SAFETY EVALUATION BY THE OFFICE OF NEW REACTORS

RELATED TO AMENDMENT NO. 46

TO THE COMBINED LICENSE NO. NPF-93 AND LICENSE NO. NPF-94

SOUTH CAROLINA ELECTRIC & GAS COMPANY

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY

VIRGIL C. SUMMER NUCLEAR STATION UNITS 2 AND 3

DOCKET NOS. 52-027 AND 52-028

1.0 INTRODUCTION

By letter dated October 1, 2015 (Agencywide Document Access and Management System (ADAMS) Accession No. ML15274A540), the South Carolina Electric & Gas Company on behalf of the South Carolina Public Service Authority (both hereafter called the licensee) requested that the U.S. Nuclear Regulatory Commission (NRC or Commission) amend the combined licenses (COLs) for Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3, COL Nos. NPF-93 and NPF-94, respectively.

The proposed amendment revises plant-specific emergency planning (EP) inspections, tests, analyses, and acceptance criteria (ITAAC) in Appendix C of the VCSNS Units 2 and 3 COLs (ADAMS Accession Nos. ML113190437 and ML113190931, respectively), to remove design control document (DCD) Table 7.5-1, "Post-Accident Monitoring System," and final safety analysis report (FSAR) Table 7.5-201, "Post-Accident Monitoring System." In addition, the amendment will replace the references to DCD Table 7.5-1 and FSAR Table 7.5-201 with UFSAR Table 7.5-1 in Units 2 and 3 and ITAAC Table C.3.8-1 for EP ITAAC Nos. 842 (C.3.8.01.01.01), 853 (C.3.8.01.05.01.05), and 860 (C.3.8.01.05.02.04).

2.0 REGULATORY EVALUATION

The NRC staff considered the following regulatory requirements and guidance in reviewing the licensee's LAR:

Title 10 of the *Code of Federal* Regulations (10 CFR) 50.47(b)(8) requires that adequate emergency facilities and equipment to support the emergency response are provided and maintained.

10 CFR 50.47(b)(9) requires adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition.

10 CFR Part 50, Appendix E, Section IV.E.2 requires that a licensee provide the equipment for determining the magnitude of, and for continuously assessing the impact of, the release of radioactive materials to the environment.

10 CFR 52.97(b) requires that the Commission identify within the COL the inspections, tests, and analyses, including those applicable to emergency planning, that the licensee shall perform, and the acceptance criteria that, if met, are necessary and sufficient to provide reasonable assurance that the facility has been constructed and will be operated in conformity with the license, the provisions of the Atomic Energy Act of 1954, as amended, and the Commission rules and regulations.

NUREG-0800, Section 14.3.10, "Emergency Planning – Inspections, Tests, Analyses, and Acceptance Criteria," March 2007, provides generic guidance for developing EP ITAAC.

3.0 TECHNICAL EVALUATION

10 CFR 50.47(b)(8) requires that the licensee provide and maintain adequate emergency facilities and equipment to support the emergency response. In addition, 10 CFR 50.47(b)(9) requires adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition. Finally, 10 CFR Part 50, Appendix E, Section IV.E.2 requires the licensee to provide the equipment for determining the magnitude of, and for continuously assessing the impact of, the release of radioactive materials to the environment. These requirements are supplemented by the generic EP ITAAC guidance in NUREG-0800, Section 14.3.10, "Emergency Planning – Inspections, Tests, Analyses, and Acceptance Criteria," which provides the regulatory basis for SCE&G's COL EP ITAAC.

The plant-specific EP ITAAC in Appendix C of the VCSNS Units 2 and 3 COLs are being revised to remove the copies of DCD Table 7.5-1 and FSAR Table 7.5-201. In addition, the references to DCD Table 7.5-1 and FSAR Table 7.5-201 in Units 2 and 3 EP ITAAC Nos. 842 (C.3.8.01.01.01), 853 (C.3.8.01.05.01.05), and 860 (C.3.8.01.05.02.04) are being replaced with references to UFSAR Table 7.5-1. These three EP ITAAC address the identification of available plant parameters in emergency response facilities and correspond to generic EP ITAAC Acceptance Criteria 4.1, 8.1.5, and 8.2.4, respectively, in NUREG-0800, Section 14.3.10, Table 14.3.10. These generic acceptance criteria include a bracketed statement that the COL applicant will identify specific capabilities. The licensee had identified these specific capabilities, in part, by referencing the plant parameters in DCD Table 7.5-1 and FSAR Table 7.5-201 in the three COL EP ITAAC acceptance criteria,[1] and is replacing these two table references in each of the three identified EP ITAAC with a single reference to UFSAR Table 7.5-1.

The licensee explained that the removal of the copies of DCD Table 7.5-1 and FSAR Table 7.5-201 from COL Appendix C, and replacing the references to these two tables with UFSAR Table 7.5-1, is needed in order to eliminate the requirement for a license amendment whenever a change to the detailed listings of plant variables in DCD Table 7.5-1 or FSAR Table 7.5-201 is made. The applicant further explained that as the design matures (i.e., as the AP1000 reactor is constructed on the site), the exact list of plant variables needed to evaluate emergency

[1] ITAAC 735 (3.1.00.03) in Appendix C of VCSNS Units 2 and 3 COLs identifies additional plant parameters listed in Table 2.5.4-1, "Minimum Inventory of Controls, Displays, and Alerts at the RSW [remote shutdown workstation]," with a "Yes" in the "Display" column, that can be retrieved in the Technical Support Center (TSC). Table 2.5.4-1, which is identical to AP1000 DCD Tier 1 Table 2.5.4-1 (ADAMS Accession No. ML11171A313), is included in Appendix C of the VCSNS Units 2 and 3 COLs as ITAAC, and is not addressed in this LAR.

situations may change; either through the addition of new variables, or the deletion of variables that are no longer needed. In addition, the licensee stated that any such changes could be evaluated under the provisions of 10 CFR Part 52, Appendix D, Section VIII.B.5, 10 CFR 50.59, or 10 CFR 50.54(q), as applicable, without automatically requiring a license amendment.

While an evaluation of these three NRC regulatory change processes are not within the scope of this current LAR review, the following brief summary of each change process indicates that the need for a license amendment associated with a future UFSAR Table 7.5-1 change would be dependent upon the specific nature of the change.[2]

- 10 CFR Part 52, Appendix D, Section VIII.B.5 – This regulation addresses generic changes made to Tier 2 information contained in the AP1000 design control document (DCD). Such changes are applicable to all applicants and licensees who reference this appendix, with various specified exceptions. The requirement for a licensee to request an amendment associated with the change is dependent upon the nature of the change and whether the licensee proposes a departure from the change.

- 10 CFR 50.59 – This regulation addresses changes made to the final safety analysis report (FSAR), including those that may, or may not, require the licensee to obtain a license amendment. In addition, FSAR changes are also governed by 10 CFR 50.71(e), which requires periodic updates to the FSAR to assure that the information included in the report contains the latest information developed, including modifications to the design. Submission of the updates to the NRC shall include all safety analyses and evaluations performed by the licensee, either in support of approved license amendments, or in support of conclusions that changes did not require a license amendment.

- 10 CFR 50.54(q) – This regulation addresses modifications to the emergency plan, including how the licensee may make changes that either reduce, or do not reduce, the effectiveness of the emergency plan. If the licensee determines that the changes do not reduce the effectiveness of the plan and the plan, as changed, continues to meet the applicable requirements, then the licensee may make the changes without NRC approval and without requiring a license amendment. If, however, the licensee determines that the changes to the emergency plan reduce the effectiveness of the plan, prior NRC approval is required, including submission of an application for an amendment to the license.[3]

The licensee further justified the removal of the copies of DCD Table 7.5-1 and FSAR Table 7.5-201 from COL Appendix C by pointing out that in Appendix C of the Enrico Fermi Unit 3

---

[2] UFSAR Table 7.5-1 is a COL application-specific variation of AP1000 DCD Tier 2 Table 7.5-1 (ADAMS Accession No. ML11171A469), and includes the Post-Accident Monitoring System variables in FSAR Table 7.5-201. The referenced change process in 10 CFR Part 50, Appendix D, Section VIII.B.5, would apply to generic changes to DCD Tier 2 Table 7.5-1, and would be applicable to UFSAR Table 7.5-1, with various specified exceptions.

[3] Additional guidance on making changes to emergency plans is provided in Regulatory Guide 1.219, "Guidance on Making Changes to Emergency Plans for Nuclear Power Reactors," November 2011 (ADAMS Accession No. ML102510626), and NRC Regulatory Issue Summary (RIS) 2005-02, Revision 1, "Clarifying the Process for Making Emergency Plan Changes," April 19, 2011 (ADAMS Accession No. ML100340545).

(Fermi 3) COL (ADAMS Accession No. ML15084A169), EP ITAAC 1724 (C.3.9.02.01) references Table II.B-1, "Minimum Staffing Requirements for Emergencies," of the Fermi 3 Emergency Plan (in Acceptance Criterion 2.1), as the source of on-shift staffing level information. While a copy of Table II.B-1 is not included in Appendix C of the Fermi 3 COL, it is included in the Fermi 3 Emergency Plan; and as such, is subject to the 10 CFR 50.54(q) change process, identified above. The licensee's basic argument is that when an EP ITAAC references a table as the source of various information, there is no requirement for a copy of the table to be included in the ITAAC itself. The staff agrees.

For Fermi 3 EP ITAAC 1724, which refers to Table II.B-1 for staffing levels, there is no comparable SCE&G COL EP ITAAC. The staff did, however, identify several other SCE&G EP ITAAC that further support the licensee's argument, through comparison with their respective Fermi 3 EP ITAAC. Specifically, as discussed above, the proposed EP ITAAC in Appendix C of the VCSNS Units 2 and 3 COLs that reference UFSAR Table 7.5-1 are EP ITAAC 842, 853, and 860. These three EP ITAAC all require the confirmation that the plant parameters listed in UFSAR Table 7.5-1 are available in the identified emergency response facilities and in support of accident assessment. These SCE&G EP ITAAC are comparable to Fermi 3 EP ITAAC 1725 (C.3.9.04.01.01), 1740 (C.3.9.08.01.06), and 1749 (C.3.9.08.02.07), respectively, which also address the availability of plant parameters (information). While Fermi 3 EP ITAAC 1725 and 1749 refer to external sources of plant information (i.e., emergency plan implementing procedures) to identify the various parameters, EP ITAAC 1740 merely states that the display of plant and environmental information in the TSC has been accomplished – without reference to a source of the information.

The staff reviewed the proposed change to Appendix C of the VCSNS Units 2 and 3 COLs (described above), and determined that there is no substantive change to the detailed EP ITAAC because UFSAR Table 7.5-1 includes the important plant parameter variables from both DCD Table 7.5-1 and FSAR Table 7.5-201. Further, UFSAR Table 7.5-1 is referenced in the acceptance criterion for Units 2 and 3 proposed EP ITAAC Nos. 842, 853, and 860. As such, the availability (in the identified emergency response facilities, or in support of accident assessment) of all plant variables listed in UFSAR Table 7.5-1 is a condition for meeting the respective EP ITAAC acceptance criterion. The only change associated with this LAR – beyond removing the copies of DCD Table 7.5-1 and FSAR Table 7.5-201 from COL Appendix C, and replacing the acceptance criteria references to these two tables with UFSAR Table 7.5-1 is to the procedural method(s) by which any future revisions to UFSAR Table 7.5-1 would be evaluated by the staff in a separate licensing action. Any future changes to UFSAR Table 7.5-1 would be addressed under the applicable change process (addressed above), including whether the changes would require a license amendment. Importantly, whichever of the three change processes (identified above) are appropriate for future changes to UFSAR Table 7.5-1, the potential, substantive impact to the adequacy of the emergency plan, including its relationship to completion of the applicable EP ITAAC, would be addressed via the relevant change process. Finally, the staff is unaware of any requirement that a copy of tables referenced in an EP ITAAC must also be included in the ITAAC itself; in addition to inclusion within the tables' source documents (e.g., FSAR, DCD, or emergency plan).

The staff finds the proposed EP ITAAC changes acceptable because they are consistent with 10 CFR Part 50, Appendix E, Section IV.E.2, and provide for the VCSNS Units 2 and 3 Emergency Plan to continue to meet the requirements in 10 CFR 50.47(b)(8) and (b)(9) for a licensee to provide and maintain adequate emergency facilities and equipment to support the emergency response, including adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition. In

addition, as discussed above, the staff finds that the proposed changes do not result in any substantive changes to the current EP ITAAC, such that the requirements in 10 CFR 52.97(b), for identification of ITAAC within the COL, continue to be met.

3.3 Conclusion

Based on the technical evaluation above, the NRC staff concludes that, with the proposed change to Appendix C of VCSNS Units 2 and 3 COLs, there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at VCSNS Units 2 and 3; and therefore, the VCSNS Units 2 and 3 Emergency Plan continues to meet the requirements of 10 CFR 50.47(b)(8), 10 CFR 50.47(b)(9), 10 CFR Part 50, Appendix E, Section IV.E.2, and 10 CFR 52.97(b).

4.0 STATE CONSULTATION

In accordance with the Commission regulations in 10 CFR 50.91(b)(2), the designated State of South Carolina Official was notified of the proposed issuance of the amendment. The State of South Carolina had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR Part 20, *Standards for Protection Against Radiation*. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite. Also, there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (*Federal Register,* 80 FR 73241, November 24, 2015). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with issuing the amendment.

Because the exemption is necessary to allow the changes proposed in the license amendment, and because the exemption does not authorize any activities other than those proposed in the license amendment, the environmental consideration for the exemption is identical to that of the license amendment. Accordingly, the exemption meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with the issuance of the exemption.

6.0 CONCLUSION

Based on the considerations discussed above in Section 3.0, the staff concludes that there is reasonable assurance that (1) the proposed operation will not endanger public health and safety, (2) such activities will be conducted in compliance with the Commission regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or public health and safety. Therefore, the staff finds the proposed ITAAC change in Appendix C of the VCSNS Units 2 and 3 COLs to be acceptable.

7.0 REFERENCES

1. South Carolina Electric & Gas Company letter to U.S. Nuclear Regulatory Commission, "LAR 15-18: VCSNS Units 2 and 3 Request for License Amendment: Revision to VCSNS Units 2 and 3 Plant-Specific Emergency Planning ITAAC," dated October 1, 2015 (SCE&G Letter No. NND-15-0558) (ADAMS Accession No. ML15274A540).

2. U.S. Nuclear Regulatory Commission letter to South Carolina Electric & Gas Company, "Acceptance Review of South Carolina Electric & Gas Company's Request for License Amendment (LAR 15-18) for the Virgil C. Summer Nuclear Station Units 2 and 3: Plant-Specific Emergency Planning [Inspection, Test, Analysis, and Acceptance Criteria] ITAAC (CAC No. RQ0457)," dated October 26, 2015 (ADAMS Accession No. ML15281A234).

3. Enrico Fermi Nuclear Plant, Unit 3 Combined License, NPF-95, Appendix C, "Inspections, Tests, Analyses, and Acceptance Criteria," dated May 1, 2015 (ADAMS Accession No. ML15084A169).

4. Virgil C. Summer Nuclear Station Unit 2, Combined License, NPF-93, Appendix C, "Inspections, Tests, Analyses, and Acceptance Criteria," March 30, 2012 (ADAMS Accession No. ML113190437).

5. Virgil C. Summer Nuclear Station Unit 3, Combined License, NPF-94, Appendix C, "Inspections, Tests, Analyses, and Acceptance Criteria," dated March 30, 2012 (ADAMS Accession No. ML113190931).

6. Westinghouse AP1000 Design Control Document, Revision 19, Tier 1 Chapter 2, "System Based Design Descriptions and ITAAC," Section 2.5, "Instrumentation and Control Systems," Table 2.5.4-1, "Minimum Inventory of Controls, Displays, and Alerts at the RSW," dated June 13, 2011 (ADAMS Accession No. ML11171A313).

7. Westinghouse AP1000 Design Control Document, Revision 19, Tier 2 Chapter 7, "Instrumentation and Controls," Section 7.5, "Safety-Related Display Information," Table 7.5-1, "Post-Accident Monitoring System," dated June 13, 2011 (ADAMS Accession No. ML11171A469).