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Docket No. 50-395

Mr. D. A. Nauman
Vice President, Nuclear Operations
South Carolina Electric & Gas Company
Virgil C. Summer Nuclear Station
P. O. Box 88
Jenkinsville, South Carolina 29065

Dear Mr. Nauman:

SUBJECT: SINGLE CELL BATTERY CHARGING - VIRGIL C. SUMMER NUCLEAR STATION
(TAC NO. 63045)

South Carolina Electric & Gas Company has made a plant modification at the Virgil C. Summer Nuclear Station to permit the use of a 40 volt non-safety-grade battery charger to be connected in parallel with the normal full capacity safety-grade battery charger. The 40 volt charger is used to place an equalization charge on a string of 4 to 15 cells of the 60 cell 125 volt station battery banks. This method of placing an equalization charge on a limited number of cells is not discussed in the FSAR for the Summer Station and has not been reviewed by the NRC.

The NRC staff has received the 10 CFR 50.59 assessment and design details of the plant modification. Review of this material has raised questions as to whether use of a partial charge for equalization tends to mask individual cell deterioration such that cells that are approaching their end-of-life are not replaced until they are completely bad. Also, the use of fuses and other design details of the modification raises certain questions regarding the adequacy of the separation of the non-safety grade battery charger from the Class 1E system. Having completed the review of the 10 CFR 50.59 assessment and the design details of the plant modification, we find that additional information is required. Our request for additional information is contained in the enclosure. We anticipate having a meeting at the site following our review of your response.

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PDR

Mr. D. A. Nauman

The reporting and/or recordkeeping requirements contained in this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P.L. 96-511.

Sincerely,

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John J. Hayes, Jr., Project Manager
Project Directorate II-1
Division of Reactor Projects I/II
Office of Nuclear Reactor Regulation

Enclosure:
Request for Additional
Information

cc w/enclosure:
See next page

OFC :LA:PD21:DBPR:PM:PD21:DRPR:D:PD21:DRPR :	:	:	:	
NAME : PAnderson : JJHayes:ch : EAdensam :	:	:	:	
DATE : 6/22/88 : 6/23/88 : 6/23/88 :	:	:	:	

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Mr. D. A. Nauman
South Carolina Electric & Gas Company

Virgil C. Summer Nuclear Station

CC:

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South Carolina Electric & Gas Company
Mr. A. R. Koon, Jr., Manager
Nuclear Licensing
Virgil C. Summer Nuclear Station
P. O. Box 88
Jenkinsville, South Carolina 29065

REQUEST FOR ADDITIONAL INFORMATION

VIRGIL C. SUMMER FORTY VOLT BATTERY CHARGER

1. What programs are in place (such as a trending program) to determine if a cell(s) that repeatedly requires equalization should be replaced?
2. How many hours on the average during the year is it expected that the 40 volt charger will be connected to either safety-related battery? Is there a limit on the number of hours that the 40 volt charger is permitted to be connected?
3. If an insulation blanket is used over the safety-related battery bank while placing an equalization charge using the 40 volt charger, what procedures insure that the battery does not become overheated due to the blanket?
4. What protection is there to detect and isolate a high impedance fault between the 40 volt battery charger and the isolation fuses if the fault limits the current to a value less than the fuse rating?
5. The 10 CFR 50.59 assessment of the 40 volt charger states that the charger will not act as a short because the output resistors plus the circuit resistance will limit the current to an insignificant amount. What is considered to be an insignificant amount?
6. The 10 CFR 50.59 assessment states that each cell of the battery can withstand 2.9 volts @ 52.5A for approximately 24 hours. However, the isolation fuses are rated at 150 amperes. What protects the battery against equalization currents between 52.5 and 150 amperes in the event that the voltage regulator controls partially fail?
7. It is understood that administrative controls will be used to check every six hours against an overvoltage to the battery cells while using the 40 volt charger. What assessment has been made to determine the effect of a six hour maximum overvoltage condition?
8. What procedural steps are followed to insure that the station battery and its individual cells are operable after removing the 40 volt charger?
9. Have the fuse cabinets, cable racks and their mountings (in the battery rooms) been seismically qualified? In particular, what assurance is there that the cable racks will not tear loose and directly or indirectly fault the battery?
10. Please send a copy of the pages from the instruction manuals IMS94B 245 and 300 that discuss the conditions for beginning or ending an equalization charge.