

B. H. Whitley
Director
Regulatory Affairs

Southern Nuclear
Operating Company, Inc.
42 Inverness Center Parkway
Birmingham, AL 35242
Tel 205.992.7079
Fax 205.992.5296



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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
Request for License Amendment and Exemption:
In-Containment Refueling Water Storage Tank (IRWST) Volume Changes (LAR-17-002)

Ladies and Gentlemen:

Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, Southern Nuclear Operating Company (SNC), the licensee for Vogtle Electric Generating Plant (VEGP) Units 3 and 4, requests an amendment to Combined License Numbers NPF-91 and NPF-92, for VEGP Units 3 and 4, respectively. The requested amendment requires changes to the Updated Final Safety Analysis Report (UFSAR) in the form of departures from plant-specific Design Control Document (PS-DCD) Tier 2 information, COL Appendix A Technical Specifications, and COL Appendix C. Pursuant to the provisions of 10 CFR 52.63(b)(1), an exemption from elements of the design as certified in the 10 CFR Part 52, Appendix D, design certification rule is also requested for the involved Tier 1 information.

The proposed departures consist of in-containment refueling water storage tank (IRWST) minimum volume changes in plant-specific UFSAR Table 14.3-2, COL Appendix A Technical Specifications 3.5.6, 3.5.7 and 3.5.8 and Surveillance Requirements 3.5.6.2 and 3.5.8.2 and COL Appendix C (and associated plant-specific Tier 1) Table 2.2.3-4. The proposed changes restore consistency of these sections with the UFSAR IRWST minimum volume value in other locations.

Enclosure 1 provides the description, technical evaluation, regulatory evaluation (including the Significant Hazards Consideration Determination), and environmental considerations for the proposed changes in the License Amendment Request (LAR). Enclosure 2 provides the background and supporting basis for the requested exemption. Enclosure 3 provides the proposed changes to the VEGP 3&4 licensing basis documents.

The changes proposed in this LAR are consistent in technical content with LAR 16-20, submitted by South Carolina Electric & Gas Company (SCE&G) on December 6, 2016 [ADAMS Accession No. ML16342B712] for Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3.

This letter contains no regulatory commitments. This letter has been reviewed and confirmed to not contain security-related information.

SNC requests staff approval of this license amendment by June 12, 2017, to support closure of VEGP Unit 3 Inspections, Tests, Analyses and Acceptance Criteria (ITAAC). Approval by this date will allow sufficient time to implement the licensing basis changes prior to the associated ITAAC activity. SNC expects to implement this proposed amendment (through incorporation into the licensing basis documents; e.g., the UFSAR) within 30 days of approval of the requested changes. SCE&G has indicated the requested approval date for the Virgil C. Summer Units 2 and 3 license amendment request for this topic is June 12, 2017.

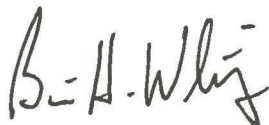
In accordance with 10 CFR 50.91, SNC is notifying the State of Georgia of this LAR by transmitting a copy of this letter and enclosures to the designated State Official.

Should you have any questions, please contact Ms. Paige Ridgway at (205) 992-7516.

Mr. Brian H. Whitley states that: he is the Regulatory Affairs Director of Southern Nuclear Operating Company; he 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



Brian H. Whitley

BHW/PTR/lms

Sworn to and subscribed before me this 20th day of January, 2017

Notary Public: Mara Rainville Hamner

My commission expires: My Commission Expires
February 18, 2020



- Enclosures: 1) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Request for License Amendment: In-Containment Refueling Water Storage Tank (IRWST) Volume Changes (LAR-17-002)
- 2) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Exemption Request: In-Containment Refueling Water Storage Tank (IRWST) Volume Changes (LAR-17-002)
- 3) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Proposed Changes to the Licensing Basis Documents (LAR-17-002)

cc:

Southern Nuclear Operating Company / Georgia Power Company

Mr. S. E. Kuczynski (w/o enclosures)

Mr. M. D. Rauckhorst

Mr. D. G. Bost (w/o enclosures)

Mr. M. D. Meier (w/o enclosures)

Mr. D. H. Jones (w/o enclosures)

Ms. K. D. Fili (w/o enclosures)

Mr. D. L. McKinney (w/o enclosures)

Mr. T.W. Yelverton (w/o enclosures)

Mr. B. H. Whitley

Mr. C. R. Pierce

Ms. A. G. Aughtman

Mr. D. L. Fulton

Mr. M. J. Yox

Mr. E. W. Rasmussen

Mr. T. R. Takats

Mr. W. A. Sparkman

Mr. J. P. Redd

Ms. A. C. Chamberlain

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Nuclear Regulatory Commission

Mr. W. Jones (w/o enclosures)

Mr. S. Lee (w/o enclosures)

Ms. J. Dixon-Herrity

Mr. P. Kallan

Mr. C. Patel

Mr. W. C. Gleaves

Ms. R. Reyes

Ms. J. M. Heisserer

Mr. G. Khouri

Mr. J. D. Fuller

Ms. S. Temple

Ms. V. Ordaz

Mr. T.E. Chandler

Ms. P. Braxton

Mr. T. Brimfield

Mr. C. J. Even

Mr. A. Lerch

State of Georgia

Mr. R. Dunn

Oglethorpe Power Corporation

Mr. M. W. Price
Mr. K. T. Haynes
Ms. A. Whaley

Municipal Electric Authority of Georgia

Mr. J. E. Fuller
Mr. S. M. Jackson

Dalton Utilities

Mr. T. Bundros

Westinghouse Electric Company, LLC

Mr. R. Easterling (w/o enclosures)
Mr. G. Koucheravy (w/o enclosures)
Mr. C. D. Churchman (w/o enclosures)
Mr. P. A. Russ
Mr. A. F. Dohse
Mr. M. L. Clyde
Mr. C. A. Castell
K. Chesko
Mr. J. Hopkins
Mr. D. Hawkins

Other

Mr. J. E. Hesler, Bechtel Power Corporation
Ms. L. A. Matis, Tetra Tech NUS, Inc.
Dr. W. R. Jacobs, Jr., Ph.D., GDS Associates, Inc.
Mr. S. Roetger, Georgia Public Service Commission
Ms. S. W. Kernizan, Georgia Public Service Commission
Mr. K. C. Greene, Troutman Sanders
Mr. S. Blanton, Balch Bingham
Mr. R. Grumbir, APOG
Mr. N. R. Kellenberger, South Carolina Electric & Gas Company
Mr. D. Kersey, South Carolina Electric & Gas Company
NDDocumentinBox@duke-energy.com, Duke Energy
Mr. S. Franzone, Florida Power & Light

Southern Nuclear Operating Company

ND-17-0045

Enclosure 1

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Request for License Amendment:

In-Containment Refueling Water Storage Tank (IRWST) Volume Changes

(LAR-17-002)

(Enclosure 1 consists of 16 pages, including this cover page.)

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Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, Southern Nuclear Operating Company (SNC, or the "Licensee") hereby requests an amendment to Combined License (COL) Nos. NPF-91 and NPF-92 for Vogtle Electric Generating Plant (VEGP) Units 3 and 4, respectively.

1. SUMMARY DESCRIPTION

This activity addresses inconsistencies in the Updated Final Safety Analysis Report (UFSAR) and the Combined License (COL) Appendix A Technical Specifications for the specification of the passive core cooling system (PXS) required in-containment refueling water storage tank (IRWST) minimum water volume. The required IRWST minimum water volume is 73,100 ft³. UFSAR Table 6.3-2 specifies the required IRWST minimum water volume as 73,100 ft³. Combined License (COL) Appendix A Technical Specifications 3.5.6, 3.5.7, and 3.5.8, specify the required IRWST minimum water volume as greater than 73,100 ft³. UFSAR Table 14.3-2 specifies an IRWST minimum required water volume of 73,900 ft³, and COL Appendix C and plant-specific Design Control Document (DCD) Tier 1 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) Table 2.2.3-4 Acceptance Criteria 8.c)vi), specify a required IRWST minimum tank volume of 73,900 ft³.

The results of the UFSAR Chapter 15 accident analyses are acceptable assuming a required IRWST minimum water volume of 73,100 ft³. Therefore, the required IRWST minimum water volume listed in UFSAR Table 14.3-2 is reduced from 73,900 ft³ to 73,100 ft³, and the calculated volume of the IRWST between the tank outlet connection and the tank overflow stated in COL Appendix C ITAAC Table 2.2.3-4 Acceptance Criteria 8.c)vi) is reduced from $\geq 73,900$ ft³ to $\geq 73,100$ ft³, with corresponding changes to the associated plant-specific DCD Tier 1 information. COL Appendix A Technical Specifications 3.5.6, 3.5.7, 3.5.8 include changes to the IRWST minimum volume from $> 73,100$ ft³ to $\geq 73,100$ ft³ (and the associated Surveillance Requirements from $\leq 73,100$ ft³ and $> 70,907$ ft³ to $< 73,100$ ft³ and $\geq 70,907$ ft³) to be consistent throughout the licensing basis.

The requested amendment proposes changes to the UFSAR in the form of departures from the plant-specific DCD Tier 2 information (as detailed in Section 2), and involves changes to related plant-specific DCD Tier 1 information, with corresponding changes to the associated COL Appendix A and COL Appendix C information. This enclosure requests approval of the license amendment necessary to implement the UFSAR Tier 2, COL Appendix A, and COL Appendix C changes. Enclosure 2 requests the exemption necessary to implement the involved changes to the plant-specific DCD Tier 1 information.

2. DETAILED DESCRIPTION

The required IRWST minimum water volumes are not stated consistently in the current licensing basis. The required IRWST minimum water volume is 73,100 ft³. UFSAR Table 6.3-2 specifies the required IRWST minimum water volume as 73,100 ft³.

The following references specify a required IRWST minimum water volume of 73,900 ft³:

1. UFSAR Table 14.3-2 lists the required IRWST minimum water volume as 73,900 ft³.
2. COL Appendix C and plant-specific DCD Tier 1 ITAAC Table 2.2.3-4 Acceptance Criteria 8.c)vi) states the required calculated volume of the as-built IRWST as $\geq 73,900$ ft³ between the tank outlet connection and the tank overflow.

COL Appendix A Technical Specifications for IRWST volumes states the minimum IRWST volume is greater than 73,100 ft³ (versus "equals" 73,100 ft³). The Technical Specifications refer to the volume of the IRWST as follows:

1. COL Appendix A Technical Specifications 3.5.6 Condition D specifies required actions with an IRWST borated water volume $\leq 73,100 \text{ ft}^3$ and $> 70,907 \text{ ft}^3$.
2. COL Appendix A Technical Specifications Surveillance Requirement (SR) 3.5.6.2 requires verification that the IRWST borated water volume is $> 73,100 \text{ ft}^3$.
3. COL Appendix A Technical Specifications 3.5.7 Condition D specifies required actions with an IRWST borated water volume $\leq 73,100 \text{ ft}^3$ and $> 70,907 \text{ ft}^3$.
4. COL Appendix A Technical Specifications 3.5.8 Condition D specifies required actions with an IRWST and refueling cavity borated water volume $\leq 73,100 \text{ ft}^3$ and $> 70,907 \text{ ft}^3$.
5. COL Appendix A Technical Specifications SR 3.5.8.2 requires verification that the IRWST and refueling cavity water total borated water volume is $> 73,100 \text{ ft}^3$.

Therefore, UFSAR Table 14.3-2, COL Appendix A Technical Specifications 3.5.6, 3.5.7, and 3.5.8, and COL Appendix C ITAAC Table 2.2.3-4 Acceptance Criteria 8.c)vi), with corresponding changes to the associated plant specific DCD Tier 1 information, are revised to resolve inconsistencies in the presentation of IRWST design details consistent with the required IRWST minimum water volume provided in UFSAR Table 6.3-2. This reflects the correct value of 73,100 ft³ verified to be acceptable as the IRWST minimum water volume in the safety analyses, as further described in Section 3.

Licensing Basis Change Descriptions

The following licensing basis changes are proposed:

1. UFSAR Table 14.3-2 is revised to reduce the required IRWST minimum water volume from 73,900 ft³ to 73,100 ft³.
2. COL Appendix A Technical Specifications 3.5.6 Condition D is revised to specify required actions with an IRWST borated water volume $< 73,100 \text{ ft}^3$ and $\geq 70,907 \text{ ft}^3$.
3. COL Appendix A Technical Specifications Surveillance Requirement (SR) 3.5.6.2 is revised so that the IRWST borated water volume is $\geq 73,100 \text{ ft}^3$.
4. COL Appendix A Technical Specifications 3.5.7 Condition D is revised to specify actions with an IRWST borated water volume $< 73,100 \text{ ft}^3$ and $\geq 70,907 \text{ ft}^3$.
5. COL Appendix A Technical Specifications 3.5.8 Condition D is revised to specify actions with an IRWST and refueling cavity borated water volume $< 73,100 \text{ ft}^3$ and $\geq 70,907 \text{ ft}^3$.
6. COL Appendix A Technical Specifications SR 3.5.8.2 is revised so that the IRWST and refueling cavity water total borated water volume is $\geq 73,100 \text{ ft}^3$.
7. COL Appendix C ITAAC Table 2.2.3-4 Acceptance Criteria 8.c)vi) is revised to reduce the acceptance criteria for the calculated volume of the IRWST between the tank outlet connection and the tank overflow from $\geq 73,900 \text{ ft}^3$ to $\geq 73,100 \text{ ft}^3$, with corresponding changes to the associated plant-specific DCD Tier 1 information.

3. TECHNICAL EVALUATION

As described in UFSAR Subsection 6.3.1.1, the seismic Category I, safety-related PXS provides emergency core cooling during design basis events. The PXS has the following safety-related functions and performance criterion:

1. The PXS provides core decay heat removal during transients or accidents, or whenever the normal heat removal paths are lost. The passive residual heat removal (PRHR) heat exchanger provides core decay heat removal during design basis events. This heat removal function is available at reactor coolant system (RCS) conditions including shutdowns. During refueling operations, when the IRWST is drained into the refueling cavity, other passive means of core decay heat removal are utilized.
2. The PXS provides RCS makeup and boration during transients or accidents when the normal RCS makeup supply from the chemical and volume control system (CVS) is unavailable or is insufficient.
3. The PXS provides safety injection to the RCS to provide adequate core cooling for the complete range of loss-of-coolant accidents (LOCAs), up to and including the double-ended rupture of the largest primary loop RCS piping. The core makeup tanks (CMTs), accumulators, IRWST, and containment recirculation provide RCS makeup, boration, and safety injection during design basis events.
4. The PXS provides for chemical addition to the containment during post-accident conditions to establish floodup chemistry conditions that support radionuclide retention with high radioactivity in containment and to prevent corrosion of containment equipment during long-term floodup conditions.
5. As a performance criterion, the PXS has the capability to bring the plant to a stable condition using the PRHR heat exchanger for events not involving a loss of coolant. For these events, the PXS, in conjunction with the passive containment cooling system, has the capability to establish safe shutdown conditions, cooling the RCS to about 420°F in 36 hours, with or without the reactor coolant pumps operating.

The PXS is designed to operate without the use of active equipment, such as pumps, and ac power sources. The PXS depends on reliable passive components and processes, such as gravity injection and expansion of compressed gases. The PXS does require a one-time alignment of valves upon actuation of the specific component.

The IRWST, as a component of the PXS, provides a quench volume for the automatic depressurization system (ADS) Stage 1, 2, and 3 discharges. The IRWST is the heat sink for the PRHR heat exchanger for decay heat removal during design basis events. The IRWST collects condensation from the containment interior for passive core cooling and the IRWST provides a source of cold, borated water for injection into the RCS.

For LOCAs and other postulated events where ac power sources are lost, or when the CMT levels reach the automatic depressurization system (ADS) actuation setpoint, the ADS initiates. This results in injection from the accumulators and subsequently from the IRWST,

once the RCS is nearly depressurized. For these conditions, the RCS depressurizes to saturated conditions at about 250°F within 24 hours. The PXS can maintain this safe shutdown condition indefinitely for the plant.

As described in COL Appendix C and plant-specific DCD Tier 1 Subsection 2.1.2, the current design requirements for the RCS include the following:

1. The RCS provides automatic depressurization during design basis events. The centerline of the connection of the sparger arms to the sparger hub is ≤ 11.5 feet below the IRWST overflow level. [ITAAC Acceptance Criteria 8.d)viii)]

As described in COL Appendix C and plant-specific DCD Tier 1 Subsection 2.2.3, the current design requirements for the PXS include the following:

1. The seismic Category I equipment, identified in Table 2.2.3-1, can withstand seismic design basis loads without loss of safety function. [ITAAC Design Commitment 5.a)]
2. The PXS provides RCS makeup, boration, and safety injection during design basis events. The elevation of the bottom inside IRWST surface is higher than the direct vessel injection nozzle centerline by ≥ 3.4 ft. [ITAAC Design Commitment 8.c and Acceptance Criteria 8.c)v)]
3. The PXS provides RCS makeup, boration, and safety injection during design basis events. The calculated volume of the IRWST is $\geq 73,900$ ft³ between the tank outlet connection and the tank overflow. [ITAAC Design Commitment 8.c and Acceptance Criteria 8.c)vi)]

As described in UFSAR Subsection 6.3.2.1.3, the IRWST is located in the containment at an elevation slightly above the RCS loop piping. RCS injection is possible only after the RCS has been depressurized by the ADS or by a LOCA. Squib valves in the IRWST injection lines open automatically on a fourth stage automatic depressurization signal. Check valves, arranged in series with the squib valves, open when the reactor pressure decreases to below the IRWST injection head.

After the accumulators, CMTs, and the IRWST inject, the containment is flooded up to a level sufficient to provide recirculation flow through the gravity injection lines back into the RCS.

The time that it takes until the initiation of containment recirculation flow varies greatly, depending on the specific event. With a break in a direct vessel injection line, the IRWST spills out through the break and floods the containment, along with RCS leakage, and recirculation can occur in several hours. In the event of automatic depressurization without a RCS break and with condensate return, the IRWST level decreases very slowly. Recirculation may not initiate for several days.

Containment recirculation initiates when the recirculation line valves are open and the containment floodup level is sufficiently high. When the IRWST level decreases to a low level, the containment recirculation squib valves automatically open to provide redundant flow paths from the containment to the reactor.

These recirculation flow paths can also provide a suction flow path from the containment to the normal residual heat removal pumps, when they are operating after containment flood up. In addition, the squib valves in the recirculation paths containing normally open motor operated valves can be manually opened to drain the IRWST intentionally to the reactor

cavity during severe accidents. This action is modeled in the AP1000 probabilistic risk assessment (PRA).

As described in UFSAR Table 15.0-6, the IRWST injection and recirculation functions (or the supported PRHR or ADS functions) are available to mitigate the following transient and accident conditions:

1. For UFSAR Section 15.2 events (Decrease in heat removal by the secondary system):
 - Loss of nonemergency ac power to the station auxiliaries (PRHR),
 - Loss of normal feedwater flow (PRHR), and
 - Feedwater system pipe break (PRHR).
2. For UFSAR Section 15.5 events (Increase in reactor coolant inventory):
 - Inadvertent operation of the CMT during power operation (PRHR), and
 - CVS malfunction that increases reactor coolant inventory (PRHR).
3. For UFSAR Section 15.6 events (Decrease in reactor coolant inventory):
 - Inadvertent opening of a pressurizer safety valve or ADS path (ADS),
 - Steam generator tube rupture (PRHR), and
 - LOCAs resulting from the spectrum of postulated piping breaks within the reactor coolant pressure boundary (IRWST injection and recirculation, PRHR, and ADS).

Further details of the availability and requirements for the IRWST for these design basis events are provided in the associated UFSAR Chapter 6 and 15 sections.

The results of the UFSAR Chapter 15 accident analyses are acceptable assuming a required IRWST minimum water volume of 73,100 ft³. This includes the following analyses:

1. Small-break LOCA analyses, using the NOTRUMP AP1000 model, are conservative in relation to a required IRWST minimum water volume of 73,100 ft³. The NOTRUMP AP1000 model does not directly model the IRWST water volume. Instead, the model uses the IRWST tank volume and subtracts the volume of components within the tank (spargers, PRHR heat exchanger, etc.). The actual IRWST water volume modeled is less than 73,100 ft³ (~73,077 ft³).
2. Large-break LOCA analyses, using the ASTRUM AP1000 model, do not model IRWST injection, and a required IRWST minimum water volume is not required to be considered.
3. Long-term core cooling analyses, using the WCOBRA/TRAC AP1000 model, include IRWST drain-down input from the small-break LOCA analyses described in Item 1. Therefore, use of the conservative small-break LOCA analyses input supports a required IRWST minimum water volume of 73,100 ft³.

4. Containment analyses, using the WGOTHIC AP1000 model, use an IRWST water volume of 73,100 ft³. Therefore, there is no impact on these analyses.
5. Transient analyses, using the LOFTRAN AP1000 model, have been updated to use an IRWST water volume of 73,100 ft³. Therefore, it is concluded that the IRWST water volume is adequately modeled in the LOFTRAN AP1000 model based on an IRWST minimum water volume of 73,100 ft³.

NUREG 1793, Final Safety Evaluation Report (FSER), Volume 1, Section 3.7, Seismic Design, lists the design parameters, including structural dimensions that will affect the seismic analysis and design of any structure, system, or component (SSC), and states that the minimum water volume of the IRWST is 78,900 ft³. This value is from WCAP 15612, "AP1000 Plant Description and Analysis Report," which summarized all the design changes made to convert the AP600 standard plant to the AP1000 standard plant. The actual water volume used in the seismic design analyses is 76,800 ft³, which is conservative with respect to a minimum water volume of 73,100 ft³. Therefore, there is no impact to the conclusions of the FSER concerning the seismic analyses.

NUREG 1793, FSER, Volume 1, Subsection 6.2.8, In-Containment Refueling Water Storage Tank Hydrodynamic Loads, states that the minimum water volume of the IRWST is 73,900 ft³. The actual water volume used in the structural design analyses is 76,800 ft³, which is conservative with respect to a minimum water volume of 73,100 ft³. Therefore, there is no impact to the conclusions of the FSER concerning the structural design analyses, including hydrodynamic loads.

NUREG 1793, FSER, Supplement 2, Subsection 16.4.3.5, Emergency Core Cooling Systems, states that the applicant proposed to replace the preliminary bracketed value of 73,900 ft³ for the minimum volume of borated water in the IRWST in DCD Tier 2 Chapter 16 Technical Specifications 3.5.6 and 3.5.8 with a new final value of greater than 73,100 ft³. The reason for this change was stated to be based on evolving IRWST design details, is consistent with the updated IRWST volume provided in DCD Table 6.3 2, and reflects a more conservative water volume that was appropriately used in safety analyses. The actual water volumes used in the safety analyses are described above, with the results of the UFSAR Chapter 15 accident analyses demonstrated to be acceptable assuming a required IRWST minimum water volume of 73,100 ft³. Therefore, there is no impact to the conclusions of the FSER concerning use of a required IRWST minimum water volume of 73,100 ft³.

The proposed changes to UFSAR Table 14.3-2 do not adversely affect the design functions of the PXS and the IRWST described above. The proposed changes are acceptable as they address inconsistencies in the current licensing basis. The proposed changes to COL Appendix A Technical Specifications 3.5.6, 3.5.7, and 3.5.8, COL Appendix C ITAAC Table 2.2.3-4 Acceptance Criteria 8.c)vi), and corresponding changes to the associated plant specific DCD Tier 1 information are consistent with these changes. The IRWST continues to meet the same regulatory acceptance criteria, codes, and industry standards specified in the UFSAR. The physical design and operation of the IRWST, including as installed inspections, testing, and maintenance requirements, as described in the UFSAR are not changed. The proposed changes comply with the requirements of 10 CFR 50 Appendix A, General Design Criteria (GDC) 2, 4, 35, 36, and 37 as stated in the UFSAR.

The proposed changes do not require a change to procedures or method of control that adversely affects the performance of the PXS and IRWST safety-related or

nonsafety- related design functions as described in the UFSAR. The physical design and operation of the IRWST, including as-installed inspections, testing, and maintenance requirements, as described in the UFSAR are not changed, and thus there are no changes to procedures or method of control required to address the proposed changes to the licensing basis. The proposed changes maintain the IRWST injection and recirculation design functions (or the supported PRHR or ADS functions) to be available to mitigate the required transient and accident conditions.

An impact review determined these proposed changes do not affect or require any change to the AP1000 PRA, including the Fire PRA, presented in UFSAR Chapter 19 results and insights (e.g., core damage frequency and large release frequency). The physical design and operation of the IRWST, including as-installed inspections, testing, and maintenance requirements, as described in the UFSAR are not changed, and thus there are no changes to the AP1000 PRA required to address the proposed changes to the licensing basis. There are no new postulated failures of the IRWST required in the PRA model. Therefore, there are no changes required to initiating event frequencies and system logic models of the PRA, including the Seismic Margins Analysis. The existing PRA risk significance investment protection determination for the IRWST is not affected.

There are no radiation zone changes or radiological access control changes required because of these proposed changes. The physical design and operation of the IRWST, including as-installed inspections, testing, and maintenance requirements, as described in the UFSAR are not changed, and thus there are no changes required to the radiation protection design features described in UFSAR Section 12.3.

There are no fire area changes required because of these proposed changes. The physical design and operation of the IRWST, including as-installed inspections, testing, and maintenance requirements, as described in the UFSAR are not changed, and thus there are no changes required to the fire protection analysis described in UFSAR Appendix 9A.

There is no change to the risk significant designation of SSCs within the Design Reliability Assurance Program as described in UFSAR Table 17.4 1, as the physical design and operation of the IRWST, including as-installed inspections, testing, and maintenance requirements, as described in the UFSAR are not changed.

The proposed changes do not affect the containment, control, channeling, monitoring, processing or releasing of radioactive and non-radioactive materials. No effluent release path is affected. The types and quantities of expected effluents are not changed. Therefore, radioactive or non-radioactive material effluents are not affected.

The proposed changes do not affect plant radiation zones, controls under 10 CFR 20, and expected amounts and types of radioactive materials, as the physical design and operation of the IRWST, including as-installed inspections, testing, and maintenance requirements, as described in the UFSAR are not changed. Therefore, individual and cumulative radiation exposures do not change.

The proposed changes do not affect the results of the aircraft impact assessment described in UFSAR Appendix 19F.

Summary

The proposed changes revise UFSAR Table 14.3-2, COL Appendix A Technical Specifications 3.5.6, 3.5.7, and 3.5.8, and COL Appendix C ITAAC Table 2.2.3-4

Acceptance Criteria 8.c)vi), with corresponding changes to the associated plant-specific DCD Tier 1 information, regarding the IRWST volume between the tank outlet connection and the tank overflow. The proposed changes clarify the necessary information to verify that the IRWST is constructed in accordance with the design certification as verified by COL Appendix C and plant-specific DCD Tier 1 ITAAC.

The proposed changes maintain the design functions of the IRWST injection and recirculation functions (or the supported PRHR or ADS functions) to be available to mitigate the required transient and accident conditions. Therefore, the previously evaluated and approved PXS safety-related and nonsafety-related design functions described in the UFSAR, and the results and consequences of the small-break LOCA transient analyses, large-break LOCA analyses, non-LOCA transient and event analyses, and containment analyses described in the UFSAR, are not adversely affected by these proposed changes.

The proposed changes do not adversely affect any safety-related equipment or function, design function, radioactive material barrier, or safety analysis.

4. REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

10 CFR 52.98(f) requires NRC approval for any modification to, addition to, or deletion from the terms and conditions of a Combined License (COL). These activities involve a change to COL Appendix C Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) information, with corresponding changes to the associated plant-specific Design Control Document (DCD) Tier 1 information. Therefore, NRC approval is required prior to making the plant specific proposed changes in this license amendment request.

10 CFR 52, Appendix D, Section VIII.B.5.a allows an applicant or licensee who references this appendix to depart from Tier 2 information, without prior NRC approval, unless the proposed departure involves a change to or departure from Tier 1 information, Tier 2* information, or the Technical Specifications, or requires a license amendment under paragraphs B.5.b or B.5.c of the section. The proposed changes for the in-containment refueling water storage tank (IRWST) include changes to Updated Final Safety Analysis Report (UFSAR) Table 14.3-2 that involve changes to COL Appendix A Technical Specifications 3.5.6, 3.5.7, and 3.5.8, COL Appendix C ITAAC Table 2.2.3-4 Acceptance Criteria 8.c)vi), and corresponding changes to the associated plant-specific DCD Tier 1 information. Therefore, NRC approval is required for the Tier 2 and involved Tier 1 departures.

10 CFR 52, Appendix D, VIII.C.6 states that after issuance of a license, changes to the plant-specific TS (Technical Specifications) will be treated as license amendments under 10 CFR 50.90. 10 CFR 50.90 addresses the applications for amendments of licenses, construction permits and early site permits. As discussed above, changes to Technical Specifications are requested, and thus a license amendment request (LAR) (as supplied herein) is required.

10 CFR Part 50, Appendix A, General Design Criterion (GDC) 2 requires that structures, systems and components important to safety be designed to withstand the effects of natural phenomena, such as earthquakes. The proposed changes for the

IRWST, which include changes to UFSAR Table 14.3-2, COL Appendix A Technical Specifications 3.5.6, 3.5.7, and 3.5.8, COL Appendix C ITAAC Table 2.2.3-4 Acceptance Criteria 8.c)vi), and corresponding changes to the associated plant specific DCD Tier 1 information, do not change the physical design and the existing seismic Category I design requirements for the IRWST. The proposed changes do not involve physical modifications or addition of systems, structures, and components, and do not affect the existing seismic design requirements. Therefore, the proposed changes comply with the requirements of GDC 2.

10 CFR Part 50, Appendix A, GDC 4 requires that systems, structures, and components can withstand the dynamic effects associated with missiles, pipe whipping, and discharging fluids, excluding dynamic effects associated with pipe ruptures, the probability of which is extremely low under conditions consistent with the design basis for the piping. The proposed changes for the IRWST, which include changes to UFSAR Table 14.3-2, COL Appendix A Technical Specifications 3.5.6, 3.5.7, and 3.5.8, COL Appendix C ITAAC Table 2.2.3-4 Acceptance Criteria 8.c)vi), and corresponding changes to the associated plant specific DCD Tier 1 information, maintain the physical design capability of the IRWST to withstand dynamic effects associated with missiles, pipe whipping, and discharging fluids as required by this criterion. The proposed changes do not change the requirements for anchoring safety-related components and supports to seismic Category I structures. Therefore, the proposed changes comply with the requirements of GDC 4.

10 CFR Part 50, Appendix A, GDC 35 requires that a system to provide abundant emergency core cooling be provided. The system safety function shall be to transfer heat from the reactor core following any loss of reactor coolant at a rate such that (1) fuel and clad damage that could interfere with continued effective core cooling is prevented and (2) clad metal water reaction is limited to negligible amounts. The proposed changes for the IRWST, which include changes to UFSAR Table 14.3-2, COL Appendix A Technical Specifications 3.5.6, 3.5.7, and 3.5.8, COL Appendix C ITAAC Table 2.2.3-4 Acceptance Criteria 8.c)vi), and corresponding changes to the associated plant specific DCD Tier 1 information, maintain the physical design capability of the IRWST to perform the safety-related design functions of the PXS. Use of a required IRWST minimum water volume of 73,100 ft³ is shown to provide the necessary water volume required for IRWST injection and recirculation functions following a design basis accident. Therefore, the proposed changes comply with the requirements of GDC 35.

10 CFR Part 50, Appendix A, GDC 36 requires that the emergency core cooling system be designed to permit appropriate periodic inspection of important components, such as spray rings in the reactor pressure vessel, water injection nozzles, and piping, to assure the integrity and capability of the system. The proposed changes for the IRWST, which include changes to UFSAR Table 14.3-2, COL Appendix A Technical Specifications 3.5.6, 3.5.7, and 3.5.8, COL Appendix C ITAAC Table 2.2.3-4 Acceptance Criteria 8.c)vi), and corresponding changes to the associated plant-specific DCD Tier 1 information, maintain the capability to inspect the IRWST in compliance with regulatory requirements. Therefore, the proposed changes comply with the requirements of GDC 36.

10 CFR Part 50, Appendix A, GDC 37 requires that the emergency core cooling system be designed to permit appropriate periodic pressure and functional testing to assure (1) the structural and leaktight integrity of its components, (2) the operability and performance of the active components of the system, and (3) the operability of the system as a whole and, under conditions as close to design as practical, the performance of the full operational sequence that brings the system into operation, including operation of applicable portions of the protection system, the transfer between normal and emergency power sources, and the operation of the associated cooling water system. The proposed changes for the IRWST, which include changes to UFSAR Table 14.3-2, COL Appendix A Technical Specifications 3.5.6, 3.5.7, and 3.5.8, COL Appendix C ITAAC Table 2.2.3-4 Acceptance Criteria 8.c)vi), and corresponding changes to the associated plant-specific DCD Tier 1 information, maintain the capability to test the IRWST in compliance with regulatory requirements. Therefore, the proposed changes comply with the requirements of GDC 37.

4.2 Precedent

No precedent is identified.

4.3 Significant Hazards Consideration Determination

The license amendment request proposes changes to Updated Final Safety Analysis Report (UFSAR) Tier 2 Table 14.3-2, COL Appendix A Technical Specifications 3.5.6, 3.5.7, and 3.5.8, and COL Appendix C ITAAC Table 2.2.3-4 Acceptance Criteria 8.c)vi), for inspections of the as-built IRWST to determine the calculated volume of the IRWST between the tank outlet connection and the tank overflow.

The proposed changes for the IRWST are consistent with the required IRWST minimum water volume provided in references elsewhere in the UFSAR, and maintain the physical design capability of the IRWST to perform the safety-related design functions of the passive core cooling system (PXS). A required IRWST minimum water volume of 73,100 ft³ provides the necessary water volume required for IRWST injection and recirculation functions following a design basis accident and for the supported passive residual heat removal (PRHR) or Automatic Depressurization System (ADS) functions.

An evaluation to determine whether or not a significant hazards consideration is involved with the proposed amendment was completed by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

4.3.1 Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The proposed changes do not affect the operation of any systems or equipment that initiate an analyzed accident or alter any structure, system, or component (SSC) accident initiator or initiating sequence of events. The proposed changes do not affect the physical design and operation of the in-containment refueling

water storage tank (IRWST), including as-installed inspections, testing, and maintenance requirements, as described in the Updated Final Safety Analysis Report (UFSAR). Therefore, the operation of the IRWST is not affected. There are no inadvertent operations or failures of the IRWST considered as accident initiators or part of an initiating sequence of events for an accident previously evaluated. Therefore, the probabilities of the accidents previously evaluated in the UFSAR are not affected.

The proposed changes do not adversely affect the ability of the IRWST to perform its design functions. The design of the IRWST continues to meet the same regulatory acceptance criteria, codes, and standards as required by the UFSAR. In addition, the proposed changes maintain the capabilities of the IRWST to mitigate the consequences of an accident and to meet the applicable regulatory acceptance criteria. The proposed changes do not affect the prevention and mitigation of other abnormal events; e.g., anticipated operational occurrences, earthquakes, floods and turbine missiles, or their safety or design analyses. Therefore, the consequences of the accidents evaluated in the UFSAR are not affected.

Therefore, the requested amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

4.3.2 Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed changes do not affect the operation of any systems or equipment that may initiate a new or different kind of accident, or alter any SSC such that a new accident initiator or initiating sequence of events is created. The proposed changes do not affect the physical design and operation of the IRWST, including as-installed inspections, testing, and maintenance requirements, as described in the UFSAR. Therefore, the operation of the IRWST is not affected. These proposed changes do not adversely affect any other SSC design functions or methods of operation in a manner that results in a new failure mode, malfunction, or sequence of events that affect safety-related or nonsafety-related equipment. Therefore, this activity does not allow for a new fission product release path, result in a new fission product barrier failure mode, or create a new sequence of events that results in significant fuel cladding failures.

Therefore, the proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

4.3.3 Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No

The proposed changes maintain existing safety margins. The proposed changes maintain the capabilities of the IRWST to perform its design functions. The proposed changes maintain existing safety margin through continued application of the existing requirements of the UFSAR, while updating the acceptance criteria for verifying the design features necessary to ensure the IRWST performs the design functions required to meet the existing safety margins in the safety analyses. Therefore, the proposed changes satisfy the same design functions in accordance with the same codes and standards as stated in the UFSAR. These changes do not adversely affect any design code, function, design analysis, safety analysis input or result, or design/safety margin.

No safety analysis or design basis acceptance limit/criterion is challenged or exceeded by the proposed changes, and no margin of safety is reduced.

Therefore, the requested amendment does not involve a significant reduction in a margin of safety.

Based on the above, it is concluded that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of “no significant hazards consideration” is justified.

4.4 Conclusions

Based on the considerations discussed above, (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 amendment will not be inimical to the common defense and security or to the health and safety of the public. Therefore, it is concluded that the requested amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of “no significant hazards consideration” is justified.

5. ENVIRONMENTAL CONSIDERATIONS

Sections 2 and 3 of this license amendment request provide the details of the proposed changes.

The license amendment request proposes changes to Updated Final Safety Analysis Report (UFSAR) Tier 2 Table 14.3-2, COL Appendix A Technical Specifications 3.5.6, 3.5.7, and 3.5.8, COL Appendix C ITAAC Table 2.2.3-4 Acceptance Criteria 8.c)vi), and corresponding changes to the associated plant-specific Design Control Document (DCD) Tier 1 information, for inspections of the as-built IRWST to determine the calculated volume of the IRWST between the tank outlet connection and the tank overflow. The proposed changes for the IRWST are consistent with the required IRWST minimum water volume provided elsewhere in the UFSAR, and maintain the physical design capability of the IRWST to perform the

safety-related design functions of the passive core cooling system (PXS), including IRWST injection and recirculation functions following a design basis accident.

A review has determined that the requested amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR Part 20, or would change an inspection or surveillance requirement. However, facility construction and operation following implementation of the requested amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the requested amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9), in that:

(i) There is no significant hazards consideration.

As documented in Section 4.3, Significant Hazards Consideration Determination, of this license amendment request, an evaluation was completed to determine whether or not a significant hazards consideration is involved by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment." The Significant Hazards Consideration Determination determined that (1) the requested amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated; (2) the requested amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated; and (3) the requested amendment does not involve a significant reduction in a margin of safety. Therefore, it is concluded that the requested amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and accordingly, a finding of "no significant hazards consideration" is justified.

(ii) There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

The proposed changes are unrelated to any aspect of plant construction or operation that would introduce any change to effluent types (e.g., effluents containing chemicals or biocides, sanitary system effluents, and other effluents), or affect any plant radiological or non-radiological effluent release quantities. Furthermore, the proposed changes do not affect any effluent release path or diminish the design functions or operational features credited with controlling the release of effluents during plant operation. Therefore, the requested amendment does not involve a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite.

(iii) There is no significant increase in individual or cumulative occupational radiation.

The proposed changes do not adversely affect walls, floors, or other structures that provide shielding. Plant radiation zones are not affected, and there are no changes to the controls required by 10 CFR Part 20 that preclude a significant increase in occupational radiation exposure. Therefore, the requested amendment does not involve a significant increase in individual or cumulative occupational radiation exposure.

Based on the above review of the proposed amendment, it has been determined that anticipated construction and operational impacts of the proposed amendment do not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in the individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

6. REFERENCES

None.

Southern Nuclear Operating Company

ND-17-0045

Enclosure 2

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Exemption Request:

**In-Containment Refueling Water Storage Tank (IRWST) Volume Changes
(LAR-17-002)**

(Enclosure 2 consists of 8 pages, including this cover page.)

1.0 PURPOSE

Southern Nuclear Operating Company (the Licensee) requests a permanent exemption from the provisions of 10 CFR 52, Appendix D, Section III.B, *Design Certification Rule for the AP1000 Design, Scope and Contents*, to allow a plant-specific departure from elements of the certification information in Tier 1 of the plant-specific AP1000 Design Control Document (DCD). The regulation, 10 CFR 52, Appendix D, Section III.B, requires an applicant or licensee referencing Appendix D to 10 CFR Part 52 to incorporate by reference and comply with the requirements of Appendix D, including certified information in DCD Tier 1. Tier 1 includes Inspections, Tests, Analyses and Acceptance Criteria (ITAAC) that must be satisfactorily performed prior to fuel load. The design details to be verified by these ITAAC are specified in the tables that are referenced in each individual ITAAC. The Tier 1 information for which a plant-specific departure and exemption is being requested includes system based design ITAAC information, including changes to the in-containment refueling water storage tank (IRWST) minimum volume.

This request for exemption will apply the requirements of 10 CFR 52, Appendix D, Section VIII.A.4 to allow changes to Tier 1 information due to the following proposed changes to the passive core cooling system (PXS) based design ITAAC table:

- Tier 1 Table 2.2.3-4 revise the IRWST volume information as follows:

Revise ITAAC Design Commitment 8.c), Acceptance Criteria vi), to reduce the acceptance criterion for the calculated volume of the IRWST between the tank outlet connection and the tank overflow from $\geq 73,900 \text{ ft}^3$ to $\geq 73,100 \text{ ft}^3$.

This request will provide for the application of the requirements for granting exemptions from design certification information, as specified in 10 CFR Part 52, Appendix D, Section VIII.A.4, 10 CFR §52.63, §52.7, and §50.12.

2.0 BACKGROUND

The Licensee is the holder of Combined License Nos. NPF-91 and NPF-92, which authorize construction and operation of two Westinghouse Electric Company AP1000 nuclear plants, named Vogtle Electric Generating Plant (VEGP) Units 3 and 4, respectively.

The proposed changes would revise the COLs to align the Tier 1 IRWST volume with other Updated Final Safety Analysis Report (UFSAR) information.

Currently, the ITAAC Acceptance Criteria in Tier 1 Table 2.2.3-4 specifies that the calculated volume of the IRWST is $\geq 73,900 \text{ ft}^3$ between the tank outlet connection and the tank overflow. Reducing the acceptance criteria for the calculated volume of the IRWST between the tank outlet connection and the tank overflow from $\geq 73,900 \text{ ft}^3$ to $\geq 73,100 \text{ ft}^3$ provides consistency with the required IRWST minimum water volume stipulated elsewhere in the UFSAR. To remain consistent with the ITAAC purpose, this proposed change will update the ITAAC accordingly while still maintaining the physical design capability of the IRWST to perform the safety-related design functions of the PXS, including IRWST injection and recirculation functions following a design basis accident.

An exemption from elements of the AP1000 certified (Tier 1) design information is requested to allow plant-specific departures to be taken from the PXS based design description in ITAAC Table 2.2.3-4. An exemption from elements of the AP1000 certified (Tier 1) design information to allow a departure from the design description is requested.

3.0 TECHNICAL JUSTIFICATION OF ACCEPTABILITY

An exemption is requested to depart from AP1000 generic Design Control Document (DCD) Tier 1 material by departing from the description of the IRWST volume in Tier 1 Table 2.2.3-4.

The proposed changes revise Tier 1 ITAAC Table 2.2.3-4 Acceptance Criteria 8.c)vi) for inspections of the as-built IRWST to determine $\geq 73,100 \text{ ft}^3$ (versus $\geq 73,900 \text{ ft}^3$) as the calculated volume of the IRWST between the tank outlet connection and the tank overflow. The proposed changes clarify the necessary information to verify that the IRWST is constructed in accordance with the design certification as verified by plant-specific DCD Tier 1 ITAAC.

The proposed changes maintain the IRWST injection and recirculation design functions (or the supported passive residual heat removal (PRHR) or automatic depressurization system (ADS) functions) to be available to mitigate the required transient and accident conditions. Therefore, the previously evaluated and approved PXS safety-related and nonsafety-related design functions described in the UFSAR, and the results and consequences of the small-break loss of coolant accident (LOCA) transient analyses, large-break LOCA analyses, non-LOCA transient and event analyses, and containment analyses described in the UFSAR, are not adversely affected by this proposed change to plant-specific DCD Tier 1 Subsection 2.2.3.

The proposed changes do not adversely impact the design functions of the IRWST, as a component part of the PXS, to provide a quench volume for the ADS Stage 1, 2, and 3 discharges; provide a heat sink for the PRHR heat exchanger for decay heat removal during design basis events; collect condensation from the containment interior for passive core cooling; and provide a source of cold, borated water for injection into the reactor coolant system (RCS). Therefore, the IRWST will continue to meet its required functionality following implementation of the proposed changes.

Detailed technical justification supporting this request for exemption is provided in Sections 2 and 3 of the associated License Amendment Request in Enclosure 1 of this letter.

4.0 JUSTIFICATION OF EXEMPTION

10 CFR Part 52, Appendix D, Section VIII.A.4 and 10 CFR 52.63(b)(1) govern the issuance of exemptions from elements of the certified design information for AP1000 nuclear power plants. Since the Licensee has identified changes to the Tier 1 information as discussed in Enclosure 1 of the accompanying License Amendment Request, an exemption from the certified design information in Tier 1 is needed.

10 CFR Part 52, Appendix D, and 10 CFR 50.12, §52.7, and §52.63 state that the NRC may grant exemptions from the requirements of the regulations provided six conditions are met: 1) the exemption is authorized by law [§50.12(a)(1)]; 2) the exemption will not present an undue risk to the health and safety of the public [§50.12(a)(1)]; 3) the exemption is consistent with the common defense and security [§50.12(a)(1)]; 4) special circumstances are present [§50.12(a)(2)]; 5) the special circumstances outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption [§52.63(b)(1)]; and 6) the design change will not result in a significant decrease in the level of safety [Part 52, App. D, VIII.A.4].

The requested exemption to allow changes to the description of the components satisfies the criteria for granting specific exemptions, as described below.

1. This exemption is authorized by law

The NRC has authority under 10 CFR 52.63, §52.7, and §50.12 to grant exemptions from the requirements of NRC regulations. Specifically, 10 CFR 50.12 and §52.7 state that the NRC may grant exemptions from the requirements of 10 CFR Part 52 upon a proper showing. No law exists that would preclude the changes covered by this exemption request. Additionally, granting of the proposed exemption does not result in a violation of the Atomic Energy Act of 1954, as amended, or the Commission's regulations.

Accordingly, this requested exemption is "authorized by law," as required by 10 CFR 50.12(a)(1).

2. This exemption will not present an undue risk to the health and safety of the public

The proposed exemption from the requirements of 10 CFR 52, Appendix D, Section III.B would allow changes to elements of the Tier 1 DCD to depart from the AP1000 certified (Tier 1) design information. The plant-specific Tier 1 will continue to reflect the approved licensing basis for VEGP Units 3 and 4, and will maintain a consistent level of detail with that which is currently provided elsewhere in Tier 1 of the DCD. Therefore, the affected plant-specific Tier 1 ITAAC will continue to serve its required purpose.

The changes to the PXS do not represent any adverse impact to design functions or the systems, structures and components (SSC) therein and will continue to protect the health and safety of the public in the same manner. The IRWST volume changes do not introduce any new industrial, chemical, or radiological hazards that would represent a public health or safety risk, nor does it modify or remove any design or operational controls or safeguards intended to mitigate any existing on-site hazards. Furthermore, the proposed changes would not allow for a new fission product release path, result in a new fission product barrier failure mode, or create a new sequence of events that would result in fuel cladding failures. Accordingly, these changes do not present an undue risk from any existing or proposed equipment or systems.

Therefore, the requested exemption from 10 CFR 52, Appendix D, Section III.B would not present an undue risk to the health and safety of the public.

3. The exemption is consistent with the common defense and security

The exemption from the requirements of 10 CFR 52, Appendix D, Section III.B would allow a change to elements of the PXS as presented in the system based design ITAAC table in the plant-specific DCD Tier 1, thereby departing from the AP1000 certified (Tier 1) design information. The proposed exemption will enable performance of the ITAAC associated with these changed elements, by reflecting the current design information in the text, tables, and figures that are referenced in the ITAAC. The exemption does not adversely impact the design, function, or operation of any plant SSC associated with the facility's physical or cyber security, and therefore does not adversely affect any plant equipment that is necessary to maintain a safe and secure plant status. The proposed exemption has no adverse impact on plant security or safeguards.

Therefore, the requested exemption is consistent with the common defense and security.

4. Special circumstances are present

10 CFR 50.12(a)(2) lists six "special circumstances" for which an exemption may be granted. Pursuant to the regulation, it is necessary for one of these special circumstances to be present in order for the NRC to consider granting an exemption request. The requested exemption meets the special circumstances of 10 CFR 50.12(a)(2)(ii). That subsection defines special circumstances as when "Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule."

The rule under consideration in this request for exemption is 10 CFR 52, Appendix D, Section III.B, which requires that a licensee referencing the AP1000 Design Certification Rule (10 CFR Part 52, Appendix D) shall incorporate by reference and comply with the requirements of Appendix D, including Tier 1 information. The VEGP Units 3 and 4 COLs reference the AP1000 Design Certification Rule and incorporate by reference the requirements of 10 CFR Part 52, Appendix D, including Tier 1 information. The underlying purpose of Appendix D, Section III.B is to describe and define the scope and contents of the AP1000 design certification, and to require compliance with the design certification information in Appendix D.

The proposed exemption would allow changes to the IRWST volume, aligning the ITAAC for the minimum IRWST volume with other UFSAR descriptions and analyses, and enhancing the accuracy of details presented in a Tier 1 ITAAC table.

The proposed changes maintain the design function of the PXS. The changes do not impact the ability of any SSCs to perform their functions or negatively impact safety. Accordingly, these changes to the certified information will enable the Licensee to

safely construct, maintain, and operate the AP1000 facility consistent with the design certified by the NRC in 10 CFR Part 52, Appendix D.

Therefore, special circumstances are present, because application of the current generic certified design information in Tier 1 as required by 10 CFR Part 52, Appendix D, Section III.B, in the particular circumstances discussed in this request is not necessary to achieve the underlying purpose of the rule.

5. The special circumstances outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption.

This exemption from the requirements of 10 CFR 52, Appendix D, Section III.B would change elements of the plant-specific DCD Tier 1 by departing from standard AP1000 certified (Tier 1) design information. This exemption would allow changes to the system based ITAAC tables. Based on the nature of the proposed changes to the generic Tier 1 information and the understanding that these changes support the actual system functions, it is expected that this exemption will be requested by other AP1000 licensees and applicants. However, even if other AP1000 licensees and applicants do not request this same departure, the special circumstances will continue to outweigh any decrease in safety from the reduction in standardization because the key design functions of the PXS associated with this request will continue to be maintained. Furthermore, the justification provided in the license amendment request and this exemption request and the associated mark-ups demonstrate that there is a limited change from the standard information provided in the generic AP1000 DCD, which is offset by the special circumstances identified above.

Therefore, the special circumstances associated with the requested exemption outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption.

6. The design change will not result in a significant decrease in the level of safety.

The proposed exemption would allow changes to the minimum IRWST volume as presented in a Tier 1 ITAAC table. The proposed changes do not affect the ability of the PXS to perform its design functions.

The proposed changes do not adversely impact the design functions of the IRWST, as a component part of the PXS, to provide a quench volume for the automatic depressurization system (ADS) Stage 1, 2, and 3 discharges; provide a heat sink for the PRHR heat exchanger for decay heat removal during design basis events; collect condensation from the containment interior for passive core cooling; and provide a source of cold, borated water for injection into the RCS.

As a result of the limited-scope and nature of the proposed changes associated with this exemption request, no systems or equipment will be adversely impacted such that there are new failure modes introduced by these changes and the level of safety provided by the current PXS and equipment contained therein will be maintained.

Because the proposed changes to the IRWST volume will not adversely affect the ability of the PXS to perform its design functions, and the level of safety provided by the current PXS and equipment contained therein is unchanged, it is concluded that the design changes associated with the proposed exemption will not result in a significant decrease in the level of safety.

5.0 RISK ASSESSMENT

A risk assessment was not determined to be applicable to address the acceptability of this proposal.

6.0 PRECEDENT

None identified.

7.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed exemption does not involve (i) a significant hazards consideration, (ii) a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Specific justification is provided in Section 5 of the corresponding license amendment request. Accordingly, the proposed exemption meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed exemption.

8.0 CONCLUSION

The Licensee requests a permanent exemption for elements of AP1000 design certification information reflected in Tier 1. The proposed change revises a table in the plant-specific DCD Tier 1 to reflect proposed plant-specific design. The proposed exemption would allow departure from AP1000 generic Tier 1 DCD information by altering the minimum IRWST volume, aligning the ITAAC for the IRWST with other UFSAR descriptions and analyses, and enhancing the accuracy of details presented in a Tier 1 ITAAC table.

The exemption request meets the requirements of 10 CFR 52.63, "Finality of design certifications," 10 CFR 52.7, "Specific exemptions," 10 CFR 50.12, "Specific exemptions," and 10 CFR 52 Appendix D, "Design Certification Rule for the AP1000." Specifically, the exemption request meets the criteria of 10 CFR 50.12(a)(1) in that the request is authorized by law, presents no undue risk to public health and safety, and is consistent with the common defense and security. Furthermore, approval of this request does not result in a significant decrease in the level of safety, satisfies the underlying purpose of the AP1000 Design Certification Rule, and does not present a significant decrease in safety as a result of a reduction in standardization.

ND-17-0045

Enclosure 2

Exemption Request: In-Containment Refueling Water Storage Tank (IRWST) Volume Change
(LAR-17-002)

9.0 REFERENCES

None.

Southern Nuclear Operating Company

ND-17-0045

Enclosure 3

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Proposed Changes to the Licensing Basis Documents

(LAR-17-002)

Note:

Added text is shown as bold Blue Underline
Deleted text is shown as bold ~~Red-Strikethrough~~
*** indicates omitted existing text that is not shown.

(Enclosure 3 consists of 8 pages, including this cover page.)

UFSAR Table 14.3-2 (Sheet 7 of 17), Design Basis Accident Analysis

Revise Tier 2 information by changing the IRWST volume as shown below:

**Table 14.3-2 (Sheet 7 of 17)
Design Basis Accident Analysis**

Reference	Design Feature	Value
***	***	***
Table 6.3-2	The passive core cooling system has an in-containment refueling water storage tank with a minimum required water volume (ft ³)	73,900 <u>73,100</u>
***	***	***

Technical Specifications 3.5.6 In-containment Refueling Water Storage Tank (IRWST) - Operating

Revise COL Appendix A information by changing the IRWST volume as shown below:

Technical Specifications

IRWST – Operating
3.5.6

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. IRWST boron concentration not within limits. <u>OR</u> IRWST borated water temperature not within limits. <u>OR</u> IRWST borated water volume $< 73,100$ $< 73,100$ cu. ft and $\geq 70,907$ $\geq 70,907$ cu. ft.	D.1 Restore IRWST to OPERABLE status.	8 hours
E. One motor operated IRWST isolation valve not fully open. <u>OR</u> Power is not removed from one or more motor operated IRWST isolation valves.	E.1 Restore motor operated IRWST isolation valve to fully open condition with power removed from both valves.	1 hour
F. Required Action and associated Completion Time of Condition A, B, C, D, or E not met. <u>OR</u> LCO not met for reasons other than Condition A, B, C, D, or E.	F.1 Be in MODE 3. <u>AND</u> F.2 Be in MODE 5.	6 hours 36 hours

Technical Specifications 3.5.6 In-containment Refueling Water Storage Tank (IRWST) - Operating

Revise COL Appendix A information by changing the IRWST volume as shown below:

Technical Specifications		IRWST – Operating 3.5.6
<u>SURVEILLANCE REQUIREMENTS</u>		
SURVEILLANCE		FREQUENCY
SR 3.5.6.1	Verify the IRWST water temperature is < 120°F.	24 hours
SR 3.5.6.2	Verify the IRWST borated water volume is <u>≥ 73,100</u> > 73,100 cu. ft.	24 hours
SR 3.5.6.3	Verify the volume of noncondensable gases in each of the four IRWST injection squib valve outlet line pipe stubs has not caused the high-point water level to drop below the sensor.	24 hours
SR 3.5.6.4	Verify the IRWST boron concentration is ≥ 2600 ppm and ≤ 2900 ppm.	31 days <u>AND</u> Once within 6 hours after each solution volume increase of ≥ 15,000 gal
SR 3.5.6.5	Verify each motor operated IRWST isolation valve is fully open.	12 hours
SR 3.5.6.6	Verify power is removed from each motor operated IRWST isolation valve.	31 days
SR 3.5.6.7	Verify each motor operated containment recirculation isolation valve is fully open.	31 days
SR 3.5.6.8	Verify each IRWST injection and containment recirculation squib valve is OPERABLE in accordance with the Inservice Testing Program.	In accordance with the Inservice Testing Program
SR 3.5.6.9	<p style="text-align: center;">- NOTE -</p> <p>Squib actuation may be excluded.</p> <hr/> <p>Verify continuity of the circuit from the Protection Logic Cabinets to each IRWST injection and containment recirculation squib valve on an actual or simulated actuation signal.</p>	24 months

Technical Specifications 3.5.7 In-containment Refueling Water Storage Tank (IRWST) – Shutdown, MODE 5

Revise COL Appendix A information by changing the IRWST volume as shown below:

Technical Specifications

IRWST – Shutdown,
MODE 5
3.5.7

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. IRWST boron concentration not within limits. <u>OR</u> IRWST borated water temperature not within limits. <u>OR</u> IRWST borated water volume < 73,100 <u>< 73,100</u> cu. ft. and ≥ 70,907 <u>≥ 70,907</u> cu ft.	D.1 Restore IRWST to OPERABLE status.	8 hours
E. Required motor operated IRWST isolation valve not fully open. <u>OR</u> Power is not removed from required motor operated IRWST isolation valve.	E.1 Restore required motor operated IRWST isolation valve to fully open condition with power removed.	1 hour
F. Required Action and associated Completion Time of Condition A, B, C, D, or E not met. <u>OR</u> LCO not met for reasons other than Condition A, B, C, D, or E.	F.1 Initiate action to establish ≥ 20% pressurizer level with the Reactor Coolant System (RCS) pressure boundary intact. <u>AND</u> F.2 Suspend positive reactivity additions.	Immediately Immediately

Technical Specifications 3.5.8 In-containment Refueling Water Storage Tank (IRWST) – Shutdown, MODE 6

Revise COL Appendix A information by changing the IRWST volume as shown below:

Technical Specifications

IRWST – Shutdown,
MODE 6
3.5.8

3.5 PASSIVE CORE COOLING SYSTEM (PXS)

3.5.8 In-containment Refueling Water Storage Tank (IRWST) – Shutdown, MODE 6

LCO 3.5.8 The IRWST, with one injection flow path and one containment recirculation flow path, shall be OPERABLE.

APPLICABILITY: MODE 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required motor operated containment recirculation isolation valve not fully open.	A.1 Open required motor operated containment recirculation isolation valve.	72 hours
B. Required IRWST injection flow path with noncondensable gas volume in one squib valve outlet line pipe stub not within limit.	B.1 Restore noncondensable gas volume in squib valve outlet line pipe stub to within limit.	72 hours
C. Required IRWST injection flow path with noncondensable gas volume in both squib valve outlet line pipe stubs not within limit.	C.1 Restore noncondensable gas volume in one squib valve outlet line pipe stub to within limit.	8 hours
D. IRWST and refueling cavity boron concentration not within limits. <u>OR</u> IRWST and refueling cavity borated water temperature not within limits. <u>OR</u> IRWST and refueling cavity borated water volume < 73,100 <u>73,100</u> cu. ft and ≥ 70,907 <u>≥ 70,907</u> cu. ft.	D.1 Restore IRWST to OPERABLE status.	8 hours

VEGP Units 3 and 4

3.5.8 - 1

Amendment No. — (Unit 3)
Amendment No. — (Unit 4)

Technical Specifications 3.5.8 In-containment Refueling Water Storage Tank (IRWST) – Shutdown, MODE 6

Revise COL Appendix A information by changing the IRWST volume as shown below:

Technical Specifications		IRWST – Shutdown, MODE 6 3.5.8
ACTIONS (continued)		
CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required motor operated IRWST isolation valve not fully open. <u>OR</u> Power is not removed from required motor operated IRWST isolation valve.	E.1 Restore required motor operated IRWST isolation valve to fully open condition with power removed.	1 hour
F. Required Action and associated Completion Time of Condition A, B, C, D, or E not met. <u>OR</u> LCO not met for reasons other than Condition A, B, C, D, or E.	F.1 Initiate action to establish water level ≥ 23 feet above the top of the reactor vessel flange. <u>AND</u> F.2 Suspend positive reactivity additions.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.8.1	Verify the IRWST and refueling cavity water temperature is $< 120^{\circ}\text{F}$.	24 hours
SR 3.5.8.2	Verify the IRWST and refueling cavity water total borated water volume is $\geq 73,100 > 73,100$ cu. ft.	24 hours

COL Appendix C (and associated plant-specific Tier 1) Table 2.2.3-4

Revise COL Appendix C (and associated plant-specific Tier 1) information by changing the IRWST volume as shown below:

Table 2.2.3-4 (cont.) Inspections, Tests, Analyses, and Acceptance Criteria		
Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
***	***	***
8.c) The PXS provides RCS makeup, boration, and safety injection during design basis events.	*** vi) Inspections of each of the following tanks will be conducted: <ul style="list-style-type: none"> – CMTs – Accumulators – IRWST 	*** vi) The calculated volume of each of the following tanks is as follows: <ul style="list-style-type: none"> – CMTs $\geq 2487 \text{ ft}^3$ – Accumulators $\geq 2000 \text{ ft}^3$ – IRWST <math>\geq 73,100 \text{ } 73,900 \text{ ft}^3</math> between the tank outlet connection and the tank overflow
***	***	***