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ND-18-1439
10 CFR 50.90

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Southern Nuclear Operating Company
Vogtle Electric Generating Plant Units 3 and 4
Revised 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-18-017R1)

Ladies and Gentlemen:

Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, Southern Nuclear Operating Company (SNC) requested 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), by submittal dated July 20, 2018 (ND-18-0647, ADAMS Accession Number ML18201A610). The requested amendment proposes changes to VEGP Units 3 and 4 COL Appendix A, Technical Specifications (TS). On November 13, 2018, the NRC issued a Request for Additional Information (RAI) seeking changes and clarifications related to the requested license amendment request (LAR).

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 4 provides the responses to the RAI, including a description and technical evaluation of additional changes that are needed beyond those provided in the original LAR. The responses and additional changes are consistent with the regulatory evaluation (including the significant hazards consideration determination), and the environmental considerations provided in Enclosure 1 of the original LAR. Enclosure 5 provides revised markups (to replace those in Enclosure 2 of the original LAR) depicting the requested changes to the VEGP Units 3 and 4 licensing basis documents, including revised Table of Contents pages for the Technical Specifications. Enclosure 6 provides revised markups depicting conforming Technical Specification Bases changes for information only (to replace those in Enclosure 3 of the original LAR), including revised Table of Contents pages for the Technical Specifications Bases.

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

SNC continues to request 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 3rd of December 2018.

Respectfully submitted,

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

Enclosures 1)-3) Provided with original submittal.

4) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 - Responses to Requests for Additional Information (LAR-18-017R1)

5) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 - Revised Proposed Changes to the Licensing Basis Documents (LAR-18-017R1)

6) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Revised Conforming Changes to the Technical Specification Bases (For Information Only) (LAR-18-017R1)

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Southern Nuclear Operating Company

ND-18-1439

Enclosure 4

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Responses to Requests for Additional Information

(LAR-18-017R1)

SNC responses are shown in blue text

(This Enclosure consists of 6 pages, including this cover page.)

The NRC requested the following information regarding license amendment request (LAR)-18-017 in a request for additional information (RAI) dated November 13, 2018. The responses from Southern Nuclear Operating Company (SNC) are provided following each NRC RAI question.

NRC Staff Questions with SNC Responses:

The staff understands that both instrumentation functions listed in TS Subsection 3.3.14 are only used to initiate isolation of the SFS (outside containment) from the refueling cavity and the IRWST (both inside containment) when the SFS is operating to cool and purify water in the refueling cavity or IRWST, or transfer water inventory between them, in the respective specified Modes to support normal plant operations or refueling operations. The licensee is requested to consider the below Sub-questions 1, 2, 3, 4 and 5, which provide suggestions to improve the clarity of the proposed changes to TS Subsections 3.3.14, 3.5.7, 3.5.8 and 3.7.13, and associated Bases; and also to TS Subsection 3.3.16 and associated Bases.

1. The proposed revised title of Subsection 3.3.14 seems imprecise because this LCO just requires operability of the two IRWST Wide Range Level – Low channels in MODES 1, 2, 3, and 4; and the three Spent Fuel Pool Level – Low 2 channels in MODE 6 with the refueling cavity and the spent fuel pool volumes in communication. Both of these ESFAS instrument Functions cause SFS CIVs SFS-PL-V035 (outside), SFS-PL-V034 (inside), and SFS-PL-V038 (outside) to close to prevent a loss of IRWST-refueling cavity water volume should the SFS system develop a leak. In keeping with other Section 3.3 subsections, the title should reflect the containment isolation purpose of the instrumentation functions; the staff suggests, “ESFAS Spent Fuel Pool Cooling System (SFS) Containment Isolation Instrumentation”; also, the LCO 3.3.14 statement should be consistent with the title: “The ESFAS SFS containment isolation instrumentation channels for each Function in Table 3.3.14-1 shall be OPERABLE.” Other possible titles are (i) for brevity, "ESFAS SFS Isolation Instrumentation"; and (ii) "ESFAS IRWST and Refueling Cavity SFS Isolation Instrumentation" to include the IRWST as well as the refueling cavity. (The title should define acronyms as needed.) And for any of these candidates, the LCO can say: "The SFS isolation instrumentation channels for each Function in Table 3.3.14-1 shall be OPERABLE.”

   The licensee is requested to consider making these clarifications.

   SNC Response:

   In order for the title to reflect the pertinent instrumentation (and for similarity to existing ESFAS RCS Hot Leg Level Instrumentation TS 3.3.10), SNC proposes to revise the title of proposed TS 3.3.14 to “ESFAS IRWST and Spent Fuel Pool Level Instrumentation.” The LCO wording is also proposed to be similarly worded.

   During review of this title change, it was noted that revised Table of Contents pages had not been included in the original LAR. It was further noted that revised Table of Contents pages had not been included with the LAR resulting in Amendment No. 91 for Unit 3, and Amendment No. 90 for Unit 4, which added Technical Specification 3.3.20, Automatic Depressurization System (ADS) and In-containment Refueling Water Storage Tank (IRWST) Injection Blocking Device. Appropriate Table of Contents revisions are included for both these omissions.

2. The Subsection 3.3.14 Actions for Function 1, “Spent Fuel Pool Level - Low 2,” apply in ‘MODE 6 with refueling cavity and spent fuel pool volumes in communication.’ The staff understands that this means that SFP level and fuel transfer canal level match the refueling cavity level, which if irradiated fuel is being moved, implies a refueling cavity water level of ≥ 23 ft above the top of the reactor vessel flange.

   In Condition A (“One Spent Fuel Pool Level – Low 2 channel inoperable.”), placing the inoperable channel in trip places the coincidence logic in a 1 out of 2 configuration; but if the channel is still inoperable but not placed in trip within 6 hours, the first condition of Condition B (“Required Action and associated Completion Time of Condition A ~~Not Met~~ not met.”) would apply. Assuming this inoperable channel is unable to produce a trip signal, the staff understands that the remaining two channels are in a 2 out of 2 coincidence logic configuration, which means Function 1 could not withstand a single failure of an operable channel, which would prevent generation of an isolation signal to the valves. This constitutes a loss of the automatic SFS containment penetration flow path isolation function, which would require manually closing the supported CIVs or otherwise isolating the two SFS containment penetration flow paths, within a reasonable but relatively short completion time. The staff concludes that performing Required Actions B.1 and B.2 would accomplish this manual isolation.

   Assuming Required Action A.1 is met, if one of the remaining two channels become inoperable, the third condition of Condition B (“Two or more Spent Fuel Pool Level – Low 2 channels inoperable.”) would apply. Placing the second inoperable channel in bypass is not an option because then Function 1 could not withstand a single failure of the remaining operable channel, which would prevent generation of an isolation signal to the valves; in addition, placing one of the remaining two channels in trip would generate an isolation signal to the valves. Although this would preserve the combined refueling cavity and IRWST water inventory, it would block direct cooling and filtering of this combined inventory using the SFS. Therefore, Action B appropriately does not include placing additional channels in bypass or trip, but as already noted, requires manually closing the supported CIVs or otherwise isolating the two SFS containment penetration flow paths, within a reasonable but relatively short Completion Time of 24 hours. The staff notes that the LAR-18-017 Enclosure 2 markup of Required Actions B.1 and B.2.1 of Subsection 3.3.14 mistakenly deletes the “(s)” from “flow path(s)”; the staff understands that (i) there are just two SFS containment penetration flow paths, and this should be explained in the Bases; and (ii) separate condition entry is not specified for each flow path. Therefore, to be consistent with the guidance of plant-specific TS Example 1.3-4, the “(s)” would need to be retained. However, the staff also notes that since the two SFS isolation instrumentation functions support the coincidence logic in each of the ESF logic divisions that actuate closure of the three SFS CIVs to isolate both SFS containment penetration flow paths, *the licensee is requested to consider replacing the phrase “isolate the affected flow path(s)” with “isolate both SFS containment penetration flow paths” in Required Actions B.1 and B.2.1, and replace “Verify the affected flow path is isolated” with “Verify both SFS containment penetration flow paths are isolated” in Required Action B.2.2.*

   In the very unlikely event that a Required Action and associated Completion Time of Condition B is not met, Action C would apply. Since the required water volume of the IRWST and refueling cavity would not be ensured were the SFS to develop a leak, Required Action C.1 conservatively requires declaring the IRWST inoperable, which would immediately lead to entering Subsection 3.5.8, Condition F. *However, since the*

Applicability of the Spent Fuel Pool Level – Low 2 ESFAS Function can be exited by closing one or both ends of the fuel transfer tube, thereby ceasing "communication" between the water volumes of the spent fuel pool and the refueling cavity, the licensee is requested to consider adding this measure as alternative Required Action C.2. (The staff acknowledges that exiting the LCO's Applicability is always an option, but it is unclear how this would apply given the required action to declare the IRWST inoperable, which leads to 3.5.8 Action F.) *The associated Bases should explain whether this action would also (by itself) maintain the required combined water inventory of the refueling cavity and IRWST.* In addition, for the Spent Fuel Pool Level – Low 2 Function, were this alternative action to be taken, proposed SR 3.5.8.3 ("Verify SFS CIVs are closed.") would apply according to surveillance column Note 2 ("Only required to be met with the refueling cavity and spent fuel pool volumes not in communication."), but would not be met. With LCO 3.5.8 not met because SR 3.5.8.3 is not met, entry into Action F would also be required. This is the same result as declaring the IRWST inoperable by proposed Required Action C.1 of Subsection 3.3.14. *The licensee is requested to explain whether irradiated fuel movement in containment and irradiated fuel movement in, and transfer to, the spent fuel transfer canal and spent fuel pool can continue provided the refueling cavity water level is ≥ 23 ft above the top of the reactor vessel flange (as required by Subsection 3.5.8 Required Action F.1), even though the SFS containment penetration flow paths are not isolated nor capable of being automatically isolated on a Spent Fuel Pool Level – Low 2 Function generated ESF actuation signal to close the three SFS CIVs. To meet Required Action F.2, the staff understands that loading a fuel assembly in the reactor vessel would not be allowed because that would constitute a positive reactivity addition to the core.*

SNC Response:

In response to the Staff requests, SNC proposes to:

a) revise the Bases of proposed TS 3.3.14 to explain that there are just two SFS containment penetration flow paths;

b) retain the "s" on paths in the Required Action statements but without the parentheses since each entry into the Condition impacts both flow paths. In addition, superfluous article adjectives are omitted consistent with the Writer's Guide; and

c) editorially revise Condition B to not capitalize the first letters of "Not Met."

The Staff proposed alternative to include a new Required Action C.2 is not considered necessary since actions can always be taken to exit the Applicability. Generally, these are provided as part of the Required Actions only when another appropriate action is not identified. In this case, with another appropriate action already included, there is no additional clarity by stating this alternative. Consider, for example, if the Required Action C.1 is implemented while offloading the core. If the offload is completed, MODE 6 would be exited, and the basis for the entry into Required Action C.1 and subsequent entry into TS 3.5.8, Condition F, would no longer be valid. Thus, both TS 3.3.14 Condition C and TS 3.5.8, Condition F, would be exited.

With regard to continued movement of irradiated fuel, it would be allowed to continue as long as the water level is sufficiently high to meet TS 3.9.4. Note, however, that positive reactivity additions, e.g., loading new fuel, would not be allowed if TS 3.5.8, Action F is entered.

3. The Subsection 3.7.13 Actions table Note 2 could be stated more clearly by inserting the phrase “containment penetration” so that it says: “2. Separate condition entry is allowed for each SFS **containment penetration** flow path.” In addition, Condition A could be stated more clearly as follows: “A. One or both **penetration** flow paths with one or more SFS containment isolation valves inoperable.” *The licensee is requested to consider making these clarifications.*

SNC Response:

In response to the Staff requests, SNC proposes to include “penetration” prior to each reference to “flow path” consistent with TS 3.6.3.

4. Subsection 3.7.13, SR 3.7.13.1 states:

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.

Subsection 3.6.3, SR 3.6.3.4 states:

SR 3.6.3.4 Verify the isolation time of each automatic power operated containment isolation valve is within limits.

| In accordance with the Inservice Testing Program

Subsection 3.6.3, SR 3.6.3.5 states:

SR 3.6.3.5 Verify each automatic containment isolation valve that is not locked, sealed or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal.

| 24 months

NUREG-2194, STS Subsection 3.3.16, SR 3.3.16.4 states:

SR 3.3.16.4 ----------NOTE----------

Only required to be met in MODE 6.

Verify Spent Fuel Pool Cooling System containment isolation valves actuate to the isolation position on an actual or simulated actuation signal.

| 24 months

The staff has the following concerns:

a. Since the above two SRs of Subsection 3.6.3 apply in MODES 1, 2, 3, and 4, they do not automatically support the LCO 3.7.13 MODE 6 operability requirement for the two SFS return line CIVs, SFS-PL-V035 (outside) and SFS-PL-V034 (inside), and the one SFS supply line CIV, SFS-PL-V038 (outside); for improved clarity and ease of use, the staff requests the licensee to consider revising proposed Subsection 3.7.13 to state the two SRs explicitly, as follows (The staff also observes that STS Subsection SRs during Mode 5 and 6, usually refer to SRs in the same TS Section, not in a different TS Section):

SR 3.7.13.1	Verify the isolation time of each **SFS** automatic power operated containment isolation valve is within limits. | In accordance with the Inservice Testing Program
SR 3.7.13.2	Verify each **SFS** automatic containment isolation valve that is not locked, sealed or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal. | 24 months

b. In addition, STS SR 3.3.16.4 may be removed, since the addition of Subsection 3.7.13 and the suggested SR 3.7.13.2 obviate the original need for it in Subsection 3.3.16.

Therefore, the licensee is requested to change (i) proposed Subsection 3.7.13 by replacing the proposed SR 3.7.13.1 and associated Bases with the above explicit SRs and suitable associated Bases; and (ii) existing Subsection 3.3.16 by deleting SR 3.3.16.4 and associated Bases.

The licensee is reminded to update the proposed changes to the Bases that were provided in the LAR-18-017 Enclosure 3 to reflect the disposition and resolution of the above issues, as stated in Sub-questions 1, 2, 3, and 4.

SNC Response:

In response to the Staff requests, SNC proposes to remove Vogtle SR 3.3.16.5 (equivalent to STS (NUREG-2194) SR 3.3.16.4).

However, SNC would like to retain the SR 3.7.13.1 referral to SR 3.6.3.4 and SR 3.6.3.5 even though they cross sections since this is the most efficient way to maintain consistency with the referenced SRs. Similarly worded SRs in different sections increase the probability of missed impacts should there be a need to revise these SRs related to isolation valves.

Each of the above proposed revisions is reflected in Enclosures 5 and 6, depicting revision 1 of the proposed Technical Specifications and associated Bases, respectively.

Southern Nuclear Operating Company

ND-18-1439

Enclosure 5

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Revised Proposed Changes to the Licensing Basis Documents

(LAR-18-017R1)

Additions identified by blue underlined text.
Deletions identified by red strikethrough of text.
Additions and ~~Deletions~~ in Rev 1. shown in this lighter blue.
* * * indicates omitted existing text that is not shown.

(This Enclosure consists of 9 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) In-containment Refueling Water Storage Tank (IRWST) and Spent Fuel Pool Level Instrumentation

LCO 3.3.14 ~~Three channels of~~ The ESFAS IRWST and Spent Fuel Pool Level ~~– Low 2~~ 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 ~~N~~not ~~M~~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 -** Penetration ~~F~~flow path(s) may be unisolated intermittently under administrative controls. ---------- B.1 Isolate ~~the~~ affected penetration flow path~~(s)~~s. AND B.2.1 Isolate ~~the~~ affected penetration flow path~~(s)~~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 penetration flow paths are ~~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 3.3.16 is revised as follows:

* * *

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.3.16.4 * * *	* * *
~~SR 3.3.16.5~~ ~~- NOTES -~~ ~~Only required to be met in MODE 6.~~ ~~Verify Spent Fuel Pool Cooling System containment isolation valves actuate to the isolation position on an actual or simulated actuation signal.~~	~~24 months~~

COL Appendix A Technical Specification 3.5.7 is revised as follows:

* * *

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.7.1	---------- **- NOTE -** Penetration 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 3.5.8.1	* * *	* * *
SR 3.5.8.2	* * *	* * *
SR 3.5.8.3	---------- **- NOTES -** 1. Penetration 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
SR 3.5.8.4~~3~~	* * *	* * *
SR 3.5.8.5~~4~~	* * *	* * *

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. Penetration flow path(s) may be unisolated intermittently under administrative controls.
2. Separate Condition entry is allowed for each SFS penetration flow path.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more penetration flow paths with one or more SFS containment isolation valves inoperable.	A.1 Isolate ~~the~~ affected penetration flow path. AND A.2.1 Isolate ~~the~~ affected penetration 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 penetration 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

COL Appendix A Technical Specification Table of Contents is revised as follows:

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Southern Nuclear Operating Company

ND-18-1439

Enclosure 6

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

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

(LAR-18-017R1)

Additions identified by blue underlined text.
Deletions identified by red strikethrough of text.
Additions and ~~Deletions~~ in Rev 1. shown in this lighter blue.
* * * indicates omitted existing text that is not shown.

(This Enclosure consists of 14 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) In-containment Refueling Water Storage Tank (IRWST) and Spent Fuel Pool Level 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 IRWST and Spent Fuel Pool Level Instrumentation provide plant protection in the event of a leak in the nonsafety-related Spent Fuel Pool Cooling System (SFS). A description of the ESFAS P-9 (T_{avg}) interlock is provided in the Bases for TS 3.3.8. A description of the two SFS penetration flow paths is provided in the Bases for TS 3.7.13.

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 IRWST and Spent Fuel Pool Level 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.

In the event a channel's as-found condition is outside the as-found
* * *

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 penetration flow path~~(s)~~ must be isolated within 24 hours.

Additionally, to assure that the penetration flow path remain~~s~~ closed, the penetration flow path shall be isolated by the use of one of the specified means (Required Action B.2.1) or the penetration flow path shall be verified to be isolated (Required Action B.2.2). A means of isolating the ~~affected~~ penetration 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~~ penetration flow path shall be verified to be isolated once per 7 days.

This action is modified by a Note allowing the penetration 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 penetration flow path(s) can be rapidly isolated when a need for penetration flow path isolation is indicated.

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 the IRWST and Spent Fuel Pool Level 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 3.3.16 is revised as follows:

* * *

SURVEILLANCE REQUIREMENTS

* * *

~~SR 3.3.16.5~~

~~SR 3.3.16.5 demonstrates that the Spent Fuel Pool Cooling containment isolation valves actuate to the isolation position in response to an actual or simulated actuation signal. The ACTUATION LOGIC OUTPUT TEST provides overlap with this Surveillance.~~

~~The Frequency of 24 months is based on the need to perform this surveillance during periods in which the plant is shutdown for refueling to prevent any upsets of plant operation.~~

~~The SR is modified by a Note stating that the SR is only required to be met in MODE 6.~~

* * *

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 isolation valve is fully open. This surveillance…

* * *

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 penetration 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 penetration 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 penetration 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 penetration 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 IRWST and Spent Fuel Pool Level 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 of the two penetration flow paths 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 IRWST and Spent Fuel Pool Level 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 penetration 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 penetration flow path can be rapidly isolated when a need for penetration flow path isolation is indicated. Note 2 allows separate Condition entry for each SFS penetration flow path. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable SFS penetration flow path.

A.1 and A.2

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

Additionally, to assure that the penetration flow path remains closed, the penetration flow path shall be isolated by the use of one of the specified means (Required Action A.2.1) or the penetration flow path shall be

verified to be isolated (Required Action A.2.2). A means of isolating the affected penetration 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 penetration 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.

The Technical Specification Bases Table of Contents is revised as follows:

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