



South Carolina Electric & Gas Company
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10CFR2.201
Dan A. Nauman
Vice President
Nuclear Operations

June 17, 1987

JUN 23 10:33

Dr. J. Nelson Grace
Region Administrator
U. S. Nuclear Regulatory Commission
Suite 2900
101 Marietta Street, NW
Atlanta, Georgia 30323

SUBJECT: Virgil C. Summer Nuclear Station
Docket No. 50/395
Operating License No. NPF-12
Response to Notice of Violation
NRC Inspection Report 50-395/87-11

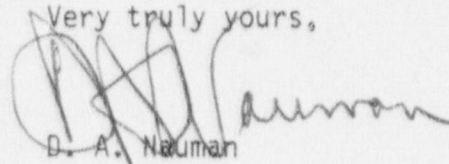
Dear Dr. Grace:

Attached is the South Carolina Electric & Gas Company (SCE&G) Licensee Event Report (LER) 87-007, dated May 13, 1987, which responds to the violation addressed in Enclosure 1 of NRC Inspection report 50-395/87-07.

SCE&G is in agreement with the alleged violation, and the enclosed LER addresses the reasons for the violation and corrective action taken to prevent recurrence. SCE&G will be in full compliance by June 30, 1987 when Change B to Revision 3 of Surveillance Test Procedure 404.901, "Steam Generator Tube Inspection," is complete.

Should you have any questions, please advise.

Very truly yours,



D. A. Nauman

MDB:DAN/bjh

Enclosure

cc: O. W. Dixon, Jr./T. C. Nichols, Jr.
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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Virgil C. Summer Nuclear Station	DOCKET NUMBER (2) 0 5 0 0 0 3 9 5 1	PAGE (3) 1 OF 0 3
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TITLE (4)
Steam Generator Tube Misplugging

EVENT DATE (6)			LER NUMBER (8)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	YEAR	SEQUENTIA- NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES		DOCKET NUMBER(S)
0 4	1 3	8 7	8 7	0 0 7	0 0 0	0 5	1 3	8 7			0 5 0 0 0
THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more of the following) (11)											

OPERATING MODE (9) 6	POWER LEVEL (10) 0 1 0 1 0	20.402(b)	20.408(a)	80.73(a)(2)(iv)	73.71(b)
		20.408(a)(1)(i)	80.38(a)(1)	80.73(a)(2)(v)	73.71(a)
		20.408(a)(1)(ii)	80.38(a)(2)	80.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 306A)
		20.408(a)(1)(iii)	X 80.73(a)(2)(i)	80.73(a)(2)(vii)(A)	
		20.408(a)(1)(iv)	80.73(a)(2)(ii)	80.73(a)(2)(vii)(B)	
		20.408(a)(1)(v)	80.73(a)(2)(iii)	80.73(a)(2)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME W. R. Higgins, Associate Manager, Regulatory Compliance	TELEPHONE NUMBER AREA CODE: 8 0 3 3 4 5 - 4 0 4 2
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS
A				N					

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15) MONTH: DAY: YEAR:
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

During the third refueling outage, the Licensee discovered that a total of six steam generator tubes were misplugged in steam generators B and C during the second refueling outage. In C steam generator, two tubes which did not require plugging were inadvertently plugged on the cold leg side, and two defective tubes which required plugging were plugged only on the hot leg side. In B steam generator, two tubes which did not require plugging were inadvertently plugged on the hot leg side.

The cause of this event is considered personnel error in that an independent inspection and verification failed to detect the tube plugging errors.

Future plugging of steam generators shall be verified by using remote video and/or still photography. Verification shall be independently performed by a minimum of two persons for each channel head of the steam generators.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Virgil C. Summer Nuclear Station	DOCKET NUMBER (2) 0 5 0 0 0 3 9 5 8 7	LER NUMBER (6)			PAGE (3)		
		YEAR — 0 0 7	SEQUENTIAL NUMBER — 0 0	REVISION NUMBER — 0 0	0 2	OF	0 3

TEXT (if more space is required, use additional NRC Form 366A's) (17)

PLANT IDENTIFICATION:

Westinghouse - Pressurized Water Reactor

EQUIPMENT IDENTIFICATION:

Steam Generators B and C (XSG-2B-RC, XSG-2C-RC)

IDENTIFICATION OF EVENT:

A total of six steam generator tubes were misplugged in steam generators B and C during the second refueling outage. In C steam generator, two tubes which did not require plugging were inadvertently plugged on the cold leg side, and two defective tubes which required plugging were plugged only on the hot leg side. In B steam generator, two tubes which did not require plugging were inadvertently plugged on the hot leg side.

EVENT DATE: April 13, 1987REPORT DATE: May 13, 1987

This report was initiated by Off-Normal Occurrence Number 87-038.

CONDITIONS PRIOR TO EVENT:

Mode 6 - third refueling outage

DESCRIPTION OF EVENT:

On April 13, 1987 with the plant in Mode 6 for the third refueling outage, the Licensee discovered four misplugged tubes in C steam generator. This condition, which existed from the second refueling outage, was determined during review of the video tapes of the primary tube sheet face for the initial tube plug verification. Row 15-Column 35 and Row 9-Column 44 should have been plugged for tube wall degradation. These tubes were plugged on the hot leg side but were not plugged on the cold leg side. Row 23-Column 66 and Row 25-Column 66 did not require plugging but were plugged on the cold leg side. Thus, the plant operated for approximately 16 months in this condition.

Similarly on April 27, 1987, the Licensee discovered in B steam generator two additional misplugged tubes from the second refueling outage. Row 21-Column 39 and Row 23-Column 39 did not require plugging but were plugged on the hot leg side.

CAUSE OF EVENT:

The cause of this event is considered personnel error.

For tube plugging during the second refueling outage, the Licensee developed unique plexiglass templates for each steam generator channel head. These templates were drilled through only for those tubes which required plugging. In addition to the plugging locations, pilot holes were drilled for the placement of a tube plug basket which was to be suspended from the tubesheet. The drilled holes for each

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TEXT (if more space is required, use additional NRC Form 366A 2) (17)

template were verified prior to installation, and the installation of the template was verified using remote video. The use of a drilled template was considered necessary to prevent tube misidentification during manual plugging.

In the case of C steam generator cold leg side and B steam generator hot leg side, the suspended basket was not used, and the tube plugs were loaded in manually. Consequently, the template had two holes drilled where tube plugs were not required. For C steam generator, the Licensee inadvertently plugged the two tubes which were drilled for the suspended basket and failed to plug two tubes which required plugging. For B steam generator, all tubes which required plugging were plugged; however, the two tubes which were to be used for the suspended basket were also plugged.

The subsequent independent manual inspection and verification of the tubesheet failed to detect the errors. The Licensee considers the adverse environmental and radiological conditions of the steam generator primary side to be a significant contributor to the missed verifications.

ANALYSIS OF EVENT:

There were no safety consequences as a result of this event.

The two defective tubes in C steam generator (Row 15-Column 35 and Row 9-Column 44) had cracks characteristic of pure water stress corrosion cracking (short axially oriented cracks in the tubesheet roll expansion zone). Cracks of this nature are currently permitted to remain in service without plugging, depending location by the F* criteria. The two tubes in C steam generator were not candidates for application of the F* criteria due to the proximity of the cracks to the tubesheet face; however, the possibility of a tube rupture event is considered remote. These cracks were axial instead of circumferential, thus preventing a tube shear; furthermore, the probability for burst due to a "fishmouth" opening of the crack is small because these cracks were constrained by the tubesheet.

CORRECTIVE ACTION:

Plugging of steam generators shall be verified as to proper location, by row and column, using remote video and/or still photography. Remote video shall be taped for future reference. Verification using this type of equipment shall be done independently by a minimum of two persons for each channel head of the steam generators. Results of each independent review will be compared and any differences resolved prior to steam generator close-out.

This program was successfully implemented during this outage to conduct a 100% verification of installed plug locations.