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October 1, 1990
ND3MNO:3038

Beaver Valley Power Station, Unit No. 2
Docket No. 50-412, License No. NPF-73
LER 90-009-00

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 90-009-00, 10 CFR 50.73.a.2.iv, "ESF Actuation - Letdown Isolation on Loss of Containment".

Very truly yours,

T. P. Noonan
General Manager
Nuclear Operations

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Attachment

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cc: Mr. T. T. Martin, Regional Administrator
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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 60.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-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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TITLE (4)
ESF Actuation - Letdown Isolation on Loss of Containment Instrument Air Pressure

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 (8)
0	9	0	2	9	0	0	9	0	N/A			0 5 0 0 0
0	9	0	0	9	0	0	0	1				0 5 0 0 0

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 4 0	20.402(b)	20.406(e)	X	60.73(a)(2)(iv)	73.71(b)						
	20.406(a)(1)(i)	60.36(e)(1)		60.73(a)(2)(v)	73.71(e)						
	20.406(a)(1)(ii)	60.36(e)(2)		60.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)						
	20.406(a)(1)(iii)	60.73(a)(2)(i)		60.73(a)(2)(vii)(A)							
	20.406(a)(1)(iv)	60.73(a)(2)(ii)		60.73(a)(2)(viii)(B)							
	20.406(a)(1)(v)	60.73(a)(2)(iii)		60.73(a)(2)(ix)							

LICENSEE CONTACT FOR THIS LER (12)		TELEPHONE NUMBER	
NAME T.P. Noonan, General Manager Nuclear Operations		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 NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC
A	L	D	X	X	X	X	X	X	X
				N					

SUPPLEMENTAL REPORT EXPECTED (14)	YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e. approximately fifteen single-space typewritten lines) (16)

On 9/2/90, the Safeguards Protection System Train A CIA Go test (OST 2.1.11D) was performed as scheduled. This test actuates individual Solid State Protection System relays and verifies proper operation of affected components. In two separate sections of the test, the procedure aligns a backup air supply to the containment instrument air system and shuts down the containment instrument air compressors while testing components required for compressor operation. In order to avoid unnecessary cycling of the compressor, it was decided to not restart the compressor after the first shutdown, but remain on the backup air supply. However, due to inadequate review, when the step to restart the compressor was omitted, the step to reopen the containment instrument air isolation valve was not performed. This resulted in the gradual loss of containment instrument air pressure. After 25 minutes, the letdown isolation valves failed closed due to low air pressure. Operators restored containment air pressure and reopened the letdown isolation valves in accordance with procedures. There were no safety implications due to this event. All air controlled components are designed to go to a fail-safe condition on loss of air pressure (Reference: UFSAR Section 9.3.1.3.3, "Containment Instrument Air System Safety Evaluation").

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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TEXT (If more space is required, use additional NRC Form 386A's) (17)

Description of Event

On 9/2/90, Operations Surveillance Test (OST) 2.1.11D, "Safeguards Protection System Train A CIA Go Testing" was performed as scheduled. This test actuates individual Solid State Protection Relays that generate CIA (Containment Isolation Phase A) signals. After the relays are actuated, the test verifies proper operation of the affected components.

Prior to assigning this test to an operator, a control room supervisor reviewed the procedure. It was noted that in step 3, prior to the first relay test, the containment instrument air system is cross connected with a backup air supply, the station instrument air system. The procedure then shuts down the containment instrument air compressor. This step is to protect the compressors during the test. The compressors' suction and discharge valves are used for containment isolation and are automatically closed during this first relay test by a CIA signal. After the first relay test is completed and the associated relay returned to normal, the procedure restarts the compressor and realigns the air systems to their normal configurations. A later portion (step 6) of the procedure repeats this cycle when the valves which isolate cooling water to the compressors are tested.

When the supervisor assigned this test to be performed, he gave verbal instructions to leave the air compressor shutdown after step 3 and stay on the alternate air supply until after step 6. This would prevent unnecessary cycling of the containment instrument air compressor.

When step 3 in the test was completed, the compressor was left shutdown as per the verbal instructions. The operator performing the test omitted a step to open the compressor's discharge valve IAC*MOV130 as he believed the step was only required when returning the compressor to service. However, this valve was also in the flow path used by the backup air supply. The valve is a containment isolation valve and had been closed by a CIA signal generated during the first relay test. While the valve was closed, all compressed air to containment was isolated.

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TEXT (If more space is required, use additional NRC Form 386A's) (17)

At 1033 hours, twenty-five minutes after IAC*MOV130 was closed, step 6 of the test had not yet been completed and instrument air was still isolated to containment. Containment instrument air pressure dropped to the point where air operated reactor coolant letdown isolation valve CHS*AOV200A closed. At 1034 hours, a second letdown isolation valve CHS*AOV200C closed due to low air pressure. Operators observed that the valves were closed and attempted to reopen them. The valves would not reopen at this time. At 1040 hours, operators initiated excess letdown in accordance with procedures.

Operators, concerned with the possibility of an instrument air problem (both affected valves were air operated) checked control room indication of containment air pressure. All available indications (one pressure alarm and one pressure indicator) indicated that containment instrument air pressure was normal. Operators then referred to the containment instrument air system prints. These prints showed that with IAC*MOV130 shut all air was isolated to containment. The prints also showed that the containment instrument air pressure sensor was located upstream of these valves and therefore was not showing the actual instrument air pressure inside containment. At 1048 hours, after determining the reason for the event, instrument air was reestablished to containment by reopening IAC*MOV130. Letdown was restored to its normal configuration in accordance with the applicable procedures.

Cause of Event

This event occurred because the operating crew deviated from the surveillance procedure to protect plant equipment (air compressor) from unnecessary stress. The station's administrative procedures allow both on-the-spot revisions of procedures or performance of partial surveillance tests. Either of these methods would have provided an approved method of modifying the test. However, on-the-spot revisions are required to be formally documented and approved prior to implementation. The procedure revision must be made in writing and be independently reviewed and approved by at least two qualified individuals, with at least one of the two holding an SRO license. To perform a partial surveillance test, a qualified individual is required to review the test prior to performance and line out steps that are not to be performed. After the initial review is complete, a second qualified individual is required to perform an

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

independent review and verify that the correct steps have been removed. The involved supervisor failed to follow either of these processes and only issued verbal instructions to the operator to deviate from the procedure. The operator performing the test made the manipulations as per his verbal instructions and inadvertently allowed the containment instrument air isolation valve to remain closed for an extended period of time.

Previous Events

There have been three previous events involving inadvertent reactor coolant letdown isolations. In Unit 2 LER 89-001, an inadvertent letdown isolation occurred when instrumentation technicians generated a spurious low pressurizer level due to personnel error. In Unit 2 LER 89-022, letdown isolated on actual low pressurizer level resulting from the mechanical failure of a drain valve. In Unit 1 LER 90-008, letdown isolated due to an actual low pressurizer level resulting from an unanticipated reactor coolant system cooldown during main steam isolation valve testing.

There have been two previous events involving inadvertent ESF actuations during Go testing. In Unit 2 LER 88-016, a chemical injection pump automatically started when an operator failed to properly block it during testing. In Unit 2 LER 90-004, a charging isolation valve closed when an operator inadvertently unblocked its actuation prior to test completion.

Corrective Actions

- 1) The reactor coolant letdown flowpath and containment instrument air flowpath were returned to their normal system arrangement in accordance with procedures.
- 2) The involved operators have been counseled concerning this event. This counseling stressed the requirements for procedural compliance along with the basis and methods for changing procedures.
- 3) This event will be reviewed with all operators.

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TEXT (If more space is required, use additional NRC Form 365A's) (17)

- 4) OST 2.1.11D has been revised to alert the operators that while IAC*MOV130 is closed, all air to containment is isolated.
- 5) The station has conducted an INPO Human Performance Enhancement System (HPES) evaluation of this event. The results of this evaluation have been reviewed and incorporated in the above corrective actions.

Safety Implications

There were no safety implications due to this event. The containment instrument air system is nonsafety-related, and is not required for safe shutdown. Instrumentation and controls served by the system are designed such that the equipment will fail in the safe mode upon loss of air. (Reference: UFSAR Section 9.3.1.3.3, "Containment Instrument Air System Safety Evaluation")

Closure of the letdown isolation valves on a loss of containment instrument air pressure is an actuation in the safe direction as these valves are required to close during accident conditions. Temporary closure of these valves, and the subsequent loss of reactor coolant letdown, during power operations has no adverse effects on plant operation. The normal letdown system is primarily used for long term chemistry control and can be isolated for extended periods without negative effects on chemistry parameters.