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November 21, 1994

JSPLTR 94-0020

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

Licensee Event Report 93-002-2, Docket 50-237 is being submitted as required by Technical Specification 6.6, NUREG 1022 and 10CFR50.50.73(a)(2)(i). This revised report provides the cause and corrective action for the LLRT Failure of Vacuum Breaker 2-1601-31B and component failure data for all LLRT valve failures during Refuel Outage D2R13.

Sincerely,

J. Stephen Perry
Vice President
BWR Operations

JSP/MM:pt

Enclosure

cc: J. Martin, Regional Administrator, Region III
NRC Resident Inspector's Office
File/NRC
File/Numerical

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LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1)	Docket Number (2)	Page (3)
Dresden Nuclear Power Station, Unit 2	0 5 0 0 0 2 3 7	1 of 1 2

Title (4)

TYPE B AND C PRIMARY CONTAINMENT LOCAL LEAK RATE TESTING LIMIT EXCEEDED DUE TO LEAKAGE PAST HEAD COOLING INLET ISOLATION VALVE 2-205-2-4.

Event Date (5)			LER Number (6)			Report Date (7)			Other Facilities Involved (8)	
Month	Day	Year	Year	Sequential Number	Revision Number	Month	Day	Year	Facility Names	Docket Number(s)
0 1	2 1	9 3	9 3	— 0 0 2 —	0 2	0 2	2 2	9 3	N/A	

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIRMENTS OF 10CFR (Check one or more of the following) (11)

POWER LEVEL (10)							
0 0 0		20.402(b)		20.405(c)		50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)		50.36(c)(1)		50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(vii)	Other (Specify in Abstract below and in Text)
		20.405(a)(1)(iii)	X	50.73(a)(2)(i)		50.73(a)(2)(viii) (A)	
		20.405(a)(1)(iv)		50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)	
		20.405(a)(1)(v)		50.73(a)(2)(iii)		50.73(a)(2)(x)	

LICENSE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER	
	AREA CODE	
Mark McGivern, LLRT Coordinator Ext. 2526	8 1 5	9 4 2 - 2 9 2 0

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS
X	B O	I S V	L 2 0 0	Y	X	BO	I S V	C 6 6 5	Y
X	S J	I S V	C 6 6 5	Y	X	BO	I S V	A 5 8 5	Y

SUPPLEMENTAL REPORT EXPECTED (14)				Expected Submission Date (15)	Month	Day	Year
	YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On January 21, 1993 with Unit 2 in a refuel outage, the performance of Dresden Technical Surveillance (DTS) 1600-01, Local Leak Rate Testing Of Primary Containment Isolation Valves, identified the Head Cooling Inlet Isolation Valve 2-205-2-4 to be leaking an undetermined amount. This exceeded the maximum pathway leakage rate for Type B and C primary containment leakage, 488.452 scfh ($0.6L_a$), as listed in Technical Specification 3.7.A.2.b.(2)(a). Once the leakage rate was recorded, the valve was again verified to be in the fully closed position. The measured leakage rate dropped to 3.0 scfh upon increasing the seating force. The valve operator was repaired under Work Request D10353, which reduced the leakage to 2.84 scfh. The safety significance of the leakage past valve 2-205-2-4 has been considered to be minimal since the redundant Head Cooling Isolation Valve 2-205-27 leaked 3.31 scfh; therefore, the total through leakage out of the penetration, on a minimum pathway basis, was 3.31 scfh.

The total as-found minimum pathway leakage (Type A test) was 2.3718 wt%/day which exceeded the Technical Specification 3.7.A.2 limit of 1.2 wt%/day. Calculations have been performed to prove this leakage did not exceed 10 CFR Part 100 limits.

NRC FORM 366B (5-92) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)
FAILURE CONTINUATION

APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Dresden Nuclear Power Station, Unit 2	05000237	93	-- 002 --	02	2 OF 12

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
X	BO	ISV	C665	Y					
X	BF	ISV	A585	Y					
X	VB	ISV	P340	Y					
X	WD	ISV	C665	Y					
X	BJ	ISV	R340	Y					
X	BB	ISV	H037	Y					
X	CC	ISV	C665	Y					
X	IG	ISV		Y					
X	LK	ISV	C665	Y					
X	IK	ISV	S212	Y					

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PLANT AND SYSTEM IDENTIFICATION:

General Electric-Boiling Water Reactor-2527 MWt rated core thermal power.

Nuclear Tracking System (NTS) tracking code numbers are identified in the text as (XXX-XXX-XX-XXXXX)

EVENT IDENTIFICATION:

Type B and C Primary Containment Local Leak Rate Testing Limit Exceeded Due To Leakage Past Head Cooling Inlet Isolation Valve 2-205-2-4

A. CONDITIONS PRIOR TO EVENT:

Unit: 2 Event Date: January 21, 1993 Event Time: 0000 hrs

Reactor Mode: N Mode Name: Refuel Power Level: 0%

Reactor Coolant System Pressure: 0 psig

B. DESCRIPTION OF EVENT:

On January 21, 1993 with Unit 2 in a refuel outage, the performance of Dresden Technical Surveillance (DTS) 1600-01, Local Leak Rate Testing Of Primary Containment Isolation Valves, identified the Head Cooling Inlet Isolation Valve 2-205-2-4 to be leaking an undetermined amount. This leakage rate exceeded the maximum pathway leakage rate for Type B and C primary containment leakage, 488.452 scfh ($0.6L_a$), as listed in Technical Specification 3.7.A.2.b.(2)(a). Once the leakage rate was recorded, the valve was again verified to be in the fully closed position. The actuator was manually engaged and closed with increased force. The measured leakage rate dropped to 3.0 scfh upon increasing the seating force.

The Shift Engineer was notified that the leakage past the Head Cooling Inlet Isolation Valve 2-205-2-4 had caused the total as-found Type B and C primary containment leakage rate to exceed $0.6L_a$ (488.452 scfh). A Problem Identification Form (PIF) was initiated per Dresden Administrative Procedure (DAP) 02-27, Integrated Reporting Process.

Additional as-found Local Leak Rate Testing of the remaining primary containment pathways identified nineteen volumes which required repairs or adjustments. The sum of all as-found Type B and C leakage calculated on a minimum pathway basis and the back correction penalty which accounts for repairs made to Type B and C volumes during the outage, not including back correction for non-vented pathways, were added. This value when added to the 95% upper confidence leak rate, measured during the Type A Integrated Leak Rate Test, along with compensation for sump level changes and non-vented systems, caused the as-found Type A leakage rate to be 2.3718 wt%/day. This value exceeded the leakage limit of 1.2 wt%/day ($0.75L_a$) stated in Technical Specification 3.7.A.2.

95% UCL Leak Rate (measured during the ILRT)	0.8184 wt%/day
Back Correction Penalty (due to repairs)	0.3225 wt%/day
Penalty For Non-Vented Systems	1.2238 wt%/day
Compensation For Sump Level Changes	0.0071 wt%/day
Total	2.3718 wt%/day

A list of the test volumes which required repairs or adjustments along with their as-found maximum Pathway and minimum pathway leakage rates are given below:

VOLUME	SYSTEM	"As-Found" Type C (Maximum Pathway) LEAKAGE RATE	"As-Found" Type C (Minimum Pathway) LEAKAGE RATE
2-220-57B&58B	Feedwater	Undetermined	271.3 scfh
2-220-57B&62B	Feedwater	271.3 scfh	271.3 scfh
2-1001-1A,1B, 2A,2B&2C	Shutdown Cooling	458.50 scfh	229.25 scfh
2-1201-1,1A,2&3	RWCU	67.29 scfh	33.65 scfh
2-1501-22A,26A & 2-1001-5A	LPCI	25.7 scfh	2.02 scfh
2-1501-25B&26B	LPCI	63.81 scfh	5.06 scfh
2-1501-27B&28B	LPCI	60.24 scfh	30.12 scfh
2-1601-20B&31B	Torus Vent	Undetermined	0.20 scfh
2-1601-21,22,55, 56&8502-500	Drywell Purge	651.80 scfh	0.35 scfh
2-2001-5&6	DWEDS	18.1 scfh	9.05 scfh
2-2001-105&106	DWFDS	28.7 scfh	14.35 scfh
2-2301-34&71	HPCI	32.54 scfh	32.54 scfh
2-2599-2B&23B	ACAD	Undetermined	3.53 scfh
2-3703&3706	RBCCW	26.08 scfh	7.86 scfh
2-4799-514	Tip Purge	40.52 scfh	40.52 scfh
2-4722&4799-530	DW Pneumatic	11.32 scfh	5.66 scfh
2-8501-1A&1B	Drywell O_2 Sample	47.55 scfh	0.10 scfh

C. APPARENT CAUSE OF EVENT:

This report is being submitted in accordance with 10 CFR 50.73(a)(2)(i) which requires the reporting of any operation or condition prohibited by the Technical Specifications.

The cause of the unsatisfactory leakage past the 2-205-2-4 valve has been attributed to insufficient closing force. The valve operator was inspected and repaired under Work Request D10353. Although the cause of failure could not be identified through motor-operated valve (MOV) diagnostic testing, it is suspected that the insufficient closing force is due to a weakened spring pack that controls the seating torque of the valve. A new spring pack and a grease relief kit were installed. In addition, the declutch shaft, fork assembly and declutch lever were also replaced. Diagnostic valve testing was then performed to set the actuator's opening and closing force through torque switch adjustments. An as-left LLRT was performed which yielded a leakage rate of 2.84 scfh. LLRT records dating back to 1983 indicate no previous failures of this valve.

A summary describing the cause and corrective actions for the remaining volumes which leaked in excess of Station guidelines are contained in Section E of this report.

D. SAFETY ANALYSIS OF EVENT:

The safety significance of the leakage past valve 2-205-2-4 has been considered to be minimal since the redundant Head Cooling Isolation Valve 2-205-27 leaked 3.31 scfh; therefore, the total through leakage out of the penetration, on a minimum pathway basis, was 3.31 scfh.

The safety significance of exceeding the 1.2 wt%/day limit established in Technical Specification 3.7.A.2 is mitigated by the integrity of the Secondary Containment and the function of the Standby Gas Treatment System (SGTS). The SGTS is used to maintain a slight negative pressure in the Reactor Building during accident conditions. Filters are provided in the system to remove radioactive particulates and charcoal adsorbers are provided to remove radioactive halogens which may be present in concentrations significant to environmental dose criteria. The calculated as-found leakage rate of 2.3718 wt%/day exceeds the Technical Specification limit of 1.2 wt%/day by a factor of approximately two. Calculations which were performed for and reported in LER 90-018-1, Leakage Path Discovered During Primary Containment ILRT due to Management Deficiency, dated August 6, 1991, indicate that a leakage rate of approximately 31 wt%/day would not exceed the off-site and control room dose rates specified by the limits in 10 CFR Part 100 and General Design Criteria 19 with SGTS operable. The D2R13 as-found leakage rate of 2.3718 wt%/day is approximately 7.7% of this value. Therefore, the safety significance of this leakage is considered minimal.

E. CORRECTIVE ACTIONS:

Immediate corrective action for the failure of valve 2-205-2-4 was to repair the actuator and verify through diagnostic testing that the actuator closing force was within the specified range. Additionally, an as-left LLRT was performed to ensure that the leakage past the valve seat was within acceptable limits. Long term corrective actions are already in place in that Dresden Station's motor operated valve diagnostic testing program will evaluate the performance of motor operated valves. This program was not fully implemented during previous Unit 2 refuel outages; however, it is now a preferred method of monitoring motor operated valve performance.

As a result of all repairs, adjustments, and modifications made to primary containment valves and penetrations during the D2R13 refuel outage, the total as-left maximum pathway leakage, as measured through Type B and C Local Leak Rate Testing, was 307.59 scfh. This value is 63% of the Technical Specification limit of 488.452 scfh. The as-left minimum pathway leakage rate, as measured through the Type A Integrated Leak Rate Test, was 0.9694 wt%/day which is less than the 1.2 wt%/day limit specified in the Technical Specification.

TEXT Energy Industry Identification System (EIIS) codes are identified in the text as [XX]

A summary of the repairs, adjustments, and final leak rate testing results for volumes which exceeded Station guidelines for leakage along with any modifications made to containment pathways are listed below:

2-220-58B "B" Feedwater Line Inboard Check Valve 2-220-58B was disassembled and inspected under Work Request D10038. An inspection of the valve internals revealed approximately 0.003" clearance between the valve's hinge pins and the bushings. The disc/seat assembly to valve body mating surface showed indications of leakage past the "O" ring seal in the area between 120 and 150 degrees. Additionally, scratches were identified in the pressure seal ring on the valve body. The valve's disc/seat assembly was replaced since the hinge pin to bushing clearances were out of specification and a new "O" ring was installed. The scratches in the valve's pressure seal ring area were bored out and the surface built up and machined to the correct specifications. An as-left LLRT was performed which yielded a leakage rate of 3.52 scfh. LLRT records dating back to 1983 indicate two failures. Future corrective actions to prevent leakage past the disc/seat assembly and the valve body have been approved by the Station Modification Review Committee and will be in place for the next refuel outage. The corrective actions include machining the valve body to accept a metallic gasket, which will replace the "O" ring seal, and additional hold down hardware for the disc/seat assembly.

2-220-62B "B" Feedwater Line Outboard Check Valve 2-220-62B was disassembled and inspected under Work Request D99084. An inspection of the valve internals revealed rust residue on the "O" ring, which is designed to seal between the disc/seat assembly and the valve body, and on the machined surface of the valve body which mates with the seal. This rust residue is indicative of leakage past the "O" ring seal. The seat/disc assembly was removed and bench tested to verify the integrity of the seating surfaces. An LLRT was performed and yielded a leakage rate of 0.50 scfh. The disc/seat assembly was reinstalled into the valve body along with a new "O" ring seal. An as-left LLRT was performed which yielded leakage of 2.14 scfh. LLRT records dating back to 1983 indicate one other failure of this valve. Future corrective actions to prevent leakage past the disc/seat assembly and the valve body have been approved by the Station Modification Review Committee and will be in place for the next refuel outage. The corrective actions include machining the valve body to accept a metallic gasket, which replaces the "O" ring seal, and additional hold down hardware for the disc/seat assembly.

2-1001-1A
2-1001-1B Shutdown Cooling Inlet Header Isolation Valve 2-1001-1A was disassembled, inspected and repaired under Work Request D10051. The inspection of the valve's internals revealed poor contact between the valve seat and disc. The valve seats were lapped and a new disc was machined for a proper fit since the original disc was too small after the required machining. Shutdown Cooling Inlet Header Isolation Valve 2-1001-1B was disassembled and inspected under Work Request D10050. An inspection of the valve internals also revealed poor contact in the valve's seating area. The valve seats were lapped and the disc machined to obtain proper contact. An as-left LLRT was performed which yielded a leakage rate of 27.40 scfh. LLRT records dating back to 1983 indicate one failure for valve 2-1001-1A and two failures for valve 2-1001-1B. Future corrective action for these valves is to either replace the valves during the next refuel outage with an Anchor Darling parallel disc style valve (This action has already been approved by the Station Modification Review Committee) or repair the

valve's seating surface and wedge in order to obtain an acceptable leak tightness.

2-1299-004 Reactor Water Cleanup Test Connection and Drain Valves 2-1299-4 and 2-1299-5 were removed from the piping under Work Request D16368 and bench tested after troubleshooting of the test volume indicated potential leakage through these valves. An LLRT was performed on the valves which indicated a leakage rate of approximately 60 scfh. New valves were installed and an as-left LLRT of the test volume yielded a leakage rate of 5.21 scfh.

2-1501-23A LPCI Loop "A" Injection Test Connection Stop Valve 2-1501-23A exhibited significant packing leakage, 25.7 scfh, during the as-found LLRT for valves 2-1501-22A, 2-1501-26A, and 2-1001-5A. Work Request D15937 was written to repack the valve in order to reduce this leakage. During the repacking of valve 2-1501-23A it was observed that the stem was bent in the area of the packing gland. Work Request D16261 was then written to replace the valve. The valve was replaced and an as-left LLRT was performed which yielded a leakage rate of 4.48 scfh for the test volume. LLRT records dating back to 1983 indicate no previous failures for this valve.

2-1501-25B LPCI Loop "B" Injection Check Valve 2-1501-25B was disassembled and inspected under Work Request D15952. An inspection of the valve internals revealed debris located in the disc/seat contact area. In addition, a "blue check" of the valve's seating area revealed incomplete contact along a portion of the seating surface. The valve seat and disc were lapped until an acceptable "blue check" was obtained. The valve was reassembled and an as-left LLRT was performed which yielded a leakage rate of 4.32 scfh. LLRT data dating back to 1983 indicates no previous valve failures.

2-1501-27B LPCI Loop "B" Drywell Spray Outboard Isolation Valve 2-1501-27B was disassembled and inspected under Work Request D10057. The valve's disc to seat contact was found to be unacceptable after a "blue check" was performed on the seating surfaces. The valve's seats were lapped and the disc was stripped of its seating material and overlaid with Stellite. Machining of the valve disc was then performed to obtain acceptable seat to disc contact. An as-left LLRT was performed which yielded a leakage rate of 1.01 scfh. LLRT records dating back to 1983 indicate no previous failures for this valve.

2-1501-28B LPCI Loop "B" Drywell Spray Inboard Isolation Valve 2-1501-28B was disassembled and inspected under Work Request D10056. Like valve 2-1501-27B, the valve's disc to seat contact was unacceptable when a "blue check" was performed. The valve's seats were removed and replaced with a new set. The valve disc was stripped of its surface material and overlaid with Stellite. The disc was then machined to provide proper seat to disc contact. An as-left LLRT was performed which yielded a leakage rate of 1.01 scfh. LLRT records dating back to 1983 indicate no previous failures for this valve.

2-1601-31B Torus To Reactor Building Vacuum Breaker 2-1601-31B was inspected and repaired under Work Request D07787. The inspection revealed the seating surfaces to be in good condition; however, it was noted during the cycling of the vacuum breaker that some times the valve would not return to the fully closed position. The problem was attributed to the valve's counterweights being out of adjustment. The valve's counterweight was adjusted to obtain repeated closings and a torque test was performed to ensure that the vacuum breaker opens at the correct differential pressure. Because this vacuum breaker must open under accident conditions of 0.5 psid and also be leak tight under normal conditions, calculations were performed to ensure that the valve's counterweights were at the correct position with respect to the valve disk's pivot point. These calculations determined that the closing moment due to the weight of the valve's disk was nearly in balance with the opening torque provided by the counterweights. Therefore, if the valve was not manually cycled firmly, the valve may hang up. Additional evaluation of the valve's counterweight position will be performed to determine if changes will be required to increase confidence in the valve's ability to close and remain leak tight. An as-left LLRT was performed which yielded a leakage rate of 0.10 scfh. LLRT records dating back to 1983 indicate no previous valve failures.

2-1601-55

Drywell Vent Valve 2-1601-55 was disassembled and inspected under Work Request D13780. An inspection of the valve revealed that the soft seat ring was cracked. A new seat ring was installed in the valve and the valve's operator was rebuilt. An as-left LLRT, performed on this valve and other valves in the test volume, yielded a leakage rate of 0.67 scfh. LLRT records dating back to 1983 indicate no previous failures of this valve.

2-2001-5
2-2001-6

Drywell Equipment Drain Sump Valves 2-2001-5 and 2-2001-6 were replaced with a diaphragm type valve under a Station modification. Chronic problems with the old inverted solid wedge style valves were attributed to grit, pumped from the sump, scoring the valve stem and seating surfaces. The new diaphragm valves are expected to be less susceptible to problems caused from grit entrained in water being pumped from the sumps. An as-left LLRT yielded a leakage rate of 0.10 scfh. LLRT records dating back to 1983 indicate one previous failure for each valve; however, various packing and timing problems have been associated with these valves.

2-2001-105
2-2001-106

Drywell Floor Drain Sump Valves 2-2001-105 and 2-2001-106 were also replaced with a diaphragm type valve under a Station modification. Chronic problems with the old inverted solid wedge style valves were attributed to grit, pumped from the sump, scoring the valve stem and seating surfaces. The new diaphragm valves are expected to be less susceptible to problems caused from grit entrained in water being pumped from the sumps. An as-left LLRT was performed which yielded a leakage rate of 0.10 scfh. LLRT records dating back to 1983 indicates one previous failure for valve 2-2001-106; likewise, various packing and timing problems have been associated with these valves.

2-2301-34
2-2301-71

HPCI Drain Pot Drain To Torus Check Valve 2-2301-34 and HPCI Drain Pot Drain To Torus Stop Check Valve 2-2301-71 were disassembled under Work Requests D14043 and D15415 respectively. Valve 2-2301-34 was disassembled and an inspection of the valve's internals was performed. A "blue check" of the valve seats revealed good contact. The valve internals were cleaned and the valve was reassembled. Valve 2-2301-71 is not an Appendix J isolation valve; however, it is used as a boundary isolation valve during the LLRT for the 2-2301-34 valve. Troubleshooting of the 2-2301-34 valve identified the majority of the 32.54 scfh of leakage past the 2301-71 valve. This valve was removed from the line and replaced with a like for like valve since a "blue check" of the valve's seating surfaces revealed poor contact on one side. This damage is thought to be caused by excessive torquing of the valve's handwheel. An as-left LLRT was

TEXT Energy Industry Identification System (EIIS) codes are identified in the text as [XX]

performed which yielded a leakage rate of 14.17 scfh. LLRT records dating back to 1983 indicate one previous failure for each valve.

2-2599-23B

ACAD Drywell Air Purge Inlet Check Valve 2-2599-23B was disassembled and inspected under Work Request D15771. An inspection of the valve internals revealed pitting, caused by corrosion, on the piston and its guide. In addition, black piping corrosion products were found on the seat and bottom of the valve. The valve internals were cleaned and the valve piston and seat were lapped to ensure proper contact. The piston guide was also cleaned and a final "blue check" was performed. The "blue check" was acceptable and the valve was reassembled. An as-left LLRT was performed which yielded a leakage rate of 1.10 scfh. LLRT records dating back to 1983 indicate two previous failures. The cause for the corrosion products found in the valve internals has been attributed to moisture in the piping system.

2-3703

RBCCW Return From the Drywell Outboard Isolation Valve 2-3703 was inspected under Work Request D10060. An inspection of the valve internals revealed marginal seat to disc contact. The valve's disc and seats were lapped to clean and true the surfaces. A final "blue check" was performed and the valve was reassembled. An as-left LLRT yielded a leakage rate of 8.16 scfh. LLRT records dating back to 1983 indicate no previous failures.

2-4799-514

TIP Purge Check Valve 2-4799-514 was replaced with a suitable valve under Work Request D16400. LLRT records dating back to 1983 indicate no previous failures for this valve.

2-4799-530

Drywell Pneumatic Inlet Check Valve To PCV 2-4722 was replaced under Work Request D18155. The original check valve was a swing-type check valve and the replacement valve was an in-line wafer-type check valve with a Viton seat. This valve design was chosen to better seal against low pressure air similar to what would be experienced during post-LOCA conditions and LLRT Tests. An as-left LLRT was performed which yielded a leakage of 1.75 scfh. LLRT records dating back to 1983 indicate one previous failure.

2-8501-1B

Drywell Air Sample Valve 2-8501-1B was evaluated and adjusted under Work Request D15717. The valve's stroke length was first checked and the closing spring force was adjusted to the appropriate setting. The cause of the failure has been attributed to improper valve stroke which can be caused through normal wear and cycling. An as-left LLRT was performed which yielded a leakage rate of 0.10 scfh was obtained. LLRT records dating back to 1983 indicate no previous failures of this valve.

Electrical Penetration X-203A

Electrical penetration X-203A was repaired under Work Request D15716. Leakage out of this penetration was reduced from 18.41 scfh to 10.39 scfh after being repaired with Loctite 286 sealant. LLRT records dating back to 1983 indicate no previous failures for this penetration.

Electrical Penetration X-202W

Electrical penetration X-202W was repaired under Work Request D12601. Leakage out of this penetration was reduced from 55.89 scfh to 1.65 scfh after being repaired with Loctite 286 sealant. LLRT records dating back to 1983 indicate two previous failures for this penetration.

Penetrations X-113,X-125

Bellows penetrations X-113, X-125, X-149A, and X-149B were replaced with a new design which provides an increased

X-149,X-149B — space between the plies. This allows the total surface of the bellows to be challenged during Type B Local Leak Rate Testing.

Penetration X-144 — The CRD return line from the reactor, 2-0308-4"-A, was cut and capped during the D2R13 refuel outage. This planned modification eliminates valves 2-301-95 and 2-301-98 as 10 CFR 50, Appendix J primary containment isolation valves. In addition, bellows penetration X-144 was sealed from within the drywell since the CRD return line was cut and capped. This eliminates Bellows X-144 as an Appendix J Type B testable volume.

F. PREVIOUS OCCURRENCES:

LER/Docket Numbers	Title
90-009/0500237	Type B and C Primary Containment Local Leek Rate Test Requirements Exceeded Due to Leaking Isolation Valves.

G. COMPONENT FAILURE DATA:

Manufacturer	Nomenclature	Model Number	Mfg. Part Number
Limitorque Corp.	Reactor Vessel Head Cooling Inlet Isolation Valve 2-205-2-4 Actuator	SMB-000	N/A

An industry-wide data base search revealed 638 failures for the Limitorque Model SMB-000 motor-operated valve actuator.

Manufacturer	Nomenclature	Model Number	Mfg. Part Number
Crane Valve Co.	"B" Feedwater Line Inboard Check Valve 2-220-58B	973	N/A
	"B" Feedwater Line Outboard Check Valve 2-220-62B		

An industry-wide data base search revealed 91 failures for the Crane Model 973 tilting disc check valve. Twenty six failures were attributed to failures of the "O" ring between the valve body and seat ring assembly and thirteen failures were due to normal wear to the tilting disc hinge pin and bushings. Most of the failures were in high temperature, high flow feedwater systems.

Manufacturer	Nomenclature	Model Number	Mfg. Part Number
Crane Valve Co.	Shutdown Cooling Inlet Header Isolation Valve 2-1001-1A	783-UL	N/A
	Shutdown Cooling Inlet Header Isolation Valve 2-1001-1B		

An industry-wide data base search revealed 33 failures of Crane Model 783 gate valves due to wear and poor seat condition. Two of those failures were to valves in the Shutdown Cooling System.

Manufacturer	Nomenclature	Model Number	Mfg. Part Number
Atwood & Morrill Co. Inc.	LPCI Loop "B" Injection Check Valve 2-1501-25B	20746-H	N/A

An industry-wide data base search revealed 3 failures for the Atwood & Morrill Model 20746-H testable swing check valve. One failure was due to seat deformation from the system environmental conditions.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6) Year	Sequential Number	Revision Number	Page (3)
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TEXT Energy Industry Identification System (EIIS) codes are identified in the text as [XX]

Manufacturer	Nomenclature	Model Number	Mfg. Part Number
Crane Valve Co.	LPCI Loop "B" Drywell Spray Outboard Isolation Valve 2-1501-27B	33-½XR	N/A
	LPCI Loop "B" Drywell Spray Inboard Isolation Valve 2-1501-28B		

An industry-wide data base search revealed 58 failures for the Crane Model 33-½XR gate valve.

Atwood & Morrill Co. Inc.	Torus To Reactor Building Vacuum Breaker 2-1601-31B	20741	N/A

An industry-wide data base search revealed 6 failures for the Atwood & Morrill Model 20741 testable swing check valve. These failures were not due to misalignment of the counter weights.

Henry Pratt Co	Drywell/Torus N_2 Purge and Pump Back Compressor Suction Valve 2-1601-55	2F II	N/A

An industry-wide data base search revealed 114 failures of Pratt Co. Model 2FII butterfly valves due to wear and poor seat condition. Nineteen of the failures were in air systems.

Crane Valve Co.	Drywell Equipment Drain Sump Valves 2-2001-5 & 2-2001-6	47-½LU	N/A
	Drywell Floor Drain Sump Valves 2-2001-105 & 2-2001-106		

An industry-wide data base search revealed 45 failures of Crane Model 47-½LU gate valves due to wear and poor seat conditions. Twelve failures were due to grit from drain systems.

Rockwell Edwards	HPCI Drain Pot to Suppression Chamber Stop Check Valve 2-2301-71	8686Y	N/A

An industry-wide data base search revealed 0 failures of the Rockwell Edwards Model 8686Y lift-type check valve.

Hancock	ACAD Drywell Air Purge Inlet Header Check Valve 2-2599-23B	5580W	N/A

An industry-wide data base search revealed 33 failures for the Hancock Model 5580W lift-type check valve. Sixteen failures were attributed to debris and corrosion products fouling valve internals and not allowing the valve to close.

Crane Valve Co.	Reactor Building Closed Cooling Water Return From Drywell Outboard Isolation Valve 2-3703	47-½XR	N/A

An industry-wide data base search revealed 45 failures of Crane Model 47-½XR gate valves due to wear and poor seat conditions. Ten failures were due to wear in component cooling systems.

Parker Fluidpower	TIP Purge Check Valve 2-4799-514	C400S	N/A

An industry-wide data base search was unable to find any reference to vendor Parker Fluidpower.

Crane Valve Co.	Drywell Pneumatic Inlet Check Valve 2-4799-530	346112	N/A

An industry-wide data base search revealed 0 failures of the Crane Model 346112 swing-type check valve.

Manufacturer	Nomenclature	Model Number	Mfg. Part Number
Skinner Valve	Drywell Air Sample Valve 2-8501-1B	CV-10 810	N/A

An industry-wide data base search revealed 5 failures of the Skinner Model CV-10 810 gate valve.