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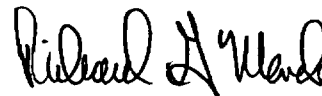
September 14, 2006  
L-06-139

***Beaver Valley Power Station, Unit No. 1***  
***Docket No. 50-334 License No. DPR-66***  
***LER 2006-003-00***

United States Nuclear Regulatory Commission  
Document Control Desk  
Washington, DC 20555

The following Licensee Event Report is submitted:

LER 2006-003-00, 10 CFR 50.73(a)(2)(i)(B), "Inadvertent Technical  
Specification Noncompliance Due to Inoperable Containment Isolation Valve."



*for* James H. Lash

Attachment

- c: Mr. T. G. Colburn, NRR Senior Project Manager  
Mr. P. C. Cataldo, NRC Senior Resident Inspector  
Mr. S. J. Collins, NRC Region I Administrator  
INPO Records Center (via electronic image)  
Mr. L. E. Ryan (BRP/DEP)

*IE22*

## 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 [infocollect@nrc.gov](mailto:infocollect@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.

## 1. FACILITY NAME

Beaver Valley Power Station Unit Number 1

## 2. DOCKET NUMBER

05000334

## 3. PAGE

1 of 5

## 4. TITLE

Inadvertent Technical Specification Noncompliance Due to Inoperable Containment Isolation Valve

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
07	22	2006	2006	- 003	- 00	09	14	2006	None	
									FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
1	<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)
	<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)
10. POWER LEVEL	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input 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 checked="" 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 368A

## 12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME

L. R. Freeland, Director Performance Improvement

TELEPHONE NUMBER (Include Area Code)

(724) 682-5206

## 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
A	JM	ISV	-	N					

## 14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete EXPECTED SUBMISSION DATE). ☒ NO

## 15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

On July 22, 2006, Beaver Valley Power Station (BVPS) Unit 1 initiated a work activity to replace a manual isolation valve in the Pressurizer liquid sample line outside of containment. The clearance intended to close and de-energize the outside containment isolation valve (TV-1SS-100A2) which is a normally open, fail-close, air-operated valve. The clearance activity isolated the air supply to this valve's solenoid actuator at approximately 1315 hours; however, the clearance did not provide adequate instructions to bleed off the trapped air in the valve's actuator, keeping this valve open. At approximately 2310 hours, an oncoming Reactor Operator noted during his Control Board walk-down that the valve position indicating light for containment isolation valve TV-1SS-100A2 was indicating open with a clearance tag posted on it. The valve was placed in the closed position at 2351 hours. BVPS Unit 1 did not comply with Technical Specification 3.6.3.1 Action a for an inoperable containment isolation valve, which is reportable pursuant to 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by the plant Technical Specifications.

The root causes for this event were 1) human performance errors (inattention to detail) occurring during the development, review/approval and implementation process that resulted in inadequate/incomplete clearance instructions and 2) supervision/management failed to provide the necessary oversight and reinforce expectations to ensure that error prevention tools were used during work execution. The safety significance of this event was very low.

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17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

## PLANT AND SYSTEM IDENTIFICATION

Westinghouse-Pressurized Water Reactor {PWR}  
Containment Isolation System {JM}

## CONDITIONS PRIOR TO OCCURRENCE

Unit 1: Mode 1 at 100 percent power

There were no systems, structures, or components that were inoperable at the start of the event.

## DESCRIPTION OF EVENT

On July 22, 2006, Beaver Valley Power Station (BVPS) Unit 1 initiated a work activity to replace a 3/8 inch manual isolation valve (1SS-27) in the Pressurizer liquid sample line outside of containment. A maintenance clearance was initiated to isolate the affected valve to allow its removal from the 3/8 inch sample line piping. The clearance intended to close and de-energize the upstream outside containment isolation valve (TV-1SS-100A2) which is a normally open, fail-close, air-operated solenoid-controlled trip valve. The clearance activity isolated the air supply to this valve's solenoid actuator at approximately 1315 hours; however, the clearance did not provide adequate instructions to bleed off the trapped air in the valve's actuator, keeping this valve open.

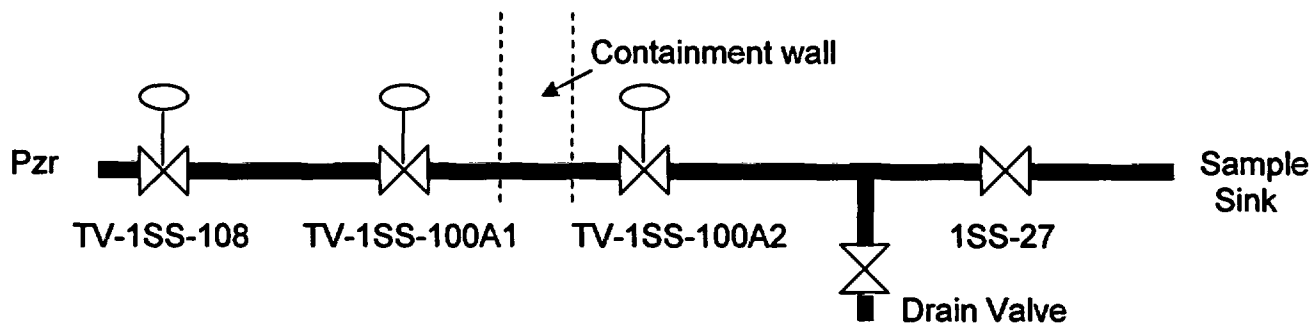
At approximately 2310 hours, the oncoming Reactor Operator noted during his Control Board walk-down that the valve position indicating light for containment isolation valve TV-1SS-100A2 was indicating open with a clearance tag posted on it. An attempt to close TV-1SS-100A2 from the control room was unsuccessful. [The shut air valve isolated both the air supply and the flow path to the solenoid-operated valve that bleeds off the air pressure that keeps TV-1SS-100A2 open. With this flow path blocked, the valve actuator could not bleed off the air and allow the spring force to close the valve.] The control room dispatched an operator to un-isolate the valve actuator's air supply so the control room could close the containment isolation valve using the control room bench board switch which controls several containment isolation valves. The valve was placed in the closed position at 2351 hours. The air supply to the valve actuator was then re-isolated. The valve then remained in its closed position, with its air supply isolated.

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17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

## Simplified Sketch of Valves



## REPORTABILITY

At approximately 1300 hours, a maintenance clearance was initiated to isolate sample system manual valve 1SS-27 just downstream of the outside containment isolation valve, TV-1SS-100A2. The air supply to TV-1SS-100A2 was isolated shortly thereafter. Since the valve's actuator was not vented, the valve remained open, and was inoperable due to it not being capable of automatic closure. The upstream inside containment isolation valve (TV-1SS-100A1) remained in its normally open position during this time (which was not intended to be closed). Although the next further upstream valve inside containment, TV-1SS-108, remained in its normally closed position, it did not have its power removed.

BVPS Unit 1 Technical Specification 3.6.3.1, Action a states "With one or more penetration flow paths with one containment isolation valve inoperable, isolate the affected penetration flow path within 4 hours by use of at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured, . . . Otherwise, be in at least Hot Standby within the next 6 hours and in Cold Shutdown within the following 30 hours."

Since there was no closed and de-energized automatic valve, no closed manual valve, no blind flange or a check valve with flow secured, then BVPS Unit 1 did not comply with Action a within 4 hours of TV-1SS-100A2 becoming inoperable and was not in Hot Standby within the following 6 hours since TV-1SS-100A2 was not closed and de-energized until approximately 10.6 hours after its air supply was initially isolated. Thus, this was an inadvertent non-compliance with Technical Specification 3.6.3.1, and is reportable pursuant to 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by the plant Technical Specifications.

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17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

## CAUSE OF EVENT

There were two root causes for this event. Human performance errors (inattention to detail) occurred during the development, review/approval and implementation process that resulted in inadequate/incomplete clearance instructions. Two independent reviews and a final Operations department approval failed to identify that the clearance did not provide adequate information to ensure desired execution, and failed to recognize the potential technical specification applicability to this evolution. These failures were attributed to various mindsets about the sequence of instructions, and a lack of a questioning attitude.

A second root cause was that supervision/management failed to provide the necessary oversight and reinforce expectations to ensure that error prevention tools were used during work execution. Human performance tools, such as pre-job briefing, questioning attitude, effective peer checks, post-job briefings, etc. were not effectively utilized during clearance posting.

## SAFETY IMPLICATIONS

Upstream containment isolation valve, TV-1SS-100A1, remained fully operable during this entire event, and would have performed its containment isolation function should it have been called upon to function. The next further upstream valve from TV-1SS-100A1 was TV-1SS-108 which is a remote manual valve, remained in its normal fully closed position the entire time. Thus, there was no potential for any single failure which could cause both TV-1SS-108 to open and prevent TV-1SS-100A1 from closing. However, this combination of two valves did not meet Technical Specification 3.6.3.1 Action a criteria.

The probability of TV-1SS-108, a normally closed remote manual air operated valve, transferring open is  $2.5E-06$  per hour, while the probability of the upstream containment isolation air operated valve, TV-1SS-100A1 failing to close on demand is  $4.5E-03$ . Assuming that a valid containment isolation signal was received during the period that TV-1SS-100A2 was unable to perform its function (from 1315 hours until 2351 hours on July 22, 2006), the probability of having the affected containment penetration unisolated would be the product of these two probabilities multiplied by the duration of the event or  $1.2E-07$ . This is considered to be of very low risk significance when considering this low probability of occurrence, the 3/8" penetration line size, and the frequency of having an actual containment isolation signal during the approximate 10.6 hour duration of the event.

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17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

## CORRECTIVE ACTIONS

1. Upon discovery, actions were immediately taken to close and de-energize the affected containment isolation valve.
2. The causes of this event and the related ineffective human performance behaviors will be reviewed with BVPS Unit 1 and Unit 2 Operations personnel involved with the clearance process.
3. A repetitive administrative task will be developed for Operations supervision/management to perform field observations that focus on the use of human performance tools during clearance activities to ensure Technical Specification references are provided. Operations Management will reinforce expectations for clearance development.

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 1 and one prior BVPS Unit 2 Licensee Event Report within the last three years for an event involving a containment isolation valve or a work clearance:

- BVPS Unit 2 LER 2005-001, "Containment Isolation Valve Relay Failure Unknowingly Leads to Technical Specification Noncompliance." BVPS Unit 2 LER 2005-001 involved a cascading component failure, which is not similar to BVPS Unit 1 LER 2006-003 event.

## COMMITMENTS

There are no new commitments made by FirstEnergy Nuclear Operating Company for BVPS Unit 1 in this document.