



Commonwealth Edison

Dresden Nuclear Power Station

R.R. #1

Morris, Illinois 60450

Telephone 815/942-2920

July 11, 1991

EDE LTR #91-325

U.S. Nuclear Regulatory Commission

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Licensee Event Report #90-009-1, Docket #050237 is being submitted as required by Technical Specification 6.6, NUREG 1022 and 10 CFR 50.73(a)(2)(i). This revised report provides an update on corrective actions taken regarding this event, and reports actions taken following leakage of a primary containment bellows penetration at the Quad Cities site.

E. D. Eenigenburg

Station Manager

Dresden Nuclear Power Station

EDE/ade

Enclosure

cc: A. Bert Davis, Regional Administrator, Region III

File/NRC

File/Numerical

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LICENSEE EVENT REPORT (LER)

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Facility Name (1) Dresden Nuclear Power Station, Unit 2	Docket Number (2) 0 15 10 10 10 12 13 17	Page (3) 1 of 1
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Title (4)
Type B and C Primary Containment Local Leak Rate Test Requirements Exceeded Due to Leaking Isolation Valves

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	9	23	9	0	9	0	0	1	1	0	1	6	9	0	N/A	

OPERATING MODE (9) N

POWER LEVEL (10) 0 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)

<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)
<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> Other (Specify in Abstract below and in Text)
<input type="checkbox"/> 20.405(a)(1)(iii)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
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LICENSEE CONTACT FOR THIS LER (12)

Name J. Geiger, Technical Staff Engineer	Ext. 2610	TELEPHONE NUMBER AREA CODE 8 1 5 9 4 2 - 12 19 12 10
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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	S B	X 1 15 IV	C 16 16 15	Y					
X	B M	X 1 15 IV	C 16 16 15	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 September 23, 1990, with Unit 2 in a refuel outage during performance of Main Steam Isolation Valve (MSIV) Local Leak Rate Testing (LLRT), the A, C, and D main steam line volumes were found to be leaking in excess of the Technical Specification limit of 11.5 SCFH. Further diagnostic testing indicated that MSIVs 2-203-1A, 1D, and 2C were the leaking valves. The cause of the leakage has been determined to be wear of the valve seating surfaces. On September 25, 1990, while performing further LLRTs, outboard primary containment drywell spray valve 2-1501-27A leaked an undetermined amount. This caused the as-found total type B and C leakage rate to be in excess of the Technical Specification limit. After flushing of the valve seat, the leak rate was reduced to a minimal level. The safety significance for both events was minimal since in each case the in line isolation valves were not observed to be leaking. Of the remaining type B and C tests which demonstrated unsatisfactory leakages, the actual through leakage was determined to be minimal. On April 2, 1991, while Unit 2 was shutdown for a short maintenance outage, six drywell bellows penetrations were inspected for cracks. Of the six, through wall cracks were found at penetration X144. However, the safety significance is considered minimal due to the satisfactory performance of these bellows during the recent Integrated Leak Rate Test (ILRT). A previous event involving the as found type B and C test results exceeding the 0.6 La limit is outlined in LER #88-004 on Docket #050249.

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On September 25, 1990, with Unit 2 still in the refuel outage, while performing DTS 1600-1, Local Leak Rate Testing (LLRT) of Primary Containment Isolation Valves, on the Low Pressure Coolant Injection (LPCI) [BM] primary containment drywell spray valves 2-1501-27A, 28A, it was discovered that the outboard isolation valve (2-1501-27A) leaked an undetermined amount. The LLRT on these valves is performed by pressurizing the volume of piping between valves 2-1501-27A and 28A to 48 psig and then monitoring the makeup flow required to maintain that pressure. In this case, however, the testing personnel were unable to pressurize the piping volume to the required test pressure. Consequently, the as-found Type B and C leak rate for this volume was documented as undetermined. This resulted in the total as found Type B and C leakage rate exceeding the Technical Specification 3.7.A.2.b.(2)(a) limit of 488.452 SCFH. The total Type B and C leakage rate is determined utilizing the maximum pathway methodology. This methodology is based on the assumption that the better valve of a dual valve set is unable to perform its containment isolation function.

Inspections of the upstream and downstream vents verified that outboard valve 2-1501-27A was the leaking valve. Further investigation suggested the cause of leakage was due to a build up of foreign material in the valve seat area. Initial troubleshooting involved flushing the valve thoroughly with clean demineralized water. Subsequent to this, a retest was performed which yielded a satisfactory leakage rate of 0.4 SCFH. As the inboard valve was not disturbed before the retest, it was clearly intact in the as-found condition.

In addition to the MSIVs and the LPCI isolation valve 2-1501-27A, ten type C and two type B tests required repairs and adjustments due to unsatisfactory leakage rates. These test volumes and their corresponding "as found" leakage rates are listed below:

Test Volume	System	"As Found" Type B and C	"As Found" Type A
		(Maximum Pathway) Leakage Rate (scfh)	(Minimum Pathway) Leakage Rate (scfh)
2-205-2-7	Head Spray	undetermined	1.0
2-220-57A, 58A	Feedwater [SJ]	51.2	27.9
2-220-57B, 62B	Feedwater	undetermined	0.3
2-301-160A, 161A	Scram Discharge Volume [AA]	73.0	10.3
2-1001-1A, 1B, 2A, 2B, 2C	Shutdown Cooling	232.6	30.6
2-1301-3, 4	Isolation Condenser [BL]	114.9	0.1
2-1501-18B, 19B	LPCI [B0]	78.4	7.3
2-2001-5, 6	Drywell Equipment Drain [WK]	35.0	17.5
2-2301-34, 71	High Pressure Coolant Injection (HPCI) [BJ]	34.6	5.1

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2-3702, 3799-126	Reactor Building Closed Cooling	131.1	12.5
	Water (RBCCW) [CC]		
Electrical Penetration - X202BB		22.0	11.0
Drywell Bellows - X113		50.0	0.0

On April 2, 1991, with Unit 2 shutdown for a short maintenance outage, while inspecting the bellows at drywell penetration X144, through wall cracks were identified on the exterior bellows ply. (During a recent Integrated Leak Rate Test (ILRT) at Quad Cities Nuclear Power Station, a significant leak had been discovered through the bellows of a similar drywell penetration. The ensuing inspections and investigations revealed that the normal LLRT methodology for these bellows was not representative of actual leakage.) As a result, the Dresden inspections were initiated. Six of the twenty four testable Unit 2 bellows were chosen for inspection. During the previous Unit 2 refuel outage, 8 of the 24 bellows possessed a positive leakage rate. The inspection lot of six was chosen from these eight based on accessibility and dose. Only the bellows at penetration X144 contained any indications of cracks.

The initial indications on bellows X144 were identified through a Penetrant Test (PT). Following the PT examination the bellows were pressurized and coated with a soap bubble solution to check for through leakage. This inspection revealed additional indications undetectable by PT. All the indications were then accurately documented on a baseline inspection map and sent to the Production Services Department for evaluation. The bellows were also inspected with helium leak detection equipment. The results of this inspection revealed leakage past both the inboard and outboard bellows plies.

C. CAUSE OF EVENT:

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

The unsatisfactory leakage from valve 2-1501-27A has been determined to be caused by an accumulation of foreign material in the valve seat. After flushing the valve seat with pressurized clean demineralized water, the leakage rate was significantly reduced. The cause of failure was initially suggested by the black mud like appearance of the water discharged from the volume of piping prior to the LLRT. Additionally, the fact that the previous two tests on this volume (performed on July 20, 1990 and November 22, 1988) yielded zero leakage further supports this conclusion.

A summary table of the root causes and corresponding corrective actions for these valves and the remaining type B and C tests which required repairs and adjustments is contained in section E of this report.

The root cause of the indications found on bellows X144 has been attributed to Transgranular Stress Corrosion Cracking (TGSCC). The bellows at Quad Cities station which was leaking was examined by the Systems Material Analysis Department (SMAD) metallurgists who concluded that the cracking mechanism was TGSCC. In addition, on two other occasions metallurgical examinations have been performed to evaluate bellows leakage. In each of these investigations the leakage was attributed to TGSCC. Thus, although the bellows at X144 has not yet been metallurgically examined, the evidence present suggests TGSCC.

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D. SAFETY ANALYSIS OF EVENT:

The consequences of the type B and C test results described within this report are minimal because in all of the above mentioned failures (2-203-1A, 2-203-1D, 2-203-2C, 2-1501-27A, and all the valves and penetrations noted in the table in section B of this report) the in line isolation valves were observed to have satisfactory integrity. Upon completion of all the "as found" type B and C testing, the total "as found" minimum pathway (through) leakage was calculated to be 241.8 scfh which is well within the Technical Specification limit of 488 scfh (0.6 La).

The safety significance of the through wall cracks found on penetration X144 is also minimal. Sufficient margin exists in the results of the recent Unit 2 ILRT which was completed in December, 1990. The "as left" ILRT resulted in a Primary Containment leakage rate of 0.8128 weight %/day which provides a margin of 0.3782 weight %/day (199 scfh) from the Technical Specification limit of 1.2 weight %/day. It is believed that these cracks were present during the ILRT and thus accounted for accordingly in the "as left" results. In addition, an engineering analysis was performed to conservatively predict the potential leakage from the bellows at X144. This analysis assumed that in addition to the indications found on the bellows, two-hundred other subsurface flaws exist that would pinhole immediately after unit startup and grow to a length of 3/8" over the remainder of the operating cycle; and, that the existing 7/16" crack grows to a length of 5/8". The combined effect of these cracks was calculated to produce a leakage rate less than 1/2 the existing margin of the "as left" ILRT results.

It should be noted that performance of the type A ILRT in December, 1990 identified a significant leak from the inboard flange of valve Drywell to Torus Vacuum Breaker [BF] 2-1601-20A. This valve was tested during the outage as part of the Appendix J type C testing program; however, this test only challenges the valve seats and the outboard valve flange. Thus, the leak on the inboard flange was not found during the type C test. The incident involving the type A test failure was reported by LER #90-018 on Docket #050237.

E. CORRECTIVE ACTIONS:

The table below summarizes the root causes and the corresponding corrective actions performed on the MSIVs 2-203-1A, 1D, 2C, valve 2-1501-27A, and the remainder of the type B and C tests which required repairs and adjustments due to an excessive leakage rate.

Test Volume	Cause and Corrective Actions
2-1501-27A, 28A	The LPCI Containment Spray line containing these two valves was hydrolazed under the direction of WR D80092. The final LLRT was performed on December 20, 1991, resulting with a leakage rate of 0.1 SCFH.
2-203-1A, 2A	MSIV 2-203-1A was repaired under the direction of WR D95360. The inspection of the valve internals revealed cuts on seating area of the main disc. The valve internals were rebuilt utilizing a new main disc, pilot valve disc, pilot valve seat, valve upper guide liner, and new valve stem. The valve was reassembled and the final MSIV LLRT (dry) performed on December 16, 1990 yielding a leakage rate of 0.1 SCFH. A review of the LLRT history for this valves revealed that this was the first time it failed an LLRT.

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Test Volume

Cause and Corrective Actions

2-203-1D, 2D

MSIV 2-203-1D was repaired under the direction of WR D95361. The inspection of the main valve internals found the pilot valve disc worn with an approximate 1/16" groove across the seating area. The valve internals were rebuilt utilizing a new pilot valve disc, upper guide liner, and valve stem. The valve was reassembled and the final MSIV LLRT (dry) performed on December 4, 1990 yielding a leakage rate of 4.0 SCFH. A review of the LLRT history for these valves revealed that the 2-203-1D failed during the previous refuel cycle due to wear on the pilot disc and seat. Prior to that, this valve had not failed since 1974.

2-203-1C, 2C

MSIV 2-203-2C was repaired under the direction of WR D95359. The inspection of the valve internals revealed steam cuts and wear on the main disc and seat. The valve internals were rebuilt utilizing a new main disc, pilot valve disc, and pilot valve seat. The main body seat ring was also lapped. The valve was reassembled and the final MSIV LLRT (wet) performed on December 9, 1990 yielding a leakage rate of 3.2 SCFH. A review of the LLRT history revealed that this valve has not failed an LLRT since 1983. An industry-wide data base search regarding leak rate testing failures of these type of MSIVs yielded 40 failures. Repairs included seating surface machining and packing adjustment/replacement.

2-205-2-7

Head Spray check valve 2-205-2-7 was repaired under the direction of WR D92531. Inspection of the valve internals revealed minor corrosion and debris on the valve seats. However, after the valve seats were cleaned, the valve still failed an LLRT bench test. The valve seating surfaces were then lapped which resulted in a successful bench test. The final LLRT was performed on December 10, 1990 yielding a satisfactory leakage rate of 7.9 SCFH. A review of the LLRT history revealed that this valve has not failed an LLRT since 1983 (refuel outage D2R8). An industry-wide data base search regarding this type of valve revealed no LLRT related failures.

2-220-57A, 58A

Feedwater check valve 2-220-58A was repaired under the direction of WR D95269. Inspection of the valve internals revealed no major problems with the disc-seat assembly. The body seat O-ring was found to be deteriorated but appeared to be functional. The disc also appeared to operate satisfactorily, although an as found blue check was not performed. The valve was reassembled using a new disc-seat assembly and new O-ring. The final LLRT was performed on December 4, 1990 yielding a satisfactory leakage rate of 1.8 SCFH. A review of the LLRT history revealed that this valve has not failed an LLRT since 1983 (refuel outage D2R8).

2-220-57B, 62B

Feedwater check valve 2-220-62B was repaired under the direction of WR D81758. The initial inspection revealed the disc stuck in the open position. Excessive force was required to close and open the valve disc. It is suspected that this binding was caused by hinge pin bushings which were not properly deburred. The station maintenance work package data file for feedwater check valve work has been updated to include a step ensuring that the bushings are properly deburred after line-boring. The valve was reassembled using a new disc-seat assembly and O-ring. The final LLRT was performed on November 26, 1990 yielding a satisfactory leakage rate of 4.9 SCFH. A review of the LLRT history revealed that this valve was found stuck open during the previous refuel outage (D2R11). The corrective actions involved replacing the disc-seat assembly. Prior to that, the valve had not failed since before 1979. An industry-wide data base search regarding this type of valve (identical to 2-220-58A) revealed 28 failures, 5 of which were LLRT related. Of the five LLRT failures, the root causes were worn out disc-seat assemblies and dirty valve internals. Corrective actions involved either replacing or lapping the disc-seat assembly.

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Test Volume Cause and Corrective Actions

2-301-160A, 161A Preliminary inspections of Scram Discharge Volume Vent valve 2-301-161A suggested that the valve was not completely closing. Initial troubleshooting under the direction of WR D95902 involved adjusting the valve stroke length. The subsequent LLRT performed on November 3, 1990, yielded a satisfactory leakage rate of 10.3 SCFH. A review of the LLRT history for this valve revealed that this was its first failure. An industry-wide data base search regarding this type of valve revealed no additional failures

2-1001-1A, 1B Shutdown Cooling Suction valve 2-1001-1A was repaired under the direction of WR D95639. The initial inspection revealed that the valve seats and wedge were washed out and pitted. The valve seats and a new wedge were lapped until a satisfactory blue check was achieved. The valve was reassembled with a live load packing arrangement and a rebuilt operator.

2-1001-1B Shutdown Cooling Suction valve 2-1001-1B was repaired under the direction of WR D95638. The valve seats and wedge were also washed out and pitted similar to the as found condition of valve 2-1001-1A. The valve seats and the original wedge were lapped until a satisfactory blue check was achieved. This valve was also reassembled with live load packing and a rebuilt operator. The final LLRT on this test volume was performed on December 9, 1990 yielding a leakage rate of 30.6 SCFH. A review of the LLRT history for these two valves revealed a previous failure in 1986 (refuel outage D2R10). The corrective actions for that failure involved lapping the valve seats and disc.

2-1301-3, 4 Isolation Condenser Return valve 2-1301-3 was repaired under the direction of WR D95268. Inspections of the valve internals revealed the valve seat and disc to be badly eroded. The disc was then stripped of its hardened surface, and then resurfaced and machined. The seats were then lapped to the disc. After achieving a satisfactory blue check, the valve was reassembled. The final LLRT was performed on December 15, 1990, yielding a satisfactory leakage rate of 0.1 SCFH. A review of the LLRT history for this valve revealed that it has not failed since prior to 1979. An industry-wide data base search for this valve and valves 2-1001-1A and 1B revealed two additional failures, although neither involved leakage past the valve seat.

2-1501-18B, 19B During the "as found" LLRT on LPCI Torus Spray valves 2-1501-18B and 19B, an inspection of the vent upstream of valve 2-1501-18B revealed that this was the suspect valve. When the conditions were made available, the seating area of valve 2-1501-18B was flushed with pressurized clean demineralized water. The subsequent LLRT performed on November 2, 1990 yielded a satisfactory leakage rate of 7.2 SCFH. An industry-wide data base search for both valves, 2-1501-18B and 19B, revealed no failures involving this type of seat leakage.

2-2001-5, 6 Drywell Equipment Drain isolation valve 2-2001-6 was repaired under the direction of WR D96190. Inspections of the valve internals revealed no cuts or foreign material on the valve seats or disc. However, during the disassembly process it was noted that the valve packing was too tight. The disc and seat were then satisfactorily blue checked and the valve reassembled with new packing and a rebuilt air operator. After reassembly the valve was stroked several times to ensure no binding.

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Test Volume

Cause and Corrective Actions

Valve 2-2001-5 was repacked under the direction of WR D96191. During the initial LLRT leakage was noted from the valve packing. The final LLRT on this test volume was performed on December 21, 1990 yielding a leakage rate of 20.5 SCFH. A review of the LLRT history for these two valves revealed that they have not failed since prior to 1974. An industry-wide data base search regarding this type of valve revealed one additional failure where the valve was leaking condensate past the valve seat. Inspection of the valve revealed cuts on the seat and disc.

2-2301-34, 71

HPCI Drainpot to Torus valve 2-2301-71 was repaired under the direction of WR D95283. The valve internals were found to be very dirty and rusted. The valve stem was also badly pitted. The valve internals cleaned and the valve seats were lapped. After the valve was repacked and reassembled, a final LLRT was performed yielding a leakage rate of 5.1 SCFH. A review of the LLRT history for this valve revealed that it has not failed an LLRT since prior to 1974. An industry-wide data base search regarding this type of valve revealed an additional LLRT failure due to rust and dirt in the valve internals.

2-3702, 3799-126

RBCCW Supply to Drywell valve 2-3702 was repaired under the direction of WR D95414. The valve seats and disc were found to be rough and in need of lapping. The original disc and seats were lapped and a satisfactory blue check achieved. The valve was reassembled and subsequently tested yielding a leakage rate of 12.5 SCFH. This was the first time that this valve was correctly tested. An industry-wide data search revealed no additional failures.

Electrical Penetration 2028B

Initial troubleshooting into the source of the leakage involved removing the cover inboard and outboard sides of the penetration, pressurizing the penetration, and leak test (using soap bubble solution) the accessible areas. A major portion of the leakage was found coming from the Amphenol connectors and spare cable ends on the inboard side of the penetration. Under the direction of WR D95284, the ends of the spare cables which were leaking were capped using Raychem end seal caps. The subsequent LLRT however yielded a leakage rate of 24 SCFH, which was slightly greater than the initial test results. The leak rate for this penetration has been slowly trending up since 1981. An industry-wide data search revealed 1 LLRT related failure which was due to cracks in the ceramic face of the penetration. The cracks were sealed using an approved material.

The Site Engineering department is currently investigating methods for repairing the leakage on this electrical penetration. This study is also investigating and evaluating the replacement of the penetration with a new type of electrical penetration. Upon completion of this study and after station discussion, the appropriate actions will be taken to reduce the leakage at this electrical penetration (237-200-90-10404).

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Test Volume

Cause and Corrective Actions

Bellows X113

Initial troubleshooting on bellows X113 revealed a pin hole leak on the test line running from the test station to the penetration. The section of the test line which contained the leak was then replaced under the direction of WR D95728. The subsequent LLRT however revealed only a slight decrease in the leak rate to 44 SCFH. A helium leak detection test was then performed per Special Procedure (SP) 91-1-11 to determine the location of the leakage. The containment side of the bellows was tested by pressurizing between the bellows plies with helium, and pulling an air sample from the top of the inside of the penetration pipe sleeve to the helium leak detector. The tests results yielded no sign of leakage past the bellows inner ply. The test equipment was then set up to test the bellows outer ply. An air sample was pulled from underneath the top of the protective cover to the helium leak detector. This tests results yielded a positive indication of leakage past the outer ply. Arrangements are currently being made to replace this bellows during the next Unit 2 refueling outage (refuel outage D2R13) under the direction of Work Request D00671. An industry-wide data search regarding bellows of this type revealed 3 failures; however, all three were due to a leaking test valve.

Bellows X144

The bellows at penetration X144 are scheduled for reinspection during the week of September 29 to October 5, 1991. The results of this inspection will be compared to the baseline inspection and evaluated to determine the present and near future condition of the bellows. If the results of this evaluation determine that the integrity of the bellows is degrading in such a way that containment could be compromised over the the remainder of the operating cycle, then a repair of the bellows will be performed. Work request D00707 has been submitted and is currently being prepared to install a clam shell bellows set over the existing bellows. If the evaluation concludes that an immediate repair is not necessary, then a time interval for the next inspection and evaluation will be determined. (237-200-90-10401)

As a part of the Intergranular Stress Corrosion Cracking (IGSCC) piping reduction program, the line which penetrates Primary Containment at penetration X144 will be cut and capped. As a part of this modification (mod 12-2-91-003) the penetration will be capped inside containment, thus eliminating the bellows as part of the Primary Containment boundary. This modification is scheduled to be installed during the next Unit 2 refuel outage (D2R13) (237-200-90-10402).

Until a valid methodology is developed for performing LLRTs on the bellows, an alternative testing program will be instituted to monitor bellows integrity. The bellows which were previously locally tested will continue to be tested using the invalidated methodology. These tests will be performed only to identify the bellows which exhibit leakage past both bellows piles. These bellows will have their covers removed and a snoop test performed on all the accessible areas of the outer bellows ply. The results of the inspections will be documented and evaluated to determine the condition of the bellows and if immediate corrective actions are required. The Technical Staff will revise DTS 1600-2, LLRT of Drywell Bellows, to govern these actions (237-200-90-10403) prior to the upcoming Unit 3 refuel outage (D3R12).

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F. PREVIOUS OCCURENCES:

LER/Docket Numbers Title

89-009/050249 Local Leak Rate Testing "As Found" Limit Exceeded Due to Excessive Leakage From Primary Containment Isolation Valves

A major contributor to this event was leakage from reactor building [NG] to pressure suppression chamber vacuum breaker check valve 3-1601-31B (redundant isolation valve not leaking). The cause of this failure was attributed to worn hinge pin which caused the valve seat to bind prior to it reaching the fully closed position.

G. COMPONENT FAILURE DATA:

<u>Manufacturer</u>	<u>Nomenclature</u>	<u>Model Number</u>	<u>MFG. Part Number</u>
Crane Co.	Inboard MSIVs 2-203-1A, 1D, 2C	DR34289-20" Y Pattern Globe Valve	N/A
Mission Mfg.	Head Spray Check Valve 2-205-2-7	90 CPF-403	N/A
Crane Valve Co.	Feedwater Check Valve 2-220-58A and 62B	973	N/A
Crane Valve Co.	Shutdown Cooling Suction Valves 2-1001-1A, 1B, and Isolation Condenser Return Valve 2-1301-3	783-UL	N/A
Crane Valve Co.	LPCI Torus Spray Valves 2-1501-18B, and 19B	151-1/2XR/33-1/2U	N/A
Crane Valve Co.	Drywell Equipment Drain Isolation Valve 2-2001-5, and 6	47-1/2XR	N/A
Henry Vogt Machine Co.	Scram Discharge Volume Vent Valve 2-0301-161A	15111-SW	N/A
Rockwell International	HPCI Drainpot to Torus Valve 2-2301-71	868Y	N/A
Crane Valve Co.	RBCCW Supply Valve 2-3702 Valve 2-3702	47-1/2U	N/A
General Electric	Electric Penetration X2028B	N/A	N/A
Pathway Bellows	RWCU Penetration X113	N/A	N/A
Pathway Bellows	CRD Return Penetration X144	N/A	N/A

An industry-wide data base search regarding leak rate testing failures was performed for the above mentioned valves and penetrations. The information obtained from this search is contained within the applicable sections of Section E of this report.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

ATTACHMENT 1

MSIV LEAKAGE RATES

Main Steam Line	"Dry" Test Results (SCFH)	"Wet" Test Results (SCFH)	Outboard MSIV Leakage Rates (2-203-2A,B,C and D) (SCFH)	Inboard MSIV Leakage Rates (2-203-2A, 1B, 1C 1D) (SCFH)
A	33.0	9.5	9.5	23.5
B	6.7	4.0	4.0	2.7
C	17.8	14.2	14.2	3.6
D	39.0	Undetermined*	—*	39.0*

* Unable to properly perform "Wet" test due to excessive water inleakage to the test volume through the inboard MSIV. Consequently, it was believed that the 39.0 SCFH leakage rate was due to the condition of the inboard MSIV; this was confirmed by performing further testing upon completion of repairs.