

**Virginia Electric and Power Company  
North Anna Power Station  
P. O. Box 402  
Mineral, Virginia 23117**

May 25, 2000

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

Serial No.: 00-252  
NAPS: MPW  
Docket No.: 50-338, 50-339  
License No.: NPF-4, NPF-7

Dear Sirs:

Pursuant to 10CFR50.73, Virginia Electric and Power Company hereby submits the following Licensee Event Report applicable to North Anna Units 1 and 2.

Report No. 50-338/2000-003-00

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

Very truly yours,

  
D. A. Heacock  
Site Vice President

Commitments contained in this letter: Replacement of SAVS fan discharge dampers.

Enclosure

cc: U. S. Nuclear Regulatory Commission  
Region II  
Atlanta Federal Center  
61 Forsyth Street, SW, Suite 23T85  
Atlanta, Georgia 30303

Mr. M. J. Morgan  
NRC Senior Resident Inspector  
North Anna Power Station

RG14-001

JE22

**LICENSEE EVENT REPORT (LER)**

(See reverse for required number of digits/characters for each block)

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

FACILITY NAME (1) <b>NORTH ANNA POWER STATION , UNITS 1 and 2</b>		DOCKET NUMBER (2) <b>05000338</b>	PAGE (3) <b>1 OF 5</b>
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TITLE  
**MULTIPLE SAFEGUARDS VENTILATION DAMPER TEST FAILURES DUE TO SYSTEM LEAKAGE**

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 NAME	DOCUMENT NUMBER
04	27	2000	2000	003	00	05	25	2000	North Anna Unit 2	05000-339
									FACILITY NAME	DOCUMENT NUMBER
										05000-

OPERATING MODE (9) <b>1</b>	POWER LEVEL (10) <b>100%</b>	<b>THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)</b>									
		20.2201(b)			20.2203(a)(2)(v)			50.73(a)(2)(i)		50.73(a)(2)(viii)	
		20.2203(a)(1)			20.2203(a)(3)(i)			50.73(a)(2)(ii)		50.73(a)(2)(x)	
		20.2203(a)(2)(i)			20.2203(a)(3)(ii)			50.73(a)(2)(iii)		73.71	
		20.2203(a)(2)(ii)			20.2203(a)(4)			50.73(a)(2)(iv)		OTHER	
		20.2203(a)(2)(iii)			50.36(c)(1)			50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A	
20.2203(a)(2)(iv)			50.36(c)(2)			50.73(a)(2)(vii)					

LICENSEE CONTACT FOR THIS LER (12)

NAME <b>D. A. Heacock, Site Vice President</b>	TELEPHONE NUMBER (Include Area Code) <b>(540) 894-2101</b>
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO	EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On May 1, 2000, with Units 1 and 2 in Mode 1 operating at 100% power, it was determined that the Safeguards Exhaust Ventilation System (SAVS) had been in a condition which could have prevented fulfillment of its safety function. Degraded conditions with the Unit 1 and 2 SAVS fan discharge dampers resulted in surveillance test failures between March 23, 2000 and April 27, 2000. Test results indicated instrument air leakage in the safety related seismic air supply for the fan discharge dampers. Inadequate test procedures did not ensure the dampers would remain open for 30 days following a design basis accident. A four hour non-emergency report was made to the NRC Operations Center at 1647 hours on May 1, 2000, pursuant to 10 CFR 50.72(b)(2)(iii)(B) and (C). This event posed no significant safety implications since a design basis accident did not occur and compensatory measures were established to adequately monitor the condition and promptly restore Safeguards area exhaust. LER 50-338/1999-006-00 identified a degraded ventilation damper that had the potential to cause a portion of the SAVS flow to bypass the charcoal filter prior to release to the environment following a design basis accident. Engineering is pursuing a change in damper design to prevent recurrence.

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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

**1.0 DESCRIPTION OF THE EVENT**

The Safeguards Exhaust Ventilation System (SAVS) functions to control the release of radioactive materials to the environment and to provide temperatures suitable for equipment operation. The SAVS provides cooling for the low head safety injection and outside recirculation spray pumps. The Loss of Coolant Accident (LOCA) design basis accident assumes that ventilation from areas with Emergency Core Cooling System (ECCS) leakage will be aligned to the charcoal filters for 30 days following the accident. Air accumulators are installed to hold the SAVS fan discharge dampers open following a LOCA concurrent with loss of Instrument Air. The dampers are air-to-open that fail closed on a loss of Instrument Air (IA). Periodic surveillance testing of the system is performed to verify design basis assumptions and not to satisfy a Technical Specification requirement.

The North Anna Ventilation System Integrated Review Team identified a concern that the configuration of the primary ventilation system may not meet post-accident design basis requirements. During development of a plant modification to address that concern, a plant issued was submitted in December 1999, stating that the existing procedures for performance testing of the air accumulators for the SAVS fan discharge dampers were inadequate. The SAVS fan discharge dampers were only being held open by the air accumulators for 10 minutes during surveillance testing. A review of previous test data indicated there was some amount of air leakage, however it was difficult to determine if the leakage could cause the damper to close before the 30 days following a LOCA. Corrective actions for this condition included revising the test procedures and scheduling a re-test of the SAVS fan discharge dampers. The revised test procedures require a 10 hour hold of the SAVS fan discharge dampers to determine the existing leak rate and to provide a calculation for a 30 day projection for the adequacy of the tank capacity and leakage to maintain the dampers open.

On May 1, 2000, with Units 1 and 2 in Mode 1 operating at 100% power, it was determined that the Safeguards Exhaust Ventilation System (SAVS) had been in a condition which could have prevented fulfillment of its safety function. Surveillance test failures of the Unit 1 and 2 SAVS fan discharge dampers, due to inadequate maintenance and testing, were experienced between March 23, 2000 and April 27, 2000. A description of the test process and subsequent actions is described below.

The Unit 1 "A" train SAVS fan discharge damper and air accumulator was tested on March 23, 2000, with unsatisfactory results. Leakage through mechanical fittings was identified as the cause. These fittings were tightened and the test procedures were revised to leak test fittings and to record ambient air accumulator temperatures in order to evaluate the effect on system pressure. Subsequent testing on March 25, 2000, ensured the damper would remain open for at least 30 days.

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The Unit 1 "B" train SAVS fan discharge damper and air accumulator was tested on March 26, 2000, with unsatisfactory results. Leakage through two isolation check valves and discharge damper vent hole were identified. Components were replaced and the test was run again on March 31, 2000, with unacceptable air leakage at the pressure control valve (PCV) to the discharge damper. The PCV was removed, inspected, tightened and re-installed. The test was performed again on April 1, 2000, with unsatisfactory results. However, the damper would have remained open for 16.6 days.

Following the initial Unit 1 "B" train SAVS fan discharge damper surveillance test failure on March 26, 2000, a Justification for Continued Operation (JCO) and supporting 10 CFR 50.59 Safety Evaluation were developed. Compensatory measures were established to ensure adequate filtration is provided for the SAVS, and adequate cooling is established to the Safeguards area. The compensatory measures ensure a motive force (air) is available to the SAVS fan discharge dampers. Manual Operator action may be required to provide the motive force after a design basis accident (DBA) based on plant conditions following a LOCA. Manual Operator action is consistent with the instrument air design basis identified in the UFSAR regarding isolation of affected portions of the system and returning the instrument air system to manual operation. Operator actions include, assessment of plant data and manual actions to establish back-up air to the discharge dampers. The JCO and Safety Evaluation were approved on April 1, 2000.

Accumulator pressure was evaluated for the Unit 1 "B" train SAVS fan discharge damper surveillance test failure on April 1, 2000. After being adjusted for temperature change using the ideal gas law, the results indicated the damper would close in 16.6 days. Manual Operator actions necessary to accomplish the compensatory measures outlined in the safety evaluation involve entering the Auxiliary Building for approximately 10 minutes. Worst case radiation dose rates in the Auxiliary Building were calculated to be 3.4 Rem per hour 15 days following a LOCA. The test results were determined to be acceptable since compensatory measures could be taken to restore SAVS in case the air accumulator pressure depleted in less than 30 days.

The Unit 2 "B" train SAVS fan discharge damper and air accumulator was tested on April 24, 2000, with unsatisfactory results. Leakage was detected on the air accumulator isolation and drain valves. Valve packing was adjusted on each valve. The test was performed again on April 25, 2000, with unsatisfactory results. Accumulator pressure was evaluated and the results indicated the damper would close in 10.4 days. Worst case radiation dose rates in the Auxiliary Building were calculated to be 5 to 6 Rem per hour 10 days following a LOCA. The test results were determined to be acceptable since compensatory measures could be taken to restore SAVS in case the air accumulator pressure depleted in less than 30 days.

The Unit 2 "A" train SAVS fan discharge damper and air accumulator was tested on April 27, 2000, with unsatisfactory results. Leakage from the isolation valve to the discharge

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damper was identified. Corrective maintenance was performed and a re-test completed with unsatisfactory results. Accumulator pressure was evaluated and the results indicated the damper would close in 9.1 days. Worst case radiation dose rates in the Auxiliary Building were calculated to be 7.2 Rem per hour 8 days following a LOCA. The test results were determined to be acceptable since compensatory measures could be taken to restore SAVS in case the air accumulator pressure depleted in less than 30 days.

**2.0 SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS**

The operability of the SAVS ensures that radioactive materials leaking from the ECCS equipment within the Safeguards area following a LOCA are filtered prior to reaching the environment and to provide ventilation to equipment spaces to ensure an acceptable operating environment for accident mitigation components. The JCO and Safety Evaluation have determined that even with a loss of air supply to the SAVS fan discharge dampers, compensatory measures are adequate to monitor the condition and promptly restore Safeguards area exhaust. Temporary loss of SAVS will not cause temperatures to exceed the equipment qualification limits. As such, this event posed no significant safety implications. Additionally, a design basis accident had not occurred. Therefore, the health and safety of the public were not affected at any time during this event.

This condition is reportable pursuant to 10 CFR 50.73 (a)(2)(v)(B) and (C) for a condition that alone could have prevented the fulfillment of the safety function of the system needed to remove residual heat and control the release of radioactive material. A four hour non-emergency report was made to the NRC Operations Center at 1647 hours on May 1, 2000, pursuant to 10 CFR 50.72(b)(2)(iii)(B) and (C).

**3.0 CAUSE**

The existing procedures for performance testing of the air accumulators for the SAVS fan discharge dampers were inadequate. The SAVS fan discharge dampers were only being held open for 10 minutes during surveillance testing. The Loss of Coolant Accident (LOCA) design basis accident assumes that ventilation from areas with Emergency Core Cooling System (ECCS) leakage will be aligned to the charcoal filters for 30 days following the accident. No provisions had been made in emergency procedures to monitor and manually ensure the dampers stayed open following the accident. Therefore, the air accumulators were relied upon to hold the dampers open for the duration.

**4.0 IMMEDIATE CORRECTIVE ACTION(S)**

Upon determination of the reportable condition, actions had already been taken to ensure operability of the SAVS (i.e. development of the Justification of Continued Operation,

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Safety Evaluation, implementing procedures, and revisions to test procedures).

Technical Specification actions were entered, as required, upon discovery of the failed test. Corrective maintenance actions were performed following each failed test to repair associated equipment.

**5.0 ADDITIONAL CORRECTIVE ACTIONS**

The Safeguards Exhaust Ventilation System (SAVS) operability has been challenged due to the leakage of instrument air components associated with operation of the SAVS fan discharge dampers. An engineering evaluation has identified replacement of the air operated dampers with "backdraft" dampers as a proper resolution.

**6.0 ACTIONS TO PREVENT RECURRENCE**

Installation and acceptable testing of the "backdraft" dampers will ensure SAVS operability without reliance on the compensatory measures currently in place.

**7.0 SIMILAR EVENTS**

LER Report Number 50-338/1999-006-00 identified a degraded ventilation damper associated with the Auxiliary Building General Exhaust Ventilation System. The degraded damper had the potential to cause a portion of the SAVS flow to bypass the charcoal filter prior to release to the environment following a design basis accident.

**8.0 ADDITIONAL INFORMATION**

None