energy harbor

Beaver Valley Power Station
P.O. Box 4
Shippingport, PA 15077

Barry N. Blair
Site Vice President

724-682-5234
Fax: 724-643-8069

July 12, 2023
L-23-158

10 CFR 50.73

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

SUBJECT:
Beaver Valley Power Station, Unit No. 2
Docket No. 50-412, License No. NPF-73
LER 2023-002-00

Enclosed is Licensee Event Report (LER) 2023-002-00, "Automatic Actuation of Auxiliary Feedwater System." 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. If there are any questions or if additional information is required, please contact Ms. Julie Hartig, Manager (Acting), Regulatory Compliance and Emergency Response, at 724-682-4224.

Sincerely,

Barry N. Blair

Enclosure: Beaver Valley Power Station, Unit No. 2 LER 2023-002-00

cc: NRC Region I Administrator
NRC Senior Resident Inspector
NRC Project Manager
INPO Records Center (via INPO Industry Reporting and Information System)
BRP/DEP

Enclosure
L-23-158

Beaver Valley Power Station, Unit No. 2 LER 2023-002-00

NRC FORM 366 (03-14-2023) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2023

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/)

1. Facility Name		2. Docket Number	3. Page
Beaver Valley Power Station, Unit No. 2	■ 050 ☐ 052	00412	1 OF 3

4. Title
Automatic Actuation of Auxiliary Feedwater System

5. Event Date			6. LER Number			7. Report Date			8. Other Facilities Involved		
Month	Day	Year	Year	Sequential Number	Revision No.	Month	Day	Year	Facility Name	☐ 050	Docket Number
05	19	2023	2023	- 002 -	00	07	12	2023	Facility Name	☐ 052	Docket Number

9. Operating Mode	10. Power Level
3	000

11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: *(Check all that apply)*

10 CFR Part 20	☐ 20.2203(a)(2)(vi)	**10 CFR Part 50**	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)	☐ 73.1200(a)
☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)	☐ 73.1200(b)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)	☐ 73.1200(c)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.36(c)(2)	☑ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)	☐ 73.1200(d)
☐ 20.2203(a)(2)(i)	**10 CFR Part 21**	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(A)	**10 CFR Part 73**	☐ 73.1200(e)
☐ 20.2203(a)(2)(ii)	☐ 21.2(c)	☐ 50.69(g)	☐ 50.73(a)(2)(v)(B)	☐ 73.77(a)(1)	☐ 73.1200(f)
☐ 20.2203(a)(2)(iii)		☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ 73.77(a)(2)(i)	☐ 73.1200(g)
☐ 20.2203(a)(2)(iv)		☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(2)(ii)	☐ 73.1200(h)
☐ 20.2203(a)(2)(v)		☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)		

☐ **OTHER** (Specify here, in abstract, or NRC 366A).

12. Licensee Contact for this LER

Licensee Contact	Phone Number (Include area code)
Julie Hartig, Manager (Acting), Regulatory Compliance and Emergency Response	724-682-4224

13. Complete One Line for each Component Failure Described in this Report

Cause	System	Component	Manufacturer	Reportable to IRIS		Cause	System	Component	Manufacturer	Reportable to IRIS

14. Supplemental Report Expected		15. Expected Submission Date	Month	Day	Year
☑ No	☐ Yes (If yes, complete 15. Expected Submission Date)				

16. Abstract (Limit to 1326 spaces, i.e., approximately 13 single-spaced typewritten lines)

At 0852 on May 19, 2023, with Beaver Valley Power Station, Unit No. 2 (BVPS-2) in Mode 3 at 0 percent power, an actuation of the Auxiliary Feedwater (AFW) System occurred. Both Motor Driven Auxiliary Feedwater (MDAFW) Pumps automatically started as designed when a `Loss of Both Main Feedwater Pumps (MFP)' signal was received upon the start failure of the `B' MFP, 2FWS-P21B. The 2FWS-P21B failure to start was because the lube oil (LO) pressure start permissive was not met when the LO system relief valve, 2FWS-RV205B, setpoint was set too low during the refueling outage. Also, the MDAFW pump auto-start signal was able to be generated during a plant condition where it was not necessary.

This event is being reported pursuant to 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in the automatic actuation of the AFW System, 10 CFR 50.73(a)(2)(iv)(B)(6). Planned corrective actions include adjusting 2FWS-RV205B setpoint to restore LO system margin and start-up procedures will be revised to disable the MDAFW Pump auto-start circuit when plant conditions do not require the auto-start function. Also, maintenance documents will be enhanced to clarify the desired setpoint value.

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

1. FACILITY NAME		2. DOCKET NUMBER	3. LER NUMBER		
			YEAR	SEQUENTIAL NUMBER	REV NO.
Beaver Valley Power Station, Unit No. 2	■ 050 ☐ 052	00412	2023	- 002	- 00

NARRATIVE

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

BACKGROUND

The Steam Generator Feedwater System (FWS) [SJ] supplies heated feedwater to the steam generators [SG] under all load conditions maintaining level within the programmed band. Two 50 percent capacity motor-driven Main Feedwater Pumps (MFPs) [SJ-P], 2FWS-P21A and 2FWS-P21B, supply sufficient feedwater flow to the three steam generators for full power operation. Each MFP has a lube oil (LO) system which consists of a reservoir, a shaft-driven pump, an auxiliary motor-driven pump, a relief valve, an oil cooler, and the necessary piping, valves and instrumentation. Oil is normally supplied by the shaft-driven LO pump. The auxiliary motor-driven LO pump provides lubrication requirements during startup and as a backup to the shaft-driven pump. The LO system relief valve [SJ-RV] maintains the LO system operating pressure. The MFP start circuit requires sufficient LO pressure to enable the start permissive to be met when starting a MFP. On a 'Loss of both Main Feedwater Pump(s)' signal, the Motor Driven Auxiliary Feedwater (MDAFW) Pumps [BA-P] auto start to provide feedwater flow to the steam generators to remove decay heat from the Reactor Coolant System [AB].

DESCRIPTION OF EVENT

At 0852 on May 19, 2023, with Beaver Valley Power Station, Unit No. 2 (BVPS-2) at 0 percent power in Mode 3 during the twenty-third refueling outage (2R23), Operations attempted to start the 'B' MFP, 2FWS-P21B, per plant start-up procedures. When 2FWS-P21B failed to start with the 'A' MFP, 2FWS-P21A, secured, a 'Loss of Both Main Feedwater Pump(s)' signal was received and the 'A' and 'B' MDAFW Pumps started as designed. There was no safety-related equipment inoperable at the start of the event that contributed to the event.

Following the Auxiliary Feedwater (AFW) actuation, the MDAFW Pumps were secured and returned to auto by the control room operators.

CAUSE OF EVENT

The direct cause for 2FWS-P21B failing to start was that the LO pressure start permissive was not met. This was because the LO system relief valve, 2FWS-RV205B, setpoint was set too low during 2R23.

2FWS-RV205B had been replaced during 2R23 and the new relief valve had been set to 10.83 psig which is at the low end of the 10 – 14 psig range prescribed by the setpoint documents. The LO system pressure needs to be at least 12 psig to meet the start permissive of the MFPs. A contributing cause is that the setpoint document and the PM replacement order incorrectly document the relief valve setpoint as 12 psig and not that the LO system operating pressure is to be at least 12 psig.

A second contributing cause to the consequence of the event was that the MDAFW pump auto-start signal was able to be generated during a plant condition where it was not necessary.

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

(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/)

1. FACILITY NAME		2. DOCKET NUMBER	3. LER NUMBER		
			YEAR	SEQUENTIAL NUMBER	REV NO.
Beaver Valley Power Station, Unit No. 2	■ 050 ☐ 052	00412	2023	- 002	- 00

NARRATIVE

ANALYSIS OF EVENT

The automatic actuation of the AFW System was reported to the NRC per 10 CFR 50.72(b)(3)(iv)(A) on May 19, 2023 (Event Notification #56527). This event is reportable pursuant to 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in the automatic actuation of the AFW System as specified in 10 CFR 50.73(a)(2)(iv)(B)(6).

The plant risk associated with the BVPS-2 start failure of the 'B' MFP and the auto start of 'A' and 'B' MDAFW Pumps is considered to be very low safety significance. This is based on the following: the event occurred in Mode 3, neither 'A' nor 'B' MFP was required to be in-service, the 'A' and 'B' MDAFW Pumps automatically started as designed, and the 'A' MFP did successfully start upon demand. The change in core damage frequency derived using the conditional core damage probability and the change in large early release frequency derived using conditional large early release probability for the observed condition are very small.

CORRECTIVE ACTIONS

Completed Actions:

1) The MFP LO system relief valve was set to a pressure that allowed the MFP start permissive to be met. 2FWS-P21B was successfully started on May 25, 2023 during 2R23 plant start-up.

Planned Actions:

1) To establish the desired margin to the start permissive required pressure, 2FWS-RV205B setpoint will be increased during the next refueling outage.

2) Revise the start-up procedures to disable the MDAFW Pump auto-start circuit upon a 'Loss of Both MFPs' signal while starting the first MFP when plant conditions do not require the auto-start function.

Planned Enhancements:

1) The setpoint documents for the 'A' and 'B' MFP LO system relief valves will be revised to provide the correct setpoint and improve margin to the start permissive required pressure.

2) The maintenance plans for the LO system relief valve PM replacements will be revised to include steps to verify the relief valve is set to maintain 12 – 15 psig in the LO system while operating.

PREVIOUS SIMILAR EVENTS

A review of the previous three years identified that no similar events involving automatic AFW actuation resulting from a MFP failure to start have occurred at BVPS.