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October 26, 1994
Refer to: RC-94-0280

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
ASME SECTION XI RELIEF REQUEST REVISION 2 (NRR 940004)

South Carolina Electric & Gas Company (SCE&G) hereby requests relief from the ASME Section XI requirements for Class 1 and 2 insulated pressure retaining bolted connections which receive VT-2 visual examination during the performance of system pressure testing. This represents a revision to the submittals dated July 26, 1994, and October 7, 1994.

Attachment I contains the component identification, code requirements, proposed alternative testing, and basis for this relief request. This relief request is for Class 1 and 2 pressure retaining bolted connections that are insulated, in systems borated for the purpose of reactivity control. Specifically, SCE&G requests the option to exempt the applicable connections from the requirement of ASME Section XI IWA 5242(a), which specifies that insulation must be removed from pressure retaining bolted connections for VT-2 visual examination during the performance of system pressure testing.

SCE&G contends that the proposed alternative testing provides the equivalent, acceptable level of quality and safety as that provided by the Code.

SCE&G desires relief from the above requirements so as not to create an undue hardship without a compensating increase in quality or safety. The testing as required by the Code presents a significant personnel hazard with the consideration of heat stress and radiation exposure of test and maintenance personnel.

SCE&G requests that the NRC review and approve this relief request as soon as possible.

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Should you have any questions, please call Mr. M. J. Zaccone at (803) 345-4328.

Very truly yours,

John L. Skolds

MJZ/JLS/nkk
Enclosure

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BOLTED CONNECTIONS ISI RELIEF REQUEST

Subject:

Removal of insulation from pressure retaining bolted connections, in systems borated for the purpose of reactivity control, during system pressure testing.

Component Identification:

Insulated pressure retaining bolted connections which receive a VT-2 visual examination during the performance of system pressure testing in Class 1 Systems (Reactor Coolant, Safety Injection, Residual Heat Removal Systems) and portions of Class 2 Systems (Charging and Alternate Spray systems from the Regenerative Heat exchanger to the Reactor Coolant System and the Letdown system including Excess Letdown) inside Reactor Containment.

Code Requirements:

IWA-5242(a) requires that for systems borated for the purpose of controlling reactivity, insulation shall be removed from pressure retaining bolted connections for visual examination VT-2.

Alternative Testing:

For Code Class 1 (Reactor Coolant, Safety Injection, Residual Heat Removal Systems) and portions of Code Class 2 (Charging and Alternate Spray systems from the Regenerative Heat exchanger to the Reactor Coolant System and the Letdown system including Excess Letdown) components located inside the Reactor Containment, the following alternative testing will be implemented:

An initial inspection shall be performed each refueling outage immediately following shutdown prior to Reactor Coolant System cooldown and depressurization. This is a hands off inspection for evidence of leakage. There will be no removal of protective covers, shields or insulation at this time. This inspection is also performed to satisfy the requirements of Generic Letter 88-05.

Following plant cooldown and depressurization the insulation will be removed from pressure retaining bolted connections and the VT-2 visual examination will be conducted. Any signs of leakage as evidenced by the presence of boric acid residues will be documented. If the inspection shows no signs of boric acid residues, the insulation will be replaced following the completion of the inspection of the bolted connection. This inspection is also performed to satisfy the requirements of Generic Letter 88-05.

If the presence of boric acid residues is found, a Maintenance Work Request (MWR) or a Nonconformance Notice (NCN) will be generated to perform further evaluation of the bolted connection. Corrective measures will be implemented as required by IWA-5250, Corrective Measures. The insulation will not be re-installed on those components receiving corrective measures and the following test requirements shall be performed upon plant startup:

For Code Class 1:

While in Mode 5, with the Reactor Coolant System filled and vented, a VT-2 visual examination will be conducted with the system at >300 psig. If the inspection shows no signs of leakage, the insulation will be replaced following the completion of the inspection of the bolted connection. If the inspection shows that leakage is still present, further corrective measures will be taken prior to replacement of the insulation.

The bolted connections will be examined again with the insulation installed during the regularly scheduled system pressure test at nominal system operating temperature and pressure as required per Table IWB-2500-1, Examination Category B-P, including a four hour hold time.

For portions of Code Class 2 components located inside the Reactor Containment (Charging and Alternate Spray systems from the Regenerative Heat exchanger to the Reactor Coolant System and the Letdown system including Excess Letdown):

While in Mode 5, the required system pressure test shall be conducted at nominal system operating temperature and pressure with the insulation removed from bolted connections. If the test cannot be performed at nominal system operating conditions due to the exposure of test personnel to unacceptable heat stress levels, a VT-2 visual examination will be conducted with the system at >300 psig. If the inspection shows no signs of leakage, the insulation will be replaced following the completion of the inspection of the bolted connection. If the inspection shows that leakage is still present, corrective measures will be taken per IWA-5250 prior to replacement of the insulation.

The bolted connections will be examined again with the insulation installed during the scheduled system pressure test at nominal system operating temperature and pressure as required per Table IWC-2500-1, Examination Category C-H, including a four hour hold time. This examination will be performed following the completion of each refueling outage.

Basis for Relief:

IWA-5242(a) specifies that insulation must be removed from pressure retaining bolted connections for VT-2 visual examination during the performance of system pressure testing for the following systems:

Reactor Coolant System
Charging and Volume Control System
Safety Injection System
Residual Heat Removal

Tabled IWB 2500-1 and IWC 2500-1 require that testing be performed prior to Start-up at nominal system operating pressure and temperature. This would require the removal and restoration of the insulation on system components with operating temperatures of between 290 and 650°F.

The removal and installation of insulation during the performance of system pressure testing inside Reactor Containment presents the following personnel hazards:

Increased potential for heat stress since the containment ambient temperature is between 100°F - 120°F.

Increased personnel safety hazard since ladders would have to be used to inspect many of the bolted connections and replace the insulation. Temporary work platforms/scaffolding inside reactor containment are removed prior to entering Mode 4.

Increased radiation exposure to test personnel since temporary shielding, inside and outside Reactor Containment, is removed prior to entering Mode 4.

System/component temperatures:

Reactor Coolant System (tested in Mode 3); 550 - 650°F.
Chemical and Volume Control System (tested in Mode 3); 290 - 500°F.

The system pressure testing of those Code Class 1 and portions of Code Class 2 systems which have insulated bolted connections are conducted in Modes 3 and 4. This would require an additional heatup/cooldown cycle on the plant each refueling outage since inspected areas cannot be accessed with the plant at nominal pressure and temperature. This has the potential to add up to two days to the critical path of the refueling outage.

The alternative testing provides the equivalent acceptable level of quality and safety as that provided by the Code. The inspection of pressure retaining bolted connections and the VT-2 visual examination at reduced temperature and depressurized will provide equivalent indication of leakage as evidenced by the presence of boric acid residue. The corrective measures provide the same level of protection to the health and safety of the public as current Code requirements. Finally, VT-2 visual examination performed at reduced pressure with the insulation removed, provides high level of assurance and reasonable verification that corrective measures were adequate to correct leakage discovered during the

depressurized VT-2 visual examination. Based on prior experience and operating history, if a leak is still present following repair activities, the leak would be of a magnitude such that evidence of that leakage would be present with the system at 300 psig. Any subsequent leakage at nominal system pressure would normally occur as the result of a prolonged inservice condition and not as a result of improper corrective measures. This type of leakage would be identified as part of the inspections performed each refueling outage with the system depressurized and the insulation removed. The reduced pressure examination, along with the system pressure test performed utilizing a four hour hold time with insulation installed, provides an equivalent level of inspection as required by the code.