



Nuclear Regulatory Commission
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Exhibit SCE000004

**UNITED STATES OF AMERICA
 NUCLEAR REGULATORY COMMISSION
 BEFORE THE COMMISSION**

In the Matter of)	Docket Nos. 52-027-COL
)	52-028-COL
SOUTH CAROLINA ELECTRIC & GAS)	
COMPANY AND SOUTH CAROLINA)	
PUBLIC SERVICE AUTHORITY (ALSO)	
REFERRED TO AS SANTEE COOPER))	
(Virgil C. Summer Nuclear Station Units 2)	September 27, 2011
and 3))	
)	

TESTIMONY OF APRIL R. RICE
IN SUPPORT OF THE MANDATORY HEARING
FOR V.C. SUMMER UNITS 2 AND 3 COMBINED LICENSES

I. WITNESS BACKGROUND

Q1. Please state your name, occupation, and business address.

A1. My name is April R. Rice. I hold the position of Licensing Supervisor for South Carolina Electric & Gas Company (SCE&G). My business address is P.O. Box 88, Jenkinsville, SC 29065.

Q2. Please describe your educational and professional background.

A2. I earned a Bachelor of Science degree in Nuclear Engineering from N.C. State University in 1981. I have worked as a supervisor at SCE&G for nine years. I joined SCE&G in 1989. In my current role, I am responsible for the licensing activities of New Nuclear Deployment. During my time working for SCE&G, I have served as the Licensing Manager for V.C. Summer Unit 1. I also have had responsibility for system engineering and performance improvement activities. I have more than 30 years of experience in the nuclear industry. I am the licensing supervisor and project manager for the environmental review for the V.C. Summer

Units 2 and 3 Combined License Application (COLA). My *curriculum vitae* is provided as Exhibit VCS000008.

Q3. Please summarize the purpose of your testimony.

A3. The purpose of my testimony is to provide a summary of the environmental review process for SCE&G's COLA for V.C. Summer Units 2 and 3 to comply with the requirements of the National Environmental Policy Act (NEPA). My testimony first describes the Environmental Report (ER) submitted with the COLA. I then discuss the nature and scope of the Nuclear Regulatory Commission (NRC) staff's environmental review.

II. ER FOR V.C. SUMMER UNITS 2 AND 3

Q4. When did SCE&G submit its ER for V.C. Summer Units 2 and 3?

A4. SCE&G submitted Revision 0 of the ER to the NRC on March 27, 2008 as Part 3 of its initial submission of the COLA.

Q5. Did SCE&G revise the ER or provide supplemental environmental information to the NRC?

A5. Yes. SCE&G submitted Revision 1 of the ER to the NRC on February 13, 2009 and Revision 2 of the ER to the NRC on July 2, 2010. SCE&G also submitted additional environmental information to the NRC through responses to requests for additional information. These responses were incorporated into the ER, as appropriate. SCE&G also provided supplemental information on environmental topics, as requested by the staff or as the project developed.

Q6. Please describe the regulatory requirements for the ER included with the COLA.

A6. As required by 10 C.F.R. § 52.80(b), SCE&G submitted an ER as part of its COLA in accordance with 10 C.F.R. § 51.50(c) and other requirements of 10 C.F.R. Part 51, Subpart A. Section 51.50(c) states:

Each applicant for a combined license shall submit with its application a separate document, entitled “Applicant’s Environmental Report—Combined License Stage.” Each environmental report shall contain the information specified in §§ 51.45, 51.51, and 51.52, as modified in this paragraph. . . . Each environmental report shall identify procedures for reporting and keeping records of environmental data, and any conditions and monitoring requirements for protecting the non-aquatic environment, proposed for possible inclusion in the license as environmental conditions in accordance with § 50.36b of this chapter.

Also, 10 C.F.R. § 51.50(c)(2) provides that if a COLA references a standard design certification, the COLA ER “may incorporate by reference the environmental assessment previously prepared by the NRC for the referenced design certification.” The COLA ER “must contain information to demonstrate that the site characteristics for the combined license site fall within the site parameters in the design certification environmental assessment.” As allowed by the regulations cited above, the ER for the COLA incorporated the information from the AP1000 design certification.

Q7. Was any NRC guidance used to prepare the analyses presented in the COLA ER?

A7. Yes. NUREG-1555, “Standard Review Plans for Environmental Reviews for Nuclear Power Plants,” was used to prepare the analyses. NUREG-1555 was initially issued in October 1999, but some sections have been revised over the past few years. NUREG-1555 is generally consistent with the guidance in Regulatory Guide 4.2, “Preparation of Environmental Reports for Nuclear Power Stations” (Rev. 2, July 1976). SCE&G also considered the

conclusions of NUREG-1437, “Generic Environmental Impact Statement for License Renewal of Nuclear Plants” (May 1996) in assessing the impacts from the new units. SCE&G further considered additional Division 4 (Environmental and Siting) Regulatory Guides to the extent they were applicable to the proposed project.

Q8. Please describe the content of the COLA ER.

A8. The ER is divided into chapters that address the following topics:

- Chapter 1 of the COLA ER contains the purpose and need for the proposed action, a project description, the status of reviews, approvals, and consultations, and the methodology used to prepare the ER.
- Chapter 2 describes the proposed site and environment that would be affected by the addition of two new reactors at the V.C. Summer site in Fairfield County, South Carolina.
- Chapter 3 describes the characteristics of the AP1000 design, and its interfaces with the environment that are the bases for evaluating environmental impacts.
- Chapter 4 examines the environmental impacts of construction to determine the suitability of the V.C. Summer site for the new units.
- Chapter 5 evaluates the environmental impacts of operations to determine the suitability of the V.C. Summer site for the new units.
- Chapter 6 addresses environmental measurements and monitoring programs, including those for thermal, radiological, hydrological, meteorological, ecological, and chemical monitoring.
- Chapter 7 evaluates the environmental impacts of postulated accidents involving radiological materials, including design basis accidents, severe accidents (including evaluation of Severe Accident Mitigation Alternatives), and transportation accidents.
- Chapter 8 examines the need for power.
- Chapter 9 examines alternatives to the proposed action, including alternative energy sources, alternative sites, and alternative plant and transmission systems.
- Chapter 10 evaluates the consequences of the proposed action, including unavoidable adverse environmental impacts of construction and operations; irreversible and irretrievable commitments of resources; relationship between

short-term uses and long-term productivity of the human environment; benefit-cost balance; and cumulative impacts.

Q9. Does the ER for V.C. Summer Units 2 and 3 satisfy the requirements of 10

C.F.R. Part 51?

A9. Yes. As shown above, the ER addresses a broad spectrum of environmental topics, including all of the applicable topics and requirements of 10 C.F.R. Part 51 for a COLA ER. In this regard, ER Table 1.3-1 provides a comparison of the 10 C.F.R. Part 51 regulatory requirements with the responsive ER sections. This information is reproduced below:

Regulatory Requirement	Responsive ER Section(s)
51.45(a), Signed original	Transmittal letter
51.45(b), Description of proposed action	Chapter 3, "Plant Description"
51.45(b), Statement of purpose of proposed action	Section 1.1.1, "Purpose and Need"
51.45(b), Description of environment affected by proposed action	Chapter 2, "Environmental Description"
51.45(b)(1), Environmental impact of proposed action	Chapters 4, "Environmental Impacts of Construction"; 5, "Environmental Impacts of Operation"; 7, "Environmental Impact of Postulated Accidents Involving Radioactive Materials"; and 10, "Environmental Consequences of the Proposed Action"
51.45(b)(2), Unavoidable adverse impacts	Section 10.1, "Unavoidable Adverse Environmental Impacts"
51.45(b)(3), Alternatives to proposed action	Chapter 9, "Proposed Action Alternatives"
51.45(b)(4), Relationship between short-term use and long-term productivity	Section 10.3, "Relationship Between Short Term Uses and Long Term Productivity of the Human Environment"
51.45(b)(5), Irreversible and irretrievable commitments of resources	Section 10.2, "Irreversible and Irretrievable Commitments of Resources"
51.45(c), Comparison of environmental effects of proposed action and alternatives	Chapters 4, "Environmental Impacts of Construction"; 5, "Environmental Impacts of Operation"; 7, "Environmental Impact of Postulated Accidents Involving Radioactive Materials"; 9, "Proposed Action Alternatives"; and 10, "Environmental Consequences of the Proposed Action"

51.45(c), Alternatives for reducing or avoiding adverse environmental impacts	Sections 4.6, “Measures and Controls to Limit Adverse Impacts During Construction” and 5.10, “Measures and Controls to Limit Adverse Impacts During Operation”
51.45(c), Economic, technical, and other benefits and costs of proposed action and alternatives	Section 10.4, “Benefit-Cost Balance”
51.45(d), Federal permits and other entitlements and status of compliance	Section 1.2, “Status of Reviews, Approvals, and Consultations”
51.45(d), Compliance with Federal and other environmental quality standards and requirements	Section 1.2, “Status of Reviews, Approvals, and Consultations”
51.45(d), Compliance for alternatives	Section 9.2, “Energy Alternatives” and Section 9.3, “Alternative Sites”
51.45(e), Adverse information	Section 10.1, “Unavoidable Adverse Environmental Impacts”
51.50 and 51.51(a), Uranium fuel cycle	Section 5.7, “Uranium Fuel Cycle Impacts”
51.50 and 51.52, Fuel and waste transportation	Sections 3.8, “Transportation of Radioactive Materials,” 5.11, “Transportation of Radioactive Materials,” and 7.4, “Transportation Accidents”
51.50, Reporting and record keeping procedures	Chapter 6, “Environmental Measurements and Monitoring Programs”
51.50, Conditions and monitoring	Chapter 6, “Environmental Measurements and Monitoring Programs”

Q10. What conclusions does the ER make regarding unavoidable adverse environmental impacts?

A10. The unavoidable adverse environmental impacts for V.C. Summer Units 2 and 3 are addressed in ER Section 10.1. ER Table 10.1-1 summarizes the construction-related unavoidable adverse environmental impacts and ER Table 10.1-2 summarizes the operations-related unavoidable adverse environmental impacts. ER Section 10.1.3 provides the following conclusion:

As can be seen from Tables 10.1-1 and 10.1-2, most of the adverse environmental impacts associated with the construction and operation of Units 2 and 3 would be reduced to SMALL through the application of mitigation measures. The unavoidable impacts expected to result in MODERATE impacts are summarized below.

Land use impacts from construction of new transmission corridors would be SMALL to MODERATE. The land would be cleared, and after construction, allowed to revegetate in grasses, forbs, and low shrubs. Land use would be converted from forestry, agriculture, or other uses to scrub/shrub or grassland communities to support electricity transmission and maintenance of the transmission lines.

Most of the socioeconomic impacts are beneficial or SMALL. The socioeconomic impact that is adverse and is MODERATE is increased traffic on the local roads in Fairfield and Newberry Counties. This level of impact is expected for both construction and operations. Traffic congestion would be mitigated by traffic control plans during normal operations and staggering outage schedules and shifts to minimize additions to the number of vehicles arriving at VCSNS at a given time.

Q11. What conclusions does the ER make regarding irreversible and irretrievable commitments of resources?

A11. The irreversible and irretrievable commitments of resources for V.C. Summer Units 2 and 3 are addressed in ER Section 10.2. The irreversible commitments of resources include materials used for nuclear fuel, some consumptive surface water use, some committed land use, temporary impacts to aquatic and terrestrial biota, and some emissions. The irretrievable commitments of resources would include the uranium used to generate power and resources similar to other major, multiyear construction projects, and would have a SMALL impact.

Q12. What conclusions does the ER make regarding the relationship between short-term uses and long-term productivity of the human environment?

A12. The relationship between short-term uses and long-term productivity of the human environment are addressed in ER Section 10.3. ER Section 10.3.3 provides the following conclusion:

The impacts resulting from the construction and operation of Units 2 and 3 would result in some adverse short-term impacts. The principal short-term benefit is the production of electrical energy. The economic benefit of VCSNS and the associated workforce is large compared with the economic benefit from forestry or other likely uses for the site. The economic benefits are expected to be the kind that would continue even after the completion of decommissioning, including the continuation of commercial establishments that arose as a result of VCSNS' service of electricity production and its retired and former workforce as well as leaving a well-trained and educated workforce for the benefit of subsequent employers. Because the site would eventually be restored by decommissioning, there would be no impacts to long-term productivity.

Q13. What is the overall conclusion in the ER regarding the benefits and costs of the proposed project?

A13. Regarding the benefits and costs of V.C. Summer Units 2 and 3, ER Section 10.4.3 states:

In conclusion, there are benefits that balance the environmental and monetary costs of the proposed action. While there can always be differing interpretations of the extent of the benefits and the significance of the costs, it is difficult to ignore value that society places on having available, reliable, electricity. It is also difficult to ignore the significant role that nuclear power plants have in a system that reliably produces electricity. Finally, it is becoming apparent that this country and the world are placing ever-increasing value on generating electricity without generating emissions that contribute to global warming, a service that nuclear power provides. SCE&G concludes that the benefits of its proposed VCSNS Units 2 and 3 substantially outweigh the cost.

III. NRC STAFF ENVIRONMENTAL REVIEW

Q14. Please describe the NRC staff's environmental review process for the COLA.

A14. Once the NRC received SCE&G's COLA, the staff began its environmental review by publishing a Notice of Intent to prepare an Environmental Impact Statement (EIS) on January 5, 2009. The staff conducted two initial scoping meetings in January 2009 to obtain public input, one in Winnsboro, South Carolina, and one in Blair, South Carolina. During 2009,

the staff also conducted site visits, including visits of the four alternative sites. During these visits, the staff met with SCE&G, public officials, and the public.

The staff prepared its Draft EIS for V.C. Summer Units 2 and 3 using wide-ranging sources of information. These included information from the scoping meetings, site visits, SCE&G's ER, consultations with Federal, State, Tribal, and local agencies, and independent review and assessment. The staff published its Draft EIS in April 2010. Following a comment period and the staff's evaluation of comments received, the staff published its Final EIS (FEIS) in April 2011. NUREG-1939, Final Environmental Impact Statement for Combined Licenses for Virgil C. Summer Nuclear Station Units 2 and 3 (Apr. 2011).

Q15. What is the overall conclusion in the FEIS regarding the benefits and costs of the proposed project?

A15. Regarding the benefits and costs of V.C. Summer Units 2 and 3, FEIS Section 10.6.3 states:

On the basis of the assessments summarized in this EIS, the construction and operation of the proposed VCSNS Units 2 and 3, with the 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.

Q16. What is the staff's recommendation in the FEIS regarding V.C. Summer Units 2 and 3?

A16. FEIS Section 10.7 states: "The NRC staff's recommendation to the Commission related to the environmental aspects of the proposed action is that the COLs should be issued." This recommendation is based on (1) the ER submitted by SCE&G and responses to staff requests for additional information; (2) consultation with Federal, State, Tribal, and local

agencies; (3) the staff review team's independent review; (4) the staff's consideration of comments related to the environmental review that were received during the public scoping process; (5) the staff's consideration of comments on the draft EIS; and (6) the assessments summarized in the FEIS, including the potential mitigation measures identified in the ER and in the FEIS (NUREG-1939, at 10-27).

Q17. Are the findings in 10 C.F.R. § 51.107(a) met for V.C. Summer Units 2 and 3?

A17. Yes. As detailed above, all environmental findings were supported by the information in SCE&G's updated ER, submitted with the V.C. Summer Units 2 and 3 COLA. The NRC staff, pursuant to 10 C.F.R. Part 51, prepared the FEIS which documents the staff's review of SCE&G's updated ER (NUREG-1939 (Apr. 2011)). Along with the NRC staff's recommendation, the FEIS includes: (1) the results of the NRC staff's analyses, which consider and weigh the environmental effects of the proposed action; (2) potential mitigation measures for reducing or avoiding adverse effects; and (3) the environmental impacts of alternatives to the proposed action (NUREG-1939, at xxxii).

Overall, in terms of 10 C.F.R. § 51.107(a), the environmental review was adequate to:

- Determine whether the requirements of Sections 102(2) (A), (C), and (E) of NEPA and the regulations in 10 C.F.R. Part 51, Subpart A, have been met;
- 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;
- 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; and
- Determine, in an uncontested proceeding, whether the NEPA review conducted by the NRC staff has been adequate.

Q18. Has the staff submitted information to support the mandatory hearing for V.C. Summer Units 2 and 3?

A18. Yes. On August 19, 2011, the staff issued SECY-11-0115, “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).”

Q19. Have you reviewed SECY-11-0115?

A19. Yes.

Q20. Does SECY-11-0115 address environmental issues regarding V.C. Summer Units 2 and 3?

A20. Yes. SECY-11-0115 describes the environmental review performed by the staff for V.C. Summer Units 2 and 3. SECY-11-0115 also describes environmental matters that the staff considers to be “Nonroutine Unique Facility Features or Novel Issues” (pages 16-20), including (1) Environmental Justice, and (2) First Project Implementing Updated Memorandum of Understanding with the U.S. Army Corps of Engineers.

Q21. Do you agree with the description in SECY-11-0115 of the staff environmental review and the environmental matters the staff considers to be “Nonroutine Unique Facility Features or Novel Issues”?

A21. Yes.

Q22. Does SECY-11-0115 evaluate the environmental findings in 10 C.F.R. § 51.107(a)?

A22. Yes.

Q23. What does the staff conclude regarding these environmental findings?

A23. The staff concludes that all of the environmental findings have been satisfied.

Q24. Do you agree with the staff's description of how the environmental findings have been satisfied?

A24. Yes.

Q25. Are true, accurate, and correct copies of each of the referenced exhibits submitted with your testimony?

A25. Yes.

Q26. Does this conclude your testimony?

A26. Yes.

I certify that this written testimony was prepared by me or under my direction, and I adopt the testimony as my sworn testimony in this proceeding.

I declare under penalty of perjury that the foregoing is true and correct to the best of my information, knowledge, and belief.

Executed on September 27, 2011.

Executed in Accord with 10 C.F.R. § 2.304(d)

/s/ April R. Rice
April R. Rice
Licensing Supervisor
South Carolina Electric & Gas Company
P.O. Box 88
Jenkinsville, SC 29065
Phone: (803) 345-4232
E-mail: arice@scana.com

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