UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of	)	
	)	
SOUTH CAROLINA ELECTRIC AND GAS COMPANY	)	
	)	
	)	Docket Nos. 52-057 and 52-028
(Virgil C. Summer Nuclear Station Units 2 and 3)	)	
	)	

NRC STAFF RESPONSES TO COMMISSION PRE-HEARING QUESTIONS

Pursuant to the Commission's Order (Transmitting Pre-Hearing Questions) of September 15, 2011, the staff of the U.S. Nuclear Regulatory Commission (Staff) hereby responds to the questions posed in that Order. These questions generally pertain to subjects discussed in the Staff's Final Safety Evaluation Report (FSER)[1] or Final Environmental Impact Statement (FEIS).[2]

The Commission's Order directed some questions to the Staff, some to South Carolina Electric and Gas and South Carolina Public Service Authority (Applicant), and some to both. Attachment A to this filing presents the Staff's responses. Where a question was directed to both the Staff and Applicant, the Staff's response is included in the attached; but where a question or sub-question was directed solely to the Applicant, the Staff has not provided a response.

/Signed (electronically) by/
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Dated at Rockville, Maryland
This 28th day of September 2011

[1] Final Safety Evaluation Report for Combined Licenses for Virgil C. Summer Nuclear Station, Units 2 and 3 (August 2011).

[2] NUREG-1939, Final Environmental Impact Statement for Combined Licenses for Virgil C. Summer Nuclear Station, Units 2 and 3 (April 2011).

ATTACHMENT A

NRC Staff Responses to Commission Questions

NRC Staff Responses to Commission Questions

1. Near-Term Task Force Recommendations

a) In SECY-11-0115, the Staff presents two options available to the Commission for implementing the Near-Term Task Force recommendations for the VCSNS, Units 2 and 3 combined licenses, but the Staff did not express a preference for either of the two options. Which of the two options would the Staff recommend be applied to the VCSNS, Units 2 and 3 combined licenses?

Staff Response:

In general, there are fewer regulatory and administrative requirements for the Staff to follow when imposing license conditions before a license is issued versus after because the complete licensing basis has not yet been established. In the specific case of the V.C. Summer Nuclear Station (VCSNS) Units 2 and 3 combined license (COL) application, certain elements of the licensing bases have already been established by the issuance of the previous design certification. Therefore, for those recommendations that affect matters resolved in the design certification rule, a regulatory basis would need to be established to impose the new requirements using the regulatory provisions found in 10 C.F.R. §§ 52.83, 52.98, and 50.109, regardless of whether the COL has been issued.

The Staff recommends proceeding with issuance of the license and using the appropriate regulatory tools to impose new requirements in the event new requirements are established.

b) How much time and effort would it take the Staff to fully implement the Near-Term Task Force recommendations for near-term combined license applications as license conditions for VCSNS, Units 2 and 3? As inspections, tests, analyses and acceptance criteria for VCSNS, Units 2 and 3?

Staff Response:

Because the time and resources necessary for the Staff to implement fully the Near-Term Task Force (NTTF) recommendations for VCSNS Units 2 and 3 will depend on the nature of the Commission's instructions on how to do so, the Staff does not yet have a clear estimate of those needs. However, assuming Commission direction regarding which NTTF recommendations to implement, the Staff anticipates that preparing an appropriate combination of license conditions and ITAAC would be a relatively straightforward process. That process would entail information gathering and coordination of technical experts, as well as appropriate communication with the Applicant. Such an effort would likely take time on the order of weeks.

c) Would the NRC Staff face any additional administrative or regulatory hurdles if the implementation of the near-term task force recommendations were delayed until after the VCSNS, Units 2 and 3 combined licenses are issued?

Staff Response:

Yes. In general, there are fewer regulatory and administrative requirements for the Staff to follow when imposing license conditions before a license is issued versus after because the complete licensing basis has not yet been established. However, in the case of the VCSNS application, certain elements of the licensing bases have already been established by the

issuance of the previous design certification. Therefore, with respect to those recommendations that affect areas already established in the design certification rule, a regulatory basis would need to be established to impose the new requirements using the regulatory provisions found in 10 C.F.R. §§ 52.83, 52.98, and 50.109, regardless of whether the COL has been issued.

d) Considering that the Fukushima accident clearly indicates that multiple concurrent events can occur at a multi-reactor site, why is the Staff confident that the finding that the license is not "inimical" to the health and safety of the public has been met? Did the Staff consider accident scenarios that required a response to concurrent events at multiple reactors and/or spent fuel storage facilities at the VCSNS site?

Staff Response:

No, the Staff did not consider multiple concurrent events at the VCSNS site in its review. This would constitute a beyond design basis event under the NRC's current requirements, and the Staff necessarily reviewed the application against current requirements. Because the application meets all current requirements, the Staff finds that the issuance of the VCSNS COLs would not be inimical to the common defense and security or to the health and safety of the public. However, should the Commission impose a new requirement for licensees to consider concurrent events at multiple reactors and/or spent fuel storage facilities, then the Staff would address the new requirement in accordance with the regulatory provisions found in 10 C.F.R. §§ 52.83, 52.98, and 50.109, depending on whether the requirements address matters within the scope of the referenced certified design.

e) Which parts of the VCSNS, Units 2 and 3 draft licenses and final safety evaluation report (FSER) would need to be modified in order to implement all the recommendations of the Near-Term Task Force that are applicable to design certifications or combined licenses?

Staff Response:

If new license conditions or additional ITAAC were imposed, then Part 2 or Appendix C of the draft COL would need to be modified. Rather than modify the FSER that was issued by the Staff, a supplemental safety evaluation report would be prepared to address any new requirements. The scope and content of such a supplemental safety evaluation report are unknown at this time and would be determined after new requirements are established by the Commission. For example, based on the NTTF recommendations, the Staff would likely need to supplement evaluations in the FSER, including, but not limited to, those contained in FSER Chapters 8, 9, 13, and 19, as well as the associated license conditions and ITAAC.

2. The VCSNS, Units 2 and 3 draft combined licenses seem to contain a provision that would allow the licensee to make changes to the design prior to receiving NRC approval. Inclusion of such a provision seems contrary to the spirit of the finding that the facility will be constructed in accordance with the combined license. How is the Staff able to make the finding that the facility will be constructed in accordance with the license, if the COL holder can make changes prior to receiving NRC approval?

Staff Response:

The draft COL for Summer contains a proposed license condition, "Changes during Construction (CdC)." This proposed condition would not allow the licensee to make changes to the design prior to receiving NRC approval. If the licensee wanted to change the nuclear plant design that is set forth in the licensing basis, it would have to request a change under one of the processes set forth in 10 C.F.R. § 52.98 (e.g., § 50.90 or § 50.59). Therefore, the licensing basis cannot be changed from that set forth in its final safety analysis report (FSAR) until the NRC has approved the license amendment request (LAR).

The proposed CdC condition provides the ability for a licensee, in conjunction with an LAR, to request a notification that the NRC has no objection to the licensee constructing the proposed changed design feature pending NRC's review of the LAR. If the LAR were subsequently approved, the licensee would change the licensing basis in the FSAR. If the LAR is subsequently denied, then the licensee must return the facility to its then current licensing basis. Therefore, under this CdC process, the Commission can find that the facility will be constructed in accordance with the COL.

3. Pre-Operational Testing License Condition

a) Each of the tests listed under heading (a) contains a note that test is to be performed by the first plant or the first three plants. Will this condition be included in all AP1000 combined licenses until a plant or the first three plants have completed the tests?

Staff Response:

Yes. All licensees that reference the AP1000 design will contain the license condition requiring the licensee to perform the subject tests. They can request a license amendment, after receiving their COL, based on an acceptable test result at another licensed plant that is applicable to their plant.

b) Since this license condition would only have to be implemented by the first AP1000 or the first three AP1000s constructed, if the construction and operation of the VCSNS, Units 2 and 3 proceeds at a pace that it is not the first or among the first three that conducts the required test, how is the need to conduct or not conduct the tests communicated to the licensee?

Staff Response:

All licensees that reference the AP1000 design will have to perform the first or first-three-plant tests. The Summer licensee will be in communication with other AP1000 licensees through the design-centered working group and will know whether the tests have been performed. At that

time, the licensee can request an amendment to the licensing basis to remove the subject license conditions.

c) If the results of the tests identified in section (a) of the pre-operational testing license condition are not within an acceptable range, what actions are the first and subsequent "plants" required to perform? Where is that requirement described?

Staff Response:

In accordance with the license condition, the licensee must re-perform such tests until the results are within the acceptable range as required by the license. Otherwise, the licensee must request a license amendment to either change the design or change the acceptance criteria for the tests.

4. What criteria were used to decide which operational programs to include in the operational program implementation license condition?

Staff Response:

SECY-05-0197, Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance, dated October 28, 2005, discussed the information on operational programs that COL applicants are required to provide in their application, implementation of operational programs, and license conditions for implementing operational programs. The NRC's regulations at 10 C.F.R. § 52.79 specify the contents for COL applications, including descriptions of operational programs and their implementation; however, the regulations do not specify implementation milestones for all operational programs. SECY-05-0197 proposed to the Commission that license conditions be used to specify implementation milestones for those operational programs required by regulations that did not have implementation milestones specified in the regulations. The Commission approved the Staff's proposal in its staff requirements memorandum (SRM) dated February 22, 2006.

In one case, 10 C.F.R. § 52.79(a)(40) requires a COL applicant to provide "a description of the fire protection required by § 50.48 of this chapter and its implementation"; however, a license condition for implementation of the fire protection was included because the regulations did not specify an implementation milestone. In addition, 10 C.F.R. § 52.79(a)(10) requires a COL applicant to provide a description of the environmental qualification program required by 10 C.F.R. § 50.49(a) and its implementation. A license condition for implementation of the environmental qualification program was included because the regulation did not specify an implementation milestone. In another case, 10 C.F.R. § 52.79(a)(33) requires "a description of the training program required by § 50.120 of this chapter and its implementation." However, 10 C.F.R. § 50.120 specified implementation of the non-licensed plant staff training program for holders of a COL to be no later than 18 months before the scheduled date for initial loading of fuel; therefore, a license condition was not necessary for implementation of that program.

5. Does the VCSNS site fall within the portion of the country that is being addressed under Generic Safety Issue 199, "Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on Existing Plants?" If so, how did the applicant address the concerns stated in Generic Safety Issue 199?

Staff Response:

Yes. Pursuant to the draft Generic Letter that was issued for public comment on September 1, 2011 (ML111710783), all 104 operating plants, including the existing VCSNS Unit 1, will be requested to address the issues raised under GI-199. Because the Generic Letter has yet to be finalized and sent to each of the licensees for operating nuclear power plants in the United States, the licensee for VCSNS Unit 1 has not yet responded to it. This Generic Issue arose during the review of the first early site permits, when the Staff determined that certain seismic hazard estimates were higher than previously assumed.

While the draft GL is only addressed to current license holders, the concerns raised in the draft GL have been indirectly addressed by the VCSNS COL applicant because the ground motion response spectra (GMRS) for VCSNS Units 2 and 3 were developed using updated probabilistic seismic hazard estimates. In its COL application, the VCSNS applicant performed its probabilistic seismic hazard analysis (PSHA) using updated EPRI ground motion prediction equations as well as a revised EPRI seismic source model, considering more up-to-date scientific information. For example, the COL review determined that the VCSNS site hazard is dominated by the Charleston seismic source zone, which was completely revised by the Applicant as a result of recent paleoliquefaction data. Furthermore, in its COL application, the Applicant used the performance-based approach to develop the GMRS (Regulatory Guide 1.208, published in March 2007), which combines a conservative characterization of the ground motion hazard with equipment/structure performance (fragility characteristics) to establish a risk-consistent GMRS.

The Staff has kept well abreast of new seismic source and ground motion studies in the Central and Eastern United States, and the Staff's review of the VCSNS Units 2 and 3 COL application focused on ensuring that the Applicant properly updated seismic source models to account for newer information, in accordance with the Staff's guidance in RG 1.208. For example, the Eastern Tennessee Seismic Zone (ETSZ) is located approximately 282 km (175 mi) to the northwest of the VCSNS site and is considered to be one of the most active seismic areas east of the Rocky Mountains. The Staff requested that the Applicant address new seismic source information for the ETSZ in its PSHA. In response, the Applicant referenced a recent sensitivity study by the Nuclear Energy Institute (NEI) (White Paper on Seismic Hazard in the Eastern Tennessee Seismic Zone, 2008 (ML081720144)), which showed that potential changes to the seismic hazard resulting from updating the ETSZ are not significant and thus performing updates to this source zone was unnecessary. The Staff also performed its own sensitivity calculation to determine that this new information did not significantly impact the seismic hazard at the VCSNS site.

6. Please provide a summary of how the DAC from the certified design were addressed in the context of this COL.

Staff Response:

The three areas in the certified design that had design acceptance criteria (DAC) were piping design; instrumentation and control; and human factors engineering.

For the piping design analysis, the original intent was for Westinghouse to complete the piping designs as part of the AP1000 design certification amendment to resolve the DAC. That work was not finished in time, so the DAC have been proposed as COL ITAAC; one that includes completion of the piping design and another that includes completion of the pipe break hazards analysis. These two ITAAC are included to perform reconciliation of the as-built piping with the piping design and with the pipe break hazards analysis. To allow for NRC inspection of the completed piping design, a license condition is included for notification of the Director of NRO of the availability of the completed design reports and a requirement that the as-designed piping analysis be completed prior to installation of piping and connected components. This activity will be performed after issuance of the COL through the ITAAC closure process. This is described in Section 3.12.5 of the VCSNS FSER (ML110450305).

For the instrumentation and control DAC, much of the DAC was completed in the AP1000 design certification amendment. The system definition phase relating to the hardware design for the protection and monitoring system remains as DAC for the licensee to complete in the ITAAC closure process. The remaining DAC are described in Section 7.2.2 of the AP1000 DC amendment FSER (ML110190411).

For human factors engineering, the DAC were closed in the AP1000 design certification amendment. Please see Chapter 18 of the AP1000 DC amendment FSER (ML102280424).

7. Please provide a summary of the differences between this application and the reference COL that has already been presented to the Commission.

Staff Response:

There are 18 parts of the VCSNS COL application. Table 1 below describes these 18 parts and summarizes the differences between the VCSNS COL application and the Vogtle COL, which is the reference COL (RCOL). The table below notes when a substantial portion of the Staff's review used the design-centered review approach. The design-centered review approach is described in Regulatory Issue Summary 2006-006, "New Reactor Standardization Needed to Support the Design-Centered Licensing Review Approach," and was endorsed by the Commission's staff requirements memorandum associated with SECY-06-0187, dated November 16, 2006.

As the table below indicates, the majority of the differences between the VCSNS application and the RCOL are in the following five areas:

- Financial information found in Part 1 of the VCSNS COL application. The Staff's evaluation of this information is found in FSER Section 1.5.1.

- FSAR Chapter 2, "Site Characteristics," found in Part 2 of the VCSNS COL application. The Staff's review of this chapter is found in FSER Chapter 2. This review constitutes the majority of the site-specific safety review.

- Site-specific COL information items found in VCSNS FSAR Chapters 1 and 3 through 19. The information in Table 2 below highlights the site-specific evaluations performed by the Staff for various chapters of the VCSNS FSAR. The table uses the left margin annotation from the VCSNS COL FSAR to identify departures, supplementary

information, COL items and conceptual design information. Because the question relates to site-specific differences in the applications, all of the left margin annotations begin with a VCS designation. Information that is standard between the applications is identified using a left margin annotation of STD. The following left margin annotations are used in Table 2:

- VCS DEP denotes FSAR information that departs from the generic AP1000 design control document (DCD)
- VCS SUP denotes FSAR information that supplements the material in the DCD
- VCS COL denotes FSAR information that addresses a DCD combined license information item
- VCS CDI denotes FSAR information that addresses DCD conceptual design information

The table does not include a summary of Chapter 2 because that chapter is almost entirely site-specific. In addition, the table below does not include information for chapters 4, 7, and 14 because they contain information that is nearly identical to the information in the RCOL. The only exception is site-specific ITAAC in chapter 14 which were evaluated in the respective SER chapter.

- The environmental report found in Part 3 of the VCSNS COL application. The environmental report provided the information used to develop the Staff's FEIS.
- The emergency plan information found in Part 5 of the VCSNS COL application. The Staff's review of this information is found in FSER Section 13.3, "Emergency Planning."

Table 1 – Summary of Evaluation of 18 Parts of the VCSNS COL Application

Part Number	Description	Summary of Differences	Evaluation
1	General and Financial Information	This information is unique to each application.	General information provided for background. Financial information reviewed in Section 1.5.1 of the FSER
2	Final Safety Analysis Report	Chapter 2 site characteristics – this review is a site-specific review for each application.	FSER Chapter 2
		Remaining Chapters of the FSAR – the majority of the information in the FSAR chapters outside of Chapter 2 takes advantage of the design-centered review approach. Table 2 below provides a summary of the site-specific information found in FSAR chapters outside of Chapter 2.	Evaluated in appropriate FSER chapters

Part Number	Description	Summary of Differences	Evaluation
3	Environmental Report	This information is unique to each application.	FEIS
4	Technical Specifications	This information is almost entirely standard. Differences include a description of the site and exclusion boundaries and low population zones found in Section 4.1 of the technical specifications, and staff organization and position titles listed in Sections 5.1 and 5.2 of the technical specifications.	FSER chapter 16
5	Emergency Plan	This information is unique to each application.	Section 13.3 of the FSER
6	Limited Work Authorization	Not applicable to VCSNS. The Vogtle COL application included a limited work authorization that was evaluated on a site-specific basis.	Not applicable
7	Departure reports	The differences between the VCSNS application and Vogtle application include the maximum safety wet bulb (noncoincident) air temperature departure and exemption. In addition, there are minor differences in the exemption and departure associated with the numbering of the FSAR. These differences are due to Vogtle incorporating by reference an early site permit. Although the technical support center (TSC) departure is identified as site specific, the VCSNS and Vogtle TSC departures are evaluated by the Staff in a similar manner.	Evaluated in appropriate FSER chapters
8	Security Plan	The security plan consists of the physical security plan, the training and qualification plan and the safeguards contingency plan. The differences in the VCSNS application and the RCOL are limited to site-specific differences related to the location of the facility and staffing and duty position titles.	Evaluated in appropriate FSER chapters
9	Withheld information	The information in this part is withheld from the public in accordance with Commission regulations. The information in this Part of the application consists of financial information (Part 1 of the application), FSAR figures, the mitigative strategies descriptions and plan (Part 14 of the application), and the cyber security plan (Part 15 of the application). The FSAR figures that are withheld are similar between the VCSNS and Vogtle COL applications. The differences for the other parts of the withheld information are discussed in Part 1, 14, and 15 of this table.	Evaluated in appropriate FSER chapters

Part Number	Description	Summary of Differences	Evaluation
10	Proposed Combined License Conditions – including ITAAC	The majority of the proposed license conditions and ITAAC are the same. Differences between the VCSNS and reference COL applications include: • Emergency planning ITAAC. The format of the EP ITAAC is different in that there are differences in the ITAAC for the two units at Vogtle but the ITAAC for the two VCSNS units are identical. While the format is different, the content of the ITAAC is essentially the same. • The VCSNS Unit 3 draft COL includes a license condition for geologic mapping of excavations for safety related structures. No such license condition is proposed for VCSNS Unit 2 or Vogtle Units 3 and 4 COLs because the excavation and geologic mapping for those units has already been completed. • Because of the soil conditions at the Vogtle site, the Vogtle Draft COL contains a license condition to eliminate soils directly above the Blue Bluff marl for soils under or adjacent to Seismic Category I structures, to eliminate any liquefaction potential. Because VCSNS is a hard rock site, no such license condition is proposed. • The ITAAC for the Vogtle COL application include ITAAC for the waterproof membrane and for backfill from the early site permit associated with soil conditions. Because VCSNS did not depart from the information in the DCD regarding the waterproof membrane options, no ITAAC for VCSNS are proposed. Because VCSNS is a hard rock site, no ITAAC related to soil conditions are proposed. • Exemptions. The VCSNS draft COL includes an exemption from the requirement of 10 C.F.R. Part 52, Appendix D, Section IV.A.2d to include information demonstrating compliance with the site parameters and interface requirements. This VCSNS exemption is specific to the maximum safety wet bulb (noncoincident) air temperature in the FSAR and is related to departure number VCS DEP 2.0-2. Vogtle has no such exemption. • Variances. The Vogtle draft COL includes variances from the early site permit. The VCSNS draft COL contains no variances because it does not reference an early site permit.	Evaluated in appropriate FSER chapters
11	Subsurface report detailing results of geotechnical exploration	This information is unique to the VCSNS COL application.	FSER Section 2.5

Part Number	Description	Summary of Differences	Evaluation
12	Seismic Technical Advisory Group Review	This information is unique to the VCSNS COL application.	FSER Section 2.5
13	Quality Assurance Program Description (QAPD)	The majority of the information in this part of the application uses the design-centered review approach. The difference between the VCSNS and Vogtle COL QAPDs is limited to Applicant-specific differences in organizational structures.	FSER Section 17.5
14	Mitigative Strategies Document for loss of large areas of the plant due to explosions or fires	The majority of the information in this part of the application uses the design centered review approach. Differences between the VCSNS and reference COL applications include: • General location-specific differences (i.e., memorandums of understandings, and available resources, staging and assembly areas, and equipment storage locations) • Increased volume capacity of the cooling tower basin • Additional fire water distribution system • Decrease in the portable pump fuel tank capacity with procedures to ensure proper refilling These site-specific differences are discussed in detail in the security related sensitive unclassified non-safeguards information version of FSER Appendix 19.A.	FSER Appendix 19.A
15	Cyber Security Plan (CSP)	The majority of the information in this part of the application uses the design centered review approach. The differences between the VCSNS and Vogtle CSPs include the title of the units and the identification of the position charged with oversight of the program and the names of the Applicants.	FSER Section 13.8
16	Special Nuclear Material Control and Accounting Program Description	The majority of the information in this part of the application uses the design centered review approach. The differences between the VCSNS and Vogtle documents are limited to names of the units and titles of the organizations responsible for implementing the program.	FSER Section 1.5.5
17	New Fuel Shipping Plan	These documents are identical between the VCSNS and Vogtle COL application.	FSER Section 1.5.5
18	Supplemental information in support of 10 C.F.R. Part 70 Special Nuclear Material License Application	These documents are identical between the VCSNS and Vogtle COL application.	FSER Section 1.5.5

Table 2 – Summary of Site-Specific Evaluations in VCSNS FSAR

FSAR Section	Site-Specific Evaluations
1.1 Introduction	VCS SUP 1.1-2, SCE&G submittal of application VCS COL 1.1-1, Schedule for construction and operation of VCSNS Units 2 and 3 VCS SUP 1.1-5, Acronyms and systems designations unique to the VCSNS application
1.4 Identification of Agents and Contractors	VCS SUP 1.4-1, Identification of agents and contractors VCS SUP 1.4-2, Information associated with consulting firms that assisted in preparing the COL application. VCS SUP 1.4-3, Information describing Westinghouse and Shaw's role in the construction of Units 2 and 3
1.7 Drawings and Other Detailed Information	VCS SUP 1.7-1, Supplemental site-specific drawings (i.e., circulating water system, raw water system and switchyard)
1.8 Interfaces for Standard Design	VCS SUP 1.8-1, Identification of site-specific departures VCS SUP 1.8-2, Listing of COL information items VCS SUP 1.8-3, Listing of interface items
1.10 Nuclear Power Plants to be Operated on Multi-Unit Sites	VCS SUP 1.10-1, Minimum separation between power blocks for Units 2 and 3
3.3 Wind and Tornado Loadings	VCS COL 3.3-1 Wind Velocity Characteristics VCS COL 3.5-1 Tornado Velocity Characteristics
3.4 Water Level (Flood) Design	VCS COL 3.4-1 Dewatering System and Water Levels
3.5 Missile Protection	VCS SUP 3.5-1 Turbine Missile from Unit 1
3.7 Seismic Design	VCS SUP 3.7-3 Design Ground Motion Response Spectra VCS COL 3.7-1 Seismic Analysis of Dams
3.8 Design of Category I Structures	VCS COL 2.5-17 Waterproofing Material for Category I Structures
5.4 Component and Subsystem Design	VCS DEP 2.0-2, Maximum Safety Wet Bulb (Noncoincident) Air Temperature
6.2 Containment Systems	VCS DEP 2.0-2, Maximum Safety Wet Bulb (Noncoincident) Air Temperature
6.4 Habitability Systems	VCS COL 6.4-1, Concentrations of Site-Specific Chemicals VCS DEP 2.0-2, Maximum Safety Wet Bulb (Noncoincident) Air Temperature
8.1 Introduction	VCS SUP 8.1-1 VCSNS Units 2 and 3 connection to the utility grid VCS SUP 8.1-2 Additional information on regulatory guidelines and standards

FSAR Section	Site-Specific Evaluations
8.2 Offsite Power System	VCS COL 8.2-1 Transmission system description, and its testing and inspection plan VCS COL 8.2-2 Switchyard description and protection relaying VCS SUP 8.2-1 Failure mode and effects analysis of the switchyard VCS SUP 8.2-2 Transmission system requirements and studies VCS SUP 8.2-3 Transmission system planning VCS SUP 8.2-4 Stability and reliability of the offsite transmission power system Interface Requirements VCS Conceptual Design Information (CDI) describing the transformer area located next to each unit's turbine building
8.3.1 AC Power Systems (Onsite)	VCS COL 8.3-1 Grounding system and lightning protection VCS SUP 8.3-1 Site-specific switchyard and power transformer voltage VCS SUP 8.3-2 EDG rating based on site conditions
8.3.1 AC Power Systems (Onsite)	VCS COL 8.3-1 Grounding system and lightning protection VCS SUP 8.3-1 Site-specific switchyard and power transformer voltage VCS SUP 8.3-2 EDG rating based on site conditions
9.1.3 Spent Fuel Pool Cooling System	VCS DEP 2.0-2, Maximum Safety Wet Bulb (Noncoincident) Air Temperature
9.2.1 Service Water System	VCS SUP 9.2-3 Provides additional information regarding the service water system cooling tower potential interactions
9.2.2 Component Cooling Water System	VCS DEP 2.0-2 Maximum Safety Wet Bulb (Noncoincident) Air Temperature
9.2.5 Potable Water System	VCS COL 9.2-1 Potable water system description outside the power block
9.2.6 Sanitary Drains	VCS SUP 9.2-1 Sanitary waste system discharge description
9.2.7 Central Chilled Water System	VCS DEP 2.0-2 Maximum Safety Wet Bulb (Noncoincident) Air Temperature
9.2.8 Turbine Building Closed Cooling Water System (TCS)	VCS CDI provides the source of cooling water for the TCS heat exchangers
9.2.9 Waste Water System	VCS COL 9.2-2 Provides information on the waste water retention basins and associated discharge piping
9.2.11 Raw Water System	VCS SUP 9.2-2 Provides site-specific information related to the raw water system
9.4.1 Nuclear Island Nonradioactive Ventilation System	VCS COL 9.4-1b Provides local toxic gas evaluations

FSAR Section	Site-Specific Evaluations
9.5.1 Fire Protection System	VCS COL 9.5-1 Qualification requirements for the fire protection program VCS COL 9.5-2 Site-specific hazards analysis of the yard areas and outlying buildings
9.5.2 Communication System	VCS COL 9.5-9 Offsite interfaces VCS COL 9.5-10 Emergency offsite communications VCS COL 9.5-11 Security communications
10.4 Other Features of Steam and Power Conversion System	VCS CDI, relating to COL Section 10.4.2 for the site specific cooling water source for the vacuum pump seal water heat exchangers VCS CDI, relating to COL Section 10.4.5 for the site specific Circulating Water System design information. VCS COL 10.4-1 Relating to the Circulating Water System design parameters. VCS COL 10.4-2 Relating to Condensate, Feedwater and Auxiliary Steam System Chemistry Control.
11.2 Liquid Radioactive Waste Management	VCS COL 11.2-2 Liquid waste discharge cost-benefit analysis VCSCOL 2.4-5 and VCS 15.7-1 Doses from accidental release from liquid waste tank failure VCS COL 11.5-3 Compliance with 10 C.F.R. Part 50, Appendix I, Sections II.A and II.D for liquid waste discharges VCS SUP 11.2-1 Liquid waste discharge pipe
11.3 Gaseous Radioactive Waste Management	VCS COL 11.3-1 Gaseous waste discharge cost-benefit analysis VCS COL 11.5-3 Compliance with 10 C.F.R. Part 50, Appendix I, Sections II.B and II.C for gaseous waste discharges
11.5 Radiation Monitoring	VCS COL 11.5-2 QA for effluent and environmental monitoring program VCS COL 11.5.3 Compliance with 10 C.F.R. Part 50, Appendix I
12.3 Radiation Protection Design Features	VCS DEP 18.8-1 Relocation of Operations Support Center VCS SUP 11.2-1 Liquid waste discharge pipe
12.4 Dose Assessment	VCS SUP12.4-1 Construction worker dose
12.5 Health Physics Facility Design	VCS DEP 18.8-1 Relocation of Operations Support Center
13.1 Organizational Structure of Applicant	VCS COL 13.1-1 Organization structure VCS COL 9.5-1 Fire protection VCS COL 18.6-1 Qualifications of the nuclear plant technical support personnel VCS COL 18.10-1 Responsibilities of the manager in charge of nuclear training
13.3 Emergency Planning	Essentially all site-specific
13.5 Plant Procedures	VCS SUP 13.5-1 Plant procedures VCS SUP 13.5-2 Plant procedures

FSAR Section	Site-Specific Evaluations
15.7 Radioactive Release from a Subsystem or Component	VCS COL 15.7-1 Consequence of Liquid Waste Tank Failure
15A Evaluation Models and Parameters for Analysis of Radiological Consequences of Accidents	VCS COL 2.3-4 DBA Radiological Consequences Analyses
16.1 Technical Specifications	VCS COL 16.1-1 related to technical specifications for use as a guide in development of the plant-specific technical specifications.
17.1 Quality Assurance During the Design and Construction Phases	VCS COL 17.5-1 QAP prior to COL issuance
17.5 Quality Assurance Program Description – New License Applicants	VCS COL 17.5-1 QAP following COL issuance VCS SUP 17.8-1 References
18.2 HFE Program Management	VCS COL 18.2-2 Location of the Emergency Operations Facility
18.8 Human-System Interface Design	VCS DEP 18.8-1 Location of the Technical Support Center (TSC) and Operational Support Center (OSC)
19.55 Seismic Margins Analysis	VCS SUP 19.59.10-6 Site-Specific Seismic Margin Analysis
19.58 Winds, Floods, and Other External Events	VCS SUP 19.58-1 External Event Frequencies

8. SECY-11-0115 describes a deviation from the 10- mile EPZ in some areas that are less than 10 miles from the plant site and describes the justification for this change. The justification is based on current land use for property not owned by the applicant. What triggers the licensee to reevaluate this EPZ should the land use change from logging to an activity consisting of higher population density, such as a school? How does this differ from the EPZ configuration associated with the current unit?

Staff Response:

The EPZ proposed for the new units is the same EPZ for the existing unit. The difference being Units 2 and 3 are approximately 1 mile southwest of the existing Unit.

Appendix E to 10 C.F.R. Part 50 requires maintenance of the emergency plan. The Summer emergency plan provides a process for making revisions to the emergency plan, annexes, and supporting agreements. The Manager of Emergency Services identifies areas needing revision during audits, assessments, training, drills, and exercises. Any changes are incorporated into the revisions. However, once the EPZ has been approved in the emergency plan by the NRC with clear demarcations of the EPZ boundaries, the licensee would not be required to make any changes to the size of the EPZ should the land use change. If FEMA made a determination that adequate protection did not exist for the citizens in the area of concern then the NRC would take appropriate action. The initial size of the EPZ is a determination by the State and local emergency management officials in coordination with the licensee and FEMA. Typically, any

change to the size of the EPZ would be proposed by State and local emergency management officials based on their judgment. The State and local emergency officials would need to agree on whether to propose a change to the size of the EPZ to the licensee. The licensee would consider any changes to the size of the EPZ and revise the emergency plan if it deemed the change necessary. The licensee, utilizing 10 C.F.R. § 50.54(q), could increase the size of the EPZ without NRC prior approval as long as it does not reduce the effectiveness of the emergency plan. If there is a reduction in the effectiveness, the licensee must submit a license amendment for the change. The Staff in coordination with FEMA would perform a review of the change to the emergency plan.

9. **The draft license contains requirements for safety testing to validate safety system performance such as the emergency core cooling system. Three of these five tests are "first plant only" tests. This would mean that after the first AP1000 unit is built anywhere in the country, the subsequent plants would not require the first plant only testing. The justification in the FSER section 14.2.5.4 relies largely on administrative controls by the first plant. Why is a single test for such important safety systems sufficient to protect the health and safety of the public?**

Staff Response:

The basis for why first plant only tests of important safety systems are acceptable is in the regulatory basis supporting the initial test programs for the AP600 design in NUREG-1512, and the AP1000 design in NUREG-1793 and its supplements.

The objective of these special tests is to establish unique phenomenological performance parameters of the AP1000 design features that are not expected to vary from plant to plant and to confirm previous results obtained during testing performed at test facilities for design certification purposes. For example, a first-plant-only in-containment refueling water storage tank (IRWST) heat-up test is performed to observe the thermal profile developed during the heat-up of the IRWST water during the passive residual heat removal heat exchanger (PRHR HX) operation during pre-operational hot functional testing. The objective of this test is to confirm the results of the AP1000 design certification program PRHR HX tests with regard to IRWST mixing. Because of the standardization of the AP1000 design, the PRHR HX design and the size and configuration of the IRWST will not change from plant to plant; therefore, the heat-up and mixing characteristics are not expected to vary from the test results obtained on the first plant. Another example of a first-plant-only test is the PRHR HX natural circulation test conducted during startup testing. The objective of this test is to demonstrate the heat removal capability of the PRHR HX with the reactor coolant system at prototypic temperatures and natural circulation conditions. Because of the standardization of the AP1000 design, the natural circulation thermo-hydraulic behavior of the PRHR HX is not expected to vary from plant to plant, thus obviating the need to perform such tests on subsequent AP1000 plants.

The Staff's safety finding is not based solely on the successful execution of these first-plant-only tests. Rather, the acceptable performance and safety of the passive core cooling system has also been demonstrated through separate-effects and integral-system tests in a rigorous test program as part of the AP1000 design certification review.

The COL for VCSNS will require the successful execution and completion of these tests unless the licensee can demonstrate the applicability of acceptable test results obtained at another licensed AP1000 plant. In section 14.2.5.4 of the VCSNS FSER, the Staff addressed STD SUP 14.2-4, which is supplemental information that describes the utilization of operating experience

in the development of plant administrative procedures. In conjunction with STD SUP 14.2-4, the Staff also reviewed VCSNS-Proposed License Condition 7, which provides the Applicant's proposed administrative controls that govern the performance of first-plant-only and three-plant-only tests.

The Staff did not accept all aspects of the Applicant's proposed license conditions. One portion of proposed License Condition 7 that was not accepted by the Staff was that subsequent plant licensees crediting completion of testing by the first-plant or by the first-three plants provide a report referencing the applicable documentation identified by the first (or first three) plant(s) confirming the testing to the Director of the Office of New Reactors. Proposed License Condition 7 would have allowed a licensee to take credit for first-plant-only or first-three-plant-only testing at another facility without having to seek a license amendment if the conditions proposed by the Applicant were met. Therefore, the Staff's FSER Section 14.2.5.5 does not include this portion of the Applicant's proposal in the Staff's proposed license condition associated with first-plant-only and first-three-plant-only testing. As discussed in response to question 3, if a subsequent licensee wishes to take credit for a previously completed first-plant-only or first-three-plant-only testing performed on a different plant(s), it must request a license amendment, after receiving its COL, based on an acceptable test result at another licensed plant that is applicable to its plant.

10. The COL for Unit 3 includes a license condition for geologic mapping of excavation. This license condition is not included in the COL for Unit 2 because this activity has already been performed. Why was this activity previously performed for Unit 2 but not for Unit 3?

This question was directed solely to the Applicant. Accordingly, the Staff has not provided a response.

11. The Staff states that the MC&A program exemption request was similar to an exemption requested by the Vogtle RCOL applicant. Please explain noteworthy differences between the two exemption requests, if any.

Staff Response:

There are no noteworthy or substantive differences between the two exemption requests. Except for the name of the Applicant, the requests are identical. The request appears in Part 7 of the Vogtle COL application, pages 20 to 24 and in Part 7 of the VCSNS COL application, pages 19 to 23.

12. a) Please explain the need for the departure regarding the maximum safety wet bulb air temperature.

This question was directed solely to the Applicant. Accordingly, the Staff has not provided a response.

b) Is the departure regarding the maximum safety wet bulb air temperature a unique departure for the Summer COL, or is it expected for other COL applications referencing the AP1000 certified design?

Staff Response:

The departure regarding the maximum safety wet bulb air temperature is not exclusive to the VCSNS COL. The COL application submitted by Florida Power and Light for Turkey Point Nuclear Units 6 and 7 contains a similar departure from the wet bulb temperature design parameter in the AP1000 certified design. The wet bulb departure appears in Part 7, page 1-5, in the Turkey Point COL application. The remaining 5 COL applications that reference the AP1000 certified design (Vogtle Units 3 and 4, Levy Units 1 and 2, William States Lee Units 1 and 2, Shearon Harris Units 2 and 3, and Bellefonte Units 3 and 4) did not request this departure. This is consistent with the AP1000 DCD, Tier 2, page 2-1, which states that the DCD site parameters envelope most sites in the United States.

13. Please provide a map of the EPZ for Units 2 & 3 (or a reference to an RAI response containing a map).

This question was directed solely to the Applicant. Accordingly, the Staff has not provided a response.

14. Please identify the license conditions for implementing operational programs that were required in order to reach the reasonable assurance finding.

Staff Response:

SECY-05-0197, Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance, dated October 28, 2005, discussed the information on operational programs that COL applicants are required to provide in their application, implementation of operational programs, and license conditions for implementing operational programs. The NRC's regulations at 10 C.F.R. § 52.79 specify the contents for COL applications, including descriptions of operational programs and their implementation; however, the regulations do not specify implementation milestones for all operational programs. SECY-05-0197 proposed to the Commission that license conditions be used to specify implementation milestones for those operational programs required by regulations that did not have implementation milestones specified in the regulations. The Commission approved the Staff's proposal in its staff requirements memorandum (SRM) dated February 22, 2006.

In 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," the Staff provided a discussion and reference to a draft COL for VCSNS Units 2 and 3. Proposed license conditions 2.D.10 and 2.D.11 address the operational programs for which the regulations do not specify implementation milestones and for which the Staff believes known implementation dates are necessary in order to reach the reasonable assurance finding. The first license condition, 2.D.10, provides the implementation milestones for the operational programs whose implementation schedule is not specified in a regulation. This proposed license condition lists each of these operational programs and provides an implementation milestone.

The second proposed license condition, 2.D.11, requires SCE&G to submit to the Director of NRO, or the Director's designee, a schedule for implementation of the operational programs listed in VCSNS COL FSAR Table 13.4-201, including the associated estimated date for initial loading of fuel. VCSNS COL FSAR Table 13.4-201 contains a complete listing of all operational programs that are required in order to reach the reasonable assurance finding. The purpose of this proposed license condition is to provide the Staff with the necessary information so that it can adequately plan for the inspection of these operational programs.

15. Draft license section 2.D.(1) Changes During Construction references COL-ISG-025, "Changes during Construction under Part 52." When will this interim Staff guidance be made final? What public comments have been received other than from industry? To what extent do we expect this to be used by SCE&G? How many License Amendment Request Preliminary Acceptability Reviews do we expect the applicant to submit each year? Have we tried to exercise this ISG in a table top all the way through the process with various types of PARs?

Staff Response:

COL ISG-025 "*Changes during Construction under Part 52*" is scheduled for release to the public for "Use and Comment" during October 2011 with a public comment period of 75 days. The Staff plans to issue the final COL/ISG-025 after the public comment period and revise the ISG incorporating lessons learned from implementation of the ISG during the construction phases of the initial COLs.

The Staff does not have a specific estimate of PARs from SCE&G. As a general matter, industry estimates were offered in the range of approximately 20 per site during the initial year of construction, followed by five to ten per year during the remaining years of construction.

During 2011 the Staff conducted two ISG-025 CdC table top sessions with the public, industry and NEI attending. The initial table top session clarified the Staff's expectations for the information that will constitute a Preliminary Acceptability Review (PAR) submittal for an effective review of the construction inspection schedule impacts and clarified the Staff's expected resource reallocations for the Region II Center for Construction Inspection (RII CCI) (ADAMS ML111390328). The second table top session exercised the Staff's PAR assessment sequences and firmly established the need for the linkage between the PAR and the related LAR submittal prior to the Staff's finding on the PAR (ADAMS ML110950672). For these tabletop sessions, industry submitted six different PAR request examples that were representative of both anticipated and emergent PAR requests and the Staff provided one example of a plant change that would require an anticipated license amendment request (ADAMS ML111390403). There were no comments from the public other than industry discussions and input during the tabletop sessions conducted during 2011.

16. Because you identified populations near the site that were potentially vulnerable to disproportionately large adverse environmental impacts, additional analysis was conducted to assess the potential impacts of significant pathways for human health and welfare effects. Aside from information obtained from SCE&G, the public scoping process and interviews with local officials, the information paper states that you conducted an independent evaluation and confirmatory analysis. Please describe the evaluation and confirmation process you followed and the conclusions you reached.

Staff Response:

The process the Staff used in its evaluation and confirmatory analysis is summarized in Section 2.6.1 of the final Environmental Impact Statement (FEIS). In accordance with 10 C.F.R. § 51.70(b), which states: "The NRC staff will independently evaluate and be responsible for the reliability of all information used in the draft environmental impact statement," the Staff began its assessment of the potential environmental justice (EJ) impacts from the building and operating of V.C. Summer Units 2 and 3 by performing an acceptance review upon receipt of the Applicant's Environmental Report (ER). In the ER, the Applicant applied the NRC's methodology for identifying potential EJ areas through a Census demographic search of the 50 mile region at the block group level (see ESRP 2.5.4 at page 2, and LIC-203 Rev 2, Procedural Guidance for Preparing Environmental Assessments and Considering Environmental Issues, Appendix C at page C-6 ML080840323). Therefore, the Staff determined the contents of the ER were sufficiently complete for the Staff to begin its EIS development. The ER identified a large number of block groups in Fairfield County, especially in and around Jenkinsville, the closest community to VCSNS, as being Black or African American populations of interest. To carry out its independent review, the Staff performed field reconnaissance of the affected Census block groups near the proposed site (in Fairfield County) where impacts would be most noticeable. The Staff visited the area four times between April 2007 and March of 2009 specifically to verify and supplement the information provided by SCE&G in its ER with regard to socioeconomic and EJ issues. The Staff met with local government officials, elected officials, private social service agencies, and various clergy from the local area. In addition to meeting with local officials, the Staff extensively visited areas throughout Fairfield County and the vicinity of the VCSNS site. These visits included the small communities of western Fairfield County including Jenkinsville, Dawkins, Blair, and Monticello. The visits also included driving the affected roadways and viewing river and lake access points including Parr Reservoir, Monticello Reservoir, and the Broad River. The interviews and related observations are documented in the Staff's consolidated (covering multiple visits) trip report[1], which is referenced in Section 2.6.1 of the FEIS. Interviews with local officials and other stakeholders revealed the following potential environmental justice issues:

- A reliance on fishing and gardening for subsistence by a noticeable segment of the local population
- High unemployment and a lack of scheduled transportation services among the minority and low-income communities in the vicinity of the site.
- The Black or African American Census block group that contained Jenkinsville had a high proportion of low-income people living along the local roads that would be the primary commuting route for VCSNS construction and operations personnel for Units 2 and 3.

[1] Memorandum from Patricia Vokoun (Project Manager) to Ryan Whited (Branch Chief) dated March 18, 2010, Subject: "Summary of the Environmental Site Audit and Alternative Site Visit Related to the Review of the Combined License Application for Virgil C. Summer Nuclear Station, Units 2 and 3." Accession No. ML100480082.

Subsistence: Interviews in Fairfield County suggested a noticeable segment of the local population relied on subsistence activities, primarily fishing and gardening, to supplement their diet. The Staff was able to observe what can be characterized as subsistence fishing. For the purposes of the EJ analysis in the EIS, the Staff defined subsistence fishing as the observation of:

- Fishing (typically alone) from the bank, rather than from a boat, without visible means of transportation nearby
- Fishing during all hours, especially during normal working hours, instead of during typical recreational fishing times (early morning and late afternoon)
- Buckets or other gear indicating that fish are being kept, rather than released
- All of this in a community where the practice has been reported to occur

The Staff identified no pathways that would modify or disrupt these subsistence uses and, therefore, the Staff concluded that there would be no subsistence-related EJ impacts from activities for VCSNS Units 2 and 3. (FEIS at 4.5.3, 5.5.3)

Employment: Interviews also suggested there was a high level of unemployment, which was exacerbated by the lack of a reliable public transportation system (because many local residents walked as their primary means of transportation). Local officials indicated that several programs either were in place or in the process of being put in place to help the local Jenkinsville and surrounding western Fairfield County area take advantage of the new construction activities at the Summer site. The Staff also viewed a job training center in the small community of Dawkins, which is on the opposite side of Lake Monticello from Jenkinsville and about 4 miles due north of VCSNS Unit 1. The center was operating and appeared to have bus transportation available to participants.

The Staff determined that, given the plans by SCE&G contractors and local governments to provide access to relevant job training for local residents to take advantage of employment opportunities at VCSNS Units 2 and 3 and the expected large influx of property tax revenue to Fairfield County, there would be no employment-related EJ impacts from building and operating VCSNS Units 2 and 3. (FEIS at 4.4.3.1).

Traffic-related impacts: Regarding traffic impacts, the Staff visited the locations where the State conducts its traffic data collection on the routes approaching the site. The Staff also drove most of the main roads in the vicinity of the site. The Staff was able to determine that:

- The roads providing primary access from I-20 to the site are rural or county two-lane roads that were not designed to support large volumes of traffic
- There are no alternate routes that would provide the majority of the workforce with efficient access to the site
- The local highways have narrow and uneven shoulders
- Traffic impacts would be most likely at intersections around the Jenkinsville community

Having identified a pathway for EJ impacts and the presence of a population of interest, the Staff examined the SCE&G ER to determine whether the Applicant had offered any mitigative

measures that would reduce the impacts. The Staff determined that the proposed mitigation plan for traffic – which is discussed in more detail in response to Question 28 -- in conjunction with the temporary and short-term nature of the impacts, would result in MODERATE EJ impacts from construction and preconstruction activities related to traffic. The Staff determined that because the traffic-related impacts from operations activities would be less than those from building VCSNS Units 2 and 3, the traffic-related EJ impacts from operations would be SMALL. (FEIS at 4.5.5 and 5.5.5)

17. Did the applicant propose any novel approaches in the environmental portion of its application? How did the Staff address these approaches?

Staff Response:

No. The Applicant did not propose any novel approaches in its application. The Applicant's ER generally followed the guidance in NUREG 1555, "The Environmental Standard Review Plan" and other applicable guidance documents.

18. Please summarize the differences between the environmental portion of the review for this COL application and the reviews for previously issued ESPs.

Staff Response:

The primary differences in the environmental review between the previously issued early site permits (ESPs) and this COL are because of:

- Differences in regulations between ESPs and COLs (need for power, alternative energy)
- ESP plant parameter envelope (PPE) approach versus a specified design

There are several items that an EIS for an ESP is not required to address, that were required to be in the Summer EIS. The requirements for an EIS for an ESP are in 10 C.F.R. § 51.75(b) and the requirements for a COL are in 10 C.F.R. § 51.75(c). Specifically, an assessment of the economic, technical, or other benefits (for example, need for power) and costs of the proposed action or an analysis or alternative energy analysis are not required for an ESP EIS, unless these analyses were addressed in the Applicant's ER. For example, the Clinton and Grand Gulf ESPs included energy alternatives but not need for power, and the North Anna ESP did not include need for power or energy alternatives. The Summer EIS, however, was required to contain all of these analyses.

Another distinction between applicants for ESPs and applicants for COLs is that ESP applicants have the choice of using a PPE instead of specifying a specific reactor design. The PPE serves as a surrogate for the reactor design. The PPE approach allows an applicant to bound the design characteristics of a reactor or reactors that might be constructed at a site. The first three ESPs (Clinton, Grand Gulf and North Anna) used the PPE approach and did not specify a reactor design. For example the PPE developed by the applicant for the North Anna ESP was a composite of values derived from five light water reactors and two gas cooled reactors.

19. The draft license for VCSNS contains an environmental protection plan. This plan cites Unusual Events. Are these Unusual Events different from Unusual Events in the Emergency Plan discussed in the FSAR and FSER and do they drive a different plant response? If they are different, why use the same terminology? If they are the same, do they drive the same plant response?

Staff Response:

The term "Unusual Event" as used in the Environmental Protection Plan (EPP) is separate and different from that term's usage in the context of reactor safety, and the term drives a different plant response in the environmental context. An unusual event within the context of the EPP is narrowly defined in Section 2.3 of the EPP as any onsite mortality, injury, or unusual occurrence of any species protected by the Endangered Species Act of 1973, as amended (ESA). The response to an unusual event under the EPP is also different. It requires a written report of the event within 30 days. To avoid duplication, if the licensee is also required (under other permits or regulations) to submit a written report to another agency, then a copy of that report can be submitted under the requirements of the EPP. Also note that some of the events would be reported to the Staff under 10 C.F.R. § 50.72(b)(2)(xi) as a 4-hour report. But the written report required by Section 4.1 of the EPP would provide the additional details regarding the event that would not be available at the time of the report under Section 50.72. Additionally, specific unusual events may require very specific responses as required by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service if a biological opinion is issued.

When the original Environmental Technical Specifications (Appendix B to the operating licenses) were developed in the 1970s for early reactors, an attempt was made to develop requirements that paralleled the safety requirements, including the structure of the technical specifications and the terminology used. This included the use of the term "Unusual Event" for certain types of events that would have to be reported to the Staff. In the late 1970s and early 1980s the Environmental Technical Specifications were converted to EPPs. A number of currently operating plants still have the term "Unusual Event" in their EPPs. For example, see Sections 4.1 of the EPPs for Grand Gulf and River Bend (Appendix B to the licenses). Because the use of this term in the context of the EPPs is known to the industry, it was retained when the Staff developed a template for the EPPs for new reactors.

20. The various safety-related license requirements are well documented in the FSER. However, there are additional license requirements for the environmental protection plan that are attached to the draft license. Where in the FEIS are they evaluated?

Almost all of the requirements in the EPP template are administrative in nature (e.g., reporting requirements). The administrative portions of the EPP are not evaluated in the EIS because they do not involve environmental impacts. These requirements are intended to ensure that the Staff remains cognizant of significant environmental matters related to its licensed facilities. The Commission specifically addressed this matter in the statements of consideration for the March 12, 1984, revision to 10 C.F.R. Part 51 and Section 50.36(b) stating that

> The Commission views its responsibilities under NEPA as including the responsibility for keeping informed of the environmental effects of its licensing actions. … In addition, the Commission will continue its practice of including conditions in its licenses to assure that it is kept knowledgeable about other environmental matters involving its licensees. … In the opinion of the Commission, this well-established practice should be appropriately reflected in the regulations. Accordingly, the Commission is amending Part 50 of this chapter to add a new § 50.36b which provides that each operating license for a utilization or production facility may include environmental conditions.

49 Fed. Reg. 9352, 9360.

The most likely requirements that would not be administrative would be conditions placed on a licensee as a result of a biological opinion issued by either the U.S. Fish and Wildlife Service (FWS) or the National Marine Fisheries Service pursuant to ESA Section 7. Under the ESA, a biological opinion issued by one of the Services would include terms and conditions directed to the NRC. The NRC would likely impose these terms and conditions on the licensee. The EPP is the vehicle for ensuring the licensee's compliance with these terms and conditions and it is a tool that the NRC uses to ensure that the agency complies with the ESA. Neither Service has issued a biological opinion regarding the NRC's potential issuance of COLs for the proposed VCSNS Units 2 and 3. Instead, each Service issued a letter concluding the ESA Section 7 consultations and concurring with the NRC's determination that the proposed action would not adversely affect ESA-listed species or adversely modify critical habitat. The FWS letter is in Appendix F of the FEIS; the NMFS letter was issued after FEIS publication, so it is not included in Appendix F, but it is available in ADAMS at ML119904161. As a result, the Services did not issue terms and conditions, and therefore, no evaluation exists for such requirements. If a biological opinion with terms and conditions had been issued for the VCSNS COL before FEIS publication, that opinion, including the terms and conditions therein, would be documented in the EIS. The implementation of EPPs as a part of the licensing process for new reactors has been discussed with industry in meetings and correspondence, concluding with a letter to the Nuclear Energy Institute dated June 9, 2010, in ADAMS at ML101110205.

21. Section 4.2 of the draft license environmental protection plan cites a license requirement to perform independent review and audit of section 2.3 of the Endangered Species Act of 1973. This license requirement appears to be lacking in specificity for the frequency, depth, and scope of review. Where is the requirement discussed in the Staff's evaluation and what are the performance requirements to satisfy this license?

Staff Response:

The purpose of the review and audit requirement is to ensure some independent oversight (within the licensee's organization) of the implementation of the EPP. However, natural variability of environmental conditions at the site precludes specification of frequency, depth, and scope of the required independent review and audit of the licensee's implementation of section 2.3 of the EPP. Since this is an environmental and compliance issue of no safety significance, the Staff does not believe that a detailed audit plan is necessary to determine licensee compliance. Additionally, avoiding such specificity ensures that the EPP will not impose requirements that may not align with, or even inadvertently contradict or oppose,

potential terms and conditions required by FWS or NMFS. This flexibility is important because, if an event or change in status of a species requires reinitiating consultation under Section 7 of the ESA after the license is issued, this consultation may result in a Service issuing a new or revised Biological Opinion with new or revised terms and conditions, which could be included in an EPP. Finally, an important component of section 2.3 of the EPP is related to discovery, i.e., the discovery of a species covered by the ESA that was not known to exist at the plant site or the discovery of a "take" of a known species that exceeds the limit established by a biological opinion. As a result of the unpredictability of discovery, a specified independent review and audit plan is not warranted. A requirement to conduct a periodic audit of compliance consistent with the current safety-related audit cycle is sufficient. As an item of an administrative nature, this item is not discussed in the EIS (similar to the response to Question 20).

22. SECY-11-0115 states that the USACE has not made a final permit decision. When do we expect this decision to be issued? Do we know that it will not contain any contrary information from our conclusions? Can we conduct the hearing and issue the license prior to the USACE issuing its Record of Decision?

Staff Response:

According to the U.S. Army corps of Engineers (USACE), the USACE Record of Decision for its permit issued under Section 404 of the Clean Water Act will be based largely on information and conclusions in the EIS. The USACE's decision on its Section 404 permit is likely to be made 30-60 days after receipt of the Section 401 Water Quality Certification. At this time, the USACE is unaware of any USACE permit decision issue or factor that would contain information contrary to the Staff's conclusions reached in the EIS. Further, the September 2008 Memorandum of Understanding (MOU) between NRC and USACE (73 FR 55546) states that, the NRC and the USACE retain ultimate responsibility for making determinations and exercising their individual responsibilities and that the NRC reserves the right to make a final decision on any matters within the NRC's regulatory authority. Therefore, the Commission may conduct the hearing and issue the license before the USACE issues its ROD.

23. SECY-11-0115 also notes that 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 Clean Water Act prohibits the NRC from issuing the license until the certification is received. Have we reviewed the responsibilities of other regulatory agencies to assure ourselves that we are properly coordinating our COL issuance with any required decisions or permits that they must render before us?

Staff Response:

Yes, the Staff has reviewed the responsibilities of other regulatory agencies and applicable laws to assure we are properly coordinating our COL issuance with any required decisions or permits that must be rendered before the NRC can issue a COL. The following lists the relevant laws, other than the Atomic Energy Act and NEPA that must be met prior to issuing the COL, and the current status of each:

- *Endangered Species Act of 1973* (16 U.S.C. 1531 et seq.,). Status: consultation completed with the US Fish and Wildlife Service on March 14, 2011 (available at

ML110900346) and with the National Marine Fisheries Service on June 27, 2011 (available at ML111990416).

- *National Historic Preservation Act of 1966* (16 U.S.C. 470) Status consultation completed, see Section 4.6 of the FEIS.

- Clean Water Act (33 U.S.C. 1251, et seq.)—The *Federal Water Pollution Control Act of 1948*, also known as the Clean Water Act (CWA), Section 401, requires applicants for a federal license, if conducting an activity that might result in a discharge into navigable waters, to provide the licensing agency a certification from the state that the discharge would comply with applicable CWA requirements (33 U.S.C. 1341). SCE&G must obtain certification from the South Carolina Department of Health and Environmental Control (SCDHEC), and submit it to the NRC. Status: NRC awaiting the Section 401 certification from SCE&G.

- Nuclear Waste Policy Act (42 U.S.C. 10101, et seq.) Status: complete. As stated in Section 1.5.2 of the FSER, the Applicant entered into a contract with the Department of Energy for disposal of high-level waste and spent fuel.

- Energy Policy Act of 2005, Section 657 (H. R. 7, August 8, 2005) Status: Complete. As stated in section 1.5.3 of the FSER, the Staff consulted with the Department of Homeland Security.

The Staff verified that the requirements in these laws that are applicable to the NRC have been met. The only law that the Staff is aware of that has not yet been met and would prohibit the NRC from issuing the COLs is the Clean Water Act Section 401 certification. Once SCE&G provides the Staff with the 401 certification, the Staff can issue the COL.

24. Describe the areas of the FEIS which were developed differently from existing NRC guidance or regulations due to cooperation with the USACE (e.g., alternatives and description of preconstruction activities).

Staff Response:

In preparing the EIS, the NRC Staff did not depart from NRC regulations or from its regulatory guidance to cooperate with the U.S. Army Corps of Engineers (USACE) on the FEIS. Although the Staff did not depart from its guidance or regulations, it may be helpful to describe the differences in regulatory authorities and approach to decision-making of the two agencies with respect to the environmental review.

There are some differences in the NRC's consideration of the proposed action from that of the USACE; consequently, there are differences in considering the environmental effects of the action (i.e., building and operating a nuclear power plant) and the alternatives thereto (e.g., alternative sites). In considering the effects of building the facility, the NRC differentiates between "construction" and "preconstruction" activities; however, the USACE does not. The NRC's standard for considering alternatives is a two-part sequential test to determine if an alternative is "environmentally preferable" and, if so, whether or not it is "obviously superior" to the proposed action; the USACE determines whether or not the proposed action is the least environmentally damaging practicable alternative or LEDPA.

The differences in the scope of the action considered by each agency were managed throughout the EIS. For example, in the EIS Chapter 4 sections for each resource area, the summary of impacts during construction and preconstruction describes the impacts initially as those for "building" the facility to meet the needs of the USACE and then for "NRC-authorized construction." Had the USACE not participated in the preparation of the EIS, then the Staff would have focused its discussion of the impacts of preconstruction activities into Chapter 7 sections dealing with cumulative impacts. All environmental effects, including those of the project, would have been considered in Chapter 7 with or without the USACEs' participation as a cooperating agency. Insofar as the USACE was a cooperating agency, the environmental effects of preconstruction activities were also considered in Chapter 4. The Staff updated its guidance to reflect this difference. In a Memorandum dated December 10, 2010 (ML100760503), the Director, Division of Site and Environmental Review, NRO, issued supplemental guidance to the Staff for developing EISs for new reactor applications involving, among other things, the consideration of cumulative impacts; the Memorandum has been updated already (ML110380369) and is likely to be updated, as needed, until the regulatory guidance is incorporated into the next revision of the ESRP.

For the purposes of considering alternative sites, the review team (both the NRC staff and the USACE Staff) considered the Applicant's site selection process that screened down from the region of interest to the proposed and alternative sites. As described in Section 9.3.7 of the EIS and following NRC's regulatory guidance, the Staff's evaluation of alternative sites determined that there were no environmentally preferable alternative sites; consequently, there was no need to examine alternative sites in greater detail. The USACE will use the information contained in the EIS and will make its LEDPA determination as part of its Record of Decision on the action. The comparison of environmental effects between the proposed and alternative sites is focused on cumulative impacts; consequently, the construction/preconstruction distinction is not a discriminating factor.

25. What is the relationship between measures and controls to limit adverse impacts listed in Table 4-7 of FEIS, the Construction Environmental Control plan referenced on page 4-89 of the FEIS, and the Environmental Protection Plan that is required by the NRC license? Address whether measures and controls outside of the NRC's regulatory jurisdiction were described in the EIS.

Staff Response:

An applicant seeking to build and operate a nuclear power plant must obtain a license from the NRC. While obtaining permission from the NRC is necessary, there are numerous other environmental-related authorizations, permits, and certifications potentially required by Federal, State, regional, local, and affected Native American Tribal agencies as well. The tabulation of such permissions is provided in Appendix H of the FEIS.

The NRC, if it grants permission to conduct "construction" activities [as defined in 10 C.F.R. § 51.4], and other permitting agencies, if they grant permission to build (i.e., conduct "preconstruction" and "construction" activities) the facility, would require that the Applicant undertake certain actions to mitigate the environmental effects of its activities. The actions that

the Applicant plans to undertake to mitigate the effects of activities even outside of NRC's regulatory authority (e.g., preconstruction activities) were considered by the Staff because such actions could have a bearing on the cumulative impacts evaluation presented in Chapter 7 of the FEIS. If another Federal, State, regional, local, or affected Native American Tribal agency requires such mitigation as a condition of its permission, then the Staff could account for it in the NRC evaluation of impacts even though NRC does not have jurisdictional control over the activity.

In Section 4.6.1 of its Environmental Report (ER), the Applicant listed the mitigative actions that it plans to use on the site to meet the overall environmental protection objectives to build the project; these planned activities comprise the Construction Environmental Controls Plan. The essential attributes of the Plan were listed in Table 4.6-1 of the ER. The Staff referred to the Applicant's Plan on page 4-89 of the FEIS, considered the Applicant's plans to control and mitigate environmental effects of building the plant, and disclosed them in Table 4-7 of the FEIS.

The Applicant is also required by 10 C.F.R. § 51.50(c) to identify procedures for reporting and keeping records of environmental data, and to identify conditions and monitoring requirements to protect the environment in accordance with 10 C.F.R. § 50.36b. Such environmental conditions are included in the Environmental Protection Plan (EPP) included as Appendix B to the Draft COL.

The EPP is not limited to the construction activities covered by the Applicant's Construction Environmental Controls Plan. The EPP also covers environmental occurrences associated with plant operations that would require notification of the NRC so that the NRC could take appropriate actions (for example, reinitiate consultation under the Endangered Species Act).

26. The Staff used a unique approach to public outreach for the environmental scoping process. Does the Staff believe that this approach was successful in garnering meaningful public comments, and would Staff consider using this approach again in similar circumstances?

Staff Response:

The Staff believes the adaptation of our Scoping Meeting process to accommodate the specific needs of the local community was highly successful. Our expanded process allowed for the inclusion of many people who otherwise would not have had their concerns heard. The Staff would consider the expansion of its scoping and public meeting process in the future to accommodate the special needs of the communities involved.

27. Please highlight major themes from the comments on the DEIS, generally describe the Staff's responses to those comments.

Staff Response:

The Staff issued the draft EIS on April 26, 2010, for public comment. The Staff held an open-house and two public meetings in Jenkinsville, South Carolina on May 27, 2010. A

transcriptionist was present to record comments from attendees at the open-house who were not available to speak during the scheduled public meeting times but who wished to provide verbal comments. Both public meetings were also transcribed to collect comments from interested stakeholders in the area of the proposed project. During the 75-day comment period the Staff received 19 letters and e-mail messages with comments. Approximately 85 people attended the DEIS public meeting, 13 provided oral comments. The Staff addressed 269 individual comments extracted from the open-house and meeting transcripts, letters, and emails.

Some comments addressed topics and issues that are not part of the environmental review for this proposed action. These comments included comments on the NRC review and regulatory processes, general comments of support or opposition to the project, or topics that are part of the NRC safety review such as emergency preparedness or security and terrorism. With respect to these comments, the Staff generally either acknowledged the commenter's general support for or opposition to the application or explained why the matter raised was not within the scope of the Staff's environmental review.

With respect to those comments on topics within the scope of the Staff's environmental review, the themes identified by the Staff related primarily to the areas of aquatic and terrestrial resources, surface water use, socioeconomics, need for power, and energy and siting alternatives. The Staff response generally directed the commenter to the section of the FEIS where the issue was evaluated, and indicated whether or not that section had been revised as a result of the comment. Most responses included a brief explanation of how a section of the FEIS was revised, or why a section was not revised.

28. Please identify the SCE&G commitments intended to mitigate the traffic-related impacts related to building the additional units.

Staff Response:

The ER Rev 2, Section 4.4.2.2.4, Page 4.4-19 states:

> Mitigation measures would be included in a construction management traffic plan developed before the start of construction. Potential mitigation measures could include establishing a centralized parking area away from the site and shuttling construction workers to the site in buses or vans, encouraging carpools, staggering construction shifts so they do not coincide with operational shifts, and scheduling construction deliveries to avoid shift change times. SCE&G could also establish a shuttle service from the Columbia area, where a significant portion of the construction workforce would likely settle. The Unit 1 operations workforce would continue to enter the plant at the current entrance on SC 215.

In accordance with its guidance at LIC-203 rev 2 Appendix C at page C-8 – C-9, the Staff reviewed these mitigation measures and determined that:

> because the traffic-related impacts would be temporary and of short duration in nature, and would be mitigated to some extent by SCE&G commitments, they would be noticeable but not destabilizing to the Jenkinsville community. Therefore, the Staff concludes that the environmental justice impacts from construction and preconstruction activities related to traffic would be MODERATE. (FEIS at 4.4.4.1)

Since the traffic-related impacts from operations would necessarily be less than those found during the peak construction employment period and because the traffic mitigation measures implemented by SCE&G for construction and pre-construction activities would still be in place, the Staff determined the traffic-related environmental justice impacts during operations would be SMALL.

29. Since this was the first COL FEIS completed under the Memorandum of Understanding with USACE, are there any lessons learned that the Staff would apply to future COL FEIS reviews?

Staff Response:

Yes. Because the FEIS serves as the environmental bases for both the NRC's COL and the USACE's Section 404 permit, the Applicant must submit information that satisfies the needs of both agencies. For example, the USACE has regulatory responsibility under Section 404 of the Clean Water Act to protect wetlands. The NRC considers impacts to wetlands in its environmental review under NEPA, but does not have the regulatory responsibility to protect the wetlands. Because of this regulatory responsibility to protect wetlands, the USACE needed more detailed information on wetlands than did the NRC, particularly in the area of transmission line impacts. The Applicant provided the more detailed information on wetlands required by the USACE in a response to a request for additional information. One lesson learned is that early pre-application interaction between an applicant for an NRC license or permit and the other Federal and State agencies that will also be issuing permits provides for a more effective and efficient review. Efficiencies can be gained by encouraging the applicants when they are planning their project to engage other Federal and State agencies to 1) provide the information in the ER that cooperating agencies may need, and 2) avoid other agencies requiring changes to the project after the ER is submitted. The NRC Staff is proactively addressing this lesson learned by engaging with the industry and other Federal and State agencies. On July 15, 2010, the NRC Staff held a public meeting with representatives from the Nuclear Energy Institute (NEI), the Environmental Protection Agency (EPA), USACE, the Bureau of Land Reclamation and the Virginia Department of Environmental Quality to discuss effective multi-agency interactions. The NRC is continuing to work with NEI to develop guidance for potential applicants on this issue.

Overall, the MOU between the USACE and the NRC (*see,* 73 FR 55546) was a success. The EIS supports two agencies' licensing and permitting requirements, which is an effective use of government resources. The USACE and the NRC each had their area of expertise and working together produced a better EIS than either agency could by itself, without an impact to the overall schedule.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of	)	
	)	
SOUTH CAROLINA ELECTRIC AND GAS COMPANY	)	
	)	
	)	Docket Nos. 52-057 and 52-028
(Virgil C. Summer Nuclear Station Units 2 and 3)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the "NRC Staff Responses to Commission Questions" have been served upon the following persons by Electronic Information Exchange this 28th day of September, 2011:

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