UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET SW SUITE 23T85
ATLANTA, GEORGIA 30303-8931

December 28, 2000

SDP/EA-00-238

South Carolina Electric & Gas Company
ATTN: Mr. Stephen A. Byrne
Vice President, Nuclear Operations
Virgil C. Summer Nuclear Station
P. O. Box 88
Jenkinsville, SC 29065

SUBJECT: FINAL SIGNIFICANCE DETERMINATION FOR A WHITE FINDING AND NOTICE OF VIOLATION (NRC INSPECTION REPORT NO. 50-395/00-05, VIRGIL C. SUMMER NUCLEAR STATION)

Dear Mr. Byrne:

The purpose of this letter is to provide you with the final results of our significance determination of the preliminary Yellow finding identified in the subject inspection report. The inspection finding was assessed using the significance determination process and was preliminarily characterized as Yellow, i.e., an issue with substantial importance to safety that will result in additional NRC inspection and potentially other NRC action. This finding involved your discovery that the manually operated turbine driven emergency feedwater (TDEFW) pump discharge isolation valve was misaligned to the closed position for 48 days during August and September 2000, rendering the TDEFW system inoperable for that length of time.

At your request, an open regulatory conference was conducted with you and members of your staff on December 7, 2000, to discuss your views on this issue. Enclosure 2 lists the attendees at the regulatory conference. Enclosures 3 and 4 contain copies of the material presented by you and the NRC at the regulatory conference, respectively. During the meeting, your staff described your assessment of the significance of the finding. Specifically, the focus of your presentation involved differences in the calculational methodology for determining the probability of successfully recognizing and repositioning the TDEFW pump discharge isolation valve to the open position within 60 minutes of the initiating event (i.e., 60 minutes was assumed in the probabilistic risk assessment model plant response analysis for station blackout sequences). You presented the results of three methodologies used to determine the Human Error Probability (HEP) for recovery of the isolation valve, and contrasted these results with the NRC's Accident Sequence Precursor (ASP) methodology for determining the HEP for recovery. As detailed in the subject inspection report, using the ASP methodology, the NRC estimated that the probability that operators would fail to open the valve prior to core damage was once in every two attempts (an HEP estimate of 0.5).

You stated that your best estimate, using the Causal Based Decision Tree/Technique for Human Error Rate Prediction (CBDT/THERP) methodology, resulted in an HEP of approximately 0.175. This value would result in a change in core damage frequency of approximately 4×10^{-6}/year. Two additional methodologies considered by you and presented at

the regulatory conference included the THERP Dynamic Diagnosis and the methodology of NUREG-1150, Severe Accident Risks: An Assessment for Five U.S. Nuclear Power Plants, resulting in HEPs of 0.27 and 0.30, respectively, both of which would result in a change in core damage frequency of approximately $6x10^{-6}$/year to $7x10^{-6}$/year. You stated that all three methodologies presented at the regulatory conference would result in a change in core damage frequency that would warrant the finding to be characterized as White. In addition, you stated that the NRC's ASP methodology was most appropriate as a screening estimate of the HEP factor, but in this case would result in an overly conservative risk estimate.

After considering the information developed during the inspection and the information you provided at the conference, the NRC has concluded that the inspection finding is appropriately characterized as White (i.e., an issue with low to moderate increased importance to safety, which may require additional NRC inspections). This determination was based on our review of the strengths and weaknesses of the risk methodologies discussed at the regulatory conference, including the associated assumptions. In addition, the NRC recognized that use of any of the HEP methodologies discussed at the regulatory conference involves inherent uncertainties that can produce a range of plausible risk estimates. We found that the HEP methodology using a THERP approach appropriately estimated the increase in risk associated with the accident sequences containing the TDEFW recovery term, and was consistent with South Carolina Electric and Gas Company's (SCE&G) baseline Probabilistic Safety Analysis model. In considering use of the SCE&G model to quantify the risk change associated with this finding, the NRC also determined that this application of the THERP methodology produced an HEP value that was consistent with other HEP values obtained for other modeled risk sequences.

You have ten business days from the date of this letter to appeal the staff's determination of significance for the identified White finding. Such appeals will be considered to have merit only if they meet the criteria given in NRC Inspection Manual Chapter 0609, Supplement 3.

The NRC also determined that your failure to properly position and independently verify the TDEFW pump discharge isolation valve in accordance with procedures required by Technical Specification (TS) 6.8.1 resulted in the failure to comply with TS 3.7.1.2 for TDEFW pump operability. The failure to adhere to these regulatory requirements is cited as one violation in the enclosed Notice of Violation (Notice). The circumstances surrounding the violation are described in detail in the subject inspection report. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions - May 1, 2000," the Notice is considered escalated enforcement action because it is associated with a White finding. At the regulatory conference, you expressed a concern that the non-compliances as documented in NRC Inspection Report No. 50-395/00-05 and presented by the NRC at the conference were inappropriately characterized as two separate apparent violations (instead of one apparent violation). You agreed at the conference, however, that plant procedural steps were not followed and the facility did not comply with TS 3.7.1.2. After consideration of all relevant information, the NRC concluded that the failure to adhere to plant procedures resulted in the failure to comply with the TS, and thus should be cited as one violation.

The NRC has concluded that information regarding the reason for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence, and the date when

full compliance was achieved is already adequately addressed on the docket in NRC Inspection Report No. 50-395/00-05 and in Licensee Event Report No. 2000-006-00, dated October 18, 2000. Therefore, you are not required to respond to this letter unless the description therein does not accurately reflect your corrective actions or your position. In that case, or if you choose to provide additional information, you should follow the instructions specified in the enclosed Notice.

Because plant performance for this issue has been determined to be in the increased regulatory response band, we will use the NRC Action Matrix to determine the most appropriate NRC response for this finding. We will notify you, by separate correspondence, of that determination.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosures, and your response (if you choose to provide one), will be available electronically for public inspection in the NRC Public Document Room (PDR) or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be placed in the PDR and PARS without redaction. ADAMS is accessible from the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Luis A. Reyes
Regional Administrator

Docket No.: 50-395
License No.: NPF-12

Enclosures:
1. Notice of Violation
2. List of Attendees
3. Conference material presented by SCE&G
4. Conference material presented by NRC

cc w/encls: (see page 4)

cc w/ encls:
R. J. White
Nuclear Coordinator Mail Code 802
S.C. Public Service Authority
Virgil C. Summer Nuclear Station
Electronic Mail Distribution

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Henry J. Porter, Assistant Director
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Melvin N. Browne, Manager
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D. Nelson, OE
C. Casto, RII
H. Christensen, RII
L. Plisco, RII
V. McCree, RII
W. Rogers, RII
A. Boland, RII
R. Haag, RII
K. Landis, RII
S. Sparks, RII
M. Widmann, RII
C. Evans, RII
L. Garner, RII

OFFICE	RII:DRS	RII:DRS	RII:DRP	RII:EICS	RII:ORA	RII:ORA	OE	NRR
SIGNATURE	/RA	/RA	VMCCREE	/RA	/RA	COMMENT	DNELSON	VORDAZ
NAME	WROGERS	CCASTO	LPLISCO	ABOLAND	CEVANS	BMALLETT	RBORCHARDT	WDEAN
DATE	12/21/2000	12/ 21 /00	12/ 21 /00	12/ 28 /00	12/ 21 /00	12/ /00	12/ 28 /00	12/ 27 /00
E-MAIL COPY?	YESNO	YES NO		YES NO	YES NO	YES NO	YES NO	YES NO

YOFFICIAL RECORD COPY DOCUMENT NAME: C:\final.wpd

NOTICE OF VIOLATION

South Carolina Electric & Gas Company
V. C. Summer Nuclear Plant
Unit 1

Docket No. 50-395
License No. NPF-12
SDP/EA-00-238

During an NRC inspection completed on September 23, 2000, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions - May 1, 2000," NUREG-1600, the violation is listed below:

> Technical Specification (TS) 3.7.1.2.b, "Emergency Feedwater System," requires that at least three independent steam generator emergency feedwater pumps and flow paths be OPERABLE with one steam turbine driven emergency feedwater pump capable of being powered from an OPERABLE steam supply system. The TS is applicable in Modes 1, 2 and 3.
>
> The associated Limiting Condition for Operation Action Statement 3.7.1.2(a) states that with one emergency feedwater pump inoperable, restore the required emergency feedwater pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.
>
> Technical Specification (TS) 6.8.1, "Procedures and Programs" requires, in part, that procedures shall be established, implemented, and maintained covering surveillance and testing activities and activities recommended in Appendix A of Regulatory Guide (RG) 1.33, Revision 2, February 1978 (Operations). Section 1.c of Appendix A addresses procedures for equipment control (e.g., locking and tagging).
>
> Surveillance Test Procedure, STP-120.004, "Emergency Feedwater Valve Operability Test," Revision 13C, Attachment 11C, required the operator(s) to position manually operated valve XVG1036-EF to locked open at the conclusion of a leakage test on an adjacent check valve.
>
> Station Administrative Procedure, SAP-153, "Independent Verification," Revision 1, Step 6.4.2.B.2, required that the initial positioner manipulate the component (XVG1036-EF) to the required position (open). Step 6.4.2.B.4 required the independent verifier to physically check the position of the component.
>
> Contrary to the above, on August, 4, 2000, the licensee failed to properly implement the requirements of STP-120.004, in that TDEFW pump discharge isolation valve XVG1036-EF was not returned to the locked open position at the conclusion of testing. In addition, on August 4, 2000, an independent verifier failed to properly implement the requirements of SAP-153, in that the required actions to independently verify that the TDEFW discharge isolation valve was locked open were not properly performed. As a result, between August 4 and September 21, 2000, while in Mode 1, the TDEFW pump flow path was isolated due to misalignment of the discharge isolation valve, which rendered the TDEFW pump inoperable for a time in excess of TS LCO 3.7.1.2. (01013)

This violation is associated with a White SDP finding.

The NRC has concluded that information regarding the reason for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence, and the date when full compliance was achieved is already adequately addressed on the docket in NRC Inspection Report No. 50-395/00-05 and in Licensee Event Report No. 2000-006-00, dated October 18, 2000. However, you are required to submit a written statement or explanation pursuant to 10 CFR 2.201 if the description therein does not accurately reflect your corrective actions or your position. In that case, or if you choose to respond, clearly mark your response as a "Reply to a Notice of Violation," and send it to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555 with a copy to the Regional Administrator, Region II within 30 days of the date of the letter transmitting this Notice.

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

Because any response will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS), to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. ADAMS is accessible from the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room). If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.790(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated this 28th day of December 2000

LIST OF OPEN REGULATORY CONFERENCE ATTENDEES

NUCLEAR REGULATORY COMMISSION:

B. Mallett, Deputy Regional Administrator, Region II (RII)
V. McCree, Deputy Director, Division of Reactor Projects (DRP), RII
W. Rogers, Senior Reactor Analyst, DRS, RII
A. Boland, Enforcement Officer, RII
S. Sparks, Senior Enforcement Specialist, RII
K. Landis, Branch Chief, DRP, RII
R. Haag, Branch Chief, DRP, RII
M. Widmann, Senior Resident Inspector, V. C. Summer, DRP, RII
C. Evans, Regional Counsel, RII
L. Garner, Project Engineer, DRP, RII (via telephone)
M. King, Resident Inspector, V. C. Summer, DRP, RII (via telephone)
J. Dixon-Herrity, Enforcement Specialist, Office of Enforcement, (teleconference)
R. Borchardt, Director, Office of Enforcement (teleconference)
K. Cotton, Senior Project Manager, Office of Nuclear Reactor Regulation (NRR), (teleconference)
R. Emch, Chief, Project Directorate II, Division of Licensing Project Management, NRR, (teleconference)
V. Ordaz, Senior Enforcement Coordinator, NRR, (teleconference)
G. Janosko, Acting Project Directorate, NRR (teleconference)
S. Wong, Senior Reactor Analyst, NRR (teleconference)
P. Koltay, Program Inspection Branch, NRR (teleconference)
S. Rosenberg, RII Coordinator, Office of the Executive Director for Operations (teleconference)

SOUTH CAROLINA ELECTRIC & GAS COMPANY:

S. Byrne, Vice President, Nuclear Operations
B. Williams, General Manager, Nuclear Plant Operations
M. Browne, Manager, Nuclear Licensing
D. Gatlin, Operations Supervisor
G. Loignon, Senior Engineer, PRA
D. Baker, Senior Nuclear Reactor Operator
B. Duncan, Coordinator for Public Affairs
R. White, Santee Cooper Representative
J. Julius, Scientec

OPEN REGULATORY CONFERENCE

V. C. SUMMER NUCLEAR STATION

DECEMBER 7, 2000
NRC REGION II OFFICE, ATLANTA, GA.

I. OPENING REMARKS, INTRODUCTIONS AND MEETING INTENT
B. Mallett, Deputy Regional Administrator

II. NRC REGULATORY CONFERENCE POLICY
A. Boland, Enforcement Officer

III. STATEMENT OF THE ISSUE WITH RISK AND VIOLATION PERSPECTIVES
V. McCree, Deputy Director, Division of Reactor Projects

IV. LICENSEE RISK AND REGULATORY PERSPECTIVE PRESENTATION

V. BREAK / NRC CAUCUS
B. Mallett, Deputy Regional Administrator

VI. CLOSING REMARKS
B. Mallett, Deputy Regional Administrator

Apparent Violation

A. Technical Specification (TS) 3.7.1.2.b, requires, in part, that at least three independent steam generator emergency feedwater pumps and flow paths shall be OPERABLE with one steam turbine driven emergency feedwater pump capable of being powered from an OPERABLE steam supply system. Action Statement 3.7.1.2(a) states that with one emergency feedwater pump inoperable, restore the required emergency feedwater pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

On August 7, 2000, the turbine driven emergency feedwater pump flow path was inoperable (e.g., isolated) for greater than 72 hours and the unit was not placed in HOT STANDBY within the next 6 hours. The flow path was not operable due to its manual isolation, XVG1036-EF, being locked closed. This valve was isolated for approximately 48 days between August 4 and September 21, 2000.

Note: The apparent violations discussed at this Regulatory Conference are subject to further review and are subject to change prior to any resulting enforcement action.

Apparent Violation

B. Technical Specification (TS) 6.8.1.c requires, in part, that procedures shall be implemented covering surveillance and test activities. In addition, TS 6.8.1.a requires, in part, that procedures in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978, be implemented. Section 1.c of Appendix A addresses procedures for equipment control.

Surveillance Test Procedure, STP-120.004, "Emergency Feedwater Valve Operability Test," Revision 13C, Attachment 11C, required the operator to position manually operated valve, XVG01036-EF, the turbine driven emergency feedwater pump discharge isolation valve, to the locked open position at the conclusion of the surveillance test.

Station Administrative Procedure, SAP-153, "Independent Verification," Revision 1, provides verification instructions for equipment control. Specifically, Step 6.4.2.B.2 required that the initial positioner to manipulate the component to the required position and Step 6.4.2.B.4 required that the independent verifier to physically check the position of the component.

On August, 4, 2000, the above procedures were not implemented, in that:

1. Valve XVG-1036-EF was not locked open as required by STP-120.004. The operator locked the valve closed.

2. Valve XVG-1036-EF was not manipulated to the required open position and was not properly physically checked as required by SAP-153. The operator failed to position the valve in the required position and the independent verifier failed to physically check the position of the component.

Note: The apparent violations discussed at this Regulatory Conference are subject to further review and are subject to change prior to any resulting enforcement action.