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April 2, 1993
ND3MNO:3440

Beaver Valley Power Station, Unit No. 2
Docket No. 50-412, Licensee No. NPF-73
LER 93-005-00

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 93-005-00, 10 CFR 50.73.a.2.v.D, "Potential for Inadequate Core Cooling Flow During Hot Leg Recirculation."

J. R. Freeland
General Manager
Nuclear Operations

DJM/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 2	0 5 0 0 0 4 1 2	1 OF 0 3

TITLE (4)

Potential for Inadequate Core Cooling Flow During Hot Leg Recirculation

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	0 4	9 3	9 3	0 0 5	0 0	0 4	0 2	9 3		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)	50.73(a)(2)(iv)	73.71(b)		
POWER LEVEL (10)		20.405(a)(1)(i)	50.36(c)(1)	X 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
L. R. Freeland, 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	
B	B P	X X X X	X X X X	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)

The Westinghouse Electric Corporation recently notified Duquesne Light Company of an issue related to supplying sufficient flow to the reactor coolant system to maintain adequate core cooling following a postulated loss of coolant accident (LOCA). A Duquesne Light engineering evaluation of this information determined that inadequate core cooling could exist due to the postulated single failure of a motor operated valve (MOV) in the low head safety injection (LHSI) system. Approximately fourteen (14) hours following a large break LOCA, the safety injection system is transferred from the cold leg recirculation mode to the hot leg recirculation mode. This is performed to terminate boiling and to prevent boron precipitation in the core. During the realignment of the LHSI system, failure of the discharge MOV to open would prevent LHSI flow to the hot legs. If the operators did not restore the LHSI flow to the cold legs, and if the break was located on a hot leg (such that full high head safety injection (HHSI) flow did not reach the core) then adequate core cooling could not be assured. In order to prevent this situation, the emergency procedures have been revised to direct the operators to immediately restore cold leg recirculation flow from the LHSI system if hot leg flow can not be established.

Description of Event:

The Westinghouse Electric Corporation recently notified Duquesne Light Company of an issue related to supplying sufficient flow to the reactor coolant system to maintain adequate core cooling following a postulated loss of coolant accident (LOCA). A Duquesne Light engineering evaluation of this information determined that inadequate core cooling could exist due to the postulated single failure of a motor operated valve (MOV) in the low head safety injection (LHSI) system. Approximately fourteen (14) hours following a large break LOCA, the safety injection system is transferred from the cold leg recirculation mode to the hot leg recirculation mode. This is performed to terminate boiling and to prevent boron precipitation in the core. During the realignment of the LHSI system, failure of the discharge MOV to open would prevent LHSI flow to the hot legs. If the operators did not restore the LHSI flow to the cold legs, and if the break was located on a hot leg (such that full high head safety injection (HHSI) flow did not reach the core) then adequate core cooling could not be assured. In order to prevent this situation, the emergency procedures have been revised to direct the operators to immediately restore cold leg recirculation flow from the LHSI system if hot leg flow can not be established.

Cause of The Event

This event was caused by inadequate analysis of the affect of a failure of the LHSI hot leg discharge MOV. The single failure of the LHSI hot leg discharge MOV was previously analyzed and it was believed that the system would still meet the required level of performance for core cooling. Recent Westinghouse analysis indicates that this is incorrect.

Corrective Actions

Immediate: The appropriate valves were administratively controlled to prevent realigning the LHSI system to the hot leg recirculation path until the emergency procedure could be revised.

Long Term: The emergency procedure which controls the transfer to hot leg recirculation was revised to direct the operators to immediately restore cold leg recirculation flow from the LHSI system if hot leg flow cannot be established.

Previous Similar Events

There have been no previous reportable events similar to this one.

Reportability

The single failure of the LHSI system hot leg discharge MOV is an event or condition that alone could have prevented the fulfillment of the safety function of a system needed to mitigate the consequences of an accident. As such, this report is being submitted in accordance with 10CFR50.73.a.2.v.D.

Safety Implications

The potential for inadequate core cooling during the hot leg recirculation phase of a LOCA was increased due to this event. If the LHSI hot leg discharge MOV failed to open when aligning for hot leg recirculation, and if the operator did not restore cold leg flow, and if the break existed on a hot leg such that full HHSI flow was not available to the core, adequate core cooling could not be assured. However, the transfer to hot leg recirculation occurs fourteen hours after the LOCA, at which time the Technical Support Center staff would be available to evaluate the situation and advise the operators. Additionally, the core exit temperatures are monitored and the function restoration procedures would be implemented to correct an inadequate core cooling condition.