

July 6, 2010

MEMORANDUM TO: Edwin M. Hackett, Executive Director  
Advisory Committee on Reactor Safeguards

FROM: David B. Matthews, Director  
Division of New Reactor Licensing /RA/  
Office of New Reactors

SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION UNITS 2 AND 3  
ADVANCED FINAL SAFETY EVALUATION REPORT WITH NO  
OPEN ITEMS FOR CHAPTER 2, "SITES CHARACTERISTICS"

By letter dated March 28, 2008, South Carolina Electric & Gas (SCE&G) submitted its application to the U.S. Nuclear Regulatory Commission (NRC) requesting combined licenses (COLs) for two AP1000 advanced passive pressurized water reactors in accordance with the requirements of Title 10 of the *Code of Federal Regulations*, Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants." The NRC formally docketed the application on July 31, 2008. These reactors are identified as Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3 and would be located in Fairfield County, South Carolina. The docket numbers established for VCSNS Units 2 and 3 are 52-027 and 52-028, respectively. Subsequent to the original VCSNS COL application, SCE&G updated and revised the application by letters dated July 30, 2009, and January 28, 2010.

Based on its review of SCE&G's application, the staff prepared the enclosed Advanced Final Safety Evaluation Report (AFSER) with no open items for Chapter 2, "Sites Characteristics." The Chapter 2 document does not contain section 2.4, "Hydrologic Engineering." The staff intends to provide Section 2.4 at a later date. Providing Summer Chapter 2 without section 2.4 was discussed with the Advisory Committee on Reactor Safeguard (ACRS) Subcommittee on the AP1000 during the June 25, 2010, meeting.

Unless otherwise stated in the AFSER with no open items, the staff's review was based on revisions and updates made to the VCSNS COL application through January 28, 2010. Issuance of this AFSER is an important milestone in the staff's review to determine whether SCE&G's application meets the Commission's regulations.

The staff has reviewed the Memorandum to the Executive Director of Operations dated February 17, 2010, and reviewed our submitted information against the categories that the Advisory Committee Reactor Safeguard (ACRS) requested to be used to highlight information for review by the Committee. Overall our assessment is that each Section of the VCSNS COL

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application Chapter 2 should be discussed with the ACRS Subcommittee on the AP1000. The basis for discussing Chapter 2 with the Subcommittee is:

- the precedent that was set with the early site permits (ESP),
- the limited amount of standard material contained in Chapter 2 of the VCSNS COL application

Previous interactions with the ACRS on the ESPs that have been issued included detailed discussions related to the site characteristics found in Chapter 2 of the applications. The staff believes that a similar interaction with the ACRS on Summer Chapter 2 would be beneficial. In addition, because of the limited amount of standard material contained in Chapter 2 of the VCSNS COL application, the staff could not take advantage of the design-centered review approach that allows the staff to perform one review for each standard technical issue in a COL application.

Although the staff believes interactions with the ACRS on all portions Chapter 2 of the VCSNS COL application are appropriate, the staff notes the following regarding Chapter 2 of the SER that may be of particular interest to the ACRS:

- Section 2.0, "Site Characteristics," and 2.3, "Meteorology," include a discussion of an exemption related to the maximum safety wet-bulb (noncoincident) air temperature. The maximum safety wet-bulb (noncoincident) air temperature in AP1000 DCD Tier 1, Table 5.0-1 is 86.1 °F while the VCSNS site value is 87.3 °F. The staff's evaluation in Section 2.3 of the SER concludes that the 87.3 °F value is appropriate for the VCSNS site. The staff's evaluation of the effects that this higher temperature has on the operation of the AP1000 design will be addressed in SER Sections 5.4, 6.2, 6.4, and 9.2, which will be provided to the ACRS at a later date.
- SER Section 2.5, "Geology, Seismology, and Geotechnical Engineering," contains an evaluation of the site in regard to these three technical disciplines. The proposed location for Units 2 and 3 is a "hard rock" site which the staff concludes meets the requirements for siting an AP1000. Section 2.5 of the SER also contains the staff's evaluations of (a) basic geologic and seismic information in relation to assessment of the capability of tectonic faults in the site region, site vicinity, and site area; (b) the potential for vibratory ground motion at the site due to reservoir-induced seismicity, and the Charleston and Eastern Tennessee Seismic Zones; (c) the possibility of capable surface faulting in the site vicinity and site area; and (d) geotechnical engineering parameters related to stability of subsurface materials and slopes. The approach that the staff takes in evaluating these different aspects of the site is the same approach that will be taken for other COLs.

The staff concludes that the AFSER with no open items does not contain any information for which exemption from public disclosure has been sought or approved. However, the NRC will withhold the AFSER from public disclosure for ten calendar days to allow SCE&G the opportunity to verify the staff's conclusion that the AFSER contains no such exempt information.

Therefore, the staff requests that the ACRS likewise withhold the AFSER with no open items from public disclosure until it has been released publicly in the Agencywide Documents Access and Management System (ADAMS). The ADAMS accession numbers for the AFSER with no open items are ML101390008, ML101400387, ML101400388, ML101400389, and ML101400393. The staff will inform the ACRS immediately if SCE&G requests that any of the information in the document be withheld from public disclosure.

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Therefore, the staff requests that the ACRS likewise withhold the AFSER with no open items from public disclosure until it has been released publicly in the Agencywide Documents Access and Management System (ADAMS). The ADAMS accession number for the AFSER with no open items are ML101390008, ML101400387, ML101400388, ML101400389, and ML101400393. The staff will inform the ACRS immediately if SCE&G requests that any of the information in the document be withheld from public disclosure.

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