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July 5, 1990
ND:MNO:2094

Beaver Valley Power Station, Unit No. 2
Docket No. 50-412, License No. NPF-73
LER 90-006-00

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 90-006-00, 10 CFR 50.73.a.2.i.B, "Operation In a Condition Prohibited by Technical Specifications".

Very truly yours,

T. P. Noonan
T. P. Noonan
General Manager
Nuclear Operations

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Attachment

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Beaver Valley Power Station, Unit 2										DOCKET NUMBER (2) 0 5 0 0 0 4 1 2										PAGE (3) 1 OF 0 4																															
TITLE (4) Operation In a Condition Prohibited By Technical Specifications																																																			
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)												
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OPERATING MODE (9) 1										THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)																																									
POWER LEVEL (10) 0 8 1 6										20.402(b)										20.403(c)										50.73(a)(2)(iv)										73.71(b)											
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										20.405(a)(1)(ii)										50.36(a)(2)										50.73(a)(2)(vi)										OTHER (Specify in Abstract below and in Text, NRC Form 368A)											
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LICENSEE CONTACT FOR THIS LER (12)																																																			
NAME Mr. Thomas P. Noonan, General Manager Nuclear Operations																				TELEPHONE NUMBER 4 1 2 6 4 3 - 1 2 5 1 8																															
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																																																			
CAUSE		SYSTEM		COMPONENT		MANUFACTURER		REPORTABLE TO NRC				CAUSE		SYSTEM		COMPONENT		MANUFACTURER		REPORTABLE TO NRC																															
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YES (If yes, complete EXPECTED SUBMISSION DATE)																				X NO										EXPECTED SUBMISSION DATE (15)																					
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On 6/5/90 at 1315 hours, with the Unit at 86% reactor power, surveillance testing of the Letdown Orifice Isolation Valves, 2CHS*AOV200A,B,C was in progress. This testing identified that one set of series solenoid valves, for 2CHS*AOV200A,B,C failed to meet the Technical Specification (TS) 3.6.3.1 Containment Isolation Phase A (CIA) closure limit of less than 10 seconds. The valves were declared inoperable. Normal Reactor Coolant System Charging and Letdown were isolated and Excess Letdown was placed in service to maintain reactor coolant system inventory. The outside containment isolation valve was closed isolating this penetration. The cause for this event was a deficiency in the surveillance program for 2CHS*AOV200A,B,C. A Temporary Waiver Of Compliance for TS 3.6.3.1 was obtained from the Nuclear Regulatory Commission allowing continued operation with normal charging and letdown in service. There were no safety implications as a result of this event. The as found closure times of 2CHS*AOV200A,B,C are bounded by the closure time limit established for the outside containment isolation valve, ensuring that the penetration is isolated with the time requirements stated in the Updated Final Safety Analysis.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
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TEXT (If more space is required, use additional NRC Form 350A's) (17)

DESCRIPTION OF EVENT

On 6/5/90 at 1315 hours, with the Unit at 86% reactor power, Solid State Protection System "GO" Testing of the Letdown Orifice Isolation Valves, 2CHS*AOV200A,B,C was in progress. This testing involved slave relay testing to initiate closure of 2CHS*AOV200A,B,C upon a Containment Isolation Phase (CIA) signal. During the testing the valves were observed having a longer than expected stroke time. The surveillance test did not require stroke timing of the valves, only valve closure upon slave relay actuation. A separate surveillance test, using the benchboard control switch, performs stroke time testing. These valves, 2CHS*AOV200A,B,C, are required to close upon receipt of a CIA signal within 10 seconds to meet the Technical Specification (TS) 3.6.3.1 Containment Isolation Phase A (CIA) closure limit. Timing of these valves following slave relay actuation showed stroke times exceeding the 10 second limit (stroke times for 2CHS*AOV200A,B,C were approximately 35.5 seconds). The valves were declared inoperable. Normal Reactor Coolant System Charging and Letdown were isolated and Excess Letdown was placed in service at 1413 hours, to maintain reactor coolant system inventory. The outside containment isolation valve (2CHS*AOV204) was closed and its air supply was isolated, isolating this penetration.

CAUSE OF THE EVENT

The cause for this event was a deficiency in the surveillance program. An investigation determined that each Letdown Orifice Isolation Valve used two series solenoid operated valves to vent air from the air operator to initiate valve closure. The slave relay inputs to one set of solenoid operated valves (2CHS*SOV200A1,B12,C1), while the benchboard control switch inputs to the other set of the series solenoid valves (2CHS*SOV200A2,B2,C2). During stroke timing using the benchboard control switch, the valves stroked within 2 seconds, however, using the CIA slave relay to initiate closure results in stroke times of approximately 35 seconds. The redundant solenoid valve arrangement is utilized to provide control signal and protection signal isolation. The solenoid valves are pilot actuated, Automatic Switch Company, model FT831654. Station drawings indicate that the CIA signal inputs to the set of solenoid valves closest to the air operated letdown orifice isolation valve. It was decided to temporarily modify the valves circuitry to input the CIA signal to the other set of solenoid valves (2CHS*SOV200A2,B2,C2). This was done in an attempt to verify the solenoid valve arrangement as indicated on the station drawings. On 6/5/90 at 2250 hours, following receipt of the required reviews and approvals, this modification was performed on 2CHS*AOV200A. Stroke timing of this valve yielded

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TEXT (If more space is required, use additional NRC Form 380A's) (17)

the following results: 2 seconds using the benchboard control switch and 1.6 seconds using the CIA slave relay. Following completion of the modifications to the other two valves at 0535 hours on 6/5/90, testing of the 2CHS*AOV200B and 200C was commenced. During the opening of 2CHS*AOV200B, position indication was lost for both 2CHS*AOV200B and 200C. Two fuses, in each valve's circuitry, were found blown. Different wiring configurations between 2CHS*AOV200A and 2CHS*AOV200B,C resulted in the creation of a short circuit on 2CHS*AOV200B,C following the completion of the temporary wiring modification. The short circuit resulted in the blown fuses. The station remained on Excess Letdown to maintain reactor coolant system inventory with normal charging and letdown isolated, until new fuses could be installed.

Additionally, efforts were initiated to obtain a Waiver Of Compliance, to increase the maximum TS 3.6.3.1 closure time for these valves to 60 seconds. There are no increases in the offsite dose consequences of postulated accidents as a result of this increase in closure time. The outside Containment Isolation Valve, for this penetration, has a closure limit of 60 seconds. At 1700 hours, station management received approval from the Nuclear Regulatory Commission for the Waiver Of Compliance. At 1820 hours, the solenoid operated valve circuitry was restored to its original configuration. At 1022 hours on 6/7/90, new fuses were obtained for 2CHS*AOV200B,C, and normal Charging and Letdown were restored.

A review of other valves for potentially similar designs was performed. Two other valves (2DGS*AOV108A and 100A) were stroked tested due to identified circuit/solenoid similarities.

All the valves were stroke timed using the CIA slave relay actuation with the following results:

2CHS*AOV200A	32.63 seconds
2CHS*AOV200B	35.07 seconds
2CHS*AOV200C	35.89 seconds
2DGS*AOV108A	2.68 seconds
2DGS*AOV100A	5.73 seconds

CORRECTIVE ACTIONSShort Term

1. The Letdown Orifice Isolation Valves were declared inoperable. Normal Charging and Letdown were isolated and Excess Letdown was placed in service.
2. The affected penetration was isolated by closing and isolating air to the outside containment isolation valve, 2CHS*AOV204.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

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TEXT (If more space is required, use additional NRC Form 360A's) (17)

3. Temporary modifications were performed on the valves to determine the cause for the difference in stroke times between the two methods of valve closure.

A Waiver Of Compliance was obtained allowing continued operation with the closure time limit increased to 60 seconds.

5. A Technical Specification Change Request has been submitted on June 22, 1990, for these valves.

Long Term

1. The surveillance procedures performing the slave relay testing of these valves will be revised to include a stroke timing requirement.
2. The design configuration for the solenoid valves will be reviewed and modified as necessary, following the completion of the evaluation.
3. The physical layout, and corresponding plant documents, of the solenoid valves and associated wiring will be reviewed and modified as necessary, following completion of the evaluation.

REPORTABILITY

This event is being reported in accordance with 10CFR50.73.a.2.i.B, as a condition prohibited by Technical Specifications.

SAFETY IMPLICATIONS

There were no safety implications as a result of this event. The valves are capable of satisfying the design requirement to close and isolate the containment penetration. In the event the inside valves fail to close, containment isolation would still be completed within 60 seconds. Increasing the inside containment isolation valves stroke times from 10 to 60 seconds will result in these valves having a stroke time equivalent to the time of the outside containment isolation valve. The inside valves are currently stroking at approximately 35 seconds which provides adequate margin to the 60 second limit. Therefore, there is no increase in the offsite dose consequences of postulated accidents. The 10 second stroke limit was defined as a matter of prudence to assure the inside valve would close before the outside valve, thus preventing the penetration relief valve from lifting. This relief valve is located in containment and discharges to the Pressurizer Relief Tank, also located in Containment. There are no safety consequences with the relief valve lifting.