



Beaver Valley Power Station  
P.O. Box 4  
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**John J. Grabnar**  
Site Vice President

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December 3, 2021  
L-21-272

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 2021-002-00

Enclosed is Licensee Event Report (LER) 2021-002-00, "Unit 2 Automatic Reactor Trip and Automatic Actuation of the 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. Any actions described in this document represent intended or planned actions and are described for information only.

If there are any questions or if additional information is required, please contact Mr. Steve Sawtschenko, Manager, Regulatory Compliance and Emergency Response, at 724-682-4284.

Sincerely,

A handwritten signature in blue ink, appearing to read "John J. Grabnar".

John J. Grabnar

Enclosure: Beaver Valley Power Station, Unit 2 LER 2021-002-00

cc: Mr. D. C. Lew, NRC Region I Administrator  
NRC Senior Resident Inspector  
Ms. S. Goetz, NRC Project Manager  
INPO Records Center (via INPO Industry Reporting and Information System)  
Mr. L. Winker (BRP/DEP)

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Enclosure  
L-21-272

Beaver Valley Power Station, Unit 2 LER 2021-002-00

(08-2020)



LICENSEE EVENT REPORT (LER)

(See Page 3 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, Library, and Information Collections Branch (T-6 A10M), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and the OMB reviewer at: OMB Office of Information and Regulatory Affairs, (3150-0104), Attn: Desk all: oira\_submission@omb.eop.gov. The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.

1. Facility Name: Beaver Valley Power Station, Unit 2
2. Docket Number: 05000
3. Page: 1 OF 3

4. Title: Unit 2 Automatic Reactor Trip and Automatic Actuation of the Auxiliary Feedwater System

5. Event Date: 10/05/2021
6. LER Number: 2021-002-00
7. Report Date: 12/03/2021
8. Other Facilities Involved: 05000

9. Operating Mode: 1
10. Power Level: 90

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

Grid for 10 CFR Part 20, 21, 50, 73, and 77 with checkboxes for various regulatory sections.

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

12. Licensee Contact for this LER

Licensee Contact: Steve Sawtschenko, Manager, Regulatory Compliance and Emergency Response
Phone Number: 724-682-4284

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

Table with 5 columns: Cause, System, Component, Manufacturer, Reportable to IRIS. Row 1: B, JG, IMOD, W120, Y

14. Supplemental Report Expected: [X] No
15. Expected Submission Date: Month, Day, Year

16. Abstract (Limit to 1560 spaces, i.e., approximately 15 single-spaced typewritten lines)
At 0632 on October 5, 2021, Beaver Valley Power Station, Unit 2 (BVPS-2) automatically tripped due to a loss of the Reactor Trip System Interlock for Power Range Neutron Flux (P-10) and associated power range trip block signals. BVPS-2 was at approximately 90% power and in an end of cycle coast down. The Auxiliary Feedwater System automatically started as designed. The apparent cause was a premature failure of a Train A Solid State Protection System (SSPS) universal logic board (ULB) due to manufacturing defects with the solder joints which may have resulted in an intermittent loss of connection.
This is reportable under 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in automatic actuation of the Reactor Protection System per 10 CFR 50.73(a)(2)(iv)(B)(1) and an automatic actuation of the Auxiliary Feedwater System per 10 CFR 50.73(a)(2)(iv)(B)(6). Corrective actions include replacement of the ULB, vendor testing of several ULBs within the SSPS, review of the final vendor test report for additional actions, and establishment of maintenance plans for periodic testing of the SSPS ULBs at both units.



**LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET**

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1. FACILITY NAME Beaver Valley Power Station, Unit 2	2. DOCKET NUMBER 05000- 412	3. LER NUMBER		
		YEAR 2021	SEQUENTIAL NUMBER 002	REV NO. 00

**NARRATIVE**

**NARRATIVE**

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

**BACKGROUND**

The Solid State Protection System (SSPS) [JG] takes binary inputs (voltage/no voltage) from the process and nuclear instrument channels corresponding to conditions (normal/abnormal) of BVPS-2 parameters. The SSPS performs the decision logic for actuating a reactor trip or ESF actuation, generates the electrical output signal that will initiate the required trip or actuation, and provides the status, permissive, and annunciator output signals to the main control room of the unit.

**DESCRIPTION OF EVENT**

At 0632 on October 5, 2021, BVPS-2 automatically tripped with an initial annunciator indication of a Power Range Low Setpoint Neutron Flux High Reactor Trip. BVPS-2 was at approximately 90% power and in an end of cycle coast down. No equipment was inoperable at the start of the event that would have contributed to the event. The Auxiliary Feedwater System [BA] automatically started as designed. The trip was not complicated and the plant was stabilized in Mode 3.

The trip was caused by an intermittent internal failure of the SSPS, specifically the loss of the reactor trip system interlock for power range neutron flux (P-10) and associated power range trip block signals. Troubleshooting was performed and three universal logic boards (ULBs) were replaced. Following the replacement, the SSPS was returned to service and BVPS-2 was put back online on October 8, 2021. The replaced ULBs along with several additional extent of condition ULBs from within both trains of the SSPS system were sent to Westinghouse for Westinghouse Automated Board Test System (WABTS) testing. The testing identified deficiencies in some of the ULBs.

**CAUSE OF EVENT**

Based on review of the Sequence of Events Log, the trip was generated within the Train A SSPS due to a loss of the reactor trip system interlock for power range neutron flux (P-10) and associated power range trip block signals. The direct cause of the trip was determined to be an internal failure of the A403 SSPS ULB. The apparent cause was a premature failure of the Train A SSPS ULB due to manufacturing defects with the solder joints which may have resulted in an intermittent loss of connection.



**LICENSEE EVENT REPORT (LER)  
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Beaver Valley Power Station, Unit 2	05000-	412	YEAR	SEQUENTIAL NUMBER	REV NO.
			2021	002	00

**NARRATIVE**

**ANALYSIS OF EVENT**

This is reportable under 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in automatic actuation of the Reactor Protection System per 10 CFR 50.73(a)(2)(iv)(B)(1) and an automatic actuation of the Auxiliary Feedwater System per 10 CFR 50.73(a)(2)(iv)(B)(6).

The plant risk associated with the BVPS-2 reactor trip on October 5, 2021, is considered to be very low. This is based on the change in average core damage frequency derived using the conditional core damage probability and change in average large early release frequency derived using conditional large early release probability for the event.

**CORRECTIVE ACTIONS**

**Completed Actions:**

The 3 suspect SSPS ULBs were replaced and sent for WABTS testing.

An additional 15 ULBs from both trains of SSPS were replaced and sent for WABTS testing as extent of condition.

**Planned Actions:**

The final Westinghouse WABTS test reports will be evaluated for additional actions that may be necessary based on the report's findings.

Periodic WABTS testing maintenance plans for both units will be established at an appropriate frequency.

**PREVIOUS SIMILAR EVENTS**

A review of the previous three years did not identify similar events that have occurred at BVPS.

CR 2021-07409