May 22, 2013



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 2013-001-00) GRID DISTURBANCE RESULTS IN AN ENGINEERED SAFEGUARD FEATURES ACTUATION OF THE "A" EDG

Attached is Licensee Event Report (LER) 2013-001-00, for the Virgil C. Summer Nuclear Station (VCSNS). This report describes the grid disturbance that initiated an Engineered Safeguard Features actuation of the "A" Emergency Diesel Generator. This report is submitted in accordance with 10CFR50.73(a)(2)(iv)(A) and 10CFR50.73(a)(2)(iv)(B)(8).

Should you have any questions, please call Mr. Bruce Thompson at (803) 931-5042.

Very truly yours,

Thomas D. Gatlin

JMG/TDG/bq Attachment

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U.S. NUCLEAR REGULATORY COMMISSION (10-2010) LICENSEE EVENT REPORT (LER) (See reverse for required number of digits/characters for each block)									SION A E rr i e C i i a B c r i i i	I APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2013 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.								
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1.0 ABSTRACT

On 3/24/2013 at 0458, a grid disturbance caused an undervoltage relay actuation on the "A" train 7200 Volt Switchgear Bus and the automatic start of the standby "A" Emergency Diesel Generator (EDG). At the time of the event, the "A" train Switchgear Bus was aligned to its normal offsite 115 kV power source. The grid disturbance was shorter in duration than the associated undervoltage relay delay time. The undervoltage event did not exist long enough to trip open the normal incoming breaker or initiate the Engineered Safety Features Load Sequencer (ESFLS). The EDG came up to the rated frequency and voltage, but the output breaker did not close, which was as expected. At 0520 the EDG was secured and restored to standby. The station was in Mode 5 for a mid cycle outage. All station equipment and all transmission system equipment operated as designed. Corrective actions to minimize the probability of reoccurrence have been added to the station's corrective action program. The event is reportable per 10CFR50.73(a)(2)(iv)(A), and 10CFR50.73(a)(2)(iv)(B)(8).

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NARRATIVE

2.0 EVENT DESCRIPTION

At 0458 on 3/24/2013 a grid disturbance caused an undervoltage relay actuation on the 7200 Volt Switchgear Bus (XSW1DA). This resulted in automatic start of the "A" standby Emergency Diesel Generator (EDG). At the time, XSW1DA was aligned to its normal offsite 115 kV power source (Parr ESF Line). The grid disturbance was caused by a lightning strike, which resulted in a momentary voltage depression on the Parr ESF Line. The voltage dipped low enough to pick up the Loss of Voltage Relays (LVR) XSW1DA 10-27-1DA-1(2)(3) that are the supervisory relays for the incoming breakers for XSW1DA. The grid disturbance did not last long enough to cause the normal incoming breaker on XSW1DA to open, or initiate the Engineered Safety Features Load Sequencer (ESFLS). The "A" EDG came up to the rated frequency and voltage, but the output breaker did not close, which was as expected since XSW1DA normal incoming breaker did not open.

3.0 EVENT ANALYSIS

The initial cause of this event was a lightning strike in the vicinity of the two 115kV lines between the Parr substation and the Denny Terrace substation that resulted in actuation of breakers on both lines. Data provided by Power Delivery indicated simultaneous phase to ground faults on these lines. The voltage on the VCS-Parr ESF Line fell to approximately 0 percent, recovered above 80 percent in approximately 41 cycles (0.68 seconds) and further recovered above 91.34 percent in approximately 44 cycles (0.73 seconds). As a result, breaker pairs 1421 (Parr) – 8062 (Denny Terrace) and 1321 (Parr) – 8052 (Denny Terrace) operated to clear the faults.

Power Delivery line crews inspected the lines and found no evidence of debris hitting the line, which excluded this being a wind related event. Power Delivery was able to identify a lightning strike from the Fault Analysis Lightning Location System and corroborated the results with Relaying Applications line voltage data. Power Delivery and VCSNS determined the event was a lightning strike in the close proximity to the lines.

The offsite 115 kV power source is monitored by Loss of Voltage Relays (LVR) XSW1DA-10-27-1DA-1(2)(3) and their associated timer relays. The purpose of the LVRs is to detect a rapid voltage dip as represented by this event. The EDGs are designed to auto start when the LVR detects the bus voltage falling to its setpoint, with a time delay. Once the LVRs pick-up, a 2 second timer relay is energized. This timer, in parallel, starts the ESFLS, the EDG, and energizes an additional timer before the EDG breaker close signal is sent. The sequence stops if the voltage recovers above the relay reset value before the timer times-out.

In this event, the voltage recovered above 80 percent in approximately 41 cycles (0.68 sec). This was quick enough (less than 2 seconds) to reset the LVRs and cancel the timer sequence which prevented the ESFLS from initiating its first significant operation (clearing the busses). Based on this logic, and given the duration of the voltage depression on the 115kV system, the EDG and the ESFLS operated as designed.

The remaining plant equipment affected by the voltage dip operated as designed.

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NARRATIVE

4.0 SAFETY SIGNIFICANCE

The safety significance of this event was minimal. The station was in Mode 5 for a mid cycle outage. The grid disturbance caused an undervoltage relay actuation on the 7200 Volt Switchgear Bus (XSW1DA) as designed. This resulted in automatic start of the "A" standby EDG but due to the short undervoltage duration, the relay delay time of the normal incoming breaker did not trip open or initiate the ESFLS. All station equipment and all transmission system equipment operated as designed.

5.0 PREVIOUS OCCURRENCE

VCSNS experienced a similar event reported by Event Notification EN #40811 on June 13, 2004 and by letter under Licensee Event Report (LER 2004-002-00) on August 11, 2004. This event was due to a lightning strike on the same 115 kV offsite power source but did result in sequenced loads by ESFLS.

6.0 CORRECTIVE ACTIONS

All station equipment and transient system equipment operated as designed. To prevent the probability of similar events occurring in the future, the Power Delivery Department has been requested to inspect and improve, where necessary, the transmission tower grounding devices on the 115 kV lines. This request has been entered into the station corrective action program.