

**Virginia Electric and Power Company  
North Anna Power Station  
1022 Haley Drive  
Mineral, Virginia 23117**

December 6, 2013

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

Serial No.: 13-581  
NAPS: JHL  
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. 50-338/2013-002-00

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,



Gerald T. Bischof  
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

<b>NRC FORM 366</b> (10-2010)		<b>U.S. NUCLEAR REGULATORY COMMISSION</b>		APPROVED BY OMB NO. 3150-0104 EXPIRES: 10/31/2013 <small>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.</small>	
<b>LICENSEE EVENT REPORT (LER)</b>  (See reverse for required number of digits/characters for each block)					
<b>1. FACILITY NAME</b> North Anna Power Station, Unit 1				<b>2. DOCKET NUMBER</b> 05000 338	
<b>3. PAGE</b> 1 OF 4					
<b>4. TITLE</b> Automatic Reactor Trip Following Actuation of the 1C Station Service Transformer Lockout Relay					
<b>5. EVENT DATE</b>		<b>6. LER NUMBER</b>		<b>7. REPORT DATE</b>	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.
10	11	2013	2013	-- 002 --	00
				MONTH	DAY
				12	06
				YEAR	
				2013	
<b>8. OTHER FACILITIES INVOLVED</b>					
FACILITY NAME					
DOCUMENT NUMBER					
05000					
FACILITY NAME					
DOCUMENT NUMBER					
05000					
<b>9. OPERATING MODE</b>		<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §:</b> <i>(Check all that apply)</i>			
1		<input type="checkbox"/> 20.2201(b)		<input type="checkbox"/> 20.2203(a)(3)(i)	
		<input type="checkbox"/> 20.2201(d)		<input type="checkbox"/> 20.2203(a)(3)(ii)	
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10. POWER LEVEL		<input type="checkbox"/> 20.2203(a)(2)(ii)		<input type="checkbox"/> 50.36(c)(1)(ii)(A)	
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		<input type="checkbox"/> 50.73(a)(2)(v)(GL)		<input type="checkbox"/> 50.73(a)(2)(v)(GM)	

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 4
		YEAR  2013	SEQUENTIAL NUMBER  --002 --	REV NO.  00	

## NARRATIVE

**1.0 DESCRIPTION OF THE EVENT**

On October 11, 2013, at 1319 hours with Unit 1 operating at 48 percent power (Mode 1) following a refueling outage, an automatic turbine trip and subsequent reactor trip occurred due to a lockout relay (EIS Component-86) actuation for the 1C Station Service Transformer (1-EP-SST-1C) (EIS System-EA, Component-XFMR). The lockout occurred simultaneously with the start of the 1C Condensate Pump (1-CN-P-1C) (EIS System-SD, Component P) during unit power ascension. When 1-CN-P-1C was started, the increase in starting amps caused a current imbalance in the 1-EP-SST-1C differential circuit which exceeded the protective relay's (EIS Component-87) trip point. Once this trip point was exceeded the differential protective relay initiated a trip signal to its associated Station Service Transformer lockout relay. This current imbalance was falsely created due to current transformer (EIS Component-XCT) shorting screws being left installed in the 1-EP-BKR-15C2 (EIS Component-BKR) cubicle, which disabled half of the needed current inputs into the differential protective relay.

All safety systems responded as expected during the event. All control rods (EIS System-AA, Component-ROD) inserted into the core at the time of the trip. Due to low decay heat loads, the Main Steam Trip Valves (EIS System-SB, Component-V) were closed as the Reactor Coolant System (RCS) (EIS System-AB) average temperature decreased, as directed by the reactor trip response procedure and decay heat was removed using the atmospheric steam dumps. Decay heat control was subsequently transferred to the main condenser steam dump system (EIS Component-COND). The auxiliary feedwater (AFW) pumps (EIS System-BA, Component-P) received an automatic start signal as designed following the reactor trip and provided makeup flow to the steam generators (SG) (EIS Component-SG). The SG levels were subsequently restored to normal operating level and the AFW pumps were secured and returned to automatic.

**2.0 SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS**

No significant safety consequences resulted from this event since the Reactor Protection System (RPS) (EIS System-JC) and the Engineered Safety Feature (ESF) System (EIS System-JE) equipment responded as designed. No visual signs of damage to equipment occurred during the event. No fault pressure relay or mechanical relief device operated which would have been indicative of an internal fault in 1-EP-SST-1C. The event posed no significant safety implications and the health and safety of the public were not affected by the event.

At 1507 hours, a 4 hour report was made to the NRC in accordance with 10CFR50.72(b)(2)(iv)(B) for a Reactor Protection System (RPS) actuation and a 8 hour report in accordance with 10CFR50.72(b)(3)(iv)(A) for a Auxiliary Feedwater System actuation. The event is reportable pursuant to 10CFR50.73(a)(2)(iv)(A) for a condition that resulted in the automatic actuation of the RPS and AFW Systems.

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**3.0 CAUSE**

The direct cause was the presence of six shorting screws that were not removed from 1-EP-BKR-15C2 cubicle following design change replacement of the under voltage relay.

The root cause of the event was less than adequate written instructions for documenting the installation and removal of shorting screws, which resulted in a loss of configuration control.

The contributing cause of the event was less than adequate training, for maintenance type activities, is provided to Control Operations personnel when compared to station maintenance training programs.

**4.0 IMMEDIATE CORRECTIVE ACTION(S)**

The Control Room crew responded to the reactor trip in accordance with emergency procedure 1-E-0, Reactor Trip or Safety Injection. The post trip response progressed as expected and the Control Room crew transitioned to 1-ES-0.1, Reactor Trip Response. All safety systems responded as designed.

**5.0 ADDITIONAL CORRECTIVE ACTIONS**

Visual inspections were performed of all current transformer (CT) blocks for the Generator, Main Transformers and Station Service Transformers. No additional shorting screws were inappropriately installed.

Visual inspection of the 1-EP-SST-1C was performed. No visual signs of damage or abnormal conditions were observed. No fault pressure relay or mechanical relief device had operated which would have been indicative of an internal fault in the transformer.

Oil samples taken on 1-EP-SST-1C and analyzed by the Dominion Oil Analysis Lab confirmed no abnormal results.

Current traces from the Digital Fault Recorder were analyzed to determine if an actual fault had occurred. Normal load current for the equipment being powered from the 1-EP-SST-1C prior to the event was observed. Normal starting current for manual start of 1-CN-P-1C was observed just prior to the lockout relay actuation (approximately 8 cycles).

The differential relays for 1-EP-SST-1C were tested and determined to be operable.

Corrective and design change work orders were reviewed to ensure work order job steps contain adequate means for tracking configuration control changes, corrected work orders.

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**6.0 ACTIONS TO PREVENT RECURRENCE**

Corrective actions are being tracked under root cause evaluation RCE001110. Corrective actions include: 1) development of a Job Familiarization Guide for planner qualifications, 2) implementation the Job Familiarization Guide for planner qualifications, and 3) revising WM-AA-101 "Work Order Planning" to include notes and/or procedure steps to direct use of configuration control tracking documentation when approved procedures are not available to control configuration.

**7.0 SIMILAR EVENTS**

None

**8.0 ADDITIONAL INFORMATION**

Unit 2 was operating in Mode 1, 100 percent power on October 11, 2013 and was not affected by this event.

Description: Station Service Transformer (1-EP-SST-1C)  
Manufacturer: HYOSUNG Corporation (HICO)