10 CFR 50.73

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

June 23, 1989

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

Serial No. N-89-013A
NAPS/JHL: nih
Docket No. 50-338

License No. 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. LER 89-008-01

This report has been reviewed by the Station Nuclear Safety and Operating Committee and will be forwarded to Safety Evaluation and Control for their 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. J. L. Caldwell
NRC Senior Resident Inspector
North Anna Power Station

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1/1

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)
NORTH ANNA POWER STATION, UNIT 1	0 5 0 0 0 3 3 8	1 OF 0 4

TITLE (4)

SERVICE WATER FLOW TO RSHXS LESS THAN DESIGN

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)
										0 5 0 0 0
0 4	1 4	8 9	8 9	— 0 0 8	— 0 1	0 6	2 3	8 9		0 5 0 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

OPERATING MODE (9)	5										
			20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(b)
POWER LEVEL (10)	0 0 0		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 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)	X	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)
G. E. Kane, Station Manager	7 0 3 8 9 4 - 5 1 5 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)

At 1835 hours on April 14, 1989, with Unit 1 in Mode 5 (Cold Shutdown), it was determined that there was less than design Service Water System flow available to the Recirculation Spray Heat Exchangers (RSHXs). The Updated Final Safety Analysis Report (UFSAR) assumes 18,000 gpm service water flow to the RSHXs for containment heat removal capability. The performance of 1-PT-75.6 indicated that there was 15,990 gpm total flow to the RSHXs. Service water flow to the RSHXs less than the design assumptions in the UFSAR is reportable pursuant to 10CFR50.73(a)(2)(ii).

1-SW-MOV-103A, B, C and D were manually repositioned to allow a balanced flow to each RSHX and a total service water flow to the RSHXs of greater than or equal to 18,000 gpm. A similar flow test (2-PT-75.6) was performed on Unit 2. A total service water flow of greater than 18,000 gpm was achieved. The Unit 2 service water system inlet motor operated valves to the RSHXs were also manually repositioned to allow a balanced flow to each RSHX.

No significant safety consequences resulted from this event because the design basis was met for minimum service water flow, highest fouling factor and the worst case key parameters actually experienced at North Anna. The health and safety of the general public were not affected by this event.

1.0 Description of Event

At 1835 hours on April 14, 1989, with Unit 1 in Mode 5 (Cold Shutdown), it was determined that there was less than design Service Water System (EIIS System Identifier BI) flow available to the Recirculation Spray Heat Exchangers (RSHX) (EIIS System Identifier BE, Component Identifier HX).

North Anna 1 and 2 LER 88-024-00 dated November 15, 1988, described the potential for less than design service water flow to the RSHXs in the event of a Design Basis Accident (DBA). As a result, 1-PT-75.6, Service Water System Flow Balance, was performed to establish design flow rates to the RSHXs under design basis conditions and to balance the flow to the RSHXs. The procedure was also used to determine the maximum allowable flow to the Component Cooling Water Heat Exchangers (EIIS System Identifier CC, Component Identifier HX) under normal operating conditions that will still allow design flow to the RSHXs. The performance of 1-PT-75.6 determined that the total service water flow to the RSHXs was 15,990 gpm. This measured service water system flow rate is less than the 18,000 gpm total flow rate assumed in the Updated Final Safety Analysis Report (UFSAR). This service water system flow rate to the RSHXs was assumed to reduce containment heat removal capabilities below the assumed UFSAR design rate. In addition, flow rates to the individual RSHXs were not balanced.

The event was the result of the service water system inlet motor operated valves (1-SW-MOV-103A, B, C and D) (EIIS Component Identifier V) to the RSHXs not coming open to the proper throttled positions. The valves open to a throttled position in order to properly balance system flows. The throttled position prior to this test was determined during previous flow testing. Previous testing was performed using installed instrumentation. Testing performed during 1-PT-75.6 was performed using more sensitive ultrasonic flow meters and pump head curves which were accurately determined just prior to the test. Total pump flow was cross checked against indicated flow to insure the flow balance was correct.

Service water flow to the RSHXs less than the design assumptions in the UFSAR is reportable pursuant to 10CFR50.73(a)(2)(ii).

2.0 Significant Safety Consequences and Implications

No significant safety consequences resulted from this event because the design basis was met for the minimum service water flow, highest fouling factor and the worst case key parameters actually experienced at North Anna. In addition, the service water pump capacity exceeded that which is assumed in the UFSAR. There are generally six service water pumps available where the UFSAR assumes

there are only two available. With six service water pumps available it can reasonably be assumed that there will be at least three service water pumps operable at all times. Therefore, there would be sufficient service water flow available for equipment that is required to be operable during a DBA. The safety significance determination includes RSHX tube fouling considerations which were reported in LER 88-016-01. The health and safety of the general public were not affected by this event.

3.0 Cause of the Event

The cause of the event was inadequate maintenance procedures which resulted in the missetting of the mechanical and electrical stops necessary to achieve the throttled valve position required by the Setpoint Document. In addition, with more accurate flow instrumentation, the Setpoint Document valve positions were determined to be non conservative.

4.0 Immediate Corrective Action

1-SW-MOV-103A, B, C and D were manually repositioned to allow a balanced flow to each RSHX and a total service water flow to the RSHXs of greater than or equal to 18,000 gpm.

5.0 Additional Corrective Actions

The mechanical stops and limit switches for 1-SW-MOV-103A, B, C and D have been reset to their proper positions.

A similar flow test was performed on Unit 2. A total service water flow rate of greater than 18,000 gpm was achieved. However, the flow balance to the RSHXs required adjustment. 2-SW-MOV-203A, B, C and D were manually repositioned to provide a balanced flow to each RSHX. The mechanical stops and limit switches for these valves have been reset to their proper position as determined by flow testing per 2-PT-75.6.

A requirement was implemented to ensure at least three service water pumps are maintained operable so there is adequate service water flow to required equipment during a DBA. The requirement also requires that the service water spray bypass MOVs (1-SW-123A and B and 2-SW-223A and B) be positioned full open or full closed (not throttled).

Appropriate documents have been revised to reflect the as left limit switch settings.

Maintenance procedures have been enhanced to ensure that the correct limit switch settings are verified after any maintenance on the service water system inlet motor operated valves to the RSHXs.

6.0 Actions To Prevent Recurrence

Periodic head curve testing will be performed on each service water pump once per refueling outage but not more often than once per 18 months. (This will include flowing the four RSHXs to verify required flow.) If significant head curve degradation is detected (compared to the last test), either pump repair or flow rebalancing will be performed if the pump displaying the degraded performance is to be used as an operable pump prior to repair. In addition, testing per ASME Section XI is performed quarterly and will ensure no significant pump degradation occurs between the 18 month (refueling outage) testing.

7.0 Similar Events

North Anna 1 and 2 LER 88-024-00 dated November 15, 1989 described the potential for less than design service water flow to the RSHXs in the event of a design basis accident.