



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

July 15, 2016

Mr. C. R. Pierce  
Regulatory Affairs Director  
Southern Nuclear Operating Company, Inc.  
P.O. Box 1295, Bin 038  
Birmingham, AL 35201-1295

**SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2 - ISSUANCE OF  
AMENDMENTS FOR CONTAINMENT PENETRATIONS (CAC NOS. MF7544  
AND MF7545)**

Dear Mr. Pierce:

The U.S. Nuclear Regulatory Commission (NRC, the Commission) has issued the enclosed Amendment No. 181 to Renewed Facility Operating License No. NPF-68 and Amendment No. 162 to Renewed Facility Operating License No. NPF-81 for the Vogtle Electric Generating Plant (VEGP), Units 1 and 2, in response to your application dated July 18, 2014, as supplemented by letters dated February 27, 2015; May 2, 2016; and June 14, 2016.


The amendments revise Technical Specification 3.9.4, "Containment Penetrations," to allow containment penetrations to be unisolated under administrative controls during core alterations or movement of irradiated fuel assemblies within containment by adopting previously NRC-approved Technical Specifications Task Force (TSTF) Change Traveler TSTF-312, "Administratively Control Containment Penetrations."

C. Pierce

- 2 -

A copy of the related safety evaluation is also enclosed. A Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

  
Bob Martin, Senior Project Manager  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-424 and 50-425

Enclosures:

1. Amendment No. 181 to NPF-68
2. Amendment No. 162 to NPF-81
3. Safety Evaluation

cc w/enclosures: Distribution via Listserv



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NUCLEAR REGULATORY COMMISSION  
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SOUTHERN NUCLEAR OPERATING COMPANY, INC.

GEORGIA POWER COMPANY

OGLETHORPE POWER CORPORATION

MUNICIPAL ELECTRIC AUTHORITY OF GEORGIA

CITY OF DALTON, GEORGIA

DOCKET NO. 50-424

VOGTLE ELECTRIC GENERATING PLANT, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 181  
Renewed License No. NPF-68

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment to the Vogtle Electric Generating Plant, Unit 1 (the facility), Renewed Facility Operating License No. NPF-68, filed by the Southern Nuclear Operating Company, Inc. (the licensee), acting for itself, Georgia Power Company, Oglethorpe Power Corporation, Municipal Electric Authority of Georgia, and City of Dalton, Georgia (the owners), dated July 18, 2014, as supplemented by letters dated February 27, 2015; May 2, 2016; and June 14, 2016, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

Enclosure 1

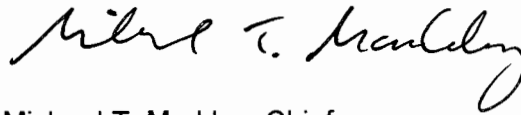
2. Accordingly, the license is hereby amended by page changes to the Technical Specifications (TSS) as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-68 is hereby amended to read as follows:

C. Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 181, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 120 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Michael T. Markley, Chief  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to Renewed NPF-68  
and Technical Specifications

Date of Issuance: July 15, 2016



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

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

GEORGIA POWER COMPANY

OGLETHORPE POWER CORPORATION

MUNICIPAL ELECTRIC AUTHORITY OF GEORGIA

CITY OF DALTON, GEORGIA

DOCKET NO. 50-425

VOGTLE ELECTRIC GENERATING PLANT, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 162  
Renewed License No. NPF-81

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment to the Vogtle Electric Generating Plant, Unit 2 (the facility), Renewed Facility Operating License No. NPF-81 filed by the Southern Nuclear Operating Company, Inc. (the licensee), acting for itself, Georgia Power Company Oglethorpe Power Corporation, Municipal Electric Authority of Georgia, and City of Dalton, Georgia (the owners), dated July 18, 2014, as supplemented by letters dated February 27, 2015; May 2, 2016; and June 14, 2016, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

Enclosure 2

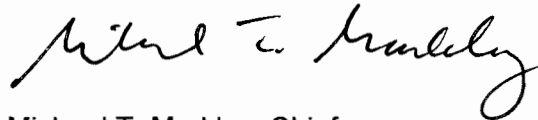
2. Accordingly, the license is hereby amended by page changes to the Technical Specifications (TSs) as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-81 is hereby amended to read as follows:

C. Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 162, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 120 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Michael T. Markley, Chief  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to Renewed NPF-81  
and Technical Specifications

Date of Issuance: July 15, 2016

ATTACHMENT

VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2

LICENSE AMENDMENT NOS. 181 AND 162

RENEWED FACILITY OPERATING LICENSE NOS. NPF-68 AND NPF-81

DOCKET NOS. 50-424 AND 50-425

Replace the following pages of the Renewed Facility Operating Licenses and the Appendix A Technical Specifications (TSs) with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove Pages

License

License No. NPF-68, page 4

License No. NPF-81, page 3

TSs

3.9.4-1

Insert Pages

License

License No. NPF-68, page 4

License No. NPF-81, page 3

TSs

3.9.4-1

(1) Maximum Power Level

Southern Nuclear is authorized to operate the facility at reactor core power levels not in excess of 3625.6 megawatts thermal (100 percent power) in accordance with the conditions specified herein.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 181, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

(3) Southern Nuclear Operating Company shall be capable of establishing containment hydrogen monitoring within 90 minutes of initiating safety injection following a loss of coolant accident.

(4) Deleted

(5) Deleted

(6) Deleted

(7) Deleted

(8) Deleted

(9) Deleted

(10) Mitigation Strategy License Condition

The licensee shall develop and maintain strategies for addressing large fires and explosions and that include the following key areas:

(a) Fire fighting response strategy with the following elements:

1. Pre-defined coordinated fire response strategy and guidance
2. Assessment of mutual aid fire fighting assets
3. Designated staging areas for equipment and materials
4. Command and control
5. Training and response personnel

(b) Operations to mitigate fuel damage considering the following:

1. Protection and use of personnel assets
2. Communications
3. Minimizing fire spread
4. Procedures for Implementing integrated fire response strategy
5. Identification of readily-available pre-staged equipment
6. Training on integrated fire response strategy



- (2) Georgia Power Company, Oglethorpe Power Corporation, Municipal Electric Authority of Georgia, and City of Dalton, Georgia, pursuant to the Act and 10 CFR Part 50, to possess but not operate the facility at the designated location in Burke County, Georgia, in accordance with the procedures and limitations set forth in this license;
- (3) Southern Nuclear, pursuant to the Act and 10 CFR Part 70, to receive, possess, and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Final Safety Analysis Report, as supplemented and amended;
- (4) Southern Nuclear, pursuant to the Act and 10 CFR Parts 30, 40, and 70 to receive, possess, and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
- (5) Southern Nuclear, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components;
- (6) Southern Nuclear, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility authorized herein.

C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter 1 and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect, and is subject to the additional conditions specified or incorporated below.

(1) Maximum Power Level

Southern Nuclear is authorized to operate the facility at reactor core power levels not in excess of 3625.6 megawatts thermal (100 percent power) in accordance with the conditions specified herein.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 162 and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

The Surveillance requirements (SRs) contained in the Appendix A Technical Specifications and listed below are not required to be performed immediately upon implementation of Amendment No. 74. The SRs listed below shall be

3.9 REFUELING OPERATIONS

3.9.4 Containment Penetrations

LCO 3.9.4

The containment penetrations shall be in the following status:

- a. The equipment hatch is capable of being closed and held in place by four bolts;
- b. The emergency and personnel air locks are isolated by at least one air lock door, or if open, the emergency and personnel air locks are isolable by at least one air lock door with a designated individual available to close the open air lock door(s); and
- c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere either:
  - 1. closed by a manual or automatic isolation valve, blind flange, or equivalent, or
  - 2. capable of being closed by at least two OPERABLE Containment Ventilation Isolation valves

NOTE

Penetration flow path(s) providing direct access from the containment atmosphere to the outside atmosphere may be unisolated under administrative controls.

APPLICABILITY: During CORE ALTERATIONS,  
During movement of irradiated fuel assemblies within containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more containment penetrations not in required status.	A.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u> A.2 Suspend movement of irradiated fuel assemblies within containment.	Immediately



UNITED STATES  
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
AMENDMENT NO. 181 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-68  
AMENDMENT NO. 162 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-81  
VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2  
SOUTHERN NUCLEAR OPERATING COMPANY, INC.

1.0 INTRODUCTION

By letter dated July 18, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14203A124), as supplemented by letters dated February 27, 2015; May 2, 2016; and June 14, 2016 (ADAMS Accession Nos. ML15058A891, ML16123A134, and ML16168A153, respectively), Southern Nuclear Operating Company, Inc., et al (SNC, the licensee), submitted a license amendment request (LAR) for changes to the Technical Specifications (TSs) for the Vogtle Electric Generating Plant, Units 1 and 2 (VEGP). The LAR proposed to revise the VEGP TSs to incorporate 23 changes that have been made to NUREG-1431, "Standard Technical Specifications - Westinghouse Plants" (STS), since VEGP adopted Improved TSs based on Westinghouse Owners Group (WOG) STS, Revision 1, issued in April 1995. The NRC approved 22 of these changes in Amendment Nos. 180 and 161, dated June 9, 2016 (ML15132A569). One change requested by the licensee, identified by Technical Specifications Task Force (TSTF) Change Traveler (TSTF)-312, Revision 1, "Administratively Control Containment Penetrations," August 16, 1999, was not approved at that time. The proposed TS change would add a Note to the Limiting Condition for Operation (LCO) Specification 3.9.4, "Containment Penetrations," allowing penetration flow path(s) that have direct access from the containment atmosphere to the outside atmosphere to be unisolated during fuel movement and core alterations.

The supplemental letters dated February 27, 2015; May 2, 2016; and June 14, 2016, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the U.S. Nuclear Regulatory Commission (NRC) staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on March 3, 2015 (80 FR 11480).

The licensee also included in the LAR its TS Bases changes for the proposed change to the TSs. TS Bases are controlled through TS 5.5.14, "Technical Specifications (TS) Bases Control Program." The NRC staff reviewed the changes and concluded that they are consistent with the changes to the VEGP TSs.

## 2.0 REGULATORY EVALUATION

In 10 CFR 50.36, "Technical specifications," the NRC established its regulatory requirements related to the content of TSs. 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; (3) surveillance requirements; (4) design features; and (5) administrative controls. The regulation further states that 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 until the condition can be met.

Title 10 of *Code of Federal Regulations* (10 CFR), Part 100, "Reactor Site Criteria," states that (1) an individual located at any point on the boundary of the exclusion area for 2 hours immediately following onset of the postulated fission product release would not receive a total radiation dose to the whole body in excess of 25 roentgen equivalent man (rem) or a total radiation dose in excess of 300 rem to the thyroid from iodine exposure, and (2) an individual located at any point on the outer boundary of the low population zone, who is exposed to the radioactive cloud resulting from the postulated fission product release during the entire period of its passage, would not receive a total radiation dose to the whole body in excess of 25 rem or a total radiation dose in excess of 300 rem to the thyroid from iodine exposure.

The regulation in 10 CFR, Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," General Design Criterion (GDC) 19, "Control room," states, in part, that, "Adequate radiation protection shall be provided to permit access and occupancy of the control room under accident conditions without personnel receiving radiation exposures in excess of 5 rem whole body, or its equivalent to any part of the body, for the duration of the accident."

Regulatory Guide (RG) 1.195, Revision 0, "Methods and Assumptions for Evaluating Radiological Consequences of Design Basis Accidents at Light-Water Nuclear Power Reactors," May 2003 (ADAMS Accession No. ML031490640), provides guidance to licensees on acceptable methods and assumptions for performing evaluations of fission product releases and radiological consequences of several postulated light-water reactor design basis accidents. Regulatory Position (RP) 4.4 and Table 4 provide radiological acceptance criteria for offsite locations for the fuel handling accident (FHA) (6.3 rem whole body and 75 rem thyroid). RP 4.5 provides radiological acceptance criteria for the control room for the FHA (5 rem whole body and 50 rem thyroid and skin).

RG 1.196, Revision 1, "Control Room Habitability at Light-Water Nuclear Power Reactors," January 2007 (ADAMS Accession No. ML063560144), provides guidance and criteria that licensees may apply to control rooms that are modified, are newly designed, or must have their conformance to the regulations reconfirmed. Per RG 1.195, the guidance in RG 1.195 will supersede corresponding radiological analysis assumptions provided in other regulatory guides (i.e., RG 1.25, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Fuel Handling Accident in the Fuel Handling and Storage Facility for Boiling and Pressurized Water Reactors" (ADAMS Accession No. ML083300022), when used in conjunction with guidance in RG 1.196.

RG 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," May 2003 (ADAMS Accession No. ML031490664), provides guidance regarding an acceptable assumption for inleakage into the control room from ingress and egress. RP 2.5, "Inleakage Test Acceptance Criteria," states, that, "The staff considers 10 cfm [cubic feet per minute] as a reasonable estimate for ingress and egress for control rooms without vestibules."

NUREG-0800, "Standard Review Plan," Section 6.4, "Control Room Habitability System" (ADAMS Accession No. ML070550069), footnote 4, states:

Normally 5 L/s [liters per second] (10 cfm) infiltration is assumed for conservatism. This flow could be reduced or eliminated if the applicant provides assurance that backflow (primarily as a result of ingress and egress) will not occur. This may mean installing two-door vestibules or equivalent.

TSTF 312-A, Revision 1 (ADAMS Accession No. ML111940085)c, modified Westinghouse Standard Technical Specification 3.9.4, "Containment Penetrations," to add a Note to the LCO statement allowing penetration flow path(s) that have direct access from the containment atmosphere to the outside atmosphere to be unisolated under administrative control.

On November 30, 1995, VEGP License Amendment No. 92 for Unit 1, and No. 70 for Unit 2 (ADAMS Accession No. ML012350007), revised LCO 3.9.4 to allow the personnel air lock to be open during core alterations or movement of irradiated fuel within containment, if appropriate administrative controls are established. Those changes were based on NRC-approved TSTF-68, Revision 2, "Containment Personnel Airlock Doors Open During Fuel Movement."

On September 11, 2000, VEGP License Amendment No. 115 for Unit 1, and No. 93 for Unit 2 (ADAMS Accession No. ML003749439), revised LCO 3.9.4 by allowing the equipment hatch to be open during core alterations and/or during movement of irradiated fuel within the containment provided that the capability for closure is maintained.

The NRC staff also considered relevant information in the VEGP Updated Final Safety Analysis Report and TSs.

The regulatory requirements from which the NRC staff based its acceptance on are the reference values in 10 CFR Part 100, and the accident-specific guideline values in RPs 4.4 and 4.5 of RG 1.195.

### 3.0 TECHNICAL EVALUATION

The licensee has proposed to adopt TSTF-312, Revision 1, "Administrative Control of Containment Penetrations." The proposed change would add a Note to the limiting condition for operation (LCO) for Specification 3.9.4, "Containment Penetrations," allowing penetration flow path(s) that have direct access from the containment atmosphere to the outside atmosphere to be unisolated under administrative control during core alterations or during movement of irradiated fuel assemblies within containment.

In order to support a plant-specific TS change that adopts TSTF 312, the licensee must show that the applicable dose acceptance criteria are met without crediting the prompt closure of any containment openings. In previous LARs, the licensee has shown that for the FHA, containment integrity is not required to meet the applicable acceptance criteria. These evaluations have been made for releases through an open equipment hatch and for an open personnel air lock. These evaluations were accepted by the NRC and resulted in the issuance of several license amendments that are listed in Section 2.0 of this safety evaluation.

TSTF-312-A, Rev. 1 includes the following Reviewers Note:

The allowance to have containment personnel airlock doors open and penetration flow paths with direct access from the containment atmosphere to the outside atmosphere to be unisolated during fuel movement and CORE ALTERATIONS is based on (1) confirmatory dose calculations of a fuel handling accident as approved by the NRC staff which indicate acceptable radiological consequences and (2) commitments from the licensee to implement acceptable administrative procedures that ensure in the event of a refueling accident (even though the containment fission product control function is not required to meet acceptable dose consequences) that the open airlock can and will be promptly closed following containment evacuation and that the open penetration(s) can and will be promptly closed. The time to close such penetrations or combination of penetrations shall be included in the confirmatory dose calculations.

In its LAR dated July 14, 2014, the licensee proposed to complete the three actions listed below.

1. Administrative controls will be established to ensure appropriate personnel are aware of the open status of the penetration flow path(s) during CORE ALTERATIONS or movement of irradiated fuel assemblies within the containment.
2. Existing administrative controls for open containment airlock doors will be expanded to ensure specified individuals are designated and readily available to isolate any open penetration flow path(s) in the event of an FHA inside containment.
3. The time needed to close open containment penetration(s) will be incorporated into the confirmatory dose calculation for FHAs.

The licensee also proposes to incorporate actions (1) and (2) listed above into the VEGP TS Bases 3.9.4 by the addition of the following Note.

The LCO is modified by a Note allowing penetration flow paths with direct access from the containment atmosphere to the outside atmosphere to be unisolated under administrative controls. Administrative controls ensure that 1) appropriate personnel are aware of the open status of the penetration flow path during CORE ALTERATIONS or movement of irradiated fuel assemblies within containment, and 2) specified individuals are designated and readily available to isolate the flow path in the event of a fuel handling accident.

The TS BASES are controlled by TS 5.5.14, "Technical Specifications (TS) Bases Control Program." The NRC staff concludes that this provides an adequate level of control for these actions. In its RAI dated May 17, 2016, the NRC staff requested confirmation that the administrative controls documents will be subject to the change control process of 10 CFR 50.59, "Changes test and experiments." In its response dated June 14, 2016, the licensee stated that the subject procedures will be subject to the 10 CFR 50.59 screening process. The NRC staff concludes that this provides an adequate level of control for these procedures.

In its letter dated February 27, 2015 (ADAMS Accession No. ML15058A891), the licensee responded to a request for additional information (RAI), stating the following:

Due to the fact that the FHA dose consequences are shown to be within acceptance limits without assuming that any containment penetration leak path(s) are isolated in response to the event, there is no need to establish a required time to close unisolated containment penetration(s), or incorporate these times into the FHA confirmatory dose calculation. Consistent with the changes identified in TSTF-312-A, TS 3.9.4, and the associated Bases, will be revised to include a Note that directs isolation of open containment penetrations by designated and available individuals in the event of an FHA. However, due to the fact that the commitment proposed in the LAR submittal to identify the time to close such penetrations or combination of penetrations in the confirmatory dose calculations is not necessary, it is withdrawn.

As previously stated, the licensee has shown that a design-basis FHA does not require the equipment hatch or the personal airlock to be closed in order for the dose acceptance criteria to be met. Therefore, the NRC staff agrees with the licensee that incorporating the time needed to close open containment penetrations in the dose calculations is not needed.

The NRC staff questioned the potential for penetrations that communicate from the containment atmosphere to areas within the plant proper to be a direct leakage path into the control room without the atmospheric dispersion that would occur for releases to the outside atmosphere. This concern was the focus of an audit performed on May 3, 2016. The audit provided clarification of the licensee's positions, as well as for the examination of other supporting information (documented in the audit summary report dated June 2, 2016 (ADAMS Accession No. ML16138A651). The NRC staff issued a letter dated May 17, 2016 (ADAMS Accession No. ML16125A411), requesting additional information as follows:

Following a fuel handling accident (FHA) there exists a potential for activity to migrate from open containment penetrations into adjacent buildings and eventually into the control room. Please provide additional information describing how this potential contribution to control room dose is accounted for in, or bounded by, the FHA dose consequence analysis of record.

In its letter dated June 14, 2016, the licensee responded to this RAI, describing the plant features that would preclude the migration of activity that could significantly impact the FHA dose analysis of record. In its letter, the licensee stated:

Vogtle Units 1 and 2 share a common control room envelope (CRE) which is maintained at a positive pressure during normal plant operation with the normal non-safety related air-conditioning system. For accident mitigation, there are two independent emergency filtration trains (along with their dedicated cooling system) for each unit. Thus, there are a total of four filtration trains, and any one of them is sufficient to maintain the dual unit control room envelope at a positive pressure greater than 1/8 inch [water gage] wg relative to all adjacent areas. Since Vogtle has a dual unit control room, the emergency filtration system remains functional for the operating unit even during an outage on the opposite unit.

In the event of a FHA, upon detection of radiation in the control room intake, the emergency filtration system will activate automatically pressurizing the main control room. During the recent (April 2016) control room in-leakage (tracer gas) testing, SNC demonstrated that the control room can be maintained at a positive pressure of at least 1/8 inch wg relative to all adjacent areas.

The dual unit control room is located within the control building structure, which is protected from effects of a tornado and fire with pressure and fire rated doors. These doors are considered boundary doors to the areas that lead from the containment and the auxiliary buildings to the control room area. The doors in the pressure/fire rated wall are fire doors and are rated for a tornado pressure rating up to 3 psi. The aforementioned doors are maintained closed during Modes 1-6 and during outages. If a door is breached, compensatory actions, such as fire watches, are implemented to initiate manual action to close the breached door if needed. It is also important to note that beyond the pressure/fire rated wall, the air pathway to the control room envelope is protected with air lock doors. The surrounding wall enclosing the equipment building is also fire rated and the fire boundary is maintained with closed fire rated doors. These doors protect against any radiation intrusion into the control room from penetrations in the containment purge and exhaust room, which are located on the same level as the control room.

Auxiliary Building penetrations in the main steam vault area, Rooms R108 and R159, are also on the same elevation as the control room but in another building. The main steam vault area is vented to the atmosphere. Thus, it is not credible to assume that, during a FHA in the containment, any radiation released in this area would migrate to the areas around the control room. The FHA analysis of record assumes a release point much closer to the control room outside air intakes than the vents for the main steam vault area, and hence the analysis of record is more conservative for this type of release.

The rest of the containment penetration rooms (both electrical and mechanical) are located at elevations below the control room (el. 220'). The mechanical penetration rooms are in the Auxiliary Building, and effluent releases would require a tortuous path to enter the Control Building. The electrical penetration rooms are in the Equipment Building below the elevation of the control room, and effluent releases would also require a tortuous path to reach the control room.



The Units 1 and 2 Train A cable spreading rooms are located below the control room on elevation 200'. The cable spreading room penetrations through the floor of the control room are sealed air tight and the area is included in the testing for control room pressurization effectiveness. The walls surrounding the penetration rooms and the Units 1 and 2 cable spreading rooms are fire rated and doors are maintained closed.

Since the control room will remain pressurized relative to the cable spreading rooms, no direct pathway exists for effluent releases from containment to travel to the main control room even with some of the containment penetrations being maintained open during a unit outage.

In conclusion, it can be stated that for a postulated FHA event in containment during a unit outage, no air pathway exists due to multiple diverse barriers (airlocks, fire-rated and air-tight doors and walls, etc.). These barriers, in addition to administrative controls and periodic pressurization testing, prove that release effluents will not traverse to any area adjacent to the dual unit control room envelope, even with some of the containment penetrations being maintained open. Hence, the operators in the control room will remain protected from a direct impact from releases in containment as a result of a postulated FHA event inside containment. The dose contribution factor to operators in the control room during a postulated FHA inside the containment event will be from the effluent escaping to the environment through the open containment door and entering as makeup air to the control room emergency filtration system. Considering the conclusions above, the current analysis of record remains bounding.

In addition to the above discussion, the licensee provided a series of plant drawings showing the location of the multiple barriers that would prevent the migration of activity from the containment penetration areas to the corridors adjacent to the control room (CR) air locks. The NRC staff examined these plant drawings in conjunction with the descriptions provided in the RAI response and the VEGP Final Safety Analysis Report (FSAR). Based on this information, the NRC staff concludes that due to the plant design features described above, it is not credible to postulate that a sufficient amount of radioactivity could migrate through the auxiliary building to significantly impact the FHA CR dose consequence analysis of record.

Notwithstanding this conclusion, the NRC staff performed a scoping analysis to bound the potential for an additional CR dose contribution resulting from the infiltration of activity from CR ingress and egress following an FHA with open containment penetrations. For this scoping analysis, the NRC staff did not credit any reductions in the migration of activity from an open containment penetration to the area immediately adjacent to the CR air locks as a result of the described isolation or the dilution provided by the auxiliary building. The NRC staff modelled the VEGP CR following the description in the VEGP FSAR, Section 6.4, "Habitability Systems." The NRC staff's scoping analysis used the assumptions and data listed in VEGP FSAR, Table 15.7.4-1, "Parameters Used in Evaluating the Radiological Consequences of a Fuel Handling Accident," and Table A1, "Parameters Used in Accident Analysis." The scoping analysis showed that even if for some unexplained reason the postulated migration of activity from open containment penetrations to the areas adjacent to the CR air locks were to occur, the robust CR emergency filtration system, as described in the VEGP FSAR, would control the

resulting incremental dose to an insignificant level relative to the CR dose calculated in the FHA analysis of record.

#### 4.0 SUMMARY

The NRC staff reviewed the analysis used by the licensee to assess the radiological impacts of adding a Note to the TS LCO 3.9.4, allowing penetration flow path(s) that have direct access from the containment atmosphere to the outside atmosphere to be unisolated under administrative control at VEGP. The staff concludes that the licensee has shown that the existing dose consequence analysis of record satisfies the requirements described in the Reviewers Note in TSTF-312, Revision 1. In addition, the NRC staff finds with reasonable assurance that the licensee's estimates of the exclusion area boundary, low-population zone, and CR doses will continue to comply with regulatory requirements and guidance identified in Section 2.0 of this safety evaluation. Therefore, the proposed change is acceptable with regard to the radiological consequences of postulated design-basis accidents. Furthermore, based on the above assessment, the NRC staff concludes that the proposed change meets the 10 CFR 50.36 requirements and is, therefore, acceptable.

#### 5.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Georgia State official was notified of the proposed issuance of the amendments. The State official had no comments.

#### 6.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve 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 amendments involve no significant hazards consideration, and there has been no public comment on such finding (80 FR 11480). Accordingly, the amendments meet 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 amendments.

#### 7.0 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 operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: J. Parillo

Date: July 15, 2016

C. Pierce

- 2 -

A copy of the related safety evaluation is also enclosed. A Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

**/RA/**

Bob Martin, Senior Project Manager  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-424 and 50-425

Enclosures:

1. Amendment No. 181 to NPF-68
2. Amendment No. 162 to NPF-81
3. Safety Evaluation

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