

**Virginia Electric and Power Company
Surry Power Station
5570 Hog Island Road
Surry, Virginia 23883**

JAN 08 2019

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

Serial No.: 19-001
SPS: TSC
Docket No.: 50-280
50-281
License No.: DPR-32
DPR-37

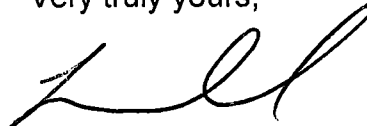
Dear Sir or Madam:

Pursuant to 10CFR50.73, Virginia Electric and Power Company hereby submits the following Licensee Event Report applicable to Surry Power Station Unit 1 and Unit 2.

Report No. 50-280, 50-281 / 2018-003-00

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

Very truly yours,



F. Mladen
Site Vice President
Surry Power Station

Enclosure

Commitment contained in this letter: None

cc: U.S. Nuclear Regulatory Commission, Region II
Marquis One Tower, Suite 1200
245 Peachtree Center Ave., NE
Atlanta, GA 30303-1257

NRC Senior Resident Inspector
Surry Power Station

IEZZ
NRR



LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

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 Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by 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

Surry Power Station, Unit 1

2. DOCKET NUMBER

05000 280

3. PAGE

1 OF 3

4. TITLE

Auto-Start of Emergency Diesel Generators due to Pilot Wire Lockout on 'C' Reserve Station Service Transformer

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	DOCKET NUMBER
11	12	2018	2018	003	00	01	11	2019	Surry Power Station, Unit 2	05000 281

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
N	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
10. POWER LEVEL	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.77(a)(1)
	<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)(D)	<input type="checkbox"/> 73.77(a)(2)(i)
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(ii)
	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> OTHER	Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT

Barry Garber

TELEPHONE NUMBER (Include Area Code)

(757) 365-2725

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	EA	CON	3M	Y					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

On November 12, 2018, at 16:36 hours, with Unit 1 at 100% power and Unit 2 defueled, 'C' Reserve Station Service Transformer (RSST) pilot wire lockout actuated while energizing the underground feeder cables to the 'C' RSST following transformer replacement. While 'C' RSST replacement activities were ongoing, the Surry 1'H' and 2'J' emergency busses were supplied from the dependable alternate power supply, Unit 2 station service back-feed. The 'C' RSST lockout signal resulted in a partial loss of off-site power to the Unit 1 'H' emergency bus and to the Unit 2 'J' emergency bus. The #1 and #3 Emergency Diesel Generators (EDG) automatically started and loaded the 1'H' and 2'J' emergency buses, respectively, as designed. The Unit 1 Main Steam Power Operated Relief Valves (PORV) momentarily opened, however the Unit 1 power level was maintained at full power. No operational issues were experienced by Unit 2. Deficient workmanship in the surface preparation of the splice connection of an underground feeder cable caused the cable fault and lockout condition. Affected cable splices were replaced prior to returning the 'C' RSST to service.

An eight-hour non-emergency event notification was made to the NRC pursuant to 10 CFR 50.72(b)(3)(iv)(A) due to a valid actuation of the #1 EDG and the #3 EDG. This report is being made pursuant to 10 CFR 50.73(a)(2)(iv)(A) due to a valid actuation of the #1 EDG and the #3 EDG.

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

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Surry Power Station, Unit 1	05000- 280	2018	- 003	- 00

NARRATIVE**1.0 DESCRIPTION OF THE EVENT**

During the Unit 2 fall 2018 refueling outage, the Surry electrical distribution system was in an off-normal alignment to support 'C' RSST [EIS-EA-XFMR] replacement. 'C' RSST is the primary source which normally supplies power from the off-site transmission network to the 'F' transfer bus and the 1'H' and 2'J' emergency busses [EIS-EK-BU]. During the 'C' RSST replacement activities, the 'F' transfer bus and the 1'H' and 2'J' emergency busses were supplied from the off-site transmission network by the dependable alternate power source, back-feed via the Unit 2 'C' Station Service Transformer.

On November 12, 2018, at 16:36 hours, 'C' RSST pilot wire lockout actuated while energizing the underground feeder cables to perform a phasing activity following 'C' RSST replacement. The lockout signal isolated both the primary and dependable alternate power sources to the 'F' transfer bus and to the 1'H' and 2'J' emergency busses. #1 and #3 Emergency Diesel Generators (EDG) [EIS-EK-DG] received automatic start signals and loaded onto the 1'H' and 2'J' emergency busses, respectively, as designed.

At the time of the event, Unit 1 was operating at 100% power, and a brief, minor thermal power transient was experienced due to actuation of the three Unit 1 Main Steam (MS) line Power Operated Relief Valves (PORV) [EIS-SB-RV]. The PORVs actuated for approximately 10 seconds due to a momentary loss of normal power supply to the Unit 1 semi-vital bus [EIS-EC-BU]. During that time, the MS line pressures reduced by approximately 7 psig before the PORVs re-closed, and pressures stabilized at pre-event levels. Thermal power level also stabilized at pre-event conditions. This effluent pathway was evaluated, and it was determined that no radionuclides were released to the environment as a result of the PORVs actuating. At the time of the event, Unit 2 was defueled in Refueling Shutdown mode. No operational impacts were experienced on Unit 2.

On November 12, 2018, at 18:23 hours, the dependable alternate off-site power circuitry to the 'F' transfer bus was reestablished by Unit 2 back-feed. At 18:45 hours and 19:06 hours, the Unit 2 back-feed circuitry was re-established to 1'H' and 2'J' emergency busses, respectively. At 19:37 hours and 21:39 hours, #1 EDG and #3 EDG, respectively, were returned to normal automatic standby alignment. All Unit 1 and Unit 2 Technical Specification action statements associated with emergency electrical systems were exited when the #1 and #3 EDGs were returned to normal alignment.

Post event testing determined that the pilot wire lockout signal was caused by a cable fault due to poor workmanship in the surface preparation of the underground cable splice connection which reduced the cable's ability to withstand transient surges. All electrical cables supplying 'C' RSST were tested, and all deficient cable splices were replaced.

An eight-hour non-emergency event notification was made to the NRC pursuant to 10 CFR 50.72(b)(3)(iv)(A) due to a valid actuation of the #1 and #3 EDGs. This report is being made pursuant to 10 CFR 50.73(a)(2)(iv)(A) due to a valid actuation of the #1 and #3 EDGs.

2.0 SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS

During the event, the redundant 1'J' 4160 V emergency bus and redundant 2'H' 4160 V emergency bus were supplied by the primary sources of off-site power, 'A' RSST and 'B' RSST, respectively. The #1, #2, and #3 Emergency Diesel Generators remained available to supply power to emergency bus loads. The actuation of Unit 1 MS PORVs resulted in a momentary minor thermal power transient, and the plant remained within safety analysis limits. Normal equipment alignment was restored by the Operations team in a timely manner. There were no radiological effluents. Therefore this event is of minimal safety significance.

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

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Surry Power Station, Unit 1	05000- 280	2018	- 003	- 00

NARRATIVE**3.0 CAUSE OF THE EVENT**

A fault on the underground primary feeder cable to 'C' RSST caused the pilot wire lockout actuation and subsequent isolation of power to the 'H' and 'J' emergency busses. The fault occurred at a cable splice location that was overstressed during switching operations. The splice was fully functional while energized at steady state, but was vulnerable when initially energized. A failure evaluation is ongoing, but the preliminary cause of failure is workmanship in the surface preparation of the splice connection which was made in 2009. The failed components were not associated with 'C' RSST replacement activities.

4.0 IMMEDIATE CORRECTIVE ACTIONS

Testing was performed on all 34.5 KV cables which supply the 'C' RSST. Faulty splice connectors were repaired prior to returning the 'C' RSST to service.

5.0 ADDITIONAL CORRECTIVE ACTIONS

'A' and 'B' RSSTs supply the primary source of off-site power to the 'J' and 'H' emergency busses, respectively. The cables which feed the 'A' and 'B' RSSTs have shorter underground cable runs than 'C' RSST. Only 'C' and 'A' RSST feeders have underground cable splices. Cables associated with 'A' and 'B' RSSTs will be Tan Delta tested at their next transformer outage opportunity.

6.0 ACTIONS TO PREVENT RECURRENCE

Long term actions recommended by the cause evaluation will be tracked by the corrective action program.

7.0 SIMILAR EVENTS

Surry LER 1999-007-00, Undervoltage Actuation Due to a Loss of Reserve Station Service Transformer

8.0 MANUFACTURER/MODEL NUMBER

3M / silicon body cold shrink splice

9.0 ADDITIONAL INFORMATION

While #1 and #3 EDGs were loaded on the 'H' and 'J' 4160 V emergency busses, Technical Specification (TS) action statements associated with Unit 1 and Unit 2 emergency electrical systems were reviewed, and associated TS clocks were entered. The event did not cause any additional reportable condition.

There were no other structures, systems, or components that were inoperable at the start of the event that contributed to the event.