

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

November 22, 2010

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

Serial No.: 10-584
NAPS: RAP
Docket No.: 50-338, 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 Power Station Units 1 and 2.

Report No. 50-338/2010-003-00

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

Sincerely,



N. Larry Lane
Site Vice President
North Anna Power Station

Enclosure

Commitments contained in this letter: None

cc: United States Nuclear Regulatory Commission
Region II
Marquis One Tower
245 Peachtree Center Ave., NE, Suite 1200
Atlanta, Georgia 30303-1257

NRC Senior Resident Inspector
North Anna Power Station

IE22
NRR

8/31/2010

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: 80 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 (3150-0104), 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, UNITS 1 and 2

2. DOCKET NUMBER

05000 338

3. PAGE

1 OF 4

4. TITLE

Potential for Containment Sump Strainer Blockage due to Unacceptable Insulation In Containment

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
09	24	2010	2010	-- 003 --	00	11	22	2010	North Anna Power Station	05000339
									FACILITY NAME	DOCUMENT NUMBER
										05000

9. OPERATING MODE

Defueled

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 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) |
| <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 type="checkbox"/> 50.73(a)(2)(v)(C) | <input type="checkbox"/> OTHER |
| <input type="checkbox"/> 20.2203(a)(2)(vi) | <input type="checkbox"/> 50.73(a)(2)(i)(B) | <input checked="" type="checkbox"/> 50.73(a)(2)(v)(D) | <input type="checkbox"/> VOLUNTARY LER |

10. POWER LEVEL

0%

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME

F. Mladen, 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

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO15. EXPECTED
SUBMISSION
DATE

MONTH DAY YEAR

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

On September 22, 2010, with Unit 1 defueled during a scheduled refueling outage, an insulation discrepancy was noted while investigating the supplementary neutron shielding material on the Reactor Pressure Vessel nozzles. Engineering review of the modification that installed the shielding noted the original Tempmat insulation was replaced with Microtherm insulation per Design Change 79-S07. This conflicted with the GSI-191 vendor walk-down report. On September 24, 2010 subsequent inspections revealed Microtherm insulation on the Intermediate RCS Loop which is within the North Anna 1 containment GSI-191 Zone of Influence. The corresponding Unit 2 Intermediate RCS Loop insulation had been mitigated. On September 28, 2010, additional Microtherm insulation was identified on the Unit 1 Reactor Coolant Pumps. On September 28, 2010, management decided to voluntarily shutdown Unit 2 based on inconsistent documentation to perform insulation inspections in equivalent areas. The visual inspections confirmed the existence of Microtherm in Unit 2 Containment. On September 29, 2010, at 1415 hours, an Information Only notification was made to the NRC Operations Center. This event is reportable per 10 CFR 50.73(a)(2)(v)(D) for a condition that could have prevented the fulfillment of a safety function needed to mitigate the consequences of an accident.

LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET

1. FACILITY NAME NORTH ANNA POWER STATION UNITS 1 & 2	2. DOCKET 05000 - 338	6. LER NUMBER			3. PAGE 2 OF 4
		YEAR 2010	SEQUENTIAL NUMBER --003 --	REV NO. 00	

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

1.0 DESCRIPTION OF THE EVENT

During the Unit 2 Spring 2010 Refueling Outage (RFO) evidence of minor leakage at the cavity seal ring was identified. A boric acid inspection of the Reactor Pressure Vessel (RPV) nozzles (EIS System – AB, Component – NZL) was subsequently performed. The inspection identified the degraded condition of the supplemental neutron shielding saddle assemblies. The configuration of the supplemental neutron shielding saddle assemblies were determined to be acceptable. Based on the degraded condition of the Unit 2 supplemental neutron shielding saddle assemblies, a decision was made to inspect the Unit 1 supplemental neutron shielding saddle assemblies during the Fall 2010 RFO.

On September 13, 2010, the inspection of the Unit 1 supplemental neutron shielding saddle assemblies determined it was not configured as indicated on plant drawings. The supplemental neutron shielding installed on top of the nozzles contained gaps preventing it from fully performing its intended function. The length of time the Units 1 and 2 supplemental neutron shielding saddle assemblies have been degraded is unknown. Corrective actions were initiated to evaluate removal of the supplemental neutron shielding saddle assemblies.

During development of the Design Change to remove the supplemental neutron shielding saddle assemblies, Engineering review of the Design Change that installed the supplemental neutron shielding saddle material noted that the original Tempmat insulation on the Unit 1 RPV nozzles was replaced with thinner Microtherm insulation per Design Change (DC 79-S07). This conflicted with the GSI-191 vendor walk-down. A review of GSI-191 walk-down reports, material specifications, design changes, and drawings was initiated. As a result of this review, on September 24, 2010 subsequent inspections revealed Microtherm insulation on the Intermediate RCS Loop which is within the North Anna 1 containment GSI-191 Zone of Influence. The corresponding Unit 2 RCS Intermediate loop insulation had been mitigated. In addition, on September 28, 2010, Microtherm was visually verified to exist on the Unit 1 Reactor Coolant Pumps (RCPs) (EIS Component – P) bowls, which is within the Zone of Influence (ZOI). On September 28, 2010, management decided to voluntarily shutdown Unit 2 based on inconsistent documentation to perform insulation inspections in equivalent areas. The visual inspection confirmed the existence of Microtherm in Unit 2 containment ZOI. In subsequent investigations, Microtherm was discovered to be installed in Units 1 and 2 on the RCPs, the RCP outlet nozzles, the Intermediate Leg elbows (on Unit 1 only), and other locations. In addition, Calcium Silicate (Cal-Sil) insulation was determined to be installed in both Units containment ZOIs. Based on hand-over-hand walk-downs that were performed there were approximately 58 cubic feet of Microtherm and 8 cubic feet of Cal-Sil identified in the Unit 1 containment ZOI. Hand-over-hand walk-downs for the Unit 2 containment ZOI identified approximately 62 cubic feet of Microtherm and 9 cubic feet of Cal-Sil.

The debris source walk-downs conducted in 2003 and 2004 for the original GSI-191 project identified the existence of Microtherm insulation in Unit 2 containment but not in Unit 1.

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		2010	--003 --	00	

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Design Change (DCP 07-004) was implemented to replace Microtherm and most Cal-Sil (in the ZOI) in Unit 2 with approved insulation. The Design Change for Unit 1 (DCP 07-129) addressed only Cal-Sil. The existence of encapsulated Microtherm on the RPV nozzles was unknown to the original GSI-191 project team and it was only identified during the investigation of the supplemental neutron shielding. The presence of Microtherm and Cal-Sil in the Unit 1 and 2 containment ZOIs was not bounded by debris load testing of the containment sump strainers (EISS System – BP, Component – STR). The North Anna Power Station (NAPS) Supplemental Response to NRC Generic Letter 2004-02, Serial No. 08-0019 dated February 29, 2008 stated that Microtherm insulation had been removed from the Unit 2 containment and that no Microtherm was installed in the Unit 1 containment.

2.0 SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS

This event posed no significant safety implications since no Design Basis Accident (DBA) occurred on either Unit during the time the unacceptable insulation remained within the Unit 1 and 2 containment ZOIs. The unacceptable insulation in the Unit 1 and 2 containment ZOIs was not bounded by debris load testing of the containment sump strainers. Dominion preliminary PRA calculations show a Conditional Core Damage Frequency (CCDF) of 5.04E-07 due to this event. This is below the regulatory threshold of 1.0E-06. The likely-hood of a Loss of Coolant Accident event is very small and the operations staff has procedures to mitigate such a condition in addition to receiving training to recognize sump blockage conditions. Therefore, the health and safety of the public were not affected by this event.

There is no ongoing vulnerability as a result of the comprehensive actions taken as described in section 4.0 below. The hand-over-hand walk-downs identified the extent of condition and ensured that unacceptable insulation does not exist within Unit 1 and 2 containment ZOIs.

On September 29, 2010, at 1415 hours, an Information Only notification was made to the NRC Operations Center to identify the Unit 2 shutdown to allow inspections for unacceptable insulation. The visual inspections confirmed the existence of Microtherm in Unit 2 Containment ZOI. This event is reportable pursuant to 10 CFR 50.73(a)(2)(v)(D), any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident.

3.0 CAUSE

The preliminary root cause evaluation of the event determined a flawed methodology was used to determine the types and quantities of insulation during the GSI-191 containment walkdowns, resulting in unacceptable insulation not being included in the containment debris inventory and subsequently remediated. Contributors to this event were an incomplete set of insulation drawings to perform plant walk-downs, ineffective oversight

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

and over-reliance on vendors, and ineffective project management during inventory walk-downs and subsequent remediation.

4.0 IMMEDIATE CORRECTIVE ACTION(S)

ETE-NA-2010-0008, Disposition of Microtherm Insulation on North Anna Unit 1, and ETE-NA-2010-0009, Final Disposition of Microtherm Insulation on North Anna Unit 2, governed the actions necessary to identify and remediate unacceptable insulation within the ZOIs for NAPS Units 1 and 2. The information for these ETEs was determined by a complete review of the insulation vendor drawings, Stone and Webster design changes for specifications associated with insulation, insulation specification changes, and design changes which could have impacted insulation. These document reviews provided the bases for engineering hand-over-hand walk-down of piping and components to determine the installed insulation type. Unacceptable insulation (Cal-Sil and/or Microtherm) was fully remediated when identified during walk-downs within the ZOIs for Units 1 and 2.

5.0 ADDITIONAL CORRECTIVE ACTIONS

The root cause evaluation team evaluated other aspects of the NAPS GSI-191 sump modification project—specifically coating program health, debris source classification, long-term chemical effects, and sump strainer design configuration. The Team determined that initial and subsequent actions associated with the aspects of the NAPS GSI-191 sump project were, and continue to be effectively governed by station policies and procedures.

Additional corrective actions from the final root cause evaluation will be documented in the Corrective Action Program and tracked to completion.

6.0 ACTIONS TO PREVENT RECURRENCE

Actions to prevent recurrence from the final root cause evaluation will be documented in the Corrective Action Program and tracked to completion.

7.0 SIMILAR EVENTS

None.

8.0 ADDITIONAL INFORMATION

None.