

9.0 Summary and Conclusions

By letter dated August 6, 2002, South Carolina Electric and Gas Company (SCE&G) submitted an application to the U.S. Nuclear Regulatory Commission (NRC) to renew the operating license (OL) for the Virgil C. Summer Nuclear Station (V.C. Summer) for an additional 20-year period (SCE&G 2002a). If the OL is renewed, State regulatory agencies and SCE&G will ultimately decide whether the plant will continue to operate based on factors such as the need for power or other matters within the State's jurisdiction or the purview of the owners. If the OL is renewed, the schedule is to issue the renewed license by June 2004. The renewed license would supersede the current license. The renewed license would expire on August 6, 2042, which is 20 years after the original license expiration date. If the OL is not renewed, the plant must be shut down at or before the expiration of the current OL, which expires on August 6, 2022.

Section 102 of the National Environmental Policy Act of 1969 (42 U.S. Code 4321) directs that an environmental impact statement (EIS) is required for major Federal actions that significantly affect the quality of the human environment. The NRC has implemented Section 102 of the National Environmental Policy Act in 10 Code of Federal Regulations (CFR) Part 51. Part 51 identifies licensing and regulatory actions that require an EIS. In 10 CFR 51.20(b)(2), the Commission requires preparation of an EIS or a supplement to an EIS for renewal of a reactor OL; 10 CFR 51.95(c) states that the EIS prepared at the OL renewal stage will be a supplement to the *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* (GEIS), NUREG-1437, Volumes 1 and 2 (NRC 1996; 1999).^(a)

Upon acceptance of the SCE&G application, the NRC began the environmental review process described in 10 CFR Part 51 by publishing a notice of intent to prepare an EIS and conduct scoping in the *Federal Register* (67 *Federal Register* 65612 [NRC 2002]) on October 25, 2002. The staff visited the V.C. Summer site in December 2002 and held public scoping meetings on December 11, 2002, in Jenkinsville, South Carolina (NRC 2002). The staff reviewed the SCE&G Environmental Report (SCE&G 2002b) and compared it to the GEIS, consulted with other agencies, and conducted an independent review of the issues following the guidance set forth in NUREG-1555, Supplement 1, the *Standard Review Plans for Environmental Reviews for Nuclear Power Plants, Supplement 1: Operating License Renewal* (NRC 2000). The staff also considered the public comments received during the scoping process for preparation of this Supplemental Environmental Impact Statement (SEIS) for V.C. Summer. The public comments received during the scoping process that were considered to be within the scope of the environmental review are provided in Appendix A, Part I, of this SEIS.

(a) The GEIS was originally issued in 1996. Addendum 1 to the GEIS was issued in 1999. Hereafter, all references to the "GEIS" include the GEIS and its Addendum 1.

Summary and Conclusions

The staff held two public meetings in Jenkinsville, South Carolina, in August 2003 to describe the preliminary results of the NRC environmental review and to answer questions to provide members of the public with information to assist them in formulating their comments. All the comments received on the draft SEIS were considered by the staff in developing this final SEIS and are presented in Appendix A, Part II.

This SEIS includes the NRC staff's analysis that considers and weighs the environmental effects of the proposed action, the environmental impacts of alternatives to the proposed action, and mitigation measures available for reducing or avoiding adverse effects. It also includes the staff's recommendation regarding the proposed action.

The NRC has adopted the following statement of purpose and need for license renewal from the GEIS:

The purpose and need for the proposed action (renewal of an operating license) is to provide an option that allows for power generation capability beyond the term of a current nuclear power plant operating license to meet future system generating needs, as such needs may be determined by State, utility, and, where authorized, Federal (other than NRC) decisionmakers.

The goal of the staff's environmental review, as defined in 10 CFR 51.95(c)(4) and the GEIS, is to determine

... whether or not the adverse environmental impacts of license renewal are so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable.

Both the statement of purpose and need and the evaluation criterion implicitly acknowledge that there are factors, in addition to license renewal, that will ultimately determine whether an existing nuclear power plant continues to operate beyond the period of the current OL.

NRC regulations [10 CFR 51.95(c)(2)] contain the following statement regarding the content of SEISs prepared at the license renewal stage:

The supplemental environmental impact statement for license renewal is not required to include discussion of need for power or the economic costs and economic benefits of the proposed action or of alternatives to the proposed action except insofar as such benefits and costs are either essential for a determination regarding the inclusion of an alternative in the range of alternatives considered or relevant to mitigation. In addition, the supplemental environmental impact statement prepared at the license renewal stage

need not discuss other issues not related to the environmental effects of the proposed action and the alternatives, or any aspect of the storage of spent fuel for the facility within the scope of the generic determination in § 51.23(a) and in accordance with § 51.23(b).^(a)

The GEIS contains the results of a systematic evaluation of the consequences of renewing an OL and operating a nuclear power plant for an additional 20 years. It evaluates 92 environmental issues using the NRC's three-level standard of significance—SMALL, MODERATE, or LARGE—developed using the Council on Environmental Quality guidelines. The following definitions of the three significance levels are set forth in the footnotes to Table B-1 of 10 CFR Part 51, Subpart A, Appendix B:

SMALL - Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.

MODERATE - Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.

LARGE - Environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

For 69 of the 92 issues considered in the GEIS, the staff analysis in the GEIS shows the following:

- (1) The environmental impacts associated with the issue have been determined to apply either to all plants or, for some issues, to plants having a specific type of cooling system or other specified plant or site characteristic.
- (2) A single significance level (i.e., SMALL, MODERATE, or LARGE) has been assigned to the impacts (except for collective off site radiological impacts from the fuel cycle and from high-level waste [HLW] and spent fuel disposal).
- (3) Mitigation of adverse impacts associated with the issue has been considered in the analysis, and it has been determined that additional plant-specific mitigation measures are likely not to be sufficiently beneficial to warrant implementation.

(a) The title of 10 CFR 51.23 is "Temporary storage of spent fuel after cessation of reactor operations—generic determination of no significant environmental impact."

Summary and Conclusions

These 69 issues were identified in the GEIS as Category 1 issues. In the absence of new and significant information, the staff relied on conclusions as amplified by supporting information in the GEIS for issues designated Category 1 in Table B-1 of 10 CFR Part 51, Subpart A, Appendix B.

Of the 23 issues that do not meet the criteria set forth above, 21 are classified as Category 2 issues requiring analysis in a plant-specific supplement to the GEIS. The remaining two issues, environmental justice and chronic effects of electromagnetic fields, were not categorized. Environmental justice was not evaluated on a generic basis and must also be addressed in a plant-specific supplement to the GEIS. Information on the chronic effects of electromagnetic fields was not conclusive at the time the GEIS was prepared.

This SEIS documents the staff's consideration of all 92 environmental issues identified in the GEIS. The staff considered the environmental impacts associated with alternatives to license renewal and compared the environmental impacts of license renewal and the alternatives. The alternatives to license renewal that were considered include the no-action alternative (not renewing the OL for V.C. Summer) and alternative methods of power generation. These alternatives were evaluated assuming that the replacement power generation plant is located at either the V.C. Summer site or some other unspecified greenfield location.

9.1 Environmental Impacts of the Proposed Action— License Renewal

SCE&G and the staff have established independent processes for identifying and evaluating the significance of any new information on the environmental impacts of license renewal. Neither SCE&G nor the staff has identified information that is both new and significant related to Category 1 issues that would call into question the conclusions in the GEIS. Similarly, neither public comments, SCE&G, nor the staff have identified any new issue applicable to V.C. Summer that has a significant environmental impact. Therefore, the staff relies upon the conclusions of the GEIS for all Category 1 issues that are applicable to V.C. Summer.

SCE&G's license renewal application presents an analysis of the Category 2 issues that are applicable to V.C. Summer, plus environmental justice and chronic effects from electromagnetic fields. The staff has reviewed the SCE&G analysis for each issue and has conducted an independent review of each issue. Three Category 2 issues are not applicable because they are related to plant design features or site characteristics not found at V.C. Summer. Four Category 2 issues are not discussed in this SEIS because they are specifically related to refurbishment. SCE&G (SCE&G 2002b) has stated that its evaluation of structures and components, as required by 10 CFR 54.21, did not identify any major plant refurbishment

activities or modifications as necessary to support the continued operation of V.C. Summer, for the license renewal period. In addition, any replacement of components or additional inspection activities are within the bounds of normal plant component replacement and, therefore, are not expected to affect the environment outside of the bounds of the plant operations evaluated in the *Final Environmental Statement Related to Operation of Virgil C. Summer Nuclear Station Unit 1* (AEC 1973) and the *Final Environmental Statement Related to the Operation of Virgil C. Summer Nuclear Station Unit No. 1* (NRC 1981).

Fifteen Category 2 issues related to operational impacts and postulated accidents during the renewal term, as well as environmental justice and chronic effects of electromagnetic fields, are discussed in detail in this SEIS. Four of the Category 2 issues and environmental justice apply to both refurbishment and to operation during the renewal term and are only discussed in this SEIS in relation to operation during the renewal term. For all 15 Category 2 issues and environmental justice, the staff concludes that the potential environmental effects are of SMALL significance in the context of the standards set forth in the GEIS. In addition, the staff determined that appropriate Federal health agencies have not reached a consensus on the existence of chronic adverse effects from electromagnetic fields. Therefore, no further evaluation of this issue is required. For severe accident mitigation alternatives (SAMAs), the staff concludes that a reasonable, comprehensive effort was made to identify and evaluate SAMAs. Based on its review of the SAMAs for V.C. Summer, and the plant improvements already made, the staff concludes that none of the candidate SAMAs are cost-beneficial.

Mitigation measures were considered for each Category 2 issue. Current measures to mitigate the environmental impacts of plant operation were found to be adequate, and no additional mitigation measures were deemed sufficiently beneficial to be warranted.

The following sections discuss unavoidable adverse impacts, irreversible or irretrievable commitments of resources, and the relationship between local short-term use of the environment and long-term productivity.

9.1.1 Unavoidable Adverse Impacts

An environmental review conducted at the license renewal stage differs from the review conducted in support of a construction permit because the plant is in existence at the license renewal stage and has operated for a number of years. As a result, adverse impacts associated with the initial construction have been avoided, have been mitigated, or have already occurred. The environmental impacts to be evaluated for license renewal are those associated with refurbishment and continued operation during the renewal term.

Summary and Conclusions

The adverse impacts of continued operation identified are considered to be of SMALL significance, and none warrant implementation of additional mitigation measures. The adverse impacts of likely alternatives if V.C. Summer ceases operation at or before the expiration of the current OL will not be smaller than those associated with continued operation of this unit and they may be greater for some impact categories in some locations.

9.1.2 Irreversible or Irretrievable Resource Commitments

The commitment of resources related to construction and operation of V.C. Summer during the current license period was made when the plant was built. The resource commitments to be considered in this SEIS are associated with continued operation of the plant for an additional 20 years. These resources include materials and equipment required for plant maintenance and operation, the nuclear fuel used by the reactors, and ultimately, permanent offsite storage space for the spent fuel assemblies.

The most significant resource commitments related to operation during the renewal term are the fuel and the permanent storage space. V.C. Summer replaces approximately one-third of the fuel assemblies during every refueling outage, which occurs on an 18-month cycle.

The likely power generation alternatives if V.C. Summer ceases operation on or before the expiration of the current OL will require a commitment of resources for construction of the replacement plants as well as for fuel to run the plants.

9.1.3 Short-Term Use Versus Long-Term Productivity

An initial balance between short-term use and long-term productivity of the environment at the V.C. Summer site was set when the plant was approved and construction began. That balance is now well established. Renewal of the OL for V.C. Summer and continued operation of the plant will not alter the existing balance, but may postpone the availability of the site for other uses. Denial of the application to renew the OL will lead to shutdown of the plant and will alter the balance in a manner that depends on subsequent uses of the site. For example, the environmental consequences of turning the V.C. Summer site into a park or an industrial facility are quite different.

9.2 Relative Significance of the Environmental Impacts of License Renewal and Alternatives

The proposed action is renewal of the OL for V.C. Summer. Chapter 2 describes the site, power plant, and interactions of the plant with the environment. As noted in Chapter 3, no refurbishment and no refurbishment impacts are expected at V.C. Summer. Chapters 4 through 7 discuss environmental issues associated with renewal of the OL. Environmental issues associated with the no-action alternative and alternatives involving power generation and use reduction are discussed in Chapter 8.

The significance of the environmental impacts from the proposed action (approval of the application for renewal of the OL), the no-action alternative (denial of the application), alternatives involving nuclear or coal- or gas-fired generation of power at the V.C. Summer site and an unspecified "greenfield site," and a combination of alternatives are compared in Table 9-1. Continued use of a once-through cooling system for V.C. Summer is assumed for the V.C. Summer site alternatives.

Table 9-1 shows that the significance of the environmental effects of the proposed action are SMALL for all impact categories (except for collective offsite radiological impacts from the fuel cycle and from HLW and spent fuel disposal, for which a single significance level was not assigned [see Chapter 6]). The alternative actions, including the no-action alternative, may have environmental effects in at least some impact categories that reach MODERATE or LARGE significance.

9.3 Staff Conclusions and Recommendations

Based on (1) the analysis and findings in the GEIS (NRC 1996; 1999), (2) the Environmental Report submitted by SCE&G (SCE&G 2002b), (3) consultation with Federal, State, and local agencies, (4) the staff's own independent review, and (5) the staff's consideration of public comments, the staff recommends that the Commission determine that the adverse environmental impacts of license renewal for V.C. Summer are not so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable.

Table 9-1. Summary of Environmental Significance of License Renewal, the No-Action Alternative, and Alternative Methods of Generation Using Once-Through Cooling

Impact Category	Proposed Action– License Renewal	No-Action Alternative– Denial of Renewal	Coal-Fired Generation	Natural Gas-Fired Generation	New Nuclear Generation	Combination of Alternatives
			Greenfield Site ^(a)	Greenfield Site ^(a)	Greenfield Site ^(a)	Greenfield Site ^(a)
Land Use	SMALL	SMALL	SMALL to LARGE	SMALL to LARGE	MODERATE to LARGE	SMALL to LARGE
Ecology	SMALL	SMALL	SMALL to LARGE	SMALL to LARGE	MODERATE to LARGE	SMALL to LARGE
Water Use and Quality	SMALL	SMALL	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE
Air Quality	SMALL	SMALL	MODERATE	MODERATE	SMALL	MODERATE
Waste	SMALL	SMALL	MODERATE	SMALL	SMALL	SMALL
Human Health ^(b)	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Socioeconomics	SMALL	SMALL to LARGE	SMALL to LARGE	SMALL to LARGE	SMALL to LARGE	SMALL to LARGE
Aesthetics	SMALL	SMALL	SMALL to LARGE	SMALL to LARGE	SMALL to LARGE	SMALL to LARGE
Historic and Archaeo- logical Resources	SMALL	SMALL	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE
Environmental Justice	SMALL	SMALL to MODERATE	SMALL to LARGE	SMALL to LARGE	SMALL to LARGE	SMALL to LARGE

(a) A greenfield site is assumed, for the purpose of bounding potential impacts, to be an undeveloped site with no previous construction.

(b) Excludes collective offsite radiological impacts from the fuel cycle and from HLW and spent fuel disposal, for which single significance levels were not assigned. See Chapter 6 for details.

9.4 References

10 CFR 51. Code of Federal Regulations, Title 10, *Energy*, Part 51, “Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions.”

10 CFR 54. Code of Federal Regulations, Title 10, *Energy*, Part 54, “Requirements for Renewal of Operating Licenses for Nuclear Power Plant.”

National Environmental Policy Act of 1969 (NEPA). 42 USC 4321, et seq.

South Carolina Electric and Gas Company (SCE&G). 2002a. License Renewal Application, V.C. Summer Nuclear Station. Jenkinsville, South Carolina.

South Carolina Electric and Gas Company (SCE&G). 2002b. *Virgil C. Summer Nuclear Station License Renewal Application*. “Appendix E, Environmental Report.” Docket Number 50/395; License Number NPF-12. Jenkinsville, South Carolina.

U.S. Atomic Energy Commission (AEC). 1973. *Final Environmental Statement Related to Operation of Virgil C. Summer Nuclear Station Unit 1, South Carolina Electric and Gas Company*. Docket No. 50-935. Directorate of Licensing, Washington, D.C.

U.S. Nuclear Regulatory Commission (NRC). 1981. Final Environmental Statement Related to the Operation of Virgil C. Summer Nuclear Station Unit No. 1. NUREG-0719, Office of Nuclear Reactor Regulation. Washington D.C.

U.S. Nuclear Regulatory Commission (NRC). 1996. *Generic Environmental Impact Statement for License Renewal of Nuclear Plants*. NUREG-1437, Volumes 1 and 2, Washington, D.C.

U.S. Nuclear Regulatory Commission (NRC). 1999. *Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Main Report*, “Section 6.3—Transportation, Table 9.1 Summary of findings on NEPA issues for license renewal of nuclear power plants, Final Report.” NUREG-1437, Volume 1, Addendum 1, Washington, D.C.

U.S. Nuclear Regulatory Commission (NRC). 2000. *Standard Review Plans for Environmental Reviews for Nuclear Power Plants, Supplement 1: Operating License Renewal*.” NUREG-1555, Supplement 1, Washington, D.C.

U.S. Nuclear Regulatory Commission (NRC). 2002. “Notice of Intent To Prepare an Environmental Impact Statement and Conduct Scoping Process.” *Federal Register*, Vol. 67, No. 207, pp. 65612-65613. Washington, D.C.

Appendix A

Comments Received on the Environmental Review

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Part I - Comments Received During Scoping

On October 25, 2002, the U.S. Nuclear Regulatory Commission (NRC) published a Notice of Intent in the *Federal Register* (67 Federal Register 65612), to notify the public of the staff's intent to prepare a plant-specific supplement to the *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* (GEIS), NUREG-1437, Volumes 1 and 2, to support the renewal application for the Virgil C. Summer Nuclear Station (V.C. Summer) operating license and to conduct scoping. The plant-specific supplement to the GEIS has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), Council on Environmental Quality (CEQ) guidelines, and 10 Code of Federal Regulations (CFR) Part 51. As outlined by NEPA, the NRC initiated the scoping process with the issuance of the *Federal Register* Notice. The NRC invited the applicant; Federal, State, Tribal, and local government agencies; local organizations; and individuals to participate in the scoping process by providing oral comments at the scheduled public meetings and/or submitting written suggestions and comments no later than January 6, 2003.

The scoping process included two public scoping meetings, which were held at the White Hall A.M.E. Church in Jenkinsville, South Carolina, on December 11, 2002. Approximately 20 members of the public attended the meetings. Both sessions began with NRC staff members providing a brief overview of the license renewal process and the NEPA process. After the NRC's prepared statements, the meetings were open for public comments. Attendees provided either oral or written statements that were recorded and transcribed by a certified court reporter. The meeting transcripts are an attachment to the Scoping Meeting Summary dated January 14, 2003.

At the conclusion of the scoping period, the NRC staff and its contractor reviewed the transcripts and all written material to identify individual comments. All comments and suggestions received orally during the scoping meetings or in writing were considered. Each set of comments from a given commenter was given a unique identifier (Commenter ID number), so that each set of comments from a commenter could be traced back to the transcript or letter by which the comments were submitted. Several commenters submitted comments through multiple sources (e.g., afternoon and evening scoping meetings).

Table A.1 identifies the individuals who provided comments and the Commenter ID number associated with each person's set(s) of comments. The individuals are listed in the order in which they spoke at the public meeting.

Appendix A

Table A-1. Individuals Providing Comments During Scoping Comment Period

Commenters			Comment Source and
ID	Commenter	Affiliation (If Stated)	ADAMS Accession Number
SU-A	Pearson		Afternoon Public Meeting ^(a)
SU-B	Marcharia	Fairfield County Council	Afternoon Public Meeting
SU-C	Burse		Afternoon Public Meeting
SU-D	Coleman	Representative	Afternoon Public Meeting
SU-E	Robinson	Fairfield County Council	Afternoon Public Meeting
SU-F	Wilder	Fairfield County Schools	Afternoon Public Meeting
SU-G	Murphy	Fairfield County Council	Afternoon Public Meeting
SU-H	Harmon	Pomaria-Garmany Elementary School	Afternoon Public Meeting
SU-I	Byrne	V.C. Summer Nuclear Station	Afternoon Public Meeting
SU-J	Summer	SCANA Services	Afternoon Public Meeting
SU-K	White	South Carolina Public Service Commission	Afternoon Public Meeting
SU-L	Bowlers	Irma/Chapin Recreation Commission	Afternoon Public Meeting
SU-M	Vickers	Fairfield County Chamber of Commerce	Afternoon Public Meeting
SU-N	Cannon	Pastor	Evening Public Meeting ^(b)
SU-O	Pearson		Evening Public Meeting
SU-P	Sprott	Fairfield County School System	Evening Public Meeting
SU-Q	Byrne	V.C. Summer Nuclear Station	Evening Public Meeting
SU-R	Summer	SCANA Services	Evening Public Meeting
SU-S	White	South Carolina Public Service Commission	Evening Public Meeting
SU-T	Rabb		Evening Public Meeting
SU-U	Caldwell		Evening Public Meeting
SU-V	Spratt	United States House of Representatives	Letter, December 11, 2002 (ML023540416)

(a) The afternoon transcript can be found under accession number ML030030808.

(b) The evening transcript can be found under accession number ML030030848.

Comments were consolidated and categorized according to the topic within the proposed supplement to the GEIS or according to the general topic if outside the scope of the GEIS. Comments with similar specific objectives were combined to capture the common essential issues that had been raised in the source comments. Once comments were grouped according to subject area, the staff and contractor determined the appropriate action for the comment. The staff made a determination on each comment that it was one of the following:

- A comment that was actually a question and introduced no new information
- A comment that was either related to support for or opposition to license renewal in general (or specifically, V.C. Summer) or that made a general statement about the licensing renewal process. It may have made only a general statement regarding Category 1 and/or Category 2 issues. In addition, it provided no new information and did not pertain to 10 CFR Part 54.

- A comment about a Category 1 issue that
 - provided new information that required evaluation during the review
 - provided no new information.
- A comment about a Category 2 issue that
 - provided information that required evaluation during the review
 - provided no such information.
- A comment regarding alternatives to the proposed action
- A comment that raised an environmental issue that was not addressed in the GEIS
- A comment outside the scope of license renewal, which includes comments regarding the need for power
- A comment outside the scope of the environmental review on safety issues pertaining to 10 CFR Part 54.

Each comment applicable to this environmental review is summarized in this section. This information, which was extracted from the V.C. Summer Scoping Summary Report, is provided for the convenience of those interested in the scoping comments applicable to this environmental review. As part of its ongoing review, the staff has clarified some of the responses included in the Scoping Report. The comments that are general or outside the scope of the environmental review for V.C. Summer are not included here. More detail regarding the disposition of general or inapplicable comments can be found in the summary report. The Agencywide Document Access and Management System (ADAMS) accession number for the summary report is ML030520583. This accession number is provided to facilitate access to the document through the Public Electronic Reading Room (ADAMS) <http://www.nrc.gov/reading-rm.html>.

The following pages summarize the comments and suggestions received as part of the scoping process that are applicable to this environmental review and discuss the disposition of the comments and suggestions. The parenthetical alpha-numeric identifier after each comment refers to the comment set (Commenter ID) and the comment number.

Appendix A

Comments in this section are grouped in the following categories:

1. Comments Concerning Socioeconomic Issues
2. Comments Concerning Air Quality Issues
3. Comments Concerning Human Health Issues
4. Comments Concerning Terrestrial Resource Issues
5. Comments Concerning Threatened and Endangered Species Issues
6. Comments Concerning Water Resources Issues
7. Comments Concerning Uranium Fuel Cycle and Waste Management Issues

Part I. Comments Received During Scoping

1. Comments Concerning Socioeconomic Issues

Comment: We also provide jobs for about 625 SCE&G employees and in excess of 100 long-term contract employees. (SU-I-5)

Comment: We also are the largest employer in the county now. (SU-Q-7)

Comment: Summer Station's operations provide jobs for nearly a thousand people. (SU-V-3)

Response: *The comments are noted. Information regarding impacts resulting from employment of plant workers during the 20-year renewal term is discussed in Chapter 4 of this Supplemental Environmental Impact Statement (SEIS).*

Comment: SCE&G is a wonderful partner for our county. Because they came online, we now have some of the finest school facilities in the state. We also are able to offer, because of their tax dollars, services to the people of this county that otherwise we could not afford because our people cannot pay taxes to provide those services. (SU-E-3)

Comment: As far as an economic development impact on this county, this to me is a very clean lake that they have provided. We then have people who are able to fish in this lake, and we now have people who are selling property around this lake, which to us is an economic development tool. And these people are coming in and building homes, which add to our tax base. (SU-E-6)

Comment: ...that the plant has been a very vital part of the tax base in our county. (SU-F-2)

Comment: So if the plant were not to be licensed and, in my personal opinion, the industry was not here to replace the plant that not relicensed, it would be devastating on the county. And for the county to have a \$16 million impact from one plant, that's a big impact into our economic base on the county level. (SU-F-3)

Comment: The school district is fortunate that the V.C. Nuclear Summer Plant is the largest tax base in the county. We get in excess 11 million dollars per year in taxes from the plant. (SU-F-4)

Comment: The benefits of the taxes that's been b[r]ought in, over \$17 million to the county. Where would we be if it wasn't for V.C. Summer? (SU-G-3)

Comment: We're also the largest taxpayer in the county. You've heard a lot about that. We pay about 17-1/2 million dollars in taxes and represent about 67 percent of the tax base. (SU-I-6)

Comment: Aside from being the largest employer, we're also the largest taxpayer. Prior to Mack's closing, we were 67 percent of the tax base. ... V.C. Summer pays about 17-1/2 million dollars a year in property taxes to the county. (SU-Q-8)

Comment: There is a big tax check that keeps our schools going. (SU-T-5)

Comment: There are many things I could touch on that SCE&G has done in this community but just to give you an overall picture of how they became our neighbors and how good they are and the things that they have done. My husband had a vision many years ago for a fire department. ... And so SCE&G said, No problem, we will come up with the building. ... Then came EMS, which is a vital part of the community, very much needed, through SCE&G. (SU-T-3)

Comment: Then they became customers of the Jenkinsville Water Company, very good customers, for that we appreciate. They keep us going, they keep the post office going, because we're a small community. We're just thankful for the things that they have done. (SU-T-4)

Comment: SCANA owned companies pay more than 17.5 million in taxes to Fairfield County, money that helps support vital public services and provides for a better quality of life. (SU-V-4)

Response: *The comments are noted. Public services, offsite land use, taxes, and education are discussed in Chapters 2 and 4 of this SEIS.*

2. Comments Concerning Air Quality Issues

Comment: ...want to make certain that SCE&G continue to follow guidelines to ensure that we are subjected to clean air and a safe environment. (SU-F-1)

Comment: Reliable operation of the Summer Station, a non-greenhouse gas emitter, precludes the requirement to use greenhouse gas from any generation and is economical for our customers. (SU-K-4)

Comment: Reliable operation of Summer Station, a non-greenhouse gas emitter, precludes the requirement to use greenhouse gas from any generation and is economical for our customers. (SU-S-5)

Response: *The comments are noted. Air emissions are regulated through the U.S. Environmental Protection Agency and the State of South Carolina. Issues associated with air quality are discussed in Chapters 2 and 4 of this SEIS. The impacts resulting from the use of fossil fuel to generate electricity are discussed in Chapter 8 of this SEIS. The comments provide no new information and, therefore, will not be evaluated further.*

3. Comments Concerning Human Health Issues

Comment: I've had constituencies ask me over the last 15 years -- there appears to be a substantial increase in different types of cancer, particularly with our senior citizens. What can you say to assure the community that this plant has no direct impact in regards to these questions? (SU-B-3)

Comment: ...does your agency also check environmentally any of the medical records to see whether or not these perceptions of increase of different types of cancers, ... do you also check whether or not there is an increase of health risk to citizens in the area? (SU-B-4)

Comment: I did get asked the question about the perception of cancer. Fairfield County leads the state in terms of diabetes, ... and the perception that the environment might complicate these conditions. So I'm just raising this because we do need an independent study. That's why I asked for a medical explanation. Have DHEC or other folks, the agency for this area, and just for the public safety to make sure that these conditions and perceptions, that they are not found, they're not authentic, and I think that will go a long ways to some uncertainties. (SU-B-6)

Comment: As far as health issues, we have a lot of health issues in Fairfield County, and a lot of contributory things that have been done. We're unique in different things. We have a fault

line that runs right through here. We also have a great deposit of granite in the county that lets off radon gas and all these other things that's not attributed to the Summer plant. (SU-G-2)

Response: *The NRC's regulatory limits for radiological protection are set to protect workers and the public from the harmful effects of radiation. The limits are based on the recommendations of standards-setting organizations. Radiation standards reflect extensive study by national and international organizations (International Commission on Radiological Protection [ICRP], National Council on Radiation Protection and Measurements, and National Academy of Sciences) and are conservative to ensure that the public and workers at nuclear power plants are protected. The NRC radiation exposure standards are presented in 10 CFR Part 20, "Standards for Protection Against Radiation," and are based on the recommendations in ICRP 26 and ICRP 30. Emissions and effluents that are below the limits set by the NRC are not considered to pose any significant risk to public health or safety. V.C. Summer monitors its radiological emissions and effluents to ensure that any radioactive releases are within allowable limits. South Carolina Electric and Gas Company (SCE&G) reports the results of its monitoring program on an annual basis in two documents that are available to the public and are provided to the NRC. These reports are (1) Annual Effluent and Waste Disposal Report, Virgil C. Summer Nuclear Station, and (2) Radiological Environmental Monitoring Report, Virgil C. Summer Nuclear Station.*

The NRC does review the annual amounts of radiological emissions and effluents released into the environment by V.C. Summer and has found them to be well within the acceptable limits. In the past, the State of South Carolina independently monitored the environment around V.C. Summer for radioactive contamination and its results were consistent with those reported by SCE&G. To ensure that the exposure limits to the public are met, NRC sets limits on radiological effluents, requires monitoring of effluents and foodstuffs. SCE&G monitors its effluents and calculates potential offsite doses caused by radioactive liquid and gaseous effluents. These calculations are performed to demonstrate the licensee's compliance with its technical specifications and the NRC regulations. Based on the information provided by SCE&G, radiological emissions and effluents from the station have been well below the limits set by the NRC and, therefore, pose no significant risk to public health or safety.

Numerous scientifically designed, peer-reviewed studies of personnel exposed to occupational levels of radiation (versus life-threatening accident doses or medical therapeutic levels) have shown minimal effect on human health, and any effect was from exposures well above the exposure levels of the typical member of the public from normal operation of a nuclear power plant.

Appendix A

The NRC does not routinely evaluate medical records. The NRC is not aware of any increase in health risk to citizens in the area around V.C. Summer that could be linked to station operations or emissions and effluents.

Radiation exposures to the public and workers were evaluated in the GEIS and determined to be Category 1 issues. Information regarding the expected radiological impacts on human health is discussed in Chapters 2 and 4 of this SEIS. The comments provide no new information and, therefore, will not be evaluated further.

4. Comments Concerning Terrestrial Resource Issues

Comment: We're a haven for wildlife. (SU-I-9)

Comment: On our site, you will hear a little bit more about this [haven for wildlife], but you will find deer, turkeys, obviously fish, eagles and more buzzards than I can count, and an occasional arrowhead. (SU-Q-10)

Response: *The comments are noted. Information regarding aquatic and terrestrial biological resources and cultural resources is discussed in Chapters 2 and 4 of this SEIS. The comments provide no new information and, therefore, will not be evaluated further.*

5. Comments Concerning Threatened and Endangered Species Issues

Comment: The creation of Summer Station and its companion generating plant, Fairfield Pumped Storage Facility, have provided an environment which has been conducive to the expansion of the bald eagle population. (SU-J-2) (SU-R-2)

Comment: This survey found no evidence of threatened or endangered species on the plant site or the transmission corridors. (SU-J-5)

Comment: This survey found no evidence of threatened or endangered species on the plant site or the transmission corridors, with the exception of the eagles that are not nesting on the site now, but they do come onto the site. (SU-R-7)

Response: *The comments are noted. Information regarding threatened and endangered species at the V.C. Summer site is discussed in Chapters 2 and 4 of this SEIS.*

6. Comments Concerning Water Resources Issues

Comment: ...it's just very important for me to know that we're protecting those lakes, because at some point, that may be the only source of drinking water we're going to have. So water is just a very important element to each of our lives. (SU-E-1)

Response: *The comment is noted. Information regarding water resources is discussed in Chapters 2 and 4 of this SEIS. The comment provides no new information and, therefore, will not be evaluated further.*

7. Comments Concerning Uranium Fuel Cycle and Waste Management Issues

Comment: As stewards of the environment, management of Summer Station has reduced the tri-annual cycle volume of low-level radioactive waste by 90 percent over the last six cycles for 18 years, recycling items previously disposed of and training the workforce to exercise prudent utilization and materials have accomplished the significant reduction. (SU-K-2) (SU-S-3)

Response: *The comment is noted. Information regarding low-level waste management is discussed in Chapters 2 and 6 of this SEIS. The comment provides no new information and, therefore, will not be evaluated further.*

Part II – Comments Received on the Draft SEIS

Pursuant to 10 Code of Federal Regulations (CFR) Part 51, the staff transmitted the *Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Regarding Virgil C. Summer Nuclear Station, Draft Report for Comment* (NUREG-1437, Supplement 15, referred to as the draft Supplemental Environmental Impact Statement [SEIS]) to Federal, State, and local government agencies; certain Indian tribes; and interested members of the public. As part of the process to solicit public comments on the draft SEIS, the staff:

- placed a copy of the draft SEIS into the U.S. Nuclear Regulatory Commission's (NRC's) Public Electronic Recording Room, its license renewal website, and at the Fairfield County Library and at the Thomas Cooper Library, University of South Carolina
- sent copies of the draft SEIS to the applicant, members of the public who requested copies, representatives of certain Indian tribes, and certain Federal, State, and local agencies
- published a notice of availability of the draft SEIS in the *Federal Register* on July 17, 2003 (68 *Federal Register* 42431)

Appendix A

- issued public announcements, such as advertisements in local newspapers and postings in public places, of the availability of the draft SEIS
- announced and held two public meetings in Jenkinsville, South Carolina, on August 26, 2003, to describe the results of the environmental review and answer related questions
- issued public service announcements and press releases announcing the issuance of the draft SEIS, the public meetings, and instructions on how to comment on the draft SEIS
- established an email address to receive comments on the draft SEIS through the Internet.

During the comment period, the staff received a total of three comment letters in addition to the comments received during the public meetings.

The staff has reviewed the public meeting transcripts and the three comment letters that are part of the docket file for the application, all of which are available in the NRC's Electronic Public Document Room. Appendix A, Part II, Section A.1 contains a summary of the comments and the staff's responses. Related issues are grouped together. Appendix A, Part II, Section A.2 contains excerpts of the August 26, 2003, public meeting transcripts and comment letters.

Each comment identified by the staff was assigned a specific alpha-numeric identifier (marker). That identifier is typed in the margin of the transcript or letter at the beginning of the discussion of the comment. A cross-reference of the alpha-numeric identifiers, the speaker or author of the comment, the page where the comment can be found, and the section(s) of this report in which the comment is addressed is provided in Table A-2. The speakers at the meetings are listed in speaking order along with the page of the transcript excerpts in this report on which the comment appears. Public testimony and written comments are identified by the letters "SU-D" followed by a number that identifies each comment in approximate chronological order in which the comments were made.

The staff made a determination on each comment that it was one of the following:

- (1) a comment that was actually a request for information and introduced no new information.
- (2) a comment that was either related to support or opposition of license renewal in general (or specifically Virgil C. Summer Nuclear Station) or that made a general statement about the license renewal process. It may have made only a general statement regarding Category 1 and/or Category 2 issues. In addition, it provided no new information and does not pertain to 10 CFR Part 54.

- (3) a comment about a Category 1 issue that
 - (b) provided new information that required evaluation during the review, or
 - (c) provided no new information
- (4) a comment about a Category 2 issue that
 - (d) provided information that required evaluation during the review, or
 - (e) provided no such information
- (5) a comment that raised an environmental issue that was not addressed in the Generic Environmental Impact Statement (GEIS) or the draft SEIS
- (6) a comment on safety issues pertaining to 10 CFR Part 54
- (7) a comment outside the scope of the license renewal (not related to 10 CFR Parts 51 or 54), or
- (8) a comment that was editorial in nature.

There was no significant new information provided on Category 1 issues [(3)(a) above] or information that required further evaluation on Category 2 issues [(4)(a)]. Therefore, the conclusions in the GEIS and draft SEIS remained valid and bounding, and no further evaluation was performed.

Comments without a supporting technical basis or without any new information are discussed in this appendix, and not in other sections of this report. Relevant references that address the issues within the regulatory authority of the NRC are provided where appropriate. Many of these references can be obtained from the NRC Public Document Room.

Within each section of Part II of this appendix (A.1.1 through A.1.9), similar comments are grouped together for ease of reference, and a summary description of the comments is given, followed by the staff's response. Where the comment or question resulted in a change in the text of the draft report, the corresponding response refers the reader to the appropriate section of this report where the change was made. Revisions to the text in the draft report are designated by vertical lines beside the text.

Appendix A

Table A-2. Comments Received on the Draft SEIS

Comment ID	Commenter	Source	Comment Location	Section(s) Where Addressed
SU-D-A-1	Marcharia	Afternoon Meeting Transcript (08/26/03)	A-38	A.1.9
SU-D-A-2	Marcharia	Afternoon Meeting Transcript (08/26/03)	A-39	A.1.2
SU-D-A-3	Marcharia	Afternoon Meeting Transcript (08/26/03)	A-39	A.1.9
SU-D-A-4	Marcharia	Afternoon Meeting Transcript (08/26/03)	A-39	A.1.9
SU-D-A-5	Marcharia	Afternoon Meeting Transcript (08/26/03)	A-39	A.1.9
SU-D-A-6	Marcharia	Afternoon Meeting Transcript (08/26/03)	A-40	A.1.3
SU-D-A-7	Marcharia	Afternoon Meeting Transcript (08/26/03)	A-40	A.1.4
SU-D-A-8	Marcharia	Afternoon Meeting Transcript (08/26/03)	A-40	A.1.1
SU-D-B-1	Moniak	Afternoon Meeting Transcript (08/26/03)	A-40	A.1.9
SU-D-B-2	Moniak	Afternoon Meeting Transcript (08/26/03)	A-40	A.1.5
SU-D-B-3	Moniak	Afternoon Meeting Transcript (08/26/03)	A-41	A.1.5
SU-D-B-4	Moniak	Afternoon Meeting Transcript (08/26/03)	A-43	A.1.9
SU-D-B-5	Moniak	Afternoon Meeting Transcript (08/26/03)	A-44	A.1.9
SU-D-B-6	Moniak	Afternoon Meeting Transcript (08/26/03)	A-44	A.1.9
SU-D-B-7	Moniak	Afternoon Meeting Transcript (08/26/03)	A-44	A.1.2
SU-D-B-8	Moniak	Afternoon Meeting Transcript (08/26/03)	A-45	A.1.2
SU-D-B-9	Moniak	Afternoon Meeting Transcript (08/26/03)	A-45	A.1.9
SU-D-B-10	Moniak	Afternoon Meeting Transcript (08/26/03)	A-45	A.1.9
SU-D-B-11	Moniak	Afternoon Meeting Transcript (08/26/03)	A-45	A.1.6
SU-D-B-12	Moniak	Afternoon Meeting Transcript (08/26/03)	A-45	A.1.4
SU-D-B-13	Moniak	Afternoon Meeting Transcript (08/26/03)	A-46	A.1.4
SU-D-B-14	Moniak	Afternoon Meeting Transcript (08/26/03)	A-46	A.1.4

Table A-2. (contd)

Comment ID	Commenter	Source	Comment Location	Section(s) Where Addressed
SU-D-C-1	Cannon	Afternoon Meeting Transcript (08/26/03)	A-41	A.1.9
SU-D-C-2	Cannon	Afternoon Meeting Transcript (08/26/03)	A-43	A.1.1
SU-D-D-1	Pearson	Afternoon Meeting Transcript (08/26/03)	A-41	A.1.5
SU-D-D-2	Pearson	Afternoon Meeting Transcript (08/26/03)	A-42	A.1.9
SU-D-D-3	Pearson	Afternoon Meeting Transcript (08/26/03)	A-42	A.1.1
SU-D-D-4	Pearson	Evening Meeting Transcript (08/26/03)	A-47	A.1.5
SU-D-E-1	Robinson	Afternoon Meeting Transcript (08/26/03)	A-41	A.1.1
SU-D-F-1	Brown	Afternoon Meeting Transcript (08/26/03)	A-41	A.1.1
SU-D-F-2	Brown	Afternoon Meeting Transcript (08/26/03)	A-42	A.1.4
SU-D-G-1	Hubbard	Evening Meeting Transcript (08/26/03)	A-47	A.1.9
SU-D-G-2	Hubbard	Evening Meeting Transcript (08/26/03)	A-47	A.1.2
SU-D-H-1	Murphy	Evening Meeting Transcript (08/26/03)	A-48	A.1.4
SU-D-H-2	Murphy	Evening Meeting Transcript (08/26/03)	A-48	A.1.4
SU-D-H-3	Murphy	Evening Meeting Transcript (08/26/03)	A-48	A.1.1
SU-D-H-4	Murphy	Evening Meeting Transcript (08/26/03)	A-48	A.1.2
SU-D-H-5	Murphy	Evening Meeting Transcript (08/26/03)	A-48	A.1.4
SU-D-H-6	Murphy	Evening Meeting Transcript (08/26/03)	A-48	A.1.1
SU-D-I-1	McKinley	Evening Meeting Transcript (08/26/03)	A-49	A.1.2
SU-D-I-2	McKinley	Evening Meeting Transcript (08/26/03)	A-49	A.1.9
SU-D-I-3	McKinley	Evening Meeting Transcript (08/26/03)	A-49	A.1.4
SU-D-I-4	McKinley	Evening Meeting Transcript (08/26/03)	A-49	A.1.1
SU-D-I-5	McKinley	Evening Meeting Transcript (08/26/03)	A-50	A.1.1
SU-D-J-1	Mueller	September 2, 2003, Letter	A-51	A.1.3

Table A-2. (contd)

Comment ID	Commenter	Source	Comment Location	Section(s) Where Addressed
SU-D-K-1	Byrne	September 29, 2003, Letter	A-54	A.1.8
SU-D-K-2	Byrne	September 29, 2003, Letter	A-54	A.1.8
SU-D-K-3	Byrne	September 29, 2003, Letter	A-54	A.1.8
U-D-K-4	Byrne	September 29, 2003, Letter	A-54	A.1.8
SU-D-K-5	Byrne	September 29, 2003, Letter	A-54	A.1.8
SU-D-K-6	Byrne	September 29, 2003, Letter	A-54	A.1.8
SU-D-K-7	Byrne	September 29, 2003, Letter	A-54	A.1.8
SU-D-K-8	Byrne	September 29, 2003, Letter	A-54	A.1.8
SU-D-K-9	Byrne	September 29, 2003, Letter	A-54	A.1.8
SU-D-K-10	Byrne	September 29, 2003, Letter	A-54	A.1.8
SU-D-K-11	Byrne	September 29, 2003, Letter	A-54	A.1.8
SU-D-K-12	Byrne	September 29, 2003, Letter	A-54	A.1.8
SU-D-K-13	Byrne	September 29, 2003, Letter	A-55	A.1.8
SU-D-K-14	Byrne	September 29, 2003, Letter	A-55	A.1.8
SU-D-K-15	Byrne	September 29, 2003, Letter	A-55	A.1.8
SU-D-K-16	Byrne	September 29, 2003, Letter	A-55	A.1.8
SU-D-K-17	Byrne	September 29, 2003, Letter	A-55	A.1.8
SU-D-K-18	Byrne	September 29, 2003, Letter	A-55	A.1.8
SU-D-K-19	Byrne	September 29, 2003, Letter	A-56	A.1.8
SU-D-K-20	Byrne	September 29, 2003, Letter	A-56	A.1.8
SU-D-K-21	Byrne	September 29, 2003, Letter	A-56	A.1.8
SU-D-K-22	Byrne	September 29, 2003, Letter	A-56	A.1.8
SU-D-K-23	Byrne	September 29, 2003, Letter	A-56	A.1.8

Table A-2. (contd)

Comment ID	Commenter	Source	Comment Location	Section(s) Where Addressed
SU-D-K-24	Byrne	September 29, 2003, Letter	A-56	A.1.8
SU-D-K-25	Byrne	September 29, 2003, Letter	A-56	A.1.8
SU-D-K-26	Byrne	September 29, 2003, Letter	A-57	A.1.8
SU-D-K-27	Byrne	September 29, 2003, Letter	A-57	A.1.8
SU-D-K-28	Byrne	September 29, 2003, Letter	A-57	A.1.8
SU-D-K-29	Byrne	September 29, 2003, Letter	A-57	A.1.8
SU-D-K-30	Byrne	September 29, 2003, Letter	A-57	A.1.8
SU-D-K-31	Byrne	September 29, 2003, Letter	A-57	A.1.8
SU-D-K-32	Byrne	September 29, 2003, Letter	A-57	A.1.8
SU-D-K-33	Byrne	September 29, 2003, Letter	A-57	A.1.8
SU-D-K-34	Byrne	September 29, 2003, Letter	A-57	A.1.8
SU-D-K-35	Byrne	September 29, 2003, Letter	A-57	A.1.8
SU-D-K-36	Byrne	September 29, 2003, Letter	A-57	A.1.8
SU-D-K-37	Byrne	September 29, 2003, Letter	A-57	A.1.8
SU-D-K-38	Byrne	September 29, 2003, Letter	A-57	A.1.8
SU-D-K-39	Byrne	September 29, 2003, Letter	A-57	A.1.8
SU-D-K-40	Byrne	September 29, 2003, Letter	A-57	A.1.8
SU-D-K-41	Byrne	September 29, 2003, Letter	A-58	A.1.8
SU-D-K-42	Byrne	September 29, 2003, Letter	A-58	A.1.8
SU-D-K-43	Byrne	September 29, 2003, Letter	A-58	A.1.8
SU-D-K-44	Byrne	September 29, 2003, Letter	A-58	A.1.8
SU-D-K-45	Byrne	September 29, 2003, Letter	A-58	A.1.8
SU-D-K-46	Byrne	September 29, 2003, Letter	A-58	A.1.8

Table A-2. (contd)

Comment ID	Commenter	Source	Comment Location	Section(s) Where Addressed
SU-D-K-47	Byrne	September 29, 2003, Letter	A-58	A.1.8
SU-D-K-48	Byrne	September 29, 2003, Letter	A-59	A.1.8
SU-D-K-49	Byrne	September 29, 2003, Letter	A-59	A.1.8
SU-D-K-50	Byrne	September 29, 2003, Letter	A-59	A.1.8
SU-D-K-51	Byrne	September 29, 2003, Letter	A-59	A.1.8
SU-D-K-52	Byrne	September 29, 2003, Letter	A-59	A.1.8
SU-D-K-53	Byrne	September 29, 2003, Letter	A-59	A.1.8
SU-D-L-1	Eudaly	October 17, 2003, Letter	A-61	A.1.7

A.1 Comments and Responses

Comments in this section are grouped in the following categories:

A.1.1 General Comments in Support of License Renewal at Virgil C. Summer Nuclear Station

A.1.2 Comments Concerning Human Health Issues

A.1.3 Comments Concerning Uranium Fuel Cycle and Waste Management Issues

A.1.4 Comments Concerning Socioeconomic and Environmental Justice Issues

A.1.5 Comments Concerning Postulated Accident Issues

A.1.6 Comments Concerning Alternatives Issues

A.1.7 Comments Concerning Terrestrial and Aquatic Ecology Issues

A.1.8 Editorial Comments

A.1.9 Other Comments Including Out of Scope Issues, Operational Safety, and Emergency Preparedness

A.1.1 General Comments in Support of License Renewal at Virgil C. Summer Nuclear Station

Comment: I think in the last year most -- if not you, most of the folks over at the plant have been very open. We have started a dialogue and I think that's going to get us over some of the humps and try to look at more strategically how do we make this community more safe. (SU-D-A-8)

Comment: We have felt all along, as council members, that this was a very safe agency for our county and as council members, we encourage you to give them the okay for relicensing because it is an enormous economic development for our county and we all as citizens who live here realize the various benefits from the taxes that are paid. We often talk about that, especially during the budget process, and what would happen if it should be closed. ... I look forward to having it extended for 20 additional years. (SU-D-E-1)

Comment: I want to go one step further and just thank SCE&G and SCANA and Santee-Cooper for doing such a good job over the past 20 years as far as picking and choosing good people to run their plant and keep it safe. I want to thank NRC for being the watchdog to make sure they run it safe -- I want to thank y'all. (SU-D-F-1)

Comment: We do thank you and we're proud to have you in the community. (SU-D-D-3)

Comment: I too want to reiterate the fact that we are happy to have good neighbors. The plant has done so much for the community and I can look right around and I see someone who is employed in taking care of the building for us and he works for the plant, so it has had a tremendous impact on the county and we get good reports that they are safe ... (SU-D-C-2)

Comment: So I'm here in full support of this, because they are good corporate neighbors, they look at all the safety issues and we also look at safety issues and question those things. But to have a resource such as this one and one of the safest plants in America and they are willing to operate an additional 20 years with the consent of the federal agencies that have them here, the room should be filled saying let's get this done. This room should be filled. Because without that, we can't even improve on the different things that we have in this county. (SU-D-H-3)

Comment: ... they're good corporate citizens. They work with the schools, not only with tax dollars, but they have programs, they donate books and all of these things to the county. They're just a good, good corporate citizen that we in Fairfield County treasure and hope they stay here and relicense for an additional 20 years. (SU-D-H-6)

Appendix A

Comment: ... I just really want to say thank you to them and I hope that the government will see fit to do the license ... (SU-D-I-4)

Comment: So let's do look at some other information maybe before we make that determination. But the nuclear plant I hope is here to stay for another 20 years ... (SU-D-I-5)

Response: *The comments are noted. The comments are supportive of license renewal at the Virgil C. Summer Nuclear Station and are general in nature. The comments provide no new information; therefore, the comments were not evaluated further. No changes were made to the SEIS.*

A.1.2 Comments Concerning Human Health Issues

Comment: I think some of the health issues -- the last time we talked, we asked what would be the impact of health issues around the plant, given the perception -- not the perception, given the fact that a lot of our senior citizens are dying from unknown cancers. That's not a perception, that's a fact. But there is a perception that it might be related to the plant. That has not been proven and I think the question asked what steps do you take or methodology that you use to determine that this plant does not have a negative impact on the quality of life or health of the local residents -- was one of the questions. (SU-D-A-2)

Comment: ... what about health impacts in the area, because there were concerns over rising cancer rates and other illnesses which would be extremely difficult to trace back to Summer Nuclear Power Plant even if it was Summer Nuclear Power Plant causing these problems, because environmental epidemiology as a discipline is almost impossible. ... So it would be very difficult to find this out, but nonetheless, it seems to be incumbent upon the NRC and SCE&G to at least address this issue and identify what sources of hazards, contaminants in general in this area there are. (SU-D-B-7)

Comment: ... I lived here for many years and I moved away and am just coming back after 47 years ... I'm just relocating and I'm wondering about so much cancer in this area. They say that Fairfield County has -- what is it, 75 percent deaths from cancer. Does this nuclear plant have anything anywhere that you know of or don't know of and somebody else knows, that causes it. I don't know if the plant causes it, but I know there's a lot of deaths around here. (SU-D-G-2)

Comment: You can point to issues all over the place, but Fairfield County has a lot of health issues, but they have a whole lot of other issues too. Some of those issues are being solved by the funding of the power plant. (SU-D-H-4)

Comment: ... the one thing I think about V.C. Summer out here, would all these folks be working out here if they thought there was a danger to this? (SU-D-I-1)

Response: *The comments are noted. Radiation exposure to the public and workers was evaluated in the GEIS and determined to be a Category 1 issue. The NRC's regulatory limits for radiological protection are set to protect workers and the public from the harmful health effects of radiation on humans. The limits were based on the recommendations of standards-setting organizations. Radiation standards reflect extensive scientific study by national and international organizations (International Commission on Radiological Protection [ICRP], National Council on Radiation Protection and Measurements, and National Academy of Sciences) and are conservative to ensure that the public and workers at nuclear power plants are protected. The radiation exposure standards are presented in 10 CFR Part 20, "Standards for Protection Against Radiation," and are based on the recommendations in ICRP 26 and ICRP 30.*

Numerous scientifically designed, peer-reviewed studies of personnel exposed to occupational levels of radiation (versus life-threatening accident doses or medical therapeutic levels) have shown minimal effect on human health, and any effect was from exposures well above the exposure levels of the typical member of the public from normal operation of a nuclear power plant.

Regarding health effects to populations around nuclear power plants, NRC relies on the studies performed by the National Cancer Institute at the request of the U.S. Congress. The Institute conducted a study in 1990, "Cancer in Populations Living Near Nuclear Facilities," to look at mortality rates around 52 nuclear power plants, nine Department of Energy facilities, and one former commercial fuel reprocessing facility (NIH Publications No. 90-874). The study concluded that there is no evidence that an excess occurrence of cancer has resulted from living near nuclear facilities. Additionally, the American Cancer Society had concluded that, although reports about cancer case clusters in such communities have raised public concern, studies show that cancer clusters do not occur more often near nuclear plants than they do elsewhere in the population.

The comments provide no new information. Therefore, the comments were not evaluated further. No changes were made to the SEIS.

Comment: There's a very high frequency of electrical power lines here and radio frequency -- electromagnetic radiation from these is harmful. ... The National Academy of Sciences comes out and says that oh, power lines don't cause leukemia. Well, sure, maybe they don't, but there's a lot of other impacts, especially neurological, that it could be causing. (SU-D-B-8)

Response: *The chronic effects of 60-Hz electromagnetic fields from power lines have been studied at length, but studies failed to uncover consistent experimental and epidemiological evidence linking harmful effects with field exposures. Consequently, as documented in the GEIS and in the NRC 10 CFR Part 51 rule regarding license renewal, the NRC will monitor the issue to determine whether a consensus has been reached by appropriate Federal health agencies that there are adverse health effects from electromagnetic fields. Section 4.2.2 of the SEIS already reflects the conclusion of a more recent report by a Federal agency, the National Institute of Environmental Health Sciences. The comment provides no new information; therefore, it will not be evaluated further. No changes were made to the SEIS.*

A.1.3 Comments Concerning Uranium Fuel Cycle and Waste Management Issues

Comment: The other thing is that technically I don't know if I know all the technical terms dealing with nuclear waste and nuclear energy and what you must do to provide safety or any other kinds of strategies around that. (SU-D-A-6)

Comment: Based on the review of the DSEIS, the project received a rating of "EC-1," meaning that some environmental concerns exist regarding aspects of the proposed project. Specifically, protecting the environment involves the continuing need for appropriate storage, and ultimate disposition, of radioactive wastes generated on-site. (SU-D-J-1)

Response: *Onsite storage of spent nuclear fuel is a Category 1 issue. The safety and environmental effects of long-term storage of spent fuel onsite have been evaluated by the NRC, as set forth in the Waste Confidence Rule (10 CFR 51.23). In the Waste Confidence Rule, the Commission generically determined that spent fuel generated by any reactor can be safely stored onsite for at least 30 years beyond the licensed operating life of the reactor, which may include the term of a renewed license. In the rule, the Commission also generically determined that such storage could be accomplished without significant environmental impact. In addition, the Commission stated in the rule its belief that there is reasonable assurance that at least one mined geological repository will be available within the first quarter of the twenty-first century, and sufficient repository capacity will be available within 30 years beyond the licensed life for any reactor to dispose of the spent fuel generated in such reactor up to that time. The "Generic Environmental Impact Statement for License Renewal of Nuclear Plants (GEIS)," (NUREG-1437) is based on the assumption that storage of the spent fuel onsite is not permanent. The plant-specific supplement to the GEIS regarding license renewal for the Virgil C. Summer Nuclear Station is based on the same assumption. Likewise, the matter of processing and storage of low level waste is considered a Category 1 issue. The conclusion regarding this issue in the GEIS included consideration of the long-term storage of low level*

waste onsite during the license renewal term. The comments provide no new information; therefore, the comments will not be evaluated further. No changes were made to the SEIS.

A.1.4 Comments Concerning Socioeconomic and Environmental Justice Issues

Comment: It has been tremendous economic benefit to our community and we are obviously enjoying the partnership that we have with you and we thank you for that. (SU-D-A-7)

Comment: But the impact that this plant has made on Fairfield County, you cannot really sum it all up other than it really has brought us into the 21st century and without it, Fairfield County would be in dire straits. (SU-D-F-2)

Comment: What would be that socio-economic impact? What would be the impact of early closure, especially if the governments plan on this operating another 20 years, local governments. (SU-D-B-12)

Comment: And I also read that inside of the 10-mile radius, I guess the evacuation area, the population has not enjoyed the same level of growth as the other parts of the county. This is not a county that experiences a lot of growth, which can be a good thing too, but does this plant affect the ability of the county to bring in other industries, both this and Newberry? Are there industries that would think about moving here, smaller scale ones that will not because there's a nuclear power plant nearby? Are the people not moving to within the 10-mile radius because of the plant? What is the reason for the exodus of people from that 10-mile radius? And somewhere in there it said that it either decreased -- a lot of people have left, something like 220 people left in a 20-year period in an area where there's only 1000 to begin with. (SU-D-B-13)

Comment: So my point is because in the south, a lot of these power plants are located in very rural areas, they all seem to be put 25 to 30 miles away from a population center. I guess that was the siting criteria back in the '60s, '70s. And some of these places just have the worst poverty in the country, never mind in South Carolina. (SU-D-B-14)

Comment: V.C. Summer this year put over \$17 million into the tax base of this county. What does that mean to Fairfield County? Over 60 some percent of the total budget. What would it mean if V.C. Summer would leave? They put moderate and large. That's not the word. Neither one of those words are suitable to what would happen to Fairfield County if V.C. Summer would leave. (SU-D-H-1)

Appendix A

Comment: ... if V.C. Summer leaves this county, it's going to be hard for this county to breathe. (SU-D-H-2)

Comment: Our schools, our county, all of these things we run on are funded by this organization. (SU-D-H-5)

Comment: I just want to say nothing but positives for them. We thank them for their help with the county -- \$17 million. And guess who'd have to pay that if they didn't? The citizens of our county. (SU-D-I-3)

Response: *Socioeconomic issues specific to the plant are Category 2 issues and are addressed in Chapter 4 of the SEIS. The comments generally support license renewal at the Virgil C. Summer Nuclear Station. Environmental justice refers to a Federal policy under which each Federal agency identifies and addresses, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority and low income populations. The NRC is cognizant of the presence of minority and low income populations in the vicinity of the Virgil C. Summer Nuclear Station. However, the staff did not find any adverse human health or environmental effects from license renewal on minority and low income populations. Environmental justice issues and findings are discussed in Chapter 4 of the SEIS. The comments provide no new information; therefore, the comments will not be evaluated further. No changes were made to the SEIS.*

A.1.5 Comments Concerning Postulated Accident Issues

Comment: You said that cost and risk analysis were the screening criteria for reducing the number of potential SAMAs, and what I was wondering is, is it cost and risk or is it cost and/or risk? Does cost by itself ever result in removing a possible improvement or does it also have to be a risk reduction? ... How are those two weighed, how are cost versus risk weighed? (SU-D-B-2)

Comment: Is risk reduction based on the total population in the area and what the impacts on population and environment would be -- not the impacts, but what the effects would be, or is it based on what the actual impacts would be, say for radiation release in terms of curies? ... The risk reduction itself, is it based on the actual impact to the environment and, therefore, possibly to people like in terms of curies, which is concrete, or is it based upon the potential effect upon the environment, which is more of an abstraction? ... (SU-D-B-3)

Comment: I just wanted to ask a question about that last statement up there, "additional plant improvements to further mitigate severe accidents are not required at V.C. Summer as part of

license renewal." ... Are you saying that irrespective of how many accidents are going to be down there, it is not required, or what are you saying? (SU-D-D-1)

Comment: I have a concern over the last statement, overall conclusion, "additional plant improvements to further mitigate severe accidents are not required at V.C. Summer as part of license renewal." ... Why was that statement even brought up? (SU-D-D-4)

Response: *In the GEIS, the NRC staff evaluated the likelihood and consequences of severe accidents. Existing severe accident analyses were reviewed and used to predict consequences at all of the nuclear power plant sites. The staff concluded that*

The probability weighted consequences of atmospheric releases, fallout onto open bodies of water, releases to groundwater, and societal and economic impacts from severe accidents are small at all plants. However, alternatives to mitigate severe accidents must be considered for all plants that have not considered such alternatives.

For Virgil C. Summer Nuclear Station, the staff performed an independent assessment and review of information related to postulated accidents to determine whether there was new and significant information. The staff concluded that there were no impacts from postulated accidents beyond those discussed in the GEIS. However, because the National Environmental Policy Act of 1969 (NEPA) requires the consideration of alternatives, and the NRC environmental protection rule specifically requires the consideration of mitigation alternatives to reduce the impacts of severe accidents, the applicant and the NRC staff consider severe accident mitigation alternatives (SAMAs) to determine whether any improvements would substantially reduce the risk even further such that the benefits of an improvement outweigh the costs of implementation. As part of this evaluation, the staff considered the likelihood (probability) of various postulated accidents, the associated releases of radioactive material, the dispersal of that material into the environment, and the impacts (consequences) to the public and the environment. For Virgil C. Summer Nuclear Station, the NRC staff found that South Carolina Electric and Gas Company (SCE&G) had already implemented all of the cost-effective improvements. Therefore, the staff concluded and reported in this Supplement that none of the remaining candidate SAMAs identified during the review needed to be implemented because they were not cost-beneficial.

The comments provide no new information; therefore, the comments were not evaluated further. No changes were made to the SEIS.

A.1.6 Comments Concerning Alternatives Issues

Comment: And in all of these relicensings, there doesn't seem to be much analysis on what the impact would be of an operator suddenly closing a plant because the energy is not needed, it's too expensive, there's been new technology. In the next 20 years, who knows what's going to happen in terms of energy technology. Nuclear power could be obsolete in 20 years, as we currently know it. (SU-D-B-11)

Response: *The comment is noted. The GEIS included extensive discussions of alternative energy sources. Environmental impacts associated with alternatives to the renewal of the operating license for Virgil C. Summer Nuclear Station were discussed in detail in Chapter 8 of this Supplement; energy technologies are expected to evolve, but the NRC must focus on the reasonable range of alternatives and is not expected to speculate in considering alternatives. As part of the alternatives discussion, the NRC staff considered the No-Action Alternative, which describes the environmental effects resulting from a decision not to renew the operating license. If the operating license is not renewed, then SCE&G would decommission the nuclear station. SCE&G will be required to comply with NRC decommissioning requirements whether or not the operating license is renewed. If the operating license is renewed under this action, decommissioning activities may be postponed for up to an additional 20 years. If the operating license is not renewed or if the operators elect to cease operations prior to the expiration date of the operating license, SCE&G would conduct decommissioning activities according to the requirements of 10 CFR 50.82. The comment provides no new information; therefore, the comment will not be evaluated further as part of the environmental review for license renewal. No changes were made to the SEIS.*

A.1.7 Comments Concerning Terrestrial and Aquatic Ecology Issues

Comment: Erosion and sedimentation problems are likely to be exacerbated at areas where clearing removes deep-rooted vegetation. Therefore, to maintain the integrity of these aquatic resources during transmission line corridor maintenance, we recommend that at least a 25-foot buffer be left on both sides of any stream crossed or paralleled by a transmission line. (SU-D-L-1)

Response: *The comment is noted. NRC understands U.S. Fish and Wildlife Service concerns regarding protection of the wetlands and waters in the vicinity of Virgil C. Summer Nuclear Station. SCE&G's general practice is to mow the transmission line rights-of-way, which leaves the root mat intact. Mowing minimizes soil disturbance and protects against accelerated erosion. Herbaceous vegetation is quickly re-established, and erosion is minimized. Trees above a certain height must be trimmed or cut to maintain overhead clearance for the*

transmission line conductors; however, the stumps are left in place. Also, vegetation in wetlands is hand-cut to avoid rutting the soil with mowing machinery. Following these practices, SCE&G has been successful in preventing erosion and sedimentation problems over the last 30 years.

The NRC notes that its National Environmental Policy Act review performed for license renewal satisfies the requirements of the Fish and Wildlife Coordination Act.

The NRC staff has determined that no further evaluation of this comment is necessary; however, the comment has been forwarded to SCE&G for consideration. No changes were made to the SEIS.

A.1.8 Editorial Comments

Comment: Tables, page xii, line 7; Correct title of Table 2-3 is "Aquatic Species Listed or Candidates for Listing as Endangered...by U.S. Fish and Wildlife Service or State of South Carolina..." Delete reference to National Marine Fisheries Service. (SU-D-K-1)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Executive Summary, page xviii, line 38; Should be "U.S. Nuclear Regulatory Commission's FES Related to Operation..." rather than U.S. Atomic Energy Commission's FES, etc. (SU-D-K-2)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Abbreviations/Acronyms, page xxii, line 38; SCANA Corp. is a completely separate entity from the S.C. Public Service Authority. SCANA Corp. is a holding company with a number of subsidiaries, including SCE&G. The S.C. Public Service Authority is also known as "Santee Cooper." (SU-D-K-3)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 1-1, line 21; Delete "Power." (SU-D-K-4)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Appendix A

Comment: Page 2-1, line 17 and 18; Grade elevation at Summer Station is approximately 436 feet above sea level. Monticello Reservoir's full pool elevation is 425 feet above sea level. (SU-D-K-5)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-4, line 14; Delete "State Park." Lake Murray is an SCE&G hydroelectric reservoir. (SU-D-K-6)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-4, lines 17 and 18; The southern boundary of the 161,000-acre Enoree Ranger District of the Sumter National Forest is only 6 or 7 miles north of VCSNS. Note that the Sumter NF consists of 3 ranger districts, one in the mountains, one in the western Piedmont, and one (the Enoree) in the central Piedmont of S.C. (SU-D-K-7)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-4, lines 19-21; The Congaree Swamp National Monument is on the Congaree River near, but several miles upstream of, the confluence of the Congaree and the Wateree Rivers (not the Broad and Saluda Rivers). It would be more accurate to say that it contains "one of" the last significant tracts of old-growth bottomland hardwood forest in the southeastern U.S. (SU-D-K-8)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-9, line 26; Summer Station also uses the Envirocare facility in Clive, Utah for disposal of solid waste (as noted in Section 2.1.4.3). (SU-D-K-9)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-10, line 5; In some circumstances, liquid wastes may be monitored during release, rather than being sampled and analyzed prior to release. (SU-D-K-10)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-10, line 7-10; Change wording to the following: "The LWPS consists of 5 collection systems which are provided by the waste holdup tank, floor drain tank, the laundry and hot shower tank, the excess liquid waste processing system (the excess waste holdup tank

and the decon pit collection tank) and the laboratory drain system. The LWPS does not process secondary system wastes." (SU-D-K-11)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-10, line 14; Replace the words "Drain Channel A processes" with "The waste holdup tank is provided to process" ... (SU-D-K-12)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-10, lines 17-21; Reword: "... may be directed to the recycle holdup tanks for processing." Delete the sentences: Administratively controlled equipment drains are the major contributors of water to Drain Channel A. Valve and pump leakoffs outside the Reactor Building are also collected in the waste holdup tank for processing and recycling. Abnormal liquid sources include leaks that may develop in the reactor coolant and auxiliary systems. (SU-D-K-13)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-10, lines 24-33; Change wording to the following: "Liquid in this tank is normally processed through the Durotek demineralizers and released to the environment under controlled conditions. Alternatively, the liquid may be recycled for use in the plant. Liquid wastes are released from the waste monitor tanks through the penstocks of the Fairfield Pumped Storage Facility. The discharge valve is interlocked with a process radiation monitor and closed automatically when the radioactivity concentration in the liquid discharge exceeds a preset limit. The waste monitor tank acts as a reservoir for holding waste which is to be released from the LWPS to the Fairfield Pumped Storage Facility. Prior to entering these tanks, the liquid may pass through a waste monitor tank demineralizer and a waste monitor tank filter. A sample is taken and, after analysis, the results are logged and the liquid is discharged or recycled. Liquid waste discharge flow and volume are recorded." (SU-D-K-14)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-10, lines 35-39; Change the wording to the following: "The floor drain tank is provided to collect and process non-reactor grade (non-recyclable) liquid wastes. These include floor drains, equipment drains containing non-reactor grade water, and other non-reactor grade sources. If the activity in the floor drain tank is such that the discharge limits cannot be met without cleanup, the liquid is processed through the Duratek demineralizers and

Appendix A

released under controlled conditions via the penstocks of the Fairfield Pumped Storage Facility. Non-recyclable reactor coolant ..." (SU-D-K-15)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-11, line 1; Change the wording to the following: "... via the floor drains." (Delete remainder of sentence.) (SU-D-K-16)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-11, lines 2-10; Delete these lines and replace with: "Laundry and hot shower drains normally need no treatment for removal of radioactivity. This water is transferred to waste monitor tank number 2 via the laundry and hot shower filter. A sample is taken, and after analysis, the results logged and the water is discharged if the activity level is below acceptable limits." (SU-D-K-17)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-11, lines 12-21; The Excess Liquid Waste Processing System (ELWS) consists of two storage tanks, the excess liquid waste holdup tank and the decon pit holdup tank. The excess waste holdup tank is used to accept waste from the floor drain tank, laundry and hot shower tank, and waste holdup tank when these tanks are filled to capacity. The liquid from this tank can be recycled back to these tanks, released directly to the environment via the waste monitor tank, or processed through the Duratek demineralizers and released under controlled conditions via the penstocks of the Fairfield Pumped Storage Facility. The decon pit collection tank collects liquid from the Fuel Handling Building sumps, the Radiological Maintenance Building drains, excess waste holdup area sump, and decon pit drains. If the activity in this tank liquid is such that the discharge limits cannot be met without cleanup, the liquid is processed through the Duratek demineralizers and released under controlled conditions via the penstocks of the Fairfield Pumped Storage Facility.

The Laboratory Drain System consists of three sinks in the radiochemical laboratory and two sinks in the sample room. In the radiochemical laboratory, spent reactor coolant samples, equipment rinse water and other non-reactor grade fluids are disposed of in the two sinks that drain to the floor drain tank. No liquids or wastes are intentionally disposed of in the sink that drains to the chemical drain tank. In the sample room, excess sample purges of reactor grade water and excess reactor coolant samples are drained from one sink to the waste holdup tank for processing. The other sink is used for draining nonreactor grade fluids to the nuclear blowdown holdup tank. (SU-D-K-18)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-12, line 38; Purge is limited to 1,000 hours per year by Tech Spec. (SU-D-K-19)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-13, lines 7-11; Condenser Air Removal System is normally released through the Charcoal Exhaust System, not only under primary to secondary leakage conditions. (SU-D-K-20)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-14, line 4; Delete the words "evaporator concentrates". (SU-D-K-21)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-14, lines 8-11; Delete these lines. (SU-D-K-22)

Response: *The comment was considered, but no changes were made to the SEIS.*

Comment: Page 2-17, line 12; Since submittal of the ER, SCE&G has modified a transmission line connection. As a result, transmission line descriptions have changed. Replace "Denny Terrace 1 Tie Line" with Summer-McMeekin-Edenwood segment (a 2.5 mile section of the line that now connects Summer Station to the pre-existing Parr-McMeekin-Edenwood line). (SU-D-K-23)

Response: *The comment was considered and appropriate changes were made to the SEIS .*

Comment: Page 2-17, Table 2-1, line 28; Replace "Denny Terrace 1 Tie Line" with "Summer-McMeekin-Edenwood" (SU-D-K-24)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-19, lines 10-12; Replace current wording with the following: "Summer-McMeekin-Edenwood segment. This 230 kV line provides power to SCE&G's Edenwood Substation by way of a 2.5 mile line running from Summer Station to the pre-existing Parr-McMeekin-Edenwood line (total of 32.5 miles between Summer Station and the Edenwood substation). This line occupies a 100' right-of-way." (SU-D-K-25)

Appendix A

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-20, line 26; Insert "Fairfield Pumped Storage Facility" for "Parr Hydro". (SU-D-K-26)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-21, line 6; Power boating is permitted on Monticello Reservoir, but the use of gasoline-powered motors is not allowed on the Monticello Sub-Impoundment. (SU-D-K-27)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-21, line 7; Change wording to: "water level varies daily up to 1.3 m (4.5 feet) to service Fairfield Pumped Storage." (or "the Parr Project.") (SU-D-K-28)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-30, lines 25-26; Suggest that wording be changed to indicate that shortnose sturgeon are found in rivers that flow into Winyah Bay, rivers that flow into Lake Marion, the Santee, Cooper, and Savannah Rivers, and the ACE Basin (Ashepoo, Combahee, and Edisto Rivers). (SU-D-K-29)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-31, line 15; Scientific name is Lasmigona decorata. (SU-D-K-30)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-31, line 16; Scientific name is Pyganodon cataracta. (SU-D-K-31)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-32, line 20; Scientific name is Pyganodon cataracta. (SU-D-K-32)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-31, lines 29-30; Incomplete sentence. (SU-D-K-33)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Table 2-5, page 2-40; Adding the percentages for Fairfield, Lexington, Newberry and Richland Counties yields a total of 96%. Approximately 95% is used on page 2-39, line 37. The difference is assumed to be due to rounding of percentages. (SU-D-K-34)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Table 2-6, page 2-42; Problems with table format, left-hand column (at least in printed version). (SU-D-K-35)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Table 2-9, page 2-47; To be consistent with text on preceding page and the table heading, suggest that numbers in right-hand column be presented as whole numbers, i.e., 87 (percent) rather than 0.87, 3 (percent) rather than 0.03, etc. (SU-D-K-36)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Table 2-10, page 2-50; Problems with table format, header section (at least in printed version). (SU-D-K-37)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-52, lines 25 and 26; Suggest re-wording to reflect that there are 5 public boat ramps related to the Parr Project (two on Monticello Reservoir, one on the Monticello Sub-impoundment, and two on Parr Reservoir.). Gasoline-powered boat use is only restricted on the Monticello Sub-impoundment. (SU-D-K-38)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Section 2.2.8.6, page 2-54; It might be helpful to give dates here for the data presented (unemployment rates, families below poverty level, and median household income) in Table 2-13. Are the data from 1999, 2000, 2001, or 2002? As is, the discussion lacks a context, particularly the remark about Fairfield County's declining unemployment rate, which was 10 percent in 1997. (SU-D-K-39)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 2-60, lines 19-23; The Parr Project did not include the construction of V.C. Summer Nuclear Station. (SU-D-K-40)

Appendix A

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 4-18, line 3; Recommend that "cooling bay" and "cooling discharge" be changed to "discharge bay" and "discharge canal", the terminology used later in this paragraph and in other sections of the DSEIS. (SU-D-K-41)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Section 4.3, page 4-26; The draft SEIS states, "The staff has not identified any new and significant information. Therefore, the staff concludes that there are no impacts of radiation exposures to the public during the renewal term beyond those discussed in the GEIS." For other Category 1 issues, the Staff's review states, "The staff has not identified any significant new information during its independent review of the SCE&G ER, the staff's site visit, the scoping process, or staff evaluation of other available information." If this is in fact the case for radiological impacts, then similar language should be used in Section 4.3. (SU-D-K-42)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 4-30, line 37; The value 90 percent (from the ER) is used here, but 95 percent is used earlier, page 2-39. The higher percentage, based on a more recent SCE&G review of employees' addresses, should be used throughout. (SU-D-K-43)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Section 4.6.1, page 4-45; Regarding aquatic species, the draft concludes that license renewal will not impact Federally listed aquatic threatened or endangered species, or their critical habitat, and determined that mitigation in place at Summer is appropriate and no additional mitigation is warranted. The Staff neglects to make a conclusion that the impacts on aquatic species are SMALL. (This conclusion is drawn in Section 4.8.6, but should be made here as well.) (SU-D-K-44)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Section 5.2.1, first two sentences of the third paragraph; The description of the SAMA development process provided here makes it sound as though SCE&G initially identified SAMAs from the PRA importance listings. In other sections the NRC has correctly described the process, but these particular sentences do not appear to reflect the actual steps used in the VCSNS SAMA analysis. A more accurate description would be something like, "The second step involved the development of a list of potential measures to reduce plant risk. This list was

compiled based on information included in the VCSNS IPE, VCSNS IPEEE, previously submitted SAMA analyses, and NCR/industry documentation discussing potential plant improvements. The proposed risk reduction measures were subsequently compared against PRA results to ensure the major risk contributors were addressed by the proposed enhancements." (SU-D-K-45)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Table 5-4, page 5-7; Because this table reports dose-risk rather than dose, the table heading should be "Breakdown of Population Dose-Risk by Containment Release Mode." (SU-D-K-46)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 8-5, line 16; As noted before, need to use the same percentage that's used in Chapter 2 and 4, 95 percent (see comment on page 4-30). (SU-D-K-47)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 8-6, line 36; Not familiar with word "contra-act" (counteract?). (SU-D-K-48)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 8-16, lines 22-26; NRC indicates that SCDHEC published a "Notice of Drafting" in August 2002 for an Early Action Plan for measures to attain the 8-hour (ozone) standard prior to any non-attainment designation. The NRC should be advised that SCDHEC submitted an Implementation Plan for the 8-hour ozone standard to EPA in July 2003 (after the DSEIS had been completed). Under that plan, the Columbia Intrastate AQCR would be designated a non-attainment area under the 8-hour ozone standard. (SU-D-K-49)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 8-17, line 13; Correct name is Cape Romain (not "Romaine") National Wildlife Refuge. (SU-D-K-50)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 8-32, line 35; Correct name is Cape Romain (not "Romaine") National Wildlife Refuge. (SU-D-K-51)

Appendix A

Response: *The comment was considered and appropriate changes were made to the SEIS.*

Comment: Page 8-35, lines 9 and 10; Note that this text is not consistent with the analysis in the preceding pages, which assumes that 150 workers would be required to operate the gas-fired plant (2 units), while only 70 (page 8-22) would be required to operate the coal-fired plant (one unit). Although this has no real bearing on the section's conclusions, it may produce confusion in the reader. (SU-D-K-52)

Response: *The comment was considered, but no changes were made to the SEIS.*

Comment: Page A-2, line 23; Commenter Stephen Summer's affiliation is SCANA Services (as in line 15). (SU-D-K-53)

Response: *The comment was considered and appropriate changes were made to the SEIS.*

A.1.9 Other Comments Including Out of Scope Issues, Operational Safety, and Emergency Preparedness

Operational Safety and Emergency Preparedness

Comment: ... in the event there was a terrorist act here, what do the citizens do, what's the plan? Because that has not been shared by the local emergency preparedness. For the citizens, senior citizens, what would be the route? (SU-D-A-1)

Comment: I know it's mandatory ... that we had to have the EMS station, which we have right there [in Jenkinsville]. We also have a fire station that's adjacent to the EMS station. ... We are concerned because ... [T]here has been one incident we had several years ago, a truck took off and didn't have water to one of the fires. ... If we have a relationship and something happens at the plant, how will we be able to help? (SU-D-A-3)

Comment: So we're asking is there any kind of way for ... the nuclear plant to help us get a fire truck. We haven't been successful with the local government and our fire trucks will not withstand a serious anything over at that plant. (SU-D-A-4)

Comment: One other question was asked by the community -- has this plant ever been in violation of anything, and what, and what was the nature of it, and when. (SU-D-A-5)

Comment: You mentioned on one of the slides [regarding the SAMA evaluation] about human error being considered. ... Is there a larger analysis of how well -- of how they're going to

manage human reliability 20 years from now? How are they going to maintain expertise and that kind of thing? ... I want to know what is going to be done during the relicensing period and in preparation for that to ensure that the current levels of human reliability are maintained or improved, so that -- to ensure that there will be ample amount of qualified people working there, because as you know, there's a war for talent in this country right now and it's difficult for a lot of industries to recruit exactly what they want.... (SU-D-B-1)

Comment: The more I hear about safety, the sounder I sleep. (SU-D-D-2)

Comment: [Referring to the severe accident mitigation alternatives analysis of postulated accidents,] [T]here were three phases there, so that last one -- could you repeat that [referring to the cost-benefit analysis]? ... What I'm interested in is the fact what if something does happen. You're saying it could or could not, but what is the final result [referring to a real, rather than postulated, accident]? (SU-D-G-1)

Comment: They have some top notch employees. I've spoken so much about them, I've worked with a lot of these gentlemen. I'm also public relations at the hospital in Winnsboro and we always pick up the phone and call and we ask for help and they are ready to help us. I told John Kadina, whoever their HR person is, is doing a darned good job hiring the folks out there because they are really caring, they are dependable, they follow through when you ask them to do things for you. I could just cite so many of them, but I'm scared I'd leave some out. (SU-D-I-2)

Response: *Operational safety, reactor operator and other employee qualifications, training, security and emergency preparedness are important elements of the NRC's regulatory program, but are outside the scope of this environmental review. An NRC safety review for the license renewal period is conducted separately. Although a topic may not be within the scope of review for license renewal, the NRC is always concerned with protecting public health and safety. Any matter potentially affecting safety, including the capability to respond to offnormal events or malevolent acts and including operational safety, will be addressed under processes currently available for existing operating licenses absent a license renewal application. The comments provide no new information, and do not pertain to the scope of license renewal as set out in 10 CFR Parts 51 and 54. Therefore, the comments will not be evaluated further as part of the environmental review for license renewal. No changes were made to the SEIS.*

License Renewal Process Issues

Comment: As they were talking about the environmental impact, they kept saying that it's a small impact. I need to know or could you define small impact for me. (SU-D-C-1)

Appendix A

Response: *As described in the Supplement (see Section 1.2.1), the NRC's standard of significance of impacts considers both context and intensity. SMALL effects indicate that they are not detectable or so minor that they will not destabilize nor noticeably alter any important attribute of the resource. MODERATE effects indicate that they are sufficient to alter noticeably, but not to destabilize, important attributes of the resource. LARGE effects are clearly noticeable and sufficient to destabilize important attributes of the resource. The comment provides no new information and will not be evaluated further as part of the environmental review for license renewal. No changes were made to the SEIS.*

Comment: ... this relicensing process is so complex and so difficult for people to grasp exactly what is being evaluated and what is being proposed, that it almost makes no sense to have public participation because everybody comes in confused and they leave confused. Even the licensing board judges seem very frustrated by the rules and one of the NRC lawyers stated during a prehearing that the rules are perplexing, they're difficult to understand and at times they're confusing. This is NRC's own lawyers. (SU-D-B-4)

Comment: ... the rules are written in a way that essentially excludes the public. ... the adjudication process is an extra step towards -- you know, adding to that safety margin. And it's not just because people are -- the public is arguing it, but it's because also when you get the Atomic Safety and Licensing Board panel going, they're very sharp people and they really hold the NRC staff's feet to the fire and the licensee's feet to the fire. They are very difficult to pull one over on and they really are effective, they're a good third step to make sure that things are going to happen as SCANA and NRC say. ... When you remove that third step, you're actually cheating the system, which nuclear power is a high consequence industry, which means it's a dangerous industry, which means it has to be safer than other industries because the consequences of the accidents are so severe. (SU-D-B-5)

Comment: But the timing was also raised, they said that it would be better to have this on a Saturday when more people are off than during the week, but it's not a Wednesday now when more people go to church at night, they have moved it to Monday, so I don't know if that was done -- today's Tuesday actually, right? Yes, Tuesday. (SU-D-B-6)

Response: *The comments are with regard to license renewal and its processes in general. The Commission has established a process, by rule, for the environmental and safety reviews to be conducted to review a license renewal application. The comments also express a concern with the long-established NRC adjudicatory practices and notifications required to inform stakeholders of opportunities to participate in the licensing process so that can make informed decisions of whether and how they wish to participate. As for the environmental review for license renewal, the public can participate during the scoping process to assist the*

NRC staff in framing the appropriate scope of its review and can participate in commenting on the NRC staff assessment. During these phases of the project, the NRC staff has elected to conduct public meetings to provide yet another opportunity for stakeholder interaction; in addition, these meetings have been held at various times of the day to be sensitive to the scheduler needs of participants. The comments provide no new information, and do not pertain uniquely to the scope of license renewal as set out in 10 CFR Parts 51 and 54. Therefore, the comments will not be evaluated further as part of the environmental review for license renewal. No changes were made to the SEIS.

Comment: What is the bottom line motivation for getting a relicensing 20 years ahead of time? And I just want to know, does this improve the ledger, the books for SCANA and Santee-Cooper? It's just a yes or no question. If it helps their financial situation by making their books look a little more presentable, having less liability, less capital investment per year; you know, just come out and say that because that may be a socio-economic impact, but I don't remember seeing it. (SU-D-B-9)

Comment: Does license renewal mean that the plant will operate another 20 years or that it will even operate up until the end of the 40 years? (SU-D-B-10)

Response: *The Commission has established a process, by rule, for the environmental and safety reviews to be conducted to review a license renewal application. As outlined in Section 1.4 of this Supplement, the NRC's purpose and need for the Federal action is to provide an option that allows for power generation capability beyond the term of the current nuclear power plant operating license to meet future system generating needs, as such needs may be determined by decisionmakers. The fact that energy planning to satisfy future needs may involve significant lead times has been factored into the NRC rules that permit the submittal of a license renewal application 20 years prior to the expiration date of the operating license. If granted, the renewal of an operating license preserves the option to continue to operate, but it does not mandate that the plant operate for the term of the renewal period or even the term of the initial license; that is within the purview of the operator and other decisionmakers. The comments provide no new information, and do not pertain to the scope of license renewal as set out in 10 CFR Parts 51 and 54. Therefore, the comments will not be evaluated further as part of the environmental review for license renewal. No changes were made to the SEIS.*

Appendix A

A.2 Public Meeting Transcript Excerpts and Comment Letters

A.2.1 Transcript of the Afternoon Public Meeting on August 26, 2003, in Jenkinsville, South Carolina

[Introduction by Mr. Cameron]

[Presentation by Mr. West]

[Presentation by Dr. Auluck]

[Presentations by Mr. Suber]

[Presentation by Dr. Doerr]

[Prior to the public comment portion of the meeting, because of a scheduling conflict a local Councilman requested the opportunity to offer comments early and other questions were raised that could be inferred as comments. These have been extracted below.]

COUNCILMAN MARCHARIA: Good afternoon, everyone. Welcome to Jenkinsville, South Carolina. To the NRC staff, I don't know everyone by name, but thank you very much for being here today. And to my two distinguished colleagues, Vice President Brown and Council lady Robinson, thanks for coming. And those who live in the immediate area -- how many folks live right here in western Fairfield? Raise your hands. Three? We matched last year. Unfortunately, you know, at this time of day, a lot of our residents are working. I'm sure they would be here if they could.

Last year I was here and I shared some comments from the community and once again, I want to reiterate some of those comments and I want to thank Mr. Suber in particular. Since last year, the many phone calls that he tried to run me down, he said I want to make sure that people know it this time and he really stepped up. And all the times that I missed you, I apologize for that, but you worked hard to get this information out to the community. So thank you very much for that.

That being said, I wanted -- some of the things that the community had to ask that's on everyone's mind is in the event there was a terrorist act here, what do the citizens do, what's the plan? Because that has not been shared by the local emergency preparedness. For the citizens, senior citizens, what would be the route? (SU-D-A-1) I think the community wanted to know that and that might be a local issue that we have to address but I'll address it also to you.

I think some of the health issues -- the last time we talked, we asked what would be the impact of health issues around the plant, given the perception -- not the perception, given the fact that a lot of our senior citizens are dying from unknown cancers. That's not a perception, that's a

fact. But there is a perception that it might be related to the plant. That has not been proven and I think the question asked what steps do you take or methodology that you use to determine that this plant does not have a negative impact on the quality of life or health of the local residents -- was one of the questions. (SU-D-A-2)

The other thing I would like to ask for, the community asked for, which I hadn't read was could we -- I -- have a copy of the original agreement with V.C. Nuclear Power Plant with Jenkinsville or the county, whichever, what was written in that initial agreement. And I raise that question simply because I know it's mandatory in some readings that I had that we had to have the EMS station, which we have right there. We also have a fire station that's adjacent to the EMS station. Hopefully we can also put a substation in there at some point in time.

We are concerned because -- I'm asking for help of how we can upgrade our fire station. It's less than three minute walking distance from here. Our fire trucks -- I'm not a firefighter, but this community is in serious danger. There has been one incident we had several years ago, a truck took off and didn't have water to one of the fires. How that could possibly happen, I don't know, but the trucks are old and even if they did have water, I don't know if they can go 10 or 15 miles. That is a serious problem. If we have a relationship and something happens at the plant, how will we be able to help? (SU-D-A-3)

The other issue that we have, in terms of volunteer firefighters, it's my understanding that you would need somewhere in the proximity of at least 11 people trained to be able to do this. We fall far short of that right now and we're trying to encourage younger people male and female, to get involved locally and learn and train to be at the local fire station.

So we're asking is there any kind of way for you or the nuclear plant to help us get a fire truck. We haven't been successful with the local government and our fire trucks will not withstand a serious anything over at that plant. (SU-D-A-4) So if you could be helpful with that or instructive as what direction we can go to acquire funds or an avenue to make this community more secure.

If you have any ideas of how we can encourage some of our younger people in the community to get this training and be available to help us in the event that something happened, it would be appreciated.

One other question was asked by the community -- has this plant ever been in violation of anything, and what, and what was the nature of it, and when. (SU-D-A-5) I probably could have gotten that answer somewhere else, but that was asked of me yesterday and I just wrote it down.

Appendix A

The other thing is that technically I don't know if I know all the technical terms dealing with nuclear waste and nuclear energy and what you must do to provide safety or any other kinds of strategies around that. (SU-D-A-6) I'll confess my ignorance, I don't know all the technical terms. But we are concerned that it's in our community. It has been a tremendous economic benefit to our community and we are obviously enjoying the partnership that we have with you and we thank you for that. (SU-D-A-7)

Those were some of the questions that I had. I'm sure that other citizens are going to have questions and does anyone have a question of me? (No response.)

COUNCILMAN MARCHARIA: Hearing none, I think I've said all I could say and I certainly wish all of you a safe journey back home and I thank you for the opportunity for the dialogue. I think in the last year most -- if not you, most of the folks over at the plant have been very open. We have started a dialogue and I think that's going to get us over some of the humps and try to look at more strategically how do we make this community more safe. (SU-D-A-8)

Thank you very much for listening to me and I hope -- I wish us all luck in our endeavor to make this happen. Thank you very much. ...

MR. MONIAK: Yes, my name is Don Moniak and I'm from Aiken, South Carolina, here to write an article about this process. ... You mentioned on one of the slides [regarding the SAMA evaluation] about human error being considered. ... Is there a larger analysis of how well -- of how they're going to manage human reliability 20 years from now? How are they going to maintain expertise and that kind of thing? ... I want to know what is going to be done during the relicensing period and in preparation for that to ensure that the current levels of human reliability are maintained or improved, so that -- to ensure that there will be ample amount of qualified people working there, because as you know, there's a war for talent in this country right now and it's difficult for a lot of industries to recruit exactly what they want.... (SU-D-B-1)

MR. MONIAK: ... You said that cost and risk analysis were the screening criteria for reducing the number of potential SAMAs, and what I was wondering is, is it cost and risk or is it cost and/or risk? Does cost by itself ever result in removing a possible improvement or does it also have to be a risk reduction? ... How are those two weighed, how are cost versus risk weighed? (SU-D-B-2)

MR. MONIAK: ... Is risk reduction based on the total population in the area and what the impacts on population and environment would be -- not the impacts, but what the effects would be, or is it based on what the actual impacts would be, say for radiation release in terms of curies? ... The risk reduction itself, is it based on the actual impact to the environment and,

therefore, possibly to people like in terms of curies, which is concrete, or is it based upon the potential effect upon the environment, which is more of an abstraction? ... (SU-D-B-3)

REVEREND CANNON: As they were talking about the environmental impact, they kept saying that it's a small impact. I need to know or could you define small impact for me. (SU-D-C-1)

MS. PEARSON: I just wanted to ask a question about that last statement up there, "additional plant improvements to further mitigate severe accidents are not required at V.C. Summer as part of license renewal." ... Are you saying that irrespective of how many accidents are going to be down there, it is not required, or what are you saying? (SU-D-D-1)

MR. CAMERON: ... Now we're going to go out to you and hear perhaps a little bit more formal comments or concerns about these issues. As I mentioned earlier, I was going to see first if Councilwoman Robinson and then Councilman Brown had anything to say. ... Would you like me to bring you this or do you want to come up front? It's totally up to you, wherever you feel more comfortable.

COUNCILWOMAN ROBINSON: I just wanted to say thank you for coming and performing the environmental impact study for us.

We have felt all along, as council members, that this was a very safe agency for our county and as council members, we encourage you to give them the okay for relicensing because it is an enormous economic development for our county and we all as citizens who live here realize the various benefits from the taxes that are paid. We often talk about that, especially during the budget process, and what would happen if it should be closed. ... I look forward to having it extended for 20 additional years. (SU-D-E-1)

COUNCILMAN BROWN: I'm David Brown. I want to reiterate what Ms. Robinson said, but I want to go one step further and just thank SCE&G and SCANA and Santee-Cooper for doing such a good job over the past 20 years as far as picking and choosing good people to run their plant and keep it safe. I want to thank NRC for being the watchdog to make sure they run it safe -- I want to thank y'all. (SU-D-F-1)

At the beginning we were talking about people with the NRC that have been with the NRC for 20 some odd years. Twenty years ago, I was on council when the hydro plant just came on line and saw the impact just the hydro made on Fairfield County. And then when the nuclear power plant tax base came on line, Fairfield County was able to go from a farming community into the 20th century because of the tax base trickle down effect. School teachers were paid more money, I remember when Sheriff Gunby didn't have enough money to buy bullets for his officers and I think he had 10 officers and now we've got 50.

Appendix A

| But the impact that this plant has made on Fairfield County, you cannot really sum it all up other than it really has brought us into the 21st century and without it, Fairfield County would be in dire straits. (SU-D-F-2)

| Thank y'all for being here.

| MR. CAMERON: Thank you both. Don Moniak, Mr. Don Moniak, do you want to come up here or do you want to speak from your seat?

| MR. MONIAK: Who was the last speaker?

| MR. CAMERON: That is Councilman George Brown -- David Brown, sorry.

| MR. MONIAK: Are there other speakers?

| MR. CAMERON: We might. Do you want to wait until the end?

| MR. MONIAK: Yes.

| MR. CAMERON: All right. Ms. Pearson, do you want to say something?

| MS. PEARSON: I just want to say a few words of thanks for you all coming out and giving us the information that we do have.

| It is a privilege and opportunity to come and sit and listen. As I stand here, I have a son who is quality control manager at the V.C. Summer Nuclear Plant. ... The more I hear about safety, the sounder I sleep. (SU-D-D-2)

| We truly do want to thank you all for the information. We do know that it's your job to do this and it appears that you put a lot of time in it. Otherwise, it wouldn't be as informative as it is.

| We do thank you and we're proud to have you in the community. (SU-D-D-3)

| MR. CAMERON: Thank you, Ms. Pearson.

| Do we have anybody else? Reverend, do you want to say anything at this point or did we answer all your questions?

| REVEREND CANNON: I too want to reiterate the fact that we are happy to have good neighbors. The plant has done so much for the community and I can look right around and I see someone who is employed in taking care of the building for us and he works for the plant,

so it has had a tremendous impact on the county and we get good reports that they are safe (SU-D-C-2) and therefore we can look across the lake and see the glory of God and the wonder of technology working hand in hand, and therefore, we are happy and we praise God.

MR. CAMERON: Thank you, Reverend Cannon.

Anybody else have a statement that they want to make before we go to Mr. Moniak? (No response.)

MR. CAMERON: Don, would you like to give us your comments?

MR. MONIAK: Sure. Because you'd hate to have a meeting, Chip, right, where somebody doesn't speak from the podium -- isn't that true?

MR. CAMERON: I do like it when someone comes up and speaks from the podium.

MR. MONIAK: I'm glad I can oblige.

MR. CAMERON: Good.

MR. MONIAK: My name is Don Moniak, I live in Aiken, South Carolina, I'm a free lance writer and independent technical and environmental consultant. I used to work for the Blue Ridge Environmental Defense League and I wrote the only contention -- wrote and argued the only contention on reactor relicensing that is going to be argued before the Atomic Safety and Licensing Board panel.

I want to say that this relicensing process is so complex and so difficult for people to grasp exactly what is being evaluated and what is being proposed, that it almost makes no sense to have public participation because everybody comes in confused and they leave confused. Even the licensing board judges seem very frustrated by the rules and one of the NRC lawyers stated during a prehearing that the rules are perplexing, they're difficult to understand and at times they're confusing. This is NRC's own lawyers. (SU-D-B-4)

So the rules are written in a way that essentially excludes the public. And I know at the last meeting, I read the transcript from the meeting in December that was held here and Brett Bursey talked about how the adjudication process is an extra step towards -- you know, adding to that safety margin. And it's not just because people are -- the public is arguing it, but it's because also when you get the Atomic Safety and Licensing Board panel going, they're very sharp people and they really hold the NRC staff's feet to the fire and the licensee's feet to the fire. They are very difficult to pull one over on and they really are effective, they're a good third

Appendix A

| step to make sure that things are going to happen as SCANA and NRC say. ... When you
| remove that third step, you're actually cheating the system, which nuclear power is a high
| consequence industry, which means it's a dangerous industry, which means it has to be safer
| than other industries because the consequences of the accidents are so severe. (SU-D-B-5) If
| you don't believe me, Sandia National Laboratory and most other NRC contractors say this
| matter of factly.

| So it's unfortunate that there is no -- not more questions, especially out of Columbia, because
| quite a few environmentalists from Columbia come down to Aiken, North Augusta, to discuss
| Savannah River Site issues -- they're 60 miles from there, they're 28 miles from here.

| At the last meeting, somebody asked how many people with NRC staff, how many are SCE&G,
| SCANA -- you know, how many people in here are not being paid to be here and are just
| members of the public. I was just curious. (Show of hands.)

| MR. MONIAK: Five.

| There was also a discussion about public involvement and I'm not sure, there was an elected
| official who said that the notice was -- it was insufficient notice and Chip Cameron admitted that
| we can always improve on our notice. I'm not sure if there was any improvement here or not,
| somebody else can decide that.

| But the timing was also raised, they said that it would be better to have this on a Saturday when
| more people are off than during the week, but it's not a Wednesday now when more people go
| to church at night, they have moved it to Monday, so I don't know if that was done -- today's
| Tuesday actually, right? Yes, Tuesday. (SU-D-B-6)

| There was a third question that was asked, is what about health impacts in the area, because
| there were concerns over rising cancer rates and other illnesses which would be extremely
| difficult to trace back to Summer Nuclear Power Plant even if it was Summer Nuclear Power
| Plant causing these problems, because environmental epidemiology as a discipline is almost
| impossible. As a friend of mine once said to the Centers for Disease Control people who were
| conducting a community health assessment, he said you all couldn't find an exposure pathway
| if you had gone to Bhopal, India. And they just said well, we think we could have. You know,
| they weren't offended by this, they may have had some difficulties, believe it or not, in their
| mind. ... So it would be very difficult to find this out, but nonetheless, it seems to be incumbent
| upon the NRC and SCE&G to at least address this issue and identify what sources of hazards,
| contaminants in general in this area there are. (SU-D-B-7)

There's a very high frequency of electrical power lines here and radio frequency -- electromagnetic radiation from these is harmful. (SU-D-B-8) How much is harmful is under debate, but the former Soviet Union held that much, much less -- their standards were well below ours. In fact, I read somewhere that their standard was anything above zero was an impact. And the former Soviet Union, now the Russians, they have a strange economy and it's a different place, but the one thing they do know is radio frequency and electromagnetic technology. They are way ahead of us in terms of developing electromagnetic bombs. ... So I didn't see that anywhere, maybe I missed it. What other factors are there that could be causing health impacts in the area. It doesn't mean that you have to say whether Summer is or not, just say that these other things could be causing it. The National Academy of Sciences comes out and says that oh, power lines don't cause leukemia. Well, sure, maybe they don't, but there's a lot of other impacts, especially neurological, that it could be causing. If you've ever met anybody who lives next to a substation, listening to that drone all day long and it's in their house and it's in their mind and they can't get it out -- people who live next to substations are often times a different breed. I would never live that close to one.

So the second set of things I had was questions. What is the bottom line motivation for getting a relicensing 20 years ahead of time? And I just want to know, does this improve the ledger, the books for SCANA and Santee-Cooper? It's just a yes or no question. If it helps their financial situation by making their books look a little more presentable, having less liability, less capital investment per year; you know, just come out and say that because that may be a socio-economic impact, but I don't remember seeing it. (SU-D-B-9)

Does license renewal mean that the plant will operate another 20 years or that it will even operate up until the end of the 40 years? (SU-D-B-10)

And in all of these relicensings, there doesn't seem to be much analysis on what the impact would be of an operator suddenly closing a plant because the energy is not needed, it's too expensive, there's been new technology. In the next 20 years, who knows what's going to happen in terms of energy technology. Nuclear power could be obsolete in 20 years, as we currently know it. (SU-D-B-11)

What would be that socio-economic impact? What would be the impact of early closure, especially if the governments plan on this operating another 20 years, local governments. (SU-D-B-12)

And I also read that inside of the 10-mile radius, I guess the evacuation area, the population has not enjoyed the same level of growth as the other parts of the county. This is not a county that experiences a lot of growth, which can be a good thing too, but does this plant affect the ability of the county to bring in other industries, both this and Newberry? Are there industries

Appendix A

| that would think about moving here, smaller scale ones that will not because there's a nuclear power plant nearby? Are the people not moving to within the 10-mile radius because of the plant? What is the reason for the exodus of people from that 10-mile radius? And somewhere in there it said that it either decreased -- a lot of people have left, something like 220 people left in a 20-year period in an area where there's only 1000 to begin with. (SU-D-B-13)

| So my point is because in the south, a lot of these power plants are located in very rural areas, they all seem to be put 25 to 30 miles away from a population center. I guess that was the siting criteria back in the '60s, '70s. And some of these places just have the worst poverty in the country, never mind in South Carolina. (SU-D-B-14) I'm speaking specifically about Plant Vogtle in Georgia, where the poverty rate is almost 30 percent in Burke County.

| So South Carolina is dominated by nuclear power and yet its schools are behind and it has higher poverty rates than the rest of the country and essentially it's a state, unlike North Carolina, that went a separate way. It relied upon government subsidies and large corporations to do its work rather than going after a high tech boom.

| So anyway, I just would like to hear those questions kind of addressed in the EIS. Thank you.

| MR. CAMERON: Thank you, Don, for those comments and the staff is going to have to consider those to see whether they're within scope and to see how to address them.

| I guess just for the record, I just would add one thing -- and thanks for taking us back to scoping, it's always important to make that tie-in. And you raised the comment about the notice, and indeed, we realized that notice for this community had to be done in a different way and Councilman Marcharia, the person who raised that the last time, before he left today, he in fact gave the NRC staff compliments for how they did and particularly Mr. Greg Suber, the project manager, for how the notice was conducted for this particular meeting. So I just let the record note that.

| Is there anybody else who wants to make a comment at this point?

| MR. CAMERON: Okay, we're going to be back tonight at 6:00 for open house, 7:00 meeting for anybody who cares to join us again, but most importantly, I think that for all of you who are here, the NRC staff is here, our expert consultants are here and I would just ask the NRC staff to talk to people who raised issues, to perhaps give them some more information.

A.2.2 Transcript of the Evening Public Meeting on August 26, 2003, in Jenkinsville, South Carolina

[Introduction by Mr. Cameron]

[Presentation by Mr. West]

[Presentation by Dr. Auluck]

[Presentations by Mr. Suber]

[Presentation by Dr. Doerr]

[Prior to the public comment portion of the meeting other questions were raised that could be inferred as comments. These have been extracted below.]

MS. HUBBARD: ... [Referring to the severe accident mitigation alternatives analysis of postulated accidents,] [T]here were three phases there, so that last one -- could you repeat that [referring to the cost-benefit analysis]? ... What I'm interested in is the fact what if something does happen. You're saying it could or could not, but what is the final result [referring to a real, rather than postulated, accident]? (SU-D-G-1)

MS. HUBBARD: ... I lived here for many years and I moved away and am just coming back after 47 years ... I'm just relocating and I'm wondering about so much cancer in this area. They say that Fairfield County has -- what is it, 75 percent deaths from cancer. Does this nuclear plant have anything anywhere that you know of or don't know of and somebody else knows, that causes it. I don't know if the plant causes it, but I know there's a lot of deaths around here. (SU-D-G-2)

MS. PEARSON: I have a concern over the last statement, overall conclusion, "additional plant improvements to further mitigate severe accidents are not required at V.C. Summer as part of license renewal." ... Why was that statement even brought up? (SU-D-D-4)

MR. CAMERON: ... There may be other questions that we can get to throughout the evening, but I'd like to go to Councilman Murphy, who is the chair of the County Council, and I think that he wants to refer to a slide. We're going to get that up there for you. Do you want to use this or come on up here? All right.

COUNCILMAN MURPHY: Good afternoon. There's a slide I'd like for you to put up there now. Money isn't everything. To sacrifice health concerns for money would be bad. But when you don't have definitive proof that what's happening is bad and you have money, it's good. Now let me just kind of outline that a little bit. When V.C. Summer first came with an interest here, Fairfield County budget for the whole county was less than a million dollars. Our schools

Appendix A

were 93 percent federal or state funded. A mill was worth less than \$10,000. The quality of life as far as the average salary in the county and quality of life was one of the lowest in the state.

V.C. Summer this year put over \$17 million into the tax base of this county. What does that mean to Fairfield County? Over 60 some percent of the total budget. What would it mean if V.C. Summer would leave? They put moderate and large. That's not the word. Neither one of those words are suitable to what would happen to Fairfield County if V.C. Summer would leave. (SU-D-H-1)

In 1997, I had a tumor in my throat and I couldn't breathe. They didn't know what it was and finally they located it. So I know what it is when it's hard to breathe. Well, if V.C. Summer leaves this county, it's going to be hard for this county to breathe. (SU-D-H-2)

So I'm here in full support of this, because they are good corporate neighbors, they look at all the safety issues and we also look at safety issues and question those things. But to have a resource such as this one and one of the safest plants in America and they are willing to operate an additional 20 years with the consent of the federal agencies that have them here, the room should be filled saying let's get this done. This room should be filled. Because without that, we can't even improve on the different things that we have in this county. (SU-D-H-3)

And as I was reminded, Greenbriar is a way from here and they're number one in the state when it comes to cancer. I live in Ridgeway and cancer is taking people out down there too. ... You can point to issues all over the place, but Fairfield County has a lot of health issues, but they have a whole lot of other issues too. Some of those issues are being solved by the funding of the power plant. (SU-D-H-4) Our schools, our county, all of these things we run on are funded by this organization. (SU-D-H-5)

If they were a bad organization, I would be up here saying close them up, regardless of what it was. But they're not, they're good corporate citizens. They work with the schools, not only with tax dollars, but they have programs, they donate books and all of these things to the county. They're just a good, good corporate citizen that we in Fairfield County treasure and hope they stay here and relicense for an additional 20 years. (SU-D-H-6)

Thank you.

(Applause.)

MR. CAMERON: Thank you very much, Councilman.

Next we're going to go to Councilwoman McKinley.

COUNCILWOMAN McKINLEY: Good evening. It's good to see all of you out here. Sometimes it's hard to get a crowd out, so you gentlemen did well getting a good crowd out tonight too.

I'm just getting over a knee replacement, so I'm sorry for the slowness getting up here.

I just want to comment, I live two blocks from a wonderful corporation that moved to Fairfield County back in 1917 -- Uniroyal. There were a lot of problems with them. I remember I couldn't hang my clothes out on the clothesline because of the soot. And we went and talked with them, they fixed the problem. Then we had a problem with the smoke coming out with the hot stretch where they were making the tires. We went and talked with them, they took care of the problem. They were a very good corporate neighbor also, they cared about the community.

And the one thing I think about V.C. Summer out here, would all these folks be working out here if they thought there was a danger to this? (SU-D-I-1) They have some top notch employees. I've spoken so much about them, I've worked with a lot of these gentlemen. I'm also public relations at the hospital in Winnsboro and we always pick up the phone and call and we ask for help and they are ready to help us. I told John Kadina, whoever their HR person is, is doing a darned good job hiring the folks out there because they are really caring, they are dependable, they follow through when you ask them to do things for you. I could just cite so many of them, but I'm scared I'd leave some out. (SU-D-I-2)

So my hat is off to them, what job they do. And Mr. Murphy is right. And you didn't use your definition of what you told them when we were at the state meeting a couple of weeks ago. He said you know how it is if you have to be on a respirator? He said that's what we'd be on in Fairfield County if the nuclear plant left. And he's right. So I really appreciate what they do for us and the benefits that they draw. And Mr. Murphy is right, Greenbriar is number one with cancer. Dr. Gaddy and I have often talked about why Fairfield County has so much heart disease, cancer. But look at all this granite we're sitting on. And we can't do a thing about it, can we? But we love Fairfield County and we deal with it.

I just want to say nothing but positives for them. We thank them for their help with the county -- \$17 million. And guess who'd have to pay that if they didn't? The citizens of our county. (SU-D-I-3)

So I just really want to say thank you to them and I hope that the government will see fit to do the license (SU-D-I-4) and this gentleman and I had lunch at the hospital and discussed this about a year ago, didn't we, Gregory?

Appendix A

MR. SUBER: Right.

COUNCILWOMAN McKINLEY: So we just had a good conversation. I want it to be safe for all of us, I want it to be safe for even the ducks out here. You know, we've got -- it's a beautiful area. I almost ran off the road awhile ago coming out looking at the sunset coming out over that water. So you folks are very blessed out here.

But I don't want us to blame something on them that might not be responsible for that. So let's do look at some other information maybe before we make that determination. But the nuclear plant I hope is here to stay for another 20 years (SU-D-I-5) and we appreciate you and thank you very much.

(Applause.)

MR. CAMERON: Thank you very much, Councilwoman.

Are there others who want to say anything to us tonight?

(No response.)

MR. CAMERON: Ok, the NRC staff is going to be here, our expert consultants are going to be here after the meeting if you want to talk to them further, and I'm hoping that we have the address straightened out so we can get some more information on that.

A.2.3 Correspondence on the Draft Supplemental Environmental Impact Statement



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 REGION 4
 ATLANTA FEDERAL CENTER
 61 FORSYTH STREET
 ATLANTA, GEORGIA 30303-8960

September 2, 2003

7/17/03
 68 FC 42431
 (1)

Rules Review and Directives Branch
 U.S. Nuclear Regulatory Commission
 Mail Stop T6-D59
 Washington, D.C. 20555-0001

**RE: EPA Review and Comments on
 Draft Generic Supplemental Environmental Impact Statement (DGSEIS)
 License Renewal of Nuclear Plants, Supplement 15
 Regarding Virgil C. Summer Nuclear Station
 CEQ No. 030322**

Dear Sir:

EPA Region 4 reviewed the Draft Generic Supplemental EIS (DGSEIS) pursuant to Section 309 of the Clean Air Act and Section 102 (2)(C) of the National Environmental Policy Act (NEPA). The purpose of this letter is to provide the Nuclear Regulatory Commission (NRC) with EPA's comments regarding potential impacts of the proposed renewal of the Virgil C. Summer Nuclear Station Operating License (OL).

South Carolina Electric and Gas Company submitted an application to renew the Operating License (OL) for the V.C. Summer Nuclear Station for an additional 20 years. The proposed action, (license renewal), would provide for continued operation and maintenance of existing facilities and transmission lines.

SU-D-J-1 Based on the review of the DGSEIS, the project received a rating of "EC-1," meaning that some environmental concerns exist regarding aspects of the proposed project. Specifically, protecting the environment involves the continuing need for appropriate storage, and ultimate disposition, of radioactive wastes generated on-site.

The DGSEIS acknowledges that OL renewal of the V.C. Summer Nuclear Station will require continuing radiological monitoring of all plant effluents. Continuing to appropriately store spent fuel assemblies and radioactive wastes on-site is required, in order to prevent impacts. Ultimately, long-term radioactive waste disposition will require transportation of wastes to a permitted repository site. Further, the DGSEIS states that renewal of the OL would result in fewer environmental impacts than the feasible alternatives for generating power, and the NRC considers impacts of OL renewal to be small. Overall, the impacts as defined in the DGSEIS appear to be within acceptable limits.

Temp Note = ADH-013

*E-EDS = ADH-03
 Add = E. Sobor (9XS)*

Internet Address (URL) • <http://www.epa.gov>
 Recycled/Recyclable • Printed with Vegetable Oil Based Inks on Recycled Paper (Minimum 30% Postconsumer)

Appendix A

Thank you for the opportunity to comment on this document. We look forward to reviewing the Final GSEIS. If we can be of further assistance, please contact Ramona McConney of my staff at (404) 562-9615.

Sincerely,

A handwritten signature in black ink, appearing to read "Heinz Mueller". The signature is fluid and cursive, with the first name "Heinz" and last name "Mueller" clearly distinguishable.

Heinz J. Mueller, Chief
Office of Environmental Assessment



Stephen A. Byrne
Senior Vice President, Nuclear Operations
803.345.4622

September 29, 2003

Chief, Rules & Directives Branch
U.S. Nuclear Regulatory Commission
Mail Stop T6-D59
Washington, DC 20555-0001

09/17/03
68 FR 42431
2

Ladies and Gentlemen:

Subject: VIRGIL C. SUMMER NUCLEAR STATION
DOCKET NO. 50/395
OPERATING LICENSE NO. NPF-12
NUREG-1437, SUPPLEMENT 15, DRAFT

SEP 29 2003
NRC

Attached is a table containing South Carolina Electric & Gas Company's comments on draft Supplement 15 to the Generic Environmental Impact Statement for License Renewal of Nuclear Plants regarding V.C. Summer Nuclear Station. If you have any questions concerning the comments, please contact Stephen Summer at (803) 345-4252.

Very truly yours,

Stephen A. Byrne

SAB/SS/mbb
Attachment

- c: N. O. Lorick
- N. S. Carns
- T. G. Eppink (w/o attachment)
- R. J. White
- R. B. Clary
- L. A. Reyes
- K. R. Cotton
- NRC Resident Inspector

- R. C. Auluck
- T. P. O'Kelley
- P. Ledbetter
- K. M. Sutton
- NSRC
- File (821.00)
- DMS (RC-03-0210)

Template = ADM-013

E-RDS = ADM-03
Add = E. Suber (SXS)
B. DAM (WLD)

SCE&G | Virgil C. Summer Nuclear Station • P. O. Box 88 • Jenkinsville, South Carolina 29065 • T (803) 345.5209 • www.scana.com

South Carolina Electric & Gas Company, V.C. Summer Nuclear Station
 Comments on the GEIS Supplement 15, regarding the V.C. Summer Nuclear Station, Draft Report for Comment.

	Location	Comment
SU-D-K-1	Tables, page xii, line 7	Correct title of Table 2-3 is "Aquatic Species Listed or Candidates for Listing as Endangered...by U.S. Fish and Wildlife Service or State of South Carolina..." Delete reference to National Marine Fisheries Service.
SU-D-K-2	Executive Summary, page xviii, line 38	Should be "U.S. Nuclear Regulatory Commission's FES Related to Operation..." rather than U.S. Atomic Energy Commission's FES, etc.
SU-D-K-3	Abbreviations/Acronyms, page xxii, line 38	SCANA Corp. is a completely separate entity from the S.C. Public Service Authority. SCANA Corp. is a holding company with a number of subsidiaries, including SCE&G. The S.C. Public Service Authority is also known as "Santee Cooper."
SU-D-K-4	Page 1-1, line 21	Delete "Power."
SU-D-K-5	Page 2-1, line 17 and 18	Grade elevation at Summer Station is approximately 436 feet above sea level. Monticello Reservoir's full pool elevation is 425 feet above sea level.
SU-D-K-6	Page 2-4, line 14	Delete "State Park." Lake Murray is an SCE&G hydroelectric reservoir.
SU-D-K-7	Page 2-4, lines 17 and 18	The southern boundary of the 161,000-acre Enoree Ranger District of the Sumter National Forest is only 6 or 7 miles north of VCSNS. Note that the Sumter NF consists of 3 ranger districts, one in the mountains, one in the western Piedmont, and one (the Enoree) in the central Piedmont of S.C.
SU-D-K-8	Page 2-4, lines 19-21	The Congaree Swamp National Monument is on the Congaree River near, but several miles upstream of, the confluence of the Congaree and the Wateree Rivers (not the Broad and Saluda Rivers). It would be more accurate to say that it contains "one of" the last significant tracts of old-growth bottomland hardwood forest in the southeastern U.S.
SU-D-K-9	Page 2-9, line 26.	Summer Station also uses the Envirocare facility in Clive, Utah for disposal of solid waste (as noted in Section 2.1.4.3).
SU-D-K-10	Page 2-10, line 5	In some circumstances, liquid wastes may be monitored during release, rather than being sampled and analyzed prior to release.
SU-D-K-11	Page 2-10, line 7-10	Change wording to the following: "The LWPS consists of 5 collection systems which are provided by the waste holdup tank, floor drain tank, the laundry and hot shower tank, the excess liquid waste processing system (the excess waste holdup tank and the decon pit collection tank) and the laboratory drain system. The LWPS does not process secondary system wastes."*
SU-D-K-12	Page 2-10, line 14	Replace the words "Drain Channel A processes" with "The waste holdup tank is provided to process".*

South Carolina Electric & Gas Company, V.C. Summer Nuclear Station
 Comments on the GEIS Supplement 15, regarding the V.C. Summer Nuclear Station, Draft Report for Comment.

	Location	Comment
SU-D-K-13	Page 2-10, line 17-21	Reword: "...may be directed to the recycle holdup tanks for processing." Delete the sentences: "Administratively controlled equipment drains are the major contributors of water to Drain Channel A. Valve and pump leakoffs outside the Reactor Building are also collected in the waste holdup tank for processing and recycling. Abnormal liquid sources include leaks that may develop in the reactor coolant and auxiliary systems."*
SU-D-K-14	Page 2-10, line 24-33	Change wording to the following: "Liquid in this tank is normally processed through the Durock demineralizers and released to the environment under controlled conditions. Alternatively, the liquid may be recycled for use in the plant. Liquid wastes are released from the waste monitor tanks through the penstocks of the Fairfield Pumped Storage Facility. The discharge valve is interlocked with a process radiation monitor and closed automatically when the radioactivity concentration in the liquid discharge exceeds a preset limit. The waste monitor tank acts as a reservoir for holding waste which is to be released from the LWPS to the Fairfield Pumped Storage Facility. Prior to entering these tanks, the liquid may pass through a waste monitor tank demineralizer and a waste monitor tank filter. A sample is taken and, after analysis, the results are logged and the liquid is discharged or recycled. Liquid waste discharge flow and volume are recorded."*
SU-D-K-15	Page 2-10, line 35-39	Change the wording to the following: "The floor drain tank is provided to collect and process non-reactor grade (non-recyclable) liquid wastes. These include floor drains, equipment drains containing non-reactor grade water, and other non-reactor grade sources. If the activity in the floor drain tank is such that the discharge limits cannot be met without cleanup, the liquid is processed through the Duratek demineralizers and released under controlled conditions via the penstocks of the Fairfield Pumped Storage Facility. Non-recyclable reactor coolant..."*
SU-D-K-16	Page 2-11, line 1	Change the wording to the following: "...via the floor drains." (Delete remainder of sentence.)*
SU-D-K-17	Page 2-11, line 2-10	Delete these lines and replace with: "Laundry and hot shower drains normally need no treatment for removal of radioactivity. This water is transferred to waste monitor tank number 2 via the laundry and hot shower filler. A sample is taken, and after analysis, the results logged and the water is discharged if the activity level is below acceptable limits."*
SU-D-K-18	Page 2-11, line 12-21	The Excess Liquid Waste Processing System (ELWS) consists of two storage tanks, the excess liquid waste holdup tank and the decon pit holdup tank. The excess waste holdup tank is used to accept waste from the floor drain tank, laundry and hot shower tank, and waste holdup tank when these tanks are filled to capacity. The liquid from this tank can be recycled back to these tanks, released directly to the

South Carolina Electric & Gas Company, V.C. Summer Nuclear Station
 Comments on the GEIS Supplement 15, regarding the V.C. Summer Nuclear Station, Draft Report for Comment.

Location	Comment
	<p>environment via the waste monitor tank, or processed through the Duratek demineralizers and released under controlled conditions via the penstocks of the Fairfield Pumped Storage Facility. The decon pit collection tank collects liquid from the Fuel Handling Building sumps, the Radiological Maintenance Building drains, excess waste holdup area sump, and decon pit drains. If the activity in this tank liquid is such that the discharge limits cannot be met without cleanup, the liquid is processed through the Duratek demineralizers and released under controlled conditions via the penstocks of the Fairfield Pumped Storage Facility.*</p> <p>The Laboratory Drain System consists of three sinks in the radiochemical laboratory and two sinks in the sample room. In the radiochemical laboratory, spent reactor coolant samples, equipment rinse water and other non-reactor grade fluids are disposed of in the two sinks that drain to the floor drain tank. No liquids or wastes are intentionally disposed of in the sink that drains to the chemical drain tank. In the sample room, excess sample purges of reactor grade water and excess reactor coolant samples are drained from one sink to the waste holdup tank for processing. The other sink is used for draining non-reactor grade fluids to the nuclear blowdown holdup tank.*</p>
SU-D-K-19	Purge is limited to 1,000 hours per year by Tech Spec.
SU-D-K-20	Condenser Air Removal System is normally released through the Charcoal Exhaust System, not only under primary to secondary leakage conditions.
SU-D-K-21	Delete the words "evaporator concentrates".*
SU-D-K-22	Delete these lines.*
SU-D-K-23	<p>Since submittal of the ER, SCE&G has modified a transmission line connection. As a result, transmission line descriptions have changed. Line 12 - Replace "Denny Terrace 1 Tie Line" with "Summer-McMeekin-Edenwood segment" (a 2.5 mile section of the line that now connects Summer Station to the pre-existing Parr-McMeekin-Edenwood line).</p>
SU-D-K-24	Replace "Denny Terrace 1 Tie Line" with "Summer-McMeekin-Edenwood",
SU-D-K-25	<p>Replace current wording with the following: "Summer-McMeekin-Edenwood segment. This 230 kV line provides power to SCE&G's Edenwood Substation by way of a 2.5 mile line running from Summer Station to the pre-existing Parr-McMeekin-Edenwood line (total of 32.5 miles between Summer Station</p>

South Carolina Electric & Gas Company, V.C. Summer Nuclear Station
 Comments on the GEIS Supplement 15, regarding the V.C. Summer Nuclear Station, Draft Report for Comment.

	Location	Comment
SU-D-K-26	Page 2-20, line 26	and the Edenwood substation). This line occupies a 100' right-of-way."
SU-D-K-27	Page 2-21, line 6	Insert "Fairfield Pumped Storage Facility" for "Parr Hydro".
SU-D-K-28	Page 2-21, line 7	Power boating is permitted on Monticello Reservoir, but the use of gasoline-powered motors is not allowed on the Monticello Sub-impoundment. Change wording to: "water level varies daily up to 1.3 m (4.5 feet) to service Fairfield Pumped Storage" (or "the Parr Project").
SU-D-K-29	Page 2-30, lines 25-26	Suggest that wording be changed to indicate that shortnose sturgeon are found in rivers that flow into Winyah Bay, rivers that flow into Lake Marion, the Santee, Cooper, and Savannah Rivers, and the ACE Basin (Ashpeop, Combahce, and Edisto Rivers).
SU-D-K-30	Page 2-31, line 15	Scientific name is <i>Lasmsgona decorata</i> .
SU-D-K-31	Page 2-31, line 16	Scientific name is <i>Pyganodon cataracta</i> .
SU-D-K-32	Page 2-32, line 20	Scientific name is <i>Pyganodon cataracta</i> .
SU-D-K-33	Page 2-31, line 29-30	Incomplete sentence.
SU-D-K-34	Table 2-5, page 2-40	Adding the percentages for Fairfield, Lexington, Newberry and Richland Counties yields a total of 96 %. "Approximately 95%" is used on page 2-39, line 37. The difference is assumed to be due to rounding of percentages.
SU-D-K-35	Table 2-6, page 2-42	Problems with table format, left-hand column (at least in printed version).
SU-D-K-36	Table 2-9, page 2-47	To be consistent with text on preceding page and the table heading, suggest that numbers in right-hand column be presented as whole numbers, i.e., 87 (percent) rather than 0.87, 3 (percent) rather than 0.03, etc.
SU-D-K-37	Table 2-10, page 2-50	Problems with table format, header section (at least in printed version).
SU-D-K-38	Page 2-52, lines 25 and 26	Suggest re-wording to reflect that there are 5 public boat ramps related to the Parr Project (two on Monticello Reservoir, one on the Monticello Sub-impoundment, and two on Parr Reservoir.). Gasoline-powered boat use is only restricted on the Monticello Sub-impoundment.
SU-D-K-39	Section 2.2.8.6, page 2-54	It might be helpful to give dates here for the data presented (unemployment rates, families below poverty level, and median household income) in Table 2-13. Are the data from 1999, 2000, 2001, or 2002? As is, the discussion lacks a context, particularly the remark about Fairfield County's declining unemployment rate, which was 10 percent in 1997.
SU-D-K-40	Page 2-60, lines 19	The Parr Project did not include the construction of V.C. Summer Nuclear Station.

South Carolina Electric & Gas Company, V.C. Summer Nuclear Station
 Comments on the GEIS Supplement 15, regarding the V.C. Summer Nuclear Station, Draft Report for Comment.

	Location	Comment
SU-D-K-41	through 23 Page 4-18, line 3	Recommend that "cooling bay" and "cooling discharge" be changed to "discharge bay" and "discharge canal", the terminology used later in this paragraph and in other sections of the DSEIS.
SU-D-K-42	Page 4-26, Section 4.3	The draft SEIS states, "The staff has not identified any new and significant information. Therefore the staff concludes that there are no impacts of radiation exposures to the public during the renewal term beyond those discussed in the GEIS." For other Category 1 issues, the Staff's review states, "The staff has not identified any significant new information during its independent review of the SCE&G ER, the staff's site visit, the scoping process, or staff evaluation of other available information." If this is in fact the case for radiological impacts, then similar language should be used in Section 4.3.
SU-D-K-43	Page 4-30, line 37	The value 90 percent (from the ER) is used here, but 95 percent is used earlier, page 2-39. The higher percentage, based on a more recent SCE&G review of employees' addresses, should be used throughout.
SU-D-K-44	Page 4-45, Section 4.6.1	Regarding aquatic species, the draft concludes that license renewal will not impact Federally-listed aquatic threatened or endangered species, or their critical habitat, and determined that mitigation in place at Summer is appropriate and no additional mitigation is warranted. The Staff neglects to make a conclusion that the impacts on aquatic species are SMALL. (This conclusion is drawn in Section 4.8.6, but should be made here as well.)
SU-D-K-45	Section 5.2.1, first two sentences of the third paragraph:	The description of the SAMA development process provided here makes it sound as though SCE&G initially identified SAMAs from the PRA importance listings. In other sections the NRC has correctly described the process, but these particular sentences do not appear to reflect the actual steps used in the VCSNS SAMA analysis. A more accurate description would be something like, "The second step involved the development of a list of potential measures to reduce plant risk. This list was compiled based on information included in the VCSNS IPE, VCSNS IPEEE, previously submitted SAMA analyses, and NCR/industry documentation discussing potential plant improvements. The proposed risk reduction measures were subsequently compared against PRA results to ensure the major risk contributors were addressed by the proposed enhancements."
SU-D-K-46	Table 5-4, page 5-7	Because this table reports dose-risk rather than dose, the table heading should be "Breakdown of Population Dose-Risk by Containment Release Mode."
SU-D-K-47	Page 8-5, line 16	As noted before, need to use the same percentage that's used in Chapter 2 and 4. 95 percent (see comment on page 4-30).

South Carolina Electric & Gas Company, V.C. Summer Nuclear Station
 Comments on the GEIS Supplement 15, regarding the V.C. Summer Nuclear Station, Draft Report for Comment.

	Location	Comment
SU-D-K-48	Page 8-6, line 36	Not familiar with word "contra-act" (counteract?).
SU-D-K-49	Page 8-16, lines 22-26	NRC indicates that SCDHEC published a "Notice of Drafting" in August 2002 for an Early Action Plan for measures to attain the 8-hour (ozone) standard prior to any non-attainment designation. The NRC should be advised that SCDHEC submitted an Implementation Plan for the 8-hour ozone standard to EPA in July 2003 (after the DSEIS had been completed). Under that plan, the Columbia Intrastate AQCR would be designated a non-attainment area under the 8-hour ozone standard.
SU-D-K-50	Page 8-17, line 13	Correct name is Cape Romain (not "Romaine") National Wildlife Refuge.
SU-D-K-51	Page 8-32, line 35	Correct name is Cape Romain (not "Romaine") National Wildlife Refuge.
SU-D-K-52	Page 8-35, lines 9-10	Note that this text is not consistent with the analysis in the preceding pages, which assumes that 150 workers would be required to operate the gas-fired plant (2 units), while only 70 (page 8-22) would be required to operate the coal-fired plant (one unit). Although this has no real bearing on the section's conclusions, it may produce confusion in the reader.
SU-D-K-53	Page A-2, line 23 *Note	Commenter Stephen Summer's affiliation is SCANA Services (as in line 15). Comments in this table followed by an asterisk describe current plant operations that may not be consistent with the FSAR. The differences have been identified and changes to the FSAR are in process. Changes will be submitted to the NRC in a subsequent FSAR amendment.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
176 Croghan Spur Road, Suite 200
Charleston, South Carolina 29407

October 17, 2003

Mr. Pao-Tsin Kuo
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Re: License Renewal at V.C. Summer Nuclear Station
TAC No. MB5227, Docket No. 50-395
FWS Log No. 4-6-03-I-490

Dear Mr. Kuo:

The U.S. Fish and Wildlife Service (Service) has reviewed the Biological Assessment and your letter requesting our concurrence regarding the above referenced action in Fairfield, Newberry, Saluda, Aiken, Richland, and Edgefield Counties, South Carolina. We are submitting the following comments under provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*) and the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*).

According to the information provided, the renewed operating license would allow 20 additional years of plant operation beyond the current V.C. Summer licensed operating period of 40 years. No major refurbishment or replacement of important systems, structures, or components are expected during the V.C. Summer license renewal period. In addition, no construction activities are expected to be associated with the license renewal.

A threatened and endangered species survey was conducted on the V.C. Summer site and associated transmission corridors in late spring and summer 2002 for 11 federally-listed species that may occur within the action area. Survey results concluded that only one species (bald eagle) was observed to be present within a five mile radius of the site.

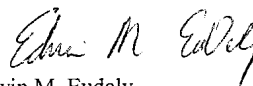
Based on our review and the information provided, the Service concurs with your determination that the proposed action is not likely to adversely affect the federally-listed bald eagle. We also concur with your determination that the proposed action will have no effect on the additional federally-listed species that were identified to have potential to occur within the project area. Therefore, the requirements of Section 7 of the Act have been fulfilled relative to the proposed action, and no further consultation is necessary at this time. However, obligations under Section 7 of the Act must be reconsidered if: (1) new information reveals that the proposed project may affect listed species in a manner or to an extent not previously considered, (2) the proposed project is subsequently modified to include activities which were not considered during this consultation; or (3) new species are listed or critical habitat designated that might be affected by the proposed project.

This is your future. Don't leave it blank. - Support the 2000 Census.

SU-D-L-1 In accordance with provisions of the Fish and Wildlife Coordination Act, the Service has also reviewed the subject project with regard to the effects the proposed action may have on waters of the U.S. and related fish and wildlife resources. Information provided revealed the presence of several streams within the proposed area. Erosion and sedimentation problems are likely to be exacerbated at areas where clearing removes deep-rooted vegetation. Therefore, to maintain the integrity of these aquatic resources during transmission line corridor maintenance, we recommend that at least a 25-foot buffer be left on both sides of any stream crossed or paralleled by a transmission line.

The above views and recommendations constitute the report of the Department of the Interior. If you require additional assistance, please contact Phil DeGarmo of my staff at 843-727-4707 x21.

Sincerely yours,



Edwin M. Eudaly
Acting Field Supervisor

EME/PMD/km

Appendix B

Contributors to the Supplement

Appendix B

Contributors to the Supplement

The overall responsibility for the preparation of this supplement was assigned to the Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission. The statement was prepared by members of the Office of Nuclear Reactor Regulation with assistance from other U.S. Nuclear Regulatory Commission organizations and the Los Alamos National Laboratory, Pacific Northwest National Laboratory, Lawrence Livermore National Laboratory, and Argonne National Laboratory.

Name	Affiliation	Function or Expertise
U.S. NUCLEAR REGULATORY COMMISSION		
William Dam	Nuclear Reactor Regulation	Project Manager
Gregory Suber	Nuclear Reactor Regulation	Project Manager
John Tappert	Nuclear Reactor Regulation	Section Chief
Barry Zalcman	Nuclear Reactor Regulation	Technical Monitor
Michael Masnik	Nuclear Reactor Regulation	Aquatic Ecology
James Wilson	Nuclear Reactor Regulation	Ecology
Tom Kenyon	Nuclear Reactor Regulation	Socioeconomics, Alternatives
Robert Palla	Nuclear Reactor Regulation	Severe Accident Mitigation
Richard Emch, Jr.	Nuclear Reactor Regulation	Radiological Safety
Robert Schaaf	Nuclear Reactor Regulation	Project Management
Jack Cushing	Nuclear Reactor Regulation	Alternatives
Stacey Fox Imboden	Nuclear Reactor Regulation	Principal Project Support
Tomy Nazario	Nuclear Reactor Regulation	Principal Project Support
Christina Guerrero	Nuclear Reactor Regulation	General Scientist
LOS ALAMOS NATIONAL LABORATORY^(a)		
Ted Doerr		Task Leader
Ellen Taylor		Deputy Task Leader
Tim Haarmann		Terrestrial Ecology
Tony Ladino		Radiation Protection
Dan Pava		Socioeconomics
Hector Hinojosa		Editor
Teresa Hiteman		Document Design
ARGONNE NATIONAL LABORATORY^(b)		
David Miller		Water Use, Hydrology
Elisabeth Stull		Aquatic Ecology
PACIFIC NORTHWEST NATIONAL LABORATORY^(c)		
Tara Eschbach		Cultural Resources

Appendix B

LAWRENCE LIVERMORE NATIONAL LABORATORY^(d)

David Armstrong

Air Quality

INFORMATION SYSTEMS LABORATORY

Kim Green

Severe Accident Mitigation Alternatives

Jim Meyer

Severe Accident Mitigation Alternatives

- (a) Los Alamos National Laboratory is operated for the U.S. Department of Energy (DOE) by the University of California.
- (b) Argonne National Laboratory is operated for DOE by the University of Chicago.
- (c) Pacific Northwest National Laboratory is operated for DOE by Battelle Memorial Institute.
- (d) Lawrence Livermore National Laboratory is operated for DOE by the University of California.

Appendix C

Chronology of NRC Staff Environmental Review Correspondence Related to South Carolina Electric and Gas Company's Application for License Renewal of Virgil C. Summer Nuclear Station

Appendix C

Chronology of NRC Staff Environmental Review Correspondence Related to South Carolina Electric and Gas Company's Application for License Renewal of Virgil C. Summer Nuclear Station

This appendix contains a chronological listing of correspondence between the U.S. Nuclear Regulatory Commission (NRC) and South Carolina Electric and Gas Company (SCE&G) and other correspondence related to the NRC staff's environmental review, under 10 Code of Federal Regulations Part 51, of SCE&G's application for renewal of the Virgil C. Summer Nuclear Station (V.C. Summer) operating license. All documents, with the exception of those containing proprietary information, have been placed in the Commission's Public Document Room, at One White Flint North, 11555 Rockville Pike (first floor), Rockville, MD, and are available electronically from the Public Electronic Reading Room found on the Internet at the following web address: <http://www.nrc.gov/reading-rm.html>. From this site, the public can gain access to the NRC's Agencywide Document Access and Management Systems (ADAMS), which provides text and image files of NRC's public documents in the Publicly Available Records (PARS) component of ADAMS. The ADAMS accession number for each document is included below.

- | | |
|-----------------|---|
| August 6, 2002 | Letter from Mr. Stephen A. Byrne, SCE&G to NRC, submitting the application for the renewal of the operating license for V.C. Summer (Accession No. ML022280018). |
| August 20, 2002 | Letter from NRC to Ms. Sara McMaster, Fairfield County Library, regarding the maintenance of reference material for the V.C. Summer license renewal application (Accession No. ML022340250). |
| August 20, 2002 | Letter from NRC to Mr. William Suddeth, Thomas Cooper Library, University of South Carolina, regarding the maintenance of reference material for the V.C. Summer license renewal application (Accession No. ML022340274). |
| August 26, 2002 | Letter from NRC to Mr. Stephen A. Byrne, SCE&G, regarding the receipt and availability of the license renewal application for V.C. Summer (Accession No. ML022390066). |

Appendix C

- August 27, 2002 NRC press release announcing the availability of the license renewal application for V.C. Summer (Accession No. ML022390116).
- | September 3, 2002 *Federal Register* Notice of receipt of application for renewal of Facility Operating License No. NPF-12 for an additional 20-year period (67 FR 56316) (Accession No. ML022390066).
- September 27, 2002 Letter from NRC to Mr. Stephen A. Byrne, SCE&G, forwarding determination of acceptability and sufficiency for docketing, proposed review schedule, and opportunity for a hearing regarding an application from SCE&G for renewal of the operating license for V.C. Summer (Accession No. ML022730054).
- | October 4, 2002 *Federal Register* Notice of acceptance for docketing of the application and notice of opportunity for a hearing regarding renewal of Facility Operating License No. NPF-12 for an additional 20-year period (67 FR 62272) (Accession No. ML022730054).
|
|
- October 23, 2002 Letter from NRC to Mr. Stephen A. Byrne, SCE&G, forwarding notice of intent to prepare an environmental impact statement and conduct scoping process for license renewal for V.C. Summer (Accession No. ML022960556).
- | October 25, 2002 *Federal Register* Notice of intent to prepare an environmental impact statement and conduct scoping process for V.C. Summer (67 FR 65612) (Accession No. ML022960605).
|
- November 27, 2002 NRC press release announcing public meetings on V.C. Summer license renewal (Accession No. ML023310303).
- November 27, 2002 Letter from NRC to Catawba Indian Nation inviting participation in scoping process for V.C. Summer license renewal (Accession No. ML023380747).
- November 27, 2002 Letter from NRC to Cherokee Indian Nation inviting participation in scoping process for V.C. Summer license renewal (Accession No. ML023380701).

- November 27, 2002 Letter from NRC to Eastern Band of the Cherokee Indian Nation inviting participation in scoping process for V.C. Summer license renewal (Accession No. ML023380734).
- November 27, 2002 Letter from NRC to United Keetoowah Band of Cherokee Indian Nation inviting participation in scoping process for V.C. Summer license renewal (Accession No. ML023380754).
- December 10, 2002 Notice of public meeting to discuss the environmental scoping process for V.C. Summer license renewal (Accession No. ML023440208).
- December 11, 2002 Letter from Mr. John M. Spratt, Jr., to the NRC providing scoping comments on the V.C. Summer license renewal (Accession No. ML023540416).
- December 11, 2002 Placement of presentation slides from December 11, 2002, scoping meeting in the public domain (Accession No. ML023470019).
- December 11, 2002 Transcript of December 11, 2002, afternoon public meeting in Jenkinsville, South Carolina on scoping process (Accession No. ML030030808).
- December 11, 2002 Transcript of December 11, 2002, evening public meeting in Jenkinsville, South Carolina on scoping process (Accession No. ML030030848).
- December 23, 2002 Letter from NRC to Mr. Stephen A. Byrne, SCE&G, forwarding revision of schedule for the review of the V.C. Summer license renewal application (Accession No. ML023580338).
- January 9, 2003 Letter from Mr. Stephen A. Byrne, SCE&G, transmitting additional information requested during site audit in support of V.C. Summer license renewal (Accession No. ML030300730).
- January 14, 2003 Summary of public scoping meetings to support review of V.C. Summer license renewal application (Accession No. ML030140468).
- January 17, 2003 Request for additional information regarding severe accident mitigation alternatives for V.C. Summer (Accession No. ML030230467).

Appendix C

January 27, 2003	Note to File: Summary of teleconference between NRC and SCE&G in support of the staff's review of the V.C. Summer license renewal application (Accession No. ML030270182).
February 21, 2003	Letter from NRC to Mr. Stephen A. Byrne, SCE&G, regarding issuance of the environmental scoping summary report associated with the staff's review of the application for renewal of the operating license for V.C. Summer (Accession No. ML030520531).
March 19, 2003	Letter from Mr. Stephen A. Byrne, SCE&G, providing a response to a NRC request for additional information regarding severe accident mitigation alternatives (Accession No. ML030920551).
April 2, 2003	Letter from SCE&G to NRC transmitting a copy of a modification to the V.C. Summer NPDES permit (Accession No. ML030920169).
April 16, 2003	Letter from NRC to U.S. Fish and Wildlife Service providing summary of conversation regarding protected species within the area under evaluation for the V.C. Summer plant license renewal (Accession No. ML031060341).
May 19, 2003	Note to File: Summary of teleconference between NRC and SCE&G in support of the staff's review of the V.C. Summer license renewal application (Accession No. ML031390642).
May 21, 2003	Letter from Stephen A. Byrne, SCE&G, providing a response to a NRC request for additional information regarding severe accident mitigation alternatives (Accession No. ML031500656).
June 13, 2003	Letter from NRC to South Carolina Department of Archives and History regarding National Historic Preservation Act and the Section 106 Review Process (Accession No. ML031710717).
June 26, 2003	Letter from NRC to U.S. Fish and Wildlife Service transmitting biological assessment for V.C. Summer plant license renewal (Accession No. ML031770358).
July 3, 2003	Letter from NRC to South Carolina Department of Archives and History transmitting map as part of June 13, 2003 letter (Accession No. ML031890468).

July 9, 2003	Letter from NRC to Mr. Stephen A. Byrne, SCE&G, transmitting Draft Supplement 15 to the Generic Environmental Impact Statement regarding Virgil C. Summer Nuclear Station and Requesting Comments (Accession No. ML031900780).
July 9, 2003	Letter from NRC to U.S. Environmental Protection Agency transmitting Draft Supplement 15 to the Generic Environmental Impact Statement regarding Virgil C. Summer Nuclear Station (Accession No. ML031900797).
July 9, 2003	Letter from South Carolina Department of Archives and History to NRC regarding National Historic Preservation Act and the Section 106 Review Process (Accession No. ML032040315).
July 28, 2003	Notice of public meeting to receive comments on the Draft Supplement 15 to the Generic Environmental Impact Statement regarding Virgil C. Summer Nuclear Station (Accession No. ML032100071).
August 6, 2003	Press Release announcing public meetings on Draft Supplement 15 to the Generic Environmental Impact Statement regarding Virgil C. Summer Nuclear Station (Accession No. ML032180367).
August 15, 2003	Letter from NRC to St. Peters A.M.E Church announcing public meetings on Draft Supplement 15 to the Generic Environmental Impact Statement regarding Virgil C. Summer Nuclear Station (Accession No. ML032270599).
August 26, 2003	Transcript of August 26, 2003, afternoon public meeting in Jenkinsville, South Carolina regarding Draft Supplement 15 to the Generic Environmental Impact Statement regarding Virgil C. Summer Nuclear Station (Accession No. ML033020153).
August 26, 2003	Transcript of August 26, 2003, evening public meeting in Jenkinsville, South Carolina regarding Draft Supplement 15 to the Generic Environmental Impact Statement regarding Virgil C. Summer Nuclear Station (Accession No. ML033020181).
September 2, 2003	Letter from Mr. Heinz J. Mueller, U.S. Environmental Protection Agency, providing comments on Draft Supplement 15 to the Generic

Appendix C

Environmental Impact Statement regarding Virgil C. Summer Nuclear Station (Accession No. ML032661180).

September 25, 2003 Letter from NRC to Mr. Kamau Marcharia, Fairfield County Council, providing information on diabetes and cancer rates in the vicinity of the Virgil C. Summer Nuclear Station following concerns raised at public meeting (Accession No. ML032730427).

September 29, 2003 Letter from Mr. Stephen A. Byrne, SCE&G, providing comments on Draft Supplement 15 to the Generic Environmental Impact Statement regarding Virgil C. Summer Nuclear Station (Accession No. ML032790356).

October 6, 2003 Letter from NRC to Mr. Stephen A. Byrne, SCE&G, regarding new environmental project manager for the License Renewal Application for Virgil C. Summer Nuclear Station (Accession No. ML032810135).

October 17, 2003 Letter from Mr. Edwin M. Eudaly, U.S. Fish and Wildlife Service, providing comments on Draft Supplement 15 to the Generic Environmental Impact Statement regarding Virgil C. Summer Nuclear Station (Accession No. ML033090341).

October 22, 2003 Letter from NRC to South Carolina Department of Archives and History regarding a request for additional information related to the National Historic Preservation Act and the Section 106 Review Process (Accession No. ML033000579).

November 6, 2003 Summary of public meetings to obtain comments on Draft Supplement 15 to the Generic Environmental Impact Statement regarding Virgil C. Summer Nuclear Station (Accession No. ML03316059).

November 12, 2003 Letter from Mr. Stephen A. Byrne, SCE&G, providing clarification of comments sent on Draft Supplement 15 to the Generic Environmental Impact Statement regarding Virgil C. Summer Nuclear Station (Accession No. ML033160547).

November 19, 2003 Letter from South Carolina Department of Archives and History regarding concurrence on Virgil C. Summer Nuclear Station license extension (Accession No. ML033360616).

Appendix D

Organizations Contacted

Appendix D

Organizations Contacted

During the course of the staff's independent review of environmental impacts from operations during the renewal term, the following Federal, State, regional, and local agencies were contacted:

Catawba Indian Nation, Catawba, South Carolina

Central Carolina Economic Development Alliance, Columbia, South Carolina

Central Midlands Council of Governments, Columbia, South Carolina

Cherokee Nation, Tahlequah, Oklahoma

Clemson University Agricultural Extension Service, Winnsboro, South Carolina

Eastern Band of the Cherokee, Cherokee, North Carolina

Fairfield School District, Winnsboro, South Carolina

Fairfield County Planning, Winnsboro, South Carolina

Fairfield County Finance Director, Winnsboro, South Carolina

Holmes Realty, Winnsboro, South Carolina

Institute for South Carolina Archaeology, Columbia, South Carolina

National Oceanic and Atmospheric Administration, Columbia, South Carolina

South Carolina Department of Archives and History, Columbia, South Carolina

South Carolina Department of Natural Resources, Land and Water, and Conservation Division

South Carolina Institute of Archaeology and Anthropology, Columbia, South Carolina

United Keetoowah Band of Cherokee, Tahlequah, Oklahoma

United States Department of Interior, Bureau of Indian Affairs, Nashville, Tennessee

United States Fish and Wildlife Service, Charleston, South Carolina

United States Forest Service, Francis Marion & Sumter National Forests, South Carolina

United Way of the Central Midlands, Columbia, Columbia, South Carolina

Town of Winnsboro, South Carolina

Appendix E

V.C. Summer Compliance Status and Consultation Correspondence

Appendix E

V.C. Summer Compliance Status and Consultation Correspondence

The list of licenses, permits, consultation, and other approvals obtained from Federal, State, regional, and local authorities for Virgil C. Summer Nuclear Station (V.C. Summer) are shown in Table E-1. Following Table E-1 are reproductions of correspondence prepared and sent during the evaluation process of the application for renewal of the operating license for V.C. Summer.

Table E-1. Federal, State, and Local Licenses, Permits, and Consultations and other Approvals for V.C. Summer

Agency ^(a)	Authority	Description	Number	Issue Date	Expiration Date	Remarks
NRC	Atomic Energy Act, 10 CFR Part 50	Operating license	NPF-12	8/6/1982	8/6/2022	Authorizes operation of V.C. Summer.
USFWS and NMFS	Endangered Species Act, Section 7 (16 USC 1536)	Consultation	NA	Consultation initiated		Requires a Federal agency to consult with USFWS regarding whether a proposed action will affect endangered or threatened species. Depredation and salvage permit. Renewal annually.
USFWS	Migratory Bird Treaty Act (16 USC 703-712)	Depredation Permit	MB040209-0	Annual	Annual	Removal and relocation of migratory bird nests.
SCDHEC-Bureau of Water	Clean Water Act, Section 402	Salvage Permit	MB83793-0	12/3/2002	4/30/2007	Retrieve dead birds.
SCDHEC-Bureau of Air Quality	Clean Air Act	NPDES wastewater permit	SC0030856	8/10/1999	7/31/2004	Discharges to Monticello Reservoir and Broad River.
SCDHEC-Division of Radioactive Waste Management, Bureau of Land and Waste Management	Atomic Energy and Radiation Control Act (S.C. Code of Laws, et Sections 13-7-40, et seq.)	Radioactive Material License	CM-1000-0012	9/30/1999	9/30/2004	Establishes emissions limits from diesel emergency generators, miscellaneous diesel engines, and other miscellaneous units. Authorizes storage of radioactive material in three steam generators removed from service in 1994.

Table E-1. (cont)

Agency	Authority	Requirement	Number	Issue Date	Expiration Date	Remarks
SCDHEC-Division of Waste Management	South Carolina Radioactive Waste Transportation and Disposal Act (S.C. Code of Laws 13-7-110 et seq.)	Radioactive Waste Transport Permit	0163-39-02	Annual	Annual	Authorizes shipment of radioactive waste to licensed collecting/processing facilities within State of South Carolina.
Tennessee Dept. of Environment and Conservation-Division of Radiological Health	Tennessee Code Annotated 68-202-206	License to Ship Radioactive Material	T-SC001-L02	Annual	Annual	Authorizes shipment of radioactive waste to licensed disposal/processing facilities within State of Tennessee.
SCDAH	National Historic Preservation Act, Section 106 (16 USC 4701)	Consultation	NA	Consultation initiated		The National Historic Preservation Act requires Federal agencies to take into account the effect of any undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register of Historic Places.
(a) NRC - U.S. Nuclear Regulatory Commission CFR - Code of Federal Regulations USFWS - U.S. Fish and Wildlife Service NMFS - National Marine Fisheries Service USC - United States Code NA - Not applicable SCDHEC - South Carolina Department of Health and Environmental Control NPDES - National Pollutant Discharge Elimination System S.C. - South Carolina SCDAH - South Carolina Department of Archives and History						

Table E-2. Consultation Correspondence

Source	Recipient	Date of Letter
U.S. Nuclear Regulatory Commission (P.T. Kuo)	U.S. Fish and Wildlife Service (S. Abbot)	April 16, 2003
U.S. Nuclear Regulatory Commission (P.T. Kuo)	South Carolina Department of Archives and History (R.E. Stroup)	June 13, 2003
U.S. Nuclear Regulatory Commission (P.T. Kuo)	U.S. Fish and Wildlife Service (S. Abbot)	June 26, 2003
U.S. Environmental Protection Agency, Region 4 (H.J. Mueller)	U.S. Nuclear Regulatory Commission	September 2, 2003
U.S. Fish and Wildlife Service (E.M. Eudaly)	U.S. Nuclear Regulatory Commission (P.T.Kuo)	October 17, 2003
U.S. Nuclear Regulatory Commission (P.T. Kuo)	South Carolina Department of Archives and History (R.E. Stroup)	October 22, 2003
South Carolina Electric and Gas (S.A. Byrne)	U.S. Nuclear Regulatory Commission	November 12, 2003
South Carolina Department of Archives and History (C.C. Long)	U.S. Nuclear Regulatory Commission (P.T. Kuo)	November 19, 2003

April 16, 2003

Ms. Sandy Abbot
Field Supervisor, Ecological Services
US Fish and Wildlife Service
176 Croghan Spur Road, Suite 200
Charleston, SC 29407

**SUBJECT: SUMMARY OF CONVERSATION REGARDING PROTECTED SPECIES
WITHIN THE AREA UNDER EVALUATION FOR THE V.C. SUMMERS PLANT
LICENSE RENEWAL**

Dear Ms. Abbot:

The U.S. Nuclear Regulatory Commission (NRC) is preparing a Supplemental Environmental Impact Statement (SEIS) for the proposed license renewal for the Virgil C. Summer Nuclear Station (V.C. Summer) which expires August 2022. To support the SEIS preparation process and to ensure compliance with Section 7 of the Endangered Species Act, NRC met with your office on December 12, 2002, to discuss the current list of species and information on protected, proposed, and candidate species and critical habitat that may be within the area of the proposed action per 50 CFR 402.12.

The plant is located in Fairfield County, South Carolina, approximately 15 miles west of the county seat of Winnsboro and 26 miles northwest of Columbia, the state capital. The Broad River flows in a northwest-to-southeast direction approximately one mile west of the site and serves as the boundary between Fairfield County (to the east) and Newberry County (to the west). The site covers approximately 2,245 acres, an area that includes portions of Monticello Reservoir. Beginning at the V.C. Summer Station, the South Carolina Electric and Gas Company (SCE&G) transmission lines generally run in a southerly direction, with five terminations very near V.C. Summer Station, one near Aiken, South Carolina, and two near Columbia, South Carolina. The Santee Cooper lines run approximately east and west to substations near Blythewood and Newberry, South Carolina, respectively. In total, for the specific purpose of connecting to the transmission system, approximately 160 miles of transmission lines (120 miles of corridor) that occupy approximately 2,000 acres of corridor were constructed.

License renewal would include use and continued maintenance of existing facilities and transmission lines for an additional 20 years of operation. The proposed action would not result in new construction or disturbance.

SCE&G contacted your office by letter dated January 19, 2001, requesting information on threatened, endangered, and candidate species that potentially occur in the vicinity of the plant. Your office responded on March 15, 2001 with a list of species. During the course of our December 12th discussion regarding threatened and endangered (T&E) species and other species of interest within the area, it was noted that the primary species of interest is the Bald Eagle that is found near the plant. It was also noted that the list provided on March 15, 2001,

S. Abbot

2

is still the current list. It is our intent to use this information as we initiate and write our Biological Assessment and prepare our license renewal SEIS.

The NRC looks forward to continuing to work with the U.S. Fish and Wildlife Service to ensure that the SEIS and Section 7 compliance activities adequately evaluate potential effects to biological resources. If you have any questions concerning this matter please contact Gregory Suber by phone at 301-415-1124 or by email at GXS@nrc.gov.

Sincerely,

/RA/

Pao-Tsin Kuo, Program Director
License Renewal and Environmental Impacts Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket No.: 50-395

cc: See next page

June 13, 2003

Dr. Rodger E. Stroup, Director
South Carolina Department of Archives
and History
Archives and History Center
8301 Parklane Road
Columbia, SC 29223

SUBJECT: V. C. SUMMER NUCLEAR STATION LICENSE RENEWAL REVIEW AND
NATIONAL HISTORIC PRESERVATION ACT, SECTION 106 REVIEW
PROCESS

Dear Dr. Stroup:

The U. S. Nuclear Regulatory Commission (NRC) is evaluating an application submitted by South Carolina Electric and Gas Company (SCE&G) for the renewal of the operating license for the V. C. Summer Nuclear Station (V. C. Summer), located in the southeastern corner of rural Fairfield County, South Carolina, approximately 26 miles northwest of Columbia, South Carolina. As part of its review of the proposed action, the NRC staff is preparing a site-specific Supplemental Environmental Impact Statement (SEIS) to its "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" (GEIS), NUREG-1437. The SEIS will include analyses of relevant environmental issues, including potential impacts on historic and cultural resources from refurbishment activities, and for the extended period of operation. The application for renewal was submitted by SCE&G on August 6, 2002, pursuant to NRC requirements of Title 10 of the *Code of Federal Regulations*, Part 54 (10 CFR Part 54). SCE&G has indicated that it does not plan on any major refurbishment activity that would result in additional land disturbance in the site area.

For your reference, the Agency official (the Director, Office of Nuclear Reactor Regulation) has determined that the area of potential effect (APE) for a license renewal action is the area at the power plant site and its immediate environs which may be impacted by post-license renewal land disturbing operation or projected refurbishment activities associated with the proposed action. The APE may extend beyond the immediate environs in those instances where post-license renewal land disturbing operations or projected refurbishment activities specifically related to license renewal of the nuclear power plant potentially have an effect on known or proposed historic sites. This determination is made irrespective of ownership or control of the lands of interest.

On January 19, 2001, SCE&G sought feedback from the South Carolina State Historic Preservation Office (SHPO) regarding license renewal at V. C. Summer. In its letter, SCE&G stated that there are no plans to alter current operations, no plans to expand existing facilities, no plans to implement major structural modifications, no plans to initiate new construction, and no plans for additional land disturbance in support of license renewal. On January 29, 2001, the South Carolina SHPO responded to the SCE&G letter and stated that "license renewal for the continuing operation of plants such as this one typically has no effect on historic properties." The SHPO encouraged SCE&G to search the SHPO's Geographical Information System (GIS) database for a more accurate, up-to-date source of information.

During our independent review, the NRC staff met with a representative of your office on December 12, 2002, to discuss the potential impacts of the proposed V. C. Summer license renewal. Enclosed is the NRC's cultural resources review for this action. This review reports the results of the literature review conducted by the staff and information from historic and cultural records, which includes information from the SHPO GIS database (Enclosure 1). The results indicate that this undertaking will have no effect on historic properties.

We plan to issue the Draft SEIS for the V. C. Summer license renewal action for public comment in June 2003; it will reflect our interactions to date. If you have any questions or require additional information, please contact Gregory Suber, the NRC Environmental Project Manager for the V. C. Summer license renewal project, at 301-415-1124 or GXS@nrc.gov.

Sincerely,

/RA/

Pao-Tsin Kuo, Program Director
License Renewal and Environmental Impacts
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket No.: 50-395

Enclosures: As stated

cc w/o encl.: See next page

**U.S. NUCLEAR REGULATORY COMMISSION (NRC)
OFFICE OF NUCLEAR REACTOR REGULATION
DIVISION OF REGULATORY IMPROVEMENT PROGRAMS**

**CULTURAL RESOURCES REPORT NARRATIVE
VIRGIL C. SUMMER NUCLEAR STATION LICENSE RENEWAL**

May 2003

**CULTURAL RESOURCES REPORT NARRATIVE
VIRGIL C. SUMMER NUCLEAR STATION LICENSE RENEWAL**

PROJECT DESCRIPTION

The U.S. Nuclear Regulatory Commission (NRC) licenses the operation of domestic nuclear power plants in accordance with the Atomic Energy Act of 1954, as amended and NRC implementing regulations. The proposed Federal action is the renewal of the Operating License for the Virgil C. Summer Nuclear Station (V. C. Summer), which is operated by South Carolina Electric & Gas Company (SCE&G). The current operating license will expire August 6, 2022. The renewed license would subsume the remaining time of the current license and permit an additional 20 years of plant operation beyond the expiration of the current operating license.

This report presents the findings of the Section 106 review conducted to establish whether any historic properties will be affected by the license renewal of V. C. Summer.

AREA OF POTENTIAL EFFECT

V. C. Summer is located in Fairfield County, South Carolina, approximately 15 miles west of Winnsboro and 26 miles northwest of Columbia. The site is in a sparsely-populated, largely rural area, with forests and small farms comprising the dominant land use. The Broad River flows in a northwest-to-southeast direction approximately one mile west of the site.

An exclusion area must be defined by the applicant wherein it can control access in the event of an emergency situation. In this case, the exclusion area is owner controlled (i.e., not subject to an alternative routine use such as leased farming) and encompasses the area within approximately one mile of the reactor building; the exclusion area is posted and access to land portions of this area is controlled at all times. The V. C. Summer property covers approximately 2245 acres, and includes the southern portion of Monticello Reservoir and parts of the Fairfield Pumped Storage Facility.

In conjunction with this license renewal action, SCE&G does not plan to undertake a major refurbishment activity in the site vicinity or along the transmission lines expressly constructed to connect the plant to the electrical grid when the plant was initially licensed. Therefore, the area of potential effect (APE) for this license renewal action is the area at the power plant site and its immediate environs which may be impacted. Specifically, this area consists of the exclusion area boundary (1-mile radius) and the Monticello reservoir shoreline.

NOTIFICATIONS AND PUBLIC INVOLVEMENT

On January 19, 2001, SCE&G wrote the South Carolina State Historic Preservation Office (SHPO) regarding license renewal at V. C. Summer. On January 29, 2001, the South Carolina SHPO responded to SCE&G letter and stated that license renewal for the continued operation of plants, such as this one, typically has no effect on historic properties. The SHPO encouraged that the SHPO Geographical Information System (GIS) database be searched for a more accurate, up-to-date source of information.

- 2 -

On December 12, 2002, NRC staff met with Marta Matthews and Chad Long at the South Carolina SHPO's office, and Keith Derding and Diane Boyd at the South Carolina Institute of Archaeology and Anthropology (SCIAA). Archaeological site file searches were conducted at SCIAA. The GIS database and files at the South Carolina SHPO's office were searched for cultural resource information that may pertain to the proposed action. At the time of this visit, Dr. Matthews and Mr. Long raised the issue of potential impacts to cultural resources caused by erosion on the Monticello shoreline. This report addresses those concerns that were raised during the site visit in the section called "Identification of Historic Properties".

Four Native American Tribes were sent letters on November 27, 2002, providing them an opportunity to have input regarding cultural resource issues in the vicinity of V. C. Summer and inviting them to participate in the National Environmental Policy Act (NEPA) scoping process. The Tribes were the Catawba Indian Nation, Eastern Band of the Cherokee, Cherokee Nation (Western Cherokee in Oklahoma), and the United Keetoowah Band of Cherokee (Attachment 4 contains an example of this letter).

The NRC public involvement process is conducted in accordance with NEPA principles; in general, the NRC actively pursues stakeholder engagement in excess of the minimum requirements. The Commission has determined that the NRC will prepare an environmental impact statement (EIS) as that discussed in Section 102 of NEPA (42 USC 4332) to assess whether the license renewal action would significantly affect the quality of the human environment. The NRC staff will prepare an EIS and, in the case of license renewal, it is a site-specific supplement (SEIS) to the NRC Generic EIS for License Renewal of Nuclear Power Plants (GEIS), NUREG-1437, for the renewal of a reactor Operating License (OL). NUREG-1437 considered almost 100 environmental issues across all nuclear power plants to determine whether issues could be resolved generically. The potential impact to cultural resources cannot be resolved generically and, therefore, must be addressed on a site-specific basis in each SEIS.

On October 24, 2002, the NRC published a Notice of Intent in the *Federal Register* to notify the public of the staff's intent to prepare a site-specific supplement to the GEIS to assess the environmental impacts of the proposed action (renewal of the OL for the V. C. Summer plant) and to conduct scoping. The NRC invited the applicant, Federal, State, and local government agencies; Tribes; local organizations; and individuals to participate in the scoping process by providing oral comments at the scheduled public meetings and/or submitting written suggestions and comments to the NRC no later than January 6, 2003. Two public scoping meetings were held on December 11, 2002, at the Fellowship Hall at the Whitehall A.M.E. Church in Jenkinsville, South Carolina, to afford the public yet another opportunity to provide comments.

The draft Supplemental Environmental Impact Statement (SEIS) regarding license renewal at V. C. Summer is scheduled to be issued in July 2003. The NRC staff plans to conduct two public meetings on August 25, 2003, to present an overview of the draft V. C. Summer site-specific supplement to the GEIS, and to accept public comments on the document. The public comment period will end on September 15, 2003. The Final SEIS will be issued in February 2004.

Information regarding license renewal and documents associated with license renewal at V. C. Summer can be viewed at the NRC's website www.nrc.gov.

IDENTIFICATION OF HISTORIC PROPERTIES

Historic and archaeological site file searches were conducted at the South Carolina Master File in the South Carolina Department of Archives and History and the Institute of Archaeology and Anthropology at the University of South Carolina to identify cultural resources that might be present at V. C. Summer. In addition, record searches were conducted for nearby locations to gain perspective on the types of historic resources that may be present in the previously undeveloped and unsurveyed portions of V. C. Summer.

The Final Environmental Statement (FES) (AEC 1973) for the construction of V. C. Summer listed three historic sites in the vicinity of the station. At that time, it was determined that none of the sites were "endangered" by the construction and operation of the proposed V. C. Summer plant. Four archaeological sites were discovered within or near the site boundary and Dr. Robert L. Stephenson, State Archaeologist, recommended that the area be surveyed and that two of the known sites be excavated (AEC 1973).

In 1972, SCE&G supported an archaeological survey that was conducted by a team from the University of South Carolina Institute of Archaeology and Anthropology (Teague 1979). The archaeological survey was conducted to assess the nature and distribution of the sites present and to assess the effect of the Parr Hydroelectric Project on historic and archaeological resources. The Parr Hydroelectric Project included: raising the level of the Parr Reservoir by elevating the Parr Reservoir Dam; construction of a series of dams on Frees Creek to create the upper reservoir for a new pumped-storage facility and supply cooling water for V. C. Summer; and construction of the Fairfield Pumped Storage Facility and V. C. Summer.

The Institute of Archaeology and Anthropology team identified 27 additional sites and excavated two others. Four of the five sites were inundated by water when Monticello Reservoir was filled in 1978 and are now inaccessible. The remaining sites lie along the banks of Monticello and Parr Reservoirs. Periods represented included the Early Archaic, Middle Archaic, Woodland, Mississippian, and Early Historic (SCE&G 2002).

Since the publication of the 1973 FES, 41 sites have been added to the National Register of Historic Places for Fairfield County. Ten of these sites fall within a 6-mile radius of V. C. Summer. Twenty-eight sites have been added to the National Register for Newberry County. Four of these sites fall within a 6-mile radius of V. C. Summer. No sites listed on the National Register of Historic Places fall within a 1-mile radius of V. C. Summer.

Two other historic sites exist within a 6-mile radius of V. C. Summer that are not listed on the National Register of Historic Places but are protected by SCE&G. One is the Mayo family cemetery, which is in a wooded area approximately 2.5 miles south of V. C. Summer on land that is owned by SCE&G, but is not within the exclusion area boundary of the V. C. Summer site. This small family plot contains headstones dating back to 1895. The other historic site, approximately 1.5 miles southwest of V. C. Summer, is a large monument erected in 1943 by the Daughters of the American Revolution marking the grave of General John Pearson, a Fairfield County native who served with distinction in the Revolutionary War. This monument is

- 4 -

in a wooded area on land that is not within the exclusion area of the V. C. Summer site, but is maintained as a buffer zone around the site. SCE&G's Forestry Operations group is familiar with these two other historic sites, which are marked on its timber inventory and land cover maps, and takes appropriate measures to protect them when conducting forest management activities in the vicinity of either historic site (SCE&G 2002).

Properties within the APE

The following table provides a summary of selected sites within the APE. No sites listed on the National Register fall within a 1-mile radius of V. C. Summer.

Site Number	Description	National Register Status	Location
38-FA-33	Savannah River and Morrow Mountain projectile points, several pottery shards - all materials were collected	Not Evaluated	Monticello Lake east shoreline - outside 1 mile radius of V. C. Summer
38-FA-37	50 pieces of quartzite chipping debris were dispersed over 500 square meters. 3 flakes were collected.	Not Evaluated	Monticello Lake west shoreline - outside 1 mile radius of V. C. Summer
38-FA-41	McMeekin Rock Shelter - excavated. This site is currently under water.	Nominated for the National Register of Historic Places in 1974 Site #74001854	Underwater - Lake Monticello
38-FA-42	Located along a road cut through a plowed field. 25 quartzite flakes, 1 biface, 1 Guilford projectile point base were found. The biface and projectile point were collected.	Not Evaluated	North of Monticello - outside 1 mile radius of V. C. Summer
38-FA-43	1 Savannah River projectile point base, 1 biface fragment, and 25 quartzite flakes were collected. This site is currently under water.	Not Evaluated	Underwater - Lake Monticello
38-FA-46	25 flakes and broken stone tools. 3 flakes and 2 Savannah River projectile points were collected. This site is currently under water.	Not Evaluated	Underwater - Lake Monticello

Appendix E

- 5 -

38-FA-47	12 quartzite flakes (5 were collected). The site has been disturbed by a road cut and no intact archaeological deposits remain.	Not Evaluated	Within 1 mile of V. C. Summer
38-FA-51	5 quartzite flakes were collected. This site is currently under water.	Not Evaluated	Underwater - Lake Monticello
38-FA-53	50 quartzite flakes and 2 projectile points were seen. The projectile points were collected. This site is currently under water.	Not Evaluated	Underwater - Lake Monticello
38-FA-56	Davis Plantation - two story house built about 1840-50	Nominated for the National Register of Historic Places in 1971 Site #74000776	South of Monticello on SC 215 - outside 1 mile radius of V. C. Summer
38-FA-125	Guilford projectile points of quartz, 1 Kirk point, 1 Savannah River point, 1 finely shaped flint blade. This site is currently under water.	Not Evaluated	Underwater - Lake Monticello
38-FA-298	2 steatite bowl fragments. Artifacts were collected. Site form suggests if associated with an archaeological site it would be under water.	Not Evaluated	Boat Ramp - north end of Lake Monticello - outside 1 mile radius of V. C. Summer

Only one archaeological site (38-FA-47) is located within a 1-mile radius of V. C. Summer. This site has not been evaluated for inclusion on the National Register of Historic Places. At the time of recording, the site consisted of 12 quartzite flakes (5 were collected). Upon reviewing the National Register Criteria for Evaluation, site 38-FA-47 is not likely to be eligible for the National Register.

Several of the archaeological sites were flooded by the impoundment of Monticello Lake. The majority of these sites have not been evaluated for inclusion on the National Register of Historic Places. These sites are not likely to be eligible for inclusion when applying the criteria for evaluation.

The McMeekin Rock Shelter (38-FA-41) was evaluated and nominated to the National Register in 1974. The site was recorded, excavated and evaluated. Results are documented in the 1972 archaeological survey that was conducted by a team from the University of South Carolina Institute of Archaeology and Anthropology (Teague 1979). The McMeekin Rock Shelter is currently underwater and is located outside of the 1-mile radius of V. C. Summer.

- 6 -

The Davis Plantation (38-FA-56) was evaluated and nominated to the National Register in 1971. The site is a two-story house built in approximately 1845, and is located south of the town of Monticello on SC 215. The Davis Plantation is located outside the 1-mile radius of V. C. Summer. The Davis Plantation is not located on the shoreline of Monticello Lake.

Several archaeological sites were considered during the cultural resources review due to their proximity to the shoreline of Monticello Lake and the potential concern of impacts associated with erosion. During the environmental site audit conducted for the NEPA review in December 2002, the NRC team of environmental specialists toured V. C. Summer and the surrounding area. The team walked portions of the Monticello Lake shoreline. Environmental impacts that could be associated with erosion were not observed. The team included specialists in archaeology, aquatic and terrestrial biology, and hydrology. The team visited several locations of known archaeological sites in the area. No cultural materials were observed at any of the locations.

SCE&G has established a land use and shoreline management plan (SCE&G 2002). The purpose of this plan is to help maintain and conserve the area's natural and man-made resources as well as assist in providing a balance between recreational use, development, environmental preservation, and control. This management plan addresses environmental policies including the exclusion area and public access for fishing, boating, hunting, and other shoreline activities. Erosion control measures are identified, as are restrictions on the removal of underbrush.

FINDINGS

In October 1972, upon reviewing the cultural resources literature associated with the construction of V. C. Summer, the South Carolina SHPO (Attachment 3) determined that no adverse effects to historic properties would result from SCE&G Construction Project #1894.

Major refurbishment of V. C. Summer is not anticipated for continued operation during the license renewal period; therefore, there is no expectation that land in the undeveloped portions of the site will be disturbed for operations during the renewal period. Operation of V. C. Summer, as planned under the application for license renewal, would protect undiscovered historic or archaeological resources on the site because the undeveloped natural landscape and vegetation would remain undisturbed, and access to the site would remain restricted.

In January 2001, SCE&G wrote the South Carolina SHPO (Attachment 1), requesting their comments on the V. C. Summer license renewal process. In its letter, SCE&G suggested that the continued operation of V. C. Summer will have no effect on historic properties (SCE&G 2001). In a response dated January 29, 2001, the South Carolina SHPO (Attachment 2) stated that license renewal for the continuing operation of plants such as this one typically has no effect on historic properties (SHPO 2001).

Operating procedures of SCE&G consider actions upon the inadvertent discovery of historic and archaeological remains at V. C. Summer. Based on the cultural resources analysis, the representation by SCE&G that it does not plan to undertake major refurbishment activities related to the renewal of V. C. Summer, and the expectation that operations will continue within

- 7 -

the bounds of previously analyzed conditions, as evaluated in the FES (AEC 1973) and subsequent environmental assessments, the NRC staff concludes that there will be no effect on historic properties within the APE and no additional mitigation is warranted.

- 8 -

ATTACHMENTS

1. Letter - January 19, 2001 SCE&G wrote the South Carolina SHPO regarding license renewal at V. C. Summer. Includes Maps of V.C. Summer and surrounding environment.
2. Letter - January 29, 2001 South Carolina SHPO responded to SCE&G letter - agreed that license renewal for the continuing operation of plants such as this one typically has no effect on historic properties.
3. Letter - October 20, 1972 SHPO wrote letter to Federal Power Commission regarding the SCE&G construction Project 1894 - determined that no adverse effects to historic properties would result from this project.
4. Letter - November 27, 2002 the NRC wrote letters to the four Tribes - example of the letter that was sent to the Catawba Indian Nation.

CERTIFICATION OF RESULTS

I certify that I conducted the investigation reported here, that my observations and methods are fully documented, and that this report is complete and accurate to the best of my knowledge.

Tara O. Eschbach

Reporter,
Pacific Northwest National
Laboratory on behalf of the
U.S. Nuclear Regulatory Commission

Signature

Date

Darby C. Stapp, Ph.D., RPA

Reviewer,
Pacific Northwest National
Laboratory on behalf of the
U.S. Nuclear Regulatory Commission

Concurrence (Signature)

Date

- 10 -

REFERENCES

South Carolina Electric and Gas (SCE&G), 2002. *Virgil C. Summer Nuclear Station Application for Renewed Operating License , Appendix E - Environmental Report*. Docket No. 50-395, Columbia, South Carolina.

South Carolina Electric and Gas Company, 2002. FERC Project 1894 Land Use and Shoreline Management Plan Monticello and Parr Reservoirs - Effective April 1, 2002. Columbia, South Carolina.

Teague, G.A., 1979. *An Assessment of Archeological Resources in the Parr Project Area, South Carolina*. Institute of Archeology and Anthropology. University of South Carolina. Columbia, South Carolina.

U.S. Atomic Energy Commission (AEC), 1973. *Final Environmental Statement Related to the Virgil C. Summer Nuclear Station Unit 1; South Carolina Electric & Gas Company*. Docket No. 50-395, Washington, D.C.

U.S. Nuclear Regulatory Commission (NRC), 1999. *Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Main Report*. NUREG-1437, Volume 1, Addendum 1, Washington, D.C.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

June 26, 2003

Ms. Sandy Abbot
U.S. Fish and Wildlife Service
Ecological Services Office
176 Crogham Spur Road
Suite 200
Charleston, SC 29407

**SUBJECT: BIOLOGICAL ASSESSMENT FOR LICENSE RENEWAL AT V. C. SUMMER
NUCLEAR STATION AND REQUEST FOR INFORMAL CONSULTATION
(TAC NO. MB5227)**

Dear Ms. Abbot:

The U.S. Nuclear Regulatory Commission (NRC) staff has prepared the enclosed Biological Assessment to evaluate whether the proposed renewal of the V.C. Summer Nuclear Station (V.C. Summer) operating license for a period of an additional 20 years would have adverse effects on listed species. This Biological Assessment covers the site, which is approximately 909 hectares (2,245 acres) and includes portions of Monticello Reservoir as well as the 193-km- (120-mi-) long transmission line corridor.

The NRC has identified eleven species listed as threatened or endangered under the Federal Endangered Species Act and one Candidate species with the potential to be affected by this action. The primary species of concern is the bald eagle, which has been found within an 8-km (5-mi) radius of V.C. Summer. The staff has determined that the proposed action is not a major construction activity and that it may affect, but is not likely to adversely affect, the bald eagle. No designated critical habitat for any listed species is located near the project area. We are placing this Biological Assessment in our project files and are requesting your concurrence with our determination.

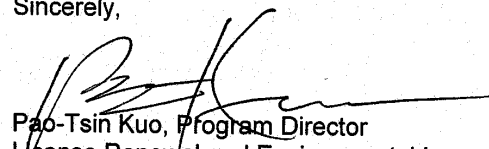
In reaching its conclusion, the NRC staff relied on the information available through local, State, and Federal agencies, on research performed by the NRC staff and contractors, and a current listing of species provided by the South Carolina field office of the Fish and Wildlife Service.

S. Abbot

- 2 -

If you have any questions regarding this Biological Assessment or the staff's request, please contact the license renewal project manager, Gregory Suber, by telephone at (301) 415-1124 or by e-mail at GXS@nrc.gov.

Sincerely,



Pao-Tsin Kuo, Program Director
License Renewal and Environmental Impacts
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket No.: 50-395

Enclosure: As stated

cc w/encl: See next page

Biological Assessment

**Virgil C. Summer Nuclear
Station
License Renewal Review**

Jenkinsville, South Carolina

June 2003

**U.S. Nuclear Regulatory
Commission
Rockville, Maryland**

Biological Assessment of the Effects of the V.C. Summer Power Plant License Renewal on Threatened or Endangered Species

Executive Summary

This Biological Assessment evaluates the potential impacts of the license renewal of the Virgil C. Summer Nuclear Station (V.C. Summer) on Federally listed threatened or endangered species. There will be no major construction, refurbishment, or replacement activities associated with this action. The U.S. Nuclear Regulatory Commission (NRC) has determined that license renewal for V.C. Summer will have no effect on the wood stork, red-cockaded woodpecker, shortnose sturgeon, Carolina heelsplitter, pool sprite, Georgia aster, smooth coneflower, rough-leaved loosestrife, Canby's dropwort, harperella, or relict trillium. The license renewal may affect, but is not likely to adversely affect, the bald eagle.

Project Description

The NRC licenses the operation of domestic nuclear power plants in accordance with the Atomic Energy Act of 1954, as amended, and NRC implementing regulations. South Carolina Electric & Gas Company (SCE&G) operates V.C. Summer Unit 1 pursuant to NRC Operating License Number NPF-12, which expires August 6, 2022.

SCE&G has prepared an environmental report in conjunction with its application to NRC to renew the V.C. Summer operating license, as provided by the following NRC regulations:

- Title 10, Energy, Code of Federal Regulations (CFR), Part 54, Requirements for Renewal of Operating Licenses for Nuclear Power Plants, Section 54.23, Contents of Application-Environmental Information (10 CFR 54.23) and
- Title 10, Energy, CFR, Part 51, Environmental Protection Requirements for Domestic Licensing and Related Regulatory Functions, Section 51.53, Postconstruction Environmental Reports, Subsection 51.53(c), Operating License Renewal Stage [10 CFR 51.53(c)].

The renewed operating license would allow 20 additional years of plant operation beyond the current V.C. Summer licensed operating period of 40 years.

No major refurbishment or replacement of important systems, structures, or components are expected during the V.C. Summer license renewal period. In addition, no construction activities are expected to be associated with the V.C. Summer license renewal.

Description of Project Area

V.C. Summer is located in Fairfield County, South Carolina, approximately 24 km (15 mi) west of the county seat of Winnsboro and 42 km (26 mi) northwest of Columbia, the State capital (Figure 1). V.C. Summer is a joint project between SGE&G, operator and two-thirds

Appendix E

owner, and the South Carolina Public Service Authority (Santee Cooper), owner of the remaining one-third. The site is in a sparsely populated, largely rural area, with forests and small farms comprising the dominant land use. The Broad River flows in a northwest-to-southeast direction approximately 1.6 km (1 mi) west of the site and serves as the boundary between Fairfield County (to the east) and Newberry County (to the west).

The V.C. Summer site covers approximately 909 ha (2245 ac), an area that includes portions of Monticello Reservoir and the Fairfield Pumped Storage Facility (FPSF). Approximately 348 ha (860 ac) are covered by the waters of Monticello Reservoir. A significant portion of the property (approximately 150 ha [370 ac]) consists of generation and maintenance facilities, laydown areas, parking lots, roads, and mowed grass. Some 50 ha (125 ac) are dedicated to transmission line rights-of-way. However, much of the V.C. Summer property consists of forested areas (approximately 360 ha [890 ac]). The primary terrestrial habitats at V.C. Summer are pine forest, deciduous forest, and mixed pine-hardwood forest (SCANA 2000). The pine forests at V.C. Summer include planted pines and naturally vegetated pines. Most of the deciduous forests at the site are located along stream bottoms and surrounding slopes.

Forested areas within the V.C. Summer site are managed by SCANA Services' Forestry Operations group, but timber is not routinely harvested. Parr Reservoir provides some limited freshwater marsh habitat in shallow backwaters, around low-lying islands, and in an area east of the FPSF tailrace that was used in the 1970s for the disposal of dredge spoil. These marshes and adjacent shallows are used by migrating dabbling ducks, including mallard, black duck, and teal. Monticello Reservoir and its subimpoundment also provide resting areas for wintering waterfowl and provide year-round habitat for non-migratory Canada geese.

Terrestrial wildlife species found in the forested portions of the V.C. Summer property are those typically found in the Piedmont forests of South Carolina. Wildlife characteristically found in the pine forests and mixed pine-hardwoods of the Piedmont include toads (e.g., Fowler's toad), lizards (e.g., Carolina anole, fence lizard, various skinks), snakes (e.g., black racer, rat snake, ringneck snake), songbirds (e.g., cardinal, bluejay, towhee, various warblers), birds of prey (e.g., red-tailed hawk, red-shouldered hawk), and a number of mammal species (e.g., gray squirrel, eastern cottontail, raccoon, white-tailed deer).

In total, for the specific purpose of connecting V.C. Summer to the transmission system, SCE&G and Santee Cooper constructed approximately 257 km (160 mi) of transmission lines (193 km [120 mi] of corridor) that occupy approximately 809 ha (2000 ac) of corridor. These transmission lines cross the counties of Fairfield, Newberry, Saluda, Aiken, Richland, and Edgefield (Figure 2). The areas are mostly remote, with low population densities. The longer lines cross numerous state and U.S. highways, including Interstate 26 and Interstate 20. SCE&G and Santee Cooper plan to maintain these transmission lines, which are integral to the larger transmission system, indefinitely. These transmission lines are expected to remain a permanent part of the regional transmission system even after V.C. Summer is decommissioned.

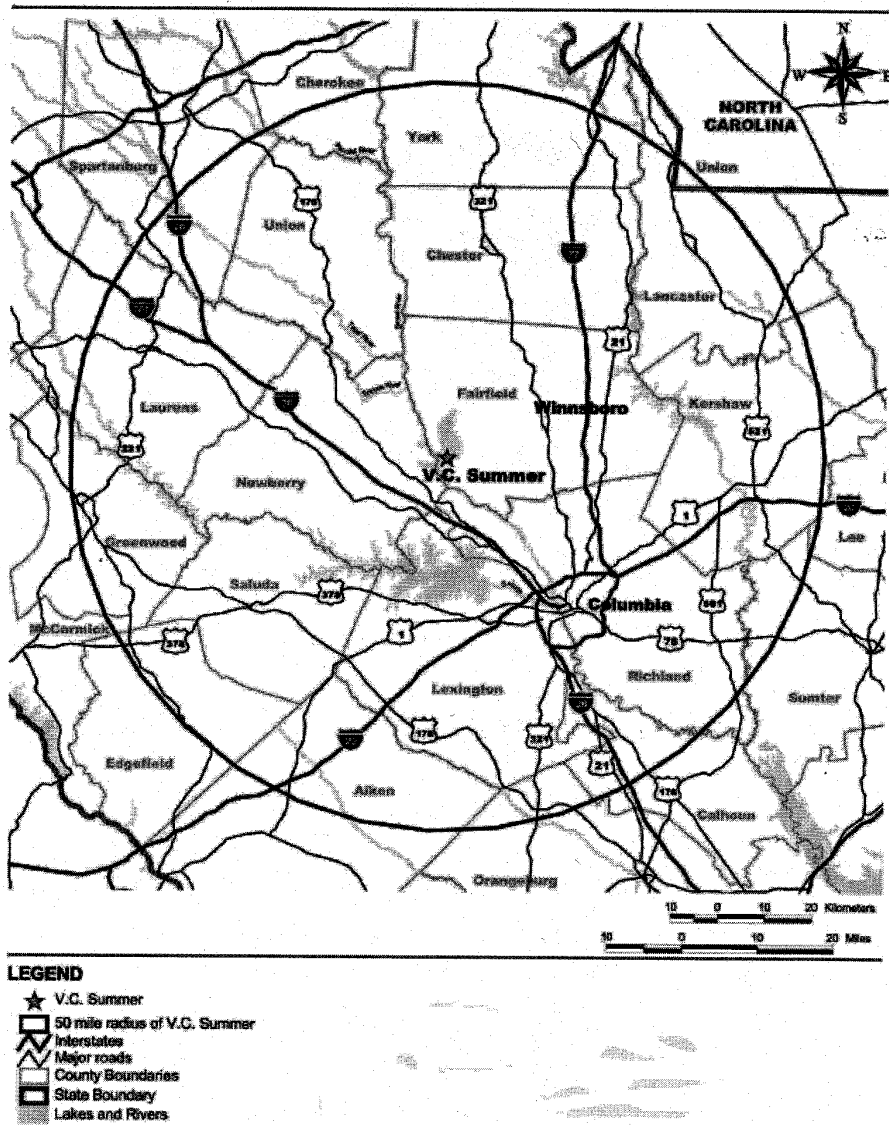


Figure 1. Location of V.C. Summer 80-km (50-mi) Region

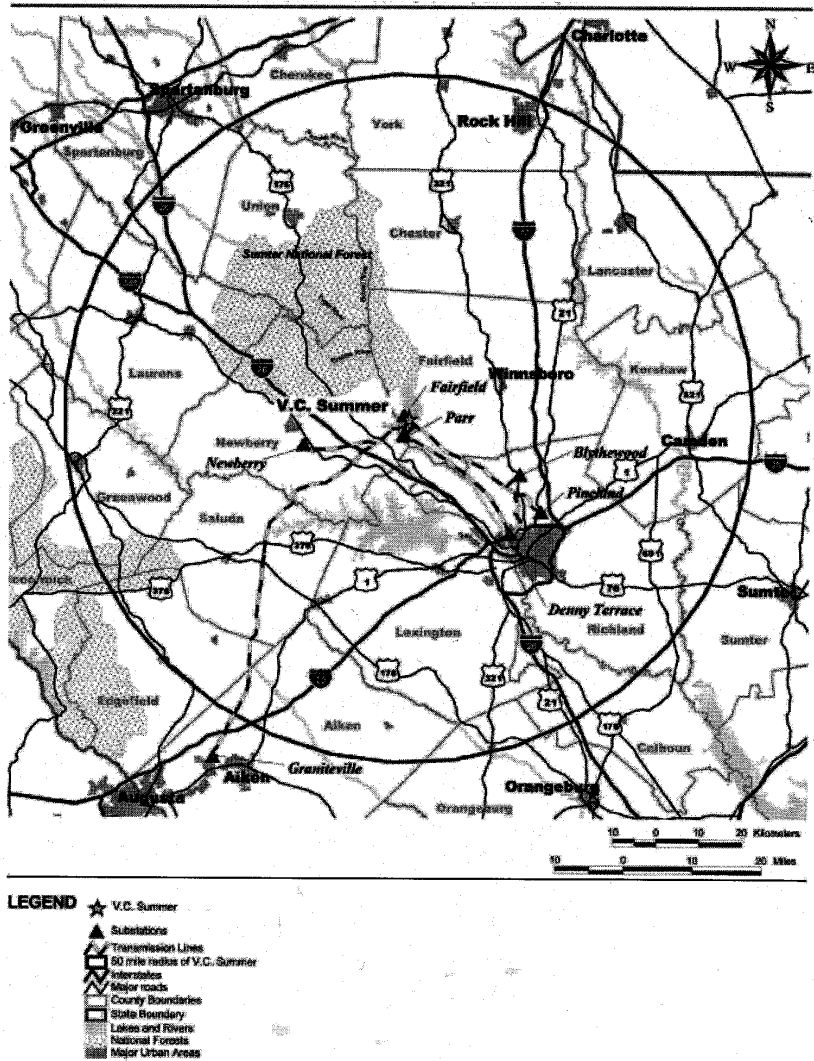


Figure 2. Location of V.C. Summer Transmission Lines

Most of the transmission corridors are situated within the Piedmont Physiographic Region, but the southernmost portions of the Summer-Graniteville, Summer-Denny Terrace No. 2, and Summer-Pineland corridors are situated within the Sandhills Physiographic Region. Most of the areas crossed by the transmission corridors are forest lands or agricultural lands (in pasture or row crops). Forest habitats along transmission corridors consist primarily of pine forest, pine-hardwood forest, and bottomland hardwood forest. Transmission corridors that run west from V.C. Summer cross more agricultural lands (mostly pasture) than corridors that run to the east. Conversely, corridors that run to the east cross more forested lands and residential areas (northern suburbs of Columbia) than corridors that run to the west.

No areas designated by the U.S. Fish and Wildlife Service (USFWS) as critical habitat for endangered species exist at the V.C. Summer site or on or adjacent to associated transmission lines. In addition, the transmission corridors do not cross any State or Federal parks, wildlife refuges, or wildlife management areas.

The transmission corridors are maintained by mowing, by trimming of undesirable vegetation from the sides of the corridors, and by use of approved herbicides. Under normal circumstances, the mowing and herbicide schedule follows a three-year cycle. Trees are "side-trimmed" every 10 years by helicopters carrying hydraulically operated saws. Aerial patrols of transmission corridors are conducted four times a year by SCE&G and twice a year by Santee Cooper. Dead and diseased trees at the edges of corridors are removed if it appears that they could fall and strike the transmission lines or support structures.

Periodic mowing in dry, upland portions of transmission corridors creates sunny, open conditions favorable for plants and animals normally found in fire-maintained ecosystems, such as successional grasslands and longleaf pine-wiregrass communities. Permanent and seasonal wetlands along transmission corridors hold potential for harboring a number of other plant species currently listed by the USFWS and South Carolina Department of Natural Resources (SCDNR), including the rough-leaved loosestrife and Canby's dropwort. Wetlands also provide habitat for several listed animal species, and some species (e.g., the wood stork) are found only in wetlands. Many animal species, however, are highly mobile and utilize more than one habitat type. The transmission corridors provide an open canopy and offer an abundance of herbaceous ground cover. Therefore, they can be natural avenues for movement and foraging by some animals.

Aquatic and riparian communities in the vicinity of V.C. Summer are influenced by the hydrology and water quality of the Broad River and movement of water between the Broad River/Parr Reservoir and Monticello Reservoir. The Broad River originates on the eastern slope of the Blue Ridge Mountains near Lake Lure, North Carolina, and flows 354 km (220 mi) southeast into South Carolina before joining the Saluda River at Columbia, South Carolina, to form the Congaree River. The Congaree River joins the Wateree River approximately 80 km (50 mi) southeast of Columbia, SC to become the Santee River. The Santee River flows southeast 230 km (143 mi) to empty into the Atlantic Ocean. In South Carolina, the Broad River basin encompasses an approximately 7242-km² (4500-mi²)

Appendix E

watershed drained by 7594 km (4719 mi) of streams (SCDHEC 1998). Major tributaries include the Pacolet, Tyger, and Enoree rivers, all of which enter the Broad River from the west. The Broad River Basin in South Carolina is entirely within the Piedmont region, which is an area of gently rolling to hilly terrain with relatively broad stream valleys; elevations range from 115 to 305 m (376 to 1000 ft) above mean sea level (SCDHEC 1998). For most of its length in South Carolina, the Broad River flows through agricultural and forested land, including the Sumter National Forest, which bounds the river for some 48 km (30 mi) above Parr Reservoir.

Parr Reservoir was created in 1914 by damming the Broad River at Parr Shoals, approximately 42 km (26 mi) upstream of the confluence of the Broad and Saluda rivers for Parr Hydro, a small (15 megawatt) run-of-the-river hydroelectric facility. Prior to 1977, the reservoir's surface area was 749 ha (1850 ac) (SCE&G 1978). In 1977, the level of Parr Reservoir was raised by 3 m (9 ft), which increased its surface area to approximately 1781 ha (4400 ac). This modification was necessary to support the development of FPSF, which was built on Frees Creek, a small tributary of the Broad River. In addition, Monticello Reservoir was created to serve as the upper reservoir for FPSF and the cooling water source for V.C. Summer. Parr Reservoir, which had historically been the source of water for Parr Hydro, assumed a dual function, providing a headwater pool for Parr Hydro and a tailwater pool for FPSF. The daily cycle of operation at the FPSF transfers up to 35,771,181 m³ (29,000 acre-feet) per day of water from Parr Reservoir to Monticello Reservoir and back (NRC 1981). Operations vary, depending on the season and system needs. In summer, FPSF generally pumps water from Parr Reservoir to Monticello Reservoir between the hours of 11 pm and 8 am and generates power (by releasing water) between the hours of 10 am and 11 pm. In winter, FPSF generally pumps water from Parr Reservoir to Monticello Reservoir between 11 pm and 6 am and generates between the hours of 6 am and 1 pm. The level of generation varies from one generator up to the maximum output of eight, depending on demand. Maximum output may not be necessary on all days. Pumping is normally done at maximum capacity. FPSF is normally operated seven days a week.

As a result of FPSF operations, Parr Reservoir is subject to daily fluctuations in water level of as much as 3 m (10 ft) (NRC 1981), but the daily average is approximately 1 m (4 ft) (Dames & Moore 1985). These water level fluctuations can expose and then inundate up to 1032 ha (2550 ac) of Parr Reservoir with each cycle of pumpback and generation (release of water). The amount of water pumped from and returned to Parr Reservoir daily represents as much as 88 percent of its total volume (NRC 1981).

V.C. Summer is on the south shore of Monticello Reservoir (Figure 3), which serves as its cooling water source and heat sink. Monticello Reservoir was formed by damming Frees Creek, a small tributary of the Broad River that flowed into Parr Reservoir about 1.9 km (1.2 mi) upstream of the Parr Shoals dam. As previously discussed, Monticello Reservoir was designed to serve both as a cooling pond for V.C. Summer and the upper pool for the FPSF,

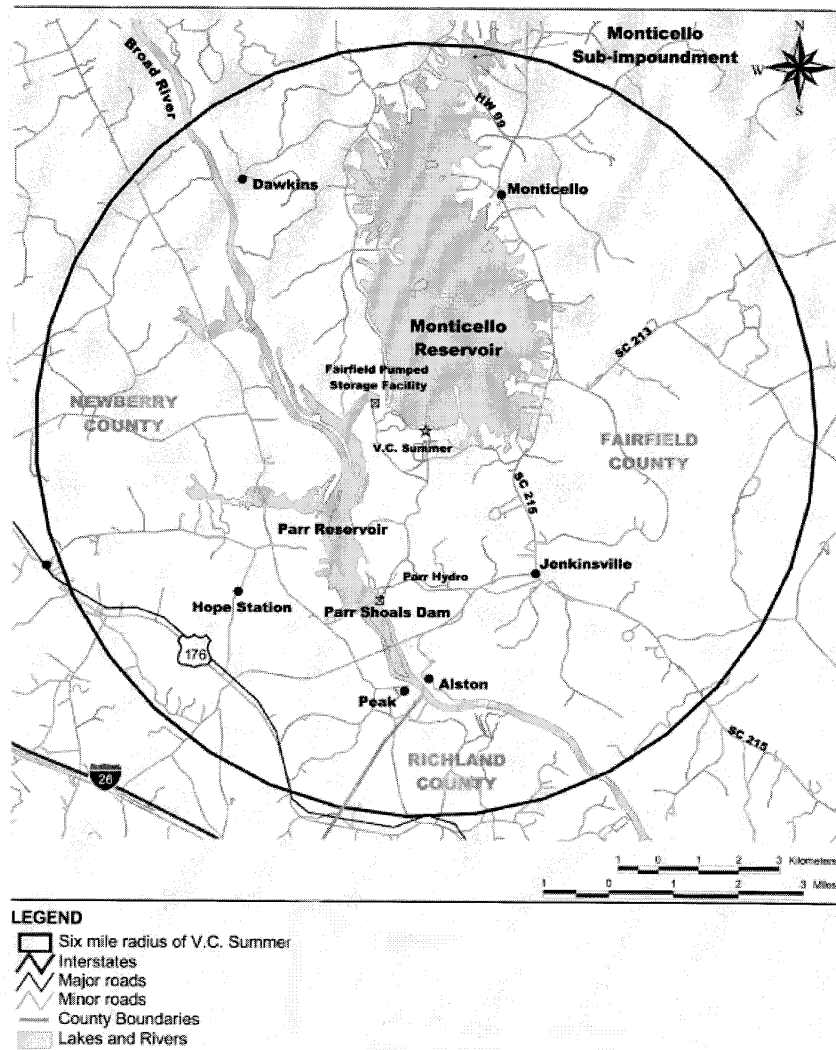


Figure 3 Location of V.C. Summer 10-km (6-mi) Region

with an enlarged Parr Reservoir serving as the lower pool. Water flow from the Frees Creek watershed into the newly created Monticello Reservoir was negligible, and FPSF's pumps were used initially to fill the reservoir with water from Parr Reservoir (NRC 1981). Monticello Reservoir's small watershed drains an area of only 4452 ha (11,000 ac), including the reservoir and its subimpoundment (discussed later in this section).

Monticello Reservoir is approximately 10 km (6 mi) long with a surface area of 2630 ha (6500 ac). The average depth is 18 m (59 ft) and the maximum depth is approximately 38 m (126 ft) (SCDHEC 1998). FPSF operations can cause water levels in Monticello Reservoir to fluctuate as much as 1.4 m (4.5 ft) daily. Daily water level changes vary, depending on system needs. It is currently rated as one of the least eutrophic reservoirs in South Carolina, and is characterized by low nutrient (total phosphorus and total nitrogen) concentrations.

List of Species

In preparing for renewal of its operating license, V.C. Summer assessed a wide variety of potential impacts, including those to ecological resources, in an environmental report that was submitted to the NRC on August 6, 2002, as part of a License Renewal Application. The *Threatened and Endangered Species Field Survey* (SCE&G 2002a) presents the results of field surveys of the V.C. Summer site and associated transmission corridors conducted in late spring (May) and summer (June, July, and August) 2002 to update information in the SCE&G environmental report (SCE&G 2002b) on ecological resources, emphasizing threatened and endangered species. Information obtained during the surveys was used by the NRC in its assessment of the potential impact of the V.C. Summer operation over the license renewal term on threatened and endangered species. This Biological Assessment describes the survey areas, presents a list of potentially occurring species, describes survey techniques, and discusses the results of the surveys.

The NRC has identified 11 species (Table 1) listed as threatened or endangered under the Federal Endangered Species Act and one Candidate species with the potential to be affected by this action based on information received from USFWS during a meeting of NRC and USFWS staff held at the USFWS Charleston Field Office in South Carolina on December 12, 2002. The list was again confirmed in a letter from NRC to USFWS April 16, 2003 (NRC 2002). The South Carolina counties included in the NRC assessment are Fairfield, Newberry, Saluda, Aiken, Richland, and Edgefield.

Additionally, SCE&G conducted field surveys to verify the presence or absence of these species (SCE&G 2002a). Before going into the field, project biologists conducted a literature review to identify species known to occur in the counties crossed by V.C. Summer transmission lines. Previous research for the V.C. Summer environmental report had shown that only one listed species, the bald eagle, was known to occur on the V.C. Summer site and there were no records of threatened and endangered species occurring along the V.C. Summer transmission corridors.

Table 1. Federal Endangered, Threatened, and Candidate Species that potentially occur in the vicinity of the V.C. Summer site or the Counties crossed by transmission lines.

Scientific Name	Common Name	Federal Status ^a	Determination
Invertebrates			
<i>Lasmigona decorata</i>	Carolina heelsplitter	E	No Effect
Fish			
<i>Acipenser brevirostrum</i>	shortnose sturgeon	E	No Effect
Birds			
<i>Haliaeetus leucocephalus</i>	bald eagle	T	Not likely to adversely affect
<i>Myceteria americana</i>	wood stork	E	No Effect
<i>Picoides borealis</i>	red-cockaded woodpecker	E	No Effect
Plants			
<i>Amphianthus pusillus</i>	pool sprite	T	No Effect
<i>Aster georgianus</i>	Georgia aster	C	No Effect
<i>Echinacea laevigata</i>	smooth coneflower	E	No Effect
<i>Lysimachia asperulifolia</i>	rough-leaved loosestrife	E	No Effect
<i>Oxpolis canbyi</i>	Canby's dropwort	E	No Effect
<i>Ptilimnium nodosum</i>	harperella	E	No Effect
<i>Trillium reliquum</i>	relict trillium	E	No Effect

^a E = Endangered; T=Threatened; C = Candidate for listing.
Source: USFWS 2002

The federally listed species known to occur in the counties crossed by V.C. Summer-associated transmission corridors are shown in Table 1. Although this species list was based primarily on information obtained from the USFWS, a number of other sources and authorities were consulted, including *Manual of the Vascular Flora of the Carolinas* (Radford et al. 1973), *Endangered, Threatened, and Rare Vascular Flora of the Savannah River Site* (Knox and Sharitz 1990), *Amphibians and Reptiles of the Carolinas and Virginia* (Martof et al. 1980), *Guide to the Reptiles and Amphibians of the Savannah River Site* (Gibbons and Semlitsch 1991), *South Carolina Bird Life* (Sprunt and Chamberlain 1970), and *Mammals of the Savannah River Site* (Cothran et al. 1991).

Species Survey

The undeveloped portions of the V.C. Summer site were surveyed on foot. The transmission corridors, because of their size, were surveyed by concentrating efforts in areas offering the greatest potential for harboring listed species. Areas of interest were identified using U.S. Geologic Survey (USGS) 7.5 minute topographic maps, county soil maps, and aerial photographs prior to conducting ground surveys. This initial "desk-top" survey allowed biologists to rapidly eliminate from consideration cropland, pastures, and other areas of poor-quality habitat for listed species. Following this phase of the survey, biologists drove to areas of potential interest and conducted surveys on foot. The survey of the V.C. Summer site was conducted in late May 2002. Surveys of the corridors were conducted over the May-August 2002 period (SCE&G 2002a).

Survey techniques are described in detail in the *Threatened and Endangered Species Field Survey* (SCE&G 2002a). The survey techniques for birds, mammals, reptiles, and amphibians were designed to provide information on the occurrence and potential for occurrence of listed species at V.C. Summer and along the transmission corridors. Biologists conducted the survey of the V.C. Summer site by systematic walkover within all natural habitats, such that each habitat type was thoroughly searched. Surveys conducted along the transmission corridors were focused on areas identified, through the examination of aerial photographs and topographic maps, as providing potential habitat for listed animal species. During each survey, wildlife species were identified through actual observations, as well as from tracks, scat, and birdcalls.

Notes regarding species observed, as well as pertinent data regarding habitat quality, weather conditions, time of day, etc., were recorded in a field notebook. No trapping or other collecting activities were conducted, except where slow-moving reptiles or amphibians were captured by hand and released after identification. Because many animal species are mobile and secretive, the absence of a species during a survey is not necessarily conclusive evidence that the species does not use the area in question. Therefore, the *potential* for use of V.C. Summer and transmission corridors by listed wildlife species was also evaluated, based on the quality of habitats observed.

The V.C. Summer site contains substantial acreage of intact forestland (exclusive of planted pines), and an attempt was made to visit all forested sites, especially those featuring steep topography and stream drainages, since these would be expected to support the highest diversity of vascular species. Similarly, portions of transmission corridors with intact forests on one or both sides were presumed most likely to harbor rare plants. A total of 75 locations representing more than 97 km (60 mi) of transmission corridor were surveyed on foot. Most of these sites were chosen based on terrain features (from topo maps), soils (from county soil surveys), land use in the area (from aerial photographs), and existing vegetation (from aerial photographs). Other sites were added due to proximity to known populations of threatened and endangered species. Several access points were locked/gated and thus inaccessible; these sites generally feature pastureland that otherwise offer little in the way of habitat for rare species.

Enlarged topographic maps developed from USGS quadsheets (7.5 minute series) and a hand-held global positioning system unit were used to record the locations of areas that were searched. Notes were taken at each area searched describing habitats and plant species present. Field surveys involved careful study of all vegetation in each target area. In the case of problematic genera, specimens were collected for further study and placed in a plant press. Specimens collected and preserved during this study are stored at the A.C. Moore Herbarium of the University of South Carolina.

Before fieldwork began, the transmission corridors were evaluated using USGS topographic maps, aerial photographs, soil maps, and other resources. Lengths of corridor that appeared to have potential for supporting a high level of biological diversity or harboring one or more rare species were identified and surveyed.

Species Evaluated

Invertebrates:

***Lasmigona decorata*, Carolina heelsplitter**

Before a 1987 USFWS survey, the Carolina heelsplitter had not been recorded in the state since the mid-19th century (Keferl and Shelly 1988 as cited in USFWS 1993, Keferl 1991 as cited in USFWS 1993). This listed (Endangered) freshwater mussel was historically found in South Carolina in the Pee Dee River system (Clarke 1985 as cited in USFWS 1993, Keferl and Shelly 1988 as cited in USFWS 1993, Keferl 1991 as cited in USFWS 1993). The USFWS conducted intensive surveys between 1987 and 1990 and found only two surviving populations of the Carolina heelsplitter in the Pee Dee River system; the Goose Creek and Lynches River/Flat Creek populations (Keferl 1991 as cited in USFWS 1993). During the USFWS surveys, a total of only 12 live individuals were found in Flat Creek (1987–1990) and two individuals were found in the Lynches River (both found in 1990). Because the Carolina heelsplitter populations have been found only in other tributaries to the Pee Dee River and not in the Broad River system near the V.C. Summer site or transmission lines, the NRC staff has determined that the proposed license renewal would have no effect on the Carolina heelsplitter.

Fish:

***Acipenser brevirostrum*, shortnose sturgeon**

The shortnose sturgeon is listed as Endangered. The shortnose sturgeon historically occurred in the Broad River in Lexington and Newberry counties, but was likely extirpated from that stretch of the Broad River. Passage of this species up the Broad River is blocked by dams (SCE&G 2002a). In South Carolina, the primary factors affecting populations of this species are habitat alteration, due to dredging and dam construction, and pollution. Currently, in South Carolina they inhabit Winyah Bay.

Rivers, those that drain into Lake Marion, the Santee, Cooper, and Savannah rivers, and the ACE (Ashepoo, Combahee, and Edisto Rivers) Basin. In the latter, shortnose sturgeon are typically found at the freshwater-saltwater interface. The shortnose sturgeon has not been found near the V.C. Summer site or transmission lines. Therefore, the NRC staff has determined that the proposed license renewal would have no effect on the shortnose sturgeon.

Birds:

***Haliaeetus leucocephalus*, bald eagle**

The bald eagle is generally associated with lakes, rivers, and coastal areas (USACE 2002). Bald eagles are commonly observed foraging around Monticello Reservoir, the FPSF tailrace canal, Parr Reservoir, and on the Broad River downstream of Parr Shoals dam. The bald eagle is listed as Threatened under the provisions of the Endangered Species Act. The bald eagle was the only listed species observed during the SCE&G field surveys.

There are no recorded bald eagle nests at the V.C. Summer site, but there are six nests within 8 km (5 mi) of the V.C. Summer site, the nearest being approximately 3.2 km (2 mi) from the site (Holling 2001). Four of these six nests are believed to be active nesting sites, while the status of two nests is unknown (SCDNR 2001). There are four bald eagle nesting sites on Parr Reservoir. Three (one active, two unknown status) are within 0.8 km (0.5 mi) of one another, on the western shore of the reservoir, approximately 3.2 km (2 mi) west of V.C. Summer. The fourth is on the Heller's Creek arm of Parr Reservoir, approximately 6 km (4 mi) northwest of V.C. Summer. There is a single bald eagle nesting site on the eastern shore of Monticello Reservoir, approximately 5.6 km (3.5 mi) north of V.C. Summer. There is also a nesting site approximately 3.2 km (2 mi) east of Monticello Reservoir (6 km [4 mi] northeast of V.C. Summer) on a tributary of the Little River. One active bald eagle nest in Saluda County is approximately 0.8 km (0.5 mi) west of the Summer-Graniteville transmission line, and one bald eagle nest in Richland County is located approximately 1.4 km (0.9 mi) south of the Summer-Denny Terrace transmission line (SCDNR 2001). The current status of the Richland County nest is unknown, but the nest was viable as recently as 1995 (SCDNR 2001).

The *Habitat Management Guidelines for the Bald Eagle in the Southeast Region* (USFWS 1987) prescribes two management zones around eagle nests, night roosts, and shoreline use areas in which the provisions of various laws and their implementing regulations may apply. The two management zones prescribed in the report are "primary" (from 229 to

457 m [750 to 1500 ft]) and “secondary” (from 23 m [75 ft] to 1.6 km [1 mi]) (USFWS 1987). The Habitat Management Guidelines provide recommendations, excluding certain activities within these zones, to minimize impacts to the bald eagle. The V.C. Summer site is located beyond the secondary management zone buffers of the active nests. Consequently, the potential for activities at the V.C. Summer site to disturb breeding/nesting at these nest sites is minimal.

Lehman (2001) summarized the literature regarding raptor electrocutions on power lines and emphasized that nearly all electrocutions in the United States occur on comparatively low-voltage distribution lines supplying individual users and businesses, not transmission lines. Because of their acute vision, maneuverability, and the fact that they migrate neither in flocks nor at night, the likelihood of transmission line collisions involving the eagles is remote. There are no known reports of bald eagle collisions with the V.C. Summer transmission lines or other structures. Based on a review of the literature and the absence of any reported electrocutions associated with the V.C. Summer transmission lines, the staff concludes that potential eagle losses due to transmission line-related electrocutions are highly unlikely. In the event that an electrocuted bald eagle were to be found, SCE&G’s procedures require that a Raptor Incident Report be filed.

Based on the locations of the active eagle nests relative to the V.C. Summer site and associated transmission lines, the potential for disturbance during nesting/breeding, either from activities at the V.C. Summer site or from transmission line maintenance, is highly unlikely. SCE&G’s procedures require that it follow the USFWS Habitat Management Guidelines for the bald eagle in the Southeast Region.

Additionally, a substantial number of bald eagles and other birds are commonly seen foraging at the FPSF as it transfers water from Parr Reservoir to Monticello Reservoir. Likely, the substantial number of bald eagles and other birds foraging at the FPSF indicates that the daily pumping of water creates a preferred foraging area for the birds. It is possible that the current water circulating system of V.C. Summer, more specifically the FPSF, increases the availability of fish. Therefore, based on the available information, the NRC staff makes a finding of “may affect, not likely to adversely affect” the bald eagles for the proposed license renewal.

***Myceteria americana*, wood stork**

The wood stork, listed as Endangered, is known to occur in Aiken County. The Summer-Graniteville transmission line terminates in the northern part of Aiken County more than 80 km (50 mi) from the V.C. Summer site. Although they do not nest in Aiken County, wood storks from the Birdsville Colony (near Millen, Georgia) forage in shallow

wetlands on the U.S. Department of Energy's Savannah River Site and in specially constructed ponds on the National Audubon Society's Silver Bluff Sanctuary, near Jackson, South Carolina (DOE 1997; NAS undated). No transmission corridors associated with V.C. Summer cross or approach the Savannah River Site or the Silver Bluff Sanctuary, and wood storks have not been recorded near the V.C. Summer site or its transmission line corridors. Therefore, the NRC staff has determined that the proposed license renewal would have no effect on the wood stork.

***Picoides borealis*, red-cockaded woodpecker**

The red-cockaded woodpecker, listed as Endangered, is known to occur in Aiken, Edgefield, Saluda, and Richland counties (SCDNR 2002). Active nest cavities of this cooperative breeder occur in open, mature pine stands with sparse midstory vegetation (USFWS 2002). When the hardwood midstory grows above 5 m (15 ft), cavity abandonment usually occurs (Hooper et al. 1980). Preferred habitat for this species is not found at the V.C. Summer site, nor is it found along the transmission corridors. There is one point on the Summer-Graniteville corridor where the Summer transmission corridor passes through mature, marginally open pine forests. At this location, however, numerous oaks of considerable height are scattered among the pines, significantly decreasing the probability that red-cockaded woodpeckers would occur here. Although the forest adjacent to that location was thoroughly searched during the 2002 field surveys, no active or abandoned nest cavities were found. Because suitable habitat does not occur at the V.C. Summer site or associated transmission lines, the NRC staff has determined that the proposed license renewal would have no effect on the red-cockaded woodpecker.

Plants:

***Aster georgianus*, Georgia aster**

The Georgia aster, a Candidate for listing, is found in dry, open woodlands and disturbed areas, such as roadsides and utility rights-of-way that are regularly mowed. Populations have been found in Edgefield, Fairfield, and Richland counties (SCDNR 2002). However, there have been no recorded occurrences of this species in or adjacent to the transmission corridors or at the V.C. Summer site (SCDNR 2001). Furthermore, the Georgia aster was not found during the 2002 field surveys. Therefore, the NRC staff has determined that the proposed license renewal would have no effect on the Georgia aster.

***Echinacea laevigata*, smooth coneflower**

The smooth coneflower, listed as Endangered, is known to occur in Aiken and Richland counties. There is no known record of smooth coneflower in Fairfield County (SCDNR 2002). Habitat for this perennial herb is open woods, cedar barrens, roadsides, clear cuts, limestone bluffs, and transmission line corridors. Fire or other disturbance, such as well-timed mowing or clearing, is essential to maintaining the open habitat required for this species (USFWS 2002). Considering the absence of truly circumneutral soils on the transmission corridors studied, the absence of apparent habitat on neighboring land, and the fact that fires are practically nonexistent in the transmission corridors, it is highly unlikely that smooth coneflower ever has been a resident of these areas. Although it was sought on open corridors featuring steep, rocky terrain throughout this project area during the 2002 field surveys, there have been no recorded occurrences of this species in or adjacent to the transmission line corridors associated with V.C. Summer or at the site (SCDNR 2001). Therefore, the NRC staff has determined that the proposed license renewal would have no effect on the smooth coneflower.

***Lysimachia asperulifolia*, rough-leaved loosestrife**

The rough-leaved loosestrife is listed as Endangered. Habitat for this perennial herb consists of Carolina bays and the ecotones between longleaf pine uplands and pond pine pocosins. The only known location of the rough-leaved loosestrife within South Carolina is at Fort Jackson in Richland County (USFWS 2002); there are no recorded occurrences of this species in or adjacent to the transmission line corridors associated with V.C. Summer or at the site (SCDNR 2001). Some possibility exists that this species could survive on boggy places under power lines studied in the field survey, but there are only two sites that could reasonably be considered, and neither of them is burned. Portions of the Graniteville transmission corridor would be thought to potentially support loosestrife, but no sandhill seepage bogs were discovered. It is highly unlikely that rough-leaved loosestrife has ever grown anywhere within the study area. Furthermore, rough-leaved loosestrife was not found during the 2002 field surveys. Therefore, the NRC staff has determined that the proposed license renewal would have no effect on the rough-leaved loosestrife.

***Oxypolis canbyi*, Canby's dropwort**

Canby's dropwort is listed as Endangered. This perennial plant is known to occur in 11 counties within South Carolina, one of which (Richland) is crossed by V.C. Summer transmission lines (SCDNR 2002). This coastal plain species grows in wet meadows, wet pineland savannas, ditches, sloughs, and along the edges of cypress-pine ponds (USFWS

2002). There have been no recorded occurrences of this species in or adjacent to the transmission line corridors associated with V.C. Summer or at the site (SCDNR 2001). No Canby's dropwort were found during the 2002 field surveys. Therefore, the NRC staff has determined that the proposed license renewal would have no effect on the Canby's dropwort.

Ptilimnium nodosum, harperella

Harperella is listed as endangered. Typical habitat for this annual herb is rocky or gravel shoals, margins of swift-flowing streams, and edges (bays) of intermittent pineland ponds (USFWS 2002). Harperella is known in South Carolina from Aiken and Saluda counties (SCDNR 2002). There is one recorded population of harperella approximately 0.8 km (0.5 mi) west of the Summer-Graniteville transmission line corridor in Saluda County. The most recent observation of this population in the SCDNR database was from 1985 (SCDNR 2001). There are no recorded occurrences of this species in or adjacent to the V.C. Summer-associated transmission corridors or the site (SCDNR 2001). It is of potential occurrence, therefore, in suitable habitat along portions of the Summer-Graniteville line, particularly around Ridge Spring. High ponds occur around State Highway SC 23 in the vicinity of the Graniteville line, but these bays are highly altered, and little resident native vegetation remains. On the other hand, the Graniteville line does not specifically cross any Carolina bays in the region. Therefore, the NRC staff has determined that the proposed license renewal would have no effect on the harperella.

Trillium reliquum, relict trillium

The relict trillium is listed as Endangered. Habitat for this perennial herb is mature, moist, undisturbed hardwood forests (USFWS 2002). Relict trillium is known from Aiken and Edgefield counties (SCDNR 2002). Relict trillium is restricted to sites over mafic rock, within old-growth, intact forest systems. They do respond somewhat positively to disturbance, and may be expected to survive in openings under powerlines if present in adjacent forests. No relict trillium was seen during this survey. The Aiken County locations for this species are much unlike anything else seen in Aiken County under the Graniteville transmission line; it is extremely unlikely that this species ever occurred in the project area. There have been no recorded occurrences of this species in or adjacent to the transmission line corridors associated with V.C. Summer or at the site (SCDNR 2001). Therefore, the NRC staff has determined that the proposed license renewal would have no effect on the relict trillium.

***Amphianthus pulillus*, pool sprite**

The pool sprite, also known as little amphianthus, is listed as Threatened. This aquatic plant occurs in small (usually less than one square meter) shallow pools on the crests and flattened slopes of granite outcrops (USFWS 2002). These pools completely dry out in summer droughts. The pool sprite is known to occur within Saluda County (USFWS 2002; SCDNR 2002), which is crossed by the transmission lines associated with V.C. Summer. This plant is endemic to open flat granite rocks, with enough surface area to allow the development of shallow pools that fill with water during spring rainy periods, when the seeds germinate, followed by rapid growth, flowering, and fruit set. Transmission corridors featuring granitic rock anywhere within this project were examined for the slightest possibility of occurrence; the best developed "flatrocks" are just south of V.C. Summer. Some boulders were seen elsewhere along power lines in Fairfield County, but none was adequate for supporting this species. It is highly unlikely that pool sprite ever occurred anywhere within the study area. Only one occurrence of this plant is known from Saluda County (USFWS 2002), but there are no recorded occurrences in or adjacent to the V.C. Summer-associated transmission line corridors or at the site (SCDNR 2001). Therefore, the NRC staff has determined that the proposed license renewal would have no effect on the pool sprite.

Conclusions

The NRC has identified 11 species listed as Threatened or Endangered under the Federal Endangered Species Act and one Candidate species with the potential to be affected by the license renewal of V.C. Summer. There will be no major refurbishment, construction, or replacement activities associated with this action. The NRC has determined that license renewal for V.C. Summer will have no effect on the wood stork, red-cockaded woodpecker, shortnose sturgeon, Carolina heelsplitter, pool sprite, Georgia aster, smooth coneflower, rough-leaved loosestrife, Canby's dropwort, harperella, and relict trillium and may affect, but is not likely to adversely affect, the bald eagle.

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Appendix E

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

September 2, 2003

Rules Review and Directives Branch
U.S. Nuclear Regulatory Commission
Mail Stop T6-D59
Washington, D.C. 20555-0001

7/17/03
68 FR 42431
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Rules and Directives Branch

**RE: EPA Review and Comments on
Draft Generic Supplemental Environmental Impact Statement (DGSEIS)
License Renewal of Nuclear Plants, Supplement 15
Regarding Virgil C. Summer Nuclear Station
CEQ No. 030322**

Dear Sir:

EPA Region 4 reviewed the Draft Generic Supplemental EIS (DGSEIS) pursuant to Section 309 of the Clean Air Act and Section 102 (2)(C) of the National Environmental Policy Act (NEPA). The purpose of this letter is to provide the Nuclear Regulatory Commission (NRC) with EPA's comments regarding potential impacts of the proposed renewal of the Virgil C. Summer Nuclear Station Operating License (OL).

South Carolina Electric and Gas Company submitted an application to renew the Operating License (OL) for the V.C. Summer Nuclear Station for an additional 20 years. The proposed action, (license renewal), would provide for continued operation and maintenance of existing facilities and transmission lines.

Based on the review of the DGSEIS, the project received a rating of "EC-1," meaning that some environmental concerns exist regarding aspects of the proposed project. Specifically, protecting the environment involves the continuing need for appropriate storage, and ultimate disposition, of radioactive wastes generated on-site.

The DGSEIS acknowledges that OL renewal of the V.C. Summer Nuclear Station will require continuing radiological monitoring of all plant effluents. Continuing to appropriately store spent fuel assemblies and radioactive wastes on-site is required, in order to prevent impacts. Ultimately, long-term radioactive waste disposition will require transportation of wastes to a permitted repository site. Further, the DGSEIS states that renewal of the OL would result in fewer environmental impacts than the feasible alternatives for generating power, and the NRC considers impacts of OL renewal to be small. Overall, the impacts as defined in the DGSEIS appear to be within acceptable limits.

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Addr = E. Sober (9XS)

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Appendix E

Thank you for the opportunity to comment on this document. We look forward to reviewing the Final GSEIS. If we can be of further assistance, please contact Ramona McConney of my staff at (404) 562-9615.

Sincerely,

A handwritten signature in black ink, appearing to read "Heinz Mueller". The signature is written in a cursive style with a large initial 'H' and a long horizontal stroke at the end.

Heinz J. Mueller, Chief
Office of Environmental Assessment



United States Department of the Interior

FISH AND WILDLIFE SERVICE
176 Croghan Spur Road, Suite 200
Charleston, South Carolina 29407

October 17, 2003

Mr. Pao-Tsin Kuo
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Re: License Renewal at V.C. Summer Nuclear Station
TAC No. MB5227, Docket No. 50-395
FWS Log No. 4-6-03-I-490

Dear Mr. Kuo:

The U.S. Fish and Wildlife Service (Service) has reviewed the Biological Assessment and your letter requesting our concurrence regarding the above referenced action in Fairfield, Newberry, Saluda, Aiken, Richland, and Edgefield Counties, South Carolina. We are submitting the following comments under provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*) and the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*).

According to the information provided, the renewed operating license would allow 20 additional years of plant operation beyond the current V.C. Summer licensed operating period of 40 years. No major refurbishment or replacement of important systems, structures, or components are expected during the V.C. Summer license renewal period. In addition, no construction activities are expected to be associated with the license renewal.

A threatened and endangered species survey was conducted on the V.C. Summer site and associated transmission corridors in late spring and summer 2002 for 11 federally-listed species that may occur within the action area. Survey results concluded that only one species (bald eagle) was observed to be present within a five mile radius of the site.

Based on our review and the information provided, the Service concurs with your determination that the proposed action is not likely to adversely affect the federally-listed bald eagle. We also concur with your determination that the proposed action will have no effect on the additional federally-listed species that were identified to have potential to occur within the project area. Therefore, the requirements of Section 7 of the Act have been fulfilled relative to the proposed action, and no further consultation is necessary at this time. However, obligations under Section 7 of the Act must be reconsidered if: (1) new information reveals that the proposed project may affect listed species in a manner or to an extent not previously considered, (2) the proposed project is subsequently modified to include activities which were not considered during this consultation; or (3) new species are listed or critical habitat designated that might be affected by the proposed project.

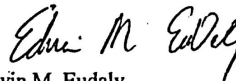
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Appendix E

In accordance with provisions of the Fish and Wildlife Coordination Act, the Service has also reviewed the subject project with regard to the effects the proposed action may have on waters of the U.S. and related fish and wildlife resources. Information provided revealed the presence of several streams within the proposed area. Erosion and sedimentation problems are likely to be exacerbated at areas where clearing removes deep-rooted vegetation. Therefore, to maintain the integrity of these aquatic resources during transmission line corridor maintenance, we recommend that at least a 25-foot buffer be left on both sides of any stream crossed or paralleled by a transmission line.

The above views and recommendations constitute the report of the Department of the Interior. If you require additional assistance, please contact Phil DeGarmo of my staff at 843-727-4707 x21.

Sincerely yours,



Edwin M. Eudaly
Acting Field Supervisor

EME/PMD/km

ML033000575

October 22, 2003

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8301 Parklane Road
Columbia, SC 29223

SUBJECT: V. C. SUMMER NUCLEAR STATION LICENSE RENEWAL REVIEW AND
NATIONAL HISTORIC PRESERVATION ACT, SECTION 106 REVIEW
PROCESS

Dear Dr. Stroup:

This letter serves to follow up your July 9, 2003, request for additional information regarding the V. C. Summer Nuclear Station (V. C. Summer). Based on a teleconference between Mr. Chad Long of your office and the U.S. Nuclear Regulatory Commission (NRC) staff, all requested items are satisfied. The results indicate that renewing the license at V. C. Summer will have no effect on historic properties.

On June 13, 2003, in accordance with Title 36 of the *Code of Federal Regulations*, Part 800 (36 CFR 800), the NRC sought concurrence from the South Carolina State Historic Preservation Office (SHPO) regarding license renewal at V. C. Summer that the proposed undertaking will have no effect on historic properties. Enclosed with our letter was our Cultural Resources Narrative. Your office responded on July 9, 2003, and recommended that additional information be provided in a revised report in order to make an assessment of effect. The SHPO's recommendations were as follows:

1. The revised report should include a topographic map (USGS 7.5 minute quadrangle) that clearly shows the location of all known and recorded sites within the Area of Potential Effects (APE).
2. The report needs to discuss seasonal and daily lake level fluctuations that are directly and indirectly related to the generation of power at the V.C. Summer Nuclear Station.
3. The report should include representative photographs of the shoreline that substantiate the claims that no environmental impacts associated with erosion were "observed" or are actively taking place.

Appendix E

R. Stroup

2

4. We are concerned about potential adverse effects to archaeological sites 38FA33, 38FA37, and 38FA298. These sites are located along the reservoir shoreline and have not been evaluated for the National Register. Potential effects include erosion and artifact collecting. Were these sites visited during your inspections? (See page 6). Can you provide photographs of these three sites? Provide more justification that these sites are not being impacted by power generation on Lake Monticello.

NRC staff and the staff from Pacific Northwest National Laboratory participated in a conference call with Mr. Chad C. Long, Staff Archaeologist of the South Carolina State Historic Preservation Office on August 15, 2003, to discuss the SHPO information requests listed above. Due to the sensitivity of the information, it was agreed by all parties that the topographic map depicting the known sites and APE (Item 1 above) would not be submitted to the SHPO's office with the revised report.

The other information requests and additional technical comments were incorporated into the revised Cultural Resources Review Report (Enclosure 1). The results indicate that this undertaking will have no effect on historic properties. Pursuant to 36 CFR 800.4(d)(1), we are providing documentation to support these findings, and we request your concurrence with our determination.

The Draft SEIS for the V. C. Summer license renewal action was published for public comment in July 2003; it reflects our interactions to date. If you have any questions or require additional information, please contact Bill Dam, the NRC Environmental Project Manager for the V. C. Summer license renewal project, at 301-415-4014 or WLD@nrc.gov.

Sincerely,
/RA/

Pao-Tsin Kuo, Program Director
License Renewal and Environmental Impacts
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket No.: 50-395

Enclosures: As stated

cc w/o encl. 5: See next page

R. Stroup

3

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/RA/

Pao-Tsin Kuo, Program Director
License Renewal and Environmental Impacts
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket No.: 50-395
Enclosures: As stated

cc w/o encl. 5: See next page

DISTRIBUTION: See next page

*See previous concurrence
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Cvr. Letter w/Amended Cultural Resources Rpt.
Narrative & Svc. List: **ML033000575**
Ltr Dated January 19, 2001: **ML031690234**
Ltr Dated January 29, 2001: **ML031690126**
Ltr Dated November 27, 2002: **ML023380701**
Ltr Dated October 20, 1972: **ML031690121**
PKG: **ML033000579**

OFFICE	LA:RLEP	GS:RLEP	PM:RLEP	SC:RLEP	OGC	PD:RLEP
NAME	YEdmonds*	JDavis*	BDam	JTappert	AHodgdon	PTKuo
DATE	10/1/03	09/26/03	10/2/03	10/2/03	10/9/03	10/22/03

OFFICIAL RECORD COPY

Appendix E

**U.S. NUCLEAR REGULATORY COMMISSION (NRC)
OFFICE OF NUCLEAR REACTOR REGULATION
DIVISION OF REGULATORY IMPROVEMENT PROGRAMS**

**CULTURAL RESOURCES REPORT NARRATIVE
VIRGIL C. SUMMER NUCLEAR STATION LICENSE RENEWAL
AMENDED REPORT**

September 2003

CULTURAL RESOURCES REPORT NARRATIVE
VIRGIL C. SUMMER NUCLEAR STATION LICENSE RENEWAL

PROJECT DESCRIPTION

The U.S. Nuclear Regulatory Commission (NRC) licenses the operation of domestic nuclear power plants in accordance with the Atomic Energy Act of 1954, as amended and NRC implementing regulations. The proposed Federal action is the renewal of the Operating License for the Virgil C. Summer Nuclear Station (V. C. Summer), which is operated by South Carolina Electric & Gas Company (SCE&G). The current operating license will expire August 6, 2022. The renewed license would subsume the remaining time of the current license and permit an additional 20 years of plant operation beyond the expiration of the current operating license.

This report presents the findings of the Section 106 review conducted to establish whether any historic properties will be affected by the license renewal of V. C. Summer.

AREA OF POTENTIAL EFFECT

V. C. Summer is located in Fairfield County, South Carolina, approximately 15 miles west of Winnsboro and 26 miles northwest of Columbia. The site is in a sparsely-populated, largely rural area, with forests and small farms comprising the dominant land use. The Broad River flows in a northwest-to-southeast direction approximately one mile west of the site.

An exclusion area must be defined by the applicant wherein it can control access in the event of an emergency situation. In this case, the exclusion area is owner controlled (i.e., not subject to an alternative routine use such as leased farming) and encompasses the area within approximately one mile of the reactor building; the exclusion area is posted and access to land portions of this area is controlled at all times. The V. C. Summer property covers approximately 2245 acres, and includes the southern portion of Monticello Reservoir and parts of the Fairfield Pumped Storage Facility.

In conjunction with this license renewal action, SCE&G does not plan to undertake a major refurbishment activity in the site vicinity or along the transmission lines expressly constructed to connect the plant to the electrical grid when the plant was initially licensed. Therefore, the area of potential effect (APE) for this license renewal action is the area at the power plant site and its immediate environs which may be impacted. Specifically, this area consists of the exclusion area boundary (1-mile radius) and the Monticello reservoir shoreline.

NOTIFICATIONS AND PUBLIC INVOLVEMENT

On January 19, 2001, SCE&G wrote the South Carolina State Historic Preservation Office (SHPO) regarding license renewal at V. C. Summer. On January 29, 2001, the South Carolina SHPO responded to the SCE&G letter and stated that license renewal for the continued operation of plants, such as this one, typically has no effect on historic properties. The SHPO encouraged that the SHPO Geographical Information System (GIS) database be searched for a more accurate, up-to-date source of information.

On December 12, 2002, NRC staff met with Marta Matthews and Chad Long at the South Carolina SHPO's office, and Keith Derting and Diane Boyd at the South Carolina Institute of Archaeology and Anthropology (SCIAA). Archaeological site file searches were conducted at SCIAA. The GIS database and files at the South Carolina SHPO's office were searched for cultural resource information that might pertain to the proposed action. At the time of this visit, Ms. Matthews and Mr. Long raised the issue of potential impacts to cultural resources caused by erosion on the Monticello shoreline. This report addresses those concerns that were raised during the site visit in the section called "Identification of Historic Properties".

Four Native American Tribes were sent letters on November 27, 2002, providing them an opportunity to have input regarding cultural resource issues in the vicinity of V. C. Summer and inviting them to participate in the National Environmental Policy Act (NEPA) scoping process. The Tribes were the Catawba Indian Nation, Eastern Band of the Cherokee, Cherokee Nation (Western Cherokee in Oklahoma), and the United Keetoowah Band of Cherokee (Attachment 4 contains an example of this letter).

The NRC public involvement process is conducted in accordance with NEPA principles; in general, the NRC actively pursues stakeholder engagement in excess of the minimum requirements. The Commission has determined that the NRC will prepare an environmental impact statement (EIS) as that discussed in Section 102 of NEPA (42 USC 4332) to assess whether the license renewal action would significantly affect the quality of the human environment. The NRC staff will prepare an EIS and, in the case of license renewal, it is a site-specific supplement (SEIS) to the NRC Generic EIS for License Renewal of Nuclear Power Plants (GEIS), NUREG-1437, for the renewal of a reactor Operating License (OL). NUREG-1437 considered almost 100 environmental issues across all nuclear power plants to determine whether issues could be resolved generically. The potential impact to cultural resources cannot be resolved generically and, therefore, must be addressed on a site-specific basis in each SEIS.

On October 24, 2002, the NRC published a Notice of Intent in the *Federal Register* to notify the public of the staff's intent to prepare a site-specific supplement to the GEIS to assess the environmental impacts of the proposed action (renewal of the OL for the V. C. Summer plant) and to conduct scoping. The NRC invited the applicant, Federal, State, and local government agencies; Tribes; local organizations; and individuals to participate in the scoping process by providing oral comments at the scheduled public meetings and/or submitting written suggestions and comments to the NRC no later than January 6, 2003. Two public scoping meetings were held on December 11, 2002, at the Fellowship Hall at the Whitehall A.M.E. Church in Jenkinsville, South Carolina, to afford the public yet another opportunity to provide comments.

The draft Supplemental Environmental Impact Statement (SEIS) regarding license renewal at V. C. Summer was published in July of 2003. The NRC staff conducted two public meetings on August 26, 2003, to present an overview of the draft V. C. Summer site-specific supplement to the GEIS, and to accept public comments on the document. The public comment period ended on October 3, 2003. The Final SEIS will be issued in February 2004.

Information regarding license renewal and documents associated with license renewal at V. C. Summer can be viewed at the NRC's website www.nrc.gov.

IDENTIFICATION OF HISTORIC PROPERTIES

Historic and archaeological site file searches were conducted at the South Carolina Department of Archives and History and the Institute of Archaeology and Anthropology to identify cultural resources that might be present at V. C. Summer. In addition, record searches were conducted for nearby locations to gain perspective on the types of historic resources that may be present in the previously undeveloped and unsurveyed portions of V. C. Summer.

The Final Environmental Statement (FES) (AEC 1973) for the construction of V. C. Summer listed three historic sites in the vicinity of the station. At that time, it was determined that none of the sites were "endangered" by the construction and operation of the proposed V. C. Summer plant. Four archaeological sites were discovered within or near the site boundary and Dr. Robert L. Stephenson, State Archaeologist, recommended that the area be surveyed and that two of the known sites be excavated (AEC 1973).

In 1972, SCE&G supported an archaeological survey that was conducted by a team from the University of South Carolina Institute of Archaeology and Anthropology (Teague 1979). The archaeological survey was conducted to assess the nature and distribution of the sites present and to assess the effect of the Parr Hydroelectric Project on historic and archaeological resources. The Parr Hydroelectric Project included: raising the level of the Parr Reservoir by elevating the Parr Reservoir Dam; construction of a series of dams on Frees Creek to create the upper reservoir for a new pumped-storage facility and supply cooling water for V. C. Summer; and construction of the Fairfield Pumped Storage Facility and V. C. Summer.

The Institute of Archaeology and Anthropology team identified 27 additional sites and excavated two others. Four of the five sites were inundated by water when Monticello Reservoir was filled in 1978 and are now inaccessible. The remaining sites lie along the banks of Monticello and Parr Reservoirs. Periods represented included the Early Archaic, Middle Archaic, Woodland, Mississippian, and Early Historic (SCE&G 2002).

Since the publication of the 1973 FES, 41 sites have been added to the National Register of Historic Places for Fairfield County. Ten of these sites fall within a 6-mile radius of V. C. Summer. Twenty-eight sites have been added to the National Register for Newberry County. Four of these sites fall within a 6-mile radius of V. C. Summer. No sites listed on the National Register of Historic Places fall within a 1-mile radius of V. C. Summer.

Two other historic sites exist within a 6-mile radius of V. C. Summer that are not listed on the National Register of Historic Places but are protected by SCE&G. One is the Mayo family cemetery, which is in a wooded area approximately 2.5 miles south of V. C. Summer on land that is owned by SCE&G, but is not within the exclusion area boundary of the V.C. Summer site. This small family plot contains headstones dating back to 1895. The other historic site, approximately 1.5 miles southwest of V. C. Summer, is a large monument erected in 1943 by the Daughters of the American Revolution marking the grave of General John Pearson, a Fairfield County native who served with distinction in the Revolutionary War. This monument is in a wooded area on land that is not within the exclusion area of the V. C. Summer site, but is

Appendix E

maintained as a buffer zone around the site. SCE&G's Forestry Operations group is familiar with these two other historic sites, which are marked on its timber inventory and land cover maps, and takes appropriate measures to protect them when conducting forest management activities in the vicinity of either historic site (SCE&G 2002).

Properties within the APE

The following table provides a summary of sites within the APE. No sites listed on the National Register fall within a 1-mile radius of V. C. Summer.

Site Number	Description	National Register Status	Location
38-FA-33	Savannah River and Morrow Mountain projectile points, several pottery shards - all materials were collected	Not Evaluated	Monticello Lake east shoreline - outside 1 mile radius of V. C. Summer
38-FA-37	1 Guilford midsection and 3 Qtzite flakes were collected when recorded in 1972. West Fork Mound. Described in 1972 as 125ft in diameter at the base and about 12 to 15 feet high and having a flat top. In 1979 site described as 50 pieces of quartzite chipping debris dispersed over 500 square meters. 3 flakes and 1 probable Guilford projectile point midsection were collected.	Not Evaluated	Monticello Lake west shoreline - outside 1 mile radius of V. C. Summer. Site is located approximately 20 - 30 meters from lake shoreline.
38-FA-41	McMeekin Rock Shelter - excavated. This site is currently under water.	Nominated for the National Register of Historic Places in 1974 Site #74001854	Underwater - Lake Monticello
38-FA-42	Located along a road cut through a plowed field. 25 quartzite flakes, 1 biface, 1 Guilford projectile point base were found. The biface and projectile point were collected.	Not Evaluated	North of Monticello - outside 1 mile radius of V. C. Summer
38-FA-43	1 Savannah River projectile point base, 1 biface fragment, and 25 quartzite flakes were collected. This site is currently under water.	Not Evaluated	Underwater - Lake Monticello

38-FA-46	25 flakes and broken stone tools. 3 flakes and 2 Savannah River projectile points were collected. This site is currently under water.	Not Evaluated	Underwater - Lake Monticello
38-FA-47	12 quartzite flakes (5 were collected). The site has been disturbed by a road cut and no intact archaeological deposits remain.	Not Evaluated	Within 1 mile of V. C. Summer
38-FA-51	5 quartzite flakes were collected. This site is currently under water.	Not Evaluated	Underwater - Lake Monticello
38-FA-53	50 quartzite flakes and 2 projectile points were seen. The projectile points were collected. This site is currently under water.	Not Evaluated	Underwater - Lake Monticello
38-FA-56 SHPO Site #39-0009	Davis Plantation - two story house built about 1840-50	Nominated for the National Register of Historic Places in 1971 Site #74000776	South of Monticello on SC 215 - outside 1 mile radius of V. C. Summer
38-FA-125	Guilford projectile points of quartz, 1 Kirk point, 1 Savannah River point, 1 finely shaped flint blade. This site is currently under water.	Not Evaluated	Underwater - Lake Monticello
38-FA-298	2 steatite bowl fragments. Artifacts were collected. Site form suggests if associated with an archaeological site it would be under water.	Not Evaluated	Boat Ramp - north end of Lake Monticello - outside 1 mile radius of V. C. Summer

Only one archaeological site (38-FA-47) is located within a 1-mile radius of V. C. Summer. This site has not been evaluated for inclusion on the National Register of Historic Places. At the time of recording, the site consisted of 12 quartzite flakes (5 were collected). Upon reviewing the National Register Criteria for Evaluation, site 38-FA-47 is not likely to be eligible for the National Register.

Several of the archaeological sites were flooded by the impoundment of Monticello Lake. The majority of these sites have not been evaluated for inclusion on the National Register of Historic Places. These sites are not likely to be eligible for inclusion when applying the criteria for evaluation.

The McMeekin Rock Shelter (38-FA-41) was evaluated and nominated to the National Register in 1974. The site was recorded, excavated and evaluated. Results are documented in the 1972

Appendix E

archaeological survey that was conducted by a team from the University of South Carolina Institute of Archaeology and Anthropology (Teague 1979). The McMeekin Rock Shelter is currently underwater and is located outside of the 1-mile radius of V. C. Summer.

The Davis Plantation (38-FA-56) was evaluated and nominated to the National Register in 1971. The site is a two-story house built in approximately 1845, and is located south of the town of Monticello on SC 215. The Davis Plantation is located outside the 1-mile radius of V. C. Summer. The Davis Plantation is not located on the shoreline of Monticello Lake.

SCE&G has established a land use and shoreline management plan (SCE&G 2002). The purpose of this plan is to help maintain and conserve the area's natural and man-made resources as well as assist in providing a balance between recreational use, development, environmental preservation, and control. This management plan addresses environmental policies including the exclusion area and public access for fishing, boating, hunting, and other shoreline activities. Erosion control measures are identified, as are restrictions on the removal of underbrush.

In response to the SHPO's comments in a letter dated July 9, 2003 to the NRC, NRC staff visited archaeological sites 38FA33, 38FA37, and 38FA298 on Wednesday, August 27, 2003. Attachment 5 contains photographs of sites and Lake Monticello shoreline.

Field notes taken on August 27, 2003

Site Number	Land Owner	Public Access	Description of Site	Erosion
38FA37	SCE&G	Within security controlled area - public not permitted	Rise in ground observable (mound). High point about 20-30 meters from shoreline. Ground cover dominated by grasses, native shrubs and planted lezpedeza. Loblolly pines planted about 20 years ago.	No signs of erosion on the site itself. Erosion at shoreline about 20 - 30 meters from site.

38FA33	Privately owned	Public not permitted	Assumed site is next to shoreline based on topography of area and location identified on the site description map. Could not determine exact location of site. Ground cover dominated by grasses and sedges. An old (currently unused) SCE&G dosimetry sampling location was about 100 - 200 meters south of location. No visible cultural resources.	Erosion not evident, however 200 meters south parts of shoreline were eroded. Parts of shoreline closer to the site appeared to have soil deposit buildup occurring.
38FA298	Public access - boat launch	Public access - boat launch	Riprap, no vegetation, no visible cultural resources	No erosion.

Water-use at Lake Monticello

This section was added in response to the SHPO's comments in a letter dated July 9, 2003, regarding seasonal and daily lake level fluctuations that are directly and indirectly related to the generation of power at V.C. Summer. The following information is from the draft Supplemental Environmental Impact Statement (SEIS) regarding License Renewal at V. C. Summer published in July of 2003.

Water use conflicts have been determined to be a site-specific issue (Category 2 issue) because consultations with regulatory agencies indicate that water use conflicts may be a problem at some plants because consumptive water loss associated with closed-cycle cooling systems may represent a substantial proportion of the flows in small rivers.

V.C. Summer operates as a once-through cooling plant that withdraws from and discharges to a cooling pond, Monticello Reservoir. Monticello Reservoir receives its make-up water from the Broad River, which has an annual mean flow of approximately $6 \times 10^9 \text{ m}^3/\text{yr}$ ($2.1 \times 10^{11} \text{ ft}^3/\text{yr}$) ($185 \text{ m}^3/\text{s}$ [6,535 cfs]). Monticello Reservoir was built to supply cooling water to the station and to provide an upper reservoir for the Fairfield Pumped Storage Facility (FPSF), located on Parr Reservoir. Parr Reservoir was created (1913-1914) by impounding the Broad River approximately 42 km (26 mi) upstream of the confluence of the Broad and Saluda Rivers.

The Federal Power Commission (Federal Energy Regulatory Commission's predecessor agency) licensed the Parr Hydroelectric Project in 1974, contingent upon a minimum

instantaneous release at the Parr Powerhouse of 4.2 m³/s (150 cfs) during most months of the year and a minimum instantaneous release of 28 m³/s (1000 cfs) during the March-April-May striped bass (*Morone saxatilis*) spawning period. For the periods 1896 to 1907 and 1980 to 2000, the lowest daily mean flow of the Broad River at the Alston, South Carolina, gauging station was 6.6 m³/s (235 cfs). The lowest recorded daily mean flow of 4.2 m³/s (149 cfs) was measured at the Richtex Station, approximately 11.3 km (7.0 mi) downstream of Parr Reservoir.

The 1981 *Final Environmental Statement* indicated that approximately 0.37 m³/s (13 cfs) of the 33 m³/s (1180 cfs) of water withdrawn from Monticello Reservoir for condenser cooling would be lost to evaporation. This water loss was to be made up by pumping back from Parr Reservoir. The projected evaporative loss of 0.37 m³/s (13 cfs) from condenser cooling represented approximately 9 percent of the minimum allowable instantaneous flow of 4.2 m³/s (150 cfs), 5.5 percent of the lowest daily mean flow (6.6 m³/s [235 cfs]), and approximately 0.2 percent of the annual mean flow (185 m³/s [6535 cfs]) of the Broad River at Alston, South Carolina. The daily cycle of operation at the FSPF transfers up to 11,736 ha-ft (29,000 ac-ft) of water (equivalent to 416 m³/s [14,700 cfs]) from Parr Reservoir to Monticello Reservoir and back on a daily basis.

Based on a higher (theoretical maximum) cooling water withdrawal rate of 37 m³/s (1308 cfs), V.C. Summer Quarterly Water Use Reports indicate that 0.62 m³/s (22 cfs) is lost to evaporation. This loss represents 14.7 percent of the minimum allowable instantaneous flow of 4.2 m³/s (150 cfs), 9.4 percent of the lowest daily mean flow (6.6 m³/s [235 cfs]), and approximately 0.3 percent of the annual mean flow (185 m³/s [6535 cfs]) of the Broad River at Alston, South Carolina. Under normal circumstances, evaporative losses from Monticello Reservoir represents less than one percent reduction in Broad River flows. Any impacts to cultural resources or riparian ecological communities in the Monticello Reservoir and Parr Reservoir would be small.

Severe drought conditions were experienced throughout the summer of 2002. However, no situations were encountered where make-up water for the evaporative losses due to V.C. Summer operations affected the flow conditions in the Broad River so as to impinge upon any of the Federal Energy Regulatory Commission- (FERC-) mandated flow restrictions. A discussion with the FERC oversight staff member of the Parr Hydropower facility confirmed that the operation of V.C. Summer causes no discernable impacts to maintaining minimum flow conditions in the Broad River. There is no concern on the part of the FERC concerning this issue. The water level changes in Monticello Reservoir are primarily driven by the hydropower requirements on the hydroelectric plant (Parr Hydro) and their FERC license for requiring minimum flows in the Broad River and Parr Reservoir. The hydroelectric plant is not part of the V.C. Summer license renewal action.

FINDINGS

In October 1972, upon reviewing the cultural resources literature associated with the construction of V. C. Summer, the South Carolina SHPO (Attachment 3) determined that no adverse effects to historic properties would result from SCE&G Construction Project #1894.

Major refurbishment of V. C. Summer is not anticipated for continued operation during the license renewal period; therefore, there is no expectation that land in the undeveloped portions of the site will be disturbed for operations during the renewal period. Operation of V. C. Summer, as planned under the application for license renewal, would protect undiscovered historic or archaeological resources on the site because the undeveloped natural landscape and vegetation would remain undisturbed, and access to the site would remain restricted.

In January 2001, SCE&G wrote the South Carolina SHPO (Attachment 1), requesting their comments on the V. C. Summer license renewal process. In its letter, SCE&G suggested that the continued operation of V. C. Summer will have no effect on historic properties (SCE&G 2001). In a response dated January 29, 2001, the South Carolina SHPO (Attachment 2) stated that license renewal for the continuing operation of plants such as this one typically has no effect on historic properties (SHPO 2001).

Operating procedures of SCE&G consider actions upon the inadvertent discovery of historic and archaeological remains at V. C. Summer. Based on the cultural resources analysis, the representation by SCE&G that it does not plan to undertake major refurbishment activities related to the renewal of V. C. Summer, and the expectation that operations will continue within the bounds of previously analyzed conditions, as evaluated in the FES (AEC 1973) and subsequent environmental assessments, the NRC staff concludes that there will be no effect on historic properties within the APE and no additional mitigation is warranted.

ENCLOSURES

1. Letter - January 19, 2001 SCE&G wrote the South Carolina SHPO regarding license renewal at V. C. Summer. Includes Maps of V.C. Summer and surrounding environment. |
2. Letter - January 29, 2001 South Carolina SHPO responded to SCE&G letter - agreed that license renewal for the continuing operation of plants such as this one typically has no effect on historic properties. |
3. Letter - November 27, 2002 the NRC wrote letters to the four Tribes - example of the letter that was sent to the Catawba Indian Nation. |
4. Letter - October 20, 1972 SHPO wrote letter to Federal Power Commission regarding the SCE&G construction Project 1894 - determined that no adverse effects to historic properties would result from this project. |
5. CD containing photographs of 38FA33, 38FA37, and 38FA298 and Monticello shoreline. |

REFERENCES

South Carolina Electric and Gas (SCE&G), 2002. *Virgil C. Summer Nuclear Station Application for Renewed Operating License , Appendix E - Environmental Report*. Docket No. 50-395, Columbia, South Carolina. |

South Carolina Electric and Gas Company, 2002. FERC Project 1894 Land Use and Shoreline Management Plan Monticello and Parr Reservoirs - Effective April 1, 2002. Columbia, South Carolina.

Teague, G.A., 1979. *An Assessment of Archeological Resources in the Parr Project Area, South Carolina*. Institute of Archeology and Anthropology. University of South Carolina. Columbia, South Carolina.

U.S. Atomic Energy Commission (AEC), 1973. *Final Environmental Statement Related to the Virgil C. Summer Nuclear Station Unit 1; South Carolina Electric & Gas Company*. Docket No. 50-395, Washington, D.C.

U.S. Nuclear Regulatory Commission (NRC), 1999. *Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Main Report*. NUREG-1437, Volume 1, Addendum 1, Washington, D.C.

U.S. Nuclear Regulatory Commission (NRC), 2003. *Draft Generic Environmental Impact Statement for License Renewal of Nuclear Plants*. NUREG-1437, Supplement 15, Washington, D.C. |
|
|

ML033160547

Stephen A. Byrne
Senior Vice President, Nuclear Operations
803.345.4622



November 12, 2003

Chief, Rules & Directives Branch
U. S. Nuclear Regulatory Commission
Mail Stop T6-D59
Washington, DC 20555-0001

Ladies and Gentlemen:

Subject: VIRGIL C. SUMMER NUCLEAR STATION
DOCKET NO. 50/395
OPERATING LICENSE NO. NPF-12
NUREG-1437, SUPPLEMENT 15, DRAFT

On September 29, 2003, SCE&G submitted comments on the draft Supplement 15 to the Generic Environmental Impact Statement for License Renewal of Nuclear Plants regarding V. C. Summer Nuclear Station. Several of the comments referred to the Liquid Waste Processing System. These comments (as listed in the September 29, 2003 letter from Stephen A. Byrne) represent the current design and/or operation of this system, irrespective of the current description in the FSAR.

If you have any questions regarding the comments submitted on September 29, 2003, or this letter, please contact Steve Summer at (803) 345-4252.

Very truly yours,

Stephen A. Byrne

SS/SAB/mbb

c: N. O. Lorick
N. S. Carns
T. G. Eppink
R. J. White
R. B. Clary
L. A. Reyes
K. R. Cotton
NRC Resident Inspector
W. R. Dam

R. C. Auluck
T. P. O'Kelley
P. Ledbetter
K. M. Sutton
NSRC
RTS
File (821.00)
DMS (RC-03-0233)

SCE&G | Virgil C. Summer Nuclear Station • P. O. Box 88 • Jenkinsville, South Carolina 29065 • T (803) 345.5209 • www.scana.com



November 19, 2003

Mr. Pao-Tsin Kuo
Office of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Washington, D.C. 20555-0001

RE: V. C. Summer Nuclear Station License Renewal Review and National Historic Preservation Act,
Section 106 Review Process (Revised Report)

Dear Mr. Kuo:

Thank you for providing us with additional information related to the proposed undertaking in Fairfield County, South Carolina. We have reviewed the report and have a few comments that need to be addressed in a final report.


The description of archaeological site 38FA37 (Page 6) states that erosion was observed along the shoreline about 20-30 meters from the site. A review of our Cultural Resource Information System (CRIS) using aerial photography clearly indicates that this site is located along the reservoir shoreline and that erosion is taking place. The description of the site that appears on the original site form, however, states that there are no intact archaeological deposits at the site. The site is located along an eroded landform and has minimal integrity. Our office therefore considers archaeological 38FA37 **not eligible** for listing in the National Register of Historic Places. In the future, we recommend that you include a copy of the original site form with the report. The final report should indicate that this site is not eligible for the National Register.

The images provided on CD supported the observation that no erosion was taking place at archaeological sites 38FA33 and 38FA298. Our office considers these sites **potentially eligible** for the National Register of Historic Places. We appreciate the effort that went into providing us with the photographs of these two sites.

Finally, we do not concur with your agency's recommendation that "there will be no effect on historic properties within the APE." Based on the amended Section 106 regulations, we feel that the proposed undertaking will have "no adverse effect" on historic properties.

These comments have been provided to assist you with your responsibilities under Section 106 of the National Historic Preservation Act, as amended, and the regulations codified at 36 CFR Part 800. Please contact me at 803-896-6181 if you have any questions or comments regarding this matter.

Sincerely,


Chad C. Long
Staff Archaeologist
State Historic Preservation Office

cc: Keith Derting, SCIAA

Appendix F

GEIS Environmental Issues Not Applicable to V.C. Summer

Appendix F

GEIS Environmental Issues Not Applicable to V.C. Summer

Table F-1 lists those environmental issues listed in the *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* (GEIS) (NRC 1996; 1999)^(a) and 10 Code of Federal Regulations (CFR) Part 51, Subpart A, Appendix B, Table B-1, that are not applicable to the Virgil C. Summer Nuclear Station (V.C. Summer) because of plant or site characteristics.

Table F-1. GEIS Environmental Issues Not Applicable to V.C. Summer

ISSUE—10 CFR Part 51, Subpart A, Appendix B, Table B-1	Category	GEIS Sections	Comment
SURFACE WATER QUALITY, HYDROLOGY, AND USE (FOR ALL PLANTS)			
Altered salinity gradients	1	4.2.1.2.2 4.4.2.2	V.C. Summer cooling system does not discharge to an estuary.
AQUATIC ECOLOGY (FOR PLANTS WITH COOLING TOWER BASED HEAT-DISSIPATION SYSTEMS)			
Entrainment of fish and shellfish in early life stages	1	4.3.3	This issue is related to heat-dissipation systems that are not installed at V.C. Summer.
Impingement of fish and shellfish	1	4.3.3	This issue is related to heat-dissipation systems that are not installed at V.C. Summer.
Heat shock	1	4.3.3	This issue is related to heat-dissipation systems that are not installed at V.C. Summer.
GROUNDWATER USE AND QUALITY			
Groundwater-use conflicts (Ranney wells)	2	4.8.1.4	V.C. Summer does not have or use Ranney wells.
Groundwater quality degradation (Ranney wells)	1	4.8.2.2	V.C. Summer does not have or use Ranney wells.

(a) The GEIS was originally issued in 1996. Addendum 1 to the GEIS was issued in 1999. Hereafter, all references to the "GEIS" include the GEIS and its Addendum 1.

Table F-1. (contd)

ISSUE—10 CFR Part 51, Subpart A, Appendix B, Table B-1	Category	GEIS Sections	Comment
GROUNDWATER USE AND QUALITY			
Groundwater quality degradation (saltwater intrusion)	1	4.8.2.1	V.C. Summer is not in a coastal area.
Groundwater quality degradation (cooling ponds in salt marshes)	1	4.8.3	This issue is related to salt marshes, which are not present at V.C. Summer.
Groundwater-use conflicts (potable and service water, and dewatering; plants that use >[100 gpm])	2	4.8.1.1 4.8.1.2	V.C. Summer uses less than (100 gpm) groundwater.
Groundwater-use conflicts (plants using cooling towers withdrawing makeup water from a small river)	2	4.8.1.3 4.4.2.1	This issue is related to heat- dissipation systems that are not installed at V.C. Summer.
TERRESTRIAL RESOURCES			
Cooling tower impacts on crops and ornamental vegetation	1	4.3.4	This issue is related to a heat-dissipation system that is not installed at V.C. Summer.
Cooling tower impacts on native plants	1	4.3.5.1	This issue is related to a heat-dissipation system that is not installed at V.C. Summer.
Bird collisions with cooling towers	1	4.3.5.2	This issue is related to a heat-dissipation system that is not installed at V.C. Summer.
HUMAN HEALTH			
Microbiological organisms (occupational health)	1	4.3.6	V.C. Summer does not have or use a cooling tower for condenser cooling.

F.1 References

10 CFR Part 51. Code of Federal Regulations, Title 10, *Energy*, Part 51, “Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions.”

U.S. Nuclear Regulatory Commission (NRC). 1996. *Generic Environmental Impact Statement for License Renewal of Nuclear Plants*. NUREG-1437, Volumes 1 and 2. Washington, D.C.

U.S. Nuclear Regulatory Commission (NRC). 1999. *Generic Environmental Impact Statement for License Renewal of Nuclear Plants Main Report*, “Section 6.3 – Transportation, Table 9.1, Summary of findings on NEPA issues for license renewal of nuclear power plants, Final Report.” NUREG-1437, Volume 1, Addendum 1. Washington, D.C.

Appendix G

NRC Staff Evaluation of Severe Accident Mitigation Alternatives for V.C. Summer in Support of License Renewal Application

Appendix G

NRC Staff Evaluation of Severe Accident Mitigation Alternatives for V.C. Summer in Support of License Renewal Application

G.1.0 Introduction

South Carolina Electric & Gas Company (SCE&G) submitted an assessment of severe accident mitigation alternatives (SAMAs) for Virgil C. Summer Nuclear Station (V.C. Summer) as part of the Environmental Report (ER) (SCE&G 2002). This assessment was based on the most recent V.C. Summer Probabilistic Risk Analysis (PRA) available at that time, a plant-specific offsite consequence analysis performed using the MELCOR Accident Consequence Code System 2 (MACCS2), and insights from the V.C. Summer Individual Plant Examination (IPE) (SCE&G 1993) and Individual Plant Examination of External Events (IPEEE) (SCE&G 1995). In identifying and evaluating potential SAMAs, SCE&G considered SAMA analyses performed for other operating plants which have submitted license renewal applications, as well as industry and U.S. Nuclear Regulatory Commission (NRC) documents that discuss potential plant improvements, such as NUREG-1560 (NRC 1997a). SCE&G identified 268 potential SAMA candidates. This list was reduced to 12 unique SAMA candidates by eliminating SAMAs that were not applicable to V.C. Summer due to design differences, had already been implemented, are related to changes that would be made during the design phase of a plant rather than to an existing plant, or had high implementation costs. SCE&G assessed the costs and benefits associated with each of the potential SAMAs and concluded that none of the candidate SAMAs evaluated would be cost-beneficial for V.C. Summer.

Based on a review of the SAMA assessment, the NRC issued requests for additional information (RAI) to SCE&G by letter dated January 17, 2003 (NRC 2003a), and by facsimile dated April 28, 2003 (NRC 2003b). Key RAIs concerned: dominant risk contributors at V.C. Summer and the SAMAs that address these contributors, the impact on dose consequences if all release categories are considered rather than just large early release categories, the potential impact of uncertainties and external event initiators on the assessment results, and detailed information on several specific candidate SAMAs. SCE&G submitted additional information by letters dated March 19, 2003, and May 21, 2003 (SCE&G 2003a and 2003b). In these responses, SCE&G provided tables containing importance measures for various events and their relationship to evaluated SAMAs, results of a revised screening based on consideration of uncertainties, an assessment of risk reduction benefits for external events, and the costs and benefits associated with several lower cost alternatives. SCE&G's responses addressed the staff's concerns and reaffirmed that none of the SAMAs evaluated would be cost beneficial.

Appendix G

An assessment of SAMAs for V.C. Summer is presented below.

G.2.0 Estimate of Risk for V.C. Summer

SCE&G's estimates of offsite risk at V.C. Summer are summarized in Section G.2.1. The summary is followed by the staff's review of the SCE&G risk estimates in Section G.2.2.

G.2.1 SCE&G's Risk Estimates

Two distinct analyses are combined to form the basis for the risk estimates used in the SAMA analysis: (1) the V.C. Summer Level 1 and 2 PRA model, which is an updated version of the IPE (SCE&G 1993), and (2) a supplemental analysis of offsite consequences and economic impacts (essentially a Level 3 PRA model) developed specifically for the SAMA analysis. The SAMA analysis is based on the most recent Level 1 and 2 PRA model available at the time of the ER, referred to as model UP3a. The scope of the V.C. Summer PRA does not include external events.

The baseline core damage frequency (CDF) for the purpose of the SAMA evaluation is approximately 5.6×10^{-5} per year, and the baseline large early release frequency (LERF) is approximately 7.0×10^{-7} per year. The CDF and LERF are based on the risk assessment for internally initiated events. The CDF represents a sizeable change from the original IPE CDF value of 2.0×10^{-4} per year. SCE&G did not include the contribution of risk from external events within the V.C. Summer risk estimates, nor did it account for the potential risk reduction benefits associated with external events in the SAMA screening process described in the ER. SCE&G concluded the existing fire and IPEEE programs have already addressed potential plant improvements related to these areas (SCE&G 2002). In response to RAIs, SCE&G performed separate assessments of the impact on the results if the 95th percentile value of the internal events CDF was used in the SAMA evaluation, or if the additional risk reduction benefits in external events were included in the analysis. This is discussed further in Sections G.4.0 and G.6.2.

The breakdown of CDF by initiating event/accident type is provided in Table G-1. As shown in this table, loss of offsite power and transients (such as loss of feedwater, reactor and turbine trips, and main steam line breaks) are dominant contributors to the CDF. Bypass events (i.e., interfacing systems loss-of-coolant accident [ISLOCA] and steam generator tube rupture [SGTR]) contribute less than one percent to the total internal events CDF.

The Level 2 PRA model has been updated since the IPE. SCE&G implemented a simplified LERF methodology as described in NUREG/CR-6595 (NRC 1999). The source terms are the same as those used in the IPE (SCE&G 1993). The conditional probabilities, fission product

Table G-1. V.C. Summer Core Damage Frequency

Initiating Event/Accident Class	CDF (Per Year)	Percent Contribution to CDF
Loss of Offsite Power	3.9×10^{-5}	70
Transients	7.5×10^{-6}	13
Special Initiators	4.4×10^{-6}	8
Loss-of-Coolant Accident	1.7×10^{-6}	3
SGTR	1.7×10^{-7}	<1
ISLOCA	1.8×10^{-7}	<1
Others	2.6×10^{-6}	5
Total CDF (from internal events)	5.6×10^{-5}	100

release fractions, and release characteristics associated with each release category were provided in response to an RAI (SCE&G 2003a).

The offsite consequences and economic impact analyses use the MACCS2 code to determine the offsite risk impacts on the surrounding environment and public. Inputs for this analysis include plant-specific and site-specific input values for core radionuclide inventory, source term and release characteristics, site meteorological data, projected population distribution (within a 80 km [50-mi] radius) for the year 2042, emergency response evacuation modeling, and economic data.

In the ER, SCE&G estimated the dose to the population within 80 km (50 mi) of the V.C. Summer site to be approximately 0.0095 person-Sv (0.95 person-rem) per year based on consideration of only those release categories that would contribute to LERF (SGTR, ISLOCA, and containment isolation failure). Late containment failures would not contribute to LERF but could still have offsite consequences. In response to a staff request, SCE&G estimated the offsite doses from late containment failures, and included this contribution in their estimate of total offsite dose. The total offsite dose is estimated to be approximately 0.01 person-Sv (1.0 person-rem) per year, with 0.0095 person-Sv (0.95 person-rem) per year from LERF-related release categories and 0.0005 person-Sv (0.05 person-rem) per year from the late release category. This total offsite dose estimate was used in the subsequent SAMA evaluation. The breakdown of the total population dose by containment release mode is summarized in Table G-2.

Appendix G

Table G-2. Breakdown of Population Dose by Containment Release Mode

Containment Release Mode	Population Dose (Person-Rem^(a) Per Year)	Percent Contribution
SGTR	0.27	27
ISLOCAs	0.63	63
Containment isolation failure	0.05	5
Early containment failure	0	0
Late containment failure	0.05	5
Total	1.0	100

(a) One person-Rem = 0.01 person-Sv

G.2.2 Review of SCE&G's Risk Estimates

SCE&G's determination of offsite risk at V.C. Summer is based on the following three major elements of analysis:

- the Levels 1 and 2 risk models that form the bases for the 1993 IPE and 1995 IPEEE submittals (SCE&G 1993 and SCE&G 1995),
- the major modifications to the IPE model that have been incorporated in the V.C. Summer PRA, and
- the MACCS2 analysis performed to translate fission product release frequencies from the Level 2 PRA model into offsite consequence measures.

Each of these analyses was reviewed to determine the acceptability of SCE&G's risk estimates for the SAMA analysis, as summarized below.

The staff's review of the V.C. Summer IPE is described in an NRC report dated May 8, 1997 (NRC 1997b). In that review, the staff evaluated the methodology, models, data, and assumptions used to estimate the CDF and characterize containment performance and fission product releases. The staff concluded that SCE&G's analyses met the intent of Generic Letter 88-20 (NRC 1988); that is, the IPE was of adequate quality to be used to look for design or operational vulnerabilities. The staff's review primarily focused on the licensee's ability to examine V.C. Summer for severe accident vulnerabilities and not specifically on the detailed findings or quantification estimates. Overall, the staff believed that the V.C. Summer IPE was of adequate quality to be used as a tool in searching for areas with high potential for risk reduction and to assess such risk reductions, especially when the risk models are used in conjunction with insights, such as those from risk importance, sensitivity, and uncertainty analyses. However, the staff did note that the elimination of early containment failure modes

from containment failure quantification limits the use of the Level 2 analysis for systematic evaluations of the relative importance of these failure modes and the investigation of potential benefit of recovery actions on overall containment performance. The impact of this deficiency on the SAMA analysis is discussed below.

A comparison of internal events risk profiles between the IPE and the PRA used in the SAMA analysis indicates a decrease of approximately 1.4×10^{-4} per year in the total CDF (from 2.0×10^{-4} per year to 5.6×10^{-5} per year). The reduction is attributed to plant and modeling improvements that have been implemented at V.C. Summer since the IPE was submitted. A summary listing of those changes that resulted in the greatest impact on the total core damage frequency was provided in the ER and in response to an RAI (SCE&G 2003a), and include:

- Changed the cooling medium for the component cooling water (CCW) pumps and charging pumps from heating, ventilation, and air conditioning chilled water to CCW to eliminate chilled water dependencies,
- Developed an abnormal operating procedure for use following a loss of both trains of chilled water,
- Developed a procedure for local operation of the power-operated relief valve (PORV) dominating failure to re-establish instrument air,
- Eliminated six check valves in the emergency feedwater (EFW) system as well as incorporated associated modeling changes,
- Updated initiating event frequencies using data in NUREG/CR-5750, "Rates of Initiating Events at U.S. Nuclear Power Plants: 1987 - 1995," and updated loss of offsite power frequency with information from EPRI TR-106306, "Loss of Off-Site Power at U.S. Nuclear Power Plants—Through 1995", and
- Updated common cause failure probability modeling and the human reliability analysis.

The CDF changes from the IPE version to the current PRA are significant. For example, an initial data and modeling update, plant modifications to change the cooling medium for the CCW pumps and charging pumps from heating, ventilation, and air conditioning chilled water to CCW, and plant modifications to eliminate check valves in the EFW system, collectively resulted in about a factor of two reduction in the CDF. A second data update involving the use of initiating event frequencies from NUREG/CR-5750 and EPRI TR-106306 resulted in an additional factor of two reduction. Given the magnitude of the plant and model changes, the overall reduction in CDF appears to be reasonable.

Appendix G

The IPE CDF value for V.C. Summer is within the range of the CDF values reported in the IPEs for other pressurized water reactors with large dry containments. Figure 11.6 of NUREG-1560 shows that the IPE-based total internal events CDF for three-loop Westinghouse plants ranges from 7×10^{-5} to 4×10^{-4} per year (NRC 1997a). It is recognized that other plants, in addition to V.C. Summer, have reduced the values for CDF subsequent to the IPE submittals, due to modeling and hardware changes. The current CDF results for V.C. Summer remain comparable to other plants of similar vintage and characteristics.

In the ER, SCE&G states that there would be no early containment failures at V.C. Summer, as reflected in Table 5-4. In a response to an RAI, SCE&G further supports that position by stating that the most important feature of the V.C. Summer containment with respect to fission product retention is the ability to remain intact for several tens of hours following core damage. The position that the early containment failure probability is zero is supported by a site-specific evaluation performed by Westinghouse in January 2003 which, according to SCE&G, shows that it is appropriate to assign a zero containment failure probability for direct containment heating and hydrogen burns, steam explosions and induced steam generator tube rupture. The staff did not review the Westinghouse study, which is referenced by SCE&G in its response to RAIs (SCE&G, 2003b). The staff does note, however, that SCE&G did perform a sensitivity analysis that assumed that the containment would fail early with a 10% probability for the high-pressure core melt events. This assumption is consistent with insights from severe accident assessments for large dry containments, which in general, have shown the conditional probability of early containment failure (excluding the contribution from ISLOCA, SGTR, and containment isolation failures) to be very small. The analysis yielded an increase in the maximum averted cost-risk of about \$4,000. This additional averted cost-risk is small and will have a negligible impact on the SAMA conclusions, particularly since modifications to reduce early containment failure (e.g., enhancing reactor depressurization or hydrogen control capabilities) would generally involve hardware or procedure modifications with implementation costs much greater than this estimated benefit. The staff concludes that while the assumption that the early containment failure probability is zero is optimistic, the sensitivity analysis provided by SCE&G nevertheless demonstrates that inclusion of early containment failures within the risk analysis would have a negligible impact on the SAMA conclusions for V.C. Summer.

The staff considered the peer reviews performed for the V.C. Summer PRA, and the potential impact of the review findings on the SAMA evaluation. In response to an RAI (SCE&G 2003a), SCE&G described the previous reviews, the most significant of which were the Westinghouse review in March 2001 and the Westinghouse Owners Group (WOG) Peer Review of August 2002. The Westinghouse review of model UP3a concluded that the technical elements of the PRA were such that the PRA is generally suitable for plant risk-informed applications. Specific recommendations from this review were reflected in a subsequent PRA update, referred to as model UP3h, which formed the basis for the WOG Peer Review. Three observations from the

WOG Peer Review were noted as extremely important and necessary to address in order to ensure the technical adequacy of the PRA. One of these was in the area of initiating events (specifically the ISLOCA) and the other two were in the systems analysis technical element (the diesel generator model and the EFW mission times). The PRA model (UP3h) has not yet been updated to address these weaknesses in the PRA, since the WOG Peer Review Report was not issued until December 2002. However, SCE&G provided the results of sensitivity analyses in which they assessed the impact of anticipated modeling changes in these areas on the SAMA evaluations. SCE&G estimated that changes to address the WOG Peer Review comments could potentially increase the CDF by about 15% relative to PRA model UP3a, with a corresponding but smaller increase in LERF. This increase is accounted for in the consideration of averted risk for the candidate SAMAs, as described in Section G.6.2.

Given that the V.C. Summer PRA had been peer reviewed and the potential impact of the peer review findings on the SAMA evaluation has been assessed, that SCE&G satisfactorily addressed staff questions regarding the PRA, including concerns related to omission of early containment failure modes (SCE&G 2003a and 2003b), and that the CDF falls within the range of contemporary CDFs for Westinghouse three-loop plants, the staff concludes that the Level 1 and Level 2 PRA models are of sufficient quality to support the SAMA evaluation.

SCE&G submitted an IPEEE in June 1995 (SCE&G 1995) in response to Supplement 4 of Generic Letter 88-20. SCE&G did not identify any fundamental weaknesses or vulnerabilities to severe accident risk in regard to the external events related to seismic, fire, or other external events. The V.C. Summer hurricane, tornado and high winds analyses show that the plant is adequately designed or procedures exist to cope with the effects of these natural events. Additionally, the V.C. Summer IPEEE demonstrated that transportation and nearby facility accidents were not considered to be significant vulnerabilities at the plant. However, a number of areas were identified for improvement in both the seismic and fire areas. In a letter dated June 14, 2000 (NRC 2000), the staff concluded that the submittal met the intent of Supplement 4 to Generic Letter 88-20, and that the licensee's IPEEE process is capable of identifying the most likely severe accidents and severe accident vulnerabilities.

The IPEEE uses a focused scope EPRI seismic margins analysis. This method is qualitative and does not provide the means to determine numerical estimates of the CDF contributions from seismic initiators. However, since V.C. Summer has a plant-level "high confidence of low probability of failure" (HCLPF) value significantly greater than its design basis, it can be qualitatively expected from the seismic margins analysis that the seismic CDF is relatively low (NRC 2002). SCE&G estimated the plant's HCLPF to be greater than 0.3g peak ground acceleration, with the exception of service water pond dams that have a 0.22g HCLPF. As noted in the IPEEE Safety Evaluation Report (NRC 2000), there is no cost effective solution for increasing the seismic capacity of the service water pond dams. A number of actions were taken by SCE&G as part of the IPEEE evaluation of seismic risk. These included bolting

Appendix G

together adjacent electrical cabinets at 17 locations throughout the plant to remove interaction concerns, providing lateral support for an isolation valve where the support was missing, and performing an analysis to show an adequate HCLPF value for a neutral grounding resistor that uses ceramic components. No additional outliers or potential areas for improvement were identified in the IPEEE.

The licensee's overall approach in the IPEEE fire analysis is similar to other fire analysis techniques, employing a graduated focus on the most important fire zones using qualitative and quantitative screening criteria. The fire zones or compartments were subjected to at least two screening stages. In the first stage, a zone was screened out if it was found to not contain any safety-related equipment. In the second stage, a CDF criterion of 1×10^{-6} per year was applied. Plant information gathered for Appendix R compliance was extensively used in the fire IPEEE. The licensee used the IPE model of internal events to quantify the CDF resulting from a fire initiating event. The conditional core damage probability was based on the equipment and systems unaffected by the fire. All fire event sequences were quantified assuming all equipment/cables in the area would fail by the fire. The CDF for each zone was obtained by multiplying the frequency of a fire in a given fire zone by the conditional core damage probability associated with that fire zone. The screening methodology applied by the licensee makes less and less conservative assumptions until a fire zone is screened out, the results do not indicate a vulnerability, or a vulnerability is identified and addressed. If applied correctly, this type of analysis will always produce a conservative result.

Using the Fire Induced Vulnerability Evaluation Method, the IPEEE fire CDF was estimated to be about 4×10^{-4} per year. In response to IPEEE RAIs, this was reduced to 8.5×10^{-5} per year (NRC 2002b). After the CDF was lowered to 8.5×10^{-5} per year, only five compartments contributed more than the screening value of 1.0×10^{-6} ; these are:

<u>Zone Description</u>	<u>CDF</u>
Control Room	3.44×10^{-5}
1 DA Switchgear Room	2.44×10^{-5}
Relay Room	1.28×10^{-5}
Turbine Room	7.09×10^{-6}
1 DB Switchgear Room	2.75×10^{-6}

In a response to an RAI, SCE&G discussed the potential for cost-effective hardware changes to address the five fire-related matters listed above (SCE&G, 2003a). This included consideration of the major fire contributors assumed in the analysis, and existing plant features and detection/mitigation capabilities. SCE&G concluded that no hardware modifications aimed at reducing risk were cost-effective for any of the zones. However, SCE&G, did describe several procedural and training enhancements that have been implemented to address fire-related issues.

The staff notes that additional SAMAs to reduce the fire risk contributors might be viable at V. C. Summer. However, given that the original fire CDF has already been reduced by over a factor of seven through a combination of hardware and procedure changes, that the updated fire CDF is conservative (since it is based on the IPE model which is over a factor of 3.6 greater than that of the current PRA), and that the plant meets Appendix R fire requirements, it is unlikely that further modifications would both substantially reduce risk and remain cost beneficial.

The risk associated with other external events at V.C. Summer is small. The CDFs due to high winds, floods and other events were not estimated since they were screened out using the NUREG-1407 approach.

For purposes of the SAMA evaluation, the contribution of external events to total risk would be bounded by the sensitivity assessment on internal events CDF (discussed in Section G.6.2) if: (1) the total contribution from external events is on the same order of magnitude as the contribution from internal events, and (2) there are no external event vulnerabilities that can be eliminated or mitigated by cost-effective SAMAs. As discussed above, the seismic CDF is relatively low given the high HCLPF value at V.C. Summer, and the contribution from fires is comparable to that from internal events. SCE&G has previously made modifications specifically addressing external event vulnerabilities, and further improvements are not expected to be cost effective. Furthermore, for several SAMAs that were close to being cost beneficial, SCE&G considered the additional risk reduction that might be achieved in external events. Accordingly, the staff finds SCE&G's consideration of external events to be acceptable.

The staff reviewed the process used by SCE&G to extend the containment performance (Level 2) portion of the PRA to an assessment of offsite consequences (essentially a Level 3 PRA). This included consideration of the source terms used to characterize fission product releases for the applicable containment release category and the major input assumptions used in the offsite consequence analyses. The MACCS2 code was utilized to estimate offsite consequences. Plant-specific input to the code includes the V.C. Summer reactor core radionuclide inventory, source terms for each release category, emergency evacuation modeling, site-specific meteorological data, and projected population distribution within a 80 km (50 mile) radius for the year 2042. This information is provided in Appendix F of the ER (SCE&G 2002).

In the ER, SCE&G estimated the dose consequences based on consideration of only those release categories that would contribute to LERF (SGTR, ISLOCA, and containment isolation failure). Late containment failures would not contribute to LERF but could still have offsite consequences. In response to a staff request, SCE&G estimated the offsite doses from late containment failures, and included this contribution in their estimate of total offsite dose. This total offsite dose estimate was used in the subsequent SAMA evaluation. Table 1.f-1 of the

Appendix G

response to the RAI provides a break out of the source term by release category (SCE&G 2003a). The source terms used for the SAMA evaluation are taken from the IPE. Accordingly, the staff concludes that the assignment of release categories and source terms is acceptable for use in the SAMA analysis.

The core inventory input used in the MACCS2 was obtained from the MACCS2 User's Guide, and corresponds to the end-of-cycle values for a 3412 MW(t) pressurized water reactor plant. A scaling factor of 0.85 was applied to provide a representative core inventory of 2900 MW(t) for V.C. Summer. Release frequencies for three sequences and release fractions were analyzed to determine the 80-km (50-mi) population dose. In response to an RAI, SCE&G re-evaluated the dose after including a non-LERF sequence to account for any contribution from late releases (SCE&G 2003a). All releases were modeled as occurring at ground level. The staff questioned whether this assumption was conservative for energetic releases and requested an assessment of the impact of alternative assumptions (e.g., releases at a higher elevation). In response to the RAI, SCE&G assessed the sensitivity of the assumption by analyzing a release from the steam generator release valves with a release height as high as 22 m (72 ft). The results showed that the increase in the 80-km (50-mi) population dose would be only about one percent (SCE&G 2003a). Additionally, SCE&G analyzed the sensitivity of the assumption that all releases have a thermal content the same as ambient. This was done by analyzing the releases with a heat content of 0, 3, 30, and 300 MW. The results showed an increase in the population dose as high as four percent. These small increases have a negligible impact on the analysis and its results.

SCE&G used site-specific meteorological data, obtained from the plant meteorological tower, processed from hourly measurements for the 1997 calendar year as input to the MACCS2 code. Data from this year was selected because it was found to result in the largest doses based on the analysis of data from 1996 through 2000. Therefore, the staff considers use of the 1997 data in the base case to be conservative.

The population distribution the applicant used as input to the MACCS2 analysis was estimated for the year 2042, based on the NRC geographic information system, an analysis of U.S. Census Bureau data for 1990 (NRC 1997c), and the population growth rates were based on 1990 and 2000 county-level census data (USCB 2001). The staff considers the methods and assumptions for estimating population reasonable and acceptable for purposes of the SAMA evaluation.

The emergency evacuation model was modeled as a single evacuation zone extending out 16 km (10 mi) from the plant. It was assumed that 95 percent of the population would move at an average speed of approximately 0.43 m/s (0.96 mph) with a delayed start time of 30 minutes (SCE&G 2003a). This assumption is conservative relative to the NUREG-1150 study (NRC 1990), which assumed evacuation of 99.5 percent of the population within the emergency

planning zone. The evacuation assumptions and analysis are deemed reasonable and acceptable for the purposes of the SAMA evaluation.

Much of the site-specific economic data were provided from SECPOP90: Sector Population Land Fraction and Economic Estimation Program (NRC 1997c) by specifying the data for each of the 22 counties surrounding the plant, to a distance of 80 km (50 mi). In addition, generic economic data that are applied to the region as a whole were revised from the MACCS2 sample problem input when better information was available. The agricultural economic data were updated using available data from the 1997 Census of Agriculture (USDA 1998). These included per diem living expenses, relocation costs, value of farm and non-farm wealth, and fraction of farm wealth from improvements (e.g., buildings).

SCE&G did not perform sensitivity analyses for the MACCS2 input parameters, such as evacuation and population assumptions. However, sensitivity analyses performed as part of previous SAMA evaluations for other plants have shown that the total benefit of the candidate SAMAs would increase by less than a factor of 2 (typically about 20 percent) due to variations in these parameters. This change is small and would not alter the outcome of the SAMA analysis. Therefore, the staff concludes that the methodology used by SCE&G to estimate the offsite consequences for V.C. Summer provides an acceptable basis from which to proceed with an assessment of risk reduction potential for candidate SAMAs. Accordingly, the staff based its assessment of offsite risk on the CDF and offsite doses reported by SCE&G.

G.3.0 Potential Plant Improvements

The process for identifying potential plant improvements, an evaluation of that process, and the improvements evaluated in detail by SCE&G are discussed in this section.

G.3.1 Process for Identifying Potential Plant Improvements

SCE&G's process for identifying potential plant improvements (SAMAs) consisted of the following elements:

- review of plant-specific improvements identified in the V.C. Summer IPE and IPEEE and subsequent PRA revisions
- review of SAMA analyses submitted in support of original licensing and license renewal activities for other operating nuclear power plants
- review of other NRC and industry documentation discussing potential plant improvements, e.g., NUREG-1560.

Appendix G

Based on this process, an initial set of 268 candidate SAMAs was identified, as reported in Table F.4-1 in Appendix F to the ER. In Phase 1 of the evaluation, SCE&G performed a qualitative screening of the initial list of SAMAs and eliminated SAMAs from further consideration using the following criteria:

- the SAMA is not applicable at V.C. Summer due to design differences,
- the SAMA has already been implemented at V.C. Summer,
- the SAMA is sufficiently similar to another SAMA such that they may be combined, or
- the systems/items associated with the SAMA have no significant safety benefit.

Based on this screening, 199 SAMAs were eliminated leaving 69 for further evaluation. Of the 199 SAMAs eliminated, 55 were eliminated because they were not applicable to V.C. Summer, 83 were eliminated because they already had been implemented at V.C. Summer, 56 were similar to another SAMA and were combined, and five were determined not to provide a significant safety benefit.

A preliminary cost estimate was prepared for each of the 69 remaining candidates to focus on those that had a possibility of having a net positive benefit. A screening cutoff of \$1.2M (the maximum attainable benefit [MAB], corresponding to eliminating all severe accident risk) was then applied to the remaining candidates (see discussion in Section G.6.1 for a derivation of the MAB). Thirty-seven of the 69 SAMAs were eliminated because their estimated cost exceeded this MAB, leaving 32 candidate SAMAs for further evaluation in Phase 2. Of these remaining SAMAs, 20 were screened from further analysis because, based on plant-specific PRA insights, they did not provide a significant safety benefit, or because the cost of implementation would be greater than the benefits associated with implementing the SAMA. The screening process resulted in identification of 12 candidate SAMAs.

In response to an RAI, SCE&G re-evaluated the Phase 1 SAMAs using the 95th confidence level. The screening cutoff for this analysis was \$2.8M. When applied, seven additional Phase 1 SAMAs were identified for further consideration. Table 4.b-1 of the response to the RAI contains the additional SAMAs and their subsequent disposition. None of the newly identified SAMAs were judged to be cost beneficial (SCE&G 2003a), as discussed in Section G.6.2.

The 12 remaining SAMAs were further evaluated and subsequently eliminated in the Phase 2 evaluation, as described in Sections G.4.0 and G.6.0 of this appendix.

G.3.2 Staff Evaluation

SCE&G's efforts to identify potential SAMAs focused primarily on areas associated with internal initiating events. The initial list of SAMAs generally addressed the accident categories that are dominant CDF contributors or issues that tend to have a large impact on a number of accident sequences at V.C. Summer.

The preliminary review of SCE&G's SAMA identification process raised concerns regarding the completeness of the set of SAMAs identified and the inclusion of plant-specific risk contributors. The staff requested clarification regarding the portion of risk represented by the dominant risk contributors. Because a review of the importance ranking of basic events in the PRA could identify SAMAs that may not be apparent from a review of the top cut sets, the staff also questioned whether an importance analysis was used to confirm the adequacy of the SAMA identification process. In response to the RAI, SCE&G provided a tabular listing of the contributors with the greatest potential for reducing risk as demonstrated by the risk reduction worth (RRW) assigned to the event (SCE&G 2003a). SCE&G used a cutoff of 1.025, and stated that events below this point would influence the CDF by less than 2.5 percent. This equates to an averted cost-risk (benefit) of approximately \$30,000. SCE&G also reviewed the LERF-based RRW events to determine if there were additional equipment failures or operator actions that should be included in the provided table. In addition, SCE&G correlated the top RRW events with the SAMAs evaluated in the ER (SCE&G 2003a). Based on these additional assessments, SCE&G concluded that the set of 268 SAMAs evaluated in the ER addresses the major contributors to CDF and LERF, and that the review of the top risk contributors does not reveal any new SAMAs.

The staff questioned SCE&G about lower cost alternatives to several of the SAMAs evaluated, including the use of: (1) portable battery chargers to supply power to the steam generator instrument panels, (2) a cross-tie to the existing non-safety station batteries, (3) a direct-drive diesel emergency feedwater pump, and (4) an automatic safety injection pump trip on low refueling water storage tank (RWST) level as an alternative to an automatic swap to recirculation (NRC 2003a). In response, SCE&G provided estimated benefits and implementation costs for each alternative (SCE&G 2003a). These are discussed further in Section G.6.2 of this appendix.

The staff notes that the set of SAMAs submitted is not all inclusive, since additional, possibly even less expensive, design alternatives can always be postulated. However, the staff concludes that the benefits of any additional modifications are unlikely to exceed the benefits of the modifications evaluated and that the alternative improvements would not likely cost less than the least expensive alternatives evaluated, when the subsidiary costs associated with maintenance, procedures, and training are considered.

Appendix G

The staff concludes that SCE&G used a systematic and comprehensive process for identifying potential plant improvements for V.C. Summer, and that the set of potential plant improvements identified by SCE&G is reasonably comprehensive and therefore acceptable. This search included reviewing insights from the IPE and IPEEE, and plant improvements considered in previous SAMA analyses. While explicit treatment of external events in the SAMA identification process was limited, the staff recognizes that the absence of external event vulnerabilities reasonably justifies examining primarily the internal events risk results for this purpose.

G.4.0 Risk Reduction Potential of Plant Improvements

SCE&G evaluated the risk-reduction potential of the 12 Phase 2 SAMAs applicable to V.C. Summer, as well as several additional SAMAs proposed by the staff.

SCE&G used model re-quantification to determine the potential benefits. The CDF and population dose reductions were estimated using version UP3a of the V.C. Summer PRA. The changes made to the model to quantify the impact of each SAMA are detailed in Sections 5.1 through 5.11 of Appendix F to the ER (SCE&G 2002).

In response to a staff request, SCE&G further examined several SAMAs including those closest to being cost beneficial to determine the extent to which the SAMAs might reduce external event risk (SCE&G 2003b). The SAMAs considered include: Phase 2 SAMA 3, Phase 2 LSAMA 10, use of a portable 120V DC generator to supply power to the steam generator level instrumentation, installation of a direct-drive diesel emergency feedwater pump, and use of the fire service water for make-up to the steam generators. This assessment included consideration of both seismic and fire risk. Based on this assessment, SCE&G concluded that although some credit may be taken for these SAMAs in external events, the benefit is more limited than in the internal events analysis. For example, power recovery in fire events may create additional difficulties not present for the initiators addressed in the internal events model. Also, the low cost alternatives would not be required to meet the rigors of a seismically-qualified component, and therefore, may not be useable following a seismic event. Nevertheless, SCE&G conservatively increased the benefit for these SAMAs by a factor of two to account for external events. Table G-3 lists the assumptions used to estimate the risk reduction for each of the 12 SAMAs and several alternatives suggested by the staff (SCE&G 2003a), the estimated risk reduction in terms of percent reduction in CDF and population dose, and the estimated total benefit (present value) of the averted risk. The estimated benefit for all SAMAs was increased by 15% to account for the resolution of peer review comments. The determination of the benefits, and the impact of uncertainties and external events is discussed in Section G.6.2.

The staff has reviewed SCE&G's bases for calculating the risk reduction for the various plant improvements and concludes that the rationale and assumptions for estimating risk reduction are reasonable and, for the above reasons, are generally conservative (i.e., the estimated risk

Table G-3. SAMA Cost-Benefit Screening Analysis

Phase 2 SAMA	Assumptions	Percent Risk Reduction		Total Benefit (\$)	
		CDF	Population Dose	Baseline	Revised ^(a)
2 - Add redundant DC control power for service water pumps	Reduce CDF by lowering the failure probability of the service water system. Reduce the loss of service water initiating event frequency.	0.2	~0	1200	1400
3 - Use existing hydro-test pump for reactor coolant pump (RCP) seal injection	Reduce CDF by providing an alternate source of seal cooling when component cooling water has failed. Add CNU_8 event to account for cold water injection shock.	9	0.5	10,300 ^(b)	23,700 ^(c)
9 - Refill the refueling water storage tank (RWST)	Reduce CDF during extended station blackout (SBO) or LOCAs which render the residual heat removal (RHR) system inoperable	2	1.5	23,800	27,400
10 - Improve the 7.2 kV bus cross-tie capability through emergency procedure and hardware change	Reduce CDF from loss of offsite power events with one failed diesel generator in combination with failure of required equipment on the remaining powered emergency bus	1	0.1	20,600	47,400 ^(c)
11 - Install relief valves in the component cooling system	Decrease ISLOCA frequency by providing overpressure protection for the component cooling system	0.2	65.9	39,700	45,700
12 - Ensure all ISLOCA releases are scrubbed	Reduce the radionuclide release to the environment given that an ISLOCA has occurred	0.2	65.9	39,700	45,700
13 - Improved main steam isolation valve design	Impact isolation capability in accident response scenarios as well as for spurious closures that would be classified as initiating events. The failure to close probability is reduced by a factor of 10 as is the loss of condenser initiating event.	0.4	0.1	5800	6700

Table G-3. (contd)

Phase 2 SAMA	Assumptions	Percent Risk Reduction		Total Benefit (\$)	
		CDF	Population Dose	Baseline	Revised ^(a)
20 - Replace current PORVs with larger ones so that only one is required for successful feed and bleed	Change success criteria for feed and bleed from two of three to one of three PORVs.	1.6	0.2	17,800	20,400
24 - Create automatic swap over to recirculation on RWST depletion — charging pump suction swap to RHR heat exchanger discharge	Improve the reliability of the transition to recirculation mode after depletion of the RWST. Add new logic to control the RWST and charging pump suction valves.	31	30.1	377,800	434,500
24a - Create automatic swap over to recirculation on RWST depletion — RHR suction swap to the sump from the RWST	This is a sensitivity case which assumes the operator always fails to align and establish cold leg recirculation.	9	28.2	117,800	135,400
25 - Improved low pressure system, i.e., use of the fire service system pumps for low-pressure injection to the reactor pressure vessel	Use current RHR piping as injection path for fire pumps. Operator action to align pumps is required. Use lumped event to represent hardware and operator action.	9.3	19.9	117,500	135,100
26 - Replace old air compressors with more reliable ones	Increase reliability of the instrument air system. Reduce initiating event frequency for loss of instrument air, and the failure to start and run probabilities of the air compressors.	1.1	0.3	13,100	15,100
27 - Install motor generator set trip breakers in control room	Increase the reliability of manual RCP trip in anticipated transient without scram. Eliminates all anticipated transient without scram risk as a bounding estimate.	1.6	0.1	18,600	21,300

Table G-3. (contd)

Phase 2 SAMA	Assumptions	Percent Risk Reduction		Total Benefit (\$)	
		CDF	Population Dose	Baseline	Revised ^(a)
Low Cost Alternatives [not originally part of the Phase 2 SAMA process]					
A-1 - Use portable 120V DC generator to supply power to steam generator (SG) level instrumentation	Provide power to EFW instrumentation during an SBO event to aid the operators in controlling SG level after battery depletion at 4 hours.	0.2	~0	3300	7600 ^(c)
A-2 - Add a cross-tie to existing non-safety station batteries	Permit successful operation of the turbine-driven EFW pump (TDEFWP) during an SBO following battery depletion.	0.2	~0	3300	3800
A-3 - Use direct-drive diesel EFW pump	Provide flow to the SGs during an SBO event given the failure of the TDEFWP. The direct-drive diesel EFW pump will be available as an alternate motive source for the TDEFWP. Use independent start and run failure term for the direct-drive diesel. Use shared test and maintenance terms as failure modes for direct-drive diesel.	13.1	0.9	152,600	351,000 ^(c)
A-4 - Create automatic safety injection pump trip on low RWST level	Prevent pump damage due air entrainment or cavitation upon a loss of suction source. Provide an addition cue for control room operators to complete alignment of recirculation mode cooling.	0.02	~0	300	350
A-5 - Use fire service water for makeup to steam generators	Provide flow to SGs during an SBO event. Secondary side depressurization has succeeded. Further SG depressurization (from 240 psig to 100 psig) is necessary as part of the alignment of the fire service system to the SGs.	<0.1	~0	1100	2600 ^(c)

(a) The reported benefit for all SAMAs includes a 15 percent increase to account for an expected increase in CDF when PRA peer review comments are addressed.

(b) In the ER, the benefit was estimated to be \$103,000 (SCE&G 2002). In response to an RAI, the benefit was reduced to \$10,300 when using more realistic assumptions (SCE&G 2003a).

(c) The reported benefit includes a 15 percent increase to account for an expected increase in CDF when PRA peer review comments are addressed, plus an additional factor of two increase to account for benefits from external events (SCE&G 2003b).

Appendix G

reduction is higher than what would actually be realized). Accordingly, the staff based its estimates of averted risk for the various SAMAs on SCE&G's risk reduction estimates.

G.5.0 Cost Impacts of Candidate Plant Improvements

SCE&G estimated the costs of implementing the 12 SAMAs which were not initially screened out. The cost estimates conservatively did not include the cost of replacement power during any extended outages that might be needed to implement the modifications. Estimates that were taken from prior SAMA analyses were not adjusted to present-day dollars. For many of the SAMAs considered, the cost estimates were significantly greater than the benefits calculated such that a detailed evaluation was not necessary and a specific dollar value was not reported. Cost estimates were provided for the following SAMAs:

SAMA	Description	Cost Estimate (\$)
3	Use existing hydro-test pump for RCP seal injection	150K - 170K
10	Improve 7.2 kV bus cross-tie capability	>50K
24	Create automatic swap over to recirculation on RWST depletion	1.2M
25	Install additional diesel-driven fire pump to provide low-pressure injection to the reactor pressure vessel from the RWST through existing RHR piping	565K
A-1	Use portable 120V DC generator to supply power to steam generator level instrumentation	84K
A-2	Add a cross-tie to existing non-safety station batteries	59K
A-3	Add direct-drive diesel EFW pump	800K
A-4	Create automatic safety injection pump trip on low RWST level	750K
A-5	Use fire service water for makeup to steam generators	28K

The staff reviewed the bases for the applicant's cost estimates. For certain improvements, the staff also compared the cost estimates (presented in Table F.6-1 of Appendix F to the ER) to estimates developed elsewhere for similar improvements, including estimates developed as part of other licensees' analyses of SAMAs for operating reactors and advanced light-water reactors. A majority of the SAMAs were eliminated from further consideration on the basis that the expected implementation cost would be much greater than the estimated risk reduction benefit. This is reasonable for the SAMAs considered given the relatively small estimated

benefit for the SAMAs (a maximum benefit of about \$378K based on the analyses contained in the ER), and the large implementation costs typically associated with major hardware changes and hardware changes that impact safety-related systems. In previous SAMA evaluations the implementation costs for such hardware changes were generally estimated to be \$1 million or more.

The staff notes that the cost to implement a direct-drive diesel EFW pump at another plant was estimated to be about \$200K. SCE&G estimated the cost of the modification to be about \$800K based on the following: \$200K for design, \$200K for evaluations, \$100K for materials, \$200K for implementation, \$30K for training, and \$80K for documentation and closeout (SCE&G 2003c). To verify the validity of the \$800K cost, the staff reviewed the costs for similar modifications evaluated in other plants' SAMA analyses as summarized below:

- \$460K for installation of a safety-related SW pump (Calvert Cliffs)
- \$300K - \$600K to provide capability for diesel-driven, low pressure vessel makeup (adding a line from the firewater header, a post indicator valve in the yard and safety-related double isolation valves to the connection with the LHSI) (Surry)
- >\$890K to replace two of the four safety injection pumps with diesel pumps (Turkey Point). Assuming that one pump would be half of this cost, the value would be >\$445K.
- >\$2M to install a motor-driven feedwater pump (Peach Bottom).
- \$480K to install a suppression pool jockey pump (Peach Bottom).

Although SCE&G's cost estimate is significantly greater than \$200K, it does not appear to be unreasonable relative to the cost estimates for similar modifications. The staff concludes that the cost estimates provided by SCE&G are sufficient and appropriate for use in the SAMA evaluation.

G.6.0 Cost-Benefit Comparison

SCE&G's cost-benefit analysis and the staff's review are described in the following sections.

G.6.1 SCE&G Evaluation

The methodology used by SCE&G was based primarily on NRC's guidance for performing cost-benefit analysis, i.e., NUREG/BR-0184, *Regulatory Analysis Technical Evaluation Handbook* (NRC 1997d). The guidance involves determining the net value for each SAMA according to the following formula:

Appendix G

$$\text{Net Value} = (\text{APE} + \text{AOC} + \text{AOE} + \text{AOSC}) - \text{COE}$$

where,

- APE = present value of averted public exposure (\$)
- AOC = present value of averted offsite property damage costs (\$)
- AOE = present value of averted occupational exposure costs (\$)
- AOSC = present value of averted onsite costs (\$)
- COE = cost of enhancement (\$).

If the net value of a SAMA is negative, the cost of implementing the SAMA is larger than the benefit associated with the SAMA and it is not considered cost beneficial. SCE&G's derivation of each of the associated costs is summarized below.

Averted Public Exposure (APE) Costs

The APE costs were calculated using the following formula:

$$\begin{aligned} \text{APE} = & \text{Annual reduction in public exposure } (\Delta\text{person-rem/year}) \\ & \times \text{monetary equivalent of unit dose } (\$2000 \text{ per person-rem}) \\ & \times \text{present value conversion factor } (10.76 \text{ based on a 20-year period with a} \\ & \text{7-percent discount rate}). \end{aligned}$$

As stated in NUREG/BR-0184 (NRC 1997d), it is important to note that the monetary value of the public health risk after discounting does not represent the expected reduction in public health risk due to a single accident. Rather, it is the present value of a stream of potential losses extending over the renewal period for the facility. Thus, it reflects the expected annual loss due to a single accident, the possibility that such an accident could occur at any time over the renewal period, and the effect of discounting these potential future losses to present value. For the purposes of initial screening, SCE&G calculated an APE of approximately \$20,500 for the 20-year license renewal period, which assumes elimination of all severe accidents.

Averted Offsite Property Damage Costs (AOC)

The AOCs were calculated using the following formula:

$$\begin{aligned} \text{AOC} = & \text{Annual CDF reduction} \\ & \times \text{offsite economic costs associated with a severe accident (on a per-event basis)} \\ & \times \text{present value conversion factor.} \end{aligned}$$

For the purposes of initial screening which assumes all severe accidents are eliminated, SCE&G calculated an annual offsite economic risk of about \$2,700 based on the Level 3 risk analysis. This results in a discounted value of approximately \$29,500 for the 20-year license renewal period.

Averted Occupational Exposure (AOE) Costs

The AOE costs were calculated using the following formula:

$$\begin{aligned} \text{AOE} = & \text{Annual CDF reduction} \\ & \times \text{occupational exposure per core damage event} \\ & \times \text{monetary equivalent of unit dose} \\ & \times \text{present value conversion factor.} \end{aligned}$$

SCE&G derived the values for averted occupational exposure from information provided in Section 5.7.3 of the regulatory analysis handbook (NRC 1997d). Best estimate values provided for immediate occupational dose (33 person-Sv [3300 person-rem]) and long-term occupational dose (200 person-Sv [20,000 person-rem] over a 10-year cleanup period) were used. The present value of these doses was calculated using the equations provided in the handbook in conjunction with a monetary equivalent of unit dose of \$2000 per person-rem, a real discount rate of seven percent, and a time period of 20 years to represent the license renewal period. For the purposes of initial screening, which assumes all severe accidents are eliminated, SCE&G calculated an AOE of approximately \$21,300 for the 20-year license renewal period.

Averted Onsite Costs (AOSCs)

AOSCs include averted cleanup and decontamination costs and averted power replacement costs. Repair and refurbishment costs are considered for recoverable accidents only and not for severe accidents. SCE&G derived the values for AOSC based on information provided in Section 5.7.6 of the regulatory analysis handbook (NRC 1997d).

SCE&G divided this cost element into two parts – the Onsite Cleanup and Decontamination Cost, also commonly referred to as averted cleanup and decontamination costs (ACCs), and the replacement power cost.

ACCs were calculated using the following formula:

$$\begin{aligned} \text{ACC} = & \text{Annual CDF reduction} \\ & \times \text{present value of cleanup costs per core damage event} \\ & \times \text{present value conversion factor.} \end{aligned}$$

Appendix G

The total cost of cleanup and decontamination subsequent to a severe accident is estimated in the regulatory analysis handbook to be $\$1.5 \times 10^9$ (undiscounted). This value was converted to present costs over a 10-year cleanup period and integrated over the term of the proposed license extension. For the purposes of initial screening, which assumes all severe accidents are eliminated, SCE&G calculated an ACC of approximately \$663,000 for the 20-year license renewal period.

Long-term replacement power costs (RPCs) were calculated using the following formula:

$$\begin{aligned} \text{RPC} = & \text{Annual CDF reduction} \\ & \times \text{present value of replacement power for a single event} \\ & \times \text{factor to account for remaining service years for which replacement power is} \\ & \quad \text{required} \\ & \times \text{reactor power scaling factor} \end{aligned}$$

SCE&G based its calculations on the value of 966 MW(e). Therefore, SCE&G applied a power scaling factor of 966 MW(e)/910 MW(e) to determine the replacement power costs. For the purposes of initial screening, which assumes all severe accidents are eliminated, SCE&G calculated an RPC of approximately \$469,000 for the 20-year license renewal period.

Using the above equations, SCE&G estimated the total present dollar value equivalent associated with completely eliminating severe accidents at V.C. Summer to be about \$1.2M.

SCE&G's Results

If the implementation costs were greater than the MAB of \$1.2M, then the SAMA was screened from further consideration. Thirty-seven of the 69 SAMAs surviving the Phase 1 screening were eliminated from further consideration in this way. Twenty additional SAMAs were eliminated because, based on plant-specific PRA insights, they did not provide a significant safety benefit, or because the cost of implementation would be greater than the benefits associated with implementing the SAMA, leaving 12 for final analysis. A more refined look at the costs and benefits was performed for the remaining 12 SAMAs, plus several alternative SAMAs identified by the staff. The cost-benefit results for these SAMAs are presented in Table G-3. As a result, all SAMAs that were evaluated were eliminated because the cost was expected to exceed the estimated benefit.

SCE&G performed sensitivity analyses to evaluate the impact of parameter choices on the analysis results (SCE&G 2002, 2003a). The sensitivity analyses included the calculation of candidate SAMA benefits using a 3-percent real discount rate as recommended in NUREG/BR-0184 (NRC 1997d). This sensitivity case resulted in less than a factor of 1.2 increase in the benefit calculation. Additionally, SCE&G considered the impact on results if the 95th percentile value of the CDF were utilized in the cost-benefit analysis instead of the mean CDF. This analysis resulted in about a

factor of 2.3 increase in the benefit calculation. These analyses did not change SCE&G's conclusion that none of the candidate SAMAs would be cost beneficial.

G.6.2 Staff Evaluation

The cost-benefit analysis performed by SCE&G was based primarily on NUREG/BR-0184 (NRC 1997d) and was executed consistent with that guidance.

In response to an RAI, SCE&G considered the uncertainties associated with the calculated CDF (Table G-4). If the 95th percentile values of the CDF were utilized in the cost-benefit analysis instead of the mean CDF value cited above, the estimated benefits of the SAMAs would increase by about a factor of 2.3. SCE&G revisited the set of SAMAs screened out in Phase 1 of the evaluation and identified seven additional SAMAs that could be cost-beneficial using the 95th percentile value of the CDF. In Table 4.b-1 of the response to the RAI, SCE&G discusses the cost of implementation and the benefit for each of these additional SAMAs (SCE&G 2003a). The averted cost-risk (benefit) was estimated by utilizing RRWs or the averted cost-risk for similar SAMAs, and then scaling this value by a factor of 2.3 in order to account for the 95th percentile PRA results. All seven SAMAs were found to have implementation costs greater than their averted cost-risk (benefit), and thus, were eliminated from further consideration. The staff reviewed the information provided by the applicant in response to this RAI and agrees with the conclusion that none of the newly identified Phase 2 SAMAs would be cost beneficial.

Table G-4. Uncertainty in the calculated Core Damage Frequency for V.C. Summer

Percentile	CDF (per year)
5th	1.87×10^{-5}
median	4.44×10^{-5}
mean	5.63×10^{-5}
95th	1.32×10^{-4}

SCE&G revisited the cost-benefit analyses for the 12 Phase 2 SAMAs and found that when the 95th confidence level is used, SAMAs 3 and 10 potentially become cost beneficial (SCE&G 2003a). These SAMA were further evaluated and dispositioned as summarized below:

SAMA 3 involves use of the existing hydro-test pump for RCP seal injection. This would reduce the CDF by providing an alternate source of cooling when CCW has failed. A benefit of \$103K was initially calculated for this SAMA based on internal events, as described in Response 4c to the RAI. In their RAI response (SCE&G 2003a), SCE&G

Appendix G

noted that the evaluation used a lumped event in the model which did not account for power dependencies, and assumed an optimistic reliability value (a failure probability of 0.001). Additionally, the benefit estimate did not consider that the RCP seals may heat up and fail while the alternate cooling method is being aligned, or could fail as a result of thermal shock when cold water is eventually reintroduced. When power dependencies and thermal effects are included in the model, the benefit of this SAMA is reduced to about \$10K. The staff agrees that these modeling considerations are valid and that the benefits associated with this SAMA would be small, given that it derives from low probability sequences in which CCW is lost in conjunction with the charging pumps. This benefit was subsequently increased by 15 percent to account for an expected increase in CDF when PRA peer review comments are addressed, plus an additional factor of two to account for benefits from external events, resulting in a total benefit of about \$24K. Using the 95th percentile CDF for internal events, the benefit would also be about \$24K. SCE&G estimated the cost of implementation to be approximately \$150K to \$170K. Accordingly, this SAMA is not cost-beneficial.

SAMA 10 involves improvements to the 7.2 kV bus cross-tie via the development of emergency procedures that contain step-by-step instructions for performing the cross-tie. An averted cost-risk (benefit) of \$20.6K was initially calculated for this SAMA based on internal events, as described in response 4c to the RAI (SCE&G 2003a). The estimated benefit was subsequently increased by 15 percent to account for an expected increase in CDF when PRA peer review comments are addressed, plus an additional factor of two to account for benefits from external events, resulting in a total benefit of about \$48K (SCE&G 2003b). Using the 95th percentile results in conjunction with the internal events CDF, the benefit would also be about \$48K (SCE&G 2003a). In the ER, SCE&G estimated the cost of implementation to be approximately \$25,000 to \$50,000. However, in their RAI response (SCE&G 2003a), SCE&G noted that this SAMA would require modification to controls in the main control room. Costs associated with this aspect were not considered in the original cost estimate provided, nor were costs associated with the engineering analysis needed to support the modification. When these additional costs factors are included, the implementation costs would be substantially greater than \$50K. Accordingly, this SAMA is not cost-beneficial.

The staff questioned SCE&G about lower cost alternatives to several of the SAMAs evaluated, including the use of: (1) a portable 120V DC generator to supply power to the steam generator instrument panels, (2) a cross-tie to the existing non-safety station batteries, (3) a direct-drive diesel EFW pump, and (4) an automatic safety injection pump trip on low RWST level as an alternative to an automatic swap to recirculation (NRC 2003a). In response, SCE&G provided estimated benefits and implementation costs for each alternative. Based on these estimates, none of these alternatives appear cost beneficial. Specifically, SCE&G estimated that the portable 120V DC generator alternative would have a benefit of \$7.6K (including impact of

external events) and an implementation cost of \$84K (SCE&G 2003a, 2003b). The cross-tie to the existing non-safety station batteries would have a benefit of \$3300 and an implementation cost of \$59K. The direct-drive EFW would have a benefit of \$351K (including impact of external events) and a revised implementation cost of \$800K (SCE&G 2003a, 2003b). The fourth alternative would have a benefit of \$300, which is far less than the estimated implementation cost of \$750K (SCE&G 2003a). SCE&G determined that none of the alternative SAMAs suggested in the RAI would be cost beneficial.

For the portable 120V DC generator alternative, a key factor in the evaluation is the human error probability associated with the operation of the turbine driven EFW pump after battery depletion. SCE&G assumed a value of 0.0041 in the baseline analysis, and provided supporting justification for this value in response to RAIs (SCE&G 2003a and 2003b). The rationale includes consideration of the long time period available for operator and technical support center staff to achieve specified steam generator levels prior to battery depletion, the relatively minor adjustments to feed rates that would be necessary following battery depletion, and the available procedures and local indications associated with the necessary human actions. Although it is SCE&G's position that the value of 0.0041 is appropriate, they provided a sensitivity case in which the baseline human error probability for operation of the turbine driven EFW was increased to a nominal value of 0.1. Given this assumption, the benefit increases to about \$51K. If a factor of two is added to account for benefits from external events, as was done for the baseline case, the benefit would become \$102K. When compared to the implementation cost of \$84K, this SAMA appears to be cost beneficial. However, as noted in Section G.4.0, the benefit of this SAMA in external events would be limited by factors such as equipment operability after a seismic event. The staff concludes that given more realistic assumptions regarding risk reduction achievable in external events, and a somewhat lower nominal human error probability that might be justified based on the rationale provided by SCE&G, this SAMA would not be cost beneficial.

SCE&G estimated the benefit of the direct-drive diesel EFW pump to be \$153K. The staff, noting that the estimated cost to implement this modification at another plant was about \$200K, issued a supplemental RAI regarding the estimated benefits. In response to the supplemental RAI, SCE&G provided a revised risk reduction estimate of about \$350K, which included both a 15 percent increase to account for the resolution of peer review comments and a factor of two increase to account for additional benefits that might be achieved in external events. However, SCE&G also estimated the plant-specific cost to implement this modification to be about \$800K for V.C. Summer. The cost estimates are discussed further in Section G.5.0. Based on the revised cost and benefit estimates, the staff finds that the applicant's assessment is reasonable, and concludes that this SAMA is not cost-beneficial.

In addition, the staff requested a cost-benefit assessment for using the fire protection system as a backup for maintaining steam generator inventory. This alternative was estimated to have a

Appendix G

benefit of \$2.6K (including impact of external events) and an implementation cost of \$28K, and would therefore not be cost beneficial (SCE&G 2003b).

SCE&G also performed a sensitivity analysis that addressed variations in discount rate. The use of a three-percent real discount rate (rather than seven percent used in the baseline) results in an increase in the maximum attainable benefit of approximately 13 percent. The results of the sensitivity study are bounded by the uncertainty assessment described above, which considered an increase of a factor of 2.3.

The staff concludes that the costs of all of the SAMAs assessed would be higher than the associated benefits. This conclusion is supported by sensitivity analysis and upheld despite a number of additional uncertainties and non-quantifiable factors in the calculations, summarized as follows:

- Uncertainty in the internal events CDF was not initially included in the calculations, which employed best-estimate values to determine the benefits. The 95th percentile CDF for internal events is approximately 2.3 times the mean value. Even upon considering the benefits at the 95th percentile value, no SAMAs were judged to be cost-beneficial. Therefore, the staff does not expect the consideration of CDF uncertainty to alter the conclusions of the analysis.
- External events were similarly not included in the V.C. Summer risk profile. However, given that the expected external events contribution to CDF is calculated in a conservative fashion and is expected to be on the same order of magnitude as the internal events contribution to CDF, a factor of two increase in the maximum attainable benefits to account for the external events should be conservative. In response to an RAI, SCE&G re-evaluated several SAMAs that were closest to being cost beneficial by increasing the benefits by 15 percent to account for PRA peer review comments, plus an additional factor of two to account for external events. This equates to a factor of 2.3 which is the same as the factor considered in the uncertainty assessment. As a result, none of the evaluated SAMAs were cost beneficial. Therefore, the staff concludes that a more detailed assessment would not yield any new SAMAs.
- The staff finds the risk reduction and cost estimates to be reasonable, and generally conservative. As such, uncertainty in the costs of any of the contemplated SAMAs would not likely have the effect of making them cost beneficial.

G.7.0 Conclusions

SCE&G compiled a list of 268 SAMA candidates using the SAMA analyses as submitted in support of licensing activities for other nuclear power plants, NRC and industry documents discussing potential plant improvements, and the plant-specific insights from the V.C. Summer IPE, IPEEE, and current PRA model. A qualitative screening removed SAMA candidates that (1) were not applicable at V.C. Summer due to design differences, (2) were sufficiently similar to another SAMA such that they could be combined, (3) had already been implemented at V.C. Summer, or (4) did not provide a significant safety benefit. A total of 199 SAMA candidates were eliminated based on the above criteria, leaving 69 SAMA candidates for further evaluation.

Using guidance in NUREG/BR-0184 (NRC 1997d), the current PRA model, and a Level 3 analysis developed specifically for SAMA evaluation, a maximum attainable benefit of about \$1.2M was calculated, representing the total present dollar value equivalent associated with completely eliminating severe accidents at V.C. Summer. Thirty-seven of the 69 SAMAs were eliminated from further evaluation because their implementation costs were greater than this maximum attainable benefit. An additional 20 SAMAs were eliminated because, based on plant-specific PRA insights, they did not provide a significant safety benefit, or because the cost of implementation would be greater than the benefits associated with implementing the SAMA. For the remaining 12 SAMA candidates and several additional alternatives identified by the staff, more detailed conceptual design and cost estimates were developed as shown in Table G-3. The cost-benefit analyses showed that none of the candidate SAMAs were cost-beneficial.

The staff reviewed the SCE&G analysis and concluded that the methods used and the implementation of those methods were sound. The treatment of SAMA benefits and costs, the generally large negative net benefits, and the small baseline risks support the general conclusion that the SAMA evaluations performed by SCE&G are reasonable and sufficient for the license renewal submittal. The unavailability of a seismic and fire PRA model precluded a quantitative evaluation of SAMAs specifically aimed at reducing risk of these initiators; however, improvements have been realized as a result of the IPEEE process at V.C. Summer that would minimize the likelihood of identifying further cost-beneficial enhancements in these areas. To assess the potential impact of uncertainties in the analysis or the inclusion of additional benefits in external events, SCE&G applied a factor of two multiplier to the estimated benefits based on internally-initiated events, and confirmed that even when considering the increase in the benefits, none of the SAMAs become cost beneficial.

Based on its review of the SCE&G SAMA assessment and as explained above, the staff finds that none of the candidate SAMAs are cost beneficial. This is based on conservative treatment of costs and benefits. This conclusion is consistent with the low residual level of risk indicated in

Appendix G

the V.C. Summer PRA and the fact that V.C. Summer has already implemented plant improvements identified from the IPE and IPEEE processes.

G.8.0 References

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