energy harbor

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January 11, 2022
L-21-292

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 2021-004-00

Enclosed is Licensee Event Report (LER) 2021-004-00, "Unit 2 Manual Reactor Trip." 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,

John J. Grabnar

Enclosure: Beaver Valley Power Station, Unit 2 LER 2021-004-00

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)

Enclosure
L-21-292

Beaver Valley Power Station, Unit 2 LER 2021-004-00

NRC FORM 366 (08-2020) U.S. NUCLEAR REGULATORY COMMISSION

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

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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/)

1. Facility Name	2. Docket Number	3. Page
Beaver Valley Power Station, Unit 2	05000 412	1 OF 3

4. Title

Unit 2 Manual Reactor Trip

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	Docket Number
11	12	2021	2021	- 004 -	00	01	11	2022		05000
									Facility Name	Docket Number
										05000

9. Operating Mode	10. Power Level
1	17

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)	☐ 50.36(c)(2)	☑ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(A)	**10 CFR Part 73**
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.69(g)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(4)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(i)	**10 CFR Part 21**	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(1)(i)
☐ 20.2203(a)(2)(ii)	☐ 21.2(c)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(i)
☐ 20.2203(a)(2)(iii)	**10 CFR Part 50**	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)	☐ 73.77(a)(2)(ii)
☐ 20.2203(a)(2)(iv)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)	
☐ 20.2203(a)(2)(v)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)	

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

12. Licensee Contact for this LER

Licensee Contact	Phone Number (Include area code)
Steve Sawtschenko, Manager, Regulatory Compliance and Emergency Response	724-682-4284

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 1560 spaces, i.e., approximately 15 single-spaced typewritten lines)

At 1007 EST on November 12, 2021, with Unit 2 in Mode 1 at approximately 17 percent power following a refueling outage, the reactor was manually tripped due to increasing steam generator water levels due to oscillating Main Feedwater Pump Recirculation Valves. The oscillation of the valves led to a steam generator water level transient that met predefined reactor trip criteria. The direct cause was the key lock switches for the recirculation valves were left in AUTO allowing the valves to modulate based on flow indication. The apparent cause was the unit supervisor did not properly read a procedure step from a startup procedure and the step was not performed.

This is reportable under 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in a manual actuation of the Reactor Protection System per 10 CFR 50.73(a)(2)(iv)(B)(1). Corrective actions are procedural clarifications and cautions.

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 2	05000- 412	2021	- 004	- 00

NARRATIVE

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

BACKGROUND

The Main Feedwater Pump Recirculation Valves (2FWR-FCV150A and B) [JB] are each controlled by a CLOSE-AUTO-OPEN key switch located in the field near the valve. The key switch is normally maintained in AUTO to allow the valves to be controlled by flow switches in the suction line of the main feed pumps. Red (open) and Green (closed) indicating lights are provided on Benchboard Section C. The valve will manually open when its local control switch is placed in OPEN and will manually close when its local control switch is placed in CLOSE.

DESCRIPTION OF EVENT

At 1007 EST on November 12, 2021, the Beaver Valley Power Station, Unit 2 (BVPS-2) reactor was manually tripped due to increasing steam generator [SB] water levels due to 2FWR-FCV150A and B oscillating. The oscillation of the valves led to a steam generator water level transient that met predefined reactor trip criteria. BVPS-2 was in Mode 1 at approximately 17 percent power following a refueling outage and no equipment was inoperable at the start of the event that contributed to the event. The trip was not complicated, and the plant was stabilized in Mode 3.

Prior to the event, at approximately 0040, a procedure step to verify that the key lock switches for 2FWR-FCV150A and B were in OPEN was not performed, resulting in the key lock switches being left in AUTO. Reactor power was then raised from 5 percent over the next hour and a half to approximately 17 percent by 0200. A condenser steam dump/turbine bypass valve perturbation caused 2FWR-FCV150A and B to oscillate and then stabilize at approximately 0630. At approximately 0945 the valves began oscillating again resulting in steam generator water level increase, and the bypass feedwater regulating valves were placed in manual control to control the steam generator water level. At 1000, the key lock switches for 2FWR-FCV150A and B were placed in OPEN. The steam generator water levels reached the trip criteria before they were able to be stabilized and the plant was manually tripped at 1007.

CAUSE OF EVENT

On midnight shift during the performance of 2OM-52.4.A, "Raising Power From 5% to Full Load Operation," revision 90, a step to verify that the key lock switches for 2FWR-FCV150A and B were in the OPEN position was not performed properly, resulting in the key lock switches being left in AUTO. During turbine valve testing on the following shift, a condenser steam dump [JI] oscillation occurred that led to feedwater flow being lowered to the setpoint of 2FWR-FCV150A and B which caused the valves to oscillate. These oscillations led to the steam generator water level transient and subsequent manual reactor trip.

The direct cause was that the key lock switches for 2FWR-FCV150A and B were left in AUTO allowing the valves to modulate based on flow indication.

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Beaver Valley Power Station, Unit 2	05000- 412	2021	- 004	- 00

NARRATIVE

CAUSE OF EVENT (continued)

The apparent cause was during performance of the procedure, the unit supervisor did not properly read step 6 of 2OM-52.4.A to the control room operator and as a result the step was performed incorrectly. The procedure step stated, "verify failed open," however, the unit supervisor read the step as "verify full open." Additionally, the unit supervisor did not read two sub steps to take the key lock switch to OPEN. The procedure is also deficient in that these two sub steps do not contain an action verb to move or verify that the key lock switches are in OPEN.

ANALYSIS OF EVENT

This is reportable under 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in a manual actuation of the Reactor Protection System per 10 CFR 50.73(a)(2)(iv)(B)(1). A 4-hour report was made in accordance with 10 CFR 50.72(b)(2)(iv)(B) at 1352 on November 12, 2021 (event notification 55572).

The plant risk associated with the BVPS-2 reactor trip on November 12, 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. The safety significance of this event was very low.

CORRECTIVE ACTIONS

Completed Actions:
The key lock switches were placed in OPEN per 2OM-52.4.A.

An immediate stand down was conducted at the site and within Operations to refocus on the correct behaviors.

Planned Actions:
Procedure 2OM-52.4.A will be updated to add the action verb to step 6 and add a caution prior to the performance of the step that describes why it is being performed.

PREVIOUS SIMILAR EVENTS

A recent mispositioning event due to personnel not properly following procedure use and adherence requirements includes Beaver Valley Power Station, Unit No. 1 (BVPS-1) LER 2021-001-00, "Containment Isolation Valve Found Restrained Open Resulting in Condition Prohibited by Technical Specifications." The cause and corrective actions from the BVPS-1 event were related to ensuring that the valves being out of position is logged correctly. This BVPS-2 event requires a corrective action to clarify a procedure step, and therefore the direct corrective actions for the BVPS-1 event would not be expected to prevent the BVPS-2 event.