

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

January 14, 2010

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

Serial No.: 09-733
NAPS: MPW
Docket No.: 50-338
License No.: NPF-4

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 1.

Report No. 50-338/2009-003-00

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,



Daniel G. Stoddard, P.E.
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

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 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, UNIT 1

2. DOCKET NUMBER

05000338

3. PAGE

1 OF 4

4. TITLE

Inoperable Reserve Station Service Transformer Due to Improper Load Tap Changer Setting

5. EVENT DATE

| MONTH | DAY | YEAR |
|-------|-----|------|
| 11 | 15 | 2009 |

6. LER NUMBER

| YEAR | SEQUENTIAL NUMBER | REV NO. |
|------|----------------------|------------|
| 2009 | -- 003 -- | 00 |

7. REPORT DATE

| MONTH | DAY | YEAR |
|-------|-----|------|
| 01 | 14 | 2010 |

8. OTHER FACILITIES INVOLVED

| FACILITY NAME | DOCUMENT NUMBER |
|---------------|-----------------|
| | 05000 |

| FACILITY NAME | DOCUMENT NUMBER |
|---------------|-----------------|
| | 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 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) | <input type="checkbox"/> VOLUNTARY LER |

10. POWER LEVEL

100%

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME

E. S. Hendrixson, 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 |
|-------|--------|-----------|-------------------|-----------------------|-------|--------|-----------|-------------------|-----------------------|
| A | EA | XFMR | G080 | Y | | | | | |

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)

At 1434 hours on November 15, 2009, a Technical Specification limiting action was entered for an inoperable offsite circuit in order to troubleshoot the load tap changer (LTC) setting on the "A" Reserve Station Service Transformer (RSST) 1-EP-ST-2A. At 1445 hours it was determined that the undervoltage blocking setting for the "A" RSST LTC controller was set at 110 volts (~3850 VAC on the transfer bus) with a required voltage setting for operability of 105 volts (~3675 VAC on the transfer bus) or less. As a result the "A" RSST was not able to meet the GDC-17 preferred source requirement and was declared inoperable. This condition had existed since December 2008 when the LTC controller was installed. As such a condition prohibited by Technical Specification 3.8.1 existed and is reportable per 10 CFR 50.73(a)(2)(i)(B). At 1602 hours the 1J Emergency Bus was transferred to the Unit 2 "B" Station Service bus clearing the limiting action. No significant safety consequences resulted from this event since the condition would not have prohibited the 1J Emergency Diesel Generator from starting and providing electrical load on a loss of offsite power. Therefore, the health and safety of the public were not affected by this event.

LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET

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|---|------------------------------|------------------|--------------------------------------|----------------------|-----------------------|
| 1. FACILITY NAME NORTH ANNA POWER STATION UNIT 1 | 2. DOCKET 05000 - 338 | 6. LER NUMBER | | | 3. PAGE 2 OF 4 |
| | | YEAR 2009 | 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

At 1434 hours on November 15, 2009, a Technical Specification limiting action was entered for an inoperable offsite circuit in order to troubleshoot the load tap changer (LTC) setting on the "A" Reserve Station Service Transformer (RSST) 1-EP-ST-2A (EIS System - EA, Component - XFMR). At 1445 hours it was determined that the undervoltage (UV) blocking setting for the "A" RSST LTC controller was set at 110 volts (~3850 VAC on the transfer bus) with a required voltage setting for operability of 105 volts (~3675 VAC on the transfer bus) or less. As a result the "A" RSST was not able to meet the GDC-17 preferred source requirement and was declared inoperable. This condition had existed since December 2008 when the LTC controller was installed. As such a condition prohibited by Technical Specification 3.8.1 existed and is reportable per 10 CFR 50.73(a)(2)(i)(B). At 1602 hours the 1J Emergency Bus (EIS Component BUS) was transferred to the Unit 2 "B" Station Service bus clearing the limiting action. At 1636 hours on November 16, 2009, following correction of the incorrect setting the 'A' RSST was declared operable when the post maintenance testing was completed on its LTC. At 1700 hours the power supply to the 1J Emergency Bus was transferred back to its normal power supply, 1-EP-ST-2A.

The improper UV blocking setting on the "A" RSST LTC controller (EIS Component STC) was non-conservative in nature. The setting was not changed or documented during the design or commissioning process for the LTC controller. This condition resulted in the inability of the "A" RSST to comply with its design and licensing basis requirements in the event of certain accident conditions.

A design change was implemented to upgrade the "A" RSST LTC controller from an obsolete analog GE model to the Reinhausen Tapcon Programmable Logic Controller (PLC) (EIS Component PMC) and was installed in December 2008. A question was raised with respect to the controller's ability to function during a degraded voltage (DV) condition, since the controller was powered from a separate, downstream lower voltage bus. To address the functionality of the LTC's during DV events, testing was performed on two spare LTC controllers and one LTC controller that is installed as a standby unit in the spare RSST. It was found that two of the controllers would function at bus voltages sufficiently below the DV setpoint. It was also discovered that one of the LTC controllers would stop functioning at a value that was higher than the trip setting of the DV relays.

This discrepancy was caused by an inappropriate UV block setting in the new controller, intended to prevent the LTC from stepping too much during a prolonged grid disturbance. The UV Block feature is a user defined setting in the controller that was not available in the old analog LTC controller. This feature was not identified in the design change and thus was not given a specific value to which it should be set. The default setting for this feature of 110 volts, equated to a bus voltage that is slightly above the DV setpoint of the DV relay.

**LICENSEE EVENT REPORT (LER)
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| 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>2009</td> <td>--003 --</td> <td>00</td> </tr> </table> | YEAR | SEQUENTIAL NUMBER | REV NO. | 2009 | --003 -- | 00 | 3. PAGE 3 OF 4 |
| YEAR | SEQUENTIAL NUMBER | REV NO. | | | | | | | |
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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

A Unit 2 reactor trip combined with certain switchyard bus alignments was identified where the "A" RSST LTC controller potentially would not be able to perform its' design function in accordance with the requirements of GDC-17. By analysis, during a Unit 2 trip, bus 1J voltage could drop below the DV relay setting when Bus 2A transfers to the "A" RSST with A-RSST on Bus 4 or A-RSST and B- RSST on Bus 5. Since the incorrect LTC UV blocking setting would preclude transformer tap changes, bus 1J would separate from the offsite power source earlier than desired and the EDG would load sequence onto the bus.

The extent of condition was limited to the "A" RSST since it was the only transformer to have the Reinhausen TAPCON LTC installed. This event posed no significant safety implications since the condition would not have prohibited the 1J Emergency Diesel Generator from starting and providing electrical load on a loss of offsite power.

This event is reportable pursuant to 10 CFR 50.73 (a)(2)(i)(B) for condition prohibited by the plants Technical Specifications.

3.0 CAUSE

The cause of this event was determined to be personnel error. During development of the design change package (DCP) the preparer and reviewer did not focus on other features of the controller because their intention was to not utilize any other features. They expected the vendor to defeat the additional features and therefore did not require testing. The DCP should have ensured the additional features were defeated and specified the proper testing to verify the features were defeated.

4.0 IMMEDIATE CORRECTIVE ACTION(S)

The "A" RSST was declared inoperable and the 1J Emergency Bus was transferred to the Unit 2 "B" Station Service bus clearing the limiting action.

5.0 ADDITIONAL CORRECTIVE ACTIONS

The event was entered in the Station's Corrective Action System for evaluation and determination of actions to prevent recurrence. Changes to the design change package were issued to provide a basis to set the UV blocking setting as well as other settings in the controller which are not required. This will prevent the "B" and "C" RSST LTC controllers from having the default settings after the controllers are installed.

Control Operations procedure NA-M-DSE-613 has been permanently changed to verify the settings on "A" RSST LTC controller. Control Operations procedures for the "B" & "C" RSST LTCs, NA-M-DSE-614 and NA-M-DSE-615, will be changed when the Reinhausen TAPCON LTCs are installed.

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

6.0 ACTIONS TO PREVENT RECURRENCE

Requirements were added to the design change to ensure the LTCs for the "B" and "C" RSST are properly set following installation. Post modification testing will validate the settings.

This event is being added to engineering continuing training to increase the awareness within Engineering of the unintended consequence of not fully understanding the capabilities or limitations of specified equipment and not ensuring design basis requirements continued to be satisfied, especially for Programmable Logic Control (PLC) based controls.

Training specific to the Reinhausen TAPCON is being provided to the appropriate personnel along with generic PLC training.

7.0 SIMILAR EVENTS

None

8.0 ADDITIONAL INFORMATION

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

Component information:

| | |
|--------------|------------------|
| Mark Number | 1-EP-ST-2A |
| Manufacturer | Reinhausen |
| Model Number | TAPCON 240 |
| Description | Load Tap Changer |