

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

April 27, 2007

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555-0001

Serial No.: 07-0195
NAPS: JHL
Docket No.: 50-339
License No.: NPF-7

Dear Sirs:

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

Report No. 50-339/2007-001-00

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.

Sincerely,



D. G. Stoddard, Site Vice President
North Anna Power Station

Enclosure

Commitments contained in this letter: None

cc: United States Nuclear Regulatory Commission
Region II
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW, Suite 23T85
Atlanta, Georgia 30303-8931

Mr. J. T. Reece
NRC Senior Resident Inspector
North Anna Power Station

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 collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0066), Office of Management and Budget, Washington, DC 20503. If a means used to impose 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.

1. FACILITY NAME NORTH ANNA POWER STATION , UNIT 2						2. DOCKET NUMBER 05000 339			3. PAGE 1 OF 5	
4. TITLE Damper Leak-by During PREACS Testing Results in Unanticipated Power Reduction										
5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCUMENT NUMBER
02	27	2007	2007	-- 001 --	00	04	27	2007	FACILITY NAME	DOCUMENT NUMBER
9. OPERATING MODE 1			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)							
			<input type="checkbox"/> 20.2201(b) <input type="checkbox"/> 20.2203(a)(3)(i) <input type="checkbox"/> 50.73(a)(2)(i)(C) <input checked="" type="checkbox"/> 50.73(a)(2)(vii)							
			<input type="checkbox"/> 20.2201(d) <input type="checkbox"/> 20.2203(a)(3)(ii) <input type="checkbox"/> 50.73(a)(2)(ii)(A) <input type="checkbox"/> 50.73(a)(2)(viii)(A)							
			<input type="checkbox"/> 20.2203(a)(1) <input type="checkbox"/> 20.2203(a)(4) <input type="checkbox"/> 50.73(a)(2)(ii)(B) <input type="checkbox"/> 50.73(a)(2)(viii)(B)							
			<input type="checkbox"/> 20.2203(a)(2)(i) <input type="checkbox"/> 50.36(c)(1)(i)(A) <input type="checkbox"/> 50.73(a)(2)(iii) <input type="checkbox"/> 50.73(a)(2)(ix)(A)							
10. POWER LEVEL 100%			<input type="checkbox"/> 20.2203(a)(2)(ii) <input type="checkbox"/> 50.36(c)(1)(ii)(A) <input type="checkbox"/> 50.73(a)(2)(iv)(A) <input type="checkbox"/> 50.73(a)(2)(x)							
			<input type="checkbox"/> 20.2203(a)(2)(iii) <input type="checkbox"/> 50.36(c)(2) <input type="checkbox"/> 50.73(a)(2)(v)(A) <input type="checkbox"/> 73.71(a)(4)							
			<input type="checkbox"/> 20.2203(a)(2)(iv) <input type="checkbox"/> 50.46(a)(3)(ii) <input type="checkbox"/> 50.73(a)(2)(v)(B) <input type="checkbox"/> 73.71(a)(5)							
			<input type="checkbox"/> 20.2203(a)(2)(v) <input type="checkbox"/> 50.73(a)(2)(i)(A) <input checked="" type="checkbox"/> 50.73(a)(2)(v)(C) <input type="checkbox"/> OTHER							
			<input type="checkbox"/> 20.2203(a)(2)(vi) <input checked="" type="checkbox"/> 50.73(a)(2)(i)(B) <input type="checkbox"/> 50.73(a)(2)(v)(D)							
Specify in Abstract below or in NRC Form 366A										
12. LICENSEE CONTACT FOR THIS LER										
FACILITY NAME M. D. Sartain, Director Station Safety and Licensing								TELEPHONE NUMBER (Include Area Code) (540) 894-2108		
13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT										
CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	
D	VF	DMP	AMER	Y						
14. SUPPLEMENTAL REPORT EXPECTED					15. EXPECTED SUBMISSION DATE			MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO										

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

On February 27, 2007, at 1620 hours, with North Anna Unit 2 operating at 100% power (Mode 1), Unit 2 Safeguards exhaust bypass dampers 2-HV-AOD-228-1 and 2-HV-AOD-228-2 were found to have leak-by during the performance of Periodic Test (PT) 0-PT-77.14A, Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS) Train A Filter In-Place Test (1-HV-FL-3A). This condition rendered both trains of Safeguards exhaust inoperable. This placed Unit 2 in Technical Specification (TS) Limiting Condition of Operation (LCO) 3.0.3. Operations personnel began a unit ramp-down at 1947 hours and a 4-hour Non-Emergency Report was made to the NRC at 2215 hours, in accordance with 10 CFR 50.72(b)(2)(i), for the initiation of any nuclear plant shutdown required by the plant's Technical Specifications. At 2220 hours, with Unit 2 at 32% power, the TS action was cleared after installation of a temporary modification that restored the system to OPERABLE. The cause of the event was improper linkage adjustment and actuator preload that resulted in less than full damper closure. This event is reportable pursuant to 10 CFR 50.73(a)(2)(i)(B), 10 CFR 50.73(a)(2)(v)(C), and 10 CFR 50.73(a)(2)(vii). No significant safety implications existed because the ECCS PREACS ventilation filters were not called upon to perform their safety function and the unfiltered ECCS leakage limit was not being challenged.

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NORTH ANNA POWER STATION UNIT 2	05000 - 339	2007	--001 --	00	2 OF 5

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

1.0 DESCRIPTION OF THE EVENT

On February 27, 2007, at 1620 hours, with North Anna Unit 2 operating at 100% power (Mode 1), Unit 2 Safeguards exhaust bypass dampers (EIS System VF, Component DMP) 2-HV-AOD-228-1 and 2-HV-AOD-228-2 were found to have leak-by during the performance of Periodic Test (PT) 0-PT-77.14A, Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS) Train A Filter In-Place Test (1-HV-FL-3A).

The ECCS PREACS is designed to filter air from the area of the active ECCS components during the recirculation phase of the loss of coolant accident (LOCA). The ECCS PREACS, in conjunction with other normal operating systems, also provides environmental controls of temperature in the ECCS pump room areas.

With leak-by of both Unit 2 Safeguards air operated dampers 2-HV-AOD-228-1 and 2-HV-AOD-228-2, a potential path existed for both trains of ECCS PREACS to bypass the filter media (EIS Component FLT). This condition rendered both trains of Safeguards exhaust inoperable. The Limiting Condition of Operation (LCO) for Technical Specification (TS) 3.7.12 does not provide an ACTION for both trains of ECCS PREACS being inoperable. Therefore, TS LCO 3.0.3 applied which required the unit to be in Mode 5 (Cold Shutdown) in 37 hours.

Operations personnel began a unit ramp-down at 1947 hours and a 4-hour Non-Emergency Report was made to the NRC at 2215 hours, in accordance with 10 CFR 50.72(b)(2)(i). At 2220 hours, with Unit 2 at 32% power, the TS action was cleared after installation of a temporary modification that restored the system to OPERABLE.

During the review of this event, it was determined that a similar event occurred on February 6, 2006. Specifically, during the performance of 0-PT-77.14B, ECCS PREACS Train B Filter In-Place Test (1-HV-FL-3B) the as found leakage for Unit 2 Safeguards exhaust bypass dampers, 2-HV-AOD-228-1 and 2-HV-AOD-228-2, was out of specification high with the Unit 2 Safeguards exhaust aligned to the charcoal filters. This condition should have required entry into TS LCO 3.0.3. While Operations personnel discussed the issue and the requirement to enter TS LCO 3.0.3, the dampers were stroked and PT was subsequently performed satisfactorily. No actual entry into TS LCO 3.0.3 was made. TS LCO 3.0.3 entry should have been made at 1800 hours. Successful testing occurred within the first 1 hour (i.e., at 1826 hours) of what should have been part of the TS LCO 3.0.3 entry time. Based on the PT being performed satisfactorily, approval of an operability determination with regards to ECCS leakage and dampers also being manually set, no further discussion of TS LCO 3.0.3 was performed. This event should have been reported pursuant to 10 CFR 50.73(a)(2)(i)(B), for any operation or condition which was prohibited by the plant's Technical Specifications.

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

2.0 SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS

There were no nuclear safety consequences as a result of this event since the Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS) ventilation filters were not called upon to perform their safety function. Furthermore, had a plant event occurred that would have necessitated use of the system, the bypass flow around the filters would not have caused the control room personnel or the public to receive radiation doses in excess of design limits since the total amount of ECCS leakage was well below the limit set for unfiltered leakage in design calculations. The only consequence of this event was a Unit ramp in an expeditious manner.

This event is reportable pursuant to 10 CFR 50.73(a)(2)(i)(A), for any operation or condition which was prohibited by the plant's Technical Specifications. The event is also reportable pursuant to 10 CFR 50.73(a)(2)(v)(C) for any event or condition that could have prevented the fulfillment of a safety function of structures or systems that are needed to control the release of radioactive material. In addition, the event is reportable pursuant to 10 CFR 50.73(a)(2)(vii) for any event where a single cause or condition caused at least one independent train or channel to become inoperable in multiple systems or two independent trains or channels to become inoperable in a single system designed to control the release of radioactive material. The event reportability for 10 CFR 50.73(a)(2)(v)(C) as a loss of safety function was not identified until after the event was initially reported pursuant to 10 CFR 50.72(b)(2)(i) on February 27, 2007. Thus, this event should have also been initially reported pursuant to 10 CFR 50.72(b)(3)(v) as a loss of safety function. Because this event is reportable per 10 CFR 50.73(a)(2)(v) it will also be reported as a Safety System Functional Failure for the NRC Performance Indicators in accordance with the guidance of NEI 99-02, revision 4.

3.0 CAUSE

The cause of the excessive damper leakage was a combination of improper adjustment of the actuator damper linkage and degraded damper seals. External adjustment of the damper linkage without performing an internal verification of damper position does not ensure proper damper operation. In addition, the damper linkages were not set to pre-load the actuator springs in accordance with manufacturers recommendations. Degradation of the damper blade seals over time prevented a tight seal with the blades in the closed position.

Several contributing causes were also identified. These contributing causes included inadequate preventive maintenance on the seals, difficulty in performing seal maintenance due to access limitations, limited actuator design margin, and inadequate damper testing.

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4.0 IMMEDIATE CORRECTIVE ACTION(S)

Operations personnel began a unit ramp-down at 1947 hours and a 4-hour Non-Emergency Report was made to the NRC at 2215 hours, in accordance with 10 CFR 50.72(b)(2)(i). At 2220 hours, with Unit 2 at 32% power, the TS action was cleared after installation of a temporary modification that restored the system to OPERABLE.

5.0 ADDITIONAL CORRECTIVE ACTIONS

Work Orders (WOs) 00737900-01 and 02 were completed to replace damper seals, including the jamb seals and to perform a thorough inspection of dampers 2-HV-AOD-228-1 and 2. This work also directed adjustment of the actuator linkage and established proper spring preload to help ensure damper closure.

Design Change (DC) 07-117 was issued and implemented to provide a method for quickly isolating the Unit 2 Safeguards bypass path should future damper leakage occur. The DC installed a structural framework that supports metal blanks that may be used to isolate flow through the bypass while permitting access to the bypass dampers for inspection/maintenance. A similar change is being developed for North Anna Unit 1.

The damper actuators for 2-HV-AOD-228-1 and 2 were refurbished. The refurbishment included replacement of the diaphragm and actuator spring.

A partial performance of 0-PT-77.14A was conducted for the Unit 2 Safeguards bypass dampers. Damper leakage was satisfactory, approximately 0.8% vs. acceptance criteria of less than 1%.

The preventive maintenance (PM) frequency and scope for damper seal replacements was revised.

Changes to component classifications for the dampers and actuators were implemented.

Procedure changes were completed to ensure adequate contingency measures are staged prior to testing.

6.0 ACTIONS TO PREVENT RECURRENCE

Maintenance procedures will be revised to 1) ensure that actuator linkages are not disconnected/reconnected without visual verification of the damper position internal to the ductwork and 2) ensure actuator preloading.

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TEXT CONTINUATION

FACILITY NAME (1) NORTH ANNA POWER STATION UNIT 2	DOCKET 05000 - 339	<table border="1"> <tr> <th colspan="3" data-bbox="1036 235 1136 254">LER NUMBER (6)</th></tr> <tr> <th data-bbox="1036 254 1136 273">YEAR</th><th data-bbox="1136 254 1295 273">SEQUENTIAL NUMBER</th><th data-bbox="1295 254 1393 273">REVISION NUMBER</th></tr> <tr> <td data-bbox="1036 273 1136 321">2007</td><td data-bbox="1136 273 1295 321">--001 --</td><td data-bbox="1295 273 1393 321">00</td></tr> </table>	LER NUMBER (6)			YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2007	--001 --	00	PAGE (3) 5 OF 5
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An evaluation will be completed to address potential solutions for damper design deficiencies. Changes will be implemented as appropriate.

Maintenance training programs will be reviewed and revised as required to strengthen maintenance work practices on dampers, damper linkages, and damper actuators.

0-PT-77.14A and B will be revised to include individual testing of PREACS bypass dampers.

These actions will be tracked in the Corrective Action Program to completion.

7.0 SIMILAR EVENTS

Licensee Event Report No. 50-338/1999-006-00 dated September 28, 1999, documents finding a damper associated with the Auxiliary Building General Area Exhaust Ventilation System degraded due to missing damper seals.

Plant Issue N-2006-0504, dated February 6, 2006, documents excessive leakage as measured by 0-PT-77.14B by 2-HV-AOD-228-1 and 2.

8.0 ADDITIONAL INFORMATION

At the time of this event North Anna Unit 1 was operating at 100 percent power and was not affected by this event.

The extent of condition was reviewed and it was determined that it is limited to ventilation system dampers that are required to provide essentially leak-tight sealing, which includes the following:

- 1-HV-AOD-228-1, -2 (Unit 1 Safeguards Exhaust Bypass Dampers)
- 1-HV-AOD-103-1, -2 (Auxiliary Building Central Exhaust Bypass Dampers)
- 1-HV-AOD-102-3, -4 (Auxiliary Building General Exhaust Filter Dampers)
- 1-HV-AOD-104-3, -4 (Containment Purge Exhaust Filter Dampers)
- 1-HV-AOD-107-3, -4 (Fuel Building Exhaust Filter Dampers)
- 1-HV-AOD-113-3, -4 (Waste Solids/Decontamination Building Exhaust Filter Dampers)
- 1-HV-AOD-160-1, -2 (Control Room Normal Supply Isolation Dampers)
- 1-HV-AOD-161-1, -2 (Control Room Normal Exhaust Isolation Dampers)

Previous ventilation system testing for North Anna Units 1 and 2 has demonstrated acceptable damper performance.