



Duquesne Light

Nuclear Group
P.O. Box 4
Shippingport, PA 15077-0004

Telephone (412) 393-6000

January 16, 1996
NPD1VPO:0421

***Beaver Valley Power Station, Unit No. 1
Docket No. 50-334, Licensee No. DPR-66
LER-95-010-00***

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 voluntarily submitted:

LER 95-010-00, "Station Shutdown for Replacement of Rubber Expansion Joints In The River Water System."

T. P. Noonan
Division Vice President
Nuclear Operations/Plant Manager

Attachment

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The Nuclear Professionals

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cc: Mr. T. T. Martin, Regional Administrator
United States Nuclear Regulatory Commission
Region 1
475 Allendale Road
King of Prussia, PA 19406

Mr. D. S. Brinkman
BVPS Licensing Project Manager
United States Nuclear Regulatory Commission
Washington, DC 20555

Mr. Larry Rossbach
BVPS Senior Resident Inspector
United States Nuclear Regulatory Commission

Mr. J. A. Hultz
Ohio Edison Company
76 S. Main Street
Akron, OH 44308

Mr. Mark Burns
Centerior Energy Corporation
6200 Oak Tree Boulevard
Independence, OH 44101-4661

INPO Records Center
700 Galleria Parkway
Atlanta, GA 30339-5957

Mr. Robert Maiers
Department of Environmental Resources
P.O. Box 8469
State Office Building, 13th Floor
Harrisburg, PA 17105-8469

Director, Safety Evaluation & Control
Virginia Electric & Power Company
P.O. Box 26666
One James River Plaza
Richmond, VA 23261

LICENSEE EVENT REPORT (LER)

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Beaver Valley Power Station Unit 1		DOCKET NUMBER (2) 05000334	PAGE (3) 1 OF 3
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Station Shutdown for Replacement of Rubber Expansion Joints in the River Water System

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
12	18	95	95	010	00	01	16	96	FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 20 CFR § (Check one or more) (11)										
	20.402(b)			20.405(c)			50.73(a)(2)(iv)			73.71(b)	
	20.405(a)(1)(i)			50.36(c)(1)			50.73(a)(2)(v)			73.71(c)	
	20.405(a)(1)(ii)			50.36(c)(2)			50.73(a)(2)(vii)			X OTHER	
	20.405(a)(1)(iii)			50.73(a)(2)(i)			50.73(a)(2)(viii)(A)			Voluntary	
20.405(a)(1)(iv)			50.73(a)(2)(ii)			50.73(a)(2)(viii)(B)					
20.405(a)(1)(v)			50.73(a)(2)(iii)			50.73(a)(2)(x)					

LICENSEE CONTACT FOR THIS LER (12)	
NAME Thomas P. Noonan, Division Vice President Nuclear Operations/ Plant Manager	TELEPHONE NUMBER (include Area Code) (412) 393--7622

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)									
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS			COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
X	BS	EXJ	G173	N					

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

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

On December 18, 1995, at 1430 hours, the Train B River Water header was declared inoperable after an engineering evaluation indicated the need to replace a rubber expansion joint in the header. The river water system is a two train system which supplies river water for cooling of various safety related loads. Declaring the train B header inoperable placed the station in Technical Specification 3.7.4.1, which requires the inoperable train to be restored to operable status within 72 hours. As a conservative measure, station management reviewed the river water rubber expansion joints that were to be replaced during the next refueling outage. Upon considering the work scope of replacing these additional expansion joints in the river water system, station management decided to conservatively remove the unit from service. At 1611 hours, a shutdown was commenced to place the unit in operational Mode 5 (Cold Shutdown). Operational Mode 5 was entered at 0057 hours on December 20, 1995, and the replacement of river water expansion joints commenced. Following replacement of the rubber expansion joints, a unit heatup commenced on December 23, 1995. The reactor was taken critical at 1515 hours on December 25, and the unit was paralleled to the power grid at 0018 hours on December 26, 1995. This report is submitted on a voluntary basis to document the details of the plant shutdown.

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

FACILITY NAME (1)		DOCKET NUMBER (2)		LER NUMBER (6)			PAGE (3)
Beaver Valley Power Station Unit 1		05000334		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 3
				95	010	00	

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

DESCRIPTION OF EVENT

On December 18, 1995, at 1430 hours, the Train B River Water header was declared inoperable after an engineering evaluation indicated the need to replace a rubber expansion joint in the header. The river water system is a two train system which supplies river water for cooling of various safety related loads. Declaring the Train B header inoperable placed the station in Technical Specification 3.7.4.1, which requires the inoperable train to be restored to operable status within 72 hours. As a conservative measure, station management reviewed the river water rubber expansion joints that were to be replaced during the next refueling outage. Upon considering the work scope of replacing these additional expansion joints in the river water system, station management decided to conservatively remove the unit from service. At 1611 hours, a shutdown was begun to place the unit in operational Mode 5 (Cold Shutdown). Operational Mode 5 was entered at 0057 hours on December 20, 1995, and the replacement of river water expansion joints commenced.

A recent failure of a Train A river water header rubber expansion joint prompted an engineering evaluation of the equivalent Train B rubber expansion joint in the river water system. A Train A header expansion joint (REJ-RW-4A2) failed on December 15, 1995, during cycling of a motor operated valve for testing. The failed Train A expansion joint was analyzed, and inspection data obtained during the previous refueling outage was re-evaluated. The video tape data obtained from internal inspections during the previous refueling outage was reviewed, concentrating on the area where the Train A header expansion joint had failed. Indication of flow induced erosion was discovered at the failure location, and this indication was compared to the data in the corresponding Train B rubber expansion joint, REJ-RW-4B2. Since similar indications were present in the Train B header expansion joint, station management decided to remove the unit from service for replacement of the rubber expansion joint. Eight other rubber expansion joints in the river water system that were scheduled to be replaced during the next scheduled refueling outage, scheduled to start in March 1996, were replaced during the shutdown, as a conservative action. Five other expansion joints that were to be replaced during non-outage periods were also replaced.

Following replacement of the rubber expansion joints, a unit heatup commenced on December 23, 1995. The reactor was taken critical at 1515 hours on December 25, and the unit was paralleled to the power grid at 0018 hours on December 26, 1995.

CAUSE OF THE EVENT

Beaver Valley Unit 1 initiated a shutdown to operational Mode 5 after an engineering evaluation indicated the need to replace rubber expansion joints in the river water system. Station management decided to conservatively remove the unit from service upon considering the work scope of replacing additional rubber expansion joints that were scheduled to be replaced during the next refueling outage.

Although the failed Train A rubber expansion joint was within its vendor recommended service life, REJ-RW-4A2, failed as a result of flow assisted erosion of the inner rubber wall, which caused corrosion of the steel belts in the ruptured expansion joint. Pressure oscillations in the river water system during motor operated valve testing, although within the design limits of the expansion joint, contributed to the failure. The Train A rubber expansion joint, REJ-RW-4A2, had been previously replaced in 1985, and was within the vendor service life expectancy of 10 to 12 years. Rubber expansion joints are subjected to a periodic visual external service material condition inspection. This inspection methodology was not able to identify the degree of internal expansion joint deterioration over time, nor could it assess the condition of the rubber expansion joint steel reinforcing belts.

The Train B rubber expansion joint, corresponding to the one that failed, was removed and visually inspected. Signs of flow induced erosion were present, but it does not appear that the reinforcing steel belts were affected. The expansion joint was sent out for a detailed evaluation. Results from radiography testing determined the steel reinforcing belts were not degraded.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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				95	010	00	

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

CORRECTIVE ACTIONS

- The unit was cooled down to operational Mode 5 for rubber expansion joint replacement.
- A total of 12 river water rubber expansion joints and one component cooling water rubber expansion joint were replaced.
- A root cause analysis of the failure of the Train A header expansion joint was performed.
- Vendor recommended visual inspections of all safety related rubber expansion joints at both Beaver Valley units were performed. No operability issues were identified.
- Operational surveillance tests will be reviewed to reduce the pressures exerted on the river water expansion joints during cycling of motor operated valves.
- Beaver Valley will revise the rubber expansion joint replacement program based on an engineering review of expansion joint performance and engineering criteria.
- A review of the impact on Beaver Valley Unit 2 rubber expansion joints was performed. The Unit has 23 rubber expansion joints installed in two non-safety related systems. No significant problems were identified.

REPORTABILITY

This report is submitted on a voluntary basis to document the details of the plant shutdown. Station management conservatively elected to remove the unit from service to replace additional expansion joint schedule for replacement at the next refueling outage. Had the station remained in mode 1, the repair and return to operational status of the train B river water system header would have been completed within the 72 hours permitted by Technical Specification 3.7.4.1.

SAFETY IMPLICATIONS

There were minimal safety implications as a result of the station shutdown. The Train A river water system remained operable to supply cooling to safety related loads as needed.

PREVIOUS SIMILAR EVENTS

At Beaver Valley Unit 1, no Licensee Event Reports concerning inoperable expansion joints were submitted recently.

However, Beaver Valley Unit 2 requested and received relief for a temporary non-code repair of two metal expansion joints in the service water system on June 7, 1993. A leak occurred on these expansion joints at a weld location between the stainless steel bellows and the carbon steel flange.