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April 30, 1990
ND3MNO:2058

Beaver Valley Power Station, Unit No. 1
Docket No. 50-334, License No. DPR-64
LER 90-007-00

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 90-007-00, 10 CFR 50.73.a.2.iv, "Reactor Trip on "C" Steam Generator Low Level and Steam Flow/Feedwater Flow Mismatch Due to Closure of "C" Main Feedwater Regulating Valve".

Very truly yours,

T. P. Noonan
General Manager
Nuclear Operations

JT/sl

Attachment

IE22
1/1

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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 1	0 5 0 0 0 3 3 4	1 OF 0 3

TITLE (4) Reactor Trip on "C" Steam Generator Low Level and Steam Flow/Feedwater Flow Mismatch Due to Closure of "C" Main Feedwater Regulating Valve.

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
0 3	3 0	9 0	9 0	—	0 0 7	— 0 0	0 4		9 0	N/A	0 5 0 0 0

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
1		20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10)		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
1 0 0		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
	AREA CODE
Thomas P. Noonan, General Manager Nuclear Operations	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	S J	T D	F 1 3 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 3/30/90 at 1541 hours, with the Unit in Power Operation at 100% reactor power, alarms indicating a Loop "C" steam flow/feedwater flow mismatch, followed by a "C" steam generator (SG) level deviation were received. The operators noted closure of the "C" Main Feedwater Regulating Valve, FCV-FW-498. The operator tried to manually open FCV-FW-498, however, the valve would not respond. At 1544 hours, a reactor trip on "SG "C" Low Level & Feedwater Flow Low" occurred. Control Room personnel entered Emergency Operating Procedures, E-0 and ES-0.1, to stabilize the plant in Hot Standby. The cause for the reactor trip was the closure of FCV-FW-498, in response to insufficient instrument air pressure supplying the valve positioner. Air pressure had degraded due to moisture in the filter in the instrument air regulator for the valve positioner. High moisture was present due to the instrument air dryer being unavailable. The moisture in the instrument air system has been removed and the instrument air dryer has been returned to service. There were no safety implications as a result of this event. The plant systems responded as designed (all rods inserted, turbine trip occurring and auxiliary feedwater initiating on low SG level), with the exception of FCV-FW-498, to place the plant in Hot Standby. This event is bounded by Updated Final Safety Analysis Report, Section 14.1.8.

DESCRIPTION

On 3/30/90 at 1541 hours, with the Unit in Power Operation (Operating Mode 1) at 100% reactor power, Control Room personnel received an annunciator indicating a Loop "C" steam flow/feedwater flow mismatch, followed by a "C" steam generator (SG) level deviation. The operators observed the "C" Loop feedwater flow and noted that the "C" SG feedwater flow and the level were rapidly decreasing. The operator also noted closure of the "C" Main Feedwater Regulating Valve, FCV-FW-498, even though the valve positioner controller was outputting a 100% full open signal. Using the manual controller, the operator tried to manually open FCV-FW-498, however, the valve would not respond. At 1544 hours, a reactor trip on "SG "C" Low Level & Feedwater Flow Low" occurred. Control Room personnel entered Emergency Operating Procedure, E-0 "Reactor Trip and Safety Injection" and transitioned to ES-0.1 "Reactor Trip Response",after verifying that a Safety injection Signal was not required, to stabilize the plant in Hot Standby (Operating Mode 3).

CAUSE OF THE EVENT

The cause for the reactor trip was the partial closure of the "C" Main Feedwater Regulating Valve, FCV-FW-498. The closure of FCV-FW-498 resulted from an insufficient supply of instrument air to the valve positioner. Moisture in the instrument air supply had plugged the filter in the air regulator for the current-to-pneumatic valve positioner for FCV-FW-498, causing the valve to close. This moisture was present in the instrument air system as a result of the instrument air dryer being out of service. While the air dryer was out of service, the air compressors' discharge was directed through the instrument air bypass filters. These filters are two-stage filters consisting of a wool felt pad and an absorbent silica gel canister. Although the filters are not as efficient as the dryer at removing moisture, they are capable of providing dry air on a temporary basis. On 3/21/90, the air dryer was removed from service for maintenance. The instrument air bypass filters remained in service for an extended period of time. During this period, although the station initiated the vendor recommended compensatory actions of blowing down the filter once per eight hours, moisture accumulated in the air lines, resulting in this event.

CORRECTIVE ACTION

The following corrective actions have been taken as a result of this event:

1. Operations personnel, utilizing the Emergency Operating Procedures, stabilized the plant in Hot Standby.

2. Air operated valves in the Turbine Building and Primary Auxiliary Building were blown down to remove any moisture within the instrument air lines. Small amounts of moisture was found in various valves within both buildings.

3. The Main Feedwater Regulating Valves were inspected and repaired as necessary. The instrument air lines for these valves were blown down to remove any moisture.

4. The instrument air dryer was returned to service.

5. A temporary diesel air compressor was placed in service to supplement the existing station air compressors and to allow the use of an additional air dryer, which could not be used because the station air compressors did not have sufficient capacity to supply the new air dryer and maintain instrument air pressure.

6. An engineering evaluation of the instrument air system is being performed.

7. The anti-rotation pin in the plug assembly for the "C" Main Feedwater Regulating Valve was repaired.

SAFETY IMPLICATIONS

There were no safety implications as a result of this event. The plant systems responded as designed (all shutdown bank and control rods inserted, turbine trip occurring and auxiliary feedwater initiating on low SG level following the SG level "shrink" resulting from the loss of secondary load), with the exception of the "C" Main Feedwater Regulating Valve which did not fully close and was isolated by closing the motor operated feedwater isolation valve, to place the plant in Hot Standby (Operating Mode 3) conditions. This event, feedwater perturbations due to valve malfunctions, is bounded by the Updated Final Safety Analysis Report (UFSAR), Section 14.1.8, "Loss of Normal Feedwater".

REPORTABILITY

This event was reported to the Nuclear Regulatory Commission at 1810 hours on 3/30/90, in accordance with the requirements of 10 CFR 50.72.a.2.ii. This written report is being submitted in accordance with the requirements of 10 CFR 50.73.a.2.iv.