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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:
Technical Specification Changes for Spent Fuel Pool Level – Low 2 and In-Containment Refueling Water Storage Tank (IRWST) Wide Range Level – Low Operability (LAR-18-017)

Ladies and Gentlemen:

Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, Southern Nuclear Operating Company (SNC) requests an amendment to the combined licenses (COLs) for Vogtle Electric Generating Plant (VEGP) Units 3 and 4 (License Numbers NPF-91 and NPF-92, respectively). The requested amendment proposes changes to VEGP Units 3 and 4 COL Appendix A, Technical Specifications (TS).

The requested amendment proposes to change TS regarding operability requirements for the Engineered Safety Features Actuation System (ESFAS) Spent Fuel Pool Level – Low 2 and In-Containment Refueling Water Storage Tank (IRWST) Wide Range Level – Low instrumentation functions for Refueling Cavity and Spent Fuel Pool Cooling System (SFS) Isolation. Additional changes are proposed to add TS operability requirements for the SFS containment isolation valves in MODES 5 and 6.

Enclosure 1 provides the description, technical evaluation, regulatory evaluation (including the significant hazards consideration determination), and environmental considerations for the proposed changes. Enclosure 2 provides markups depicting the requested changes to the VEGP Units 3 and 4 licensing basis documents. Enclosure 3 provides markups depicting conforming Technical Specification Bases changes for information only.

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

SNC requests NRC staff review and approval of the license amendment no later than January 20, 2019 to support Operator training updates. Delayed approval of this license amendment could result in a delay in Operator training updates. SNC expects to implement the proposed amendment within 30 days of approval of the requested changes.

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

Should you have any questions, please contact Mr. Wesley Sparkman at (205) 992-5061.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 20th of July 2018.

Respectfully submitted,

Brian H. Whitley
Director, Regulatory Affairs
Southern Nuclear Operating Company

Enclosures 1) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 - Request for License Amendment Regarding Technical Specification Changes for Spent Fuel Pool Level – Low 2 and In-Containment Refueling Water Storage Tank (IRWST) Wide Range Level – Low Operability (LAR-18-017)

2) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 - Proposed Changes to the Licensing Basis Documents (LAR-18-017)

3) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 - Conforming Changes to the Technical Specification Bases (For Information Only) (LAR-18-017)

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Southern Nuclear Operating Company

ND-18-0647

Enclosure 1

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Request for License Amendment Regarding Technical Specification Changes for Spent Fuel Pool Level – Low 2 and In-Containment Refueling Water Storage Tank (IRWST) Wide Range Level – Low Operability

(LAR-18-017)

(This Enclosure consists of 19 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) requests an amendment to the combined licenses (COLs) for Vogtle Electric Generating Plant (VEGP) Units 3 and 4 (License Numbers NPF-91 and NPF-92, respectively). The requested amendment proposes changes to VEGP Units 3 and 4 COL Appendix A, Technical Specifications (TS).

1. SUMMARY DESCRIPTION

The requested amendment proposes to change TS regarding operability requirements for the Engineered Safety Features Actuation System (ESFAS) Spent Fuel Pool Level – Low 2 and In-Containment Refueling Water Storage Tank (IRWST) Wide Range Level – Low instrumentation functions for Refueling Cavity and Spent Fuel Pool Cooling System (SFS) Isolation. Additional changes are proposed to add TS operability requirements for the SFS containment isolation valves in MODES 5 and 6. Proposed changes to the TS are provided in Enclosure 2. Proposed changes to the TS Bases are provided in Enclosure 3 for information only.

2. DETAILED DESCRIPTION

TS 3.3.14, “ESFAS Spent Fuel Pool Level Instrumentation,” requires three channels of ESFAS Spent Fuel Pool Level – Low 2 instrumentation to be OPERABLE in MODE 6. In the event of a leak in the nonsafety-related, nonseismic SFS when connected to the refueling cavity, closure of the SFS containment isolation valves on Spent Fuel Pool Level – Low 2 in two of three channels will terminate draining of the refueling cavity. However, the spent fuel pool level is the same as the refueling cavity level only when the refueling cavity is connected through the fuel transfer tube and fuel transfer canal to the spent fuel pool in MODE 6. As such, the Spent Fuel Pool Level – Low 2 instrumentation function is only effective in terminating draining of the refueling cavity in MODE 6 with refueling cavity and spent fuel pool volumes in communication. Therefore, the Applicability of TS 3.3.14 is proposed to be revised to reflect that condition. In addition, a new TS 3.7.13, “SFS Containment Isolation Valves,” is proposed to be added to require the SFS containment isolation valves to be OPERABLE in MODE 6 with refueling cavity and spent fuel pool volumes in communication consistent with the proposed changes to TS 3.3.14.

UFSAR Subsections 6.3.2.2.3 and 7.3.1.2.21 describe closure of the SFS containment isolation valves on one of two channels of ESFAS IRWST Wide Range Level – Low instrumentation to prevent loss of IRWST water inventory in the event of a leak in the nonsafety-related, nonseismic SFS when connected to the IRWST. This actuation can be manually blocked while the plant is in MODE 6, below the P-9 (reactor coolant average temperature (T_{avg})) interlock setpoint of less than or equal to 200°F. This allows the SFS to transfer IRWST water inventory to the refueling cavity, and to perform cooling and purification of the refueling cavity. The manual block can also be used during MODE 5 so that, if required, operators can use the SFS to cool, purify, sample, or transfer water to the IRWST when the level is below the IRWST Wide Range Level – Low setpoint. IRWST Wide Range Level – Low is automatically unblocked when T_{avg} is above the P-9 setpoint (i.e., in MODES 1, 2, 3, and 4). The ESFAS IRWST Wide Range Level – Low instrumentation function was added in VEGP Units 3 and 4 License Amendments 100 and 99, respectively (NRC Accession No. ML17284A066).

The operability of the IRWST Wide Range Level – Low instrumentation function, and the operability of the actuated SFS containment isolation valves, support continued IRWST operability

when the SFS is connected to the IRWST in MODES 1, 2, 3, and 4. Without an OPERABLE IRWST Wide Range Level – Low instrumentation function and OPERABLE SFS containment isolation valves in MODES 1, 2, 3, and 4, aligning the SFS to the IRWST would result in declaring the IRWST inoperable, and the requirements of TS 3.5.6, "In-containment Refueling Water Storage Tank (IRWST) – Operating," would be applicable for determining the TS Actions required to be followed.

In addition, without the SFS containment isolation valves being closed in MODE 5 and in MODE 6 with refueling cavity and spent fuel pool volumes not in communication, aligning the SFS to the IRWST would also result in declaring the IRWST inoperable, and the requirements of TS 3.5.7, "In-containment Refueling Water Storage Tank (IRWST) - Shutdown, MODE 5," or TS 3.5.8, "In-containment Refueling Water Storage Tank (IRWST) - Shutdown, MODE 6," would be applicable for determining the TS Actions required to be followed.

The Refueling Cavity and SFS Isolation on the IRWST Wide Range Level – Low instrumentation function is a support system required by the definition of operability for the IRWST. However, it is desired to have separate TS requirements for this support system, similar to other ESFAS automatic actuation functions. This is desired to provide greater visibility and explicit guidance to the operations staff. To support this, changes are proposed to TS 3.3.14.

Similarly, explicit operability requirements in the form of explicit Surveillance Requirements (SRs) are proposed for TS 3.5.7 and TS 3.5.8 in MODE 5 and in MODE 6 with refueling cavity and spent fuel pool volumes not in communication to support continued IRWST operability. These changes provide clear requirements for the following:

1. Requiring the IRWST Wide Range Level – Low instrumentation function to be OPERABLE in MODES 1, 2, 3, and 4, and

2. Requiring the SFS containment isolation valves to be verified closed, and only opened intermittently under administrative controls, in MODE 5 and in MODE 6 with refueling cavity and spent fuel pool volumes not in communication.

These changes provide explicit operability requirements while allowing flexibility in the use of the SFS to cool, purify, sample, or transfer water to and from the IRWST and refueling cavity, while maintaining operability of the IRWST during these times.

Description of any Changes to Current Licensing Basis Documents

COL Appendix A TS Changes:

The following changes to COL Appendix A TS are proposed:

1. TS 3.3.14 is revised as follows:

    a. Applicability for the Spent Fuel Pool Level – Low 2 instrumentation function is changed from "MODE 6" to "MODE 6 with refueling cavity and spent fuel pool volumes in communication."

b. Requirement is added for the ESFAS IRWST Wide Range Level – Low instrumentation function to be OPERABLE in MODES 1, 2, 3, and 4.

c. A new Condition C is added to provide the Required Action for when the Required Action and associated Completion Time of Condition B is not met.

d. A new TS Table 3.3.14-1 is added, referencing the table in the Limiting Conditions for Operation (LCO), renaming the TS and the LCO to ESFAS Refueling Cavity and SFS Isolation Instrumentation, explicitly referring to the two instrumentation function names in Conditions A and B, and adding a Note allowing for separate Condition entry for each function.

2. TS 3.5.7 and TS 3.5.8 SRs are added to require the SFS containment isolation valves to be verified closed and only opened intermittently under administrative controls in MODE 5 and in MODE 6 with refueling cavity and spent fuel pool volumes not in communication.

3. New TS 3.7.13 is added requiring the SFS containment isolation valves to be OPERABLE in MODE 6 with refueling cavity and spent fuel pool volumes in communication to support the proposed requirements of TS 3.3.14.

3. TECHNICAL EVALUATION

3.1 Background and Affected Design Functions

Spent Fuel Pool Cooling System Overview

According to UFSAR Subsection 9.1.3, the SFS is designed to remove decay heat generated by stored fuel assemblies from the water in the spent fuel pool. This is done by pumping the high temperature water from within the spent fuel pool through a heat exchanger, and then returning the water to the pool. A secondary function of the SFS is to clarify and purify the water in the spent fuel pool, the fuel transfer canal, and the refueling cavity.

Per UFSAR Subsection 9.1.3.1.6, the SFS transfers water between the IRWST and the refueling cavity during refueling operations. Per UFSAR Subsection 9.1.3.1.7, the SFS provides purification and cooling of the IRWST during normal operation prior to a scheduled refueling. The SFS is designed to maintain the water in the IRWST consistent with activity requirements of the water in the refueling cavity during a refueling.

SFS Containment Isolation Valves

The SFS containment isolation valves are on the SFS supply and return lines that penetrate the containment barrier. The SFS supply line is isolated by one motor-operated valve located outside containment (SFS-PL-V038) and one check valve located inside containment (SFS-PL-V037). The SFS return line is isolated by two motor-operated isolation valves, one located inside containment (SFS-PL-V034) and one located outside containment (SFS-PL-V035). The two SFS containment isolation valves on each penetration flow path are required to meet the single failure criterion. The motor-operated isolation valves are normally closed, and may be intermittently opened in all MODES for cooling, purification, sampling, or for transferring water to and from the IRWST, or in MODE 6 for cooling, purification, or

transferring water to and from the refueling cavity. Each motor-operated isolation valve may be actuated manually or on an automatic containment isolation signal.

SFS Use during Refueling Operations

Per UFSAR Subsection 9.1.3.4.2, both spent fuel pool mechanical trains are in operation during refueling. One train is aligned for spent fuel pool cooling and purification throughout the refueling. The other train performs various support functions during the refueling. Initially, the standby mechanical train is used to purify the water in the IRWST to prepare for the refueling. The spent fuel pool and fuel transfer canal are kept full of water, and the refueling cavity is flooded only during plant shutdown for refueling.

The refueling cavity and fuel transfer canal are connected by the fuel transfer tube, which is fitted with a quick opening hatch on the refueling cavity end and fuel transfer tube isolation valve (FHS-PL-V001) on the fuel transfer canal end. In preparation for refueling, the refueling cavity drains are closed and the fuel transfer tube quick opening hatch is opened. With the refueling cavity prepared for flooding, the reactor vessel head is unseated and the plant enters MODE 6. The standby SFS pump aligned for IRWST purification is stopped, and valves inside containment are aligned to gravity drain the IRWST to the refueling cavity. Eventually the gravity drain rate slows down and the IRWST and the refueling cavity have the same water level. At this time, the standby SFS pump is aligned to transfer additional IRWST water into the refueling cavity. When the refueling cavity is flooded to the same water level as the fuel transfer canal and spent fuel pool, the standby SFS pump is aligned to the refueling cavity for cooling and purification. Refueling operation then requires opening the fuel transfer tube isolation valve to establish communication between the refueling cavity through the fuel transfer tube and fuel transfer canal to the spent fuel pool to allow transfer of fuel assemblies. Following refueling, the fuel transfer tube isolation valve is closed isolating the refueling cavity from the fuel transfer canal and spent fuel pool, and the standby SFS pump is aligned to transfer the refueling cavity water to the IRWST prior to reactor reassembly. After the refueling cavity is drained, the fuel transfer tube quick opening hatch is closed, and the refueling cavity drains are opened.

SFS Protection Functions

UFSAR Subsection 7.3.1.2.21 and Table 7.3-1 Item 20 describe Refueling Cavity and SFS Isolation. Per the UFSAR, the IRWST and the refueling cavity are isolated from the SFS if either of the following conditions exists:

1. Spent Fuel Pool Level – Low 2

2. IRWST Wide Range Level – Low

If either of these conditions occurs, a signal from the safety-related Protection and Safety Monitoring System (PMS) closes the safety-related SFS containment isolation motor-operated valves (SFS-PL-V034, SFS-PL-V035, and SFS-PL-V038).

Condition 1 provides protection against a loss of refueling cavity water inventory in the event of a leak in the nonsafety-related, nonseismic SFS in MODE 6 with refueling cavity and spent

fuel pool volumes in communication that could result in reduction of the combined IRWST and refueling cavity water inventory below the minimum volume requirement of TS 3.5.8. As stated previously, the refueling cavity and spent fuel pool volumes are normally in communication during refueling, and the spent fuel pool level is the same as the refueling cavity level. Therefore, during refueling with refueling cavity and spent fuel pool volumes in communication, Refueling Cavity and SFS Isolation on Spent Fuel Pool Level – Low 2 also terminates draining of the spent fuel pool. With refueling cavity and spent fuel pool volumes not in communication, the spent fuel pool is protected from excessive draining due to a break in a line or failure of a spent fuel pool cooling pump to stop by the location of the drain and makeup line connections.

Condition 2 provides protection against a loss of IRWST water inventory in the event of a leak in the SFS in MODES 1, 2, 3, and 4 that could result in reduction of IRWST water inventory below the minimum volume requirement of TS 3.5.6.

The functional logic for these conditions is illustrated in UFSAR Figure 7.2-1, Sheet 14.

A loss of IRWST water inventory may occur in the event of a leak in the SFS in MODE 5 and in MODE 6 with refueling cavity and spent fuel pool volumes not in communication that could result in reduction of the IRWST water inventory below the minimum volume requirement of TS 3.5.7, or reduction of the combined IRWST and refueling cavity water inventory below the minimum volume requirement of TS 3.5.8. Automatic isolation on the IRWST Wide Range Level – Low input signal may be manually blocked when T_{avg} is below the P-9 setpoint (T_{avg} less than or equal to 200°F). The block allows the ability to transfer IRWST water to the refueling cavity. When automatic isolation is blocked below P-9, manual closure capability of the SFS containment isolation valves is available to terminate draining of the IRWST to ensure the remaining combined IRWST and refueling cavity water inventory provides adequate decay heat removal in MODES 5 and 6.

Passive Core Cooling System Overview

The Passive Core Cooling System (PXS) is designed to provide emergency Reactor Coolant System (RCS) makeup and boration, safety injection, and emergency core decay heat removal.

The PXS provides safety injection to the RCS to ensure adequate core cooling for the complete range of loss-of-coolant accidents (LOCAs) up to and including the double-ended rupture of the largest RCS piping. In addition to mitigating the immediate effects of the LOCA, the safety injection function must provide core cooling to support long-term safe shutdown. The IRWST water inventory is used for low pressure injection into the RCS through the two injection flow paths that are connected to the reactor vessel. There are also two recirculation flow paths to provide for long-term core cooling. The IRWST available volume and injection capability is selected to provide adequate core cooling for these accident scenarios.

Operability Requirements for the IRWST and Refueling Cavity

TS 3.5.6, TS 3.5.7, and TS 3.5.8 require minimum water inventory in the IRWST and refueling cavity during various plant MODES so that design functions as described in the UFSAR are accomplished.

The ESFAS Refueling Cavity and SFS Isolation function on IRWST Wide Range Level – Low in MODES 1, 2, 3, and 4 protects against a loss of IRWST water inventory supporting continued IRWST operability when the IRWST is connected to the SFS. The ESFAS Refueling Cavity and SFS Isolation function on Spent Fuel Pool Level – Low 2 in MODE 6 with refueling cavity and spent fuel pool volumes in communication protects against a loss of refueling cavity water inventory. Without these requirements being met, connecting the IRWST or the refueling cavity to the SFS would result in declaring the IRWST inoperable. The ability of the IRWST to perform its safety-related function, as assumed in the safety analysis, is retained when these requirements are met.

3.2 Changes to TS Applicability for ESFAS Spent Fuel Pool Level – Low 2 Instrumentation Function and Addition of TS Requirements for SFS Containment Isolation Valve Operability in MODE 6 with Refueling Cavity and Spent Fuel Pool Volumes in Communication

As required by TS 3.3.14, the ESFAS Spent Fuel Pool Level – Low 2 instrumentation function is required to be OPERABLE in MODE 6. The SFS containment isolation valves close on a Refueling Cavity and SFS Isolation actuation from a Spent Fuel Pool Level – Low 2 input signal to maintain the water inventory in the refueling cavity if there is a leak in the SFS while it is connected to the IRWST and/or refueling cavity. This isolation provides protection for the combined IRWST and refueling cavity water inventory required for maintaining adequate core cooling in MODE 6. However, the spent fuel pool level is the same as the refueling cavity level only when the refueling cavity is connected through the fuel transfer tube and fuel transfer canal to the spent fuel pool in MODE 6, and the spent Fuel Pool Level – Low 2 instrumentation function is only effective in terminating draining of the refueling cavity in MODE 6 with refueling cavity and spent fuel pool volumes in communication. Therefore, TS 3.3.14 Applicability is proposed to be revised from MODE 6 to MODE 6 with refueling cavity and spent fuel pool volumes in communication.

The change in Applicability is consistent with the design of the plant reflecting that the ESFAS Spent Fuel Pool Level – Low 2 instrumentation function is only effective and necessary in MODE 6 with refueling cavity and spent fuel pool volumes in communication. The SFS containment isolation valves are closed on a Refueling Cavity and SFS Isolation on the Spent Fuel Pool Level – Low 2 input signal to protect combined IRWST and refueling cavity water inventory if there is a leak in the SFS. Changing the Applicability of TS 3.3.14 for the Spent Fuel Pool Level – Low 2 instrumentation function to only include MODE 6 with refueling cavity and spent fuel pool volumes in communication does not adversely impact this ESFAS instrumentation function. Additionally, the spent fuel pool is protected from excessive draining due to a break in a line or failure of a spent fuel pool cooling pump to stop by the location of the drain and makeup line connections. This includes a siphon break between the normal water level and the level of the suction of the spent fuel pool pumps siphon for pipes which discharge into the spent fuel pool.

The SFS containment isolation valves are explicitly addressed by TS 3.6.3 for MODES 1, 2, 3, and 4. It is desired to include explicit operability requirements for the SFS containment isolation valves in MODE 6 with refueling cavity and spent fuel pool volumes in communication to support the proposed changes to the requirements of TS 3.3.14. Therefore, a new TS 3.7.13 is proposed to be added requiring the SFS containment isolation valves to be OPERABLE in MODE 6 with refueling cavity and spent fuel pool volumes in communication.

This is acceptable because the new requirements are consistent with the design of the plant and support the ESFAS Spent Fuel Pool Level – Low 2 instrumentation function described in TS 3.3.14. This TS ensures that the SFS containment isolation valves are capable of being closed to isolate the IRWST and refueling cavity from the SFS in the event of a leak in the SFS in MODE 6 with refueling cavity and spent fuel pool volumes in communication.

If one or more flow paths with one or more SFS containment isolation valves are inoperable (TS 3.7.13 Condition A), then the Required Action is to do both of the following:

1. Isolate the affected flow path within 24 hours.

2. Perform either one of the following:

    a. Isolate the affected flow path by use of at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured within 7 days.

    b. Verify the affected flow path is isolated once per 7 days.

These actions fulfill the safety function and put the plant in a safe configuration. The Required Actions and Completion Times above are consistent with those in TS 3.3.14 for Spent Fuel Pool Level – Low 2 for similar degraded conditions (i.e., two or more Spent Fuel Pool Level – Low 2 channels inoperable), which remains unchanged.

If the Required Action and associated Completion Time of Condition A is not met (TS 3.7.13 Condition B), then the Required Action is to declare the IRWST inoperable immediately. Declaring the IRWST inoperable allows the supported system Required Actions of TS 3.5.8 to dictate the required measures. TS 3.5.8 provides appropriate Required Actions for the inoperability of the SFS containment isolation valves.

The Actions are modified by two notes. Note 1 allows the flow path(s) to be unisolated intermittently under administrative control. These administrative controls consist of stationing a dedicated operator at the valve controls, who is in continuous communication with the control room. In this way, the flow path can be rapidly isolated when a need for flow path isolation is indicated. Control room operators are aware of various indications alerting them to the need to isolate the IRWST and refueling cavity from the SFS, as further described in Section 3.4 below. Note 2 allows separate Condition entry for each SFS flow path. This is acceptable because the Required Actions for each Condition provide appropriate compensatory actions for each inoperable SFS flow path.

3.3 Addition of TS Requirements for ESFAS IRWST Wide Range Level – Low Instrumentation Function in MODES 1, 2, 3, and 4

As required by TS 3.5.6, the IRWST water inventory must meet the minimum volume requirements defined in the SRs for the IRWST to be considered OPERABLE in MODES 1, 2, 3, and 4.

Because a leak in the nonsafety-related, nonseismic SFS when connected to the IRWST could adversely impact the capability of the IRWST to perform its design functions, closure of the SFS containment isolation valves on one of two channels of IRWST Wide Range Level – Low instrumentation is provided in the design of the PMS. ESFAS IRWST Wide Range Level – Low actuation terminates draining of the IRWST water inventory at a setpoint above the TS minimum IRWST volume required for mitigating the consequences of a design basis event in MODES 1, 2, 3, and 4.

The Refueling Cavity and SFS Isolation on the IRWST Wide Range Level – Low instrumentation function is a support system required by the definition of operability for the IRWST. However, it is desired to have separate TS requirements for this support system, similar to other ESFAS instrumentation functions. This is desired to provide greater visibility and explicit guidance to the operations staff. In addition, TS 3.3.14 does not include a Condition for when the Required Action and associated Completion Time of Condition B is not met. Therefore, a new Condition C in TS 3.3.14 is proposed, which directs that the appropriate Required Actions for inoperable IRWST be entered.

This is acceptable because the new requirements are consistent with the design of the plant and support OPERABILITY of the IRWST in MODES 1, 2, 3, and 4, and to provide appropriate Required Actions when the ESFAS IRWST Wide Range Level – Low instrumentation function is inoperable. The proposed changes provide explicit TS operability requirements for the IRWST Wide Range Level – Low instrumentation function supporting IRWST operability when the SFS is connected to the IRWST. The ESFAS IRWST Wide Range Level – Low instrumentation function is a support system required by the definition of OPERABILITY for the IRWST. Therefore, this change to include explicit OPERABILITY requirements provides greater visibility and explicit guidance to the operations staff for these required actions. It is also a human factors improvement.

The proposed changes to TS 3.3.14 require the IRWST Wide Range Level – Low instrumentation function to be OPERABLE in MODES 1, 2, 3, and 4. This ensures, along with TS 3.6.3 that includes OPERABILITY requirements for the SFS containment isolation valves, that the SFS containment isolation valves close in the event of a leak in the nonsafety-related, nonseismic SFS, isolating the IRWST from the SFS.

The IRWST Wide Range Level – Low instrumentation function has a one-out-of-two logic. If one or both of the IRWST Wide Range Level – Low channels are declared inoperable in MODES 1, 2, 3, or 4, then the proposed Required Action is to isolate the affected SFS flow path between the IRWST and the nonsafety-related, nonseismic SFS within 24 hours. This Action restores the seismic boundary and puts the plant in a safe configuration. The Required Actions and Completion Time are consistent with that for the Spent Fuel Pool Level – Low 2

instrumentation function for similar degraded conditions (i.e., two or more Spent Fuel Pool Level – Low 2 channels inoperable), which remains unchanged.

Adding Condition C to TS 3.3.14 provides the Required Action for when the Required Action and associated Completion Time of Condition B is not met. Condition C requires the IRWST to be declared inoperable immediately. Declaring the IRWST inoperable allows the supported system Required Actions to dictate the required measures. This proposal is consistent with the OPERABILITY requirements related to this support system.

The other changes to TS 3.3.14 are administrative to support the changes described above. This includes adding TS Table 3.3.14-1 and referencing the table in the LCO, renaming the TS and the LCO to ESFAS Refueling Cavity and SFS Isolation Instrumentation, explicitly referring to the two instrumentation function names in Conditions A and B, and adding a Note allowing for separate Condition entry for each function. These changes are made to distinguish between the Conditions for the Spent Fuel Pool Level – Low 2 and IRWST Wide Range Level – Low instrumentation functions. They do not alter the OPERABILITY requirements beyond what has already been described.

The SRs for TS 3.3.14 applicable to Spent Fuel Pool Level – Low 2 instrumentation function are unchanged, and are consistently applied to IRWST Wide Range Level – Low instrumentation function. These SRs are also consistent with the other ESFAS instrumentation functions listed in TS 3.3.8.

3.4 Addition of TS Requirements for SFS Containment Isolation Valves in MODE 5 and in MODE 6 with Refueling Cavity and Spent Fuel Pool Volumes Not in Communication

As required by TS 3.5.7 and TS 3.5.8, the combined IRWST and refueling cavity water inventory must meet the water volume requirements defined in the SRs for the IRWST to be considered OPERABLE in MODES 5 and 6. Therefore, requirements are proposed to be added to TS 3.5.7 and TS 3.5.8 for requiring the SFS containment isolation valves to be verified closed and only opened intermittently under administrative controls in MODE 5 and in MODE 6 with refueling cavity and spent fuel pool volumes not in communication. These changes are acceptable because the requirements are consistent with the design of the plant and support OPERABILITY of the IRWST in MODE 5 and in MODE 6 with refueling cavity and spent fuel pool volumes not in communication.

The proposed SRs require the operator to verify the SFS containment isolation valves are closed every 31 days while in MODE 5 and in MODE 6 with refueling cavity and spent fuel pool volumes not in communication. With the valves closed, the IRWST and refueling cavity are isolated from the SFS, and protected against a loss of water inventory due to a leak in the SFS. The seismic boundary is established and the plant is in a safe configuration. The Frequency of 31 days is consistent with similar SRs, such as SR 3.6.3.1.

The Notes for the proposed SRs allow for the SFS flow path to be unisolated intermittently under administrative controls. For TS 3.5.8, a second Note specifies that the SR is only required to be met with refueling cavity and spent fuel pool volumes not in communication, because the Spent Fuel Pool Level – Low 2 instrumentation function provides protection only

in MODE 6 with refueling cavity and spent fuel pool volumes in communication as proposed in TS 3.3.14.

The allowance for the SFS containment isolation valves to be opened intermittently under administrative controls is acceptable because the requirements are consistent with the design of the plant and support OPERABILITY of the IRWST in MODE 5 and in MODE 6 with refueling cavity and spent fuel pool volumes not in communication. These administrative controls consist of stationing a dedicated operator at the SFS containment isolation valve controls who is in continuous communication with the control room. The dedicated operator would be aware of changes resulting in significant leakage and a need for valve closure. Control room operators are aware of various indications alerting them to the need to isolate the IRWST and refueling cavity from the SFS. These indications include:

- Two seismically qualified, Class 1E level sensors (WLS-400A/B) located in the Auxiliary Building radiologically controlled area provide an alarm in the main control room. These level sensors are provided to alert the operator of rising flood-up levels in the Auxiliary Building, which could indicate a break in the SFS.

- IRWST and refueling cavity water level indication used to comply with TS 3.5.7 and TS 3.5.8 (PXS-054, PXS-055, SFS-027, SFS-028) provide indication in the main control room. A loss of combined water volume would indicate the need for operators to isolate flowpaths between the IRWST and refueling cavity and SFS.

Automatic isolation of the SFS containment isolation valves is not required in MODE 5 and in MODE 6 with refueling cavity and spent fuel pool volumes not in communication. In these shutdown MODES, it is still necessary to preserve the combined IRWST and refueling cavity water inventory to support achieving the required containment flood-up level for long-term core cooling. Therefore, three shutdown cases are evaluated considering various plant shutdown configurations to assess the available water inventory sources (RCS, core makeup tanks, IRWST, etc.) used to support long-term core cooling in the event of an SFS double-ended pipe break. Each case assumes water inventory sources based on equipment OPERABILITY requirements for a specific plant configuration (including the minimum TS volume for IRWST water inventory) to determine if the total water volumes would achieve the required containment flood-up level for long-term decay heat removal for the given plant configuration. Each case also evaluates what alarms would be available to the operators to alert them of the leak. In the three cases, the evaluation shows that there is margin in the amount of remaining IRWST water as compared to the IRWST minimum volume required to support flood-up level for recirculation if the operators take action within 30 minutes of receiving an alarm.

Given the multiple indications (including direct personal observation) of the occurrence of a leak, and the continuous communication established between the control room and the dedicated operator at the valve controls, the valve closure response is expected well before the 30 minutes assumed for operator response. This is consistent with the commitments outlined in UFSAR Subsection 1.9.4.2.2 Item B-17 and ANSI 58.8-1984, which support acceptability of crediting operator actions within 30 minutes to initiate preplanned actions.

3.5 Technical Evaluation of Other Impacts

An impact review determined that these proposed changes would have no impact on the AP1000 plant PRA presented in UFSAR Chapter 19, including the Fire PRA, results and insights (e.g., core damage frequency and large release frequency). There are no fire area changes required because of these proposed changes. The proposed changes do not require any changes to the fire protection analysis described in UFSAR Appendix 9A. The proposed changes to the COL Appendix A TS for Spent Fuel Pool Level – Low 2 instrumentation function, IRWST Wide Range Level – Low instrumentation function, and SFS containment isolation valves do not impact any initiating event and do not introduce any new failure modes or mechanisms. There are no physical modifications to any structure, system, or component (SSC) as described in the UFSAR. Therefore, there is no impact to or addition of any SSC that is considered to be D-RAP risk significant (Design Control Document Tier 1 Table 3.7-1 and UFSAR Table 17.4-1). There is no interface with the diverse actuation system (DAS), and no change to the design functions of the DAS to provide diverse reactor protection system functions.

The proposed changes to the COL Appendix A TS do not adversely affect any function or feature used for the prevention and mitigation of accidents or their safety analyses. There are no physical modifications to any SSC as described in the UFSAR. Therefore, no safety-related SSC or function is adversely involved. The proposed changes do not involve nor interface with any SSC accident initiator or initiating sequence of events related to the accidents evaluated in the UFSAR. The proposed changes do not result in any increase in probability of an analyzed accident occurring, and do not require a change in the analyses of normal operation and anticipated operational occurrences. The proposed changes do not affect the radiological source terms (i.e., amounts and types of radioactive materials released, their release rates and release durations) used in the accident analyses.

The proposed changes do not require a change to procedures or method of control that adversely affects the performance of any safety-related design function as described in the UFSAR. There are no physical modifications to any SSC function as described in the UFSAR. The physical operational requirements of the plant, including as-installed inspections, testing, and maintenance requirements, as described in the UFSAR are not changed, as the proposed changes to the COL Appendix A TS for Spent Fuel Pool Level – Low 2 instrumentation function, IRWST Wide Range Level – Low instrumentation function, and SFS containment isolation valves only affect explicit TS operability requirements for the affected SSCs. Therefore, there are no changes to procedures or a method of control that adversely impact the licensing basis.

The proposed changes do not adversely interface with or adversely affect safety-related equipment or a fission product barrier. There are no physical modifications to any SSC as described in the UFSAR, there are no changes to the analytical methods described in the UFSAR, and there are no changes to compliance with the regulatory requirements described in the UFSAR. The proposed changes do not result in a new failure mode, malfunction or sequence of events that could adversely affect a radioactive material barrier or safety-related equipment. The proposed changes do 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 significant fuel cladding failures.

The proposed changes do not adversely affect safety-related equipment or equipment whose failure could initiate an accident. There are no physical modifications to any SSC as described in the UFSAR that would interface with or adversely affect safety-related equipment or a radioactive material barrier. The proposed changes do not adversely affect any safety-related equipment, design code limit allowable value, safety-related function or design analysis, nor do they adversely affect any safety analysis input or result, or design/safety margin. Instead, the changes proposed preserve required design/safety margins.

The Technical Specification Safety Limits are not affected. The Limiting Safety System Settings and Limiting Control Settings requirements continue to be met by the proposed changes to the COL Appendix A TS, and the proposed changes are consistent with maintaining safety system functions and provide assurance that the affected SSCs are maintained OPERABLE.

There are no radiation zone changes or radiological access control changes required because of these proposed changes. There are no physical modifications to any SSC as described in the UFSAR that may affect the radiation protection requirements, and thus there are no changes required to the radiation protection design features described in UFSAR Section 12.3.

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 Part 20, and expected amounts and types of radioactive materials. 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 Subsection 19F.4.

The proposed changes have no adverse impact on the emergency plan or the physical security plan implementation, because there are no changes to physical access to credited equipment inside the Nuclear Island (including containment or the auxiliary building) and no adverse impact to plant personnel’s ability to respond to any plant operations or security event.

Summary

The proposed changes would revise COL Appendix A TS information to:

1. Revise TS 3.3.14 as follows:

a. Applicability for the Spent Fuel Pool Level – Low 2 instrumentation function is changed from "MODE 6" to "MODE 6 with refueling cavity and spent fuel pool volumes in communication."

b. Requirement is added for the ESFAS IRWST Wide Range Level – Low instrumentation function to be OPERABLE in MODES 1, 2, 3, and 4.

c. A new Condition C is added to provide the Required Action for when the Required Action and associated Completion Time of Condition B is not met.

d. A new TS Table 3.3.14-1 is added, referencing the table in the LCO, renaming the TS and the LCO to ESFAS Refueling Cavity and SFS Isolation Instrumentation, explicitly referring to the two instrumentation function names in Conditions A and B, and adding a Note allowing for separate Condition entry for each function.

2. Revise TS 3.5.7 and TS 3.5.8 SRs to add requirements for the SFS containment isolation valves to be verified closed and only opened intermittently under administrative controls in MODE 5 and in MODE 6 with refueling cavity and spent fuel pool volumes not in communication.

3. Add new TS 3.7.13 requiring the SFS containment isolation valves to be OPERABLE in MODE 6 with refueling cavity and spent fuel pool volumes in communication to support the proposed requirements of TS 3.3.14.

4. REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

10 CFR 52.98(c) requires NRC approval for any modification to, addition to, or deletion from the terms and conditions of a Combined License (COL). The amendment request involves changes to plant-specific Technical Specifications (COL Appendix A). Therefore, NRC approval is required prior to making the plant-specific proposed changes in this license amendment request.

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 plant-specific Technical Specifications (COL Appendix A) are requested. Therefore, NRC approval is required for these plant-specific TS changes.

10 CFR 50.36 Technical specifications. - (c) *Technical specifications will include items in the following categories: (1) Safety limits, limiting safety system settings, and limiting control settings.* (*2) Limiting conditions for operation. (3) Surveillance Requirements.* The safety limits are not affected. In addition, the limiting safety system settings and limiting control settings continue to be met with the proposed changes to the plant-specific Technical Specifications limiting conditions for operation, applicability, actions, and surveillance requirements as justified by this license amendment request.

10 CFR Part 50, Appendix A, GDC 13, "Instrumentation and control," requires that instrumentation shall be provided to monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions as appropriate to assure adequate safety, including those variables and systems that can affect the fission process, the integrity of the reactor core, the reactor coolant pressure boundary, and the containment and its associated systems. Appropriate controls shall be provided to maintain these variables and systems within prescribed operating ranges. The proposed changes to the plant-specific TS require explicit requirements for the operability of the affected instrumentation functions and SFS containment isolation valves, and appropriate actions when the affected instrumentation functions and SFS containment isolation valves are inoperable, thereby maintaining the initial conditions and operating limits required by the accident analysis, and the analyses of normal operation and anticipated operational occurrences, so that the safety functions of the affected structures, systems, and components (SSCs) are met. The proposed changes do not involve physical modifications or addition of SSCs, and do not change the operating ranges or setpoints of the affected instrumentation functions. Therefore, the proposed changes comply with the requirements of GDC 13.

4.2 Precedent

None.

4.3 Significant Hazards Consideration

The requested amendment proposes changes to the Combined License (COL) Appendix A plant-specific Technical Specifications regarding operability requirements for the Engineered Safety Features Actuation System (ESFAS) Spent Fuel Pool Level – Low 2 and In-Containment Refueling Water Storage Tank (IRWST) Wide Range Level – Low instrumentation functions for Refueling Cavity and Spent Fuel Pool Cooling System (SFS) Isolation. Additional changes are proposed to add plant-specific Technical Specifications operability requirements for the SFS containment isolation valves in MODES 5 and 6.

An evaluation to determine whether a significant hazards consideration is involved with the requested 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 safety limits as described in the plant-specific Technical Specifications. In addition, the limiting safety system settings and limiting control settings continue to be met with the proposed changes to the plant-specific Technical Specifications limiting conditions for operation, applicability, actions, and surveillance requirements. The proposed changes do not adversely affect the operation of any systems or equipment that initiate an analyzed accident or alter any structures, systems, and components (SSCs) accident initiator or initiating sequence of events. The proposed

changes do not result in any increase in probability of an analyzed accident occurring, and maintain the initial conditions and operating limits required by the accident analysis, and the analyses of normal operation and anticipated operational occurrences, so that the consequences of postulated accidents are not changed. The proposed changes do not adversely affect the ability of the Refueling Cavity and SFS Isolation function, and the SFS containment isolation valves, to perform the required safety functions, and do not adversely affect the probability of inadvertent operation or failure of the required safety functions.

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 safety limits as described in the plant-specific Technical Specifications. In addition, the limiting safety system settings and limiting control settings continue to be met with the proposed changes to the plant-specific Technical Specifications limiting conditions for operation, applicability, actions, and surveillance requirements. 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.

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 requested 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 do not affect the safety limits as described in the plant-specific Technical Specifications. In addition, the limiting safety system settings and limiting control settings continue to be met with the proposed changes to the plant-specific Technical Specifications limiting conditions for operation, applicability, actions, and surveillance requirements. The proposed changes do not affect the initial conditions and operating limits required by the accident analysis, and the analyses of normal operation and anticipated operational occurrences, so that the acceptance limits specified in the UFSAR are not exceeded. The proposed changes satisfy the same safety functions in accordance with the same requirements 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.

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

The requested amendment proposes changes to the Combined License (COL) Appendix A plant-specific Technical Specifications regarding operability requirements for the Engineered Safety Features Actuation System (ESFAS) Spent Fuel Pool Level – Low 2 and In-Containment Refueling Water Storage Tank (IRWST) Wide Range Level – Low instrumentation functions for Refueling Cavity and Spent Fuel Pool Cooling System (SFS) Isolation. Additional changes are proposed to add plant-specific Technical Specifications operability requirements for the SFS containment isolation valves in MODES 5 and 6.

A review has determined that the anticipated effects on facility construction and operation following implementation of the requested amendment meet 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, 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 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 that are credited with controlling the release of effluents during plant operation. Therefore, it is concluded that 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 exposure.

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 under 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 requested amendment, it has been determined that anticipated construction and operational impacts of the requested 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 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). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the requested amendment.

6. REFERENCES

None

Southern Nuclear Operating Company

ND-18-0647

Enclosure 2

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Proposed Changes to the Licensing Basis Documents

(LAR-18-017)

Additions identified by blue underlined text.
Deletions identified by red strikethrough of text.
* * * indicates omitted existing text that is not shown.

(This Enclosure consists of 7 pages, including this cover page.)

COL Appendix A Technical Specification 3.3.14 is revised as follows:

3.3 INSTRUMENTATION

3.3.14 Engineered Safety Feature Actuation System (ESFAS) Refueling Cavity and Spent Fuel Pool ~~Level~~Cooling System (SFS) Isolation Instrumentation

LCO 3.3.14 ~~Three channels of ESFAS Spent Fuel Pool Level – Low 2 instrumentation~~The ESFAS Refueling Cavity and SFS Isolation Instrumentation channels for each Function in Table 3.3.14-1 shall be OPERABLE.

APPLICABILITY: ~~MODE 6~~According to Table 3.3.14-1.

ACTIONS

- NOTE –

Separate condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Spent Fuel Pool Level - Low 2 channel inoperable.	A.1 Place channel in trip.	6 hours

B.	Required Action and associated Completion Time of Condition A Not Met. OR One or more In-Containment Refueling Water Storage Tank (IRWST) Wide Range Level – Low channels inoperable. OR Two or more Spent Fuel Pool Level - Low 2 channels inoperable.	---------- **- NOTE -** Flow paths may be unisolated intermittently under administrative controls. ---------- B.1 Isolate the affected flow path~~(s)~~. AND B.2.1 Isolate the affected flow path~~(s)~~ by use of at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. OR B.2.2 Verify the affected flow path is isolated.	24 hours 7 days Once per 7 days
C.	Required Action and associated Completion Time of Condition B not met.	C.1 Declare the IRWST inoperable.	Immediately

* * *

Table 3.3.14-1 (page 1 of 1)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS
1. Spent Fuel Pool Level - Low 2	6[(a)]	3
2. IRWST Wide Range Level - Low	1,2,3,4	2

(a) With refueling cavity and spent fuel pool volumes in communication.

COL Appendix A Technical Specification 3.5.7 is revised as follows:

* * *

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.7.1	---------- **- NOTE -** Flow path(s) may be unisolated intermittently under administrative controls. ---------- Verify Spent Fuel Pool Cooling System containment isolation valves are closed.	31 days

* * *

REVIEWERS NOTE: Renumber remaining SRs.

COL Appendix A Technical Specification 3.5.8 is revised as follows:

* * *

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.8.3	---------- **- NOTES -** 1. Flow path(s) may be unisolated intermittently under administrative controls. 2. Only required to be met with refueling cavity and spent fuel pool volumes not in communication. ---------- Verify Spent Fuel Pool Cooling System containment isolation valves are closed.	31 days

* * *

REVIEWERS NOTE: Renumber remaining SRs.

New COL Appendix A Technical Specification 3.7.13 is added as follows:

Technical Specifications SFS Containment Isolation Valves 3.7.13

3.7 PLANT SYSTEMS

3.7.13 Spent Fuel Pool Cooling System (SFS) Containment Isolation Valves

LCO 3.7.13 The SFS containment isolation valves shall be OPERABLE.

APPLICABILITY: MODE 6 with refueling cavity and spent fuel pool volumes in communication.

ACTIONS

- NOTES -

1. Flow path(s) may be unisolated intermittently under administrative controls.
2. Separate condition entry is allowed for each SFS flow path.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more flow paths with one or more SFS containment isolation valves inoperable.	A.1 Isolate the affected flow path. AND A.2.1 Isolate the affected flow path by use of at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. OR A.2.2 Verify the affected flow path is isolated.	24 hours 7 days Once per 7 days
B. Required Action and associated Completion Time not met.	B.1 Declare the In-Containment Refueling Water Storage Tank inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.13.1	For SFS containment isolation valves required to be OPERABLE, the following SRs are applicable: SR 3.6.3.4 SR 3.6.3.5	In accordance with applicable SRs

Southern Nuclear Operating Company

ND-18-0647

Enclosure 3

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Conforming Changes to the Technical Specification Bases (For Information Only)

(LAR-18-017)

Additions identified by blue underlined text.
Deletions identified by red strikethrough of text.
* * * indicates omitted existing text that is not shown.

(This Enclosure consists of 12 pages, including this cover page.)

Technical Specification Bases B 3.3.8 is revised as follows:

* * *

APPLICABLE SAFETY ANALYSES, LCOs, and APPLICABILITY (continued)

* * *

Reactor Coolant Average Temperature (T_{avg}), P-9

With T_{avg} channels less than the P-9 setpoint, the operator can manually block the Steam Generator Narrow Range Water Level – Low 2 Reactor Trip. This allows rod testing during routine maintenance. With T_{avg} channels greater than P-9 setpoint, the Steam Generator Narrow Range Water Level - Low 2 Reactor Trip is automatically enabled.

The P-9 interlock also permits the draining of the IRWST to support refueling operations. With T_{avg} channels less than the P-9 setpoint, the operator can manually block the IRWST Wide Range Level - Low isolation signal. With T_{avg} channels greater than P-9 setpoint, the IRWST Wide Range Level - Low isolation signal is automatically enabled. This block is necessary to permit IRWST volume to be transferred to and from the refueling cavity during MODE 6 with the refueling cavity and spent fuel pool volumes not in communication.

* * *

Refueling Cavity and Spent Fuel Pool Cooling System (SFS) Isolation

~~The containment isolation valves in the lines between the refueling cavity and the Spent Fuel Pool Cooling System are isolated on Spent Fuel Pool Level – Low 2 signal.~~The SFS can be connected to the spent fuel pool, the fuel transfer canal, the refueling cavity, and the IRWST to clarify and purify the water. It can also connect the IRWST and refueling cavity to transfer water in preparation for refueling activities, and to return to normal operations from refueling activities. In the event of a leak in the nonsafety-related SFS, Refueling Cavity and SFS Isolation is actuated on the following signals:

- Spent Fuel Pool Level - Low 2; and
- IRWST Wide Range Level - Low.

The IRWST Wide Range Level - Low isolation signal can be manually blocked by the main control room operator when below the P-9 (T_{avg}) interlock setpoint, and is automatically unblocked when above the P-9 setpoint. This block is necessary to permit IRWST volume to be transferred to and from the refueling cavity during MODE 6 with refueling cavity and spent fuel pool volumes not in communication.

* * *

Technical Specification Bases B 3.3.14 is revised as follows:

B 3.3 INSTRUMENTATION

B 3.3.14 Engineered Safety Feature Actuation System (ESFAS) Refueling Cavity and Spent Fuel Pool ~~Level~~Cooling System (SFS) Isolation Instrumentation

* * *

APPLICABLE SAFETY ANALYSES, LCOs, and APPLICABILITY

~~The required channels of ESFAS instrumentation provide plant protection in the event of any of the analyzed accidents. ESFAS protective functions include the Refueling Cavity Isolation.~~

~~The instrument Function required by this LCO is the Spent Fuel Pool Level – Low 2.~~

~~In the event of a leak in the non-safety Spent Fuel Pool Cooling System, closure of the containment isolation valves on low spent fuel pool level in two of three channels will terminate draining of the refueling cavity. Since the transfer canal is open in MODE 6, the spent fuel pool level is the same as the refueling cavity.~~

~~Draining of the spent fuel pool, directly, through a leaking Spent Fuel Pool Cooling System is limited by the location of the suction piping, which is near the top of the pool. Therefore, closure of the containment isolation valves between the refueling cavity and the Spent Fuel Pool Cooling System is sufficient to terminate refueling cavity and spent fuel pool leakage through the Spent Fuel Pool Cooling System. Three channels of ESFAS Spent Fuel Pool Level – Low 2 Function are required to be OPERABLE in MODE 6 to maintain water inventory in the refueling cavity.~~

The required channels of ESFAS Refueling Cavity and SFS Isolation instrumentation provide plant protection in the event of a leak in the nonsafety-related SFS. A description of the ESFAS P-9 (T_{avg}) interlock is provided in the Bases for LCO 3.3.8.

The following are descriptions of the individual instrument Functions required by this LCO as presented in Table 3.3.14-1.

1. Spent Fuel Pool Level - Low 2

   Three spent fuel pool level channels are provided. If any two spent fuel pool level channels decrease to below the Low 2 setpoint, Refueling Cavity and SFS Isolation is actuated closing the SFS containment isolation valves to terminate draining of the refueling cavity before reducing the combined In-Containment Refueling Water Storage Tank (IRWST) and refueling cavity water inventory below the minimum volume required to provide adequate decay heat removal in MODE 6. With refueling cavity and spent fuel pool volumes in communication in MODE 6, the spent fuel pool level is the same as the refueling cavity, so Refueling Cavity and SFS Isolation on Spent Fuel Pool Level - Low 2 also terminates draining of the spent fuel pool. In MODE 6 with refueling cavity and spent fuel pool volumes not in communication, SR 3.5.8.3 requires the SFS containment isolation valves to be maintained closed, except under administrative controls. With the SFS containment isolation valves closed, the nonsafety-related SFS is isolated from the IRWST and refueling cavity, and a leak in the SFS does not cause draining of the IRWST and refueling cavity. Three channels of ESFAS Spent Fuel Pool Level – Low 2 Function are required to be OPERABLE in MODE 6 with refueling cavity and spent fuel pool volumes in communication.

2. IRWST Wide Range Level - Low

   Two IRWST wide range level channels are provided. If either IRWST wide range level channel decreases to below the Low setpoint, Refueling Cavity and SFS Isolation is actuated closing the SFS containment isolation valves to terminate draining of the IRWST before reducing the IRWST water inventory below the minimum volume required to mitigate the consequences of a design basis event in MODES 1, 2, 3, and 4. The IRWST Wide Range Level - Low isolation signal can be manually blocked by the main control room operator when below the P-9 setpoint, and is automatically unblocked when above the P-9 setpoint. This block is necessary to permit IRWST volume to be transferred under administrative control to and from the refueling cavity during MODE 6 with refueling cavity and spent fuel pool volumes not in communication. In MODE 5 and in MODE 6 with refueling cavity and spent fuel pool volumes not in communication, the isolation valves are maintained closed, except under administrative controls as required by SR 3.5.7.1 and SR 3.5.8.3. In MODE 6 with refueling cavity and spent fuel pool volumes in communication, the Spent Fuel Pool Level - Low 2 isolation signal provides protection. Two channels of IRWST Wide Range Level - Low are required to be OPERABLE in MODES 1, 2, 3, and 4.

ESFAS ~~Spent Fuel Pool Level~~Refueling Cavity and SFS Isolation instrumentation satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

ACTIONS

A Note has been added in the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be entered independently for each Function listed on Table 3.3.14-1.

* * *

A.1

Condition A addresses the situation where one spent fuel pool level channel is inoperable. With one spent fuel pool level channel inoperable, the inoperable channel must be placed in a trip condition within 6 hours. If one of the three spent fuel pool level channels is tripped, the logic becomes one-out-of-two, while still meeting the single failure criterion. The specified Completion Time is reasonable considering the time required to complete this action.

B.1 and B.2

If the Required Action and associated Completion Time of Condition A is not met, or one or more IRWST level channels are inoperable, or two or more spent fuel pool level channels are inoperable, the plant must be placed in a condition where the instrumentation Function for valve isolation is no longer applicable. To achieve this, the affected flow path~~(s)~~ must be isolated within 24 hours.

Additionally, to assure that the flow path remains closed, the flow path shall be isolated by the use of one of the specified means (Required Action B.2.1) or the flow path shall be verified to be isolated (Required Action B.2.2). A means of isolating the affected flow path~~(s)~~ includes at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured within 7 days. If one of the Required Action B.2.1 specified isolation means is not used, the affected flow path shall be verified to be isolated once per 7 days.

* * *

C.1

If the Required Action and associated Completion Time of Condition B is not met, the IRWST must be declared inoperable immediately. Declaring the IRWST inoperable allows the supported system Required Actions (i.e., depending on the MODE, LCO 3.5.6, “In-Containment Refueling Water Storage Tank (IRWST) - Operating”, or LCO 3.5.8, “In-Containment Refueling Water Storage Tank (IRWST) - Shutdown, MODE 6”) to dictate the required measures. The IRWST LCO(s) provide appropriate Required Actions for the inoperability of Refueling Cavity and SFS Isolation Instrumentation. This action is in accordance

with LCO 3.0.6, which requires that the applicable Conditions and Required Actions for the IRWST declared inoperable shall be entered in accordance with LCO 3.0.2.

* * *

Technical Specification Bases B 3.5.6 is revised as follows:

* * *

SURVEILLANCE REQUIREMENTS

* * *

SR 3.5.6.5

This surveillance requires verification that each motor operated isolation injection and sump recirculation valve is fully open.

* * *

Technical Specification Bases B 3.5.7 is revised as follows:

* * *

SR 3.5.7.1

This SR ensures that the Spent Fuel Pool Cooling System (SFS) containment isolation valves are closed. With the nonsafety-related SFS isolated from the IRWST, a leak in the SFS does not cause draining of the IRWST.

The Surveillance Requirement is modified by a Note allowing the affected flow path(s) to be unisolated intermittently under administrative controls. These administrative controls consist of stationing a dedicated operator at the valve controls, who is in continuous communication with the control room. In this way, the flow path(s) can be rapidly isolated when a need for isolation is indicated.

* * *

REVIEWERS NOTE: Renumber remaining SRs.

Technical Specification Bases B 3.5.8 is revised as follows:

* * *

SR 3.5.8.3

This SR ensures that the Spent Fuel Pool Cooling System (SFS) containment isolation valves are closed. With the nonsafety-related SFS isolated from the IRWST and refueling cavity, a leak in the SFS does not cause draining of the IRWST and the refueling cavity.

The Surveillance Requirement is modified by two Notes. Note 1 allows the affected flow path(s) to be unisolated intermittently under administrative controls. These administrative controls consist of stationing a dedicated operator at the valve controls, who is in continuous communication with the control room. In this way, the flow path(s) can be rapidly isolated when a need for isolation is indicated.

The Surveillance Requirement is modified by Note 2 stating that it is only required to be met with refueling cavity and spent fuel pool volumes not in communication. In MODE 6 with refueling cavity and spent fuel pool volumes in communication, Refueling Cavity and SFS Isolation is actuated on a Spent Fuel Pool Level - Low 2 isolation signal as required by LCO 3.3.14, “ESFAS Refueling Cavity and SFS Isolation Instrumentation,” providing protection.

* * *

REVIEWERS NOTE: Renumber remaining SRs.

New Technical Specification Bases B 3.7.13 is added as follows:

Technical Specifications Bases SFS Containment Isolation Valves B 3.7.13

B 3.7 PLANT SYSTEMS

B 3.7.13 Spent Fuel Pool Cooling System (SFS) Containment Isolation Valves

BASES

BACKGROUND

The safety-related SFS containment isolation valves are used to isolate the SFS from the refueling cavity in the event of a leak in the nonsafety-related SFS.

The SFS containment isolation valves are on the SFS supply and return lines that penetrate the containment barrier, which can be aligned to and from the refueling cavity and In-Containment Refueling Water Storage Tank (IRWST). The SFS supply line is isolated by one motor-operated valve located outside containment (SFS-PL-V038) and one check valve located inside containment (SFS-PL-V037). The SFS return line is isolated by two motor-operated isolation valves, one located inside containment (SFS-PL-V034) and one located outside containment (SFS-PL-V035). The two SFS containment isolation valves on each penetration flow path are required to meet the single failure criterion. Each motor-operated isolation valve may be actuated manually from the main control room.

The SFS containment isolation valves close automatically as required by LCO 3.3.14, “ESFAS Refueling Cavity and Spent Fuel Pool Cooling System (SFS) Isolation Instrumentation.”

APPLICABLE SAFETY ANALYSES

In the event of a leak in the nonsafety-related SFS in MODE 6 with refueling cavity and spent fuel pool volumes in communication, a loss of refueling cavity water inventory may occur. Automatic actuation to close the SFS containment isolation valves on a Spent Fuel Pool Level - Low 2 signal with refueling cavity and spent fuel pool volumes in communication terminates draining of the refueling cavity before reducing the combined IRWST and refueling cavity water inventory below the minimum volume required to provide adequate decay heat removal in MODE 6.

In MODE 6 with refueling cavity and spent fuel pool volumes in communication, the spent fuel pool level is the same as the refueling

cavity, and Refueling Cavity and SFS Isolation on Spent Fuel Pool Level – Low 2 also terminates draining of the spent fuel pool.
Therefore, each SFS containment isolation valve is required to be OPERABLE in MODE 6 with refueling cavity and spent fuel pool volumes in communication.

The SFS containment isolation valves satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The requirement that the SFS containment isolation valves be OPERABLE assures that there will be redundant means available to terminate draining of the refueling cavity and spent fuel pool in the event that a leak in the nonsafety-related SFS occurs in MODE 6 with refueling cavity and spent fuel pool volumes in communication.

APPLICABILITY

The SFS containment isolation valves must be OPERABLE in MODE 6 with refueling cavity and spent fuel pool volumes in communication.

LCO 3.6.3, “Containment Isolation Valves,” requires OPERABILITY of the SFS containment isolation valves in MODES 1, 2, 3, and 4. Surveillance Requirements of LCO 3.5.7, “In containment Refueling Water Storage Tank (IRWST) – Shutdown, MODE 5,” and LCO 3.5.8, “IRWST – Shutdown, MODE 6,” require the SFS containment isolation valves to be closed, except under administrative controls, in MODE 5 and in MODE 6 with refueling cavity and spent fuel pool volumes not in communication.

ACTIONS

The ACTIONS are modified by two Notes. Note 1 allows the flow path(s) to be unisolated intermittently under administrative control. These administrative controls consist of stationing a dedicated operator at the valve controls, who is in continuous communication with the control room. In this way, the flow path can be rapidly isolated when a need for flow path isolation is indicated. Note 2 allows separate Condition entry for each SFS flow path. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable SFS flow path.

A.1 and A.2

With one or more flow paths with one or more SFS containment isolation valves inoperable, then the affected flow path must be isolated within 24 hours. When the affected flow path is isolated, it is performing its required safety function.

Additionally, to assure that the flow path remains closed, the flow path shall be isolated by the use of one of the specified means (Required

Action A.2.1) or the flow path shall be verified to be isolated (Required Action A.2.2). A means of isolating the affected flow path includes at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured within 7 days. If one of the Required Action A.2.1 specified isolation means is not used, the affected flow path shall be verified to be isolated once per 7 days.

B.1

If the Required Action and associated Completion Time of Condition A is not met, the IRWST must be declared inoperable immediately. Declaring the IRWST inoperable allows the supported system Required Actions (i.e., LCO 3.5.8) to dictate the required measures. The IRWST LCO provides appropriate Required Actions for the inoperability of the SFS containment isolation valves. This action is in accordance with LCO 3.0.6, which requires that the applicable Conditions and Required Actions for the IRWST declared inoperable shall be entered in accordance with LCO 3.0.2.

SURVEILLANCE REQUIREMENTS

SR 3.7.13.1

SR 3.7.13.1 requires performance of Surveillances required by SR 3.6.3.4 and SR 3.6.3.5 for the SFS containment isolation valves required OPERABLE. The Frequencies associated with each specified SR are applicable. Therefore, see the corresponding Bases for LCO 3.6.3 for a discussion of each SR.

REFERENCES

None.
