



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 107 TO FACILITY OPERATING LICENSE NO. NPF-12

SOUTH CAROLINA ELECTRIC & GAS COMPANY

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY

VIRGIL C. SUMMER NUCLEAR STATION, UNIT NO. 1

DOCKET NO. 50-395

1.0 INTRODUCTION

By letter dated June 12, 1991, the South Carolina Electric & Gas Company (the licensee) submitted a request for changes to the Virgil C. Summer Nuclear Station, Unit No. 1 (Summer Station), Technical Specifications (TS) regarding surveillance testing of new replacement Class 1E batteries. The requested changes would modify Surveillance Requirement 4.8.2.1 and the associated Bases section 3/4 8-2 for the new replacement batteries installed to meet the requirements of Regulatory Guide 1.155, Station Blackout.

2.0 EVALUATION

The Station Blackout (SBO) Rule, 10 CFR 50.83, requires that each light water cooled nuclear power plant be able to withstand and recover from an SBO for a specified duration. The licensee initially stated that the Class 1E batteries were determined to have sufficient capacity to meet SBO loads for 4 hours, assuming that loads not needed to cope with the SBO would be stripped. Subsequently, in a submittal dated April 17, 1989, the licensee stated that load stripping to extend the battery capacity to meet the 4-hour SBO coping duration was not considered prudent. The licensee informed the staff by letter dated October 2, 1989, that it would replace the existing batteries with higher capacity batteries in order to meet the subject SBO coping duration without the requirement to manually strip loads.

The licensee recently (Spring 1990) installed two higher capacity Class 1E batteries. The new Class 1E batteries were sized to meet the more restrictive SBO load demand under the most limiting battery conditions. These conditions are (1) a minimum electrolyte temperature of 60°F, (2) a minimum capacity derating factor for aging and temperature of 80%, and (3) 58 out of the 60 installed cells connected. Each battery is rated at 2175 ampere-hours. Section B.3.2.1.3 of the Summer Station Final Safety Analysis Report states that 860 ampere-hours represents the worst

case load demand in the event of a design basis accident or unit SBO of 4-hour duration. The licensee proposes the following changes be made to reflect the revised engineering criteria used to size the new batteries:

- (1) Change TS 4.8.2.1.b.3 to specify an average electrolyte temperature greater than or equal to 60°F rather than 65°F. The basis for this surveillance requirement is to verify that the average electrolyte temperature is above the minimum value for which the battery is sized given the manufacturer's recommendations for acceptable operating temperatures. Since the licensee states that the minimum electrolyte temperature used for sizing the replacement batteries was 60°F, we find the change consistent with the original intent of the surveillance requirement. Therefore, the change is acceptable.
- (2) Change TS 4.8.2.1.e to specify that the minimum battery capacity to be verified by test is at least 80% rather than 90% of the manufacturer's rating. The proposed acceptance criteria is consistent with Institute of Electrical and Electronics Engineers (IEEE) Standard 450-1987 and IEEE Standard 485-1983 recommendations. It is recommended that the battery be replaced if its capacity is below 80% of the manufacturer's rating. A capacity factor of 80% is indicative of an increased rate of deterioration even if there is ample capacity to meet the load requirements. We find that this change does not affect the original intent of the surveillance requirement and is, therefore, acceptable.
- (3) Change the Bases B 3/4 (page B-2) industry reference citation from IEEE Standard 450-1980 to IEEE Standard 450-1987. This change is editorial in nature and does not affect the original intent of the Bases reference. The change is, therefore, acceptable.

### 3.0 SUMMARY

We have reviewed the licensee's submittal and have concluded that the changes reflect the revised design basis for the replacement Class 1E batteries. The licensee stated that the new batteries are sized larger than required with the subject calculations considering all correction factors for aging, design margin and operating temperatures as recommended in IEEE Standard 485. We find that the subject changes meet the original intent for the existing Technical Specification requirements and are, therefore, acceptable.

#### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the South Carolina State official was notified of the proposed issuance of the amendment. The State official had no comments.

#### 5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (56 FR 37590). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

#### 6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: R. Jenkins

Date: April 17, 1992