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June 18, 2009

L-09-165

10 CFR 50.73

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

**SUBJECT:**

Beaver Valley Power Station, Unit No. 1  
Docket No. 50-334, License No. DPR-66  
LER 2009-002-00

Attached is Licensee Event Report (LER) 2009-002-00, "Feedwater Isolation Initiates Auxiliary Feedwater System During Refueling Shutdown." This event is being reported in accordance with 10 CFR 50.73(a)(2)(iv)(A).

There are no regulatory commitments contained in this submittal. Any actions discussed in this document that represent intended or planned actions are described for the NRC's information, and are not regulatory commitments.

If there are any questions or if additional information is required, please contact Mr. Colin P. Keller, Manager, Regulatory Compliance at 724-682-4284.

Sincerely,



Peter P. Sena III

Attachment

cc: Mr. S. J. Collins, NRC Region I Administrator  
Mr. D. L. Werkheiser, NRC Senior Resident Inspector  
Ms. N. S. Morgan, NRR Project Manager  
INPO Records Center (via electronic image)  
Mr. L. E. Ryan (BRP/DEP)

IE22  
NRR

# LICENSEE EVENT REPORT (LER)

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

Estimated burden per response to comply with this mandatory collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-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.

<b>1. FACILITY NAME</b> Beaver Valley Power Station Unit Number 1	<b>2. DOCKET NUMBER</b> 05000334	<b>3. PAGE</b> 1 of 4
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**4. TITLE**  
Feedwater Isolation Initiates Auxiliary Feedwater System During Refueling Shutdown

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
04	20	2009	2009	- 002	- 00	06	18	2009	None	
									FACILITY NAME	DOCKET NUMBER

<b>9. OPERATING MODE</b> 3	<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §:</b> (Check all that apply)									
	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)						
<b>10. POWER LEVEL</b> 0 %	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)						
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)						
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)						
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)						
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)						
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)						
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER						
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A						

**12. LICENSEE CONTACT FOR THIS LER**

FACILITY NAME Colin P. Keller, Manager, Regulatory Compliance	TELEPHONE NUMBER (Include Area Code) (724) 682-4284
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**13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT**

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
B	SJ	FCV	M120	Yes					

<b>14. SUPPLEMENTAL REPORT EXPECTED</b>	<b>15. EXPECTED SUBMISSION DATE</b>	MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE).	<input checked="" type="checkbox"/> NO			

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

During a plant shutdown on April 20, 2009, a feedwater isolation occurred at the Beaver Valley Power Station (BVPS) Unit 1 as a result of two of three narrow range water level transmitters in the 'B' steam generator reaching the Hi-Hi setpoint. There was not sufficient time for Operator manual attempts to reduce the excessive feedwater flow rate prior to reaching the high water level. An automatic Feedwater Isolation Signal was initiated on the Hi-Hi steam generator water condition in the 'B' steam generator, with safety-related plant systems responding as designed. Both motor-driven auxiliary feedwater pumps started, as designed, in response to all main feedwater pumps being tripped by the Feedwater Isolation Signal. This was a valid actuation of the Auxiliary Feedwater System, which is reportable pursuant to 10 CFR 50.73(a)(2)(iv)(A)

The root cause of this event was determined to be foreign material found within the bypass feedwater regulating valve positioner, causing the valve to fail to close during the event. The foreign material was manufacturing induced and did not represent internal organizational or process weakness related to the procurement and use of this valve. The safety significance of the Feedwater Isolation event on April 20, 2009 was very low.

**LICENSEE EVENT REPORT (LER)**

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**NARRATIVE**

There were no structures, components, or systems that were inoperable at the start of the event that contributed to the event. Energy Industry Identification System (EIIIS) codes are identified in the text as [XX].

**DESCRIPTION OF EVENT**

During a plant shutdown on April 20, 2009, a feedwater isolation occurred at the Beaver Valley Power Station (BVPS) Unit 1 as a result of two of three narrow range water level transmitters in the 'B' steam generator reaching the Hi-Hi setpoint.

While reducing the plant's temperature in Mode 3 in preparation to commence a refueling outage, each of the three steam generators were being fed using the Main Feedwater System [SJ] through their individual bypass feedwater regulating valves with the Main Feedwater Control System [JB] operating in automatic control. At 01:14, the control room operator noted excessive feedwater flow and a rapidly rising water level on the 'B' steam generator. The operator took manual control of the feedwater bypass regulating valve on the 'B' steam generator in an attempt to lower the feedwater flow rate. When the control demand was taken to zero, the feedwater bypass regulating valve did not close, with feedwater flow indication remaining at an excessive flow rate. A Hi-Hi steam generator water level occurred in the 'B' steam generator before other manual actions could be taken to terminate the feedwater level rise.

An automatic Feedwater Isolation Signal was initiated on the Hi-Hi steam generator water condition in the 'B' steam generator, with safety-related plant systems responding as designed, which included tripping of the operating main feedwater pump and closing the main feedwater isolation valves. Both motor-driven auxiliary feedwater pumps started, as designed, in response to all main feedwater pumps being tripped by the Feedwater Isolation Signal. With steam generator feedwater flow now being supplied and controlled by the Auxiliary Feedwater System [BA], a proper feedwater flow rate was re-established, terminating the water level increase in the 'B' steam generator. Steam generator water level was decreased below the Hi-Hi setpoint at 02:04.

The 4-inch bypass feedwater bypass regulating valve is designed to modulate open pneumatically and vents the air to close. This feedwater bypass regulating valve's positioner had been replaced with a new vendor-supplied positioner in November, 2008. When this feedwater bypass regulating valve was exercised on April 19, 2009, the day before the planned plant shutdown, the field operator noted uncharacteristic varied valve speeds when moving in the closed direction. However, this was determined not to be unacceptable since the valve met its surveillance acceptance criteria. On April 20, 2009, with the plant in Mode 4, approximately 4 hours after the Hi-Hi steam generator water level had occurred, this feedwater bypass regulating valve was successfully stroked full open and full close by manually operation from the control room benchboard.

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**NARRATIVE**

**CAUSE OF EVENT**

The direct cause of this event was failure of the positioner associated with the controls of FCV-1FW-489, "B" Bypass Main Feedwater Regulating Valve. The positioner was not providing accurate signals to the boosters on a valve closure input.

The root cause of this event was determined to be foreign material found within the feedwater bypass regulating valve positioner, causing the valve to fail to close during the event. The internal foreign materials found within the positioner were small chipped pieces of the positioner poppet seat and excess thread sealant compound. The foreign material was manufacturing induced and did not represent internal organizational or process weakness related to the procurement and use of this valve.

**ANALYSIS OF EVENT**

The portion of the main feedwater system which provides feedwater to the steam generators and the main feedwater automatic level control system do not perform safety-related functions. The safety function for main feedwater isolation valve closure functioned correctly. This event is bounded by the safety analysis provided in the Updated Final Safety Analysis Report Section 14.1.9 for the bounding excessive feedwater flow condition from a system malfunction.

The plant risk associated with the BVPS Unit 1 Feedwater Isolation event that occurred on April 20, 2009, due a high water level condition in the 'B' Steam Generator is considered to be very low. This is based on the conditional core damage probability for the event when considering the actual plant conditions that were present at the time of the event. Based on the above, the safety significance of the Feedwater Isolation event on April 20, 2009, was very low.

A Hi-Hi water level condition was experienced in the 'B' Steam Generator, causing an automatic Feedwater Isolation Signal to be generated. This signal automatically stopped the running Main Feed Pump, which then automatically started both motor-driven Auxiliary Feedwater System (AFW) Pumps. Both motor-driven AFW pumps were actuated in response to the valid high steam generator water level condition, as designed. This was a valid actuation of the Auxiliary Feedwater System, which is reportable pursuant to 10 CFR 50.73(a)(2)(iv)(A) since Auxiliary Feedwater System is an applicable system as listed in 10 CFR 50.73(a)(2)(iv)(B)(6).

This event was reported as specified system actuations pursuant to 10 CFR 50.72(b)(3)iv)(A) at 05:09 on April 20, 2009 (EN Number 45000).

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**NARRATIVE**

**ANALYSIS OF EVENT (Continued)**

There was no loss of safety function pursuant to 10 CFR 50.73(a)(2)(v) since the applicable safety systems functioned as designed.

**CORRECTIVE ACTIONS**

1. The applicable bypass feedwater regulating valve has been repaired and tested satisfactory.
2. The applicable Main Feedwater System regulating valve positioners will be re-classified to 'augmented quality' in order to stipulate that newly received positioners receive an internal inspection for foreign material.
3. An operating experience will be issued related to the discovery of foreign matter on the positioner valve.

Completion of the above and other corrective actions are being tracked through the BVPS corrective action program.

**PREVIOUS SIMILAR EVENTS**

A review found no prior BVPS Unit No. 1 and BVPS Unit No. 2 Licensee Event Reports within the last three years for an event involving manufacturer internal valve foreign material.

CR 09-57474