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POLICY ISSUE
INFORMATION

August 19, 2011 SECY-11-0115

FOR: The Commissioners

FROM: R. W. Borchardt
Executive Director for Operations

SUBJECT: STAFF STATEMENT IN SUPPORT OF THE UNCONTESTED HEARING FOR ISSUANCE OF COMBINED LICENSES FOR THE VIRGIL C. SUMMER NUCLEAR STATION, UNITS 2 AND 3 (DOCKET NOS. 52-027 and 52-028)

PURPOSE:

The U.S. Nuclear Regulatory Commission's (NRC's) Office of New Reactors (NRO) has completed its review of the application for two combined licenses (COLs) to authorize construction and operation of Virgil C. Summer Nuclear Station (VCSNS), Units 2 and 3, located in Fairfield County, SC. This subsequent COL (SCOL) application references the AP1000 Design Certification Document (DCD), Revision 19.

NRO presents this information paper pursuant to the revised Internal Commission Procedures dated May 12, 2011 (see http://www.nrc.gov/about-nrc/policy-making/internal.html). Issuance of this paper follows the issuance of the VCSNS COL final safety evaluation report (FSER) (Agencywide Documents Access and Management System (ADAMS) Accession No. ML110450305). Previously, the agency issued the final environmental impact statement (FEIS), on April 19, 2011 (NUREG-1939, Volumes 1 and 2 (ADAMS Accession Nos. ML11098A044 and ML11098A057, respectively)). Another key reference to this paper is a draft COL for VCSNS Unit 3 (ADAMS Accession No. ML111920134). This paper, with its references, provides the information requested to support the Commission's determination that

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the staff's review has been adequate to support the findings set forth in Title 10 of the *Code of Federal Regulations* (10 CFR) 52.97, "Issuance of combined licenses," and 10 CFR 51.107, "Public hearings in proceedings for issuance of combined licenses; limited work authorizations."

The staff's review of the application is complete. Subject to the final certification by rulemaking of the amended AP1000 design referenced by the application, the staff concludes that all required findings can be made to support issuance of the COLs. Although the design certification rulemaking is ongoing, there are no significant technical or policy issues related to the rulemaking that the staff believes would be of significant Commission interest for this action or would preclude issuance of the COLs upon the effective date of the rule.

Subject to the completion of rulemaking and Commission approval, the final rule is scheduled for publication by early 2012. The rule would become effective 30 days after publication in the *Federal Register* (*FR).*

SUMMARY:

This paper addresses each of the findings in 10 CFR 52.97(a) and 10 CFR 51.107(a) and provides an adequate basis for the Commission to conclude that each of these findings can be made. This paper also focuses on nonroutine or novel matters such as unique features of the facility or novel issues that arose as part of the review process. This paper does not address routine aspects of the safety and environmental review process.

BACKGROUND:

I. Application History

Application, Ownership, and Location

South Carolina Electric & Gas Company (SCE&G) and the South Carolina Public Service Authority (commonly referred to as "Santee Cooper") submitted an application for the planned VCSNS, Units 2 and 3, on March 27, 2008. The applicant most recently updated the VCSNS COL application on June 28, 2011 (ADAMS Accession No. ML11187A074). The publicly available portions of the application are available in ADAMS and on the NRC website at http://www.nrc.gov/reactors/new-reactors/col/summer/documents.html.

Santee Cooper has authorized SCE&G to act as its agent in applying for a COL for VCSNS Units 2 and 3. SCE&G and Santee Cooper will jointly own the facility and share in the costs and output of the facility as follows: SCE&G, 55 percent; Santee Cooper, 45 percent. SCE&G is the principal subsidiary of SCANA Corporation, an energy-based holding company with headquarters in Cayce, SC. SCE&G is a regulated public utility engaged in the generation, transmission, distribution, and sale of electricity in South Carolina. SCE&G has constructed and currently operates Virgil. C. Summer Unit 1. Construction on Unit 1 began in April 1973, and it has been commercially operated since January 1984. Santee Cooper is South Carolina's State-owned electric and water utility with headquarters in Moncks Corner, SC.

The site for VCSNS Units 2 and 3 is located approximately 1 mile from the center of VCSNS Unit 1 in western Fairfield County, SC. The Monticello Reservoir will provide the water necessary for the operation of VCSNS Units 2 and 3. The reservoir is located east of the Broad River and west of South Carolina State Highway 215. VCSNS Units 2 and 3 will be located approximately 15 miles west of Winnsboro, the county seat. Newberry, the county seat of Newberry County, is about 17 miles away to the west. Columbia, the South Carolina State capital, is located about 26 miles to the southeast.

Additional information about the applicant and ownership appears in Part 1 (General and Administrative Information) of the VCSNS COL application. Additional information about the site location and characteristics appears in Part 2 (Final Safety Analysis Report (FSAR)), Chapters 1 and 2, of the COL application.

Referenced Design Certification and Design Certification Amendments

Westinghouse Electric Company is the applicant for certification of the amended AP1000 design (DCD Revision 19) referenced in the VCSNS COL application. Westinghouse was also the applicant for the AP1000 design certified in Appendix D, “Design Certification Rule for the AP1000 Design,” to 10 CFR Part 52, “Licenses, Certifications, and Approvals for Nuclear Power Plants.” On February 24, 2011, the staff issued a proposed rule to amend the Westinghouse AP1000 design certification based on DCD Revision 18. Westinghouse submitted the referenced DCD Revision 19 on June 13, 2011 (ADAMS Accession No. ML11171A287), and the staff anticipates that Revision 19 will serve as the basis for the final rule submitted for Commission approval. In August 2011, the NRC staff issued an FSER for the DCD (ADAMS Accession No. ML112061231). The rulemaking that would certify the AP1000 design amendment is pending, and the staff expects a final rule would be issued by early 2012.

Subsequent Combined License

In implementing the design centered review approach (see ADAMS Accession No. ML053540251), COL applications designated as subsequent COLs (SCOLs) include in some areas standard content information identical to the information in the designated reference COL (RCOL) application for the design center (in this case, the AP1000 design center). In these areas, the staff performs a single evaluation of the standard content as part of the RCOL application review. To apply the RCOL application review to an SCOL application, the staff confirms that the information submitted by the SCOL applicant is identical to that previously reviewed for the RCOL application. The staff also evaluates any site-specific differences to ensure that they do not affect the SCOL application analysis. Generally, the first COL application for a particular design submitted for NRC staff review is designated as the RCOL application, and the subsequent applications in the design center are designated as SCOL applications. The Staff Statement in Support of the Uncontested Hearing for Issuance of Combined Licenses for Vogtle Electric Generating Plant (VEGP), Units 3 and 4, includes a discussion on how VEGP was designated as the RCOL application for the AP1000 design center (ADAMS Accession No. ML110600264). The COL application for VCSNS Units 2 and 3 has been designated as an SCOL application in the AP1000 design center.

In this paper, the staff does not discuss issues addressed under the Vogtle COL review that the staff recognized as “standard” matters under the design centered review approach and that are also applicable to the VCSNS COL application. The FSER for the VCSNS COLs identifies matters from the Vogtle COL application determined to be “standard” and applicable to the VCSNS COLs and discusses them in Section 1.2.3.

The staff has completed preparation of a draft COL for VCSNS Unit 2. The draft license is available to the Commission for information (ADAMS Accession No. ML111920134). The COL for Unit 3 will be similar to the COL for Unit 2, with the only exception being that the Unit 3 COL includes a license condition for geologic mapping of the excavation. This license condition was unnecessary for Unit 2 because the applicant already performed this activity for Unit 2.

Advisory Committee on Reactor Safeguards

To support the Advisory Committee on Reactor Safeguards (ACRS) in providing an independent review and report to the Commission regarding the VCSNS COL application, the staff presented the results of its safety review to the ACRS AP1000 subcommittee at two meetings on July 21-22, 2010, and January 24, 2011. The staff presented the results of its VCSNS COL safety review to the ACRS full committee on February 10, 2011. The ACRS issued its final recommendation on February 17, 2011 (ADAMS Accession No. ML110170006). The ACRS conclusions and recommendations and the staff response are discussed further in later sections of this paper.

II. Outreach

Public Meetings

Prior to NRC docketing the application, the staff held a public outreach meeting in Winnsboro, SC, on August 28, 2007, to explain the COL review process and take questions from the public. The staff held two public scoping meetings on January 27, 2009, in Winnsboro, SC and on January 28, 2009, in South Blair, SC. Additionally, the staff held an outreach meeting on March 28, 2009, in Jenkinsville, SC. After issuing the draft environmental impact statement (DEIS) on April 16, 2010, the staff held a public meeting on May 27, 2010, to present an overview of the DEIS and to accept comments on the document. While reviewing the application, the staff conducted a total of eight public meetings and public conference calls.

Federal Register Notices

The NRC published *Federal Register* (FR) notices as required for key milestones of the licensing process.

- After receiving the application on March 27, 2008, the agency published notice of such receipt in the FR on July 9, 2008 (73 FR 39339).

- The NRC staff docketed the application on May 30, 2008, and published a notice of docketing on August 6, 2008 (73 FR 45792).

- On October 10, 2008, the NRC published a notice of hearing and opportunity to petition for leave to intervene (73 FR 60362).

- On January 5, 2009, the NRC published a notice of intent to prepare an EIS and to conduct scoping (74 FR 323).

- On April 23, 2010, the NRC published a notice of the availability of the DEIS for public comment and a public meeting to present an overview of the DEIS and to accept public comments on the document (75 FR 21368).

- On March 2, 9, 16, and 23, 2011, the NRC published notices of the application in accordance with Section 182(c) of the Atomic Energy Act of 1954, as amended, and 10 CFR 50.43(a)(3) (76 FR 11522, 12998, 14436, and 16456).

- On April 22, 2011, the NRC published a notice of availability of the FEIS (76 FR 22734).

Consultations

In accordance with Section 657 of the Energy Policy Act of 2005, the NRC consulted with the U.S. Department of Homeland Security. As part of its environmental review in accordance with National Environmental Policy Act (NEPA) and other applicable statutes, including the Endangered Species Act and the National Historic Preservation Act, the staff consulted with and obtained input from appropriate Federal, State, local, and Tribal organizations.

Adjudicatory Actions

On October 10, 2008, the NRC published in the *Federal Register* (73 FR 60632) a notice of hearing and opportunity to petition for leave to intervene. In response to this notice, the NRC received two petitions to intervene. On February 18, 2009 (LBP-09-02; ADAMS Accession No. ML090490756) and March 17, 2010 (LBP-10-06; ADAMS Accession No. ML100760500), the Atomic Safety and Licensing Board (ASLB) issued memoranda and orders denying the admission of all proposed contentions. On March 26, 2010, the Sierra Club and Friends of the Earth appealed the March 17, 2010, ASLB's memorandum and order. On August 27, 2010, the Commission affirmed the ASLB's decision and terminated the contested portion of the proceeding (CLI-10-21; ADAMS Accession No. ML102390081).

From April 14-18, 2011, a number of organizations jointly filed an emergency petition to suspend all pending reactor licensing decisions and related rulemaking decisions until the NRC investigated lessons learned from the Fukushima Dai-ichi nuclear power station accident (ADAMS Accession No. ML111091154). This petition was filed on numerous adjudicatory dockets, including in the VCSNS COL proceeding. The Commission has not yet ruled on the petition.

III. Review Process/Methodology

The key processes and methodologies used to ensure quality, consistency, and completeness in preparation of the FSER and FEIS are described below.

NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition." The principal purpose of the standard review plan (SRP) is to ensure the quality and uniformity of staff safety reviews. The staff uses the SRP as a routine tool for evaluating the safety of nuclear power plant designs. The SRP, comprehensively updated in 2007, is the most definitive basis available for evaluating whether an application meets the set of regulations established by the Commission. Each section of the SRP outlines the specific regulations that will be met when the review is complete, including the general design criteria from Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities." Section 1.9.2 of the applicant's FSAR identifies the departures from the SRP associated with the VCSNS COL application. This listing does not include SRP departures associated with the AP1000 DCD that have been incorporated by reference.

NUREG-1555, "Standard Review Plans for Environmental Reviews for Nuclear Power Plants: Environmental Standard Review Plan." This guidance, including a 2007 update that addresses environmental reviews for COLs, includes environmental SRPs that NRC staff uses when conducting environmental reviews of applications related to nuclear power plants, in accordance with the National Environmental Policy Act (NEPA) and the NRC's NEPA implementing regulations in 10 CFR Part 51, "Environmental protection regulations for domestic licensing and related regulatory functions."

Regulatory Guides. Regulatory guides (RGs) provide guidance to licensees and applicants on implementing specific parts of the NRC's regulations, techniques used by the NRC staff in evaluating specific problems or postulated accidents, and data needed by the staff in its review of applications for permits or licenses. Appendix 1AA to the applicant's FSAR identifies the RGs associated with the VCSNS COL application and whether the applicant conformed with or departed from each RG. This listing does not include departures from regulatory guidance associated with the AP1000 DCD that have been incorporated by reference.

Interim Staff Guidance. For areas where the existing SRP does not contain review guidance, the staff prepared and used interim staff guidance (ISG) documents. The ISGs clarify technical review approaches and address questions related to processes and licensing. The staff used the following ISGs in the VCSNS review, and it is indicated below to which FSER section(s) each ISG primarily relates:

- DC/COL-ISG-1, "Interim Staff Guidance On Seismic Issues of High Frequency Ground Motion," dated May 19, 2008; see FSER Section 19.55

- DC/COL-ISG-3, "PRA Information to Support Design Certification and Combined License Applications," dated June 11, 2008; see FSER Sections 19.55, 19.58, and 19.59

- DC/COL-ISG-7, "Assessment of Normal and Extreme Winter Precipitation Loads on the Roofs of Seismic Category I Structures," dated June 23, 2009; see FSER Section 2.3.1

- DC/COL-ISG-8, "Necessary Content of Plant-Specific Technical Specifications," dated December 9, 2008; see FSER Section 16.1

- DC/COL-ISG-11, "Finalizing Licensing-Basis Information," dated November 2, 2009; see FSER Section 1.1

- DC/COL-ISG-15, "Post-Combined License Commitments," dated October 7, 2009; see FSER Sections 1.4.4 and 1.5.5

- DC/COL-ISG-16, "Compliance with 10 CFR 50.54(hh)(2) and 10 CFR 52.80(d)," (non-public) dated June 9, 2010; see FSER Section 19A

- DC/COL-ISG-20, "Seismic Margin Analysis for New Reactors Based on Probabilistic Risk Assessment," dated March 15, 2010; see FSER Sections 19.55 and 19.58

- DC/COL-ISG-22, "Interim Staff Guidance on Impact of Construction of New Nuclear Power Plants on Operating Units at Multi-Unit Sites," dated February 7, 2011; see FSER Section 1.4.4

Office Instructions. In its review, the staff followed administrative guidance contained in a number of Office Instructions. These internal documents address a range of procedure matters, including the staff's process for issuing requests for additional information, performance of audits, qualification and training of technical staff and managers, ensuring consistency between staff offices, and interactions with applicants, interveners, and public stakeholders.

Design-Centered Review Approach, SECY-06-0019, "Semiannual Update on the Status of New Reactor Licensing Activities and Future Planning for New Reactors," dated January 31, 2006 (ADAMS Accession No. ML053530315). Under the design-centered review approach, NRO has used, to the extent practicable, a "one issue-one review-one position" strategy in order to optimize the review effort and resources needed to perform these reviews. Within the AP1000 design center, the staff has conducted one technical review for each reactor design issue and is using this one decision to support the review of multiple COL applications.

"Addressing Construction and Preconstruction Activities, Greenhouse Gas Issues, General Conformity Determinations, Environmental Justice, Need for Power, Cumulative Impact Analysis, and Cultural/Historical Resources Analysis Issues in Environmental Impact Statements," dated December 10, 2010 (ADAMS Accession No. ML100760503). This guidance assisted the staff in addressing certain aspects of the environmental reviews for ESP and COL applications that had evolved since the 2007 update to NUREG-1555 or were identified during the first several reviews of ESP and COL applications.

IV. ACRS Report

The ACRS review of the VCSNS COL application culminated with a letter to the Commission dated February 17, 2011, concluding that there is reasonable assurance that VCSNS Units 2 and 3 can be built and operated without undue risk to public health and safety and that the Commission should approve the SCE&G COL application for VCSNS Units 2 and 3 following its final revision (ADAMS Accession No. ML110450490). The ACRS letter also identified specific recommendations. On March 26, 2011, the staff issued a response to the ACRS letter, which described specific changes to the application and the FSER, other actions taken by the staff and applicant, and an explanation of the staff's actions. (ADAMS Accession No. ML110560591). The ACRS conclusions and recommendations and the staff response are summarized below.

Applicability of ACRS Recommendations Regarding Vogtle COLs to VCSNS COLs

The ACRS noted that recommendations in its January 24, 2011, letter concerning the VEGP Unit 3 and 4 RCOL application are also applicable to the VCSNS Units 2 and 3 SCOL application. The recommendations are associated with the following topics:

- containment interior debris limitations
- inservice inspection/inservice testing program requirements for squib valves
- power measurement uncertainty, and
- future changes to the AP1000 DCD and VEGP FSAR

In its response, the staff stated that it intends to resolve these issues for VCSNS Units 2 and 3 in the same manner it committed to resolving them for the VEGP Units 3 and 4 COL application.

Use of HABIT Code for Toxic Gas

The ACRS noted the staff's use of the HABIT code to perform confirmatory toxic gas hazard analysis. The applicant performed toxic gas analyses with a different code and concluded that the VCSNS site is adequately protected. RG 1.78, "Evaluating the Habitability of a Nuclear Power Plant Control Room During a Postulated Hazardous Chemical Release," Revision 1, dated December 2001, specifies HABIT as an acceptable code for toxic gas analysis. In accordance with the regulatory guide, the staff used the HABIT code to perform independent confirmatory calculations of the effects of an accidental release of toxic gas. The staff confirmatory analyses also concluded that the VCSNS site is adequately protected from accidental toxic gas releases. After its review of offsite hazards for VCSNS, Units 2 and 3, the ACRS observed in its February 17, 2011, letter that HABIT only models neutral density gas dispersion and does not consider heavy gas effects; and recommended that the staff limit the use of the current version of the HABIT code to neutral density gas dispersion modeling. While noting its concern regarding HABIT, the February 17, 2011, ACRS letter also states that there is reasonable assurance that VCSNS Units 2 and 3 can be built and operated without undue risk to the health and safety of the public, and the staff agrees with that conclusion. Based on the ACRS recommendation, the staff is taking steps to improve HABIT and RG 1.78. The staff continues to find that, based on the applicant's analysis and the staff confirmatory analysis, toxic gas is adequately addressed for the VCSNS application.

V. Task Force Evaluation of Fukushima Dai-ichi Nuclear Power Plant Event

The Commission has options associated with a decision to proceed with new reactor licensing in light of the recommendations from the Fukushima Task Force report (ADAMS Accession No. ML111861807). The Fukushima Task Force report contains three specific recommendations for near-term COL applications: 1) confirm station blackout and spent fuel pool capabilities associated with the AP1000 design, 2) enhance on-site emergency response capability through the integration of emergency operating procedures, severe accident management guidelines, and extensive damage mitigation guidelines, and 3) enhance emergency planning to address prolonged station blackout and multi-unit accidents. Prior to issuance of the COLs, the Commission could choose to adopt some or all of these recommendations and implement them in the COLs through license conditions. Alternatively, the Commission could issue the COLs and later modify, add, or delete any terms or conditions of the COLs to reflect any new Commission requirements in accordance with the regulatory provisions found in 10 CFR 52.83, 52.98, and 50.109, depending on whether the conditions address matters within the scope of the referenced certified design. Under this approach, the criteria for implementation of any Commission decisions on the Task Force recommendations generally would be comparable for both the near-term COLs and for operating reactors.

DISCUSSION:

I. Excluded Matters

This information paper does not discuss matters that were previously addressed and resolved in the context of other reviews undertaken as part of the 10 CFR Part 52 process. Such excluded matters include issues addressed under the AP1000 design certification amendment review.

Also excluded from consideration from the uncontested hearing is an emergency petition to suspend all pending reactor licensing decisions and related rulemaking decisions until NRC investigates lessons learned from the Fukushima Dai-ichi nuclear power station accident. A number of organizations filed this petition jointly on numerous adjudicatory dockets from April 14-18, 2011, including in the VCSNS COL proceeding. More recently, on August 10, 2011, a subset of those petitioners filed “Supplemental Comments” on the VCSNS docket in connection with that petition. The Commission has not yet ruled on the petition.

II. Exemptions and Departures

Exemptions from NRC Regulations

The staff evaluated and found acceptable the following four exemptions from NRC regulations associated with the review of the application:

Description	Regulation	Location of Evaluation in FSER
COL application organization and numbering	10 CFR Part 52, Appendix D, Section IV.A.2.a	Sections 1.5.4 and 2.0.4
Exemption criteria	10 CFR 52.93(a)(1)	Sections 1.5.4 and 2.0.4
Special nuclear material control and accounting (MC&A) program description	10 CFR 70.22(b), 70.32(c), 74.31, 74.41, 74.51	Section 1.5.4
Maximum safety wet bulb (noncoincident) air temperature	10 CFR Part 52, Appendix D, Section IV.A.2.d	Section 2.0.4

The exemption request for COL organization and numbering is substantively similar to an exemption request by the Vogtle RCOL applicant. For this request, the applicable regulation requires that a COL application referencing a certified design include a plant-specific DCD using the same organization and numbering as the generic DCD. In support of its exemption request, the applicant asserted that complying with this requirement would be less efficient and indicated that a modified organization is needed to address the topics identified in RG 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)," and NUREG-0800 and to include plant-specific discussions.

Before considering whether this numbering exemption should be granted, the staff needed to address a threshold question regarding the review standard applicable to the request. Under 10 CFR 52.93(a)(1), if a request for an exemption is from any part of a design certification rule, then the Commission may grant the exemption if the exemption complies with the appropriate change provision in the referenced design certification rule or, if there is no applicable change provision, if the exemption complies with 10 CFR 52.63. Here, there is no applicable change provision in the referenced design certification rule, so according to Section 52.93(a)(1), the exemption must meet 10 CFR 52.63. However, the pertinent standards of 10 CFR 52.63, by their terms, also do not apply to this change. As such, the numbering exemption cannot comply with the plain language of Section 52.93(a)(1); accordingly, this exemption should have fallen under 10 CFR 52.93(a)(2), and, thus, be analyzed under the requirements in 10 CFR 52.7. Because the plant-specific DCD's organization and numbering is not "certification information" but solely administrative, the language of Section 52.93(a)(1) does not appear to serve the underlying purpose of the regulation as described by the Commission in the Statements of

Consideration to the rule, in which the Commission stated that only changes to certification information must meet 10 CFR 52.63 (see 72 FR 49444). Therefore, pursuant to 10 CFR 52.7, for the purpose of determining the standards applicable to the numbering exemption, the staff finds an exemption to Section 52.93(a)(1) to be acceptable.

The MC&A program exemption request is similar to an exemption request by the Vogtle RCOL applicant. The applicable regulations in 10 CFR Part 70, "Domestic licensing of special nuclear material," and 10 CFR Part 74, "Material control and accounting of special nuclear material," require that a special nuclear material license application describe an MC&A program and that the applicant establish, implement, maintain, and follow an MC&A program. The applicant noted that the cited regulations include exceptions from these requirements for nuclear reactors licensed under 10 CFR Part 50. The applicant stated that when reviewing the MC&A program there is no reason to treat reactors licensed under 10 CFR Part 52 differently than those licensed under 10 CFR Part 50.

For the exemption request for maximum safety wet bulb (noncoincident) air temperature, 10 CFR Part 52, Appendix D, Section IV.A.2.d requires that a COL application referencing a certified design include information demonstrating compliance with the site parameters and interface requirements. The applicant included an analysis to show that the higher maximum safety wet bulb (noncoincident) air temperature will not adversely affect any safety-related structures, systems, or components. This exemption request is discussed in more detail later in this paper.

Part 7, Section B, of the COL application presents a full discussion of the exemption requests.

For these four exemptions, the staff evaluation in each case determined that the exemption is authorized by law, will not present an undue risk to public health or safety, and is consistent with the common defense and security; and that special circumstances are present (10 CFR 50.12(a)(2)(ii)). For all four exemptions, the special circumstance determined by the staff is that application of the regulation is not necessary to achieve the underlying purpose of the rule. In addition, for the wet bulb temperature exemption, the staff found that the exemption will not result in a decrease in the level of safety otherwise provided by the design, and the special circumstances outweigh any decrease in the safety that may result from the reduction in standardization caused by the exemption. The staff evaluation of the exemptions appears in the FSER sections listed in the above table.

Departures from AP1000 DCD Revision 19

The staff evaluated and found acceptable the applicant's proposed departures from information in the AP1000 DCD Revision 19, presented in the table below. Part 7, Section A, of the COL application describes and justifies the departures and evaluates each departure against the criteria in Section VIII.B.5 of Appendix D to 10 CFR Part 52, to determine whether the applicant could implement the departure without NRC approval.

Description	Location of Evaluation in FSER
STD DEP 1.1-1. Organization and numbering for FSAR sections	Section 1.5.4
VCS DEP 2.0-1. Organization and numbering for FSAR Chapter 2	Section 2.0
VCS DEP 2.0-2. Maximum safety wet bulb (noncoincident) air temperature	Sections 2.0, 2.3.1, 5.4, 6.2, 6.4, 9.1.3, 9.2.2, and 9.2.7
STD DEP 8.3-1. Class 1E voltage regulating transformer current limiting features	Section 8.3.2
VCS DEP 18.8-1. Emergency response facility locations	Section 13.3

Part 7 of the COL application provides additional information on each departure request, including the affected FSAR sections and a summary, justification, and evaluation of each departure.

The two departures designated above as "STD," are standard for COL applicants adopting the AP1000 design. The remaining three departures are specific to the VCSNS application. Each departure and the staff basis for accepting it is summarized below.

STD DEP 1.1-1 – This is one of two administrative departures related to the exemption on COL organization and numbering, discussed above. The applicant requested this departure to include content consistent with RG 1.206 and NUREG-0800. The renumbered sections associated with this Tier 2 departure appear in FSAR Chapters 9, 13, and 17.

VCS DEP 2.0-1 – This is the second of two administrative departures related to the exemption on COL organization and numbering, discussed above. It is similar to STD DEP 1.1-1 but affects only Chapter 2 of the FSAR. The applicant requested this departure to support NRC review and the applicant's presentation of information consistent with RG 1.206.

VCS DEP 2.0-2 – This departure is a change to the site parameter value for the maximum safety wet bulb (noncoincident) air temperature established in DCD Tier 1 Table 5.0-1, and it corresponds to the related exemption request discussed above. The departure increases the DCD wet bulb value of 86.1 degrees Fahrenheit (F) by 1.2 degrees F to 87.3 degrees F, which is the maximum wet-bulb temperature expected to occur once every 100 years. The results of the analysis submitted by the applicant show that the higher temperature will not adversely affect safety-related or defense-in-depth structures, systems, or components (SSCs), their

functional capabilities, or analysis methods as presented in the DCD in Tier 2 information. The staff found that the potentially affected SSCs, including the following, would perform acceptably at the increased temperature:

- passive containment cooling system
- control room habitability
- normal residual heat removal system (RNS)
- component cooling water system (CCS)
- spent fuel pool (SFP) cooling system
- Service water system (SWS)
- Central chilled water system

Section III below further discusses this departure.

STD DEP 8.3-1 – This standard departure involves the applicant's use of breakers and fuses to provide the isolation function instead of current limiting devices in Class 1E voltage regulating transformers. It is the same as the departure that the staff previously evaluated in the Vogtle RCOL application and discussed in the "Staff Statement in Support of the Uncontested Hearing for Issuance of Combined Licenses and a Limited Work Authorization for the Vogtle Electric Generating Plant, Units 3 and 4."

VCS DEP 18.8-1 – Under this departure, the applicant is changing the locations of the technical support center (TSC) and operations support center (OSC) from the locations designated in the DCD. The DCD specifies the location of the TSC in the control support area (CSA) and the location of the OSC in the annex building. In the COL application, the applicant relocated the TSC to a central location that can serve VCSNS Units 1, 2, and 3, and moved the OSC to the CSA space vacated by the move of the TSC. The staff found that the changed locations met regulatory requirements and are, therefore, acceptable.

III. Nonroutine Unique Facility Features or Novel Issues

Safety Matters

a. Emergency Planning Zone for VCSNS Units 2 and 3

The plume exposure pathway emergency planning zone (EPZ) established to facilitate a preplanned strategy for protective actions during an emergency has a radius of about 10 miles from the reactor site. The exact size and shape of an EPZ is a result of detailed planning which includes consideration of the specific conditions at the site, unique geographical features of the area, and demographic information.

The VCSNS COL application stated that the existing EPZ for Unit 1 would also be the EPZ for Units 2 and 3. The existing EPZ has a boundary that is approximately 10 miles in radius from the proposed reactors but, because of the road network and other factors, some portions of the EPZ are greater than 10 miles from the proposed reactors and others are less. The requirements in 10 CFR 50.47(b) and Appendix E, "Emergency Planning and Preparedness for

Production and Utilization Facilities," to 10 CFR Part 50 state that the EPZ should generally be about 10 miles (16 kilometers) in radius. However, the regulations do not require an exact 10-mile radius; instead, they state that the actual EPZ shall be determined in relation to local emergency response needs and capabilities as they are affected by local conditions. In its review of the VCSNS COL application, the Federal Emergency Management Agency (FEMA) raised a concern over the applicant's statement that the center of the proposed Units 2 and 3 is approximately 1 mile southwest of the center of the existing Unit 1. The current EPZ is based on a 10-mile radius from the center of Unit 1 and then adjusted based on demography, topography, land characteristics, access routes, and jurisdictional boundaries. When considering all of these attributes, the established EPZ did not include a 10-mile radius in all cases. FEMA issued a request for additional information (RAI) to address whether the existing EPZ should be expanded approximately 1 mile to the southwest to account for the new units or whether the current EPZ boundary was adequate for both the new units and the existing units.

The applicant coordinated the RAI response with the State of South Carolina Emergency Management Agency and the local risk county emergency management agencies of Lexington, Newberry, Richland, and Fairfield counties. The additional area identified in the RAI was determined to be largely a managed area of planted trees supporting the extensive logging industry in this area. The area's population is small and the secondary road infrastructure has roads that run away from the EPZ toward a recreational lake area approximately 20 to 25 miles from VCSNS Unit 1.

The applicant met with the State emergency management staff and the elected officials from the four risk counties of Lexington, Newberry, Richland, and Fairfield. The applicant obtained resolutions from each county commission indicating that the existing EPZ boundary is appropriate for the emergency planning needs of the jurisdictions and is adequate to protect public health and safety for the proposed new reactors.

As a result of this coordinated effort, FEMA determined that the response to the RAI was acceptable and consistent with the guidance in NUREG-0654/FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," issued November 1980. In turn, FEMA provided the NRC with its finding of reasonable assurance for planning in its Interim Findings Report, which is addressed in FSER Section 13.3. The NRC staff visited the VCSNS site three times and traveled the EPZ and the evacuation routes to evaluate the area identified in the FEMA RAI. The NRC staff also met with the State and local emergency management staff to discuss the issues in the FEMA RAI. In accordance with 10 CFR 50.47(b) and Appendix E of 10 CFR Part 50, and after reviewing FEMA's reasonable assurance finding, the staff found the EPZ acceptable based on clear demarcations considering demography, topography, land characteristics, access routes, and jurisdictional boundaries.

b. <u>Maximum Safety Wet Bulb (Noncoincident) Temperature</u>

For the VCSNS site, the non-safety related cooling towers primarily use latent heat of vaporization (evaporation) to cool process water. Cooling tower performances are based on water flow rate, water inlet temperature, water outlet temperature, and ambient wet bulb

temperature. Cooling tower performance is also dependent on adequate fan speed for the mechanical draft service water system cooling towers and water makeup flow. The measured wet bulb temperature is a function of relative humidity and ambient air temperature. Wet bulb temperature essentially measures how much water vapor the atmosphere can hold at current weather conditions. A lower wet bulb temperature means the air is drier and can hold more water vapor than it can at a higher wet bulb temperature, which affects the efficiency of the cooling tower as a medium for cooling.

The applicant proposed a departure from the maximum safety wet bulb (noncoincident) air temperature in both Tier 1 and Tier 2 material of the AP1000 DCD. In addition, Part 7 of the VCSNS COL application requests an exemption from this site parameter value. The site parameter value provided in AP1000 DCD Tier 1, Table 5.0-1 for the air temperature maximum wet bulb (noncoincident) is 86.1 degrees F. However, AP1000 DCD, Section 2.3.6.1 states that a COL applicant shall address the site-specific regional climatological information. The applicant presented information documenting the regional meteorological characteristics, including the maximum wet-bulb temperature expected to occur once every 100 years (see FSAR Subsection 2.3.1.5). The VCSNS site characteristic for the maximum safety wet bulb (noncoincident) air temperature for Units 2 and 3 is 87.3 degrees F, which exceeds the DCD site parameter by 1.2 degrees F. The applicant analyzed the maximum safety wet bulb (noncoincident) air temperature of 87.3 degrees F for Units 2 and 3. The staff reviewed the analyses and, although the increase in the temperature is small, the change impacted the systems listed below. As documented in the FSER, the staff concluded the following regarding the impact of the higher temperature on the following systems:

- Passive containment cooling system - There is no impact on the performance of the safety system because the peak containment pressure remains bounded by the current AP1000 analysis. The staff's evaluation appears in Section 6.2 of the FSER.

- Control room habitability – Based on the system design margin of the nonradioactive ventilation system, the main control room temperature and humidity at the higher VCSNS maximum safety wet bulb temperature will remain at or below the desired design points during normal operation. The staff's evaluation appears in Section 6.4 of the FSER.

- Normal residual heat removal system - Section 5.4.7.1 of the AP1000 DCD provides the design bases for the normal residual heat removal system. The staff reviewed the bases for this system that could be affected by the higher wet bulb temperature and determined that the following two bases for this system were maintained:

    - The RNS reduces the temperature of the reactor coolant system from 350 degrees F to 125 degrees F within 96 hours after shutdown and the RNS system maintains the reactor coolant temperature at or below 125 degrees F for the plant shutdown.

    - The RNS system limits the temperature of the water in the in-containment refueling water storage tank to less than boiling temperature during extended

operation of the passive residual heat removal system and keeps it at 120 degrees F or below during normal operation.

The staff's evaluation appears in Section 5.4 of the FSER.

- Component cooling water – The staff found that the CCS water supply temperature to plant components is not more than 100 degrees F assuming a wet bulb temperature of 87.3 degrees F for service water cooling. The staff's evaluation appears in Section 9.2.2 of the FSER.

- Spent fuel pool cooling – The staff found that the SFP maximum temperature will be maintained at less than 120 degrees F during a partial core fuel shuffle refueling with the CCS cooling the SFP. The staff's evaluation appears in Section 9.1.3 of the FSER.

- Service water system – The SWS, which includes mechanical draft cooling towers, cools the CCS. The staff found that the higher wet bulb temperature did not affect the ability of the SWS to perform its function. The staff's evaluation appears in Section 9.2.2 of the FSER and is associated with the SWS's ability to cool the CCS at the higher wet bulb temperature.

- Central chilled water system – The system consists of two closed-loop subsystems—a high cooling-capacity subsystem and a low cooling-capacity subsystem. The high capacity chilled water subsystem is the primary system used to provide chilled water to the majority of plant heating, ventilation, and air conditioning systems and other plant equipment requiring chilled water cooling. The low capacity chilled water subsystem (LCCWS) is dedicated to the nuclear island nonradioactive ventilation system. Only the LCCWS is directly affected by the change in wet bulb temperatures. The staff found that the increased heat load produced by operation at the higher VCSNS maximum safety ambient wet bulb temperature of 87.3 degrees F can be accommodated within the available capacity margin of the air cooled chiller units without impacting the LCCWS or supporting systems' design or plant operation. The staff's evaluation appears in Section 9.2.7 of the FSER.

The results of these evaluations show that the higher maximum safety wet bulb (noncoincident) air temperature will not adversely affect safety-related or defense-in-depth SSCs.

Environmental Matters

c. Environmental Justice

Background

Environmental justice refers to a Federal policy established by Presidential Executive Order 12898, "Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations," dated February 11, 1994 (59 FR 7629), under which each Federal

agency in the executive branch identifies and addresses, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority or low-income populations. The Commission has voluntarily committed to undertake environmental justice reviews as part of the staff's socioeconomics evaluations in preparing environmental impact statements (69 FR 52040). Environmental justice was a concern on this project because the review team (collectively, the NRC staff and the staff of the United States Army Corps of Engineers (USACE)) determined that the high proportion of minority and low-income people living near the VCSNS site created the potential for a disproportionately high and adverse impact that warranted more detailed analysis. In conducting its analysis, the staff provided additional opportunities for public participation in the environmental review process.

Scoping and Outreach

The staff initiated its environmental review process by publishing in the *Federal Register* a notice of intent to prepare an EIS and to conduct scoping (74 FR 323). Two public scoping meetings took place in Winnsboro and Blair, SC, on January 27 and 28, 2009, respectively, to facilitate public participation in the scoping process. During the scoping meetings, the staff identified potential environmental justice issues related to the demographics of the population living near the proposed VCSNS Units 2 and 3. After the scoping meetings were held, the Mayor of Jenkinsville, SC (located approximately 2 miles from the proposed VCSNS Units 2 and 3), requested an extension of the scoping period to ensure that his constituency could provide meaningful comments to the NRC. The staff concluded that the Mayor's reasonable request, coupled with comments provided during the scoping meetings, warranted an extension of the scoping period; consequently, the staff extended the scoping period by 30 days to April 6, 2009 (74 FR 9112).

Following the initial scoping efforts, the staff expanded its outreach to local officials and leaders. Based on feedback from that additional outreach, the staff held an informal public open house in the local community on Saturday, March 28, 2009. For this open house, the staff developed an alternate approach to the traditional open house used by the staff for its scoping process. For example, to facilitate the participation of individuals who would not otherwise offer public statements, the staff offered private transcription so that the public record would include their concerns. In addition, the staff held one-on-one discussions and small group presentations. More staff than is typically involved in public meetings participated in the open house to ensure that knowledgeable persons were available to answer questions on all aspects of the staff's review.

On May 27, 2010, the review team conducted two public meetings to receive comments on the DEIS. The review team expanded the open house period before the transcribed public comment meetings to allow for greater interaction with members of the community. In addition, the review team arranged for private transcription for members of the public who did not want to speak before a larger audience. The staff implemented these additional measures based on the staff's outreach efforts and experience in conducting the March 28, 2009, open house, to allow for maximum public participation and to ensure that local community needs were adequately addressed.

Analysis

The staff reviewed the comments received from the public and from Federal, State, Tribal, regional, and local agencies during the development of the EIS, including the scoping process. The review team interviewed State, local, and county officials, business leaders, and key members of minority communities within the economic impact area to assess the potential for disproportionately high and adverse human health or environmental effects that could be experienced by minority or low-income communities when building and operating the additional units.

Analysis of demographic data indicated that there were low-income, African American, and aggregated minority populations of interest (i.e., the populations exceeded the threshold criteria established for environmental justice analyses) within the 50-mile region. The review team found that several African-American populations of interest were in census block groups clustered near the VCSNS site and further analysis revealed that these block groups contained a high concentration of low-income households that were not evident at the census block group level. These populations exhibited unique characteristics and practices (subsistence fishing, hunting, and gardening) that further identified them as vulnerable to disproportionately high and adverse impacts. Therefore, the review team performed additional analyses before making a final environmental justice determination. For each of the low-income and minority populations identified, the review team had to determine whether or not the populations had one or more unique characteristics that would cause an impact to disproportionately affect them. The review team (1) identified potentially significant pathways for human health and welfare effects; (2) determined the impact of each pathway for the populations; and (3) determined whether or not the characteristics of the pathway or special circumstances of the minority or low-income populations would result in a disproportionately high and adverse impact.

Conclusions

The review team analyzed potential environmental justice impacts during both the building and operation of the facility in the following areas: health impacts; physical and environmental impacts; subsistence and special conditions; and socioeconomic impacts. Based on information provided by SCE&G, information provided in the public scoping process, the review team's interviews with local public officials, and the review team's independent evaluation and confirmatory analyses, the review team found only one pathway, traffic, near the proposed site that could result in disproportionately high and adverse environmental or health impacts to any minority or low-income population in the 50-mile region during the building of the facility.

The review team determined that traffic impacts related to building the additional units would be noticeable in the Jenkinsville area. This area was identified in the review team's site visits and technical analysis as having minority populations of interest and a high proportion of low-income households. The staff determined that, while the peak employment period traffic during the building of the facility would not exceed daily road capacity standards, the peak-hour traffic levels would exceed current State management standards and construction worker traffic would result in (1) a 50-percent increase in average daily traffic along SC-213, and (2) a 125-percent increase in average daily traffic along SC-215. Therefore, the review team concluded that there

could be traffic-related disproportionately high and adverse impacts on minority and low-income populations in the Jenkinsville area. However, the review team found that because the traffic-related impacts would be temporary and of short duration, and because they would be mitigated to some extent by SCE&G commitments, including the development of a traffic management plan, the impacts would be noticeable but not destabilizing. Therefore, the review team concluded that the environmental justice impacts related to traffic during the building of the facility would be MODERATE. The review team concluded that all other environmental justice impacts during the building of the facility would be SMALL.

The review team did not find environmental pathways that would lead to disproportionately high and adverse impacts on minority and low-income populations as a result of plant operations. Therefore, the review team concluded that the environmental justice impacts of operations would be SMALL.

d. First Project Implementing Updated Memorandum of Understanding with the U.S. Army Corps of Engineers

On September 12, 2008, the NRC and the USACE signed an updated Memorandum of Understanding (MOU) regarding the review of nuclear power plant applications (ADAMS Accession No. ML082540354). The MOU establishes a framework that allows for early coordination and participation of both regulatory agencies to ensure the timely review of applications so that each agency's review responsibilities under NEPA and other related statutes can be met in a manner that is effective for the Federal Government. The agreement anticipates that the NRC will usually serve as the lead agency, as it did for the VCSNS review, and that USACE will act as a cooperating agency, as defined in 10 CFR 51.14. The VCSNS environmental review was among the first to implement the updated MOU and is the first new reactor FEIS completed under this MOU to come to a mandatory hearing before the Commission. The MOU helped to avoid duplication of effort and conserved resources in developing an EIS that met both NRC and USACE needs.

Practices for performing environmental reviews differ somewhat between the two agencies. For example, the NRC staff evaluates environmental impacts in its EIS by using the impact category levels of SMALL, MODERATE, or LARGE in accordance with Footnote 3 of 10 CFR Part 51, Appendix B, Table B-1, and alternatives to the proposed action are compared to determine whether there are "environmentally preferable" alternatives and, if so, whether they are "obviously superior." However, for permit decisions under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act, the USACE must determine that the proposed action is the least environmentally damaging practicable alternative and must address the USACE public interest review factors. The USACE's final permit decision will be made in its Record of Decision, and to the extent possible, it will rely on the information in the FEIS.

The USACE staff was integrated into the environmental project team and was involved in public meetings, the consideration of public comments, and the preparation of the DEIS and FEIS. There were differences in the information needs of the NRC and USACE due to differences in the two agencies' regulatory frameworks and differences in the proposed actions for each agency. The proposed actions are: (1) NRC issuance of COLs for two new nuclear power

reactor units and (2) USACE issuance of a Department of the Army Individual Permit pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899. The differing information needs of each agency required close coordination between the NRC and USACE staffs to ensure that certain issues were adequately addressed in the EIS. For example, the building of transmission lines is not part of the NRC's action because NRC regulations specifically exclude such activities from the definition of "construction" (see 10 CFR 51.4); thus, potential impacts from transmission lines are typically considered as part of the staff's cumulative impacts evaluation However, the USACE considers construction of transmission lines to be part of its proposed action if wetlands or waters of the U.S. are affected by the project. Because of the differences in regulatory authority and the different proposed actions of the two agencies, the review team requested more data regarding transmission lines than the staff would ordinarily request for an NRC EIS. For instance, more detailed plans from the applicant regarding transmission line routing and impact assessments for potentially affected species along transmission line rights of ways were needed. As the project progressed, the USACE and the staff worked together to request sufficient information from the applicant to meet the needs of both agencies. The resulting EIS achieved the objectives of the MOU in terms of timeliness and effective use of resources.

IV. Findings

10 CFR 52.97(a)(1)

(i) <u>The applicable standards and requirements of the Act and the Commission's regulations have been met</u>.

The staff reviewed the application and evaluated it against the applicable regulations in 10 CFR Parts 20, 26, 30, 31, 32, 40, 50, 51, 52, 55, 70, 73, 74, 100, and 140. The staff performed this evaluation using applicable portions of the SRP, ISG documents, regulatory guides, bulletins, and generic letters. Based on the staff's review, documented in the FSER and the FEIS, and the conclusions of the ACRS, the staff concludes that, for the purpose of issuing COLs for VCSNS Units 2 and 3, the applicable standards and requirements of the Atomic Energy Act of 1954, as amended, and the Commission's regulations have been met.

(ii) <u>Any required notifications to other agencies or bodies have been duly made</u>.

As required by Section 182(c) of the Atomic Energy Act of 1954, as amended, and 10 CFR 50.43(a), on February 23, 2011, the NRC notified the Public Service Commission of South Carolina of the VCSNS COL application (ADAMS Accession No. ML110490240). In addition, in January 2009, the NRC published notices of the application in the *Winnsboro Herald Independent*, the *Newberry Observer*, the *Union Daily*, the *Blythewood Chronicle*, and *The State*. In accordance with Section 182(c), the staff also published a notice of the application in the *Federal Register* on March 2, 9, 16, and 23, 2011 (76 FR 11522, 12998, 14436, and 16456).

Based on the staff's completion of notifications to regulatory agencies and issuance of the public notices described above, the staff concludes that, for the purpose of issuing COLs for VCSNS Units 2 and 3, all required notifications to other agencies or bodies have been duly made.

(iii) There is reasonable assurance that the facility will be constructed and will operate in conformity with the licenses, the provisions of the Act, and the Commission's regulations.

The staff reviewed information provided by the applicant to ensure that the plants will be constructed and will operate in conformity with the licenses, applicable provisions of the Atomic Energy Act of 1954, as amended, and applicable regulations. This includes the FSAR and other portions of the application, including general and financial information; technical specifications; the emergency plan; requests for departures and exemptions; the quality assurance (QA) plan; and the security plan.

In areas where the staff found that the information submitted initially was incomplete or insufficient to allow the staff to reach a reasonable assurance conclusion, the staff issued RAIs to the applicant to obtain sufficient information. The staff reviewed applicant responses to ensure that the additional information provided was sufficient to support the staff conclusion. Where necessary, the applicant provided multiple supplemental responses. As necessary, the staff also conducted audits of the applicant's records and calculations and performed its own confirmatory calculations to confirm applicant statements.

In some cases, the staff's reasonable assurance finding required the imposition of license conditions or inspections, tests, analyses, and acceptance criteria (ITAAC) as part of the licenses. The draft COL lists the license conditions and ITAAC. The basis for each license condition or ITAAC appears in the technical evaluations in the VCSNS COL FSER and the AP1000 DCD FSER referenced by the VCSNS COL application.

On the basis of the staff's review of the application discussed in this information paper and documented in the FSER and FEIS, the staff concludes that, for the purpose of issuing COLs for VCSNS Units 2 and 3, there is reasonable assurance that the facilities will be constructed and will operate in conformance with the licenses, the provisions of the Atomic Energy Act of 1954, as amended, and the Commission's regulations.

(iv) The applicant is technically and financially qualified to engage in the activities authorized.

The staff reviewed information provided by the applicant regarding technical and financial qualifications.

a. Technical Qualification. The staff reviewed information provided by the applicant regarding technical qualifications. The review included an evaluation of the operating experience, organizational structure, and QA program of SCE&G. The

review included the fact that SCE&G operates VCSNS Unit 1, which is a 1,000-megawatt electric, pressurized water reactor plant located approximately 30 miles northwest of Columbia in Jenkinsville, SC. SCE&G holds a 10 CFR Part 50 license for VCSNS Unit 1 and has demonstrated its ability to build and operate a nuclear power reactor. SCE&G has demonstrated the ability to choose and manage the oversight of nuclear steam supply system vendors, architect-engineers, and constructors of nuclear-related work. The staff's review of the applicant's organizational structure concluded that the management, technical support, and operating organizations are acceptable. The staff reviewed the QA program and found it acceptable. This QA program includes requirements that will be implemented by SCE&G's engineering, procurement and construction contractor, Westinghouse and Shaw.

The staff's evaluation of this information appears in Sections 1.4 and 13.1 and Chapter 17 of the FSER. Based on the staff's evaluation of SCE&G's experience with building and operating a nuclear power plant, its operating organization, and its QA program, the staff finds that SCE&G is technically qualified to hold a 10 CFR Part 52 license in accordance with 10 CFR 52.79(a)(1)(iv).

b. Financial Qualification. The staff reviewed information provided by the applicant about financial qualifications. The review included an evaluation of the financial qualifications, decommissioning funding assurance, foreign ownership, and nuclear insurance and indemnity. The staff evaluated information pertaining to the total cost of VCSNS Units 2 and 3, consisting of engineering, procurement, construction costs, owners' costs, financing costs, inflation and information pertaining to funding sources for each of the owners. Applicable regulations and guidance considered by the staff included 10 CFR Part 140, 10 CFR 52.97(a)(1)(iv),10 CFR 50.33,10 CFR Part 50, Appendix C, Section I.A.2, and NUREG-1577.

The staff's evaluation of this information appears in Chapter 1 of the FSER. Based on the financial information provided by SCE&G, the NRC staff concludes that the owners of VCSNS Units 2 and 3, comprising SCE&G and Santee Cooper, have demonstrated that they possess or have access to the financial resources necessary to meet estimated operation, construction costs and related fuel cycle costs. Therefore, the NRC staff concludes that SCE&G and Santee Cooper, as joint owners of VCSNS Units 2 and 3, are financially qualified to construct and operate VCSNS Units 2 and 3 and to engage in the activities authorized by the licenses.

(v) Issuance of the licenses will not be inimical to the common defense and security or to the health and safety of the public.

The staff reviewed the COL application to assure that issuance of the license will not be inimical to the common defense and security or to public health and safety. Specifically, the staff evaluated the applicant's analysis and conclusions about site-specific conditions, including the geography and demography of the site; nearby industrial, transportation, and military facilities; site meteorology; site hydrology; and site geology,

seismology, and geotechnical engineering to ensure that issuance of the licenses will not be inimical to public health and safety. The review also evaluated the design of structures, components, equipment, and systems to ensure safe operation, performance, and shutdown when subjected to extreme weather, floods, seismic events, missiles (including aircraft impacts), chemical and radiological releases, and loss of offsite power to the extent not already resolved by the incorporation of the AP1000 design.

The review confirmed that radiological releases and human doses during both normal operation and accident scenarios will remain within regulatory limits, which supports the staff's conclusion that issuance of the licenses will not be inimical to public health and safety. The review determined that the physical security to be implemented at the site is adequate to protect the facility, which supports the staff's conclusion that issuance of the licenses will not be inimical to the common defense and security.

The review also determined that operational programs identified by the applicant are sufficiently described to assure the staff of compliance with regulations. Where the staff needed to confirm operational program implementation to reach a reasonable assurance finding but the details of program implementation were not governed by specific regulatory requirements, the draft license contains license conditions to ensure that plant operation will not be inimical to the common defense and security or to public health and safety. The staff evaluation addressed the operational programs identified in staff requirements memorandum SECY-05-0197, dated February 22, 2006, as well as three additional operational programs, including a cyber security program, an MC&A program for special nuclear material, and a special nuclear material physical security program. The staff's review of the applicant's emergency planning information concluded that the emergency plan is acceptable and supports the staff's conclusion that issuance of the licenses will not be inimical to public health and safety.

On the basis of the staff's review of the application, as discussed in this information paper and the referenced documents, the staff concludes that issuance of the COLs for VCSNS Units 2 and 3 will not be inimical to the common defense and security or to public health and safety.

(vi) <u>The findings required by Subpart A of Part 51 of this chapter have been made</u>.

As discussed below, the staff concludes that, for the purpose of issuing COLs for VCSNS Units 2 and 3, the environmental review has been adequate to support the findings set forth in 10 CFR 51.107(a).

10 CFR 52.97(a)(2):

The staff concludes that there are no acceptance criteria from ITAAC in the referenced standard design certification that the applicant has asserted are met. Therefore, no Commission finding under this section is required for the purpose of issuing COLs for VCSNS Units 2 and 3.

10 CFR 51.107(a)

i. Determine whether the requirements of Section 102(2) (A), (C), and (E) of NEPA and the regulations in this subpart have been met.

The staff reviewed the application and evaluated it against the applicable regulations in 10 CFR Parts 50, 51, 52, and 100. The staff performed this evaluation using applicable portions of the environmental SRP (NUREG-1555), issued in 2000 and updated in 2007, and ISG documents, regulatory guides, and generic letters. The staff addressed supplemental guidance providing additional information on contemporary and evolving issues in a memorandum dated December 10, 2010 (ADAMS Accession No. ML100760503).

In accordance with NEPA Section 102(2)(A) (42 U.S.C. § 4332(2)(A)), the staff prepared the FEIS (NUREG-1939) based on its independent assessment of the information provided by the applicant and information developed independently by the staff, including through consultation with other agencies. The staff's technical analysis used a systematic, interdisciplinary approach to integrate information from many fields, including the natural and social sciences as well as the environmental design arts. Consequently, the staff concludes that its review comports with the NRC's requirements in Appendix A, "Format for Presentation of Material in Environmental Impact Statements," to 10 CFR Part 51. The staff concludes that environmental findings in the FEIS constitute the "hard look" required by NEPA and have reasonable support in logic and fact.

In accordance with NEPA Section 102(2)(C)(i–v) (42 U.S.C. § 4332(2)(C)(i–v)), the FEIS for the VCSNS COL addresses (1) the environmental impact of the proposed action, (2) any unavoidable adverse environmental effects, (3) alternatives to the proposed action, (4) the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity, and (5) any irreversible and irretrievable commitments of resources that would be involved in the proposed action should it be implemented.

As supported by correspondence presented in Appendix F to the FEIS, the staff concludes that it fulfilled the requirement of NEPA Section 102(2)(C) by consulting with and obtaining comments from other Federal agencies with jurisdiction by law or special expertise (see 42 U.S.C. § 4332(2)(C)). The USACE fully participated with the NRC in preparing this EIS as a cooperating agency and participated collaboratively on the review team under the Commission's MOU with the USACE. The staff did not identify any other Federal agencies as cooperating agencies in preparation of the FEIS. The staff concludes that the FEIS demonstrates that the staff adequately considered alternatives to the proposed action to the extent that it involves unresolved conflicts concerning alternative uses of available resources, consistent with the requirements of NEPA Section 102(2)(E) (42 U.S.C. § 4332(2)(E)). The alternatives considered in the FEIS include the no-action alternative, site alternatives, energy alternatives, system design alternatives, and mitigation alternatives for severe accidents.

ii. Independently consider the final balance among conflicting factors contained in the record of the proceeding with a view to determining the appropriate action to be taken.

Section 10.6.3 of the FEIS provides the staff summary of the cost-benefit assessment. The staff concluded that "the construction and operation of the proposed Units 2 and 3, with mitigation measures identified by the staff, would have accrued benefits that most likely would outweigh the economic, environmental, and social costs. For the NRC-proposed action (NRC-authorized construction and operation) the accrued benefits would also outweigh the costs of construction and operation of Units 2 and 3."

iii. Determine, after weighing the environmental, economic, technical, and other benefits against environmental and other costs, and considering reasonable alternatives, whether the COL should be issued, denied, or appropriately conditioned to protect environmental values.

As noted above, in its FEIS, the staff considered the cost-benefit analysis, including the need for power, as well as reasonable alternatives. Based on that analysis, the staff recommends that the COLs be issued. The staff based its recommendation on (1) the VCSNS COL application environmental report, (2) consultation with Federal, State, Tribal and local agencies (3) the staff's own independent review, (4) the NRC staff's consideration of comments related to the environmental review that were received during the public scoping process, (5) the NRC staff's consideration of comments on the DEIS, and (6) the assessments summarized in the EIS, including the potential mitigation measures identified in the environmental report and in the EIS.

iv. Determine, in an uncontested proceeding, whether the NEPA review conducted by the NRC staff has been adequate.

The staff conducted an independent evaluation of the application; developed independent, reliable information; and conducted a systematic, interdisciplinary review of the potential impacts of the proposed action on the human environment and of reasonable alternatives to the applicant's proposal. Before developing the DEIS, the staff issued a notice of intent to conduct scoping and invited public participation. The staff also provided opportunities for governmental and general public participation during the scoping process for the DEIS and used publicly available guidance in the development of its EIS in conformance with the requirements of Appendix A to 10 CFR Part 51.

The staff considered the purpose of and need for the proposed action, the environment that could be affected by the action, and the consequences of the proposed action, including mitigation that could reduce impacts. The staff considered the no-action alternative and reasonable alternatives to the proposed action. The staff considered any adverse environmental effects that could not be avoided should the proposed action be implemented, the relationship between short-term uses of the human environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources that would be involved in the proposed project.

The NRC filed the DEIS with the EPA for its review consistent with the requirements of Section 309 of the Clean Air Act (see 42 U.S.C. § 7609). The staff considered all comments received on the DEIS and, in Appendix E to the FEIS, described the manner in which each comment was dispositioned.

On these bases, the staff concludes that, for the purpose of issuing the COLs, it conducted a thorough and complete environmental review sufficient to meet the requirements of NEPA and adequate to inform the Commission's action on the COL request.

V. Other Aspects of the Staff Review Not Tied to Specific Findings

SCE&G has not yet received from the South Carolina Department of Health and Environmental Control the certification required under Section 401 of the Clean Water Act. The Section 401 certification would indicate that the discharges into navigable waters associated with the activities permitted under the COLs are in compliance with certain applicable Clean Water Act requirements. Section 401 of the Clean Water Act prohibits the NRC from issuing the COLs until NRC receives the certification from SCE&G.

COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection.

/RA/

R. W. Borchardt
Executive Director
for Operations

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