NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Beaver Valley Power Station, Unit 2	0 5 0 0 0 4 1 2	1 OF 0 3

TITLE (4)
Reactor Trip Due to a Lo-Lo Level Condition in the 21B Steam Generator

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 NAMES	DOCKET NUMBER(S)
									N/A	0 5 0 0 0
1 0	2 9	8 7	8 7	0 3 4	0 0	1 1	3 0	8 7	N/A	0 5 0 0 0

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 9 8	20.402(b)	20.405(c)	X 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 (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		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	TELEPHONE NUMBER
William S. Lacey, Plant Manager	AREA CODE 4 1 2 — 6 4 3 - 1 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	
X	S M	L C V	M 1 2 0	N							

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

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

On 10/29/87 at 0135 hours, with the plant at 98% reactor power, erratic level swings in the "B" 5th Point Heater were observed. Operations and Instrument & Control (I&C) personnel were dispatched to investigate. At 0142 hours, extraction steam to the "B" 5th Point Heater isolated on extreme high level. Heater Drain Pump and Main Feedwater Pump (MFP) perturbations were also noted. At 0145 hours, Condensate Polishing was bypassed to improve MFP flow. A start attempt on the 21C Condensate Pump was unsuccessful. The "B" 5th Point Heater isolation caused level increases and heater isolations in the entire "B" heater train. At 0145 hours, the 21A MFP tripped on low suction pressure. An emergency shutdown was commenced, however at 0147 hours, a reactor trip on Lo-Lo Level in the 21B Steam Generator occurred. The operators stabilized the plant in HOT STANDBY using the Emergency Operating Procedures. The cause for this event was improper response of the "B" 5th Point Heater Level Control Valves (LCV). I&C personnel adjusted the response of the "B" 5th Point Heater LCVs. The other LCVs in the heater train were also checked for proper operation. Administrative guidance has been provided to Operations personnel as a result of this event. There were no safety implications to the public as a result of this event. This type of event was previously analyzed in FSAR 15.2.7.

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

On 10/29/87 at 0135 hours, with the plant in POWER OPERATION (Operational Mode 1) at 98% reactor power, erratic level swings in the "B" 5th Point Heater were observed with accompanying high and low level alarms. Operations personnel and Instrument & Control (I&C) personnel were dispatched to investigate and restore proper level operation. At 0142 hours, extraction steam to the "B" 5th Point Heater isolated on extreme high level. At this time, Heater Drain Pump motor amps were observed swinging and Main Feedwater Pump (MFP) suction pressure was observed to be low. At 0145 hours, the Condensate Polishing System was bypassed to allow more condensate flow to the MFPs to improve main feedwater flow. A start on the 21C Condensate Pump was attempted, however, this attempt was unsuccessful because the Condensate Pump motor breaker was not fully racked in on its electrical bus. The "B" 5th Point Heater isolation caused increased cooling and condensation in the other heaters in the "B" heater train, subsequently resulting in isolations of the "B" 4th Point, 3rd Point, 2nd Point and 1st Point heaters. At 0145 hours, the 21A MFP tripped on low suction pressure. The 21A MFP was restarted, but tripped within 10 seconds on low suction pressure. An emergency shutdown in accordance with Abnormal Operating Procedure (AOP) 2.51.1 "Emergency Shutdown" was commenced. At 0147 hours, a reactor trip on Lo-Lo Level in the 21B Steam Generator occurred as a result of the decrease in main feedwater flow. The Auxiliary Feedwater System actuated and the operators utilized the Emergency Operating Procedures to stabilize the plant in HOT STANDBY (Operational Mode 3).

The cause for this event was attributed to improper response of the "B" 5th Point Heater Level Control Valves (LCV) [High Level Control Valve: 2HDL-LCV124B1, Masoneilan Model 12810 and Normal Level Control Valve: 2HDL-LCV124B2, Masoneilan Model 12830]. I&C personnel have adjusted the response of the LCVs for proper level control. These corrective actions were verified during the subsequent plant startup. The other LCVs in the "B" Heater Train were also checked and adjusted as necessary. Proper operation of these valves was also verified during the subsequent plant startup. The cause for the failure of the 21C Condensate Pump to start was due to the breaker not being fully racked in the 4160V Bus. The cause for the trip of the 21A MFP after it was started following the initial trip, was due to the continued presence of the low suction pressure trip signal. The attempt to improve feedwater flow by bypassing the Condensate Polishing System was unsuccessful because of mechanical problems with the Condensate Polishing Bypass Valve [2CNM-DCV100], which were subsequently identified on 11/10/87 and will be detailed in a future LER. This valve was subsequently replaced.

As a result of this event, in addition to the corrective actions listed above regarding the "B" Heater Train Level Control Valves, administrative guidance has been provided to the Operations shifts. This administrative guidance consists of two Special Operating Orders (SOO) requiring the operators to: 1) set up the EHC System to run the turbine back sufficiently to sustain operation on one MFP trip and to start the Startup Feed Pump (2FWS-P24), if a MFP trips, and 2) "bump" the associated piece of equipment every time a breaker is racked off and racked back on a bus, to ensure availability for operation (if plant conditions do not permit the "bumping", a caution tag will be placed on the control switch for the associated equipment indicating that the equipment has not been functionally checked). This second SOO will be in effect until permanent incorporation into the Switching Procedures.

There were no safety implications to the public as a result of this event. This type of event has been previously analyzed in FSAR Section 15.2.7 "Loss of Normal Feedwater Flow". The Auxiliary Feedwater System actuated on the Lo-Lo Level condition in the 21B Steam Generator in accordance with the system design to maintain a heat sink for decay heat removal.

There have been six (6) previous reactor trips which were initiated by Lo-Lo level conditions in one seam generator or by a Low Level condition coincident with a steam flow/feed flow mismatch.

Duquesne Light

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November 30, 1987
ND3SPM:0103

Beaver Valley Power Station, Unit No. 2
Docket No. 50-412, License No. NPF-73
LER 87-034-00

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 87-034-00, 10 CFR 50.73.a.2.iv, "Reactor Trip Due to a Lo-Lo Level Condition in the 21B Steam Generator".

Very truly yours,

Wm. S. Lacey
Plant Manager

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Attachment

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