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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 GENERIC LETTER 91-06 (LTR 910006-0)

Pursuant to 10 CFR 50.54(f), South Carolina Electric & Gas Company (SCE&G) is submitting the required responses to the questions in Enclosure 1 of Generic Letter 91-06 with respect to Virgil C. Summer Nuclear Station (VCSNS). Attached is the completed questionnaire plus additional justification as required by Question 5.

I declare that the statements set forth herein are true and correct to the best of my knowledge, information, and belief.

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

Very truly yours,

John L. Skolds

DCH:JLS:lcd
Attachment

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10 CFR 50.54(f) REQUEST - GENERIC ISSUE (GI) A-30 "ADEQUACY OF SAFETY-RELATED DC POWER SUPPLIES"

Background

The specific area of concern of GI A-30 "Adequacy of Safety-Related DC Power Supplies" is the adequacy of the safety-related dc power in operating nuclear power plants, particularly with regard to multiple and common cause failures. Risk analysis and past plant experience support conclusions that failure of the dc power supplies could represent a significant contribution to the unreliability of shutdown cooling. Analysis indicates that inadequate maintenance and surveillance and failure to detect battery unavailability are the prime contributors to failure of the dc power systems.

During the development of plans to resolve GI A-30, it was observed that several previously issued regulatory notices (IENs), bulletins (IEBs) and letters (GLs) submitted to licensees include recommendations similar to those that have been identified to resolve GI A-30. More specifically, it has been determined that recommendations contained in notifications IEN 85-74, "Station Battery Problems", IEB 79-27, "Loss of Non-Class 1E Instrumentation and Control Power System Bus during Operation," and separate actions being taken to resolve GI 49, "Interlocks and LCOs for Class 1E Tie Breakers" include the elements necessary to resolve GI A-30. It is therefore concluded that licensees that have implemented these recommendations and actions will have resolved GI A-30 The response to the questions that follow is necessary to provide the staff with information to determine whether any further action is required for your facility.

Questions

The following information is to be provided for each unit at each site:

1. Unit Virgil C. Summer Nuclear Station

2. a. The number of independent redundant divisions of Class 1E or safety-related dc power for this plant is two. (Include any separate Class 1E or safety-related dc, such as any dc dedicated to the diesel generators.)

   b. The number of functional safety-related divisions of dc power necessary to attain safe shutdown for this unit is one.

3. Does the control room at this unit have the following separate, independently annunciated alarms and indications for each division of dc power?

   a. alarms

      1. Battery disconnect or circuit breaker open? Yes

      2. Battery charger disconnect or circuit breaker open (both input ac and output dc)? Yes

3. dc system ground? Yes #

4. dc bus undervoltage? Yes

5. dc bus overvoltage? Yes

6. Battery charger failure? Yes

7. Battery discharge? Yes

b. Indications

1. Battery float charge current? No

2. Battery circuit output current? No

3. Battery discharge? Yes

4. Bus voltage? Yes

c. Does the unit have written procedures for response to the above alarms and indications? Yes

4. Does this unit have indication of bypassed and inoperable status of circuit breakers or other devices that can be used to disconnect the battery and battery charger from its dc bus and the battery charger from its ac power source during maintenance or testing? Yes

5. If the answer to any part of question 3 or 4 is no, then provide information justifying the existing design features of the facility's safety-related dc systems. *See note below.

6. (1) Have you conducted a review of maintenance and testing activities to minimize the potential for human error causing more than one dc division to be unavailable? Yes ** and (2) do plant procedures prohibit maintenance or testing on redundant dc divisions at the same time? Yes **

If the facility Technical Specifications have provisions equivalent to those found in the Westinghouse and Combustion Engineering Standard Technical Specifications for maintenance and surveillance, then question 7 may be skipped and a statement to that effect may be inserted here. VCSNS Technical Specification is equivalent to Westinghouse Standard.

7. Are maintenance, surveillance and test procedures regarding station batteries conducted routinely at this plant? Specifically:

a. At least once per 7 days are the following verified to be within acceptable limits:

1. Pilot cell electrolyte level? N/A

2. Specific gravity or charging current? N/A

3. Float voltage? N/A

4. Total bus voltage on float charge? N/A

5. Physical condition of all cells? N/A

b. At least once per 92 days, or within 7 days after a battery discharge, overcharge, or if the pilot cell readings are outside the 7-day surveillance requirements are the following verified to be within acceptable limits:

1. Electrolyte level of each cell? N/A

2. The average specific gravity of all cells? N/A

3. The specific gravity of each cell? N/A

4. The average electrolyte temperature of a representative number of cells? N/A

5. The float voltage of each cell? N/A

6. Visually inspect or measure resistance of terminals and connectors (including the connectors at the dc bus)? N/A

c. At least every 18 months are the following verified:

1. Low resistance of each connection (by test)? N/A

2. Physical condition of the battery? N/A

3. Battery charger capability to deliver rated ampere output to the dc bus? N/A

4. The capability of the battery to deliver its design duty cycle to the dc bus? N/A

5. Each individual cell voltage is within acceptable limits during the service test? N/A

d. At least every 60 months, is capacity of each battery verified by performance of a discharge test? N/A

e. At least annually, is the battery capacity verified by performance discharge test, if the battery shows signs of degradation or has reached 85% of the expected service life? N/A

8. Does this plant have operational features such that following loss of one safety-related dc power supply or bus:

   a. Capability is maintained for ensuring continued and adequate reactor cooling? Yes

   b. Reactor coolant system integrity and isolation capability are maintained? Yes

c. Operating procedures, instrumentation (including indicators and annunciators), and control functions are adequate to initiate systems as required to maintain adequate core cooling? Yes

9. If the answer to any part of question 6, 7 or 8 is no, then provide your basis for not performing the maintenance, surveillance and test procedures described and/or the bases for not including the operational features cited. *See note below.

*Note: For questions involving supporting type information (question numbers 5 and 9) instead of developing and supplying the information in response to this letter, you may commit to further evaluate the need for such provisions during the performance of your individual plant examination for severe accident vulnerabilities (IPE). If you select this option, you are required to:

(1) So state in response to these questions, and
(2) Commit to explicitly address questions 5 and 9 in your IPE submittal per the guidelines outlined in NUREG-1335 (Section 2.1.6, Subitem 7), "Individual Plant Examination: Submittal Guidance."

#Question 3.b.3: VCSNS is currently in an outage in which a modification is being installed to add a DC system ground alarm in the control room. This modification is expected to be complete prior to startup from Refuel-6.

**Question 6: There is no explicitly documented review of the potential for human error to cause more than one DC division to be unavailable due to maintenance and testing. However, the entire process of planning, scheduling, required reviews and final approval of maintenance and testing of all plant equipment is based on working on one train of plant equipment at a time. Therefore, the development of this process and the associated procedures that apply to this process, as well as any changes that impact this process, are reviewed with an emphasis on minimizing human error and any other error from performing maintenance or testing on more than one train at a time.

It should be noted that an individual maintenance procedure does not explicitly "prohibit" maintenance on more than one DC division but the process for initiating or approving the maintenance does. The only exception to this would be in outage or other situations where the operating license would allow both trains to be inoperable and plant management concurrence was obtained.

(Justification for Question 5 on next page)

Justification for Question 5

Question 3.b.1: VCSNS, in accordance with manufacturer's instructions, monitors the float charge on the battery by monitoring float voltage. The float voltage is indicated and monitored in the control room. In addition, the setpoint for the DC system undervoltage alarm is such that loss of float voltage will cause the annunciation of the alarm. These factors coupled with the requirements of Technical Specifications assure the adequacy and awareness of float charge status.

Question 3.b.2: As stated above, battery operability is monitored by using voltage as an indicator. The design of the DC system is such that each battery train is sized to provide adequate power for the 4 hour duration assumed under "Station Blackout" conditions without requiring any operator actions to shed DC loads. Therefore, battery circuit output current is not needed to monitor battery status.

Additionally the battery circuit current (both input and output) is indicated on a local indicator.