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L-01-142

Beaver Valley Power Station, Unit No. 1
Docket No. 50-334 License No. DPR-66
LER 2001-002-00

United 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 2001-002-00, 10 CFR 50.73(a)(2)(iv), "Manual Reactor Trip During Plant
Shutdown."

Lew W. Myers

Attachment

IE22

Rec'd
01/14/02

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cc: Mr. H. J. Miller, Regional Administrator
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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
Manual Reactor Trip During Plant Startup.

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
10	06	2001	2001	002	00	11	29	2001	None	
9. OPERATING MODE			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)							
3										
10. POWER LEVEL			0 %							
			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)(iii)		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	
			20.2203(a)(2)(iii)		50.46(a)(3)(ii)		50.73(a)(2)(v)(C)		Specify in Abstract below or in	
			20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(D)		NRC Form 366A	
			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 T. S. Cosgrove, Manager Regulatory Affairs	TELEPHONE NUMBER (Include Area Code) (724) 682-5203
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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
N/A									

14. SUPPLEMENTAL REPORT EXPECTED

YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
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16. ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On October 6, 2001, Beaver Valley Power Station Unit No. 1 testing personnel and the Control Room operators were performing a Control Rod Drop Testing surveillance in preparation for reactor startup following Unit 1's fourteenth refueling outage. The plant was in a sub-critical condition in Mode 3 with Shutdown Bank B control rods withdrawn. At 1959 hours, the Control Room operators observed indications of two dropped control rods (via rod position indication reading zero steps and rod bottom lights on), and entered Unit 1 Abnormal Operating Procedure (AOP) 1.1.8 for Rod Inoperability. The Reactor Operator opened the reactor trip breakers in accordance with the AOP and the Reactivity Management Plan. Emergency Operating Procedure E-0 for Reactor Trip was performed and the plant remained in Mode 3. The manual initiation of a reactor trip via the Reactor Protection System by the BVPS Unit 1 control room operator on October 6, 2001, was a valid manual reactor trip signal and was not part of a pre-planned sequence during testing or reactor operation. Therefore this event is reportable pursuant to 10 CFR 50.73(a)(2)(iv)(A).

It was subsequently discovered that the two dropped control rod indications were caused by the testing personnel repositioning knife switches to place the rod drop computer in service. There were no dropped control rods. This action by the testing personnel and resulting expected indications were not communicated to the Control Room operators prior to their occurrence. The opening of the reactor trip breakers was caused by a lack of good communication practices and a lack of procedure adherence by an inexperienced test engineer. This engineer failed to read a step in the test procedure which required the engineer to inform the Reactor Operator that the control room would be losing indication on control rod Shutdown Bank B. The safety significance of the manual reactor trip on October 6, 2001 was small.

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PLANT AND SYSTEM IDENTIFICATION

Westinghouse-Pressurized Water Reactor System
Control Rod Drive System and Control Rod Position Indication (AA)

CONDITIONS PRIOR TO OCCURRENCE

Unit 1: Mode 3 at 0 % power

There were no systems, structures, or components that were inoperable that contributed to the event.

DESCRIPTION OF EVENT

On October 6, 2001, Beaver Valley Power Station Unit No. 1 testing personnel and the Control Room operators were performing a Control Rod Drop Testing surveillance in preparation for reactor startup following Unit 1's fourteenth refueling outage. The plant was in a sub-critical condition in Mode 3 with Shutdown Bank B control rods withdrawn. At 1959 hours, the Control Room operators observed indications of two dropped control rods (via rod position indication reading zero steps and rod bottom lights on), and entered Unit 1 Abnormal Operating Procedure (AOP) 1.1.8 for Rod Inoperability. The Reactor Operator (RO) opened the reactor trip breakers in accordance with the AOP and the Reactivity Management Plan. Emergency Operating Procedure E-0 for Reactor Trip was performed and the plant remained in Mode 3.

A subsequent investigation discovered that the two dropped control rod indications were caused by the testing personnel repositioning knife switches to place the rod drop computer in service. There were no dropped control rods. This action by the testing personnel and resulting expected indications were not communicated to the Control Room operators prior to their occurrence.

During the briefing held before conducting these tests, the crew discussed actions to take in the event of a single or multiple dropped rods. During the pre-test briefing, the crew decided that they would open the trip breakers per the immediate action of the AOP for multiple dropped rods.

REPORTABILITY

The manual initiation of a reactor trip via the Reactor Protection System by the BVPS Unit 1 control room operator on October 6, 2001, was a valid manual reactor trip signal and was not part of a pre-planned sequence during testing or reactor operation. Therefore this event is reportable pursuant to 10 CFR 50.72(b)(3)(iv)(A) and 50.73(a)(2)(iv)(A). The NRC was notified that a manual reactor trip occurred at BVPS Unit 1 pursuant to 10 CFR 50.72 (b)(3)(iv)(A) at 0305 hours on October 7, 2001 (ENS No. 38360).

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CAUSE OF EVENT

This event was caused by a lack of procedure adherence and a lack of good communication practices. It involved a human error by an inexperienced test engineer to read a step in the test procedure. The procedure step required the engineer to inform the RO that the control room would be losing indication on control rod Shutdown Bank B. The engineer failed to read this step because of a familiarity with the test procedure from the previous banks' rod drop performed earlier in the test.

Lack of understanding for the importance of procedure adherence factors contributed to this incident. The Lead Engineer was in contact with the Control Room at the start of the event. The (inexperienced) test engineer interrupted the Lead Engineer, (who was still on the page party with the control room) to ask what could be done next to move the testing along. The Lead Engineer told the test engineer to get the recorders ready for the Shutdown Bank B control rod drop. Instead of locating the last step performed in the test procedure, the test engineer skipped to page 18 of the test procedure because he knew that this was where the table of knife switches for Shutdown Bank B was located. This resulted in missing the step on page 17 to inform the RO that he would be losing Shutdown Bank B indication. Not realizing that the indication in the Control Room was affected by the opening of the switches, the test engineer instructed the I&C technicians to open the knife switches for Shutdown Bank B. Once the knife switches were open, the Lead Engineer (still on the page party with the Control Room) was informed indication was lost and immediately instructed the I&C technicians to stop and return the knife switches to the closed position. However, by this time, the Control Room Operators had already followed the AOP to manually trip the reactor.

SAFETY IMPLICATIONS

Following the manual reactor trip, the control rods fully inserted into the reactor core and the required safety systems operated as designed. Emergency Operating Procedure E-0 for Reactor Trip was performed and the plant remained in Mode 3. The plant was in a sub-critical condition in Mode 3 prior to the manual reactor trip.

This event was a manual reactor trip from a sub-critical condition, which is much less severe than the design basis event for Loss of External Electrical Load and/or Turbine Trip from full power. The Loss of External Electrical Load and/or Turbine Trip is analyzed in BVPS Unit No. 1 UFSAR Section 14.1.7. Comparison of the UFSAR Loss of External Electrical Load and/or Turbine Trip with this event indicates that BVPS Unit 1 operated conservatively regarding the UFSAR transient in comparisons of UFSAR analysis assumptions/results. The actual plant response for this event was bounded by the UFSAR analysis for a Loss of External Electrical Load and/or Turbine Trip.

The plant risk associated with this BVPS Unit 1 manual reactor trip is considered to be low. This is based on the conditional core damage probability for the event when considering the trip was taking place during plant operation in Mode 3 and with 0% reactor power.

Based on the above, the safety significance of the manual reactor trip on October 6, 2001 was small.

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CORRECTIVE ACTIONS

1. Actions have been taken to address the importance of this event and the importance of procedural adherence and communication standards with System Engineers.
2. System Engineering will perform Just-In-Time training for the Rod Drop testing team prior to the next Beaver Valley Power Station refueling outage (2R09), stressing communications standards.
3. The test procedure involving the Control Rod Drop Test (1BVT-1.1.1) will be revised to include warnings before each Shutdown Bank Table to inform the Reactor Operator that indication will be lost in the Control Room when the knife switches are opened.

Corrective action completion is being tracked through the corrective action program.

PREVIOUS SIMILAR EVENTS

A review of past Beaver Valley Power Station Units 1 and 2 Licensee Event Reports found one similar event involving a reactor trip associated with inadequate procedure awareness within the last three years:

BVPS Unit 1 LER 99-001, "Manual Reactor Trip Due to Continuing Degradation of Main Condenser Parameters."