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October 1, 1990
ND3MNO:3040

Beaver Valley Power Station, Unit No. 1
Docket No. 50-334, License No. DPR-66
LER 90-014-00

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 90-014-00, 10 CFR 50.73.a.2.iv, "ESF Actuation - Steam Generator Blowdown Isolation".

Very truly yours,

T. P. Noonan
General Manager
Nuclear Operations

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Attachment

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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 600 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, 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) **0 5 0 0 0 3 3 4** PAGE (3) **1 OF 0 4**

TITLE (4) **ESF Actuation - Steam Generator Blowdown Isolation**

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)
0	8	31	90	090	014	00	10	01	N/A	0 5 0 0 0
										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) 1 0 0	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(e)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
	<input type="checkbox"/> 20.406(a)(1)(i)	<input type="checkbox"/> 50.36(e)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(e)
	<input type="checkbox"/> 20.406(a)(1)(ii)	<input type="checkbox"/> 50.36(e)(2)	<input type="checkbox"/> 50.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
	<input type="checkbox"/> 20.406(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(vii)(A)	
	<input type="checkbox"/> 20.406(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
	<input type="checkbox"/> 20.406(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME **T.P. Noonan, General Manager Nuclear Operations** TELEPHONE NUMBER **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
X	BAPS		B074	N					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

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

On 8/31/90 at 1744 hours, blowdown from all steam generators isolated when blowdown isolation valves TV-BD-100A,B,C and sampling isolation valves TV-SS-117A,B,C closed. Operators, after verifying there was no condition requiring the valves to be shut, attempted unsuccessfully to reopen them. Further investigation determined that the valves were being maintained closed due to problems with auxiliary feedwater pressure switch PS-FW-157-3 (Barksdale Model B2T-M32SS). This switch is designed to isolate blowdown when the steam driven auxiliary feedwater pump is operating. The failure of the switch was caused by moisture induced corrosion in its electrical circuitry. This switch was replaced and all isolation valves reopened by 1640 hours on 9/1/90. There were no safety implications due to this event. The pressure switch failed in a conservative direction, causing the blowdown and sample valves to isolate. Redundant safety-related signals (containment isolation phase A and high energy line break isolation) exist and are capable of isolating the blowdown and sampling penetrations in the event of an accident, regardless of the switch failure mode (UFSAR sections 5.3, "Containment Isolation System" and 10.3.8.3, "Secondary Vents and Drains Performance Analysis").

**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 RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		

TEXT (If more space is required, use additional NRC Form 306A's) (17)

Description of Event

On 8/31/90 at 1845 hours, the reactor operator, while scanning the control board, observed that steam generator blowdown flow was indicating zero. Examination of the system flowpath determined that there was no flow due to blowdown isolation valves TV-BD-100A,B,C being closed. It was also noted that steam generator blowdown sampling isolation valves TV-SS-117A,B,C were also closed. Operators verified that there was no condition present that required the valves to be closed. Attempts at this time to reopen the valves were unsuccessful.

Since there are no alarms associated with these valves closing, the operators consulted the control room computer records and verified that the six valves had gone shut at 1744 hours. Investigation found that the valves had shut due to an erroneous signal from auxiliary feedwater pressure switch PS-FW-157-3 (Barksdale Model B2T-M32SS). This switch senses discharge pressure from the steam driven auxiliary feedwater pump and isolates all blowdown flowpaths when the pump is running. This action conserves steam generator inventory while the auxiliary feedwater system is in service.

At the time of the event, the pump was not running. The switch had failed and was maintaining a high discharge pressure signal. Analysis of the switch determined it had failed due to moisture induced corrosion of its electrical circuitry. The valves were declared inoperable and their affected penetrations were isolated.

Cause of Event

This event was due to a failure of the steam driven auxiliary feedwater pump discharge pressure switch, PS-FW-157-3. The pressure switch failed after moisture entered its electrical wiring compartment, causing the wiring to corrode. Once the wiring failed, the pressure switch's normally closed relay contacts opened, actuating the blowdown and sampling isolations.

When the pressure switch was examined on 8/31/90, no moisture was present in the wiring compartment. Water marks and corrosion products deposited on the sides of the compartment indicated the earlier presence of water. Investigation into the source of this water is ongoing.

**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 RECORDS AND REPORTS MANAGEMENT BRANCH (F-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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TEXT (If more space is required, use additional NRC Form 305A's) (17)

Previous Similar Events

Review of station documents showed no previous similar events.

Corrective Actions

- 1) Operators declared the affected valves inoperable and isolated the associated penetrations.
- 2) The failed pressure switch was replaced. The new switch was tested and verified to be operable. The isolation valves were reopened and the steam generator blowdown system returned to operations by 1640 hours on 9/1/90.
- 3) Investigation into the pressure switch inleakage water source is ongoing. Additional corrective actions will be evaluated pending the outcome of this investigation.
- 4) The similar pressure switches for the two motor driven auxiliary feedwater pumps were inspected and verified to be dry and free of corrosion. No indication of previous water inleakage was detected.

Safety Evaluation

There were no safety implications due to this event. The pressure switch failed in such a manner that it caused the blowdown isolation and blowdown sampling isolation valves to close. This failure is in the conservative direction (ie. maintaining containment isolation) as these valves are required to be closed during accident conditions. Blowdown is primarily used for steam generator chemistry control. While long term isolation of blowdown during operation would lead to undesirable secondary chemistry, the temporary isolation that occurred during this event did not cause any administrative chemistry operating limits to be exceeded.

Regardless of whether the switch failed in the conservative or nonconservative direction, if the steam driven auxiliary feedwater pump actuated but was unable to maintain steam generator inventory due to blowdown not isolating, the two motor driven auxiliary feedwater pumps would start due to low-low steam

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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TEXT (If more space is required, use additional NRC Form 305A's) (17)

generator level in two steam generators. Both of these pumps have discharge pressure switches which would isolate the blowdown and blowdown sampling systems once either motor driven pump started. Additionally, other safety-related auto-isolation signals to the blowdown and blowdown sampling systems exist and were fully operational during this event. These other signals are Containment Isolation Phase A, Safeguards High Energy Line Break isolation and isolation on high blowdown radiation. In the event of an accident, these other signals were available and capable of isolating the blowdown and blowdown sampling systems.

(References: Beaver Valley Unit 1 UFSAR Section 5.3, "Containment Isolation System" and Section 10.3.8.3, "Secondary Vents and Drains Performance Analysis".)