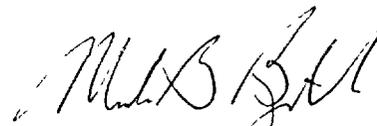


Mark B. Bezilla
Site Vice President724-682-5234
Fax: 724-643-8069April 25, 2003
L-03-074***Beaver Valley Power Station, Unit No. 1***
Docket No. 50-334 License No. DPR-66
LER 2003-003-00United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

In accordance with Appendix A, Beaver Valley Technical Specifications, the following Licensee Event Report is submitted:

LER 2003-003-00, 10 CFR 50.73(a)(2)(iv)(A), "Automatic Actuation of Emergency Diesel Generator Following Loss of Emergency Bus Offsite Source."



Mark B. Bezilla

Attachment

- c: Mr. T. G. Colburn, NRR Senior Project Manager
- Mr. D. M. Kern, Sr. Resident Inspector
- Mr. H. J. Miller, NRC Region I Administrator
- INPO Records Center (via electronic image)
- Mr. L. E. Ryan (BRP/DEP)

IE22

NPC FORM 366 (7-2001)	U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB NO. 3150-0104	EXPIRES 7-31-2004
LICENSEE EVENT REPORT (LER) (See reverse for required number of digits/characters for each block)		Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@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 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 No. 1	2. DOCKET NUMBER 05000334	3. PAGE 1 OF 4
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4. TITLE
Automatic Actuation of Emergency Diesel Generator Following Loss of Emergency Bus Offsite Source

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
02	27	2003	2003	003	00	04	25	2003	None	
									FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE	1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §. (Check all that apply)								
10. POWER LEVEL	58	20 2201(b)			20.2203(a)(3)(ii)			50.73(a)(2)(ii)(B)		50.73(a)(2)(ix)(A)
		20 2201(d)			20 2203(a)(4)			50.73(a)(2)(ii)		50 73(a)(2)(x)
		20 2203(a)(1)			50 36(c)(1)(i)(A)			X 50.73(a)(2)(iv)(A)		73 71(a)(4)
		20 2203(a)(2)(i)			50 36(c)(1)(ii)(A)			50.73(a)(2)(v)(A)		73 71(a)(5)
		20 2203(a)(2)(ii)			50.36(c)(2)			50.73(a)(2)(v)(B)		OTHER Specify in Abstract below or in NRC Form 366A
		20 2203(a)(2)(iii)			50.46(a)(3)(ii)			50.73(a)(2)(v)(C)		
		20 2203(a)(2)(iv)			50 73(a)(2)(i)(A)			50.73(a)(2)(v)(D)		
		20 2203(a)(2)(v)			50 73(a)(2)(i)(B)			50.73(a)(2)(vii)		
		20 2203(a)(2)(vi)			50 73(a)(2)(i)(C)			50.73(a)(2)(viii)(A)		
20 2203(a)(3)(i)			50.73(a)(2)(ii)(A)			50.73(a)(2)(viii)(B)				

12. LICENSEE CONTACT FOR THIS LER

NAME L. R. Freeland, Manager Regulatory Affairs / Performance Improvement	TELEPHONE NUMBER (Include Area Code) (724) 682-5284
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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

14. SUPPLEMENTAL REPORT EXPECTED				15. EXPECTED SUBMISSION DATE		
YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO		MONTH	DAY	YEAR

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

At 1301 hours on 2/27/2003, Beaver Valley Power Station Unit 1 was operating at 58% power and returning to full power operation following a startup from a recent forced outage. During the startup of the 'B' main feedwater pump, an instantaneous ground overcurrent trip occurred on the offsite power to 4KV feeder breaker 1D6. The opening of the feeder breaker de-energized the non-safety related 'D' bus which had been supplying power to the 'B' main feedwater pump. The 'B' train safety related emergency bus which is normally powered by the 'D' bus, then also became de-energized with the loss of power on the 'D' bus. The 'B' train emergency diesel generator automatically started on the loss of voltage and re-energized the emergency bus, with loads automatically sequenced back onto the bus as designed. The automatic actuation of the emergency diesel generator is reportable pursuant to 10 CFR 50.73(a)(2)(iv)(A).

The direct cause of this event was the unexpected opening of the 4KV feeder breaker 1D6 from offsite power when the 'B' main feedwater pump was started. The root cause was that the ground sensor cable geometry induced a false ground fault current that actuated the ground fault detection relays. The improper geometry combined with a lowered ground relay setting caused the ground relay to operate on a false ground current and trip the feeder breaker. The safety significance of this event was low.

LICENSEE EVENT REPORT (LER)
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PLANT AND SYSTEM IDENTIFICATION

Westinghouse-Pressurized Water Reactor (PWR)
 Medium Voltage Power System (4160 v) (EA)
 Medium Voltage Power System – Class 1E (4160 v) (EB)
 Emergency Onsite Power Supply (EK)
 Main Feedwater System (SJ)

CONDITIONS PRIOR TO OCCURRENCE

Unit 1: Mode 1 at 58 % power

There were no systems, structures, or components that were inoperable at the start of the event that contributed to the event other than as described below.

DESCRIPTION OF EVENT

At 1301 hours on 2/27/2003, Beaver Valley Power Station (BVPS) Unit 1 was operating at 58% power and returning to full power operation following a startup from a recent forced outage. Following the start of the 'B' main feedwater pump, an ground instantaneous overcurrent trip occurred on the offsite power to 4KV feeder breaker 1D6 (EA). The opening of the feeder breaker de-energized the non-safety related 'D' 4KV bus which had been supplying power to the 'B' main feedwater pump. The 'B' train safety related 'DF' 4KV emergency bus (EB) which is normally powered by the 'D' bus, then also became de-energized with the loss of power on the 'D' bus. The 'B' train emergency diesel generator (EK) automatically started on the loss of voltage and re-energized the 'DF' bus, with emergency loads automatically sequenced back onto the bus as designed.

The control room crew entered Abnormal Operating Procedure 1AOP-36.2, Loss of 4KV Emergency Bus and 1AOP-51.1, Emergency Shutdown. Power was manually reduced and the plant was stabilized at 43% power with the 'D' bus de-energized and the 'B' emergency diesel generator supplying all power to the 'DF' bus.

With the normal offsite power supply to the 'DF' bus inoperable, Technical Specification 3.8.1.1 was entered which requires that the operability of the remaining A.C. sources be demonstrated within 1 hour and at least once per 8 hours thereafter, and to restore the offsite circuit to operable status within 72 hours. At 0133 hours on 2/28/2003, the 'DF' bus was re-energized from the offsite power source and Technical Specification 3.8.1.1 was exited.

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REPORTABILITY

This event is reportable pursuant to 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in an automatic actuation of the onsite emergency diesel generator on 02/27/2003, a system listed in paragraph 10 CFR 50.73(a)(2)(iv)(B)(8). The NRC was notified of this event pursuant to 10 CFR 50.72(b)(3)(iv)(A) at 1715 hours on 2/27/2003 (ENS No. 39623).

CAUSE OF EVENT

The direct cause of this event was the unexpected opening of the 4KV feeder breaker 1D6 from offsite power when the 'B' main feedwater pump was started. The root cause of this event was that the ground sensor cable geometry induced a false ground fault current that actuated the ground fault detection relays. These relays were reset by a plant modification performed in February 2003 to operate at a lower setting to ensure coordination with station service neutral overcurrent protection. The improper geometry combined with the lowered ground relay setting caused the ground relay to operate on a false ground current and trip the feeder breaker. This was the first time that this main feedwater pump had been started since this new ground fault relay had been installed.

A contributing cause was the a lack of knowledge regarding the importance of the effect of the cable geometry in the sensor during the development of the design change. Another contributing cause was that the post modification testing was less than adequate.

SAFETY IMPLICATIONS

This event was a loss of one non-safety related and one safety related bus, which are normally powered from offsite power. This is less severe than the design basis event for a complete loss of offsite power. The Loss of External Electrical Load and/or Turbine Trip is analyzed in BVPS Unit No. 1 Updated Final Safety Analysis Report (UFSAR) Section 14.1.7. The actual plant response on 02/27/2003 was bounded by the UFSAR analysis for a Loss of External Electrical Load. All safety related systems functioned as expected following the opening of the offsite feeder breaker.

The plant risk associated with the BVPS Unit 1 loss of safety related DF bus and the start of the No. 2 emergency diesel generator on 02/27/2003, is considered to be low. This is based on the incremental core damage probability for the event when considering the actual component unavailabilities that were present at the time of the trip and the relatively short duration. Therefore, the safety significance of this event was low.

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TEXT CONTINUATION

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CORRECTIVE ACTIONS

1. Measurements, inspections and tests were conducted on numerous plant components. No equipment failures or miscalibrations of relays were found.
2. A potential transformer style fault sensor is now being used in place of the previous magnetic sensor on the 1D6 bus breakers and other similar breakers. Revised relay settings were also implemented.
3. The 'B' main feedwater pump motor will be monitored during its initial startup from the current refueling outage to verify that this motor is operating correctly.
4. Additional training will be provided to design engineering personnel on determining bounding technical requirements as determined through a training needs analysis.
5. The Engineering Standard on protective relaying philosophy will be revised as a result of this event.
6. The design change process will be reviewed with regard to the post maintenance testing criteria.

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

PREVIOUS SIMILAR EVENTS

A review of past Beaver Valley Power Station Licensee Event Reports for the last five years found three similar events involving a loss of bus or ground overcurrent event at BVPS Unit 1 or Unit 2.

BVPS Unit 1 LER 00-004, "Inadvertent ESF Actuation Due to Loss of Power to 4KV Emergency Bus."

BVPS Unit 2 LER 99-005, "4KVS-2A Bus Trip on Ground Overcurrent Relay 51-VA207X."

BVPS Unit 2 LER 99-006, "Loss of Beaver Valley Power Station Unit No. 2 4KV Train 'B' Emergency Bus."

ATTACHMENT

Beaver Valley Power Station, Unit No. 1 License Event Report 2003-003-00

Commitment List

The following list identifies those actions committed to by FirstEnergy Nuclear Operating Company (FENOC) for Beaver Valley Power Station (BVPS) Unit Nos. 1 and 2 in this document. Any other actions discussed in the submittal represent intended or planned actions by Beaver Valley. These other actions are described only as information and are not regulatory commitments. Please notify Mr. Larry R. Freeland, Manager, Regulatory Affairs/Corrective Actions, at Beaver Valley on (724) 682-5284 of any questions regarding this document or associated regulatory commitments.

Commitment

Due Date

The 'B' main feedwater pump motor will be monitored during its initial startup from the current refueling outage to verify that this motor is operating correctly.

As tracked through the Corrective Action Program.

Additional training will be provided to design engineering personnel on determining bounding technical requirements as determined through a training needs analysis.

As tracked through the Corrective Action Program.

The Engineering Standard on protective relaying philosophy will be revised as a result of this event.

As tracked through the Corrective Action Program.

The design change process will be reviewed with regard to the post maintenance testing criteria.

As tracked through the Corrective Action Program.