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Beaver Valley Power Station, Unit No. 2
Docket No. 50-412 License No. NPF-73
LER 2006-002-00

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

The following Licensee Event Report is submitted:

LER 2006-002-00, 10 CFR 50.73(a)(2)(i)(B) and 10 CFR 50.73(a)(2)(v)(C) and 10 CFR 50.73(a)(2)(vii), "Entry into Technical Specification 3.0.3 Due to Inoperability of Both Trains of the Supplemental Leak Collection and Release System."

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

NRC FORM 366 (6-2004) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 6/30/2007

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 infocollects@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.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

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4. TITLE

Entry into Technical Specification 3.0.3 Due to Inoperability of Both Trains of the Supplemental Leak Collection and Release System

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
04	11	2006	2006	- 002 -	00	06	12	2006	None	
									FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE

1

10. POWER LEVEL

100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☒ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(a)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☐ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☒ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☒ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER *(Include Area Code)*
L. R. Freeland, Director Performance Improvement	(724) 682-4284

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
X	VF	FLT	A220	Yes					

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 April 11, 2006, Beaver Valley Power Station (BVPS) Unit No. 2 declared both trains of the Supplemental Leak Collection and Release System (SLCRS) inoperable due to a loss of filtering capacity of the charcoal main filter banks. The charcoal main filter banks were sprayed with water after an inadvertent actuation of fire protection deluge valves. With the charcoal main filter banks wet, their filtering capacity was diminished and both trains were declared inoperable. At 0924 hours, Unit 2 entered the actions of Technical Specification (TS) 3.0.3. In accordance with the requirements of TS 3.0.3, actions to prepare for a plant shutdown began at 1020 hours and a shutdown of the plant was commenced at 1055 hours.

In parallel with the plant shutdown, a Notice of Enforcement Discretion (NOED) was prepared for presentation to the Nuclear Regulatory Commission (NRC). At 1520 hours, with reactor power at approximately 19 percent (%), the NOED was granted by the NRC for a period of 48 hours and the plant shutdown was terminated. The unit returned to 100% power on April 12, 2006, at 1455 hours.

The most probable cause of the event was a ground that actuated certain fire protection actuation relays. This event is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B) due to an entry into TS 3.0.3 for greater than one hour, 10 CFR 50.73(a)(2)(v)(C) as a condition that could have prevented the fulfillment of the safety function of a system designed to control the release of radioactive material, and 10 CFR 50.73(a)(2)(vii) as an event where a single cause resulted in the loss of two independent trains of SLCRS as required by TS 3.7.8.1. The plant risk associated with the inadvertent actuation of the fire protection deluge system is considered to be 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}
Auxiliary Building Environmental Control System {VF}

CONDITIONS PRIOR TO OCCURRENCE

Unit 2: Mode 1 at 100 percent power.

The "A" train of Supplemental Leak and Collection System (SLCRS) had been declared inoperable on April 10, 2006, at 0436 hours for scheduled maintenance. The action of Technical Specification (TS) 3.7.8.1 requires that an inoperable train of SLCRS be restored within 7 days or the unit shall be placed in at least Hot Standby within the next 6 hours and in Cold Shutdown within the following 30 hours.

DESCRIPTION OF EVENT

On April 11, 2006, Beaver Valley Power Station Unit No. 2 was at 100% power. The actions of TS 3.7.8.1 had been entered on April 10, 2006, at 0436 hours due to the removal of the "A" train of SLCRS for scheduled maintenance. At 0924 hours on April 11, 2006, an inadvertent actuation of fire protection system deluge valves resulted in a wetting of the charcoal filters for both parallel filters in the "B" train of SLCRS and in one of the two filters in the "A" train of SLCRS. With the charcoal main filter banks wet, their filtering capacity was diminished and both trains were declared inoperable due to their inadequate filtration ability. At 0924 hours, Unit 2 entered the actions of TS 3.0.3 which requires that within one hour action shall be initiated to place the unit in Hot Standby within the next 6 hours, Hot Shutdown within the following 6 hours and Cold Shutdown within the subsequent 24 hours. In addition to the SLCRS main filter banks, deluge valve actuations affected the System Station Service Transformers, the Main Transformer, the Condensate Polishing building ventilation charcoal filter and the Decontamination building ventilation charcoal filter. The transformers were not adversely affected by the spray actuation and remained operable. The consequences of the spray on the Condensate Polishing and Decontamination building charcoal filters were not significant.

In accordance with the requirements of TS 3.0.3, actions to prepare for a plant shutdown began at 1020 hours and a shutdown of the plant at 20 percent (%) per hour was commenced at 1055 hours. A notification to the Nuclear Regulatory Commission (NRC) in accordance with 10 CFR 50.72(b)(2)(i) was completed at 1237 hours. The notification was required due to the initiation of a plant shutdown required by Technical Specifications.

In parallel with the plant shutdown, a Notice of Enforcement Discretion (NOED) was prepared for presentation to the NRC. At 1400 hours, with reactor power at approximately

26%, the request for a NOED was presented to the NRC for consideration. At 1520 hours, with reactor power at approximately 19%, the NOED was granted for a period of 48 hours and the plant shutdown was terminated. The basis for the NOED, found in FENOC letter L-06-070, dated April 13, 2006, was that all credit for the charcoal filtration has now been removed from at-power design basis accident safety analyses and that there is currently a license amendment request pending with the NRC which will remove this system from the plant's Technical Specifications during power operation. The unit returned to 100% power on April 12, 2006, at 1455 hours.

On April 13, 2006, the "A" train of SLCRS was declared operable and BVPS Unit No. 2 exited the NRC Discretionary Enforcement for TS 3.0.3 at 0945 hours. With the "B" train of SLCRS inoperable, the unit continued in TS 3.7.8.1 until April 14 when the "B" train was returned to service and TS 3.7.8.1 was exited at 2209 hours.

CAUSE OF EVENT

Extensive analysis and investigation by the root cause team, which included support of industry fire protection system and electrical circuit troubleshooting experts, could not determine the exact cause of the deluge actuations. The team determined that the most probable cause of the event was a ground located on the non-safety related 125 VDC bus 2-5 or 2-6 that propagated a surge to the other DC bus and actuated sensitive fire protection actuation relays. All of the fire protection circuits did not actuate due to the difference in the actual impedance of the trip circuits in response to a surge on the buses. The exact location and cause of the ground could not be determined. It was most likely a ground somewhere in the DC system that cleared itself and could not be located later.

REPORTABILITY

This event is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B) as an operation or condition prohibited by Technical Specifications. Per the guidance in NUREG 1022, revision 2, entry into TS 3.0.3 should be considered reportable under this criterion if the condition is not corrected within an hour, such that it is necessary to initiate actions to shutdown.

This event is also reportable per 10 CFR 50.73(a)(2)(v)(C) as a condition that could have prevented the fulfillment of the safety function of a system that is needed to control the release of radioactive material and 10 CFR 50.73(a)(2)(vii) as an event where a single condition caused two independent trains to become inoperable in a single system designed to control the release of radioactive material. Per the guidance in NUREG 1022, revision 2, the systems included in the scope of these two reporting criteria are the systems required by the plant's Technical Specifications to be operable to perform one of the functions (i.e. control the release of radioactive material) in the rule. The reporting criteria are not determined by the phrases "safety-related" or "important to safety". Thus,

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

even though the SLCRS charcoal filters no longer provide any safety function credited in the existing at-power safety analyses, it is being reported as a loss of safety function per 10 CFR 50.73(a)(2)(v)(C) and 10 CFR 50.73(a)(2)(vii) since the stated purpose of the SLCRS in the plant's Technical Specifications is to control the release of radioactive material, pursuant to NUREG-1022.

The event reportability for 10 CFR 50.73(a)(2)(v)(C) as a loss of safety function was not identified until well after this event was initially reported pursuant to 10 CFR 50.72(b)(2)(i) on April 11, 2006. Thus, this event should also have been initially reported pursuant to 10 CFR 50.72(b)(3)(v) as a loss of safety function. This transmittal will serve as reporting for 10 CFR 50.72(b)(3)(v).

Because this event is reportable per 10 CFR 50.73(a)(2)(v) it will also be reported as a Safety System Functional Failure for the NRC Performance Indicators in accordance with the guidance of NEI 99-02, revision 4.

SAFETY IMPLICATIONS

The plant risk associated with the BVPS Unit 2 inadvertent actuation of the fire protection deluge system on April 11, 2006, is considered to be very low. The main filter banks are not modeled in the Probabilistic Risk Assessment model and therefore the loss of filtering did not directly affect core damage probability. The incremental conditional core damage probability for the event was based on the event duration and component unavailability. At the time of the BVPS-2 inadvertent actuation there were two other PRA modeled components that were out of service. These were the swing High Head Safety Injection pump and the containment instrument air compressor. The total duration of the event from the time of the inadvertent actuation until the time when the "A" train of SLCRS was declared operable, was 48 hours and 21 minutes. This results in an incremental conditional core damage probability of 5.5E-10 for the duration of the event, which is considered to be very low and non-risk significant.

In addition, although current Technical Specifications require SLCRS to be Operable, the current design and licensing bases do not credit SLCRS filtration for any design basis accident in Modes 1-4. BVPS had previously submitted a License Amendment Request that, when approved, will allow removal of the current SLCRS Technical Specification requirements when the plant is operating in Modes 1-4.

Based on the above, the safety significance of the fire protection deluge system inadvertent actuation on April 11, 2006, was very low.

CORRECTIVE ACTIONS

1. Immediate actions included isolating water to the deluge systems for the areas involved as well as the Auxiliary Feedwater pumps as a precautionary measure. Hourly fire tours were initiated to the isolated areas as a compensatory measure.

2. The charcoal and High Efficiency Particle Air (HEPA) filters on the main filter banks were replaced as necessary.

3. The deluge valves for the SLCRS main filter banks are planned to be replaced with manually operated ball valves. Actuation of the fire protection system to these areas will be manually controlled.

4. An investigation will be performed to determine if a latent common connection exists between the non-safety related 125 VDC 2-5 and 2-6 buses.

Completion of the above and other corrective actions are being tracked through the BVPS corrective action program.

PREVIOUS SIMILAR EVENTS

A review found one prior BVPS Unit 1/ BVPS Unit 2 Licensee Event Report within the last ten years involving the potential for a spurious actuation of the fire protection deluge system that could result in both trains of SLCRS being inoperable at Unit 1 or Unit 2.

- LER 1-97-021-01 "Potential for Seismic Event to Result in Both Trains of Supplementary Leak Collection and Release System to Become Inoperable". This LER addressed the potential for a spurious actuation of the deluge system during a seismic event due to the use of non-qualified relays in the fire protection control circuitry. The corrective actions involved the qualification and/or replacement of the relays to meet seismic criteria.

COMMITMENTS

There are no new commitments made by FirstEnergy Nuclear Operating Company (FENOC) for BVPS Unit No. 2 in this document.