 Combined	1.88
Electrical		3.39
MSIV's	11.5 @ valve	86.76 Max
Double Gasketed Seals	58.76 Combined	7.35

SUPPLEMENTARY NOTE CONCERNING LPCI CONTAINMENT SPRAY VALVE MO-1501-27B
(See Reference 4)

Valve MO-1501-27B was found to have excessive disc-to-seat clearance during the "as found" local leak-rate test. The valve was disassembled and the disc and seat were both lapped. After reassembly, the valve again failed the leak test. Further investigation revealed that the torque switch on the Limitorque operator was out of calibration. After recalibration, once again the leak test failed. The valve was disassembled a second time and again was found to have excessive disc-to-seat clearance. The disc was "bottoming out" before seating completely. Repairs consisted of building up and then regrinding the disc to the proper size. Upon reassembly, the leak test yielded a satisfactory leakage of 0.864 SCFH @ 48 PSIG. This leakage is for both valves 1501-27B & 28B combined.

In an effort to determine the total through-leakage for the penetration, 1501-28B was independently leak-rate tested prior to the repair of 1501-27B. The individual leakage was found to be 2.462 SCFH. This test was performed with an 80 PSIG water head present against the upstream side of the 1501-27B valve. Water leaking past 1501-27B reduced the test volume. This reduction in the test volume caused a given leakage to drop the test pressure faster, indicating greater leakage in spite of the water being added to the test volume past 1501-27B. Consequently, the leakage for 1501-28B appeared to be greater than the leakage for 1501-27B & 28B combined.

LOCAL LEAK RATE TESTS PERFORMED DURING THE UNIT 2 REFUELING OUTAGE OF 1974-75

TYPE OF PENETRATION: Primary Isolation Valves

TEST NUMBER	PENETRATION NUMBER	VOLUME BEING TESTED	INITIAL LEAK RATE SCFH	INITIAL THRU LEAKAGE SCFH	FINAL LEAK RATE SCFH	FINAL THRU LEAKAGE SCFH
5	X-107A	Rx Feedwater Check 220-58A & 57A	[illegible].383	X	0.320	X
6	X-107A	" 220-62A & 57A*	5835.304	5835.[illegible]	0.000	0.0
7	X-107B	" 220-58B & 57B*	3832.75[illegible]	X	23.018	X
8	X-107B	" 220-62B & 57B	358.20[illegible]	358.[illegible]	6.19[illegible]	6.[illegible]
21	X-204	Torus Vac Relief 1601-20A & 31A	9.973	4.[illegible]	5.5[illegible]	2.[illegible]
22	X-304	" 1601-20B & 31B	0.497	0.2[illegible]	12.[illegible]	6.[illegible]
23	X-304 / X-[illegible]	Torus DW - Vent Purge 1601-21,22,55,56 & 3502-501	40.710	10.[illegible]	[illegible]	[illegible]
24	X-125 / X-[illegible]	Torus/DW - Vent 1601-23,24,60,61,62,63	6.113	[illegible].057	6.[illegible]	[illegible]
29	X-152A	LPCI DW Spray 1501-27A & 28A	0.0	0.0	0.0	[illegible]
30	X-211A	LPCI Suppression Spray 1501-18A & 19A	352.101	X	14.592	7.[illegible]
30A	X-211B	" 1501-18B & 19B	13.[illegible]	13.[illegible]	X	X
31	X-210A	LPCI Test Line 1501-20A & 38A	537.767	X	4.5[illegible]	[illegible]
31A	X-210A	" 1501-20A & 38A*	0.0	0.0	X	X
32	X-145	LPCI DW Spray 1501-[illegible] & [illegible]	5[illegible].532	X	(0.5[illegible])	([illegible])
32A	X-145	" 1501-27B & 28B	52.462	5[illegible]	X	X
33	X-210B	LPCI Test Line 1501-[illegible] & [illegible]B	787.134	4[illegible]	0.0	[illegible]
34	X-211B	LPCI Suppression Spray 1501-18B & 19B	7028.109	[illegible]	0.202	[illegible]
62	X-118	[illegible] 2001-5 & 6	8.783	4.392	8.783	4.[illegible]
63	X-117	[illegible] 2001-105 & 106	12.518	[illegible]	12.518	[illegible]
64	X-212A	HPCI [illegible] 2301-45 & 74	[illegible]1.797	0.0	23.708	0.0
65**	X-101	[illegible]	12.693	6.347	12.693	[illegible]

TOTAL THRU LEAKAGE FOR PAGE: 10,365.724 (Initial Thru Leakage) | 53.037 (Final Thru Leakage)

*Indicates waterhead present on one side of valve

** [illegible]

LOCAL LEAK RATE TESTS PERFORMED DURING THE UNIT 2 REFUELING OUTAGE OF 1974-75

TYPE OF PENETRATION: Primary Inst Air Valves

TEST NUMBER	PENETRATION NUMBER	VOLUME BEING TESTED	INITIAL LEAK RATE SCFH	INITIAL THRU LEAKAGE SCFH	FINAL LEAK RATE SCFH	FINAL THRU LEAKAGE SCFH
66	X-149A	Core Spray to Rx 1402-[illegible] & 25A	1.083	0.542	[illegible]	0.0
67	X-210A	Core Spray Test Line 1402-4A, 20, 24A, & 38A	0.476	0.238	0.476	[illegible]
68	X-149B	Core Spray to Rx 1402-24B & 25B	0.0	0.0	0.0	0.0
69	X-210B	Core Spray Test Line 1402-4B, 8B, 24B, & 38B	2.922	1.461	2.922	1.461
71	X-108	Rec Cool Supply 1301-1 & 2	0.0	0.0	0.0	0.0
72**	X-107	Rec Cool Return 2301-3 & 4*	≤18.936	≤18.936	≤18.936	≤18.936
73	X-313A	Torus Drain (East)	2.633	1.317	2.633	1.317
74	X-313B	" (West)	13.812	6.906	13.812	[illegible]
92	X-115A	HPCI Supply 2301-4 & 5	0.0	0.0	0.0	0.0
93	X-312	HPCI Drain 2301-34 & 71	18.727	9.364	18.727	9.364
94	X-106	MSL Drain 220-1 & 2	0.0	0.0	0.0	[illegible]
95	X-113	Cleanup Supply 1201-1*, 2, & 3	0.0	0.0	0.0	[illegible]
97	X-101	DW CAM Return 9208A	0.237	X	0.237	X
98	X-101	" 9205B	0.183	0.183	0.183	0.183
99	X-101	DW CAM Supply 9207A	0.536	0.536	0.536	0.536
100	X-101	" 9207B	0.679	X	0.679	X
101	X-122	Rx Wtr Sample 220-44 & 45	0.054	0.054	0.054	0.054
102	X-116A X-116B	SD Cooling Supply 1001-18, 19, 20, 2B, & 2C	0.0	0.0	0.0	0.0
105	X-147	Rx Head Cooling 205-2-7 & Flange	53.779	X	0.0	0.0
106	X-147	205-2-4 & Flange	0.310	0.310	0.310	X
107	X-116B	LPCI Check 1501-25B & 26B*	56.632	X	0.0	X
		TOTAL THRU LEAKAGE FOR PAGE		39.546		38.775

*Indicates waterhead present on one side of valve

LOCAL LEAK RATE TESTS PERFORMED DURING THE UNIT 2 REFUELING OUTAGE OF 1974-75

TYPE OF PENETRATION: Primary Sept Bar Valves

TEST NUMBER	PENETRATION NUMBER	VOLUME BEING TESTED	INITIAL LEAK RATE SCFH	INITIAL THRU LEAKAGE SCFH	FINAL LEAK RATE SCFH	FINAL THRU LEAKAGE SCFH
108	X-146B	LPCI Injection 1501-228, 266* & 1001-5B	0.635	0.635	0.635	0.635
109	X-146A	" 1501-228, 266* & 1001-5A	0.653	0.653	0.653	0.653
110	X-146A	LPCI Check 1501-250 & 266A*	22.137		3.974	
111	X-130	SBLC 1101-1 & 16	7.182	7.182	7.182	7.182
112	X-130	" 1101-1 & 15	21.707		21.707	
113	X-146 X-146	No Head -- 1601-52, 53 & 57	0.0	0.0	0.0	0.0
114	X-144	CRD Return Line 301-35* & 39*	(1.247)	1.247	(1.247)	(1.247)
115	X-144	" 301-35 & 39*	(6.785)		11.785	
		TOTAL THRU LEAKAGE FOR PAGE		9.747		9.747

*Indicates waterhead present on one side of valve

LOCAL LEAK RATE TESTS PERFORMED DURING THE UNIT 2 REFUELING OUTAGE OF 1974-75

TYPE OF PENETRATION: Double Gasketed Seals

TEST NUMBER	PENETRATION NUMBER	VOLUME BEING TESTED	INITIAL LEAK RATE SCFH	INITIAL THRU LEAKAGE SCFH	FINAL LEAK RATE SCFH	FINAL THRU LEAKAGE SCFH
9	1601-32A	Torus Vac. Breaker Flange	16.171	8.086	4.614	[illegible]
10	1601-32B		146.041	73.021	0.0	0.0
11	1601-32C		19.287	9.644	[illegible]	[illegible]
12	1601-32D		88.859	44.430	0.0	0.0
13	1601-32E		0.0	0.0	0.035	0.018
14	1601-32F		0.0	0.0	[illegible]	[illegible]
15	1601-33A		1.949	[illegible]	0.0	0.0
16	1601-33B		26.031	13.016	[illegible]	[illegible]
17	1601-33C		243.849	121.925	[illegible]	[illegible]
18	1601-33D		121.701	60.851	0.0	0.0
19	1601-33E		40.716	20.358	[illegible]	[illegible]
20	1601-33F		52.349	26.175	0.334	[illegible]
25		Drywell Head Flange	0.105	0.053	(0.026)	[illegible]
26	X-100	Equip. Hatch	0.007	0.004	(0.052)	[illegible]
27	X-305B	Pers. Access Hatch (West)	0.0	0.0	[illegible]	[illegible]
28	X-306A	" (East)	0.0	0.0	[illegible]	[illegible]
35	X-136F	TIP Index Monitor Flange	0.507	0.255	0.507	0.255
36	X-136E	"	0.455	0.228	0.455	[illegible]
37	X-136[illegible]	"	0.034	0.017	0.034	[illegible]
38	X-136H	"	0.0	0.0	0.0	[illegible]
39	X-136C	"	0.0	0.0	0.0	[illegible]
		TOTAL THRU LEAKAGE FOR PAGE		359.042		4.230

*Indicates waterhead present on one side of valve

LOCAL LEAK RATE TESTS PERFORMED DURING THE UNIT 2 REFUELING OUTAGE OF 1974-75

TYPE OF PENETRATION: Double Gasketed Seals (cont)

TEST NUMBER	PENETRATION NUMBER	VOLUME BEING TESTED	INITIAL LEAK RATE SCFH	INITIAL THRU LEAKAGE SCFH	FINAL LEAK RATE SCFH	FINAL THRU LEAKAGE SCFH
40	X-136G	TIP Index Mech. Flange	0.017	0.00[illegible]	0.017	[illegible]
41	X-136A	"	0.0	0.0	0.0	0.0
42	X-136D	"	0.052	0.026	0.052	[illegible]
43	X-136B	"	0.052	0.026	0.052	[illegible]
70	X-137	Drywell Head Manhole	0.0	0.0	0.0	0.0
77	X-102	CRD Removal Hatch	0.0	0.0	0.0	0.0
80	#8	Shear Lug Inspection Hatch	0.0	0.0	0.0	0.0
81	#7	"	0.0	0.0	0.0	0.0
82	#6	"	0.0	0.0	0.0	0.0
83	#5	"	0.0	0.0	0.0	0.0
84	#4	"	0.020	[illegible]	0.020	[illegible]
85	#3	"	0.0	0.0	0.0	0.0
86	#2	"	0.0	0.0	0.0	0.0
87	#1	"	0.0	0.0	0.0	0.0
96	X-135E	Drain Flange	0.034	0.017	0.034	0.017
103	X-313D	Torus Drain Flange (Ext)	0.877	0.404	3.345	0.0
104	X-313B	" (Int)	0.0	0.0	0.0	0.0

	INITIAL THRU LEAKAGE SCFH	FINAL THRU LEAKAGE SCFH
TOTAL THRU LEAKAGE FOR PAGE	0.491	0.088

*Indicates waterhead present on one side of valve

LOCAL LEAK RATE TESTS PERFORMED DURING THE UNIT 2 REFUELING OUTAGE OF 1974-75

TYPE OF PENETRATION: Electrical

TEST NUMBER	PENETRATION NUMBER	VOLUME BEING TESTED	INITIAL LEAK RATE SCFH	INITIAL THRU LEAKAGE SCFH	FINAL LEAK RATE SCFH	FINAL THRU LEAKAGE SCFH
44	X-202BB	Rod Pos. Ind.	6.017	3.009	6.017	3.009
45	X-202X	Core Vibration Sensors	0.0	0.0	0.0	0.0
46	X-204H	Neutron Monitor Sig.	0.0	0.0	0.0	0.0
47	X-202W	Rod Pos. Ind.	0.331	0.166	0.331	0.166
48	X-202S	Rod Pos. Ind.	217.834	0.0	0.0	0.0
49	X-202Q	LV Power & Control	6.039	3.020	0.299	0.149
50	X-202N	Neutron Monitor Sig.	0.0	0.0	0.0	0.0
51	X-202J	Neutron Monitor Sig.	0.0	0.0	0.0	0.0
52	X-202F	LV Power & Control	1.326	0.663	1.326	0.663
53	X-202D	HV Power	0.0	0.0	0.0	0.0
54	X-202B	HV Power	0.0	0.0	0.0	0.0
55	X-204T	Rod Pos. Ind.	0.0	0.0	0.0	0.0
56	X-201S	LV Power & Control	11.342	5.671	0.327	0.164
57	X-204Q	HV Power	0.0	0.0	0.0	0.0
58	X-204P	HV Power	0.0	0.0	0.0	0.0
59	X-203C	LV Power & Control	17.652	8.826	1.644	0.822
60	X-205E	LV Power & Control	0.0	0.0	0.0	0.0
61	X-200B	LV Power & Control	0.645	0.323	0.645	0.323
75	X-203A	Rod Pos. Ind.	1.341	0.671	1.341	0.671
76	X-200A	LV Power & Control	9.242	4.621	0.0	0.0
77	X-204E	Neutron Monitor Sig.	0.165	0.083	0.165	0.083
		TOTAL THRU LEAKAGE FOR PAGE		24.550		6.041

*Indicates waterhead present on one side of valve

LOCAL LEAK RATE TESTS PERFORMED DURING THE UNIT 2 REFUELING OUTAGE OF 1974-75

TYPE OF PENETRATION: Bellows Seals

TEST NUMBER	PENETRATION NUMBER	VOLUME BEING TESTED	INITIAL LEAK RATE SCFH	INITIAL THRU LEAKAGE SCFH	FINAL LEAK RATE SCFH	FINAL THRU LEAKAGE SCFH
79	X-105A	Main Steam Line	0.0	0.0	0.0	0.0
	X-105B	"	0.0	0.0	0.0	0.0
	X-105C	"	11.823	0.0	0.0	0.0
	X-105D	"	0.0	0.0	0.0	0.0
	X-106	Main Steam Line Drain	0.0	0.0	0.0	0.0
	X-107A	Primary Feedwater	0.0	0.0	0.0	0.0
	X-107B	"	0.0	0.0	0.0	0.0
	X-108A	Air Condenser Supply	0.0	0.0	0.0	0.0
	X-108B	Air Condenser Return	0.0	0.0	0.0	0.0
	X-111A	Shutdown Cooling Supply	0.0	0.0	0.0	0.0
	X-111B	"	0.0	0.0	0.0	0.0
	X-113	Cleanup Supply	0.0	0.0	0.0	0.0
	X-115A	HPCI Supply	0.0	0.0	0.0	0.0
	X-116A	LPCI Injection	0.0	0.0	0.0	0.0
	X-116B	"	0.0	0.0	0.0	0.0
	X-123	RBCCW Inlet	21.941	10.971	0.0	0.0
	X-124	RBCCW Outlet	0.0	0.0	0.0	0.0
	X-125	Vent from Drywell	0.023	0.012	0.023	0.012
	X-126	Vent to Drywell	0.0	0.0	0.0	0.0
	X-130	Stdby Liquid Cntl	0.0	0.0	0.0	0.0
	X-144	CRD Return	0.884	0.442	0.884	0.442
		TOTAL THRU LEAKAGE FOR PAGE		11.425		0.454

*Indicates waterhead present on one side of valve

LOCAL LEAK RATE TESTS PERFORMED DURING THE UNIT 2 REFUELING OUTAGE OF 1974-75

TYPE OF PENETRATION: B.[illegible] [illegible] (cont)

TEST NUMBER	PENETRATION NUMBER	VOLUME BEING TESTED	INITIAL LEAK RATE SCFH	INITIAL THRU LEAKAGE SCFH	FINAL LEAK RATE SCFH	FINAL THRU LEAKAGE SCFH
79	X-147	Rx Head Cooling	0.0	0.0	0.0	0.0
}	X-149A	Core Spray	0.0	0.0	3.465	[illegible]
	X-149B	" "	0.047	0.023	2.325	[illegible]
		TOTAL THRU LEAKAGE FOR PAGE		0.023		2.5[illegible]

*Indicates waterhead present on one side of valve

LOCAL LEAK RATE TESTS PERFORMED DURING THE UNIT 2 REFUELING OUTAGE OF 1974-75

TYPE OF PENETRATION: MSIV

TEST NUMBER	PENETRATION NUMBER	VOLUME BEING TESTED	INITIAL LEAK RATE SCFH	INITIAL THRU LEAKAGE SCFH	FINAL LEAK RATE SCFH	FINAL THRU LEAKAGE SCFH
1	X-105A	MSIV 203-2A	1.382	1.382	1.382	1.382
2	X-105B	203-3B	1.348	1.348	1.348	1.348
3	X-105C	203-3C	154.485		0.0	
4	X-105D	203-3D	0.0	0.0	0.0	0.0
2*	X-105B	203-1B	2.277		2.277	
3*	X-105A	203-1A	2.858		2.858	
4*	X-105D	203-1D	1.390		1.390	
1*	X-105C	203-1C	105.730	105.730	0.0	0.0
		TOTAL THRU LEAKAGE FOR PAGE		108.460		2.737

*Indicates waterhead present on one side of valve