SAFETY EVALUATION BY THE OFFICE OF NEW REACTORS

RELATED TO AMENDMENT NOS. 70 AND 69

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, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16244A836), Southern Nuclear Operating Company, Inc. (SNC/licensee) submitted license amendment request (LAR) 16-021 and requested that the U.S. Nuclear Regulatory Commission (NRC) amend the combined licenses (COL) for Vogtle Electric Generating Plant (VEGP), Units 3 and 4, COL Numbers NPF-91 and NPF-92, respectively.

The LAR would revise the Updated Final Safety Analysis Report (UFSAR) in the form of departures from the incorporated plant-specific Design Control Document (DCD) Tier 2* information. Specifically, the LAR proposed changes to revise the COLs to clarify information in the Tier 2* Technical Report WCAP-17179, Revision 2, "AP1000 Component Interface Module Technical Report," (ADAMS Accession No. ML102170265 – non-public) that shows design compliance with licensing bases requirements. A change to the ownership of two reference documents in Technical Report WCAP-17179, Revision 2, was also included in the LAR. In addition, the LAR proposed a change to the [[

]].

The NRC staff issued an initial *Federal Register* notice of opportunity to request a hearing and a proposed No Significant Hazards Determination on October 25, 2016 (81 FR 73440).

2.0 REGULATORY EVALUATION

The regulation in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52, Appendix D, VIII.B.6 requires prior NRC approval for departure from Tier 2* information.

The regulation in 10 CFR Part 50, Appendix A, General Design Criterion (GDC) 22, “Protection System Independence,” provides, in part, that the protection system shall be designed to assure that the effects of natural phenomena, and of normal operating, maintenance, testing, and postulated accident conditions on redundant channels do not result in loss of the protection function, or shall be demonstrated to be acceptable on some other defined basis.

The regulation 10 Part CFR 50, Appendix A, GDC 24, “Separation of Protection and Control Systems,” provides, in part, that the protection system shall be separated from control systems to the extent that failure of any single control system component or channel, or failure or removal from service of any single protection system component or channel which is common to the control and protection systems leaves intact a system satisfying all reliability, redundancy, and independence requirements of the protection system.

3.0 TECHNICAL EVALUATION

The protection and safety monitoring system (PMS) is the reactor protection system for the certified AP1000 reactor design (ADAMS Accession No. ML11171A500). The PMS includes the reactor trip system (RTS) and the engineered safety features actuation system (ESFAS). The PMS initiates reactor trip and actuation of engineered safety features in response to plant conditions monitored by process instrumentation and provides safety-related displays.

The component interface module (CIM) is a subsystem of the PMS. The two main components of the CIM subsystem are the [[
]]. The CIM subsystem is designed to provide the interface between field components and the PMS and the plant control system (PLS). [[
]]. The CIM subsystem communicates with the safety-related PMS using the safety remote node controllers (SRNC) assembly, and the CIM subsystem communicates with the non-safety-related PLS using a remote node controller (RNC). The CIM modules provide the interface between the PMS ESFAS functions and plant components.

In the LAR, the licensee proposed to (1) clarify the design process documentation and the associated licensing documents in the Tier 2* Technical Report WCAP-17179, (2) revise the ownership of SRNC and CIM intellectual property, and (3) modify the [[
]].

The changes proposed in this LAR are made to clarify information presented in Technical Report WCAP-17179, which is referenced in the UFSAR as a Tier 2* document. Therefore, a LAR must be submitted for approval in accordance with 10 CFR Part 52, Appendix D, Section VIII.B.6. The technical evaluations are provided below for these changes.

3.0.1 Clarification of Design Process Documentation and Associated Licensing Documents

The licensee proposed to revise the COLs to clarify information in the Tier 2* Technical Report WCAP-17179, Revision 2, which demonstrates design compliance with licensing bases requirements. Technical Report WCAP-17179, Revision 2, is incorporated by reference into the UFSAR to provide additional details regarding the CIM subsystem design. Specifically, this proposed change will revise the titles of the two CIM field programmable gate array (FPGA) and SRNC FPGA specification documents to designate them as CIM FPGA and SRNC FPGA software requirements specifications. Two additional software design description documents are also added as references in the proposed change. The NRC staff found that this proposed change of documentation results in tighter compliance with the code requirements endorsed by Regulatory Guide (RG) 1.172, "Software Requirements Specifications for Digital Computer Software Used in Safety Systems of Nuclear Power Plants," (ADAMS Accession No. ML13007A173). Technical Report WCAP-17179, Revision 2, is a Tier 2* design description document; therefore, a LAR is required to change the references. The NRC staff found that there is no change to the design of the CIM subsystem from the proposed change of documentation. The change just provides tighter compliance with license basis requirements. The proposed change of documentation does not impact the safety functional design and performance of the CIM subsystem and does not affect protection system independence. Therefore, based on the foregoing and because of continued compliance with the requirements of GDCs 22 and 24, this proposed change is acceptable to the NRC staff.

3.0.2 Ownership of CIM and SRNC Intellectual Property

The FPGA specification documents for the CIM, 6105-10004 "SRNC FPGA Specification" and 6105-20004 "CIM FPGA Specification," which are referenced in the Tier 2* Technical Report WCAP-17179, Revision 2, were originally developed by a company named CS Innovations. Westinghouse Electric Company (WEC) now owns the CIM and SRNC intellectual property previously held by CS Innovations. The licensee proposed to remove the reference to CS Innovations' intellectual property to reflect the acquisition of the CIM and SRNC intellectual property by WEC. This proposed change to the ownership of CIM and SRNC intellectual property does not affect protection system independence nor does it impact the certified safety functional design for the CIM subsystem. Therefore, based on the foregoing and because of continued compliance with the requirements of GDCs 22 and 24, this proposed change is acceptable to the NRC staff.

3.0.3 [[ ]]

The licensee proposed to change the [[

]]. The NRC staff reviewed the proposed [[ ]]. A [[ ]] is included in Technical Report WCAP-17179, Revision 2, only as a general technical specification for the FPGA component in the CIM, providing flexibility for the specific licensee (in this case, SNC) to choose a specific FPGA. The proposed change is being made to identify the specific [[ ]] selected for the VEGP CIM subsystem. The proposed change enables the FPGA used in the actual design to function properly and the output actuation relays to drive outputs as required. With this change to the [[

]]. The proposed change also will have a negligible effect on the 24 Vdc supplies and ultimately the plant electrical system load. The [[

]] no other technical change to the design of the CIM subsystem was proposed. The proposed change does not affect protection system independence nor does it revise the safety functional design of the CIM subsystem; therefore, it continues to meet the requirements of GDC 22. Additionally, because it does not have any adverse effect on the functions of the CIM subsystem, the proposed change to the [[ ]] does not impact the separation of protection and control systems. Therefore, based on the foregoing and because of continued compliance with the requirements of GDC 22, this proposed change is acceptable to the NRC staff.

3.0.4 Summary

The NRC staff finds that the three proposed changes do not adversely impact any function or feature used for the prevention and mitigation of accidents or their safety analyses. The proposed changes do not involve nor interface with any SSC accident initiator or initiating sequence of events related to the accidents evaluated in the plant-specific DCD or UFSAR. The proposed changes do not affect the radiological source terms (i.e., amounts and types of radioactive materials released, their release rates and release durations) used in the accident analyses. No system or design function or equipment qualification is adversely affected by the proposed changes. The proposed changes do not result in a new failure mode, malfunction or sequence of events that could adversely affect a radioactive material barrier or safety-related equipment. The proposed changes do not allow for a new fission product release path, result in a new fission product barrier failure mode, or create a new sequence of events that would result in significant fuel cladding failures. The proposed three changes do not adversely affect any design code limit allowable value or design analysis nor do they adversely affect any safety analysis input or result, or design/safety margin.

The NRC staff finds that the three proposed changes ensure that the PMS and CIM subsystem operate as designed and that the CIM subsystem design and specifications is properly documented in the UFSAR. The proposed changes meet the requirements of GDCs 22 and 24. Therefore, based on the above technical evaluations, the NRC staff concludes that the proposed changes are acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations in 10 CFR 50.91(b) (2), the Georgia State official was notified of the proposed issuance of the amendment on December 7, 2016. The State official 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, and that 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 (81 FR 73440; published on October 25, 2016) and the discussion in Section 3.0 above continues to support that proposed finding. 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 Commission has concluded, based on the considerations discussed above that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by construction activities 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 NRC staff finds the changes proposed in this license amendment to be acceptable.