



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

SAFETY EVALUATION BY THE OFFICE OF NEW REACTORS
RELATED TO AMENDMENT NOS. 115 AND 114
TO THE COMBINED LICENSE NOS. NPF-91 AND NPF-92, RESPECTIVELY
SOUTHERN NUCLEAR OPERATING COMPANY, INC.
GEORGIA POWER COMPANY
OGLETHORPE POWER CORPORATION
MEAG POWER SPVM, LLC
MEAG POWER SPVJ, LLC
MEAG POWER SPVP, LLC
CITY OF DALTON, GEORGIA
VOGTLE ELECTRIC GENERATING PLANT, UNITS 3 AND 4
DOCKET NOS. 52-025 AND 52-026

1.0 INTRODUCTION

By letter dated August 31, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17243A088), the Southern Nuclear Operating Company (SNC) requested that the U.S. Nuclear Regulatory Commission (NRC) amend Vogtle Electric Generating Plant (VEGP) Units 3 and 4, Combined License (COL) Numbers NPF-91 and NPF-92, respectively. The letter contained License Amendment Request (LAR) 17-029 and requested changes to the approved COL Appendix A, Technical Specifications (TS) by proposing modifications to TS 3.4.9 Applicability Notes and Required Actions to correctly reflect when the instrumentation would not provide accurate data.

2.0 REGULATORY EVALUATION

This LAR proposed changes to the approved COL Appendix A by proposing modifications to TS 3.4.9 to correctly reflect when the instrumentation would not provide accurate data.

The NRC staff considered the following regulatory requirements in reviewing the proposed LAR:

Appendix D, Section VIII.B.5.a allows an applicant or licensee who references this appendix to depart from Tier 2 information, without prior NRC approval, unless the proposed departure involves a change to or departure from Tier 1 information, Tier 2* information, or the TS, or requires a license amendment under paragraphs B.5.b or B.5.c of the section.

10 CFR Part 52, Appendix D, VIII.C.6 states that after issuance of a license, "Changes to the plant-specific TS will be treated as license amendments under 10 CFR 50.90." 10 CFR 50.90 addresses the application for amendment of license, construction permit, or early site permit.

10 CFR 52.98(f) requires NRC approval for any modification to, addition to, or deletion from the terms and conditions of a COL.

10 CFR 50.36, TS impose limits, operating conditions, and other requirements upon reactor facility operation for the public health and safety. The TS are derived from the analyses and evaluations in the safety analysis report. In general, TS must contain: (1) safety limits and limiting safety system settings; (2) limiting conditions for operation; (3) surveillance requirements (SR); (4) design features; and (5) administrative controls.

10 CFR 50.36(c)(2)(ii) requires that a TS limiting condition for operation (LCO) of a nuclear reactor must be established for instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary (RCPB).

10 CFR 50.36(c)(2)(iii) requires that the TS include SR to test, calibrate or inspect necessary systems and components to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the LCO will be met.

10 CFR Part 50, Appendix A, General Design Criterion (GDC) 2 requires that structures, systems and components important to safety be designed to withstand the effects of natural phenomena, such as earthquakes.

10 CFR 50, Appendix A, GDC 30 requires, in part, that plants provide the means for detecting and, to the extent practical, identifying the location of the source of reactor coolant leakage.

3.0 TECHNICAL EVALUATION

Existing Applicability Note 1 of TS 3.4.9 states that the containment atmosphere F18 particulate monitor is not required to be operable in MODE 1 when reactor power is less than 20 percent rated thermal power.

Existing Applicability Note 2 of TS 3.4.9 currently cites a condition for which the containment sump level measurement cannot be used. Note 2 currently states, "Containment sump level measurements cannot be used for leak detection if leakage is prevented from draining to the sump such as by redirection to the In-Containment Refueling Water Storage Tank (IRWST) by the containment shell gutter drains."

The closure of the IRWST gutter drain isolation valves would affect the ability of the containment sump level instrumentation to detect unidentified leakage. Condensate from RCPB or main steam line leakage can be captured in both the containment air filtration system (VCS) coil drains and the IRWST gutter drains, which are normally drained to the containment sump. When the IRWST gutter drain isolation valves are closed for in-service testing or maintenance, condensate from the gutters would be directed to the IRWST instead of the containment sump.

Preventing leakage collected in the IRWST gutters from reaching the containment sump would affect the containment sump level measurements for unidentified leakage.

The VCS controls containment building air temperature and humidity to provide a suitable environment for equipment operability during normal operation and shutdown. During operation of the purge flow path the containment air filtration system (VFS) provides outdoor air to purge the containment atmosphere of airborne radioactivity to provide an acceptable airborne radioactivity level prior to personnel access, as well as intermittent venting of air into and out of the containment to maintain the containment pressure within its design pressure range during normal plant operation. Operation of the VFS affects the ability of both methods of RCS leakage detection required by LCO 3.4.9 (the containment sump level and the containment atmosphere F18 particulate radioactivity monitoring) to detect unidentified leakage. While a containment purge is occurring, the humidity of the VFS supply air will affect the quantity of condensate that reaches the containment sump. The ingress of outside air could invalidate the containment sump level measurement because injected humidity could increase sump levels leading to false alarms and removal of humidity could divert condensation away from the VCS coils and the containment sump. Because of the associated humidity perturbation, operating the VFS will affect the ability of the containment sump level sensors to accurately detect RCPB leakage. There is a high potential of getting false readings on the containment sump level instruments because of the containment purge. VFS supply air is directed to the VCS intake; and VCS supply air is distributed throughout the containment compartments to provide cooling for various components. Because containment venting and containment purge involve injecting fresh air into containment and exhausting air from the containment atmosphere, operating the VFS will affect the radioactivity concentration of the air sample drawn through the radiation monitoring skid; and thus the ability of the containment atmosphere F18 particulate monitor to detect RCPB leakage.

Therefore, SNC proposed the following TS changes to TS 3.4.9. A change is proposed to the Applicability Notes of TS 3.4.9 in relation to the operability of the leak detection instrumentation during containment purge. Specifically, addition of an Applicability Note is proposed for the containment sump level instruments and the containment atmosphere F18 particulate monitor that would not require operability when the containment purge flow path is open and for 2 hours following closure of the containment purge flow path during the modes of LCO 3.4.9 applicability. In compensation for not requiring operability of these instruments for the period specified, an RCS inventory balance would be required every 24 hours after 12 hours of steady state operation while the conditions of the Applicability Note are met. The 2-hour normalization period associated with Note 1b is proposed to encompass the transport delay time to the containment sump and allow the VCS coolers to reestablish equilibrium atmospheric conditions inside containment prior to requiring operability for these instruments. The 2-hour normalization period also provides adequate time to collect data over a valid measurement interval. The proposed changes to TS 3.4.9 for RCS leakage detection provide for adequate detection of unidentified leakage from the RCS at all times using either the change in containment sump level, the containment atmosphere F18 particulate radioactivity, or the RCS inventory balance methods of detecting RCS unidentified leakage; and maintain compliance with GDC 30.

The purpose of existing Required Action A.1 of LCO 3.4.9 is that, with one required containment sump channel inoperable, to make sure that the remaining required containment sump level channel is operable. However, Required Action A.1 evaluates the volume input to the containment sump to judge operability of the remaining channel, but it lacks fidelity with respect to whether the instrument is reading an accurate input. The operability of the remaining containment sump level channel cannot be judged by changes in the containment

sump integrated volume because changes in the volume input to the containment sump are associated with normal operation. A change in the leak rate of a component or a new leak could increase the volume input to the containment sump without posing a safety issue. Therefore, the remaining required containment sump level channel could be measuring a change in containment sump volume input that is accurate and within the limits imposed by LCO 3.4.7 and LCO 3.7.8. Therefore, if Required Action A.1 is not met but leakage otherwise would be within limits, a plant shutdown would still be required in accordance with Condition D of TS 3.4.9.

SNC proposed a change to improve verification of the remaining channel by replacing Required Action A.1 from LCO 3.4.9 with a new SR which will provide more relevant monitoring to assess operability of the remaining required containment sump level channel. In order to better facilitate determining the operability of the remaining containment sump level instrument, the new SR would require a channel check of the containment sump level instruments on a frequency consistent with the existing SR for the containment atmosphere F18 particulate monitor. This change would be implemented by removing reference to the containment atmosphere F18 particulate monitor from SR 3.4.9.1, making this SR applicable to all instrumentation required by the LCO. The proposed changes to TS 3.4.9 impose compensatory actions when instrumentation used to detect abnormal degradation of the RCPB is not operable; and add an SR to assure the instrumentation performs as designed. Therefore, the proposed changes meet the requirements of 10 CFR 50.36(c). In addition, the changes to TS 3.4.9 for RCS leakage detection do not change the physical design of the RCS leakage detection equipment required by LCO 3.4.9. The containment sump level sensors and the containment atmosphere F18 particulate monitor are seismic Category I and remain functional after a safe shutdown earthquake, maintaining compliance with GDC 2.

Based on the technical evaluations above, the staff finds that the proposed changes to the COLs, Appendix A, plant-specific TS included in the LAR, the staff concludes that there is reasonable assurance that the requirements of 10 CFR Part 50, Appendix A, GDCs 2 and 30, and 10 CFR 50.36(c) will continue to be met. Therefore, the staff finds the proposed TS changes to be acceptable. The proposed TS Bases changes are consistent with the proposed TS changes.

3.1 SUMMARY

In LAR 17-029, the licensee proposed to make changes that would affect the COL Appendix A. The proposed changes do not adversely affect any safety-related equipment or function, design function, radioactive material barrier, or safety analysis. The NRC documented its review of the above changes in Section 3.0 of this safety evaluation and finds the changes acceptable in accordance with 10 CFR 50.36(c), 10 CFR 50, Appendix A, GDCs 2 and 30.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations in 10 CFR 50.91(b)(2), on February 6, 2018, the Georgia State official was consulted on 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 (82 FR 47032, published on October 10, 2017). 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 the issuance of the amendment.

6.0 CONCLUSION

The staff has concluded, based on the considerations discussed in Section 3.0 and confirming that these changes do not change an analysis methodology, assumptions, or the design itself, 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) there is reasonable assurance that 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 to the health and safety of the public. Therefore, the staff finds the changes proposed in this license amendment acceptable.

7.0 REFERENCES

1. Southern Nuclear Operating Company, Vogtle Electric Generating Plant Units 3 and 4, "Leakage Detection Instrumentation Operability (LAR-17-029)" August 31, 2017 (ADAMS Accession No. ML17243A088).
2. Vogtle Units 3 and 4 Updated Final Safety Analysis Report, Revision 6 and Tier 1, Revision 5, March 12, 2017 (ADAMS Accession No. ML17172A218).
3. AP1000 Design Control Document, Revision 19, dated June 13, 2011 (ADAMS Accession No. ML11171A500).
4. Combined License NPF-91 for Vogtle Electric Generating Plant Unit 3, Southern Nuclear Operating Company (ADAMS Accession No. ML14100A106).
5. Combined License NPF-92 for Vogtle Electric Generating Plant Unit 4, Southern Nuclear Operating Company (ADAMS Accession No. ML14100A135).