10CFR50.73

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

October 5,1998

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

Serial No.: 98-280A
NAPS: MPW
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 Supplement applicable to North Anna Unit 2.

Report No. 50-339/98-003-01

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,

W. R. Matthews
Site Vice President

Enclosure

Commitments contained in this letter: None

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

IE22

NRC FORM 366 (4-95)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 4/30/98

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND 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.

LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
NORTH ANNA POWER STATION , UNIT 2	05000339	1 OF 5

TITLE (4)
LARGE BORE SNUBBERS INOPERABLE

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	24	98	98	003	01	10	05	98		05000
									FACILITY NAME	DOCUMENT NUMBER 05000

OPERATING MODE (3)	6
POWER LEVEL (10)	0 %

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

	20.2201(b)		20.2203(a)(2)(v)	X	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
	20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)		or in NRC Form 366A

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
W. R. Matthews, Site Vice President	(540) 894-2101

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

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

On April 24, 1998, with Unit 2 in Mode 6 Refueling, multiple failures occurred during functional testing of the reactor coolant system (RCS) large bore snubbers. The Technical Specifications require functional testing of 10 percent of the large bore snubbers every 18 months during shutdown. As a result of functional test failures in the planned test group additional snubbers were tested. Further failures resulted in all large bore snubbers (12) being tested. Of the 12 snubbers tested, 7 failed to meet the acceptance criteria established in the maintenance procedures. This event is reportable pursuant to 10CFR50.73(a)(2)(i)(B) for a condition prohibited by Technical Specifications.

The cause of the snubbers to meet the functional test acceptance criteria is unknown. All 12 large bore snubbers have been replaced with a different model. This condition posed no significant safety implications since it was determined that the RCS structural integrity was not compromised. Therefore the health and safety of the public were not affected.

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
North Anna Power Station, Unit 2	05000339	98	-- 003 --	01	2 OF 5

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

1.0 DESCRIPTION OF THE EVENT

The Technical Specifications (TS) require functional testing of 10 percent of the large bore snubbers every 18 months during shutdown. Testing ensures activation (restraining action) is achieved within the specified range of velocity or acceleration in both tension and compression. Testing also ensures the snubber bleed rate is within the specified range in both tension and compression. All reactor coolant system (RSC) large bore snubbers (12) (EIIS System-AB, Component-SNB) were subject to functional tests, either because they were part of the planned test group (2) or because of failures of previously tested snubbers. Of the 12 snubbers tested, 7 failed to meet the acceptance criteria established in the maintenance procedures. The failures were the result of the snubbers not achieving the lock up rate, specified in the test procedures, in either or both the tension and compression activation tests. Individual results are listed below.

Snubber 001A is located between the upper steam generator (EIIS Component-SG) and containment crane wall in the "A" loop. The lock up rates of the snubber in tension and compression were 10.79 inches per minute (IPM) and 4.01 IPM, respectively. The compression rate was below the lower limit of the acceptance criteria of 6 to 20 IPM. The bleed rate was within the acceptance criteria range.

Snubber 011A is located between the lower steam generator supports and the reactor coolant pump (RCP) (EIIS Component-P) in the "A" loop. The lock up rates of the snubber in tension and compression were 22.26 IPM and 8.43 IPM, respectively. The tension rate was above the upper limit of the acceptance criteria of 6 to 20 IPM. In addition, the test machine plots did not show the snubber achieved lock up in tension. The bleed rate was within the acceptance criteria range. Since a bleed rate test cannot be performed without achieving lock up, then lock up did, in fact, occur. The lack of a defined lock up in tension on the plots is believed to be a test machine anomaly.

Snubber 001B is located between the upper steam generator and containment crane wall in the "B" loop. The lock up rates of the snubber in tension and compression were 10.05 IPM and 9.11 IPM, respectively. Although the lock up rates were within the limits of the acceptance criteria of 6 to 20 IPM, the test machine plots did not show the snubber achieved lock up. The bleed rate was within the acceptance criteria range. Since a bleed rate test cannot be performed without achieving lock up, then lock up did, in fact, occur. The lock up rates and bleed rates were within the test acceptance criteria. The lack of a defined lock up on the plots is believed to be a test machine anomaly.

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
North Anna Power Station, Unit 2	05000339	98	-- 003 --	01	3 OF 5

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

1.0 DESCRIPTION OF THE EVENT (continued)

Snubber 010B is located between the lower steam generator supports and the RCP in the "B" loop. The lock up rates of the snubber in tension and compression were 5.84 IPM and 17.29 IPM, respectively. The tension rate was below the lower limit of the acceptance criteria of 6 to 20 IPM. The bleed rate was within the acceptance criteria range.

Snubber 003C is located between the upper steam generator and the bio-wall in the "C" loop. The lock up rates of the snubber in tension and compression were 5.76 IPM and 5.06 IPM, respectively. The lock up rates were below the lower limit of the acceptance criteria of 6 to 20 IPM. The bleed rate was within the acceptance criteria range.

Snubber 010C is located between the lower steam generator supports and the RCP in the "C" loop. The lock up rates of the snubber in tension and compression were 3.61 IPM and 1.78 IPM, respectively. The lock up rates were below the lower limit of the acceptance criteria of 6 to 20 IPM. The bleed rate was within the acceptance criteria range.

Snubber 011C is located between the lower steam generator supports and the RCP in the "C" loop. The lock up rates of the snubber in tension and compression were 2.05 IPM and 9.76 IPM, respectively. The tension rate was below the lower limit of the acceptance criteria of 6 to 20 IPM. The bleed rate was within the acceptance criteria range.

Event reporting guidelines contained in NUREG - 1022, Rev. 1, discuss multiple test failure reportability. Similar functional test failures, on seven of twelve snubbers, are an indication that the discrepancies arose over time since the previous plant shutdown. As such, the condition existed during plant operation and is reportable under 10CFR50.73(a)(2)(i)(B) for a condition prohibited by Technical Specifications.

2.0 SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS

An evaluation determined that the failure of the large bore snubbers to meet their acceptance criteria, did not result in the RCS pressure boundary being in an overstress condition. The lower limit of the lock up rate acceptance criteria ensures that the snubbers will not inadvertently lock when the piping is subjected to all normal operating conditions and design basis thermal transients. When a snubber exhibits a lock up rate below the acceptance criteria, a potential for an inadvertent lock up exists during thermal expansion or contraction. This could cause unanalyzed thermal stress in the RCS piping

2.0 SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS (continued)

and components. To determine the influence of the low lock up rate of a snubber on a system, the maximum anticipated snubber piston axial velocity during each thermal expansion and contraction event of the system must be determined. If the anticipated snubber piston axial velocity, during a thermal event, is greater than the lock up rate of the snubber then the snubber may lock up during a thermal event.

The estimated maximum snubber piston axial velocity due to reactor coolant loop thermal expansion or contraction was determined to be approximately 2.164 IPM under worst case thermal transient conditions . Piston velocities during normal heatup and cooldown are significantly less (i.e., orders of magnitude) than this worst case thermal transient condition. The test procedure lower lock up rate acceptance level of 6 IPM is chosen for conservatism, being approximately three times the estimated maximum axial velocity under worst case thermal transient. Two snubbers had a measured lock up rate below 2.164 IPM (i.e., 011C at 2.05 IPM, and 010C at 1.78 IPM). These snubbers could have potentially locked up if they had been subjected to the worst case thermal transients. Only normal heatup and cooldown occurred during the period the system operated with the snubber exhibiting low lock up rate. Since normal heatup and cooldown rates on the system are significantly slower than the design worst case thermal transient rates evaluated, no potential for an inadvertent snubber lock up existed during normal heatup, cooldown or power operation. The low lock up rate does not influence the snubber's ability to carry seismic load, because the snubber locks up during a seismic event to perform its intended design function.

The upper limit of the lock up rate acceptance criteria ensures that the snubber will lock up to carry loading due to an earthquake, LOCA or other design basis event. No such design basis events have occurred. Neither the low or high lock up rates affected the structural integrity of the RCS. Therefore, the health and safety of the public were not affected by this condition.

3.0 CAUSE

The cause of the snubbers to exhibit lock up rates outside the acceptance criteria range is unknown.

4.0 IMMEDIATE CORRECTIVE ACTION(S)

Following the initial snubber failure, additional snubbers were tested in accordance with TS. Engineering evaluations were performed to determine whether the failure of the snubbers resulted in a RCS pressure boundary overstress condition.

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
North Anna Power Station, Unit 2	05000339	98	-- 003 --	01	5 OF 5

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

5.0 ADDITIONAL CORRECTIVE ACTIONS

All 12 large bore snubbers were replaced with new LISEGA large bore snubbers in accordance with a previously approved design change.

6.0 ACTIONS TO PREVENT RECURRENCE

With replacement of the large bore snubbers, the types of failures exhibited are not expected to occur again.

7.0 SIMILAR EVENTS

There have been no other LERs written concerning multiple functional test failures of snubbers to meet their acceptance criteria.

8.0 ADDITIONAL INFORMATION

Unit 1 was operating at 100% and was not affected by this event. Snubber test results from previous Unit 1 outages have been reviewed. During the 1997 Unit 1 outage, four snubbers were tested. With the completion of the testing in the 1997 outage, all twelve Unit 1 large bore snubbers have been functionally tested (i.e., the remaining eight had been tested in Unit 1 outages prior to 1997.) Only one functional test failure has occurred during this testing. The Unit 1 snubber which failed during the 1997 Unit 1 outage was replaced with a new Lisega snubber. Plans are underway to replace the remaining eleven large bore snubbers during the 1998 Unit 1 outage to minimize future manpower and dose expenditures associated with testing and maintenance of the existing snubbers.

Nine of eleven large bore snubbers were replaced during the 1998 Unit 1 outage. The last two snubbers will be replaced during a future Unit 1 refueling outage. Three of the snubbers were tested with satisfactory results. This testing satisfies the surveillance requirements as delineated in the Technical Specifications. Since these tests were acceptable coupled with the satisfactory functional tests during previous outages, reasonable assurance of operability has been achieved for the two large bore snubbers that were not replaced.