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

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.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Dresden Nuclear Power Station, Unit 3	05000249	1 OF 14

TITLE (4)
Type B and C Leakage Limit Exceeded Due to Valve 3-1301-3 Not Fully Closed

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 NAME	DOCKET NUMBER
03	12	94	94	-- 009 --	01	07	24	95	None	
									FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	N
POWER LEVEL (10)	000

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

	20.2201(b)		20.2203(a)(3)(i)		50.73(a)(2)(iii)		73.71(b)
	20.2203(a)(1)		20.2203(a)(3)(ii)		50.73(a)(2)(iv)		73.71(c)
	20.2203(a)(2)(i)		20.2203(a)(4)		50.73(a)(2)(v)		OTHER
	20.2203(a)(2)(ii)		50.36(c)(1)		50.73(a)(2)(vii)		(Specify in Abstract below and in Text, NRC Form 366A)
	20.2203(a)(2)(iii)		50.36(c)(2)		50.73(a)(2)(viii)(A)		
	20.2203(a)(2)(iv)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)(B)		
	20.2203(a)(2)(v)		50.73(a)(2)(ii)		50.73(a)(2)(x)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
M. McGivern, Local Leak Rate Test Coordinator Ext. 2526	(815) 942-2920

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	Yes		X	BO	ISV	M358	Yes
X	SJ	ISV	C665	Yes		X	BR	ISV	C665	Yes

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 15 single-spaced typewritten lines) (16)

At approximately 1800, on March 12, 1994, with Unit 3 in Refuel Outage D3R13, the performance of Dresden Technical Surveillance, Local Leak Rate Testing Of Primary Containment Isolation Valves, identified the Isolation Condenser System Condensate Return Throttling Valve 3-1301-3 to be leaking an undetermined amount. This value when added to the existing maximum pathway leakage rate resulted in the maximum pathway leakage rate limit for Type B and C primary containment leakage being exceeded. Trouble-shooting determined that the Motor Operated Valve had not closed completely when stroked for draining the system. After the valve was closed using primary containment isolation logic another LLRT was performed and leakage was determined to be 5.3 scfh. The safety significance of not fully closing the 3-1301-3 valve for the LLRT is considered minimal since when the valve was fully closed with primary containment isolation logic an acceptable LLRT was obtained. This supplement contains the root cause, corrective actions taken and results of an NPRDS search for all test volumes that exceeded administrative local leakage limits during Refuel Outage D3R13.

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

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.

LICENSEE EVENT REPORT (LER)
FAILURE CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Dresden Nuclear Power Station, Unit 3	05000249	94	-- 009 --	01	2 OF 14

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	A585	Yes					
X	WK	ISV	C665	Yes					
X	BJ	ISV	M358	Yes					
X	IP	ISV	R340	Yes					
X	BB	ISV	H037	Yes					
X	IK	ISV	F052	Yes					
X	KC	ISV	C665	Yes					

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 Leakage Limit Exceeded Due to Valve 3-1301-3 Not Fully Closed

A. PLANT CONDITIONS PRIOR TO EVENT:

Unit: 3 Event Date: 03/12/94 Event Time: 1800 hrs

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

Reactor Coolant System Pressure: 0 psig

B. DESCRIPTION OF EVENT:

At approximately 1800, on March 12, 1994, with Unit 3 in Refuel Outage D3R13, the performance of Dresden Technical Surveillance (DTS) 1600-01, Local Leak Rate Testing Of Primary Containment Isolation Valves, identified the Isolation Condenser System [BL] Condensate Return Throttling Valve 3-1301-3 to be leaking an undetermined amount. This value when added to the existing maximum pathway leakage rate resulted in the maximum pathway leakage rate limit 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) being exceeded. The Shift Control Room Engineer (SCRE) was notified of the event.

In order to quantify minimum pathway leakage (leakage through the 3-1301-4), the throttling valve's motor was disengaged and the valve was closed manually. Approximately 8 turns with the handwheel were needed in order to shut the valve. Leakage promptly dropped to 18.81 scfh.

Due to the configuration of the system piping, the 3-1301-3 throttling valve had been opened to facilitate draining of the system prior to performing the Local Leak Rate Test (LLRT). The 3-1301-3 was then closed from the Control Room by its control switch (normal means).

To determine why the valve did not fully close, a Motor Operated Valve (MOV) diagnostic test was performed in order to verify that the torque switch setting had not changed since April 1993 when the valve had been last tested. Thrust values were essentially the same. Upon completion of the diagnostic testing, the valve was closed using the Primary Containment Group V [JM] logic circuitry. The valve was then given another LLRT which resulted in the volume leaking 5.3 scfh.

A Problem Identification Form (PIF) was initiated per Dresden Administrative Procedure (DAP) 02-27, Integrated Reporting Process.

The total as-found minimum pathway leakage (Type A test) for D3R13 was 1.2233 wt%/day which exceeded the Technical Specification limit of 1.2 wt%/day. Calculations have been performed to validate that this leakage did not exceed 10 CFR 100 limits.

A list of additional valves which failed the administrative leakage limit during the outage is provided below. The test volumes which required repairs or adjustments and the as-found maximum pathway and minimum pathway leakage rates are included in the table. The minimum pathway leakage rate reflects the actual leakage which would occur under design basis accident conditions.

VOLUME	SYSTEM	(Maximum Pathway) LEAKAGE RATE	(Minimum Pathway) LEAKAGE RATE
3-205-24 & Flange	Head Cooling	35.3 scfh	29.40 scfh
3-205-27 & Flange	Head Cooling	35.3 scfh	29.40 scfh
3-220-1 & 2	Main Steam Lines Drain	Undetermined	0.10 scfh
3-220-57A & 58A	Feedwater	Undetermined	2.00 scfh
3-220-57B & 58B	Feedwater	Undetermined	18.50 scfh
3-1101-1 & 15	SBLC	21.56 scfh	10.21 scfh
3-1101-1 & 16	SBLC	21.56 scfh	10.21 scfh
3-1501-25A & 26A	LPCI	81.47 scfh	2.90 scfh
3-2001-5 & 6	DW Equip. Drain Sumps	Undetermined	0.10 scfh
3-2301-45 & 74	HPCI	Undetermined	84.00 scfh
3-2499-28B & 29B	CAM	211 scfh	0.10 scfh
3-2599-2A & 23A	ACAD	Undetermined	1.40 scfh
3-2599-2B & 23B	ACAD	18.30 scfh	0.80 scfh
3-9208A	DW Air Sample	Undetermined	17.40 scfh
3-9208B	DW Air Sample	Undetermined	17.40 scfh
3-4327-502	Demin Water	102.12 scfh	102.12 scfh
Elec Pen X-202F	Thermocouples	15.64 scfh	7.82 scfh
Bellows X-111A	Shutdown Cooling	1.42 scfh	0.71 scfh
Bellows X-138	SBLC	0.90 scfh	0.45 scfh
Bellows X-149B	LPCI	5.70 scfh	2.85 scfh

C. 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 closing logic for throttling valve 3-1301-3 is designed such that the control switch could be released (spring return to normal) any time during valve travel, prior to reaching closed torque switch trip, and the valve would stop in the open position. The Operator also has the option of using a Pull-to-Lock feature of the control switch which would maintain the control switch closed signal and the valve would stop on achieving closed torque switch trip. Also, a Primary Containment Group V isolation signal would provide a close signal, regardless of control switch position, and the valve would stop on achieving

closed torque switch trip. See attached Figure 1, MOV 3-1301-3 Simplified Schematic.

The logic for MOV 3-1301-3 includes an interlock (MO/NC) between the open and close contactors that prevents energizing the close contactor (MC) if the open contactor (MO) is energized. When a close signal is received from either the control switch or the Group V isolation logic and the valve is in the full open position (LS/O) or the intermediate open position (LS/IO), the throttling valve will start to go closed, as the close contactor (MC) is energized. Upon energization of the closing contactor (MC), auxiliary contact (MC/NO) will close bringing the close torque switch into the circuit. The close torque switch contacts (CTS) are normally closed and open upon the close torque switch setting being reached (valve full closure).

The Operator's normal action to full close this valve is to move the control switch to the CLOSE position (closing contact CS/CLOSE) and to hold it there until 5 seconds after full close indication is received. The Operator can stop the valve anywhere in its closing cycle by releasing the control switch and allowing it to spring return to the AUTO position (opening contact CS/CLOSE). The valve can be given a close signal again through either the control switch or the Group V isolation logic and the valve would close as long as the valve was in the intermediate position (limit switch contact LS/IO is closed).

The closing logic is designed with close contactor auxiliary contact (MC/NO) in series with the close torque switch (CTS) since this valve has non-locking actuator gears. Once the actuator stops, the gear engagement relaxes slightly, allowing relaxation of the spring pack, thus resulting in reclosure of the close torque switch contact (CTS). The close contactor auxiliary contact (MC/NO) prevents anti-hammering of the valve by opening on initial deenergization of the close contactor (MC) and eliminating circuit continuity through the close torque switch (CTS) despite its reclosure.

As with any MOV, when the close signal is removed, the valve momentarily continues to move in the close direction due to close contactor drop out time and MOV inertia. For this valve, this creates a condition in which the control switch could be released while the valve is in the intermediate position (LS/IO closed) and the valve could coast into the closed indication region (LS/IO open) but not be fully seated (achieve close torque switch trip). In order to fully seat the valve, the valve would first have to be opened to at least the intermediate position and then reclosed. This condition has been recognized and is explained to the Operators in step F.9 of Dresden Operating Surveillance DOS 1300-3, Manual Operation of the Isolation Condenser:

> IF MO 2(3)-1301-3, RX INLET ISOL valve is determined to be NOT full closed, AND only the CLOSE indication is lit, THEN the valve must be reopened to obtain a dual OR OPEN indication before an attempt to close the valve can be made.

The Operators are also instructed to hold the control switch in the closed position beyond full close indication to ensure valve full closure in DOS 1300-3, step F.8:

> When closing the MO 2(3)-1301-3, RX INLET ISOL valve the control switch should be held in the CLOSE position for a minimum of five (5) seconds to ensure full closure.

MOV 3-1301-3 is a 14 inch gate valve that is set for a total stroke of approximately 1-3/4 inches. The stroke time of the valve is about six seconds. The LLRT volume for the Isolation Condenser condensate return line includes the outboard isolation MOV, 3-1301-3, and the inboard isolation MOV, 3-1301-4. The 3-1301-4 is located at an elevation lower than the 3-1301-3, and a drain valve is located adjacent to the 3-1301-4 to support volume draining. In order to perform the LLRT the 3-1301-3 was cycled several times to support draining of the system. The Operator was instructed to close the 3-1301-3 valve for the LLRT and he proceeded to hold the control switch in the closed position and continued that for at least 5 seconds after receipt of full closed indication. The exact root cause for this event is unknown but it is speculated that the control switch was engaged for valve closure but then was unknowingly relaxed prior to reaching full closure (torque switch trip), but the valve travelled far enough to achieve closed indication. Due to the control logic for the valve, as previously explained, the Operator's action of continuing to hold the control switch would not continue to close the valve. This appears to be the cause as the MOV diagnostic test did not indicate any differences from the previous test (April, 1993) and when the valve was closed with the primary containment isolation logic a successful LLRT was obtained.

A summary describing the cause and corrective actions for the remaining volumes which leaked in excess of Station administrative leakage limits during Refuel Outage D2R13 are contained in Section E of this report.

D. SAFETY ANALYSIS:

The safety significance of not fully closing the 3-1301-3 valve for the LLRT is considered minimal since when the valve was fully closed with primary containment isolation logic an acceptable LLRT was obtained.

The calculated as-found leakage rate for Refuel Outage D3R13 of 1.2233 wt%/day exceeds the Technical Specification limit of 1.2 wt%/day. Calculations which were performed and reported in LER/Docket 90-018-1/0500237, 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 of 10 CFR 100 and General Design Criteria 19 with Standby Gas Treatment System operable. The safety significance is mitigated by the integrity of the Secondary Containment and the function of the Standby Gas Treatment System, which is used to maintain a slight negative pressure in the Reactor Building during accident conditions. Filters are provided in the system to remove radioactive particles and charcoal absorbers are provided to remove radioactive halogens which may be present in concentrations significant to environmental dose criteria. The Refuel Outage D3R13 as-found leakage rate of 1.2233 wt%/day is approximately 3.9% of the 31 wt%/day previously analyzed condition.

Therefore, the safety significance of this as-found minimum pathway leakage is considered minimal.

E. CORRECTIVE ACTIONS:

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

During a feedwater transient in 1987, the reactor operators observed that small changes in 3-1301-3 valve position were difficult to perform due to the rapid speed of valve movement. A modification request form was submitted to consider providing a slower speed gearing ratio for the 3-1301-3 valve in order to facilitate fine adjustment of 3-1301-3 valve position. This has been accomplished through installation of modification M12-3-92-001 which increased the gear ratio for the 3-1301-3 valve to support commitments to NRC Generic Letter 89-10. In addition, the closing limit switches have been repositioned closer to valve seat contact. These changes have improved the thrust capability and valve controllability.

This LER was incorporated into the required reading list for Reactor Operators. (NTS 249-180-94-00901)

A search of similar valve operation problems will be performed to determine if additional Operator training is needed. (NTS 249-180-94-00900S01)

A summary of the root cause, repairs, adjustments, and as-left leak rate testing results for volumes which exceeded Station administrative leakage limits are listed below:

3-205-24 Reactor Head Cooling Inlet Valve 3-205-24, a Crane gate valve, was cut out under Work Request D01831 and an Anchor Darling dual disk gate valve was installed. The cause of the leakage was determined to be an inadequate application of the valve resulting in changing to the dual disk gate valve. An as-left LLRT was performed which yielded a leakage rate of 3.70 scfh. LLRT records dating back to 1980 indicates 5 previous failures of this valve of which only one failure resulted (January, 1990) in the performance of maintenance to the valve.

3-205-27 Reactor Head Cooling Inlet Check Valve 3-205-27 was disassembled and inspected under Work Request D07178. Cause of the excessive leakage was determined to be corrosion deposits on the valve seat. The valve was replaced due to poor leak rate performance. An as-left LLRT was performed which yielded a leakage rate of 15.74 scfh. LLRT records dating back to 1980 indicate 1 previous failure of this valve. Valve replacement is considered adequate corrective action based on the historical leakage data.

3-220-1
3-220-2 During power operation, the motor for Main Steam Line Drain To Condenser Valve MOV 3-220-2 had developed a ground and could not be operated. Since the 3-220-2 is at the test volume's low point, the valve had to be manually opened to drain possible water from the main steam line drain piping. The valve was then closed manually.

The leakage rate was conservatively assigned as undetermined since the valve was not closed by normal means prior to testing even though the test yielded no leakage. The cause of the leakage was determined to be an inadequate application of the valve. Main Steam Line Drain To Condenser Valves 3-220-1 and 3-220-2, Crane gate valves, were cut out and Anchor Darling dual disk gate valves were installed under Work Requests D17980 and D19887, respectively. LLRT records dating back to 1980 indicate 2 previous failures (December, 1989 and September, 1991) for 3-220-1 and 3 previous failures (last failure in September, 1991) for 3-220-2. An as-left LLRT was performed which yielded a leakage rate of 4.81 scfh. There have been LLRT failures of the Anchor Darling dual disk gate valves subsequent to Refuel Outage D3R13. See LER/Docket 95-007/0500249.

3-220-58A Feedwater Inboard Check Valve 3-220-58A was disassembled and inspected under Work Request D20566. A seat/disk assembly to valve body hold down bolt was discovered to be loose. Valve leakage was determined to be caused by this loose bolt allowing the seat/disk assembly to distort. This loose hold down bolt allowed the seat/disk assembly to distort, therefore, the disk could not fully close leaving a gap for leakage. As part of the materiel condition improvement initiative, the valve internals were modified to eliminate this problem of leakage between the seat/disk assembly and the valve body. This modification included grinding out part of the valve body for the introduction of a bolting ring, the use of a flexatallic gasket and a seat/disk assembly with more hold down bolts. An as-left LLRT was performed which yielded a leakage rate of 34.10 scfh. LLRT records dating back to 1980 indicate 6 previous failures of this valve.

3-220-58B Feedwater Inboard Check Valve 3-220-58B was disassembled and inspected under Work Request D20425. Reddish debris was found on the seat. Valve internals showed indication of leakage between the valve body and the seat/disk assembly. The "O" ring between the seat/disk assembly and the valve body was in poor condition. Inadequate valve design was determined to be the cause of the degradation of the "O" ring which allowed leakage between the valve body and the seat/disk assembly. As part of the materiel condition improvement initiative, the valve internals were modified to eliminate the leakage between the seat/disk assembly and the valve body. This modification included grinding out part of the valve body for the introduction of a bolting ring, the use of a flexatallic gasket and a seat/disk assembly with more hold down bolts. An as-left LLRT was performed which yielded a leakage rate of 12.07 scfh. LLRT records dating back to 1980 indicate 2 previous failures of this valve.

3-1101-15
3-1101-16 SBLC Inboard Isolation Check Valve 3-1101-15 was disassembled and inspected under Work Request D20152. The inspection revealed reddish debris on the seat which caused it not to seat properly. The seat was cleaned and lapped while the plug was cleaned and skim cut. The as-left LLRT yielded a leakage rate of 0.60 scfh.

SBLC Outboard Isolation Check Valve 3-1101-16 was disassembled and inspected under Work Request D20099. The inspection revealed a slight raise in the seating material of the piston. Reddish debris on the seat caused it to not seat properly. The seat and plug were cleaned. An as-left LLRT was performed which yielded a leakage rate of 0.10 scfh.

LLRT records dating back to 1980 indicate 2 previous failures (Fall of 1983 and September, 1992) for 3-1101-15 and 2 previous failures (last failure in Spring of 1988) for 3-1101-16. Corrective actions of cleaning and refurbishing are considered adequate corrective actions for both failures because of the low failure history.

3-1501-25A LPCI Inboard Isolation Check Valve 3-1501-25A was disassembled and inspected under Work Request D24990. The inspection revealed slight corrosion and a nick on the seating surfaces. The seating surfaces were cleaned and lapped. An as-left LLRT was performed which yielded a leakage rate of 3.10 scfh. LLRT records dating back to 1980 indicate no previous failures of this valve.

3-2001-5
3-2001-6 Drywell Equipment Drain Sump Valves 3-2001-5 and 3-2001-6, Crane gate valves, were cut out under Work Request D16245 and ITT Grinell diaphragm valves were installed. These gate valves are susceptible to damage caused by the pumping of dirt and grit that accumulates in the sump. The cause of the valve leakage is thus an inadequate application of the valve. To correct this, diaphragm valves, which are less susceptible to damage, were installed. An as-left LLRT was performed which yielded a leakage rate of 0.10 scfh. LLRT records dating back to 1980 indicate 1 previous failure (October, 1991) of each valve.

3-2301-45 HPCI Turbine Exhaust Check Valve 3-2301-45, a Marlin duo-check valve, was removed from the system and inspected under Work Request D20134. The rubber seat was found to be worn and is attributed to erosion during low flow conditions. Corrective actions include installation of a C & S dual disk check valve with a lighter spring. This change will allow the valve to open fully against low steam flow. A revision to Operations Department procedures, which includes minimizing operating time within this low flow condition, has been completed. An as-left LLRT was performed which yielded a leakage rate of 0.10 scfh. LLRT records dating back to 1980 indicate 3 previous failures of this valve. Dresden station has experienced an additional LLRT failure of the 3-2301-45 valve after the completion of the D3R13 Refuel Outage. See LER/Docket 95-011/0500249.

3-2499-28B H_2/O_2 Analyzer Discharge Check Valve 3-2499-28B was disassembled and inspected under Work Request D24571. The inspection revealed moisture in the valve, light grayish corrosion and a small piece of debris on the piston seat. These conditions result from the moist drywell atmosphere condensing in the cooler H_2/O_2 Analyzer return piping. The cause of the valve failure is an inadequate application of the valve. The lift-type check valve was cut out and replaced

with an Anchor Darling swing-type check valve which is less susceptible to corrosion and fouling of seating surfaces. An as-left LLRT was performed which yielded a leakage rate of 5.90 scfh. LLRT records dating back to 1980 indicate 2 previous failures (January, 1992 and February, 1994) of this valve.

3-2599-23A ACAD Inlet To Drywell Check Valve 3-2599-23A, a Hancock lift-type check valve, was disassembled and inspected under Work Request D24403. The inspection revealed that the piston was corroded to the disc guide. The cause of the valve failure is an inadequate application of the valve. The lift-type check valve was cut out and replaced with an Anchor Darling swing-type check valve which is less susceptible to corrosion and fouling of seating surfaces. An as-left LLRT was performed which yielded a leakage rate of 1.20 scfh. LLRT records dating back to 1980 indicate one previous failure (September, 1993) of this valve.

3-2599-23B ACAD Inlet To Drywell Check Valve 3-2599-23B, a Hancock lift-type check valve, was disassembled and inspected under Work Request D20131. The inspection revealed that the piston was corroded to the disc guide. The cause of this failure is an inadequate application of the valve. The lift-type check valve was cut out and replaced with an Anchor Darling swing-type check valve which is less susceptible to corrosion and fouling of seating surfaces. An as-left LLRT was performed which yielded a leakage rate of 0.10 scfh. LLRT records dating back to 1980 indicate 2 previous failures (Fall of 1985 and Spring of 1988) of this valve.

3-9208A Drywell Air Sample Valve 3-9208A was disassembled and inspected under Work Request D24610. An inspection revealed that the valve internals were in good condition resulting in an inability to determine the root cause of the failure of the valve to meet the administrative leakage limit. Work Request D24610 reassembled the valve with no change to the internals since LLRT records dating back to 1980 indicate no previous failure of this valve. An as-left LLRT was performed which yielded a leakage rate of 2.72 scfh. The maintenance inspection activity is considered adequate for corrective action because of the historical ability of the valve to perform satisfactorily.

3-9208B Drywell Air Sample Valve 3-9208B was disassembled and inspected under Work Request D24608. Valve leakage was caused by a badly worn valve seating surface due to erosion. The valve internals were replaced. An as-left LLRT was performed which yielded a leakage rate of 0.35 scfh. LLRT records dating back to 1980 indicate no previous failure of this valve.

3-4327-502 Clean Demineralized Water Stop Valve 3-4327-502 was cut out and replaced under Work Request D26498. An as-left LLRT was performed which yielded a leakage rate of 0.10 scfh. LLRT records dating back to 1980 indicate no previous failure of this valve. Valve replacement is considered satisfactory corrective action based on failure records.

Elec Pen X-202F — Electrical Penetration X-202F was disassembled and inspected under Work Request D20020. Cause of the leakage was a torn pliable inner inboard seal. The tear was repaired and an as-left LLRT yielded a leakage rate of 0.10 scfh.

Bellows X-111A — Shutdown Cooling Piping Expansion Bellows X-111A was cut out under Work Request D08405. As part of the bellows replacement upgrade initiative, this bellow was replaced by a single ply expansion bellow and was welded in place. A Bellows Test Enclosure was then installed. This Bellows Test Enclosure is a removable outer cover which performs as the outboard primary containment boundary. The as-left LLRT yielded a leakage rate of 1.10 scfh.

Bellows X-138 — Standby Liquid Control Piping Expansion Bellows X-138 was cut out under Work Request D08407. As part of the bellows replacement upgrade initiative, this bellow was replaced by a single ply expansion bellow and was welded in place. A Bellows Test Enclosure was then installed. This Bellows Test Enclosure is a removable outer cover which performs as the outboard primary containment boundary. The as-left LLRT yielded a leakage rate of 14.04 scfh.

Bellows X-149B — Core Spray "A" Loop Piping Expansion Bellows X-149B was cut out under Work Request D08408. As part of the bellows replacement upgrade initiative, this bellow was replaced by a single ply expansion bellow and was welded in place. A Bellows Test Enclosure was then installed. This Bellows Test Enclosure is a removable outer cover which performs as the outboard primary containment boundary. The as-left LLRT yielded a leakage rate of 1.00 scfh.

A valve team has been established at Dresden Station in order to increase valve performance. This is to be done through the use of diagnostic testing and preventive maintenance so as to minimize the amount of corrective maintenance needed to be performed. The Valve Team consists of Program Engineers who are tasked with developing and implementing plans for increasing the performance of a specific type of valve; motor-operated valves, air-operated valves, check valves and manual and relief valves. This focused attention will allow Dresden to continue the trend of decreasing as-left maximum pathway leakage experienced over the last 3 refuel outages.

F. PREVIOUS OCCURRENCES:

LER/Docket Number	Title
91-007/0500249	Type B and C Containment Local Leak Rate Testing Limit Exceeded Due to HPCI Turbine Exhaust Check Valve Leakage.
93-002/0500237	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.

G. COMPONENT FAILURE DATA:

MANUFACTURER	NOMENCLATURE	MODEL NUMBER	MFG. PART #
Crane Valve Co.	Reactor Head Cooling Inlet Valve 3-0205-24	787-UL	N/A

An industry-wide data base search revealed 1 failure for the Crane Model 787-UL valve. The failure was caused by steam erosion damage to the seating surface.

Mission Valve Co.	Reactor Head Cooling Inlet Check Valve 3-0204-27	90 CPF-403	N/A

An industry-wide data base search revealed 1 failure for the Mission Crane Model 90 CPF-403 check valve. This failure was caused by slippage of the flange bolting which caused the gasket to tear.

Crane Valve Co.	"A" Feedwater Line Inboard Check Valve 3-220-58A "B" Feedwater Line Inboard Check Valve 3-220-58B	973	N/A

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.

Crane Valve Co.	Standby Liquid Control Inboard Injection Check Valve 3-1101-15 Standby Liquid Control Outboard Injection Check Valve 3-1101-16	3888-U	N/A

An industry-wide data base search revealed 4 failures for the Crane Model 3888-U lift-type check valve. All four failures were due to general corrosion of seating surfaces not allowing proper seat-plug contact.

Atwood & Morrill	LPCI Loop "A" Injection Check 3-1501-25A	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.

MANUFACTURER	NOMENCLATURE	MODEL NUMBER	MFG. PART #
Crane Valve Co.	Drywell Equipment Drain Sump Valves 3-2001-5 & 3-2001-6	47-1/2LU	N/A

An industry-wide data base search revealed 45 failures of Crane Model 47-1/2LU gate valves due to wear and poor seat conditions. Twelve failures were due to grit from drain systems.

Mission Mfg. Co.	HPCI Turbine Exhaust To Suppression Chamber Check Valve 3-2301-45	15SMF402	N/A

An industry-wide data base search revealed 6 failures of Mission Mfg. Co. Model 15SMF duo check valves. Three failures were due to worn seating surfaces.

Rockwell Edwards	"B" H_2/O_2 Analyzer Discharge Check Valve 3-2499-28B	36174JTZ	N/A

An industry-wide data base search revealed 1 failure for the Rockwell Edwards lift-type check valve. This failure was also due to debris trapped inside valve internals not allowing the valve to close.

Hancock Co.	ACAD Inlet To Drywell Check Valve 3-2599-23A	H037	N/A
	ACAD Inlet To Drywell Check Valve 3-2599-23B		

An industry-wide data base search revealed 36 failures of the Hancock lift-type check valve. Sixteen failures were due to debris fouling seating surfaces.

Fisher	Drywell Air Sample Valve 3-9208A	667ES	N/A
	Drywell Air Sample Valve 3-9208B		

An industry-wide data base search revealed 16 failures of the Fischer Model 667ES globe valve due to normal wear.

Crane Valve Co.	Clean Demineralized Water Stop Valve 3-4327-502	143-1/2U	N/A

An industry-wide data base search revealed 8 failures of Crane Model 143-1/2U gate valves.

FIGURE 1
MOV 3-1301-3 Simplified Schematic