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January 28, 1997
RC-97-0026

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

Gentlemen:

Subject: VIRGIL C. SUMMER NUCLEAR STATION
DOCKET NO. 50/395
OPERATING LICENSE NO. NPF-12
RESPONSE TO GENERIC LETTER 96-06

Reference: 1. G.J. Taylor Letter to Document Control Desk, RC-96-0261,
October 30, 1996
2. G.J. Taylor Letter to Document Control Desk, RC-96-0032,
February 13, 1996

Pursuant to 10CFR50.54(f), the Nuclear Regulatory Commission (NRC) issued Generic Letter 96-06, "Assurance of Equipment Operability and Containment Integrity During Design-Basis Accident Conditions", requesting that licensees determine (1) if containment air cooling water systems are susceptible to either water hammer or two-phase flow conditions during postulated accident conditions, and (2) if piping systems that penetrate the containment are susceptible to thermal expansion of fluid so that over-pressurization of piping could occur. The generic letter requested that each plant respond by January 28, 1997, with a summary report stating actions taken, conclusions reached relative to susceptibility of the issues, the basis for continued operability of affected systems and components, as applicable, and corrective actions that were implemented or planned to be implemented. For systems found to be susceptible to the conditions of the generic letter, identify the systems affected and describe the specific circumstances involved.

South Carolina Electric and Gas Company (SCE&G), acting for itself and as agent for South Carolina Public Service Authority, hereby submits the current status and the planned action, as it applies to the Virgil C. Summer Nuclear Station (VCSNS), in response to Generic Letter 96-06. This submittal addresses the action requested for the 120 day response.

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The first issue involves the Reactor Building Cooling Units (RBCUs) at VCSNS and their associated piping inside containment. This piping forms a closed system inside containment. Pressure surges due to column voiding (flashing) and rejoining (collapsing) have been known to occur in the system. These pressure surges were determined to be less than the system design pressure and were addressed in accordance with applicable plant programs.

In 1994, SCE&G implemented MRF 22363 which modified the opening and closing logic for the Service Water inlet and outlet valves to the Reactor Building. These modifications tied the opening and closing of these valves to the starting and stopping of the Service Water Booster Pump (SWBP). Additionally the SWBP recirculation line was procedurally maintained open. As part of the post-modification testing, MOVATS traces of the upstream and downstream pressures at these valves were made. These showed a short duration pressure spike (<1 sec.) of 200 psig in the A train and 170 psig in the B train. There were no signs of the RBCU thermal relief valve (setpoint: 170 psig) having lifted during this transient. Additionally a system walkdown of the piping outside containment was performed. No visible damage to the piping and supports was observed. Preliminary analyses performed under this generic letter support the actual field test results. Preliminary analyses have also indicated that the actual field test conditions represent the bounding conditions. This concluded SCE&G's preliminary investigation as discussed in Reference 1. Although satisfied that there was no concern for system function/operability, SCE&G plans to finalize the preliminary analyses.

SCE&G expects to have the analyses completed by the end of May 1997. No further modifications to the system are anticipated and system operability is not in question.

The second issue, in the generic letter, involves the potential overpressurization of piping penetrating the Reactor Building (RB) containment. This issue can be divided into two sub-issues: 1.) Pressure locking of Containment Isolation Valves that are required to open during a design basis accident, and 2.) Thermal overpressurization of the piping between two closed CIV's during a design basis accident.

Sub-issue 1 was addressed in two areas. Pressure locking of gate valves was addressed in the response to NRC Generic Letter 95-07 "Pressure Locking and Thermal Binding of Safety-Related Power Operated Gate Valves" (Reference 2). A review of all other types of containment isolation valves and valves contained in closed loops inside of containment which penetrate containment was performed for susceptibility to pressure locking. These valves were determined to not be susceptible to pressure locking. Therefore, sub-issue 1 has been addressed completely and is not a concern at VCSNS

The scoping review for sub-issue 2 identified 116 piping penetrations. A thorough review of the licensing and design basis requirements as presented in various documents including the FSAR and NUREG-0717 for containment penetrations at VCSNS was performed. In this regard, SCE&G has reviewed all penetrations and found all penetrations at VCSNS to be in compliance with the original requirements. For the Balance of Plant (BOP) penetrations at VCSNS, consideration of thermal overpressurization due to LOCA or MSLB was not a design requirement. The design basis for NSSS penetrations at VCSNS is provided in Westinghouse Document 1.14 "Systems Standard Design Criteria Nuclear Steam Supply System Containment Isolation" Revision 2 dated 1/16/73. This document addresses how to meet the General Design Criteria 55, 56, and 57. Section 2.4 of this document covers "Overpressure Protection" and states:

"In some cases following a loss of coolant accident it is possible that the fluid contained between two closed isolation barriers may be heated and expand. This expansion may result in overpressurization of the piping and valves. On lines where overpressurization may occur, relief protection is provided. On some lines, a small line containing a check valve is installed to bypass the isolation valve inside containment. The check valve allows fluid between the valves to discharge to the line further inside containment. This check valve is regarded as part of the isolation barrier and is air tested accordingly. Pressure between air operated globe or diaphragm valves will cause the stem to lift slightly providing relief. In several cases relief valves are located between isolation valves for system protection. An overpressure will cause the valve to lift and relieve toward the inside of containment"

In light of the issues presented in this generic letter, a review of all containment piping penetrations using the Westinghouse NSSS penetration criteria has been performed. In general, the water filled penetrations which are closed during an accident have relief devices such as spring to close Air Operated Valves (AOV's), check valves or relief valves to prevent overpressurization. These penetrations were reviewed in depth for flow direction, type of valve, type of relief, and open flow path. All but five manually isolated BOP penetrations were found to meet the more stringent Westinghouse criteria for overpressurization. Three of these BOP penetrations are in the Spent Fuel Cooling System and one each in the Demineralized Water System and Fire Service System.

The five manually isolated penetrations are in portions of systems that are used only during a refueling outage. They are normally water filled when isolated prior to start up. Since these penetrations are subject to leak testing, there are known leakages for the associated Containment Isolation Valves. Therefore, SCE&G does not consider that there is an operability problem for those penetrations. However, SCE&G is continuing to analyze these penetrations for potential overpressurization. As a prudent measure, four of the penetrations have been drained and are periodically verified. Since these penetrations are no longer water filled, they are not susceptible to failure due to thermal overpressurization. The other penetration was found to be isolated by a valve which is not required to be closed. That valve has been opened, eliminating the potential for overpressurization. All five penetrations currently meet the General Design Criteria requirements for containment isolation. Therefore, at this time, SCE&G is in full compliance with Generic Letter 96-06 in regards to thermal overpressurization of piping penetrations. No modifications are required.

In summary, SCE&G is addressing both issues presented in GL 96-06 and is aggressively moving forward to close these issues out. SCE&G expects to have all reviews/analyses completed by the end of May, 1997. I declare that these statements and matters set forth herein are true and correct to the best of my knowledge, information, and belief.

Should you have any questions, please call Mr. Jim Turkett at (803) 345-4047 at your convenience.

Very Truly Yours,



Gary J. Taylor

JWT/GJT/

c: J.L. Skolds
W.F. Conway
R.R. Mahan
R.J. White
L.A. Reyes
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NRC Resident Inspector

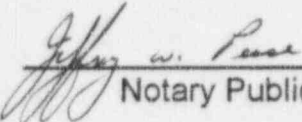
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STATE OF SOUTH CAROLINA :
COUNTY OF FAIRFIELD : TO WIT :

I hereby certify that on the 28th day of January 1997, before me, the subscriber, a Notary Public of the State of South Carolina, personally appeared S. A. Byrne being duly sworn, and states that he has signature authority for the Vice President, Nuclear Operations of the South Carolina Electric and Gas Company, a corporation of the State of South Carolina, that he provides the foregoing response for the purposes therein set forth, that the statements made are true and correct to the best of his knowledge, information, and belief, and that he was authorized to provide the response on behalf of said corporation.

WITNESS my Hand and Notarial Seal


Notary Public

My Commission Expires

July 26, 2005
Date