January 15, 2014

Mr. Ronald A. Jones, Vice President
New Nuclear Operations
South Carolina Electric & Gas Company
14368 State Highway 213
Jenkinsville, SC 29065

SUBJECT: WITHDRAWAL ACKNOWLEDGMENT LETTER FOR SOUTH CAROLINA ELECTRIC & GAS COMPANY'S LICENSE AMENDMENT REQUEST FOR THE VIRGIL C. SUMMER NUCLEAR STATION, UNITS 2 AND 3: AUXILIARY BUILDING STRUCTURAL FLOOR AND ROOF DETAILS (LAR - 13-38) (TAC NO. RQ0407)

Dear Mr. Jones:

By letter dated November 7, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML13316A370) and revised by a letter dated December 5, 2013 (ADAMS Accession No. ML13343A073), South Carolina Electric & Gas Company (SCE&G) submitted a license amendment request for Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3 Combined licenses (COLs) (License Nos.NPF-93 and NPF-94, respectively). The proposed amendment would depart from plant-specific Design Control Document (DCD) Tier 2* and Tier 2 material by revising details of the design of auxiliary building structural floors and roof. The purpose of this letter is to provide the results of the U.S. Nuclear Regulatory Commission (NRC) staff's acceptance review of this amendment request. The acceptance review was performed to determine if there is sufficient technical information in scope and depth to allow the NRC staff to complete its detailed technical review. The acceptance review is also intended to identify whether the application has any readily apparent information insufficiencies in its characterization of the regulatory requirements or the licensing basis of the plant.

Consistent with Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.90, an amendment to the license must fully describe the changes requested, and following as far as applicable, the form prescribed for original applications. Section 52.79 of the 10 CFR addresses the content of technical information required. This section stipulates that the submittal address the design and operating characteristics, unusual or novel design features, and principal safety considerations.

By letter dated December 19, 2013 (ADAMS Accession No. ML13358A319), you requested to withdraw the application from NRC review. The NRC staff acknowledges your request to withdraw the application. NRC staff activities on the review have ceased and the associated Technical Assignment Control Number has been closed.

Although the staff's review was not completed, the NRC staff notes that its review to date has identified that your application did not provide the information (see Enclosure) to enable the NRC staff to perform a review. Therefore, if you decide to re-submit the request, it must include the information included in the enclosure.

If you have any questions, please contact me at (301) 415-6191 or Ravindra.Joshi@NRC.gov.

Sincerely,

/RA Denise McGovern for:/

Ravindra Joshi, Senior Project Manager
Licensing Branch 4
Division of New Reactor Licensing
Office of New Reactors

Docket No(s): 52-027
52-028

Enclosure: As stated

cc w/encl: See next page

By letter dated December 19, 2013 (ADAMS Accession No. ML13358A319), you requested to withdraw the application from NRC review. The NRC staff acknowledges your request to withdraw the application. NRC staff activities on the review have ceased and the associated Technical Assignment Control Number has been closed.

Although the staff's review was not completed, the NRC staff notes that its review to date has identified that your application did not provide the information (see Enclosure) to enable the NRC staff to perform a review. Therefore, if you decide to re-submit the request, it must include the information included in the enclosure.

If you have any questions, please contact me at (301) 415-6191 or Ravindra.Joshi@NRC.gov.

Sincerely,

/RA Denise McGovern for:/

Ravindra Joshi, Senior Project Manager
Licensing Branch 4
Division of New Reactor Licensing
Office of New Reactors

Docket No(s): 52-027
52-028

Enclosure: As stated

cc w/encl: See next page

DISTRIBUTION:

Public	RidsNroDnrl	MSutton	DMcGovern
RidsNroDnrlLB4	RJackson	MErnstes	TFredette
RidsOgcMailCenter	RidsAcrsAcnwMailCenter	JBielecki	LBurkhart
RidsRgn2MailCenter	SBurnell	RButler	DJaffe
APonko	GKhouri	MShams	BTegeler

ADAMS Accession No.: ML14008A078 *via e-mail NRO-002

OFFICE	DNRL/LB4:PM	DNRL/LB4:LA	DE/SEB1:BC	DNRL/LB4:BC
NAME	RJoshi	RButler	MShams*	LBurkhart
DATE	01/15/14	01/09/14	01/14/14	01/15/14

OFFICIAL RECORD COPY

Deficiencies in South Carolina Electric and Gas Company's License Amendment Request (LAR-13-38), "Structural Floors and Roof Details"

In License Amendment Request (LAR) 13-26, South Carolina Electric and Gas Company (SCE&G) proposes revising the design of the reinforced concrete slabs described in Subsection 3H.5.3 and Figure 3H.5-8 of the Updated Final Safety Analysis Report (UFSAR), and modifying the sub-section and figure accordingly.

Based on the current description of these slabs in Subsection 3H.5.3 and Figure 3H.5-8 of the UFSAR, staff understands that these structural elements are designed and detailed as a one-way composite slab system, consisting of an 8 inch thick reinforced concrete precast panel with 16 or 24 inches of cast-in-place concrete placed on top. Shear ties are placed between the precast and cast-in-place portions to develop the horizontal shear necessary for composite behavior. These slabs span between and are supported by the reinforced concrete shearwalls within the Auxiliary Building. Flexural reinforcement consists of positive moment reinforcement placed in the bottom of the precast panel and negative moment reinforcement placed in the top of the cast-in-place concrete portion. This reinforcement is fully anchored into the supporting walls and no relative rotation is assumed to occur between the composite slab and walls at their connection. For resisting loads applied after construction, the composite slab behaves as a 24 or 36 inch thick monolithic concrete slab built integrally with the supporting walls. Staff further understands that the structural models on which the in-structure response spectra (ISRS) were developed are consistent with these assumptions, and the concrete slabs described in this subsection of the UFSAR are to be designed and constructed in accordance with the requirements of ACI 349-01, including Chapter 17, and any applicable supplemental requirements of the UFSAR.

Based on the proposed revisions to Subsection 3H.5.3 and Figure 3H.5-8 of the UFSAR, staff understands that in the revised design the precast panel and concrete are not assumed or designed to act as one unit for resisting loads applied after construction. The floor system consists of a 16 or 24 inch one-way reinforced concrete slab cast on an 8-12 precast panel. The precast panel is provided as formwork for construction of the cast-in-place slab and is abandoned in place. After construction and attainment of sufficient strength, the cast-in-place slab supports all loads without reliance on the precast panel. During seismic events, the precast panel is assumed to be supported by the cast-in-place slab and ties are provided between the two elements for this purpose. Flexural reinforcement is placed in the top and bottom of the cast-in-place slab. This reinforcement is fully anchored into the supporting walls and no relative rotation is assumed to occur between the cast-in-place slab and walls at their connection. Reinforcement in the precast panel does not extend into the supporting walls and a gap may be present between the panel and wall. For resisting loads applied after construction, the floor system is assumed to be a 16 or 24 inch thick monolithic concrete slab built integrally with the supporting walls. These floors are to be designed and constructed in accordance with the requirements of ACI 349-01, and any applicable supplemental requirements of the UFSAR.

Enclosure

1. Please verify that SNC's understanding of the current design of the reinforced concrete slabs described in Subsection 3H.5.3 of the USFAR is consistent with that of the staff in that the portions of Appendix 3H are applicable to entire segments of Nuclear Island and not only critical sections. If it varies, please provide specific points of disagreement.

2. Please verify staff's understanding of the revised design based on the proposed revisions to Subsection 3H.5.3 and Figure 3H.5-8 of the UFSAR is consistent with SCE&G's intent.

3. In Section 3 of the LAR, it states: "The precast panel is part of the Seismic Category I floor slab. The shear stirrups connecting the precast panel with the cast-in-place concrete support the precast panel to resist seismic loads acting on the precast panel. The weight of the precast panel is included in the analysis of the floor and is not considered as a separate element, in accordance with ACI 349, Chapter 17." Please clarify the intent of these statements:

    a. In what manner is the precast panel assumed to be part of the Seismic Category I floor slab?
    b. Is the precast panel an essential structural element of the floor?
    c. Are the seats on which the precast panel rests part of the Seismic Category I floor system?

4. In Section 3 of the LAR, it states: "For the floors with precast concrete panels, the stiffness of the floor is based on the combined thicknesses of the cast-in-place portion and the precast concrete panel." Staff interprets this statement to mean that the depth assumed in calculating the moment of inertia and stiffness of the floor includes the thickness of the precast panel. If so, doesn't this assumption require the development of composite action between the precast panel and cast-in-place slab?

5. If composite behavior between the precast panel and cast-in-place portion is assumed in the stiffness calculations of the floor:

    a. Please clarify how this assumption is compatible with assuming the cast-in-place portion supports all post-construction loads, and the revised description of the floor system proposed in the LAR.
    b. Are consistent assumptions used in calculating the stiffness of the floor for structural design and determining the fundamental dynamic properties? If not, are the assumptions conservative and do they meet the requirements of Section 8.6 of ACI 349-01?
    c. Will the design of the shear stirrups between the two elements be in accordance with the requirements of Chapter 17 of ACI 349-01?
    d. Will the design of the reinforcement in the precast panel be based on composite behavior?
    e. The thickness of the system at the wall connection will be that of the cast-in-place slab alone due to the gap and lack of continuity between the precast panel and wall. Has the non-prismatic nature of the revised floor system been considered in the analysis and design?
    f. Please quantify the reduction in stiffness of the floor system due to the gap and lack of continuity between the precast panel and wall.

g. Please quantify any changes to the ISRS due to the reduction in stiffness of the floor system.

6. If the precast panel and cast-in-place slabs are not assumed to act as a composite unit in calculating the moment of inertia and stiffness of the floor system:

    a. Please clarify whether the revised system design is consistent with assumptions made in the design basis seismic analysis models (e.g., NI20 and NI05) and whether the stiffness of the precast panel has been included in calculating the fundamental dynamic properties of the floor? If so, please describe the methodology used.
    b. Please quantify the reduction in stiffness of the revised floor system.
    c. Please quantify the impact of the design change on ISRS due to the reduction in stiffness of the floor system.

7. Are the locations of the critical sections shown on figures 3H.5-1 consistent with Subsection 3H.5 of the UFSAR?

cc:

Mr. Jeffrey B. Archie
Sr. Vice President, Nuclear Operations
South Carolina Electric & Gas Company
MC D304
220 Operation Way
Cayce, SC 29033-3172

Chairman
Fairfield County Council
Drawer 60
Winnsboro, SC 29180

Ms. Shannon Bowyer Hudson
Office of Regulatory Staff
State of South Carolina
1401 Main Street
Suite 900
Columbia, SC 29201

Mr. George McKinney
Director
South Carolina EMD
1100 Fish Hatchery Road
West Columbia, SC 29172

Ms. Gidget Stanley-Banks
Director
Allendale County EPA
426 Mullberry Street
Allendale, SC 29810

COL SCE&G – VC Summer Mailing List

Email

abynum@scana.com (Al Bynum)
amonroe@scana.com (Amy Monroe)
APAGLIA@Scana.com (Al Paglia)
APH@NEI.org (Adrian Heymer)
April.Rice@scana.com (April Rice)
arice@scana.com (April R. Rice)
awc@nei.org (Anne W. Cottingham)
bedforbj@westinghouse.com (Brian Bedford)
Bill.Jacobs@gdsassociates.com (Bill Jacobs)
charles.baucom@cbi.com (Charles T. Baucom)
christina.barnett@scana.com (Christina Barnett)
collinlj@westinghouse.com (Leslie Collins)
CumminWE@Westinghouse.com (Edward W. Cummins)
cwaltman@roe.com (C. Waltman)
david.lewis@pillsburylaw.com (David Lewis)
DCRM-EDMS@SCANA.COM
delongra@westinghouse.com (Rich DeLong)
dgriffin@scana.com (Donna S. Griffin)
ed.burns@earthlink.net (Ed Burns)
ewingja@westinghouse.com (Jerrod Ewing)
fbelser@regstaff.sc.gov
hutchiwe@westinghouse.com (William Hutchins)
jarchie@scana.com (Jeffrey B. Archie)
jenkinse@dhec.sc.gov (Susan Jenkins)
jflitter@regstaff.sc.gov
Joseph_Hegner@dom.com (Joseph Hegner)
karlg@att.net (Karl Gross)
kinneyrw@dhec.sc.gov (Ronald Kinney)
KSutton@morganlewis.com (Kathryn M. Sutton)
kwaugh@impact-net.org (Kenneth O. Waugh)
lchandler@morganlewis.com (Lawrence J. Chandler)
maria.webb@pillsburylaw.com (Maria Webb)
matias.travieso-diaz@pillsburylaw.com (Matias Travieso-Diaz)
mcintyba@westinghouse.com (Brian McIntyre)
media@nei.org (Scott Peterson)
MSF@nei.org (Marvin Fertel)
nirsnet@nirs.org (Michael Mariotte)
Nuclaw@mindspring.com (Robert Temple)
patriciaL.campbell@ge.com (Patricia L. Campbell)
Paul@beyondnuclear.org (Paul Gunter)
pbessette@morganlewis.com (Paul Bessette)
porterhj@dhec.sc.gov (Henry Porter)
randall@nexusamllc.com (Randall Li)

COL SCE&G – VC Summer Mailing List

RJB@NEI.org (Russell Bell)
Ronald.Jones@scana.com (Ronald Jones)
russpa@westinghouse.com (Paul Russ)
rwink@ameren.com (Roger Wink)
sabinski@suddenlink.net (Steve A. Bennett)
sburdick@morganlewis.com (Stephen Burdick)
sbyrne@scana.com (Stephen A. Byrne)
sfrantz@morganlewis.com (Stephen P. Frantz)
shudson@regstaff.sc.gov (Shannon Hudson)
stephan.moen@ge.com (Stephan Moen)
TGATLIN@scana.com (Thomas Gatlin)
threatsj@dhec.sc.gov (Sandra Threatt)
tom.miller@hq.doe.gov (Tom Miller)
TomClements329@cs.com (Tom Clements)
Vanessa.quinn@dhs.gov (Vanessa Quinn)
vcsnrc@scana.com (NRC Senior Resident Inspector
Wanda.K.Marshall@dom.com (Wanda K. Marshall)
weave1dw@westinghouse.com (Doug Weaver)
William.Cherry@scana.com (William Cherry)
wmcherry@santeecooper.com (Marion Cherry)