



Beaver Valley Power Station
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July 6, 2021
L-21-168

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 2021-001-00

Enclosed is Licensee Event Report (LER) 2021-001-00, "Containment Isolation Valve Found Restrained Open Resulting in Condition Prohibited by Technical Specifications." This event is being reported in accordance with 10 CFR 50.73(a)(2)(i)(B).

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 black ink, appearing to read "John J. Grabnar", written over a horizontal line.

John J. Grabnar

Enclosure: Beaver Valley Power Station, Unit 1 LER 2021-001-00

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-21-168

Beaver Valley Power Station, Unit 1 LER 2021-001-00



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
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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 at: oir_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 1	2. Docket Number 05000 334	3. Page 1 OF 4
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4. Title Containment Isolation Valve Found Restrained Open Resulting in Condition Prohibited by Technical Specifications

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
05	08	2021	2021	- 001 -	00	07	06	2021	Facility Name	05000
									Facility Name	Docket Number
										05000

9. Operating Mode 3	10. Power Level 0
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11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)

<input type="checkbox"/> 10 CFR Part 20	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	10 CFR Part 73
<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.69(g)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(4)
<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.71(a)(5)
<input type="checkbox"/> 20.2203(a)(2)(i)	10 CFR Part 21	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(1)(i)
<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 21.2(c)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(i)
<input type="checkbox"/> 20.2203(a)(2)(iii)	10 CFR Part 50	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	<input type="checkbox"/> 73.77(a)(2)(ii)
<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<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)(v)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)	
<input type="checkbox"/> 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 (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	Manufacturer	Reportable to IRIS	Cause	System	Component	Manufacturer	Reportable to IRIS

14. Supplemental Report Expected		15. Expected Submission Date		Month	Day	Year
<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes (If yes, complete 15. Expected Submission Date)					

16. Abstract (Limit to 1560 spaces, i.e., approximately 15 single-spaced typewritten lines)

On May 8, 2021, during startup from the 27th Beaver Valley Power Station, Unit 1 (BVPS-1) refueling outage, BVPS-1 entered Mode 4 and then Mode 3 without satisfying Technical Specification (TS) 3.6.3, Containment Isolation Valves, Limiting Conditions for Operation as required by LCO 3.0.1 and LCO 3.0.4. TS 3.6.3 LCO requires containment isolation valves be operable in Modes 1, 2, 3 and 4. TS LCO 3.0.1 requires that LCOs be met during Modes or other specified conditions in the Applicability. TS LCO 3.0.4 requires that with an LCO not met, entry into a Mode of applicability shall only be made when the associated actions to be entered permit continued operation in the Mode for an unlimited period of time or when a risk assessment has been performed determining that entry into the Mode is acceptable. Contrary to LCO 3.0.4, while in Mode 3, it was discovered that containment isolation check valve 1QS-4 (quench spray pump discharge check valve) was inoperable. The check valve was inadvertently left open during performance of a loop seal fill procedure while in Mode 5.

The root cause was determined to be a loss of configuration control of 1QS-4 due to human performance errors by the Operations supervisor. The corrective action is to revise the loop fill procedure to direct that the check valves are added to the containment penetration log when being restrained open. This event is being reported under 10 CFR 50.73(a)(2)(i)(B) for operation or condition prohibited by TS.

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

(See NUREG-1022, R.3 for instruction and guidance for completing this form
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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Beaver Valley Power Station, Unit 1	05000-00334	2021	001	00

NARRATIVE

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

BACKGROUND

Technical Specification (TS) 3.6.3, Containment Isolation Valves Limiting Condition for Operation (LCO) 3.6.3, Each containment isolation valve shall be OPERABLE in Modes 1, 2, 3, and 4.

Condition A, One or more penetration flow paths with one containment isolation valve inoperable. If not met, both Required Actions apply: A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured within 4 hours, AND A.2 Verify the affected penetration flow path is isolated once per 31 days for isolation devices outside containment AND prior to entering Mode 4 from Mode 5 if not performed within the previous 92 days for isolation devices inside containment.

Also applicable is Condition D, Required Action and associated Completion Time not met. Required Actions: D.1 Be in Mode 3 within 6 hours AND D.2 be in Mode 5 within 36 hours.

With TS LCO 3.6.3 not met, and BVPS-1 entering Modes of applicability, LCO 3.0.4 also applies. LCO 3.0.4, When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made:

- When the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time;
- After performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate (exceptions to this Specification are stated in the individual Specifications); or
- When an allowance is stated in the individual value, parameter, or other Specification.

This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

Per TS 3.6.3 Bases, the containment isolation valves form part of the containment pressure boundary and provide a means for fluid penetrations not serving accident consequence limiting systems to be provided with two isolation barriers that are closed on a containment isolation signal. Two barriers in series are typically provided for each penetration, one is inside containment and the other is outside containment.

The quench spray [BE] pump discharge check valves are containment isolation [BD] valves per TS 3.6.3. During performance of procedure 1OM-13.4.O, "Quench Spray Loop Seal Drain and Fill," the check valve is secured open to facilitate the evolution, and then returned to normal system arrangement (NSA) during procedure restoration. The quench spray loop seals are used to prevent containment repressurization and to prevent draining water to the containment sump, and they are required to be filled for the entire cycle of operation.

1QS-3 and 1QS-4 (Trains A and B Quench Spray Pump Discharge Check Valve) are the containment isolation valves inside containment for their respective containment penetrations. The corresponding isolation valves outside containment are MOV-1QS-101A and B, respectively.

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		2021	001	00

NARRATIVE**DESCRIPTION OF EVENT**

On May 8, 2021, BVPS-1 was in Mode 3 and starting up from the 27th refueling outage. During the boric acid program containment walkdowns in support of plant startup, 1QS-4 (Train B Quench Spray Pump Discharge Check Valve) was found to be restrained open by its swing arm when it was expected to be unrestrained and closed per its NSA position. The restraint had been placed in accordance with procedure 1OM-13.4.O to support filling the quench spray loop seal prior to startup from the refueling outage and had not been removed prior to entering a mode of applicability for the containment isolation TS LCO 3.6.3. This resulted in the associated containment penetration being declared inoperable and an unplanned LCO action statement entry for LCO 3.6.3. Additionally, LCO 3.0.1 and LCO 3.0.4 were not met when the plant entered two modes of applicability while not meeting LCO 3.6.3.

BVPS-1 entered Mode 4, the first Mode of applicability, on May 8, 2021 at 0356. Mode 3 was subsequently entered at 1028. The condition was discovered and the TS LCO 3.6.3 Condition A was entered on May 8, 2021 at 1406. The restraint was removed and LCO 3.6.3 Condition A was exited at 1541. Prior to discovery, the containment penetration was inoperable for 10 hours and 10 minutes. The valve was restored 1 hour and 35 minutes after discovery, for a total inoperability time of 11 hours and 45 minutes. No other equipment or systems were inoperable which contributed to this event. The quench spray system train B remained operable.

CAUSE OF EVENT

The direct technical cause was that 1QS-4 was restrained out of NSA per procedure 1OM-13.4.O and not returned to NSA following filling of the loop seal. The root cause was a loss of configuration control of valve 1QS-4 due to human performance errors by the Operations supervisor, who did not meet the requirements of procedure 1/2-ADM-2028, "Temporary Configuration Control," and procedure NOP-OP-1002, "Conduct of Operations," for logging system conditions.

In the days leading up to the event, the plant was performing outage activities and activities required for plant startup. One of these activities was filling of the quench spray loop seals per procedure 1OM-13.4.O. As part of this procedure, the quench spray pump discharge check valve is restrained open to support gravity filling of the loop seal from the refueling water storage tank (RWST). The loop seal level is then verified by ultrasonic non-destructive examination (NDE) and the valve is returned to NSA per the restoration steps of 1OM-13.4.O. Similar procedures that restrain open containment isolation valves contain steps to add the applicable containment penetrations to the containment penetration log when the procedures are worked, no such steps are included in 1OM-13.4.O.

On April 30, 2021, NDE identified that the loop seals on both trains of quench spray needed to be filled. This fill was planned to follow the Type A containment surveillance test which prevented access to containment. Following the surveillance, procedure 1OST-47.2A, "Mode 5 Containment Penetration Verification," was performed to verify that containment isolation valves were restored to NSA; 1QS-4 was marked satisfactory in its NSA position.

In the evening of May 2, 2021, following verification that 1QS-4 was restored to NSA, 1OM-13.4.O was performed to fill the train B loop seal and 1QS-4 was restrained open. Operations personnel concluded that the loop was not filled and stopped performance of the procedure in order to perform other work. Therefore, with the procedure incomplete, the decision was made by Operations supervision that check valve 1QS-4 be left restrained open in order to continue filling the loop at a later time. There was no log entry made of this performance of 1OM-13.4.O per NOP-OP-1002, nor was an entry made documenting the non-NSA position of 1QS-4.

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NARRATIVE**CAUSE OF EVENT (Continued)**

Following the attempt to fill the loop seal, Operations requested NDE to evaluate the level in the loop seals with NDE confirming that both train A and B loop seals were satisfactory. Once determined that both loop seals were satisfactory, due to conflicting priorities, the restoration steps that should have been performed in accordance with 1OM-13.4.O were not performed.

On day shift May 3, 2021, the BVPS lead NDE inspector determined that the train B loop seal needed to be refilled, and Operations attempted to refill this loop seal. At this point, the operating crew believed 1QS-4 to be in its NSA position. Rather than restraining 1QS-4 open, they elected to open MOV-1QS-101B such that the RWST would provide enough static head to open 1QS-4 and fill the loop seal. This was properly documented in the logs. The loop seal was later determined by NDE to be satisfactory. Between the determination that the loops seals were satisfactory on May 2, 2021 and the final disposition of the train B loop seal, the working copy of the procedure which indicated the steps were not yet complete for 1OM-13.4.O was misplaced. At this time, since the working procedure had been misplaced, the Operations supervisor assumed that all steps had been completed and that 1QS-4 was therefore in its NSA position.

ANALYSIS OF EVENT

Since BVPS-1 entered Mode 4 and then Mode 3 with 1QS-4 inoperable, and without meeting the requirements of LCO 3.0.4, this is reportable under 10 CFR 50.73(a)(2)(i)(B) for operation or condition prohibited by TS.

The risk impact of having the quench spray pump discharge check valve 1QS-4 in the open position when it is required to be closed is negligible. The Probabilistic Risk Analysis (PRA) only models 1QS-4 for its function to open and provide quench spray flow following a Containment Isolation Phase B (CIB) signal, and this function was not impacted by the valve being restrained open. The containment isolation function of 1QS-4 is not modeled in the PRA since the valve is required to open and supply quench spray flow into containment in a severe accident. Additionally, the likelihood of an accident generating CIB conditions while the plant remained in Modes 4 and 3 is very small, and if it were to occur the existing recovery procedures include steps to close the outside containment isolation valve (MOV-1QS-101B) for this penetration once quench spray flow is no longer required, to prevent any potential release through this line. Therefore, this event had very low safety significance.

CORRECTIVE ACTIONS**Completed Actions:**

Operations removed the restraint and returned 1QS-4 to NSA on May 8, 2021.

Planned Actions:

Revise 1OM-13.4.O to direct that valves 1QS-3/1QS-4 are added to the containment penetration log when being restrained open.

PREVIOUS SIMILAR EVENTS

A review of the previous three years identified that no similar events have occurred at BVPS.

CR-2021-03771