



**Duquesne Light**

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

Telephone (412) 393-6000

February 14, 1994  
ND3MNO:3543

**Beaver Valley Power Station, Unit No. 2**  
**Docket No. 50-412, Licensee No. NPF-73**  
**LER 94-001-00**

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

Gentlemen:

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

LER 94-001-00, 10 CFR 50.73.a.2.i.B, "Refueling Water Storage Tank Lo-Lo Level Transmitters Freezing."

L. R. Freeland  
General Manager  
Nuclear Operations

DAW/ke

Attachment

9402180279 940214  
PDR ADOCK 05000412  
S PDR

February 14 1994  
ND3MNO:3543  
Page 2

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

Mr. G. E. Edison, BVPS Licensing Project Manager  
United States Nuclear Regulatory Commission  
Washington, DC 20555

Larry Rossbach, Nuclear Regulatory Commission,  
BVPS Senior Resident Inspector

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

Mark Burns  
Centerior Energy  
6200 Oak Tree Blvd.  
Independence, OH 44101-4661

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

Mr. Robert Barkanic  
Department of Environmental Resources  
P.O. Box 2063  
16th Floor, Fulton Building  
Harrisburg, PA 17120

Director, Safety Evaluation & Control  
Virginia Electric & Power Co.  
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 (MNRB 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 2

DOCKET NUMBER (2)

05000 4 1 2

PAGE (3)

1 OF 04

TITLE (4)

Refueling Water Storage Tank Lo-Lo Level Transmitters Freezing

EVENT DATE (5)			LER NUMBER (6)			REPORT NUMBER (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
01	15	94	94	001	00	02	14	94	N/A	05000
									FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)								
POWER LEVEL (10)	100	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)	OTHER	20.405(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	[Specify in Abstract below and in Text, NRC Form 366A.]	
		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

L. R. Freeland, General Manager Nuclear Operations

TELEPHONE NUMBER (Include Area Code)

4 1 2 6 4 3 - 1 2 5 8

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
B	BQ	XXXX	XXXX	N					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (* yes, complete EXPECTED SUBMISSION DATE)	X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
---	---	----	-------------------------------	-------	-----	------

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

At 0053 hours on 1/15/94, the control room received channel "D" Refueling Water Storage Tank (RWST) LO-LO Level bistable indication. This was determined to be the result of the transmitter sensing lines freezing during low ambient temperatures. This channel is one of four transmitters required to be operable by Technical Specifications (TS). In accordance with TS, the other three channels were demonstrated to be operable and the bistable for the "D" channel was bypassed. Actions were implemented to thaw the sensing lines. At 0640 hours, the "D" channel was taken out of bypass to obtain voltage readings. The LO-LO bistable light was dark indicating normal conditions at this time. At 0820 hours, the control room received indication for the channel "A" RWST LO-LO Level bistable. The "D" channel displayed normal indications, but the declaration of operable was being held until voltage data could be evaluated. With one less than the required three operable transmitters available, TS 3.0.3 was applied. Actions to thaw both sensing lines were expedited and preparations to shut down the unit were initiated. A load reduction was commenced at 0942 hours. At 1202 hours, both transmitters were restored to operable status and TS 3.0.3 was exited. This event is being reported under 10CFR50.73 (7.1), as a condition prohibited by Technical Specifications.

REQUIRED NUMBER OF DIGITS/CHARACTERS  
FOR EACH BLOCK

BLOCK NUMBER	NUMBER OF DIGITS/CHARACTERS	TITLE
1	UP TO 46	FACILITY NAME
2	8 TOTAL 3 IN ADDITION TO 05000	DOCKET NUMBER
3	VARIABLES	PAGE NUMBER
4	UP TO 76	TITLE
5	6 TOTAL 2 PER BLOCK	EVENT DATE
6	7 TOTAL 2 FOR YEAR 3 FOR SEQUENTIAL NUMBER 2 FOR REVISION NUMBER	LER NUMBER
7	6 TOTAL 2 PER BLOCK	REPORT DATE
8	UP TO 18 - FACILITY NAME 8 TOTAL -- DOCKET NUMBER 3 IN ADDITION TO 05000	OTHER FACILITIES INVOLVED
9	1	OPERATING MODE
10	3	POWER LEVEL
11	1 CHECK BOX THAT APPLIES	REQUIREMENTS OF 10 CFR
12	UP TO 50 FOR NAME 14 FOR TELEPHONE	LICENSEE CONTACT
13	CAUSE VARIES 2 FOR SYSTEM 4 FOR COMPONENT 4 FOR MANUFACTURER NPRDS VARIES	EACH COMPONENT FAILURE
14	1 CHECK BOX THAT APPLIES	SUPPLEMENTAL REPORT EXPECTED
15	6 TOTAL 2 PER BLOCK	EXPECTED SUBMISSION DATE

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

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 (MNBB 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)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Beaver Valley Power Station Unit 2	05000 4 1 2	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	OF 02 OF 04
		9 4	- 0 0 1 -	0 0	

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

**DESCRIPTION OF EVENT**

At 1710 hours on January 14, 1994, the Unit 2 control room received a channel "B" Refueling Water Storage Tank (RWST) LO-LO Level bistable indication. It was determined that the indication was the result of the transmitter sensing lines freezing due to the low ambient temperatures. The channel "B" RWST level is one of four transmitters required to be operable by Technical Specifications. With any two RWST level transmitters in a LO-LO condition with a Safety Injection signal present, the suction flow path of the Safety Injection pumps transfers from the RWST to the containment sump. The RWST level transmitters are located in an area that is open to the outside environment, which was below freezing for several hours. The piping leading to each transmitter is heat traced. By adjusting the heat trace controls, the "B" channel was returned to service at 2244 hours, on January 14, 1994. On January 15, 1994 at 0053 hours, the Unit 2 control room received LO-LO level indication from the channel "D" RWST LO-LO Level bistable. The bistable was bypassed and its heat tracing was adjusted in an attempt to thaw the transmitter sensing lines. At 0640 hours, the "D" Channel was taken out of bypass for Instrument and Control Technicians to obtain transmitter voltage measurements. The LO-LO bistable status light on Benchboard "B" kickup panel was dark indicating normal conditions at this time. At 0820 hours, the control room received LO-LO level indication for the channel "A" RWST LO-LO Level bistable. The "D" channel displayed normal indications, but the declaration of operable was being held until voltage data could be analyzed. With one less than the required three operable transmitters available, Technical Specification 3.0.3 was applied. Actions to thaw both transmitters' sensing lines were expedited and preparations to shut down the unit were initiated. A load reduction was begun at 0942 hours.

Instrument and Control Technicians drained the sensing lines and flushed warm water from the heat traced piping back through the transmitters sensing lines to verify operability. At 1017 hours, the "A" channel returned to normal and at 1046 hours the "D" channel returned to normal. The power reduction was stopped at 1046 hours, with the Unit operating at 94.5% power. At 1202 hours, after monitoring the transmitter voltages at fifteen minute intervals and verifying them to be reliable, both transmitters were declared operable and Technical Specification 3.0.3 was exited. This event is being reported under 10CFR50.73.a.2.i.B, a condition prohibited by Technical Specifications.

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

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 (MNBB 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)	DOCKET NUMBER (2)	LER NUMBER (4)			PAGE (3)
Beaver Valley Power Station Unit 2	05000 4 1 2	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	OF 03 04
		9 4	0 0 1	0 0	

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

**CAUSE OF THE EVENT**

Due to an extended period of extremely low ambient temperatures and inadequate freeze protection, the water inside the transmitters froze causing a LO-LO RWST Level signal to be generated.

**CORRECTIVE ACTIONS**

Immediate: 1. The heat trace circuits for the sensing lines to the transmitters were jumpered to maintain the heat trace circuit continuously energized with direct control by an operator.

2. A load reduction was commenced in accordance with Technical Specification 3.0.3 at 0942 hours on 1/15/94.

3. Instrument and Control Technicians drained the sensing lines and flushed warm water from the heat traced sensing lines back through the transmitters to verify operability.

Intermediate: 1. The jumpers were removed from the heat trace circuits, and the setpoints were adjusted such that the circuits controlled the heat trace in a range that would preclude freezing.

2. A temporary enclosure with supplemental heat was constructed around the area of the transmitters and associated piping.

3. Instrument and Control Technicians established periodic transmitter venting and voltage monitoring to detect adverse trends and prevent freezing.

Long Term: 1. This event and previous occurrences are being investigated to develop an effective permanent preventive measure.

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

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 (MNBB 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)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Beaver Valley Power Station Unit 2	05000 4 1 2	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	OF 04 OF 04
		9 4	- 0 0 1 -	0 0	

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

**PREVIOUS SIMILAR EVENTS**

There were two previous similar events:

LER 2-88-001 - Two of four RWST level transmitters froze resulting in LO-LO Level indication. Temporary area heating was provided and temporary heat tracing along with additional insulation was installed on the instrument sensing lines.

LER 2-88-006 - Two of four RWST level transmitters froze resulting in LO-LO Level indication. Engineering designed and installed permanent heat tracing for the sensing line that would be more reliable than the temporary heat tracing already in place.

**REPORTABILITY**

Technical Specification 3.3.2.1 requires that a minimum of three of the four RWST LO-LO Level channels be operable. At 0820 hours on January 15, 1994 two RWST LO-LO Level channels were inoperable due to frozen transmitters. This is a condition prohibited by Technical Specifications and is reportable under 10CFR50.73.a.2.i.B.

**SAFETY IMPLICATIONS**

There were minimal safety implications due to this event. The safety function associated with the affected transmitters is the automatic transfer to the recirculation cooling mode, subsequent to a Safety Injection system actuation and the RWST reaching a LO-LO level condition. Operators are trained to manually activate the transfer per the Emergency Operating Procedures if it does not automatically actuate.