



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 189

TO COMBINED LICENSE NO. NPF-91

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 UNIT 3

DOCKET NO. 52-025

1.0 INTRODUCTION

By letter dated January 12, 2023 (Agencywide Documents Access and Management System Accession No. ML23012A238), Southern Nuclear Operating Company, Inc. (SNC or the licensee) requested that the U.S. Nuclear Regulatory Commission (NRC) amend the Vogtle Electric Generating Plant (VEGP) Unit 3, Combined License (COL) No. NPF-91. License Amendment Request (LAR) 23-002, "Emergency License Amendment Request: Technical Specification (TS) Limiting Conditions for Operation (LCO) 3.4.11, 3.4.12, and 3.4.13 Operability Requirements for Automatic Depressurization System (ADS) Stage 4 Flow Paths Prior to Initial Criticality (LAR-23-002)," proposed changes to the VEGP, Unit 3, COL Appendix A, Technical Specifications (TSs) 3.4.11, "Automatic Depressurization System (ADS) – Operating," 3.4.12, "Automatic Depressurization System (ADS) – Shutdown, RCS Intact," and 3.4.13, "Automatic Depressurization System (ADS) – Shutdown, RCS Open." The changes proposed for those TSs in the LAR are similar, in that a note would be added to each of the TS Limiting Condition for Operation that would detail the specific conditions under which the LCO would not apply for ADS stage 4. In its LAR, the licensee requested that the NRC process the proposed amendment on an emergency basis. The LAR further states that approval of the proposed amendment is requested within 72 hours of the submittal of this LAR to allow the progression of the ADS stage 4 pipe support rework activities while minimizing the potential impact on the ongoing startup activities.

SNC requested TS changes necessary to facilitate rework of two piping supports on the “B” and “D” ADS stage 4 lines. Recently, during precritical testing, elevated vibrations were found in the “B” and “D” paths of the ADS stage 4 line which discharge to the No. 2 steam generator compartment. Subsequent investigation of the vibrations revealed that certain piping supports were missing their U-bolt interface plates that make up part of a dynamic pipe clamp assembly. The missing interface plates were identified as a non-conforming condition. The rework to install the interface plates is expected to take 10 days. If the rework was performed under the current TS, it would require shutdown and cooldown actions that may take additional time, require reduction in operating mode, and possibly require additional actions. VEGP Unit 3 is currently in Mode 3, “Hot Standby,” and the piping work must be performed in Mode 4, “Safe Shutdown,” or potentially in Mode 5, “Cold Shutdown.” The piping rework is impeding entry into Mode 2, “Startup,” where the reactor may go “critical” for the first time. Because of the impact that following the current TS would have on the critical path schedule to reactor startup, SNC has proposed this LAR and requested emergency priority so that they may proceed to effect the rework as rapidly as safely achievable.

2.0 REGULATORY EVALUATION

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

10 CFR 52.98(f) provides that any modification to, addition to, or deletion from the terms and conditions of a COL is a proposed license amendment. These activities involve a change to COL Appendix A TS information. Therefore, NRC approval in the form of a license amendment is required prior to making these plant-specific proposed changes.

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 a license, including a combined license. The proposed LAR requires changes in the TS, and therefore an LAR is required to be submitted for NRC approval.

The regulation at 10 CFR 50.36(b) requires:

Each license authorizing operation of a ... utilization facility ... will include technical specifications. The technical specifications will be derived from the analyses and evaluation included in the safety analysis report, and amendments thereto, submitted pursuant to [10 CFR] 50.34 [“Contents of applications; technical information”]. The Commission may include such additional technical specifications as the Commission finds appropriate.

In 10 CFR 50.36, the Commission established its regulatory requirements related to the content of TS. Pursuant to 10 CFR 50.36, TS are required to include items in the following five specific categories related to station operation: (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation (LCO); (3) surveillance requirements (SR); (4) design features; and (5) administrative controls. The rule does not specify the specific requirements to be included in a plant’s TS. The regulation also states, in part, that “[a] summary statement of the bases or reasons for such specifications, other than those covering administrative controls, shall also be included in the application, but shall not become part of the technical specifications.”

As stated in 10 CFR 50.36(c)(2)(i), the “Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications.”

10 CFR 50.91(a)(5) provides the conditions under which the Commission may find that an emergency situation may exist, the associated process for publishing a notice of issuance and opportunity for hearing and public comment, the limits where the Commission may decline to process the emergency license amendment request, and the information the licensee must provide to support the assertion that emergency processing of the license amendment request is necessary and appropriate.

The staff also considered the following general design criterion (GDC) from Appendix A, “General Design Criteria for Nuclear Power Plants,” to 10 CFR Part 50, “Domestic Licensing of Production and Utilization Facilities”:

GDC 34, “Residual heat removal,” requires that the plant design include a system to remove residual heat from the reactor core so that specified acceptable fuel design limits and the design conditions of the reactor coolant pressure boundary are not exceeded.

3.0 TECHNICAL EVALUATION

3.1 Description of Proposed Changes

The licensee proposed revising the applicability of the limiting conditions for operation (LCO) for TS 3.4.11, “Automatic Depressurization System (ADS) – Operating,” TS 3.4.12, “Automatic Depressurization System (ADS) – Shutdown, RCS Intact,” and TS 3.4.13, “Automatic Depressurization System (ADS) – Shutdown, RCS Open.” Each LCO would be modified to state that the ADS stage 4 flow paths are not required to be operable prior to initial criticality. The specific proposed changes are as follows:

- A note is added to LCO 3.4.11 stating, “For Unit 3 only, in MODE 4, ADS stage 4 flow paths are not required to be OPERABLE prior to initial criticality.”
- A note is added to LCOs 3.4.12 and 3.4.13 stating, “For Unit 3 only, ADS stage 4 flow paths are not required to be OPERABLE prior to initial criticality.”

The proposed changes would allow the licensee to operate in Modes 4 and 5 prior to initial criticality without the ADS stage 4 flow paths required to be operable. The licensee did not request, and this license amendment does not authorize, any changes to the approved design of Vogtle 3.

3.2 Evaluation of Changes

The staff evaluated the proposed changes to determine if:

1. The licensee’s proposed changes are compliant with all applicable regulatory requirements, and
2. If operating the plant in accordance with the proposed changes provides reasonable assurance of adequate protection of public health and safety.

As stated in 10 CFR 50.36(b), “The technical specifications will be derived from the analyses and evaluation included in the safety analysis report.” In accordance with 10 CFR 50.36(c)(2), the LCO defines “the lowest functional capability or performance levels of equipment required for safe operation of the facility.” The staff reviewed the licensee’s Updated Final Safety Analysis Report (UFSAR) to determine if the safety analyses supported the licensee’s assertion that the ADS stage 4 does not need to be operable in Mode 4 and Mode 5 prior to initial criticality of the new fuel in the core. In Modes 4 and 5 prior to initial criticality, there is no decay heat or fission products generated in the core. While operating in this condition, ADS stage 4 flow paths are not required to perform any safety function such as depressurization, residual heat removal, or passive core cooling. Therefore, it is reasonable that the ADS stage 4 does not need to be operable prior to initial criticality of the reactor core. However, there are safety functions that require ADS stage 4 following initial criticality. Accordingly, the proposed notes are structured so that they are only applicable prior to initial criticality. In Section 3, “Technical Evaluation,” of the Enclosure to the LAR, the licensee states:

The term “initial criticality” is a commonly used term in the nuclear industry to refer to the time at which the reactor is first made critical. A reactor achieves criticality (and is said to be critical) when each fission event releases a sufficient number of neutrons to sustain an ongoing series of reactions. Initial criticality is an important milestone in the construction and commissioning of a nuclear power plant. Initial criticality is referred to repeatedly throughout the licensing basis documents, including the Combined License and Updated Final Safety Analysis Report (UFSAR), and its meaning is unambiguous, as there is a single defined point at which the reactor reaches criticality.

The staff reviewed VEGP Unit 3 UFSAR Section 14.2.7, “Initial Fuel Loading and Initial Criticality,” where the staff noted the UFSAR states that “initial criticality” follows “initial core load.” The staff agrees that the term “initial criticality” defines a specific time when the reactor is first made critical. Based on this, the staff finds that the proposed LCO notes provide a clear demarcation between the operating condition where ADS stage 4 does not need to be operable and the operating condition where ADS stage 4 must be operable. Once initial criticality is achieved, the notes will no longer be applicable and the three affected LCOs will be required to be met for the ADS stage 4 flow paths. Therefore, the LCO continues to meet 10 CFR 50.36 because it continues to define “the lowest functional capability or performance levels of equipment required for safe operation of the facility.”

In addition, while operating the plant in Modes 4 and 5 prior to initial criticality, no decay heat and other residual heat from the reactor core will be generated. Accordingly, GDC 34 requirements remain satisfied during this time.

Although not explicitly discussed in LAR 23-002, the proposed markup to LCO 3.4.13 shows renumbering the existing note as “1.” and numbering the proposed note as “2.” The heading is also revised from “NOTE” to “NOTES.” The staff finds these editorial changes acceptable and necessary for clarity and understanding.

Therefore, based on the previous discussion, the staff finds that the proposed changes to LCOs 3.4.11, 3.4.12, and 3.4.13 are acceptable because:

1. The changes are consistent with applicable regulatory requirements (i.e., 10 CFR 50.36 and GDC 34 requirements continue to be met).
2. The proposed changes are consistent with the UFSAR analyses for Vogtle 3.

3. Operating the plant in accordance with the proposed TS changes provides reasonable assurance of adequate protection of public health and safety.

3.3 SUMMARY

In LAR 23-002, SNC proposed to make changes that would affect LCOs for the ADS by making the ADS stage 4 operability requirements not applicable prior to initial criticality of the new fuel in the core. The NRC staff concluded that the proposed TS changes satisfy the requirements of 10 CFR 50.36(c)(2)(i) because the LCO defines the lowest functional capability or performance levels of equipment required for safe operation of the facility and with these proposed changes they will continue to meet the requirements. The staff also concluded that GDC 34 will continue to be met because no decay heat will be generated prior to initial criticality. In addition, facility operations in accordance with the LCO can be conducted without endangering the health and safety of the public.

4.0 EMERGENCY SITUATION

The NRC's regulations in 10 CFR 50.91(a)(5) state that where the Commission finds that an emergency situation exists, in that failure to act in a timely way would result in derating or shutdown of a nuclear power plant, or in prevention of either resumption of operation or of increase in power output up to the plant's licensed power level, it may issue a license amendment involving no significant hazards consideration without prior notice and opportunity for a hearing or for public comment. In such a situation, the NRC will publish a notice of issuance under 10 CFR 2.106, providing for opportunity for a hearing and for public comment after issuance.

As discussed in the licensee's application dated January 12, 2023, the licensee requested that the proposed amendment be processed by the NRC on an emergency basis. Regarding the basis for the emergency situation, SNC stated the following, in part, in the LAR:

The rework plan for installing the missing interface plates and returning the two ADS stage 4 flow paths to operable status identifies that the duration of this activity exceeds the completion times allowed for this activity, regardless of whether the two ADS stage 4 lines are reworked in Mode 4 or in Mode 5. If the rework is initiated while the plant is in Mode 4, TS 3.4.11 would require entry into Condition D after 72 hours, with subsequent entry into Mode 5 in the following 36 hours. If the rework is initiated while the plant is in Mode 5 with the Reactor Coolant System (RCS) pressure boundary intact, TS 3.4.12 would also require entry into Condition D after 72 hours, with an immediate subsequent requirement to initiate action to open the RCS pressure boundary. And finally, if the RCS pressure boundary is already open when the rework is initiated, TS 3.4.13 would require an alternate flow path with an equivalent area to be opened after 36 hours. An acceptable alternate ADS stage 4 flow path is a manway cover on the hot leg side of the steam generator channel head; however, this flow path is not readily available with the RCS filled. Therefore, conservatively, each of these situations would lead the plant operating staff to vent RCS per TS 3.4.13, Condition C, Required Action C.3.

Vogtle Unit 3 is currently in Mode 3, and completion of the ADS stage 4 pipe support rework is currently planned to be performed in Mode 4, however due to the need to bring the plant to a temperature condition low enough to safely perform the rework there is the potential to not be able to stay in Mode 4 for the entirety of the rework duration and may need to enter Mode 5. This comprehensive rework activity is identified as an impediment for completing startup testing, which is the critical path activity for entry into Mode 2 and

the eventual operation of Unit 3. To eliminate this impediment, SNC is requesting approval of this change, which will allow the ADS stage 4 pipe support rework to safely proceed without the likelihood of venting and refilling the RCS. The activities required to refill the RCS, including degassing, and to return to Mode 4, are conservatively estimated to add 3 days to the critical path to plant operation. SNC is requesting emergency processing of this license amendment request, as a delay in approval of the proposed changes would result in a day-for-day delay in the resumption of activities necessary to reach the current plant conditions required to achieve operation of the plant.

The NRC staff reviewed the licensee's basis for processing the proposed amendment as an emergency amendment (as discussed above) and determined that an emergency situation exists consistent with the provisions in 10 CFR 50.91(a)(5). Furthermore, the NRC staff determined that: (1) the licensee used its best efforts to make a timely application; (2) the licensee could not reasonably have avoided the situation; and (3) the licensee has not abused the provisions of 10 CFR 50.91(a)(5). Based on these findings, and the determination that the amendment involves no significant hazards consideration as discussed below, the NRC staff has determined that a valid need exists for issuance of the license amendment using the emergency provisions of 10 CFR 50.91(a)(5).

5.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION

The NRC's regulation in 10 CFR 50.92(c) states that the NRC may make a final determination, under the procedures in 10 CFR 50.91, that a license amendment involves no significant hazards consideration if operation of the facility, in accordance with the amendment, would not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety.

An evaluation of the issue of no significant hazards consideration is presented below:

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The proposed changes do not adversely affect the operation of any structures, systems, or components (SSCs) associated with an accident initiator or initiating sequence of events. The proposed changes do not affect the design of the Automatic Depressurization System (ADS) or the Reactor Coolant System (RCS).

The proposed amendment does not affect accident initiators or precursors nor adversely alter the design assumptions, conditions, and configuration of the facility. The proposed amendment does not alter any plant equipment or operating practices with respect to such initiators or precursors in a manner that the probability of an accident is increased. The proposed amendment will not alter assumptions relative to the mitigation of an accident or transient event, as these assumptions are based upon irradiated fuel for the associated accident or transient. The proposed amendment does not increase the likelihood of the malfunction of an SSC or impact analyzed accidents.

Therefore, the proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed amendment does not introduce any new or unanalyzed modes of operation. The proposed changes do not involve a physical alteration to the plant (i.e., no new or different type of equipment will be installed) or a change to the methods governing normal plant operation. The changes do not alter the assumptions made in the safety analysis, as these assumptions are based upon irradiated fuel for the associated accident or transient.

Therefore, the proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No

The margin of safety is related to the ability of the fission product barriers to perform their design functions during and following an accident. These barriers include the fuel cladding, the reactor coolant system, and the containment. The performance of these fission product barriers is not affected by the proposed amendment; therefore, the margins to the onsite and offsite radiological dose limits are not significantly reduced.

Therefore, the proposed amendment does not involve a significant reduction in a margin of safety.

Based on the above evaluation, the staff concludes that the three standards of 10 CFR 50.92(c) are satisfied. Therefore, the staff has made a final determination that no significant hazards consideration is involved for the proposed amendment and that the amendment should be issued as allowed by the criteria contained in 10 CFR 50.91.

6.0 STATE CONSULTATION

In accordance with the Commission's regulations in 10 CFR 50.91(b) the Georgia State official was notified of the proposed issuance of the amendment. In accordance with the Commission's regulations in 10 CFR 50.91(b), on January 13, 2023, the Commission consulted the State official. The State of Georgia had no comment.

7.0 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, and that there is no significant increase in individual or cumulative occupational radiation exposure. The NRC has made a final no significant hazards

consideration determination, as stated above. 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.

8.0 CONCLUSION

The staff has concluded, based on the considerations discussed in Section 3.0 that there is reasonable assurance that: (1) the health and safety of the public will not be endangered by the proposed changes, (2) the changes are 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.

9.0 REFERENCES

1. Southern Nuclear Operating Company, Vogtle Electric Generating, Plant Unit 3, "Emergency License Amendment Request: Technical Specification (TS), Limiting Conditions for Operation (LCO) 3.4.11, 3.4.12, and 3.4.13 Operability Requirements for Automatic Depressurization System (ADS) Stage 4 Flow Paths Prior to Initial Criticality (LAR-23-002)," January 12, 2023 (ML23012A238).
2. Combined License NPF-91 for Vogtle Electric Generating Plant, Unit 3, Appendix A, "Vogtle Electric Generating Plant Units 3 and 4 Technical Specifications." Southern Nuclear Operating Company, February 10, 2012 (ML14100A106).
3. Vogtle Electric Generating Plant Units 3 and 4, Updated Final Safety Analysis Report, Revision 11, June 15, 2022 (ML22179A145).