

V. C. Summer Nuclear Station
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June 18, 2020

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

Serial No.: 20-222
VCS-LIC/HK R0
Docket No. 50-395
License No. NPF-12

DOMINION ENERGY SOUTH CAROLINA (DESC)
VIRGIL C. SUMMER NUCLEAR STATION (VCSNS) UNIT 1
LICENSEE EVENT REPORT 2020-001-00
CONDITION PROHIBITED BY TECHNICAL SPECIFICATION 3.7.3

Dominion Energy South Carolina hereby submits Licensee Event Report (LER) 2020-001-00, for VCSNS. This report provides details concerning an operation or condition prohibited by Technical Specifications. This report is submitted in accordance with 10 CFR 50.73(a)(2)(i)(B).

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

Sincerely,

A handwritten signature in blue ink, appearing to read "George A. Lippard", written over a horizontal line.

George A. Lippard
Site Vice President
V.C. Summer Nuclear Station

Enclosure

Commitments contained in this letter: None

cc:

G. J. Lindamood – Santee Cooper
L. Dudes – NRC Region II
S. A. Williams – NRC Project Mgr.
NRC Resident Inspector
J. N. Bassett – INPO
Marsh USA, Inc.

**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
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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-6 A10M), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocoll.Resource@nrc.gov, and the OMB reviewer at: OMB Office of Information and Regulatory Affairs, (3150-0104), Attn: Desk Officer for the Nuclear Regulatory Commission, 725 17th Street NW, Washington, DC 20503; e-mail: aira_submission@omb.eop.gov. The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.

1. Facility Name V. C. Summer Nuclear Station, Unit 1	2. Docket Number 05000 395	3. Page 1 OF 4
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4. Title Condition Prohibited by Technical Specification 3.7.3
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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
04	21	2020	2020	- 001 - 00		06	18	2020	Facility Name	Docket Number 05000

9. Operating Mode	11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)			
-	<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 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)
000	<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 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	Manufacturer	Reportable to ICES	Cause	System	Component	Manufacturer	Reportable to ICES
X	CC	FSV	A391	Y					
14. Supplemental Report Expected					15. Expected Submission Date				
<input type="checkbox"/> Yes (If yes, complete 15. Expected Submission Date) <input checked="" type="checkbox"/> No					Month Day Year				

Abstract (Limit to 1400 spaces, i.e., approximately 14 single-spaced typewritten lines)
On April 21, 2020, at approximately 0538 while the station was defueled, operators were performing Surveillance Test Procedure STP-130.005M, XVG09627B-CC VALVE OPERABILITY TESTING (MODE 5), Revision 1, when the Service Water Supply to Component Cooling Valve, XVG09627B-CC, failed to stroke open.

Satisfactory completion of STP-130.005M demonstrates the operability of a Component Cooling Water System valve that cannot be tested while the Plant is in Mode 1, per Technical Specification (TS) Surveillance Requirement 4.0.5. XVG09627B-CC failing to open resulted in a condition prohibited by TS 3.7.3 since the valve was determined to be inoperable for longer than allowed by the TS 3.7.3 Limiting Condition for Operation (LCO) action statement. XVG09627B-CC was returned to service with the completion of Work Order 1901340.

This Licensee Event Report (LER) is being provided per the requirements of 10 CFR 50.73(a)(2)(i)(B) because XVG09627B-CC has been deemed to have been inoperable for a period that is greater than the 72-hour LCO allowed outage time.

**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		
V. C. Summer Nuclear Station, Unit 1		05000-	395	YEAR	SEQUENTIAL NUMBER
				2020	001
					REV NO. 00

NARRATIVE**1.0 DESCRIPTION OF THE EVENT**

On April 11, 2020, V. C. Summer Nuclear Station (VCSNS) began Refueling Outage 25 (RF25), during which the performance of Surveillance Test Procedure STP-130.005M was scheduled to be performed on the Service Water Supply to Component Cooling Valve, XVG09627B-CC.

Cross connection valves (XVG-09627A,B-CC) from the Service Water System (SW) to the Component Cooling Water System (CC) enable Service Water to be used as an emergency makeup supply to the CC System in the event of a complete loss of the demineralized water system's makeup capability, or if leakage from a through-wall crack exceeds the demineralized water system's makeup capacity.

Given that XVG09627B-CC is the Safety-Related supply of makeup water, rendering the valve inoperable would in turn render the associated 'B' Component Cooling Water System inoperable. Technical Specification (TS) 3.7.3 states that at least two Component Cooling Water loops shall be operable in Modes 1 through 4. With only one Component Cooling Water loop operable, restore at least two loops to operable status within 72 hours or be in at least hot standby within the next 6 hours and cold shutdown within the following 30 hours. Satisfactory completion of STP-130.005M demonstrates the operability of the cross connect valve, XVG09627B-CC.

The performance of STP-130.005M on April 21, 2020, resulted in an unsatisfactory surveillance as XVG09627B-CC failed to stroke open. Step 8.1.c of STP-130.005M states that the valve shall be declared inoperable and action taken per TS 3.7.3 when the valve or disc fails to exhibit the required change in position.

Since the last known successful functional surveillance test of XVG09627B-CC was completed on October 27, 2018, it is reasonable to expect that the valve would have been inoperable for more than 72-hours, violating the TS 3.7.3 LCO action statement. XVG09627B-CC was returned to service with the completion of Work Order 1901340.

2.0 SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS

The CC system consists of two independent loops providing 100 percent redundancy in supplying cooling water for the essential safety related systems, and a common supply for nonessential systems. Thus, with the loss of one CC System cooling loop, or portion thereof, cooling water remains available to the redundant component in each of the safety-related systems.

If XVG09627B-CC is found to be inoperable when the plant is operating in Modes 1 through 4, the associated train of CC water will also be rendered inoperable. The unaffected train will continue to meet the design basis safety-related function, as both trains are 100 percent capacity loops.

There were no safety consequences as a result of this event and the station responded correctly to the event by returning XVG09627B-CC to operable status with the completion of Work Order 1901340.

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		2020	001	00

NARRATIVE**3.0 CAUSE OF THE EVENT**

A review of the valve's service history indicates that there are seven potential causes, and each was evaluated. Of these seven only two failure mechanisms could not be refuted: solenoid issues and the valve's disc being stuck in the seat. Either of these could have prevented XVG09627B-CC from stroking open and they are the most likely causes.

4.0 IMMEDIATE CORRECTIVE ACTIONS

XVG09627B-CC was returned to service upon completion of Work Order 1901340.

5.0 ADDITIONAL CORRECTIVE ACTIONS

None

6.0 ACTIONS TO PREVENT RECURRENCE

A request for preventative maintenance addition was written under Work Order (WO) 2007409 to replace the solenoids for XVG-09627A,B-CC on an R10 frequency (approximately every 180 months).

Extent of Condition – WO 2007410 was written to replace XVG09627A-20A-CC, Air Supply Solenoid for XVG09627A-CC, during RF26. Additionally, the normal Preventative Maintenance (PM) process drives an internal inspection of XVG09627A-CC during RF26. Any issues identified during PM on a cross connect valve on one train are also evaluated on the opposite train cross connect valve and corrective actions are initiated as necessary.

7.0 SIMILAR EVENTS

The following four Condition Reports (CRs) list instances where XVG09627A/B-CC failed to stroke open during the performance of surveillances that occur each refueling outage.

CR-11-02582 documents the failure of valve XVG09627A-CC to fully stroke open during the performance of STP-130.005L. This failure was found to have been caused by a shortened stroke length due to the threaded coupling between the actuator shaft and valve stem having backed out approximately 1 3/4" during handwheel manipulation. Additional friction was created in the handwheel from galling between the handwheel shaft and actuator housing. The increased friction apparently caused over-application of force on the handwheel which loosened the coupling.

CR-12-05011 documents the failure of XVG09627B-CC to stroke open during the performance of STP-130.005M. The cause evaluation determined that a combination of factors resulted in the valve failing to open. Specifically, the air operator gate valve design with older graphite packing is only exercised once every 18 months during refueling outages.



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NARRATIVE

CR-13-01471 documents the failure of XVG09627B-CC to fully stroke open during the performance of STP-130.005M. The cause evaluation determined that the valve gagging device interfered with the opening stroke.

CR-14-02282 documents the failure of XVG09627A-CC to stroke open during the performance of STP-130.005L. The cause evaluation determined that a combination of factors resulted in the valve failing to open. Specifically, the air operated gate valve design, the use of graphite packing, and the valve is only exercised once every 18 months which allows the build-up of corrosion.

Corrective actions to mitigate the failure mechanisms discussed above include rebuilding/replacing valve actuators and handwheels (WOs 1109127 and 1109128), implementing PMs to inspect and clean corrosion from the valve internals, replacing graphite packing with Teflon packing (CR-12-05011), and revising SOP-118 so that a fuse is removed to prevent the valve from receiving an open signal instead of gagging the valves closed (SOP-118 Rev 18 Change F). If the valves MUST be gagged closed, SOP-118 contains instructions to stroke the valves per the surveillance procedure to ensure they are not stuck closed prior to returning the valves to operable status.

8.0 MANUFACTURER/MODEL NUMBER

XVG09627B-CC is a Service Water System Outlet Header Component Cooling Water Loop B Cross Connect Valve that was manufactured by Anchor/Darling Valve Company, Model Number CKJAB 2AS 13/14 C.

9.0 ADDITIONAL INFORMATION

None