

SAFETY EVALUATION BY THE OFFICE OF NEW REACTORS

RELATED TO AMENDMENT NO. 26

TO COMBINED LICENSE NOS. NPF-93 AND NPF-94

SOUTH CAROLINA ELECTRIC & GAS COMPANY

VIRGIL C. SUMMER NUCLEAR STATION, UNITS 2 AND 3

DOCKET NOS. 52-027 AND 52-028

1.0 INTRODUCTION

By letter dated January 27, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15028A537), the South Carolina Electric & Gas Company, (SCE&G/licensee) submitted license amendment request (LAR) 14-19 and requested that the U.S. Nuclear Regulatory Commission (NRC/Commission) amend the combined licenses (COLs) for the Virgil C. Summer Nuclear Station Units 2 and 3 (VCSNS), COL Nos. NPF-93 and NPF-94, respectively.

The proposed amendment would revise the VCSNS Units 2 and 3 Updated Final Safety Analysis Report (UFSAR) by permitting 1) a deletion of WCAP-15847, "AP1000 Quality Assurance Procedures Supporting NRC Review of AP1000 DCD Sections 18.2 and 18.8," from the Tier 2* portion of the UFSAR in Table 1.6-1 and Section 18.2.7 and 2) a clarification of a human factors engineering (HFE) operational sequence analysis (OSA) task related to the automatic depressurization system (ADS) in Section 18.5.1. The deletion of WCAP-15847 is requested because that WCAP identifies documents that were used to support the AP1000 Design Certification that have since been superseded or deleted. The change to the OSA task description is requested to correct the reactor mode for the ADS valve testing during which this task will be analyzed. The proposed LAR involves changes to the approved VCSNS Units 2 and 3 UFSAR Tier 2* information.

2.0 REGULATORY BASIS

As stated in the request, WCAP-15847 was written during the AP1000 Design Certification to compile the current versions of the pertinent procedures for transmittal to the NRC as examples of design procedures applicable to the AP1000. The procedures, which were issued between 1991 and 2002, no longer exist, are not currently used, or have been superseded by other

Westinghouse Electric Company (WEC) procedures. The change to the OSA task relates to identifying "Mode 5" as the appropriate operating mode for the execution of this task. The OSA task "ADS [automatic depressurization system] valve testing during Mode 1" is proposed to be changed to identify Mode 5 as the appropriate mode for performance of this task. Both ADS valves in each line are normally closed during normal reactor operation. If one of these valves is opened (for example, for testing), the reactor coolant system (RCS) pressure boundary is not fully maintained. The ADS valves are tested during cold shutdowns (i.e., Mode 5) when the RCS pressure is reduced to atmospheric pressure. This avoids a potential loss-of-coolant accident caused by mispositioning a single valve during testing. Technical Specifications require verification that each ADS Stage 1, 2, and 3 valve strokes to its fully opened position during shutdown conditions (i.e., Mode 5).

The NRC staff considered the following regulatory requirements in reviewing the licensee's proposed UFSAR changes. Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52.98(c)(1) states that if a COL references a certified design, then changes to, or departures from, the information within the scope of the referenced design certification rule are subject to the applicable change procedures in that rule. The regulations in 10 CFR Part 52, Appendix D, Section III.B, require a holder of a COL referencing 10 CFR Part 52, Appendix D to incorporate by reference and comply with the requirements of Appendix D, including certified information in Tier 2* of the AP1000 Design Control Document (DCD). Section VIII.B.6a requires NRC approval for departures from Tier 2* information. Because the proposed amendment request involves changes to Tier 2* information, NRC approval is required before making the Tier 2* changes addressed in this LAR.

3.0 TECHNICAL EVALUATION

3.1 Deletion of Tier 2* Reference, WCAP-15847, Revision 1, from the VCSNS Units 2 and 3 UFSAR

The subject document was declared as Tier 2* in Revision 15 of the AP1000 Design Control Document (DCD). That Tier 2* information was carried forward into Revision 19, that is the current approved version of the AP1000 DCD as referenced in the Design Certification Rule for the AP1000 design (10 CFR Part 52, Appendix D). WCAP-1587 is not used to support any of the staff's safety conclusions in Revision 19 of the DCD. The subject document is obsolete and has been superseded by other documents (WEC procedures) supporting Revision 19 of the DCD. From a regulatory perspective, WCAP-15847 is a historical document. Accordingly, the staff concludes that inclusion of WCAP-15847 in the VCSNS Units 2 and 3 UFSAR is not necessary to meet regulatory requirements and therefore the deletion of the same is acceptable.

3.2 Modification to an OSA task description in the VCSNS Units 2 and 3 UFSAR

The OSA is an analysis technique used within the task analysis element of the HFE design process to evaluate workload and timing requirements. The UFSAR, Section 18.5.1, incorporates by reference the AP1000 DCD Section 18.5.1 which lists a series of tasks to be analyzed using OSA. One of the tasks is described in the amendment request as, "ADS valve testing during Mode 1." In accordance with standard operating practices and ANS/ANSI 51.1, "Nuclear Safety Criteria for the Design of Stationary Pressurized Water Reactor Plants," both ADS valves in each line are normally closed during normal reactor operation. If one of these valves is opened in Mode 1 (for example, for testing), the RCS pressure boundary is not fully maintained in accordance with this criteria. Table 3.9-16 of the VCSNS Units 2 and 3 UFSAR

describes the valve's American Society of Mechanical Engineers (ASME) inservice test requirements. Note 3 of UFSAR, Section 3.9.8.4, "Valve Inservice Testing," Table 3.9-16, "Valve Inservice Test Requirements," applies to the ADS Stage 1, 2, and 3 valves. Note 3 to this table requires these valves be normally closed to maintain the RCS pressure boundary. Opening an ADS valve in Mode 1 of reactor operation in order to perform an inservice test would result in a loss of coolant accident. The inservice test must be performed in a cooled and depressurized RCS state. The valves are tested in Mode 5 with the RCS cooled and depressurized. The proposed change corrects the task description from Mode 1 to Mode 5. Thus the proposed change corrects an error and ensures safety and technical consistency within the VCSNS Units 2 and 3 UFSAR. Accordingly, the staff concludes the correction from Mode 1 to Mode 5 is acceptable.

4.0 STATE CONSULTATION

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

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* on March 17, 2015 (80 FR 13912)). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need to be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The staff has concluded, based on the considerations discussed above, that there is reasonable assurance that (1) the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or the health and safety of the public. Therefore, the staff finds the changes proposed in this license amendment acceptable.

7.0 REFERENCES

1. Virgil C. Summer Nuclear Station Units 2 & 3, LAR 14-19, "HFE OSA Task Update and Removal of WCAP-15847," dated January 27, 2015, letter from South Carolina Electric & Gas Company (ADAMS Accession No. ML15028A537)
2. NUREG-0711, Revision 2, "Human Factors Engineering Program Review Model," dated February 28, 2004 (ADAMS Accession No. ML12205A463)

3. NUREG-1793, "Final Safety Evaluation Report - NUREG-1793, Supplement 2 - AP1000 Design Certification Amendment," dated August 5, 2011 (ADAMS Accession No. ML112061231)