



Ronald A. Jones
Vice President
New Nuclear Operations

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NND-16-0212
10 CFR 55.11
10 CFR 55.31(a)(5)

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3
Combined License Nos. NPF-93 and NPF-94
Docket Nos. 52-027 & 52-028

Subject: Request for Exemption from 10 CFR 55.31(a)(5)

Reference: Letter NND-16-0109, "Request for a Commission-Approved
Simulation Facility," dated April 21, 2016

The NRC regulations at 10 CFR 55.31(a)(5) require an applicant for an operator license to "[p]rovide evidence that the applicant, as a trainee, has successfully manipulated the controls of either the facility for which a license is sought or a plant-referenced simulator that meets the requirements of § 55.46(c)." South Carolina Electric & Gas Company (SCE&G) is currently constructing Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3 and does not yet have a plant-referenced simulator. Accordingly, SCE&G submitted a request for a Commission-Approved Simulation (CAS) Facility dated April 21, 2016 (Reference).

In accordance with the provisions of 10 CFR 55.11, SCE&G requests an exemption from 10 CFR 55.31(a)(5) for VCSNS Units 2 and 3 to enable operator license candidates to use the CAS Facility after it is approved by NRC in lieu of a plant-referenced simulator to satisfy the control manipulation requirement. The requested exemption will expire when VCSNS Units 2 and 3 have a plant-referenced simulator that meets the requirements in 10 CFR 55.46(c). This exemption will help ensure a sufficient number of licensed operators will be available to support fuel load.

The enclosure to this letter provides the justification for the exemption. As discussed in the enclosure, the requested exemption from 10 CFR 55.31(a)(5) is in conformance with an exemption that the NRC recently issued for Vogtle Units 3 and 4 under similar circumstances, as noticed at 81 Fed. Reg. 20,690 (April 8, 2016). SCE&G requests approval of the requested exemption in an appropriate time frame to support the CAS Request (Reference).

This letter makes no regulatory commitments.

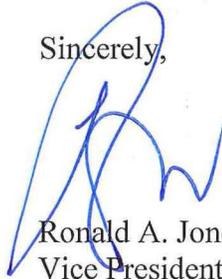
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Should you have any questions regarding this request, please contact April Rice, Manager, Nuclear Licensing, New Nuclear Deployment, at (803) 941-9858, or by email at arice@scana.com.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on this 8th day of JUNE, 2016.

Sincerely,



Ronald A. Jones
Vice President
New Nuclear Operations

Enclosure

c: Paul Kallan
Chandu Patel
Billy Gleaves
Catherine Haney – Region II Regional Administrator
Jennifer L. Uhle – Director, Office of New Reactors
Marion Cherry - Santee Cooper
Stephen A. Byrne – SCE&G
Jeffrey B. Archie – SCE&G
Ronald A. Jones – SCE&G
Brian McIntyre – Westinghouse
Brian Bedford-Westinghouse
Joseph Cole – Westinghouse
Patrick Young – Westinghouse
Carl D. Churchman - Westinghouse
Jeff Hawkins - Fluor
Alvis J. Bynum – SCE&G
Kathryn M. Sutton – Morgan Lewis
Curtis Castell – WECTEC
Chuck Baucom - WECTEC
Benny Buras – WECTEC
Charlie White – WECTEC
Unit 1 NRC Resident Inspector
Unit 2/3 NRC Resident Inspector
Amanda Pugh, SNC
Andy Barbee
Paul Mothena
Pat Leary
Jody Lawter
Gene Guthrie (NRC)
Susan Jenkins
Garrett Sanders
DCRM-EDMS@SCANA.COM
VCSummerMail@westinghouse.com
vcsummer2&3project@westinghouse.com
VCSNNDCorrespondence@scana.com

South Carolina Electric & Gas Company

NND-16-0212
Enclosure

Virgil C. Summer Nuclear Station Units 2 and 3

Request for Exemption from 10 CFR 55.31(a)(5)

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1.0 Executive Summary

The NRC regulations of 10 CFR 55.31(a)(5) require an applicant for an operator license to “[p]rovide evidence that the applicant, as a trainee, has successfully manipulated the controls of either the facility for which a license is sought or a plant-referenced simulator that meets the requirements of § 55.46(c).” South Carolina Electric & Gas Company (SCE&G) is currently constructing Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3 and does not yet have a plant-referenced simulator. Accordingly, SCE&G’s submitted a request for a Commission-Approved Simulation (CAS) Facility dated April 21, 2016 (Reference).

In accordance with the provisions of 10 CFR 55.11, SCE&G requests an exemption from 10 CFR 55.31(a)(5) for VCSNS Units 2 and 3 to enable operator license candidates to use the CAS Facility in lieu of a plant-referenced simulator to satisfy the control manipulation requirement. The requested exemption will expire when VCSNS Units 2 and 3 have a plant-referenced simulator that meets the requirements in 10 CFR 55.46(c). This exemption will help ensure a sufficient number of licensed operators will be available to support fuel load.

As discussed in more detail in Section 3 below, the CAS Facility for VCSNS Units 2 and 3 conforms to the same control manipulation requirements as a plant-referenced simulator. Therefore, the exemption request will have no adverse impact on the competence of operator license candidates.

As discussed in more detail in Section 4 below, this exemption request satisfies the criteria in 10 CFR 55.11. Specifically, the exemption is authorized by law, will not endanger life or property, and is otherwise in the public interest.

As discussed in more detail in Section 5 below, this exemption request is subject to a categorical exclusion in 10 CFR 51.22 from the need to prepare an environmental assessment or an environmental impact statement. More specifically, the exemption request involves no significant hazards consideration and will not result in a significant increase in the environmental impacts associated with construction and operation of VCSNS.

Accordingly, the NRC should approve this exemption request.

2.0 Background

VCSNS Units 2 and 3 are currently under construction, and are expected to be ready for operation in 2019 and 2020, respectively. The VCSNS Units 2 and 3 simulation facility is comprised of two AP1000 full scope simulators. The simulators meet the requirements of ANSI/ANS-3.5-1998, “Nuclear Power Plant Simulation Facilities for Use in Operator Training and License Examinations,” as endorsed by Regulatory Guide 1.149,

Revision 3. On April 21, 2016, SCE&G requested that these simulators be accepted as a CAS Facility.

10 CFR 55.31(a)(5) requires an applicant for an operator license to:

Provide evidence that the applicant, as a trainee, has successfully manipulated the controls of either the facility for which a license is sought or a plant-referenced simulator that meets the requirements of § 55.46(c). At a minimum, five significant control manipulations must be performed that affect reactivity or power level. Control manipulations performed on the plant-referenced simulator may be chosen from a representative sampling of the control manipulations and plant evolutions described in § 55.59(c)(3)(i)(A-F), (R), (T), (W), and (X) of this part, as applicable to the design of the plant for which the license application is submitted. For licensed operators applying for a senior operator license, certification that the operator has successfully operated the controls of the facility as a licensed operator shall be accepted.

SCE&G is requesting that NRC grant an exemption from the first sentence of 10 CFR 55.31(a)(5) to enable VCSNS Units 2 and 3 to use the CAS Facility in lieu of a plant-referenced simulator. SCE&G is not requesting an exemption from the other portions of 10 CFR 55.31(a)(5), and candidates for operator licenses will continue to be required to meet those substantive requirements, including at least five significant control manipulations chosen from a representative sampling of the control manipulations and plant evolutions described in 10 CFR 55.59(c)(3)(i)(A-F), (R), (T), (W), and (X). The requested exemption will expire when a VCSNS Units 2 and 3 plant-referenced simulator that meets the requirements in 10 CFR 55.46(c) is available.

3.0 Detailed Description and Technical Evaluation

As discussed in the Reference, SCE&G's request for a CAS Facility corresponds closely with a request for a CAS Facility submitted by Southern Nuclear Company for Vogtle Units 3 and 4, which was approved by the NRC on March 25, 2016 (ML16068A043). Similarly, SCE&G's request for exemption from 10 CFR 55.31(a)(5) is in conformance with an exemption from 10 CFR 55.31(a)(5) issued for Vogtle Units 3 and 4 by the NRC on March 31, 2016 (ML16085A234), as noticed at 81 Fed. Reg. 20,690 (April 8, 2016).

The requested exemption is contingent upon NRC's approval of the CAS Facility, as requested in the Reference. The CAS Facility for VCSNS Units 2 and 3 provides the necessary reactor physics, thermal-hydraulic, and integrated system modeling necessary to perform the required control manipulations. This modeling includes the predicted core performance instead of the most recent core load. Because VCSNS Units 2 and 3 are under construction, plant experience from the most recent core load is not available. Predicted core performance is acceptable because operating experience with core design has demonstrated that the reactor physics and thermal hydraulic characteristics associated with a core design can be accurately predicted.

The CAS simulation facility for VCSNS Units 2 and 3 models the AP1000 plant systems and also contains the alarms, indications, and controls needed to operate the AP1000 plant systems, including those controls that affect reactivity. SCE&G has concluded that the simulation facility for VCSNS Units 2 and 3 is sufficient in scope and fidelity with the reference plant to perform control manipulations as identified in 10 CFR 55.31(a)(5).

The CAS Facility for VCSNS Units 2 and 3 is capable of providing a wide range of scenarios, including those evolutions in 10 CFR 55.59(c)(3)(i)(A)-(F) and (R), (T), (W), and (X), which are identified in 10 CFR 55.31(a)(5) as appropriate scenarios allowing applicants to perform control manipulations, without procedural exceptions, simulator performance exceptions, or deviation from the approved examination scenario sequence. There exists a large variety of control manipulations that can be completed without procedural exceptions, simulator performance exceptions, or deviation from the approved training scenario sequence.

The performance and malfunction testing the facility performed in accordance with ANS 3.5, and documented in the referenced CAS submittal, has demonstrated that the core performance predictions have been accurately modeled. This allows candidates to conduct a wide range of evolutions, which satisfies the control manipulation requirements.

Further, the conditions under which the operator license applicants will be licensed will be essentially unchanged, and the use of the CAS Facility in place of a plant-referenced simulator will not significantly change the determination of the qualifications of applicants for operator licenses. Under the requested exemption, 10 CFR 55.31(a)(5) will continue to require the applicant to perform, at a minimum, five significant control manipulations that affect reactivity or power level.

Consistent with 10 CFR 55.46(c)(2), the CAS Facility also fulfills the role of the plant-referenced simulator to ensure that:

- (i) The plant-referenced simulator utilizes models relating to nuclear and thermal-hydraulic characteristics that replicate the most recent core load in the nuclear power reference plant for which a license is being sought; and
- (ii) Simulator fidelity has been demonstrated so that significant control manipulations are completed without procedural exceptions, simulator performance exceptions, or deviation from the approved training scenario sequence.

Therefore, the CAS Facility for VCSNS Units 2 and 3 is equivalent to a plant-referenced simulator with respect to performance of significant control manipulations.

The acceptability of the CAS Facility for VCSNS Units 2 and 3 with respect to the significant control manipulations required by 10 CFR 55.31(a)(5) is additionally assured

by the fact that SCE&G performs scenario-based testing (SBT) for scenarios used to satisfy the control manipulation requirement. SCE&G implements SBT in accordance with Revision 1 of NEI 09-09, “Nuclear Power Plant-Referenced Simulator Scenario Based Testing Methodology.” The NRC staff has endorsed NEI 09-09 in Regulatory Guide 1.149, Revision 4, dated April 2011. NEI 09-09, page 1, describes SBT as follows:

Key to the SBT Methodology is parallel testing and evaluation of simulator performance while instructors validate simulator training and evaluation scenarios. As instructors validate satisfactory completion of training or evaluation objectives, procedure steps and scenario content, they are also ensuring satisfactory simulator performance in parallel, not series, making the process an “online” method of evaluating simulator performance. Also critical is the assembly of the SBT package – the collection of a marked-up scenario, appropriate procedures, monitored parameters, an alarm summary and an affirmation checklist that serves as the proof of the robust nature of this method of performance testing. Proper conduct of the SBT Methodology is intended to alleviate the need for post-scenario evaluation of simulator performance since the performance of the simulator is being evaluated (i.e., compared to actual or predicted reference plant performance) during the parallel conduct of SBT and scenario validation.

In summary, the CAS Facility for VCSNS Units 2 and 3 conforms to the same control manipulation requirements as a plant-referenced simulator. Therefore, the exemption request will have no adverse impact on the competence of operator license candidates.

4.0 Legal Justification for the Exemption

Exemptions from the provisions in 10 CFR Part 55 are governed by 10 CFR 55.11, Specific Exemptions. That regulation states:

The Commission may, upon application by an interested person, or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and will not endanger life or property and are otherwise in the public interest.

As demonstrated below, each of these provisions in 10 CFR 55.11 is satisfied by this exemption request.

4.1 This exemption is authorized by law.

The Commission has the authority to issue the requested exemption. The exemption would not conflict with any provision of the Atomic Energy Act (AEA) or any other law.

In particular, Section 107 of the AEA states that the Commission shall (a) prescribe uniform conditions for licensing of individuals as operators of utilization facilities, and (b) determine the qualifications of such individuals. For the following reasons, the exemption request is not inconsistent with Section 107:

- The requirements in Section 107 of the AEA do not expressly prohibit exemptions to the portion of 10 CFR 55.31(a)(5) that requires the use of a plant-referenced simulator or the facility for control manipulations.
- Because a plant-referenced simulator and the CAS Facility for VCSNS Units 2 and 3 are essentially the same with respect to control manipulations, an exemption from 10 CFR 55.31(a)(5) allowing the use of the CAS Facility in lieu of a plant-referenced simulator for control manipulations will still satisfy the applicable statutory requirements of the AEA that the Commission prescribe uniform conditions for licensing individuals as operators and determine the qualifications of operators.
- The Commission will comply with subsection (b) through the licensing of the operators of VCSNS Units 2 and 3. This action is unaffected by the exemption request.
- As described in Section 3 above, the CAS Facility for VCSNS Units 2 and 3 is equivalent to a plant-referenced simulator with respect to performing control manipulations.
- The NRC has recently granted a similar exemption from 10 CFR 55.31(a)(5) for Vogtle Units 3 and 4 under similar circumstances, as noticed at 81 Fed. Reg. 20,690 (April 8, 2016).

In summary, the requested exemption is authorized by law.

4.2 This exemption will not endanger life or property.

The exemption does not pertain to the design, construction, or operating procedures of VCSNS Units 2 and 3. Furthermore, as explained in Section 3 above, the exemption is consistent with ensuring that the operators will be competent and fully trained to safely operate the plant and respond to transients and accidents. The exemption would not affect the content and substance of the control manipulations, examination or tests, but would only allow the use of a CAS Facility in lieu of a plant-referenced simulator by operator license candidates.

The CAS Facility exhibits expected plant response to operator input and to normal, transient, and accident conditions to which the simulator has been designed to respond. Further, the CAS Facility is designed and implemented so

that (i) it is sufficient in scope and fidelity to allow conduct of the evolutions listed in 10 CFR 55.45(a)(1) through (13), and 10 CFR 55.59(c)(3)(i)(A) through (AA), as applicable to the design of the reference plant and (ii) it allows for the completion of control manipulations for operator license applicants. Accordingly, the CAS Facility for VCSNS Units 2 and 3 will replicate reference plant performance for the significant control manipulations required by 10 CFR 55.31(a)(5). Because the CAS Facility for VCSNS Units 2 and 3 matches the criteria of a plant-referenced simulator with respect to control manipulations, the exemption will not endanger life or property.

4.3 This exemption is consistent with the public interest.

This exemption aids planning by allowing operator license applicants to complete their applications sooner, with the underlying requirements essentially unchanged, and could result in licensing decisions being made earlier than would be possible if the applicants had to wait for a plant-referenced simulator to be available.

Another purpose of the exemption is to provide for the timely licensing of operators prior to operation of VCSNS Units 2 and 3. A delay in the licensing of these operators could make it more difficult to ensure that a sufficient number of licensed operators are available when construction is completed, potentially resulting in a delay in operation of the plant. A delay in operation would result in additional costs for interest on the cost of construction and salaries of plant personnel. Additionally, a delay in construction would deprive the region of an earlier carbon-free source of electrical generation, resulting in the emission of greenhouse gases from replacement power from fossil fuel plants.

The CAS Facility is able to meet the requirements of a plant-referenced simulator with respect to control manipulations. Thus, the capabilities of the VCSNS Units 2 and 3 CAS Facility are suitable to accomplish the regulatory purpose underlying the requirements of 10 CFR 55.31(a)(5).

As discussed in the NRC's issuance of a similar exemption request for Vogtle Units 3 and 4 (81 Fed. Reg. at 20,692-693), the exemption also is consistent with NRC principles of Efficiency, Reliability, Clarity, Independence and Openness. Those same principles apply to this exemption request.

Accordingly, the exemption is in the public interest.

5.0 Environmental Considerations

Pursuant to 10 CFR 51.22(c)(25), an exemption from NRC regulations is subject to a categorical exclusion from the preparation of an environmental assessment or an environmental impact statement if:

- (i) There is no significant hazards consideration;
- (ii) There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite;
- (iii) There is no significant increase in individual or cumulative public or occupational radiation exposure;
- (iv) There is no significant construction impact;
- (v) There is no significant increase in the potential for or consequences from radiological accidents; and
- (vi) The requirements from which an exemption is sought involve: . . .
 - (E) Education, training, experience, qualification, requalification or other employment suitability requirements; . . .

As demonstrated below, each of these provisions in 10 CFR 51.22(c)(25) is satisfied by this exemption request.

5.1 This exemption does not involve a significant hazards consideration.

As provided in 10 CFR 50.92, an action involves a significant hazards consideration if it would: (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. As demonstrated below, none of these criteria applies to the exemption.

The exemption does not involve any physical change in the facility or in the procedures governing operation of the plant. Therefore, the exemption does not create the possibility of a new or different kind of accident or a reduction in a margin of safety.

Additionally, this exemption allows the use of a CAS Facility in lieu of a plant-referenced simulator by operator license candidates to satisfy the control manipulation requirements in 10 CFR 55.31(a)(5), but does not change the substantive requirements for the candidates. As a result, the individuals to be licensed pursuant to this exemption would still be fully trained and demonstrated to be competent to safely operate the plant. Consequently, the exemption does not involve a significant increase in the probability or consequences of an accident previously evaluated. Additionally, the requested exemption is similar to an exemption recently granted to Vogtle Units 3 and 4 under similar circumstances.

5.2 This exemption does not involve a significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

The exemption does not involve any physical change in the facility or in the procedures governing operation of the plant. Furthermore, as discussed above, the individuals to be licensed pursuant to this exemption would still be fully trained and demonstrated to be competent to safely operate the plant, including effluent releases. Therefore, the exemption will not involve a significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

5.3 This exemption does not involve a significant increase in individual or cumulative public or occupational radiation exposure.

The exemption does not involve any physical change in the facility or in the procedures governing operation of the plant. Furthermore, as discussed above, the individuals to be licensed pursuant to this exemption would still be fully trained and demonstrated to be competent to safely operate the plant, including effluent releases. Therefore, the exemption will not involve a significant increase in individual or cumulative public or occupational radiation exposure.

5.4 This exemption does not involve a significant construction impact.

The exemption does not involve any physical change in the facility or the manner in which the plant will be constructed. Therefore, the exemption does not involve a significant construction impact.

5.5 This exemption does not involve a significant increase in the potential for or consequences from radiological accidents.

The exemption does not involve any physical change in the facility or in the procedures governing operation of the plant. Furthermore, as discussed above, the individuals to be licensed pursuant to this exemption would still be fully trained and demonstrated to be competent to safely operate the plant. Therefore, the exemption will not involve a significant increase in the potential for or consequences from radiological accidents.

5.6 The requirements from which this exemption is sought involve training and qualification requirements.

This exemption pertains to the training and qualification requirements for candidates for licensed operators. Therefore, the request involves the activities described in 10 CFR 51.22(c)(25)(vi)(E).

6.0 Conclusions

SCE&G is requesting an exemption from 10 CFR 55.31(a)(5) to allow the use of a CAS Facility in lieu of a plant-referenced simulator by candidates for an operator license. This exemption request does not change the substantive requirements for the candidates. Additionally, this exemption request will expire when a plant-referenced simulator is available that meets the requirements in 10 CFR 55.46(c). In accordance with 10 CFR 55.11, this exemption request is authorized by law, will not endanger life or property, and is otherwise in the public interest. Therefore, the NRC should approve this exemption request.