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VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION
P. O. BOX 402
MINERAL, VIRGINIA 23117

10 CFR 50.73

January 22, 1992

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Serial No. N-91-035
NAPS:WCH
Docket Nos. 50-338
License Nos. NPF-4

Dear Sirs:

The Virginia Electric and Power Company hereby submits the following Licensee Event Report applicable to North Anna Unit 1.

Report No. 50-338/91-023-00

This Report has been reviewed by the Station Nuclear Safety and Operating Committee and will be forwarded to the Corporate Management Safety Review Committee for its review.

Very Truly Yours,

G. E. Kane
Station Manager

Enclosure:

cc: U.S. Nuclear Regulatory Commission
101 Marietta Street, N.W.
Suite 2900
Atlanta, Georgia 30323

Mr. M. S. Lesser
NRC Senior Resident Inspector
North Anna Power Station

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NRC FORM 366 (5-89) | U.S. NUCLEAR REGULATORY COMMISSION | APPROVED OMB NO. 3150-0104 EXPIRES: 4/30/92

LICENSEE EVENT REPORT (LER)

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.

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
North Anna Power Station Unit 1	0 5 0 0 0 3 3 8	1 OF 4

TITLE (4)
INADVERTENT FLOW FROM LHSI SYSTEM TO RCS DURING SHUTDOWN WITH RCS AT LOW 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(S)
1 2	2 7	9 1	9 1	- 0 2 3	- 0 0	0 1	2 2	9 2		0 5 0 0 0
										DOCKET NUMBER(S) 0 5 0 0 0

OPERATING MODE (9)	5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 0 0	20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below or 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
G. E. Kane, Station Manager	AREA CODE 7 0 3 8 9 4 - 2 1 0 1

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	

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 December 27, 1991, at 1545 hours, Unit 1 was at cold shutdown (Mode 5) with Reactor Coolant System (RCS) pressure at 30 psig and slowly decreasing when the pressurizer level increased from 60% to 82% cold calibrated level. Investigation revealed that the Low Head Safety Injection (LHSI) pump discharge valves had been left open after Type "C" testing. As RCS pressure slowly dropped, the Refueling Water Storage Tank (RWST) static head became sufficient to cause borated water to flow through the LHSI pumps into the RCS.

This event is reportable pursuant to 10 CFR 50.73 (a)(2)(iv), and a four hour report was made pursuant to 10 CFR 50.72 (b)(2)(ii).

This event posed no significant safety implications because there was no overpressure concern. In addition, the minimum shutdown margin required by TS TS 3.1.1.2 was maintained. Therefore, the health and safety of the public was not affected at any time during this event.

1.0 Description of the Event

On December 27, 1991, at 1545 hours, with Unit 1 at cold shutdown (Mode 5) and Reactor Coolant System (RCS)(EIIS System Identifier AB) pressure at 30 psig and slowly decreasing, the pressurizer (EIIS System Identifier AB, Component Identifier PZR) level increased from 60% to 82% cold calibrated level. Investigation revealed that the Low Head Safety Injection (LHSI) pump discharge valves (EIIS System Identifier BP, Component Identifier V) had been left open following Type "C" testing performed on the previous day. As RCS pressure slowly dropped, the Refueling Water Storage Tank (RWST)(EIIS System Identifier BP, Component Identifier TK) static head became sufficient to cause borated water to flow through the LHSI pumps into the RCS.

At 1900 hours on December 26, 1991, during the operations shift turnover, the oncoming Unit 1 Senior Reactor Operator (SRO) was informed that 1-SI-MOV-1864A and B were in the open position. At 2200 hours the SRO was informed that Type C testing on the LHSI system was complete. At that time the SRO decided to leave the valves open based on the recent increased attention concerning shutdown operations with the Residual Heat Removal (RHR) System in service. (Note that the RHR system is completely separate from the LHSI system at North Anna) He felt that leaving the valves open would provide an increased level of safety if RHR was lost, although they were aware that the RWST could gravity feed into the RCS at low RCS pressures. At 0700 hours on December 27, 1991, the oncoming operations shift was not adequately informed that the LHSI discharge MOVs had been left in the open position while the RCS pressure was still slowly decreasing.

At 1545 hours on December 27, 1991, the RCS pressure was approximately 30 psig relative to RCS hot leg elevation. With the RCS at this pressure, the static head of the RWST was sufficient to allow water to flow through the LHSI pumps to the RCS via the open cold leg injection valves. The result was an increase in pressurizer level from 60% to 82%. The total volume addition was estimated to be 2020 gallons.

This event is reportable pursuant to 10 CFR 50.73 (a)(2)(iv) as an inadvertent Engineered Safety Feature actuation. A four hour report was made on December 27, 1991, at 1821 hours pursuant to 10 CFR 50.72 (b)(2)(ii).

2.0 Significant Safety Consequences and Implications

This event posed no significant safety implications because there was no overpressure concern. In addition, the minimum shutdown margin required by TS TS 3.1.1.2 was maintained. Therefore, the health and safety of the public was not affected at any time during this event.

3.0 Cause of the Event

The cause of the event was personnel error due to the failure to maintain configuration control following the performance of the Type C test. The procedure did not provide specific guidance for cycling LHSI pump discharge MOVs 1-SI-MOV-1864A and B; however, these valves were opened to

3.0 Cause of the Event (continued)

permit reflooding of the LHSI penetrations. Final closure of the Type C test directed to return the valves to the as found position or as directed by the Shift Supervisor. The SRO decided to leave the valves open based on the recent increased attention concerning shutdown operations with the RHR System in service. He felt that leaving the valves open would provide an increased level of safety if RHR was lost. The valves were then left in the open position, and the change in system alignment was not identified as being abnormal for existing conditions.

4.0 Immediate Corrective Actions

When the cause of the SI flow to the RCS was identified, the LHSI pump discharge MOVs (1-SI-MOV 1864A and B) were closed.

5.0 Additional Corrective Actions

The Type C test procedure was revised to require documentation of valve manipulations performed while reflooding penetrations.

Operations Procedure OP-3.4 was revised to provide additional verification that the LHSI discharge MOVs are closed when RCS pressure is decreasing to less than 100 psig.

The SRO was counseled by management on the importance of maintaining equipment status control.

6.0 Actions to Prevent Recurrence

The Superintendent of Operations submitted a memorandum to all Operations Department personnel which discussed the event and emphasized equipment status control.

The event will be discussed in the Licensed Operator Requalification Program.

7.0 Similar Events

LER N2-87-013 documents inadvertent SI flow to the RCS during Mode 5 (solid water operation) when the wrong valve was cycled open during an inservice test on October 26, 1987. MOV-2869A was opened rather than MOV-2869B causing normal charging flow to the RCS via the High Head Safety Injection hot leg flow path. The resulting overpressure condition caused both power operated relief valves to open.

LER N2-87-014 documents the inadvertent discharge of "C" SI accumulator tank during mode 5 reduced inventory operation with the RCS at 17 inches above centerline. During post maintenance testing, the "C" accumulator discharge MOV was opened without ensuring the accumulator was properly vented. Operators at the valve heard the accumulator discharge, and the RCS level was subsequently measured at 96 inches above centerline.

8.0 Additional Information

On December 30, 1991, at 2203 hours, another increase in pressurizer level was noticed when a LHSI pump discharge Motor Operated Valve (MOV) was opened for VOTES sensor testing. The pressurizer level increased 3.5% due to the release of trapped pressure between the pump discharge check valve and the discharge MOV. Note that pressure indication between these two valves is not available. The LHSI pumps had been flow tested on recirculation on December 28, 1991, and a small amount of residual air in the piping left from Type C testing became pressurized and was trapped by the pump discharge check valve. When 1-SI-MOV-1890A was opened, the pressure release caused approximately 250 gallons of borated water to flow to the RCS via the hot leg injection lines. The "A" LHSI pump was isolated from the RWST when the event occurred; therefore, no continuous flow path existed. Since the emergency source of borated water was isolated, this pressure equalization is not an Engineered Safety Feature Actuation event.

Initially, this event was determined to be reportable, and a four hour report was made pursuant to 10 CFR 50.72 (b)(2)(ii) on December 30, 1991. Following SNSOC review and evaluation of Deviation Report N91-2047, the four hour report was retracted on January 9, 1992.

North Anna Unit 2 was in Mode 1 throughout this event and was not affected.