

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

April 1, 2011

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

Serial No.: 11-193
NAPS: MPW
Docket No.: 50-338
License No.: NPF-4

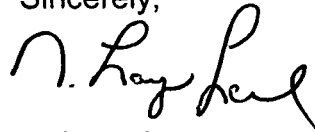
Dear Sirs:

Pursuant to 10CFR50.73, Virginia Electric and Power Company hereby submit the following voluntary Licensee Event Report applicable to North Anna Power Station Unit 1.

Report No. 50-338/2011-001-00

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

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 FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@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, UNIT 1

2. DOCKET NUMBER

05000 338

3. PAGE

1 OF 3

4. TITLE

Annunciator Card Failure Due To Carbon Resistor Degradation

5. EVENT DATE

MONTH	DAY	YEAR
02	03	2011

6. LER NUMBER

YEAR	SEQUENTIAL NUMBER	REV NO.
2011	-- 001 --	00

7. REPORT DATE

MONTH	DAY	YEAR
04	01	2011

8. OTHER FACILITIES INVOLVED

FACILITY NAME	DOCUMENT NUMBER
FACILITY NAME	05000

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 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 checked="" type="checkbox"/> OTHER
<input type="checkbox"/> 20.2203(a)(2)(vi)	<input 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

10. POWER LEVEL

100%

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
B	IB	ANN	H100	N					

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 February 3, 2011, at 0345 hours, with Unit 1 at 100 percent power, Mode 1, annunciator 1H-G4, Annunciator System DC Ground was received in the Main Control Room (MCR). At 0348 hours annunciator 1B-D3, Boric Acid Tank 1B Hi-Lo Level CH I-II was received which, when acknowledged, locked in and annunciator 1H-G4 cleared. While investigating, an acrid smell was noticeable in the MCR. At 0353, upon entry into the annunciator system cabinet room, adjacent to the MCR, the door of the cabinet, 1-EI-CB-21, was opened and flames approximately 2 - 4 inches long were observed coming from an annunciator circuit card. Operations personnel entered fire contingency action procedure 0-FCA-0, Fire Protection - Operations Response. At 0354 hours, a two second discharge of a portable CO2 fire extinguisher put out the fire and a re-flash fire watch was established. At 0437 hours the fire contingency action procedure was exited. This event posed no significant safety implications since the fire was small, extinguished quickly, did not pose an actual threat to the safety of the nuclear power plant and it did not affect equipment required for safe operation of the plant. Therefore, the health and safety of the public were not affected by this event. This event is being reported voluntarily to share information and lessons learned.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

1. FACILITY NAME NORTH ANNA POWER STATION UNIT 1	2. DOCKET 05000 - 338	6. LER NUMBER			3. PAGE 2 OF 3
		YEAR 2011	SEQUENTIAL NUMBER --001--	REV NO. 00	

NARRATIVE

1.0 DESCRIPTION OF THE EVENT

A voluntary report is being made to share information and lessons learned regarding a circuit card failure for two Main Control Room annunciators.

On February 3, 2011, at 0345 hours annunciator 1H-G4, Annunciator System (EIS System – IB) DC Ground was received in the Main Control Room (MCR). At 0348 hours annunciator 1B-D3, BAT 1B Hi-Lo Level CH I-II (EIS Component – ANN) was received which, when acknowledged, locked in and annunciator 1H-G4 cleared. While investigating, an acrid smell was noticeable in the MCR. At 0353, upon entry into the annunciator system cabinet room, adjacent to the MCR, the door of the cabinet, 1-EI-CB-21, (EIS Component – CAB) was opened and flames approximately 2 - 4 inches long were observed coming from an annunciator circuit card. Operations personnel entered fire contingency action procedure 0-FCA-0, Fire Protection – Operations Response. At 0354 hours a two second discharge of a portable CO2 fire extinguisher put out the fire and a re-flash fire watch was established. At 0437 hours the fire contingency action procedure was exited.

2.0 SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS

The small fire was extinguished quickly, did not pose an actual threat to the safety of the nuclear power plant and it did not affect equipment required for safe operation of the plant. The function of the annunciator card in question is to provide two alarm circuits in the MCR (i.e., 1B-D3, BAT 1B Hi-Lo Level CH I-II and 1B-H3, PZR Surge Line Lo Temp). The requirements for initiating a declaration of an emergency were never met. Interviews with the Operations crew on shift at the time of the incident noted their ability to perform duties necessary for the safe operation of the plant were never hampered. The health and safety of the public were not affected.

The failure probability of these resistors is based on their current drawing service over time. The annunciator system is the only system that uses these resistors in an application where they are continuously drawing current. Other applications use these resistors, but their current drawing service is limited. When these resistors are exposed to current for extended periods of time, they heat up due to natural energy losses. The risk and consequence is not associated with the resistor alone, but rather the resistor being exposed to current draw for extended periods of time (typically months/years). When they are used in such a manner, there is a risk of combustion due to prolonged exposure to heat through current draw. The consequence of this application is that a resistor may combust. However, after combustion, the resistor will typically create an open circuit within a very short time frame (due to their rapidly degrading state) removing the energy from the resistor limiting the combustion to a single card (which could possibly impact two annunciators).

The set up of the carbon resistors used on the annunciator card is particular to the Hathaway (annunciator) system.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

1. FACILITY NAME NORTH ANNA POWER STATION UNIT 1	2. DOCKET 05000 - 338	6. LER NUMBER <table border="1"> <tr> <td>YEAR</td> <td>SEQUENTIAL NUMBER</td> <td>REV NO.</td> </tr> <tr> <td>2011</td> <td>--001--</td> <td>00</td> </tr> </table>	YEAR	SEQUENTIAL NUMBER	REV NO.	2011	--001--	00	3. PAGE 3 OF 3
YEAR	SEQUENTIAL NUMBER	REV NO.							
2011	--001--	00							

NARRATIVE

3.0 CAUSE

The cause of the annunciator card fire was age related degradation of the carbon resistor. As the resistors age, they can either increase or decrease in resistance. In either case, the heat dissipation of the resistors increases causing the temperature to approach the high end of the specification for these resistors. This is defined as electrical fatigue.

4.0 IMMEDIATE CORRECTIVE ACTION(S)

Fire Contingency Action procedure 0-FCA-0, Fire Protection – Operations Response was entered. The fire was promptly extinguished and a re-flash fire watch was established.

5.0 ADDITIONAL CORRECTIVE ACTIONS

Engineering performed a thermography scan of both Unit 1 and Unit 2 Hathaway cabinets to determine if any of the other resistors were at risk for combustion. All scans showed that, while temperatures on some resistors were elevated, none of the temperatures were above the resistors specification. Resistors were replaced on eight cards that had elevated temperatures.

6.0 ACTIONS TO PREVENT RECURRENCE

A plan has been developed to replace the carbon resistors in the Hathaway system annunciator cards with metal film resistors. Temperature monitoring for the Hathaway cabinets to trend component temperatures and drive component replacements is being established. Appropriate Preventive Maintenance strategies for Hathaway System will include a replacement frequency for the resistors.

7.0 SIMILAR EVENTS

None

8.0 ADDITIONAL INFORMATION

Unit 2 was operating at 100 percent power, Mode 1, and was not affected by this event.

Component Manufacturer: Hathaway
 Component Model Number: 744202
 Component Type: Annunciator Point Card