

George A. Lippard  
Vice President, Nuclear Operations  
803.345.4810



September 08, 2016

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 2016-002-00)  
PRESSURIZER HEATER INOPERABLE LONGER THAN TECHNICAL  
SPECIFICATION LIMITING CONDITION FOR OPERATION 3.4.3

Attached is Licensee Event Report (LER) 2016-002-00, for the Virgil C. Summer Nuclear Station (VCSNS). This report describes a condition that resulted in the Pressurizer Heater Backup Group 2 Breaker being unable to meet Technical Specification 3.4.3 Pressurizer Criteria. This report is submitted in accordance with 10 CFR 50.73(a)(2)(i)(B).

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

Very truly yours,

George A. Lippard

WHK/GAL/wm  
Attachment

c: K. B. Marsh  
S. A. Byrne  
J. B. Archie  
N. S. Carns  
J. H. Hamilton  
J. W. Williams  
W. M. Cherry  
C. Haney  
S. A. Williams  
NRC Resident Inspector  
QA Manager - L. W. Harris

Paulette Ledbetter  
J. C. Mellette  
ICES Coordinator  
K. M. Sutton  
INPO Records Center  
Marsh USA, Inc.  
Maintenance Rule Engineer  
NSRC  
RTS (CR-16-03099)  
File (818.07)  
PRSF (RC-16-0135)

IEZZ  
NRK



## 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 FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to [Infocollections.Resource@nrc.gov](mailto:Infocollections.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

VC SUMMER - UNIT 1

## 2. DOCKET NUMBER

05000 395

## 3. PAGE

1 OF 3

## 4. TITLE

PRESSURIZER HEATER INOPERABLE LONGER THAN TECHNICAL SPECIFICATION LIMITING CONDITION FOR OPERATION 3.4.3

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		
07	22	2016	2016	002	00	09	08	2016	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)(vii)(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 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 checked="" 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  
Bruce ThompsonTELEPHONE NUMBER (Include Area Code)  
(803) 931-5042

## 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
E	AB	EHTR, 52		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 July 22, 2016, a past operability review determined that the Pressurizer Backup Group 2 Heaters were inoperable for 94 hours, from 0600 on June 15, 2016, to 0400 on June 19, 2016. On June 18, 2016, the breaker (XSWIDB 05) that provides safety class 1E power to Pressurizer Backup Group 2 Heaters was found with its charging springs discharged. The closing coil plunger was found mechanically bound due to foreign material. The closing latch was unable to reset and the contacts did not allow the spring charging motor to energize and recharge the closing springs. The failed breaker XSW1DB 05 was swapped with a spare breaker and the Pressurizer Backup Group 2 Heaters were returned to service at 0400, June 19, 2016.

The time for which the Pressurizer Backup Group 2 Heaters were inoperable exceeds Technical Specification 3.4.3.a Limiting Condition for Operation of 72 hours. Therefore, this report is being submitted in accordance with 10 CFR 50.73(a)(2)(i)(B).

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

(See NUREG-1022, R.3 for instruction and guidance for completing this form  
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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
VC SUMMER - UNIT 1	05000-	YEAR	SEQUENTIAL NUMBER	REV NO.
		2016	002	00

**NARRATIVE****1.0 EVENT DESCRIPTION**

On June 18, 2016, breaker XSW1DB 05 was found with charging springs discharged. The closing coil plunger was found mechanically bound in the up position. The closing latch was unable to reset and the contacts did not allow the spring charging motor to energize and recharge the closing springs.

A past operability evaluation, completed on July 22, 2016, determined that the breaker was not reliable for 94 hours from 0600 on June 15, 2016, to 0400, June 19, 2016. This event exceeded the Technical Specification (TS) 3.4.3.a Limiting Condition for Operation (LCO) of 72 hours.

**2.0 EVENT ANALYSIS**

TS 3.4.3 requires a water volume less than or equal to 1288 cubic feet and at least two groups of pressurizer heaters, each having a capacity of at least 125 kW, to be operable during Modes 1, 2, and 3. The requirement that a minimum number of pressurizer heaters be operable enhances the capability of the plant to control Reactor Coolant System pressure and establish natural circulation. Pressurizer pressure is controlled by three components: electrical heaters, spray valves, and relief valves. The electrical heaters are energized when pressurizer pressure drops below a desired pressure. When the desired pressure is reached, the heaters are turned off.

The 78 pressurizer heaters have an installed capacity of 1420 kW which is divided between one control group and two backup groups. Proportional (Variable) Heaters are powered from bus 1C (XSW1C 02), Backup Group 1 is powered from XSW1DA (XSW1DA 12) and Backup Group 2 is powered from XSW1DB (XSW1DB 05). The two backup heater groups are on separate emergency generator supplied buses so that any single failure will not defeat operation or control of both groups. Additionally, the two backup heaters have automatic actions from the pressurizer level control. The Proportional (Variable) Heaters are supplied by non-safety power, thus the TS requirement refers only to the backup groups of pressurizer heaters. With one group of pressurizer heaters unavailable, two groups must be restored to operable status within 72 hours, or be in at least hot standby within the next six hours and in hot shutdown within the following six hours.

On June 18, 2016 breaker XSW1DB 05 was found with its charging springs discharged. The closing coil plunger was found mechanically bound in the up position. The closing latch was unable to reset and the contacts didn't allow the spring charging motor to energize and recharge the closing springs. The station replaced the breaker with a spare, completed the breaker retest, and cleared the R&R.

Station investigation of the failed breaker revealed foreign material was causing the plunger to stick. The foreign material was determined to be part of the cotter pin that was introduced during the refurbishment of the breaker conducted under a previous work order. The piece of cotter pin caused the plunger to fail after the coil was actuated.



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

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<b>1. FACILITY NAME</b>		<b>2. DOCKET NUMBER</b>		<b>3. LER NUMBER</b>		
VC SUMMER - UNIT 1		05000-		395		
				<b>YEAR</b>	<b>SEQUENTIAL NUMBER</b>	<b>REV NO.</b>
				2016	002	00

## **NARRATIVE**

### **3.0 SAFETY SIGNIFICANCE**

The pressurizer backup heater groups have no impact on the PRA model. Breaker XSW1DB 05 is not modeled in the PRA.

An extremely conservative surrogate for determining the impact of this event is the removal of bus XSW1DB from service which resulted in 1E-6 time for 5.4 days. The removal of breaker XSW1DB 05 for approximately four days was not risk significant.

### **4.0 PREVIOUS OCCURRENCE**

No previous occurrence.

### **5.0 CORRECTIVE ACTIONS**

The station replaced the breaker with a spare, completed the breaker retest, and cleared the R&R.