Southern Nuclear
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SOUTHERN COMPANY

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U.S. Nuclear Regulatory Commission
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Southern Nuclear Operating Company
Vogtle Electric Generating Plant Units 3 and 4 Combined License Application
Supplemental Information in Support of
10 CFR Part 70 Special Nuclear Material License Application

Ladies and Gentlemen:

By letter dated March 28, 2008, Southern Nuclear Operating Company (SNC) submitted an application for combined licenses (COLs) for proposed Vogtle Electric Generating Plant (VEGP) Units 3 and 4 to the U.S. Nuclear Regulatory Commission (NRC) for two Westinghouse AP1000 reactor plants, in accordance with 10 CFR Part 52. In addition, the COL application (COLA) also included the application for the necessary license issued under 10 CFR Part 70 to receive, possess, and use special nuclear material. During the NRC's detailed review of this application, the NRC identified a need for additional information in support of the 10 CFR Part 70 special nuclear material license application. The enclosures to this letter provide the requested supplemental information. This letter identifies changes that will be made to a future revision of the VEGP Units 3 and 4 COLA.

If you have any questions regarding this letter, please contact Mr. Wes Sparkman at (205) 992-5061.

D090
NRO

Mr. C. R. Pierce states he is the AP1000 Licensing Manager of Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and to the best of his knowledge and belief, the facts set forth in this letter are true.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY

C. R. Pierce

Sworn to and subscribed before me this 22nd *day of* June, *2011*

Notary Public: Dana Marie Williams

My commission expires: 12/1/2014

NOTARY PUBLIC STATE OF ALABAMA AT LARGE
MY COMMISSION EXPIRES: Dec 1, 2014
BONDED THRU NOTARY PUBLIC UNDERWRITERS

CRP/SES

Enclosures:

1. Response to NRC Question Regarding 10 CFR Part 70 Non-Fuel Material Description
2. Supplemental Information in Support of 10 CFR Part 70 Special Nuclear Material License Application

cc: Southern Nuclear Operating Company
Mr. J. H. Miller, III, President and CEO (w/o enclosure)
Mr. J. A. Miller, Executive Vice President, Nuclear Development (w/o enclosure)
Mr. J. T. Gasser, Executive Vice President, Nuclear Operations (w/o enclosure)
Mr. D. H. Jones, Site Vice President, Vogtle 3 & 4 (w/o enclosure)
Mr. B. L. Ivey, Vice President, Nuclear Development Support (w/o enclosure)
Mr. J. R. Johnson, Vice President, Quality and Compliance (w/o enclosure)
Mr. T. E. Tynan, Vice President - Vogtle (w/o enclosure)
Mr. D. M. Lloyd, Vogtle 3 & 4 Project Support Director (w/o enclosure)
Mr. M. J. Ajluni, Nuclear Licensing Director
Mr. T. C. Moorer, Manager, Environmental Affairs, Chemistry and Rad. Services
Mr. J. D. Williams, Vogtle 3 & 4 Site Support Manager
Mr. J. T. Davis, Vogtle 3 & 4 Site Licensing Supervisor
Mr. W. A. Sparkman, COL Project Engineer
Ms. A. G. Aughtman, Lead AP1000 Licensing Project Engineer
Document Services RTYPE: GOV0208
File AR.01.02.06

Nuclear Regulatory Commission
Mr. V. M. McCree, Region II Administrator
Mr. F. M. Akstulewicz, Deputy Director Div. of Safety Systems & Risk Assess. (w/o encl.)
Mr. R. G. Joshi, Lead Project Manager of New Reactors
Ms. T. E. Simms, Project Manager of New Reactors
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Mr. M. M. Comar, Project Manager of New Reactors
Ms. S. Goetz, Project Manager of New Reactors
Mr. J. M. Sebrosky, Project Manager of New Reactors
Mr. D. C. Habib, Project Manager of New Reactors
Ms. D. L. McGovern, Project Manager of New Reactors
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Georgia Power Company
Mr. T. W. Yelverton, Nuclear Development Director
Ms. A. N. Faulk, Nuclear Regulatory Affairs Manager

Oglethorpe Power Corporation
Mr. M. W. Price, Executive Vice President and Chief Operating Officer
Mr. K. T. Haynes, Director of Contracts and Regulatory Oversight

Municipal Electric Authority of Georgia
Mr. J. E. Fuller, Senior Vice President, Chief Financial Officer
Mr. S. M. Jackson, Vice President, Power Supply

Dalton Utilities
Mr. D. Cope, President and Chief Executive Officer

Bechtel Power Corporation
Mr. J. S. Prebula, Project Engineer (w/o enclosure)
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Ms. K. K. Patterson, Project Manager

Shaw Stone & Webster, Inc.
Mr. B. Davis, Vogtle Project Manager (w/o enclosure)
Mr. J. M. Oddo, Licensing Manager
Mr. E. C. Wenzinger, Licensing Engineer, Vogtle Units 3 & 4

Westinghouse Electric Company, LLC
Mr. S. D. Rupprecht, Vice President, New Plant Product Services (w/o enclosure)
Mr. T. H. Dent, VP, Consortium Project Director Vogtle Units 3 & 4 (w/o enclosure)
Mr. R. F. Ziesing, Director, US Licensing, NPP
Mr. S. A. Bradley, Vogtle Project Licensing Manager
Mr. M. A. Melton, Manager, Regulatory Interfaces
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Mr. D. A. Lindgren, Principal Engineer, AP1000 Licensing and Customer Interface

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Mr. W. Maher, FP&L
Mr. J. Douet, Entergy
Mr. N. T. Simms, Duke Energy
Mr. G. A. Zinke, NuStart & Entergy
Mr. R. H. Kitchen, PGN
Ms. A. M. Monroe, SCE&G
Mr. T. Miller, DOE/PM

Enclosure 1

VEGP Units 3 and 4 COL Application

Response to NRC Question
Regarding
10 CFR Part 70 Non-Fuel Material Description

NuStart Qb Tracking No. 4279

NRC eRAI No.: N/A

VEGP RAI: VEGP VOL Pt01 Part 70 Matl

Combined License (COL) application Part 1, Section 1.1.4, Requested Licenses and Authorized Uses: Identify the name, amount, and specifications (including the chemical and physical form and, where applicable, isotopic content) of the non-fuel special nuclear material (SNM) the applicant proposes to use. Confirm that the applicable design and programmatic elements provided in the FSAR will satisfy the requirements in 10 CFR 70.22(a)(6) through (8) prior to receipt of SNM.

Regulatory Basis: In COL application Part 1, Section 1.1.4, the applicant stated that "...[i]n addition, this application is for the necessary licenses issued under 10 CFR Part 30, 10 CFR Part 40, and 10 CFR Part 70 to receive, possess, and use byproduct, source and special nuclear material." The regulatory requirements for issuing special nuclear material licenses are described in 10 CFR Part 70. In order to receive, possess, and use special nuclear material, the applicant is required to provide specific descriptions of the special nuclear material, in accordance with the applicable requirements of 10 CFR 70.22(a)(4). 10 CFR 70.22(a)(6) through (8) requires the special nuclear material license applicant to include additional information regarding the design and programmatic elements that protect health and minimize danger to life and property from this material.

Response:

The radioactive material identified below represents nominal values of known non-fuel special nuclear material specifically required for use in each AP1000 unit:

(a) Element and Mass Number	(b) Chemical or Physical Form	(c) Maximum Amount
Uranium 235 (approx. 93%) 234, 236 & 238 (approx. 7%) 233 (trace amounts)	Intermediate Range Neutron Detectors - Fission Chambers (5 detectors, including 1 spare)	4.99 grams of Uranium per fission chamber Five fission chambers – total of approx. 25 grams

Additionally, the AP1000 DCD identifies some components that may contain Part 70 special nuclear material as an alternate to the planned material for those components. Specifically, DCD Section 4.2.2.3.4 identifies that the primary source rods contain capsules of californium source material, with plutonium-beryllium as an alternate source material. Also, the source range neutron detectors are currently planned to be BF3 proportional counters, but an alternate future design may use fission chambers for the source range detectors; thereby resulting in a total amount of SNM for the intermediate and source range detectors that would be twice the amount of SNM as the currently designed intermediate range detectors. The radioactive material identified below represents the alternative materials that may be used in each AP1000 unit:

(a) Element and Mass Number	(b) Chemical or Physical Form	(c) Maximum Amount
Uranium 235 (approx. 93%)	Source Range Neutron Detectors - Fission Chambers Alternate design may use fission chamber design for source range detectors. The additional material identified here is for the source range detectors. (5 detectors, including 1 spare)	Approx. 5 grams of additional Uranium per fission chamber Five fission chambers – total of approx. 25 grams additional
Plutonium 238 (> 80%)	Primary Source Rods (2) (One PuBe alloy source rod per assembly; two assemblies per reactor)	Approx. 15 grams of Plutonium per source assembly – total of approx. 30 grams

The details relating to the alternate SNM components include assumed values based on previous designs, and have not been designed specifically for the AP1000 units.

The applicant for this 10 CFR Part 70 material license is technically qualified to engage in the proposed activities associated with this license, based on the applicant's on-going experience in the safe operation of nuclear power plants, as presented in Section 1.4.1 of the Final Safety Analysis Report (FSAR), which is provided as Part 2 of the COL application.

Furthermore, as indicated in FSAR Table 13.4-201, portions of the Radiation Protection Program will be implemented prior to initial receipt of byproduct, source, or special nuclear materials. As per FSAR Table 13.4-201, Item 10, Implementation Milestone #1, and the NRC-approved template, Nuclear Energy Institute (NEI) 07-03A, Generic FSAR Template Guidance for Radiation Protection Program Description, which is incorporated by reference into FSAR Appendix 12AA, the appropriate radiation protection program elements associated with organization, facilities, instrumentation and equipment, procedures (e.g., procurement, receipt, , inventory, labeling, leak testing, surveillance, control, transfer, disposal, storage, issuance, and use of radioactive sources), and training will be in place prior to initial receipt of by-product, source, or special nuclear materials, thereby satisfying the requirements of 10 CFR 70.22(a)(4), (6), (7), and (8). FSAR Section 12.2 includes the requirements for written procedures that address leak-testing of radioactive sources (byproduct material, source material, and devices that contain SNM, as appropriate). The leak-test will be consistent with 10 CFR 20.1501 survey and monitoring requirements for evaluating the quantities of radioactive material and the potential radiological hazard of the radioactive source.

The disposal of the fission chambers will be consistent with the requirement established by operating procedures that specify the processes to be followed to ship waste that complies with the waste acceptance criteria (WAC) of the disposal site, the waste classification and characteristics requirements of 10 CFR 61.55 and 61.56, and the requirements of third party waste processors as applicable. This process is identified in FSAR Section 11.4.6.1.

Prior to installation, the new fission chambers are stored in the Auxiliary Building fuel handling area, which is an area protected by the fire protection program and fire protection system, as discussed in DCD Section 9A.3.1.3.1.2. Temporary storage of these non-combustible sealed sources is not specifically addressed in the AP1000 Fire Protection Analysis in DCD Appendix 9A; however, the approach to extinguishing fires and containing material releases associated with the fission chambers would be similar to, and bounded by, the approach considered for the fuel handling area in general. The fuel handling area has been evaluated and determined

acceptable for the storage of SNM in a full core load of new fuel. The hazards imposed by the relatively small quantity of SNM associated with the fission chambers (less than 100 grams), is not expected to be a challenge to the existing Fire Protection Analysis for the new fuel storage. Further, the fission chambers that contain the non-fuel SNM are sealed sources that are tested periodically to confirm their leak-tightness. Therefore, it is expected that the capabilities of the fire protection program and the fire protection equipment servicing this area are sufficient to meet the requirements of 10 CFR 70.22(a)(7) and 70.22(a)(8).

As a result of the above discussed evaluation, the associated COL Application Revision identified below will be included in a future COLA revision.

This response is expected to be STANDARD for each S-COLA.

Associated VEGP COL Application Revision:

COLA Part 11, Enclosures, will be revised by the addition of a new Enclosure 11#, Supplemental Information in Support of 10 CFR Part 70 Special Nuclear Material License Application (where # is the next appropriate Appendix 11 letter designation). Enclosure 11# is provided as Enclosure 2 to this letter.

Enclosure 2

VEGP Units 3 and 4 COL Application

Supplemental Information in Support of
10 CFR Part 70 Special Nuclear Material License Application

COLA Part 11#

(where # is the next appropriate Appendix 11 letter designation)

Supplemental Information in Support of

10 CFR Part 70 Special Nuclear Material License Application

Non-Fuel Special Nuclear Material for Use in Each AP1000 Unit

In accordance with the regulatory requirements of 10 CFR 70.22(a)(4), each application for a 10 CFR Part 70 Special Nuclear Material (SNM) License shall include the name, amount, and specifications (including the chemical and physical form and, where applicable, isotopic content) of the special nuclear material the applicant proposes to use or produce. The radioactive material identified below represents nominal values of known non-fuel special nuclear material specifically required for use in each AP1000 unit:

(a) Element and Mass Number	(b) Chemical or Physical Form	(c) Maximum Amount
Uranium 235 (approx. 93%) 234, 236 & 238 (approx. 7%) 233 (trace amounts)	Intermediate Range Neutron Detectors - Fission Chambers (5 detectors, including 1 spare)	4.99 grams of Uranium per fission chamber Five fission chambers – total of approx. 25 grams

Additionally, the AP1000 DCD identifies some components that may contain Part 70 special nuclear material as an alternate to the planned material for those components. Specifically, DCD Section 4.2.2.3.4 identifies that the primary source rods contain capsules of californium source material, with plutonium-beryllium as an alternate source material. Also, the source range neutron detectors are currently planned to be BF3 proportional counters, but an alternate future design may use fission chambers for the source range detectors; thereby resulting in a total amount of SNM for the intermediate and source range detectors that would be twice the amount of SNM as the currently designed intermediate range detectors. The radioactive material identified below represents the alternative materials that may be used in each AP1000 unit:

(a) Element and Mass Number	(b) Chemical or Physical Form	(c) Maximum Amount
Uranium 235 (approx. 93%)	Source Range Neutron Detectors - Fission Chambers Alternate design may use fission chamber design for source range detectors. The additional material identified here is for the source range detectors. (5 detectors, including 1 spare)	Approx. 5 grams of additional Uranium per fission chamber Five fission chambers – total of approx. 25 grams additional
Plutonium 238 (> 80%)	Primary Source Rods (2) (One PuBe alloy source rod per assembly; two assemblies per reactor)	Approx. 15 grams of Plutonium per source assembly – total of approx. 30 grams

The details relating to the alternate SNM components include assumed values based on previous designs, and have not been designed specifically for the AP1000 units.

Leak Testing:

FSAR Section 12.2 includes the requirements for written procedures that address leak-testing of radioactive sources (byproduct material, source material, and devices that contain SNM, as appropriate). The leak-test will be consistent with 10 CFR 20.1501 survey and monitoring requirements for evaluating the quantities of radioactive material and the potential radiological hazard of the radioactive source.