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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 NOTICE OF VIOLATION  
NRC INSPECTION REPORT 91-23

Attached is the South Carolina Electric & Gas Company (SCE&G) response to the violations addressed in Enclosure 1 of NRC Inspection Report 50-395/91-23. SCE&G denies the alleged violation identified as 91-23-02. The basis for this position is enclosed in Attachment I. SCE&G is in agreement with the alleged violation 91-23-03, and has enclosed the required response in Attachment II.

Also, it should be noted that issues related to violation 91-23-02 were discussed in the exit interview on December 17, 1991. However, they were not presented in the context of a possible violation. Accordingly, no dissenting comments were made during the exit interview. The Licensee was notified on December 19, 1991, that these issues were to be cited as a violation, subsequent to which the Licensee did meet with the Resident Inspector to express a dissenting position.

If you should have any questions, please call at your convenience.

Very truly yours,

John L. Skelds

DCH:WRH:JLS:lcd  
Attachment

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RESPONSE TO NOTICE OF VIOLATION  
VIOLATION NUMBER 50-395/91-23-02

I. RESTATEMENT OF VIOLATION

10CFR50, Appendix B, Criterion XVI, requires that measures be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, and defective material and equipment are promptly identified and corrected.

Contrary to the above, the Licensee did not correct an identified deficiency for the indicating lights on the emergency diesel generator control panels. A subsequent failure of an indicating light during a surveillance test rendered the "A" emergency diesel generator inoperable. The Licensee had not recognized the potential for the indicating light deficiency to result in an inoperable emergency diesel generator.

II. SCE&G POSITION ON VIOLATION

South Carolina Electric & Gas Company (SCE&G) denies that it did not meet 10CFR50, Appendix B, Criterion XVI, in that the cited example of corrective action did not pertain to "a condition adverse to quality."

III. BASIS FOR SCE&G POSITION

The following general information provides a summary of events which led to this notice of violation.

A Nonconformance Notice (NCN) 3349 was initiated on May 22, 1989, describing the failure of three indicating lights on each of the two diesel generator panels. The NCN stated that these lights had experienced repeat failures and cited that there had been at least 10 Maintenance Work Requests (MWR) over a 4 year period.

The NCN was dispositioned after the quantification of the MWR failures and a review of their causes. As a result of the review, it was determined that the problem identified in the NCN (indicator light failure) was not attributable to or the result of a design or hardware defect, a defect in manufacturing or repair, or improper guidance provided by a manufacturer's operating and maintenance instruction. However, the disposition did point out that the female connector in the socket was a spring coil, as opposed to a shell base, and that bulb installation could easily result in a loose connection which would cause additional heat to be generated in the bulb/socket. (This does not affect the function of the indicating light, only the life of the bulb.) Therefore, the disposition of the problem described in the

NCN (indicator light failure) was to replace the spring coil socket with a bayonet type base to simplify installation and eliminate the potential for loose connections, thus eliminating possible over rating of the bulb.

During a surveillance run of the "A" train Diesel Generator (DG) on December 9, 1991, the diesel was started via an emergency start signal (ESS). This signal energized the indicator light cited in the violation as causing the failure. This signal was then overridden (light is deenergized) to activate the non emergency trips for the one hour run requirement. After the one hour requirement was met, the DG was unloaded and its output breaker was opened. At this point, the emergency start manual pushbutton was actuated to verify the emergency no load voltage regulator had returned to its proper setting. Upon this actuation, a "DG A, Loss of DC" annunciator was received.

The DG was secured, declared inoperable and a MWR initiated to troubleshoot and repair the cause of the annunciator. This resulted in the discovery that a fuse had blown and the emergency start indicator bulb was blown. The fuse was replaced which cleared the annunciator and all points of the circuit were checked for grounds, with none being found. The light socket for the emergency start indicator was broken while attempting to remove the blown bulb. A new bulb and socket was installed. The cause of the blown fuse was attributed to an assumed short in the bulb/socket. The DG was then started to verify proper circuit function.

The Notice of Violation asserts that a violation of Appendix B existed due to the assumption that the question raised by NCN 3349 constitutes a condition adverse to quality and, therefore, a failure to implement corrective action in a timely manner constitutes the violation. SCE&G agrees that the failure which occurred on December 9 was a condition adverse to quality. However, the cause of this failure is considered to be a random failure which was unique in its failure mode and is not included in the scope of the NCN. Therefore, the corrective action associated with this failure is the restoration of the circuit to its design condition which was accomplished by the MWR. Should this or similar failure modes recur, then further corrective actions would be in order.

SCE&G's position that the NCN and its corrective actions do not relate to a "condition which is adverse to quality" is supported by the following:

1. NCN 3349 was written to evaluate the number of indicating light failures. It referenced that at least 10 MWRs related to indicating light failures had been originated in the past four years. The first point to be made is that this does not constitute an inordinate amount of failures (i.e., six individual indicator lights have the potential to fail, therefore, 10 failures represent less than two failures per light in the four-

year period). Furthermore, of all the MWRs related to the indicating lights, initiated from 1981 to 1989 (the time the NCN was originated), only eight were bulb/socket related problems, and of those, three were simply burned out or broken bulbs. Therefore, since the only trend that existed, other than lens replacement, was the eight bulb/socket failures over more than seven years, and those failures did not impact the circuit, there is no evidence that the NCN scope included "a condition adverse to quality." Also, it is important to note that the indication provided by these lights is not required for DG operability and is duplicated by annunciators in the main control room.

2. The Notice of Violation implied that the NCN disposition to replace the sockets is necessary to correct "a condition adverse to quality." However, the present sockets are part of a qualified, safety related piece of equipment, and are part of a circuit which meets the accepted IEEE standards required for this particular application. It should be noted that this design incorporates provisions to protect the circuit (fuses) and to provide the control room indication of a loss of power to the circuit (annunciator). These provisions exist to account for the fact that random electrical failures are probable.
3. The NCN disposition to replace the sockets was for the purpose of reducing the probability of a loose connection between the bulb and socket which was suspected to shorten bulb life. This disposition was intended to eliminate the cause of the loose connection and was not intended to correct "an identified condition adverse to quality."

SCE&G considers the failure of the control circuit cited in the violation as a random failure, and not a failure which could be predicted from the NCN. This conclusion is based on the fact that the normal mode of failure for a light bulb is an open circuit and, should a bulb fail such that it did short, only in rare cases would enough amperage be drawn to overload a fuse or breaker. This is evidenced in this case by observing that, since at least 1981, none of the normal bulb burnouts or bulb/socket problems have resulted in disabling the circuit. Therefore, the present circuit provides an ample amount of protection and a sufficient level of quality in its present design.

4. SCE&G finds the inspector's concern that "the licensee did not recognize the potential for the warning light failure to result in an inoperable Diesel Generator" to be without merit. SCE&G maintains that the review of the question raised by the NCN was thorough and complete and that the evidence which emerged from the NCN review does not support that there should have been concerns raised with respect to the potential for a light failure to result in an inoperable diesel generator. SCE&G does not agree that there is a logical connection between the NCN, its

disposition, and the prevention of the failure cited in the violation. As stated in Item 3, this failure was a random failure, and the disposition of the NCN could not have prevented a similar failure. Furthermore, the potential for an electrical failure is accounted for in the approved design of the circuit.

Therefore, 10CFR50, Appendix B, Criterion XVI was not violated due to the fact that NCN 3349 did not represent a condition adverse to quality and due to the discontinuities between the NCN and the failure cited in the violation.

RESPONSE TO NOTICE OF VIOLATION  
VIOLATION NUMBER 50-395/91-23-03

Requirement: 10 CFR 50.55a(g)(4) requires that throughout the service life of a boiling or pressurized watercooled nuclear power facility, components (including supports) shall meet the requirements set forth in Section XI of the ASME Boiler and Pressure Vessel Code. The applicable edition of the code, the 1977 Edition with Summer 1978 Addenda, for ISI inspection and testing, contains the following requirements:

IWA-5214 states, in part, that a system alteration shall be pressure tested prior to resumption of service. IWD-5212 states, in part, "The system hydrostatic test pressure shall be at least 1.10 times the system pressure  $P_{SV}$  for systems with Design Temperature of 200 degrees Fahrenheit or less...."

I. ADMISSION OF VIOLATION

SCE&G is in agreement with the violation in that VCSNS did not hydrostatically test a portion of the newly installed Service Water bypass piping prior to returning it to service.

II. REASON FOR VIOLATION

Design modification MRF 21746 was developed to facilitate more effective manual control of Service Water flow through the Chilled Water System Chillers XHX-1A-VU, XHX-1B-VU, and XHX-1C-VU when Service Water inlet temperature is less than 50 degrees Fahrenheit. To accomplish this, a three inch globe valve and bypass line was installed around each Chiller six inch Service Water outlet gate valve. However, for Chiller XHX-1C-VU (which is a swing Chiller that can be aligned to either Train A or Train B), two 3-inch isolation gate valves (XVG-3196-SW and XVG-3197-SW) were added in addition to the globe valve to maintain two-valve separation from the opposite Train to which the Chiller is aligned.

On December 6, 1991, after the modification for XHX-1C-VU was completed, a hydrostatic test at 72 psig was performed to verify system integrity. On December 16, 1991, after reviewing the system drawings and the valve lineup sheets for the hydrostatic test, the NRC Resident Inspector noted that the new piping between XVG-3196-SW, XVB-3129A-SW, and XVB-3129B-SW; and XVG-3197-SW, XVB-3129C-SW, and XVB-3129D-SW was not hydrostatically tested to 72 psig as required by Section XI of the ASME Boiler and Pressure Vessel Code.

The cause of the event is attributed to a lack of clear and concise hydrostatic test requirements in MRF 21746 and the inadequate Design Engineering review of the hydrostatic test procedure valve lineup prior to testing.

It should be noted that a visual inspection at normal system operating pressure was satisfactorily performed.

III. CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

On December 17, 1991, Nonconformance Notice (NCN) 4393 was initiated detailing the sections of piping that were not hydrostatically tested. Disposition #1 to the NCN specified the performance of an additional hydrostatic test to include the missed sections of piping. The second hydrostatic test was performed on December 18, 1991, with satisfactory results.

IV. CORRECTIVE ACTION TAKEN TO AVOID FURTHER VIOLATION AND DATE OF FULL COMPLIANCE

To preclude further occurrences of violations of this type, the following corrective actions will be taken:

1. Station Administration Procedure (SAP) 601, Application, Scheduling and Handling of Maintenance Activities, will be revised to more clearly delineate Design Engineer preimplementation review of all post modification testing. This action will be completed by April 1, 1992.
2. Personnel in both the Design Engineering (the group responsible for the design) and the Test Unit (the group responsible for performing the hydrostatic test) have been apprised of the lessons learned in this event. The lessons learned covered with the Design Engineering personnel included not assuming that other groups responsible for performing "checkout" and/or "functional" testing understand what was meant by the testing requirements and that Lead Engineers will be involved in all phases of the implementation process including post modification testing.

In the Test Unit lessons-learned discussion, items that were stressed include not relying solely upon the test recommendation provided in the MRF to develop the testing procedure, but to review the design independently to verify testing recommendations; and have someone independently verify the work for adequacy.