



Dresden Generating Station

6500 North Dresden Road

Morris, IL 60450

www.exeloncorp.com

10 CFR 50.73

SVPLTR # 16-0052

September 30, 2016

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

Dresden Nuclear Power Station, Unit 2  
Renewed Facility Operating License Nos. DPR-19  
NRC Docket No. 50-237

Subject: Licensee Event Report 237/2016-002-01, Unit 2 HPCI Inlet Steam Drain Pot Piping Leak Resulting in HPCI Inoperability

Enclosed is Licensee Event Report 237/2016-002-01, "Unit 2 HPCI Inlet Steam Drain Pot Piping Leak Resulting in HPCI Inoperability". This report describes events which are being reported in accordance with 10 CFR 50.73(a)(2)(v)(D), "Any event or condition that could have prevented the fulfillment of the safety function of ... systems that are needed to mitigate the consequences of an accident".

There are no regulatory commitments contained in this submittal.

Should you have any questions concerning this letter, please contact Mr. Bruce Franzen at (815) 416-2800.

Respectfully,

A handwritten signature in black ink, appearing to read "P. Karaba".

Peter J Karaba  
Site Vice President  
Dresden Nuclear Power Station

Enclosure Licensee Event Report 237/2016-002-01

cc: Regional Administrator – NRC Region III  
NRC Senior Resident Inspector – Dresden Nuclear Power Station

IEZZ  
NRR



**LICENSEE EVENT REPORT (LER)**

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form  
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to [Infocollects.Resource@nrc.gov](mailto:Infocollects.Resource@nrc.gov), and to the Desk Officer, Office of Information and Regulatory Affairs, NEOF-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

**1. FACILITY NAME**

Dresden Nuclear Power Station, Unit 2

**2. DOCKET NUMBER**

05000237

**3. PAGE**

1 OF 4

**4. TITLE**

Unit 2 HPCI Inlet Steam Drain Pot Piping Leak Resulting in HPCI Inoperability

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
05	16	2016	2016	002	01	09	30	16		05000
									FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
1	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
10. POWER LEVEL	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.77(a)(1)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(2)(i)
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(ii)
	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> OTHER	Specify in Abstract below or in NRC Form 366A	

**12. LICENSEE CONTACT FOR THIS LER**

LICENSEE CONTACT	TELEPHONE NUMBER (Include Area Code)
Bruce Franzen – Regulatory Assurance Manager	815-416-2800

**13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT**

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
X	BJ	PSF	Unknown	Y					

**14. SUPPLEMENTAL REPORT EXPECTED**

YES (If yes, complete 15. EXPECTED SUBMISSION DATE)  NO

**15. EXPECTED SUBMISSION DATE**

MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On 5/16/2016 at approximately 1120 CDT during planned maintenance on Division II of the Low Pressure Coolant Injection (LPCI) system, a through-wall steam leak was observed in the Unit 2 High Pressure Coolant Injection (HPCI) inlet drain pot drain piping. The leak was identified to be on the Inlet Drain Pot line leading to the Main Condenser upstream of the HPCI Inlet Drain Pot 2A Inboard Drain Valve, Air Operated Valve (AOV) 2-2301-29, which is ASME Code Class 2 piping. The cause of the through-wall leak was liquid droplet impingement erosion thinning of chrome moly piping. HPCI was declared inoperable following isolation of the degraded piping per Technical Requirements Manual (TRM) 3.4.a. This event is of low safety significance. Corrective Actions included replacing the piping with stainless steel, ensuring similar sections of piping are replaced or scheduled for replacement, and reviewing Extent of Condition.

This event is reportable under 10 CFR 50.73(a)(2)(v)(D), "Any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident."

NRC FORM 366A  
(11-2015)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104

EXPIRES: 10/31/2018



## LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Dresden Nuclear Power Station, Unit 2	05000-237	2016	- 002	- 01

### NARRATIVE

#### PLANT AND SYSTEM IDENTIFICATION

Dresden Nuclear Power Station (DNPS), Unit 2, is a General Electric Company Boiling Water Reactor with a licensed maximum power level of 2957 megawatts thermal. The Energy Industry Identification System codes used in the text are identified as [XX].

#### A. Plant Conditions Prior to Event:

Unit: 02	Event Date: 05/16/16	Event Time: 1120 CDT
Reactor Mode: 1	Mode Name: Power Operation	Power Level: 100 percent

#### B. Description of Event:

On 5/16/2016 at approximately 1120 CDT, a through-wall steam leak was observed in the Unit 2 High Pressure Coolant Injection (HPCI) [BJ] inlet drain pot drain piping during planned maintenance on Division II of the Low Pressure Coolant Injection (LPCI) [BO] system. The leak was identified to be on the Inlet Drain Pot line upstream of the HPCI Inlet Drain Pot 2A Inboard Drain Valve, Air Operated Valve (AOV) 2-2301-29, which is ASME Code Class 2 piping.

At 1157 CDT, the station entered the Action Statement in the Technical Requirements Manual (TRM) 3.4.a to isolate the adversely affected ASME Code Class 2 component. At 1457 CDT, the flow path containing the leaking pipe was isolated and HPCI was declared inoperable. At this time, the station entered Technical Specification (TS) 3.5.1 Condition K due to the inoperability of HPCI and a division of LPCI. Condition K directed entry into TS Limiting Condition for Operation (LCO) 3.0.3. At 1710 CDT, the LPCI system was restored and TS LCO 3.0.3 was exited but the unit remained in TS 3.5.1 Condition G. At 0042 CDT on 5/18/2016, the adversely affected piping was replaced with stainless steel and HPCI was declared operable which allowed for TS 3.5.1 Condition G to be exited.

This event is reportable under 10 CFR 50.73(a)(2)(v)(D), "Any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident."

#### C. Cause of Event:

The cause of the failure was local internal thinning from a mechanical erosion mechanism. Based on the cratered appearance of the eroded surface, the thinning was due to liquid droplet impingement erosion. The through-wall leak occurred toward the downstream side of the elbow where the droplet impact angle was high (close to 90 degrees). The susceptible pipe was scheduled to be replaced in 2013, but the work package was inadvertently revised to remove the replacement from the scope of work.

#### D. Safety Analysis:

The safety significance of this condition is low and did not adversely impact the health and safety of the public. During the evolution redundant systems remained capable of

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### NARRATIVE

performing each of the functions required by the safety analysis. The Isolation Condenser [BL] and Automatic Depressurization System [JE] remained in service and were capable of removing heat from containment while the vessel is at high pressure and lowering vessel pressure to allow for the low pressure systems to inject. Division I of LPCI remained capable of injection along with both divisions of Core Spray [BM]. Additionally, the Torus Cooling function of LPCI remained available as the primary method of heat removal from primary containment. The torus cooling function of LPCI provides the connection to the ultimate heat sink which was available throughout the evolution.

#### E. Corrective Actions:

The degraded elbow was replaced with stainless steel material. The replacement of the remaining sections of chrome moly piping and fittings was scheduled. Ultrasonic inspections were performed to determine the Extent of Condition. A review of recent work orders completed on safety related and/or HPCI/LPCI system work order tasks was performed to identify additional scope removals. Actions were taken to address the inadvertent work scope revision.

#### F. Previous Occurrences:

In 2012, two through-wall steam leaks were identified on the line upstream of the AOV-2-2301-29 and 3-2301-29 valves with one leak on each unit. Actions were created and completed to perform inspections on all HPCI steam drain elbows in the turbine building that had not previously been replaced with stainless steel material. A sample of elbows in the reactor building was also inspected to verify the assumption that degradation was due to liquid droplet impingement.

In 2011, a through-wall leak occurred on the AOV 2-2301-29 valve. The cause of this event was Liquid Impingement Erosion.

In 2007, a through-wall leak occurred on a 90 degree elbow in HPCI piping located upstream of the AOV 2-2301-29 valve. The cause of this event was Liquid Impingement Erosion. The elbow was replaced with like for like chrome moly material.

In 2007, a through-wall leak occurred in HPCI piping located downstream of 3-2301-55 valves. The cause of this event was Flow Accelerated Corrosion as a result of carbon steel pipe.

In 2007, a through-wall leak occurred in HPCI piping between the 3-2301-54 and 3-2301-55 valves. The cause of this event was Flow Accelerated Corrosion.

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Dresden Nuclear Power Station, Unit 2	05000-237	2016	- 002	- 01

**NARRATIVE**

**G. Component Failure Data:**

Manufacturer	Model	S/N	Type
N/A	N/A	None	1 inch chrome moly elbow piping