



George A. Lippard
Vice President, Nuclear Operations
803.345.4810

March 19, 2018

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Sir / Madam:

Subject: VIRGIL C. SUMMER NUCLEAR STATION (VCSNS), UNIT 1
DOCKET NO. 50-395
OPERATING LICENSE NO. NPF-12
LICENSEE EVENT REPORT (LER 2018-001-00)
VALID ACTUATION OF EMERGENCY DIESEL GENERATOR

Attached is Licensee Event Report (LER) 2018-001-00, for the Virgil C. Summer Nuclear Station. This report describes the actuation of the 'A' Emergency Diesel Generator caused by the loss of the 115 kV power supply to the normal incoming Engineered Safety Features power supply to the safety related bus 1DA. This report is submitted in accordance with 10 CFR 50.73(a)(2)(iv)(A).

An apparent cause evaluation is being performed. A supplemental LER will be submitted to provide the results of the evaluation.


Should you have any questions, please call Mr. Michael S. Moore at (803)345-4752.

Very truly yours,

George A. Lippard

BAB/GAL/nk
Attachment

c:	J.E. Addison	NRC Resident Inspector	Maintenance Rule Engineer
	W.K. Kissam	L.W. Harris	NSRC
	J. B. Archie	Paulette Ledbetter	RTS (CR-18-00268)
	J. H. Hamilton	J.C. Mellette	File (818.07)
	G. J. Lindamood	ICES Coordinator	PRSF (RC-18-0021)
	W. M. Cherry	K.M. Sutton	
	C. Haney	INPO Records Center	
	S. A. Williams	Marsh USA, Inc.	

NRC FORM 366 (04-2017)		U.S. NUCLEAR REGULATORY COMMISSION			APPROVED BY OMB: NO. 3150-0104		EXPIRES: 03/31/2020					
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">  <p>LICENSEE EVENT REPORT (LER) (See Page 2 for required number of digits/characters for each block)</p> <p>(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/)</p> </div> <div style="font-size: 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 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. </div> </div>												
1. FACILITY NAME V.C. Summer Nuclear Station, Unit 1					2. DOCKET NUMBER 05000 395		3. PAGE 1 OF 3					
4. TITLE VALID ACTUATION OF EMERGENCY DIESEL GENERATOR												
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		
01	18	2018	2018	001	00	03	19	2018	FACILITY NAME	DOCKET NUMBER		
										05000		
										05000		
9. OPERATING MODE			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)									
1			<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)	
100			<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 Michael Moore, Manager Nuclear Licensing									TELEPHONE NUMBER (Include Area Code) (803) 345-4752			
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			
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
14. SUPPLEMENTAL REPORT EXPECTED						15. EXPECTED SUBMISSION DATE			MONTH	DAY	YEAR	
<input checked="" type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input type="checkbox"/> NO									5	07	2018	
ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) On January 18, 2018 at 1202 [EST], V.C. Summer Nuclear Station (VCSNS) lost one of its two redundant offsite power supplies. The loss of the 115 kV offsite power supply created an undervoltage condition on the normal incoming Engineered Safety Features (ESF) power supply to the safety related bus 1DA. The 'A' Emergency Diesel Generator (EDG) started and loads sequenced as designed. All plant equipment and systems responded as expected. All loads were transferred back to the offsite 115 kV power supply at 1318 [EST]. The EDG was secured at 1321 [EST], and reset for auto start. Reactor power remained at 100% throughout the event. An apparent cause evaluation is being performed. A supplemental LER will be submitted to provide the results of the evaluation.												

**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/>)

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	2. DOCKET NUMBER	3. LER NUMBER		
V.C. Summer Nuclear Station, Unit 1	05000- 395	YEAR 2018	SEQUENTIAL NUMBER - 001	REV NO. - 00

NARRATIVE**1.0 EVENT DESCRIPTION**

On January 18, 2018 at 1202 [EST], VCSNS lost one of its two redundant offsite power supplies. The Parr Substation supplies the 115 kV offsite power supply to VCSNS. Emergent maintenance at the offsite Parr Substation resulted in an inadvertent opening of breaker #1802 in the Parr Switchyard. The loss of the power supply created an undervoltage condition on the normal incoming ESF power supply to the safety related bus 1DA. The 'A' EDG started and loads sequenced as designed.

The 'A' Residual Heat Removal Pump started but did not inject any water into the Reactor Coolant System. The 'A' Emergency Feedwater pump started and ran for approximately 2 minutes. All other plant equipment and systems also responded as expected. The normal power supply for the other required offsite power source remained available throughout the event.

Operations personnel monitored the plant and verified conditions were stable prior to realigning the plant to normal feed and securing the EDG. All loads were transferred back to the offsite power supply at 1318 [EST]. The EDG was secured at 1321 [EST], and reset for auto start.

2.0 EVENT ANALYSIS

The SCE&G transmission system supplies offsite power for operating the ESF buses as well as for startup and shutdown of the station. One power source is the SCE&G transmission grid terminating at the VCSNS 230 kV switchyard bus, which feeds the plant through a step down transformer. The second power source is from the offsite Parr Generating Complex over a 115 kV transmission line. This source is connected to the plant through onsite step down transformers and a separate regulating transformer.

The 7.2 kV ESF buses are each provided with three loss of voltage relays set at approximately 81% of the nominal bus voltage level and three degraded voltage relays set at approximately 91.34% of the nominal bus voltage level. Receipt of an undervoltage signal from the associated bus from either the loss of voltage relays or degraded voltage relays will automatically initiate a diesel generator start, a permissive for EFW turbine pump start, an ESF load sequence operation and a permissive for diesel generator circuit breaker close. Loss of voltage on an ESF bus opens the normal or alternate supply circuit breaker (whichever is closed) and, when emergency diesel generator voltage and frequency are established, closes the emergency power source circuit breaker.

The undervoltage and degraded voltage relays associated with 1DA functioned properly upon detecting the loss of voltage on the incoming 115kV line. The 'A' EDG started and all required loads sequenced on as designed. Operators acknowledged alarms and walked down the main control board to ensure equipment was functioning properly. The normal power supply for the other required offsite power source remained available throughout the event.

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		YEAR	SEQUENTIAL NUMBER	REV NO.
V.C. Summer Nuclear Station, Unit 1	05000-395	2018	001	00

NARRATIVE**3.0 SAFETY SIGNIFICANCE**

The temporary loss of 115kV power source resulted in a temporary increase in core damage frequency and large early release frequency. Since the loss was short in duration, the conditional core damage probability (CCDP) and conditional large early release probability (CLERP) associated with the event is very small. The estimates are:

CCDP = 1.11 E-08
CLERP = 3.88E-10

These values are well below the risk significance thresholds of 1 E-06 for CCDP and 1 E-07 for CLERP, and do not exceed any color thresholds or risk limits.

4.0 PREVIOUS OCCURRENCE

On September 11, 2017 the VCSNS Unit 1 'A' EDG was actuated. The EDG actuation was caused by a storm induced perturbation on the off-site power system. The perturbation cleared and off-site voltage was returned to normal within the designed recovery time limit. The bus continued to be carried by the off-site source and the EDG output breaker remained open. This event was reported under LER-2017-004-00. This was transmitted via letter number RC-17-0158 (Accession Number ML17313B092).

5.0 CORRECTIVE ACTIONS

An apparent cause evaluation is being performed under CR-18-00268. Corrective actions will be determined after this evaluation is finalized. A common cause analysis is also being performed under CR-18-00670 to evaluate recent transmission issues at and related to VCSNS.

The #1802 breaker at the Parr Substation associated with the event is within the Transmission System Maintenance Rule boundary for the 115kV power supply. The undervoltage on 1DA ESF bus and subsequent start and loading of 'A' EDG is an unplanned ESF Actuation, which is one of our 3 Plant Level Performance criteria in the Maintenance Rule Program. The event will be assessed regarding the effectiveness of maintenance per the Maintenance Rule, 10CFR50.65.