TENNESSEE VALLEY AUTHORITY

1101 Market Street, Chattanooga, Tennessee 37402

CNL-23-059

September 20, 2023

10 CFR 50.90

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

Sequoyah Nuclear Plant, Units 1 and 2
Renewed Facility Operating License Nos. DPR-77 and DPR-79
NRC Docket Nos. 50-327 and 50-328

Watts Bar Nuclear Plant, Units 1 and 2
Facility Operating License Nos. NPF-90 and NPF-96
NRC Docket Nos. 50-390 and 50-391

Subject: **Supplement to Sequoyah Nuclear Plant, Units 1 and 2, and Watts Bar Nuclear Plant, Units 1 and 2, Application to Revise Technical Specifications to Adopt TSTF-567-A, Revision 1, "Add Containment Sump TS to Address GSI-191 Issues" (SQN-TS-23-03 and WBN-TS-23-06) (EPID L-2023-LLA-0106)**

References:
1. TVA letter to NRC, CNL-23-028, "Sequoyah Nuclear Plant, Units 1 and 2, and Watts Bar Nuclear Plant, Units 1 and 2, Application to Revise Technical Specifications to Adopt TSTF-567-A, Revision 1, 'Add Containment Sump TS to Address GSI-191 Issues' (SQN-TS-23-03 and WBN-TS-23-06)," dated August 2, 2023 (ML23214A385)

2. NRC electronic mail to TVA, "Acceptance Review Results for the Sequoyah and Watts Bar License Amendment Request to Adopt TSTF-567 (L-2023-LLA-0106)," dated August 24, 2023 (ML23236A256)

In Reference 1, Tennessee Valley Authority (TVA) submitted a request for an amendment to Renewed Facility Operating License Nos. DPR-77 and DPR-79 for the Sequoyah Nuclear Plant (SQN), Units 1 and 2; and Facility Operating License Nos. NPF-90 and NPF-96 for the Watts Bar Nuclear Plant (WBN), Units 1 and 2, respectively. The proposed amendment requested adoption of Technical Specifications Task Force (TSTF) Traveler TSTF-567-A, Revision 1, "Add Containment Sump TS to Address GSI-191 Issues," which is an approved change to the Standard Technical Specifications (STS), into the SQN Units 1 and 2 and the WBN Units 1 and 2 Technical Specifications (TS). The proposed amendment adds a new TS 3.6.16, "Containment Sump," and adds an Action to address the condition of the containment sump made inoperable due to containment accident generated and transported debris exceeding the analyzed limits. The Action provides time to correct or evaluate the condition in lieu of an immediate plant shutdown.

Reference 1 was accepted by the Nuclear Regulatory Commission (NRC) in Reference 2. However, during the review of Reference 1, the NRC informed TVA of a minor inconsistency in the WBN Unit 2 TS 3.6.16 Bases and minor formatting changes needed to the SQN Units 1 and 2 and the WBN Units 1 and 2 TS 3.6.16. Also, NRC indicated that the proposed change to the WBN Units 1 and 2 Safety Function Determination Program (TS 5.7.2.18) was not included in the response to questions 1 and 2 of the No Significant Hazards Consideration Analysis in Section 3.1 to Reference 1 in accordance with the model application of TSTF-567-A, Revision 1.

Enclosure 1 provides the revised No Significant Hazards Consideration Analysis, changes are indicated by revision bars. Enclosure 2 provides the revised SQN Units 1 and 2 and WBN Units 1 and 2 TS 3.6.16 pages marked up to show the proposed changes. Enclosure 3 provides the revised WBN Unit 2 TS 3.6.16 Bases pages marked up to show the proposed changes. Changes to the existing TS Bases are provided for information only and will be implemented under the Technical Specification Bases Control Program. The information in Enclosures 1 through 3 supersede those provided in Reference 1.

This letter does not change the environmental considerations contained in Reference 1. Additionally, in accordance with Title 10 of the *Code of Federal Regulations* 50.91(b)(1), TVA is sending a copy of this letter and the enclosure to the Tennessee Department of Environment and Conservation.

There are no new regulatory commitments associated with this submittal. Please address any questions regarding this request to Stuart L. Rymer, Senior Manager, Fleet Licensing, at slrymer@tva.gov.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 20th day of September 2023.

Respectfully,

Digitally signed by Edmondson, Carla
Date: 2023.09.20 18:42:58 -04'00'

Kimberly D. Hulvey
Director, Nuclear Regulatory Affairs

Enclosures:

1. Revised No Significant Hazards Consideration Analysis
2. Revised SQN Units 1 and 2 and WBN Units 1 and 2 TS 3.6.16
3. Revised WBN Unit 2 TS 3.6.16 Bases

cc: See Page 3

cc:(with Enclosures):

NRC Regional Administrator - Region II
NRC Senior Resident Inspector - Sequoyah Nuclear Plant
NRC Senior Resident Inspector - Watts Bar Nuclear Plant
NRC Project Manager - Sequoyah Nuclear Plant
NRC Project Manager - Watts Bar Nuclear Plant
Division of Radiological Health - Tennessee Department of Environment and Conservation

Enclosure 1

Revised No Significant Hazards Consideration Analysis

3.1 No Significant Hazards Consideration Analysis

The proposed amendment adds a new Technical Specification (TS) 3.6.16, "Containment Sump," and adds an Action to address the condition of the containment sump made inoperable due to containment accident generated and transported debris exceeding the analyzed limits. The Action provides time to correct or evaluate the condition in lieu of an immediate plant shutdown. This Action is placed in a new specification on the containment sump that otherwise retains the existing TS requirements. An existing Surveillance Requirement (SR) is moved from TS 3.5.2 to the new specification. The requirement to perform the SR in TS 3.5.3 is deleted.

The proposed amendment also revises the Watts Bar Nuclear Plant (WBN), Units 1 and 2 Safety Function Determination Program (SFDP) (TS 5.7.2.18) to clarify its application when a supported system is made inoperable by the inoperability of a single TS support system. The Sequoyah Nuclear Plant (SQN), Units 1 and 2 TS 5.5.13 already reflect this change.

Tennessee Valley Authority (TVA) has evaluated whether or not a significant hazards consideration is involved with the proposed amendment(s) by focusing on the three standards set forth in Title 10 of the *Code of Federal Regulations* (10 CFR) 50.92, "Issuance of amendment," as discussed below.

1. *Does the proposed amendment involve a significant increase in the probability or consequence of an accident previously evaluated?*

   Response: No.

   The proposed change adds a new specification to the TS for the containment sump. An existing SR on the containment sump is moved to the new specification and a duplicative requirement to perform the SR in TS 3.5.3 is removed. The new specification retains the existing requirements on the containment sump and the actions to be taken when the containment sump is inoperable with the exception of adding new actions to be taken when the containment sump is inoperable due to containment accident generated and transported debris exceeding the analyzed limits. The new action provides time to evaluate and correct the condition instead of requiring an immediate plant shutdown.

   The containment sump is not an initiator of any accident previously evaluated. The containment sump is a passive component and the proposed change does not increase the likelihood of the malfunction. As a result, the probability of an accident is unaffected by the proposed change.

   The containment sump is used to mitigate accidents previously evaluated by providing a borated water source for the Emergency Core Cooling System (ECCS) and Containment Spray System (CSS). The design of the containment sump and the capability of the containment sump assumed in the accident analysis is not changed. The proposed action requires implementation of mitigating actions while the containment sump is inoperable and more frequent monitoring of reactor coolant leakage to detect any increased potential for an accident that would require the containment sump. The consequences of an accident during the proposed action are no different than the current consequences of an accident if the containment sump is inoperable.

The proposed change clarifies the WBN SFDP when a supported system is made inoperable by the inoperability of a single TS support system. The SFDP directs the appropriate use of TS actions and the proposed change does not alter the current intent of the TS. The actions taken when a system is inoperable are not an assumption in the initiation or mitigation of any previously evaluated accident.

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

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 change adds a new specification to the TS for the containment sump. An existing SR on the containment sump is moved to the new specification and a duplicative requirement to perform the SR in TS 3.5.3 is removed. The new specification retains the existing requirements on the containment sump and the actions to be taken when the containment sump is inoperable with the exception of adding new actions to be taken when the containment sump is inoperable due to containment accident generated and transported debris exceeding the analyzed limits. The new action provides time to evaluate and correct the condition instead of requiring an immediate plant shutdown.

The proposed change does not alter the design or design function of the containment sump or the plant. No new systems are installed or removed as part of the proposed change. The containment sump is a passive component and cannot initiate a malfunction or accident. No new credible accident is created that is not encompassed by the existing accident analyses that assume the function of the containment sump.

The proposed change clarifies the WBN SFDP when a supported system is made inoperable by the inoperability of a single TS support system. The SFDP directs the appropriate use of TS actions and the proposed change does not alter the current intent of the TS. The proposed change to the SFDP will not result in any change to the design or design function of the containment sump or a method of operation of the plant.

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

3. *Does the proposed amendment involve a significant reduction in a margin of safety?*

Response: No.

The proposed change adds a new specification to the TS for the containment sump. An existing SR on the containment sump is moved to the new specification and a duplicative requirement to perform the SR in TS 3.5.3 is removed. The new specification retains the existing requirements on the containment sump and the actions to be taken when the containment sump is inoperable with the exception of adding new actions to be taken when the containment sump is inoperable due to containment accident generated and transported debris exceeding the analyzed limits. The new action provides time to evaluate and correct the condition instead of requiring an immediate plant shutdown.

The proposed change does not affect the controlling values of parameters used to avoid exceeding regulatory or licensing limits. No Safety Limits are affected by the proposed change. The proposed change does not affect any assumptions in the accident analyses that demonstrate compliance with regulatory and licensing requirements.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, TVA concludes that the proposed change presents no 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.

Enclosure 2

Revised SQN Units 1 and 2 and WBN Units 1 and 2 TS 3.6.16

3.6 CONTAINMENT SYSTEMS

3.6.16 Containment Sump

LCO 3.6.16 The containment sump shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Containment sump inoperable due to containment accident generated and transported debris exceeding the analyzed limits.	A.1 Initiate action to mitigate containment accident generated and transported debris. AND A.2 Perform SR 3.4.13.1. AND A.3 Restore the containment sump to OPERABLE status.	Immediately Once per 24 hours 90 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Containment sump inoperable for reasons other than Condition A.	B.1 ----------NOTES---------- 1. Enter applicable Conditions and Required Actions of LCO 3.5.2, "ECCS – Operating," and LCO 3.5.3, "ECCS – Shutdown," for emergency core cooling trains made inoperable by the containment sump. 2. Enter applicable Conditions and Required Actions of LCO 3.6.6, "Containment Spray System," for containment spray trains made inoperable by the containment sump. ---------- Restore the containment sump to OPERABLE status.	72 hours
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.16.1	Verify by visual inspection, the containment sump does not show structural damage, abnormal corrosion, or debris blockage.	In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.16 Containment Sump

LCO 3.6.16 The containment sump shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Containment sump inoperable due to containment accident generated and transported debris exceeding the analyzed limits.	A.1 Initiate action to mitigate containment accident generated and transported debris. AND	Immediately
	A.2 Perform SR 3.4.13.1. AND	Once per 24 hours
	A.3 Restore the containment sump to OPERABLE status.	90 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Containment sump inoperable for reasons other than Condition A.	B.1 ----------NOTES---------- 1. Enter applicable Conditions and Required Actions of LCO 3.5.2, "ECCS – Operating," and LCO 3.5.3, "ECCS – Shutdown," for emergency core cooling trains made inoperable by the containment sump. 2. Enter applicable Conditions and Required Actions of LCO 3.6.6, "Containment Spray System," for containment spray trains made inoperable by the containment sump. ---------- Restore the containment sump to OPERABLE status.	72 hours
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.16.1	Verify by visual inspection, the containment sump does not show structural damage, abnormal corrosion, or debris blockage.	In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.16 Containment Sump

LCO 3.6.16 The containment sump shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Containment sump inoperable due to containment accident generated and transported debris exceeding the analyzed limits.	A.1 Initiate action to mitigate containment accident generated and transported debris. AND	Immediately
	A.2 Perform SR 3.4.13.1. AND	Once per 24 hours
	A.3 Restore the containment sump to OPERABLE status.	90 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Containment sump inoperable for reasons other than Condition A.	B.1 ---------- NOTES ---------- 1. Enter applicable Conditions and Required Actions of LCO 3.5.2, "ECCS – Operating," and LCO 3.5.3, "ECCS – Shutdown," for emergency core cooling trains made inoperable by the containment sump. 2. Enter applicable Conditions and Required Actions of LCO 3.6.6, "Containment Spray System," for containment spray trains made inoperable by the containment sump. ---------- Restore the containment sump to OPERABLE status.	72 hours
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.16.1	Verify by visual inspection, the containment sump does not show structural damage, abnormal corrosion, or debris blockage.	In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.16 Containment Sump

LCO 3.6.16 The containment sump shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Containment sump inoperable due to containment accident generated and transported debris exceeding the analyzed limits.	A.1	Initiate action to mitigate containment accident generated and transported debris.	Immediately
	AND		
	A.2	Perform SR 3.4.13.1.	Once per 24 hours
	AND		
	A.3	Restore the containment sump to OPERABLE status.	90 days

(Continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. Containment sump inoperable for reasons other than Condition A.	B.1	----------NOTES---------- 1. Enter applicable Conditions and Required Actions of LCO 3.5.2, “ECCS – Operating,” and LCO 3.5.3, “ECCS – Shutdown,” for emergency core cooling trains made inoperable by the containment sump. 2. Enter applicable Conditions and Required Actions of LCO 3.6.6, “Containment Spray System,” for containment spray trains made inoperable by the containment sump ----------	
		Restore the containment sump to OPERABLE status.	72 hours
C. Required Action and associated Completion Time not met.	C.1	Be in MODE 3.	6 hours
	AND		
	C.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.16.1	Verify by visual inspection, the containment sump does not show structural damage, abnormal corrosion, or debris blockage.	In accordance with the Surveillance Frequency Control Program

Enclosure 3

Revised Technical Specification Bases Changes (Mark-Up) for WBN Unit 2
(For Information Only)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.16 Containment Sump

BASES

BACKGROUND

The containment sump provides a borated water source to support recirculation of coolant from the containment sump for residual heat removal, emergency core cooling, containment cooling, and containment atmosphere cleanup during accident conditions.

The containment sump supplies both trains of the Emergency Core Cooling System (ECCS) and the Containment Spray System (CSS) during any accident that requires recirculation of coolant from the containment sump. The recirculation mode is initiated when the pump suction is transferred to the containment sump at a level which ensures the containment sump has enough water to supply the net positive suction head to the ECCS and CSS pumps. A single containment sump is used to supply both trains of the ECCS and CSS.

The containment sump contains strainers to limit the quantity of the debris materials from entering the sump suction piping. Debris accumulation on the strainers can lead to undesirable hydraulic effects including air ingestion through vortexing or deaeration, and reduced net positive suction head (NPSH) at pump suction piping.

While the majority of debris accumulates on the strainers, some fraction penetrates the strainers and is transported to downstream components in the ECCS, CSS, and the Reactor Coolant System (RCS). Debris that penetrates the strainer can result in wear to the downstream components, blockages, or reduced heat transfer across the fuel cladding. Excessive debris in the containment sump water source could result in insufficient recirculation of coolant during the accident, or insufficient heat removal from the core during the accident.

BASES

APPLICABLE SAFETY ANALYSES

During all accidents that require recirculation, the containment sump provides a source of borated water to the ECCS and CSS pumps. As such, it supports residual heat removal, emergency core cooling, containment cooling, and containment atmosphere cleanup during an accident. It also provides a source of negative reactivity (Ref. 1). The design basis transients and applicable safety analyses concerning each of these systems are discussed in the Applicable Safety Analyses section of B 3.5.2, "ECCS -Operating," B 3.5.3, "ECCS - Shutdown," and B 3.6.6, "Containment Spray System."

UFSAR Section 6.3.2.2 (Ref. 2) describes evaluations that confirm long term core cooling is assured following any accident that requires recirculation from the containment sump.

The containment sumps satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii)

LCO

The containment sump is required to ensure a source of borated water to support ECCS and CSS OPERABILITY. A containment sump consists of the containment drainage flow paths, debris intercepting devices, a volume of lower containment formed by sealed penetrations inside the lower crane wall, the containment sump strainers, and the inlet to the ECCS and CSS piping. The piping inlet is protected by the advanced design strainers. Each strainer contains perforations to reduce the size of debris that may enter the sump. The water flows through mesh screens, which suppress vortices that may occur in the sump at the entrance to the twin recirculation pipes. An OPERABLE containment sump has no structural damage or abnormal corrosion that could prevent recirculation of coolant and will not be restricted by containment accident generated and transported debris.

Containment accident generated and transported debris consists of the following:

a. Accident generated debris sources - Insulation, coatings, and other materials which are damaged by the high-energy line break (HELB) and transported to the containment sump. This includes materials within the HELB zone of influence and other materials (e.g., unqualified coatings) that fail due to the post-accident containment environment following the accident;

b. Latent debris sources – Pre-existing dirt, dust, paint chips, fines or shards of insulation, and other materials inside containment that do not have to be damaged by the HELB to be transported to the containment sump; and

(continued)

BASES

LCO (continued)

c. Chemical product debris sources – Aluminum, zinc, carbon steel, copper, and non-metallic materials such as paints, thermal insulation, and concrete that are susceptible to chemical reactions within the post-accident containment environment leading to corrosion products that are generated within the containment sump pool or are generated within containment and transported to the containment sump.

Containment debris limits are defined in TVA Calculations MDQ0009992014000659 (Ref. 3), ALION-CAL-TVA-2739-03 (Ref. 4), and ALION-CAL-TVA-2739-04 (Ref. 5).

APPLICABILITY

In MODES 1, 2, 3, and 4, containment sump OPERABILITY requirements are dictated by the ECCS and CSS OPERABILITY requirements. Since both the ECCS and the CSS must be OPERABLE in MODES 1, 2, 3, and 4, the containment sump must also be OPERABLE to support their operation.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Thus, the containment sump is not required to be OPERABLE in MODES 5 or 6.

ACTIONS

A.1, A,2, and A.3

Condition A is applicable when the containment sump is inoperable due to containment accident generated and transported debris exceeding the analyzed limits. Examples that would require entry into TS 3.6.16 Condition A include:

- Unanalyzed debris sources that are discovered inside containment
- Errors that are discovered in debris-related analyses
- Discovery of a previously unevaluated phenomenon that can affect containment sump performance.

Containment debris limits are defined in TVA Calculations MDQ0009992014000659 (Ref. 3), ALION-CAL-TVA-2739-03 (Ref. 4), and ALION-CAL-TVA-2739-04 (Ref. 5). Immediate action must be initiated to mitigate the condition.

Examples of mitigating actions are:

- Removing the debris source from containment or preventing the debris from being transported to the containment sump;

(continued)

BASES

ACTIONS
(continued)

- Evaluating the debris source against the assumptions in the analysis;
- Deferring maintenance that would affect availability of the affected systems and other LOCA mitigating equipment;
- Deferring maintenance that would affect availability of primary defense-in-depth systems;
- Briefing operators on LOCA debris management actions; or
- Applying an alternative method to establish new limits.

While in this condition, the RCS water inventory balance, SR 3.4.13.1, must be performed at an increased Frequency of once per 24 hours. An unexpected increase in RCS leakage could be indicative of an increased potential for an RCS pipe break, which could result in debris being generated and transported to the containment sump. The more frequent monitoring allows operators to act in a timely fashion to minimize the potential for an RCS pipe break while the containment sump is inoperable.

The inoperable containment sump must be restored to OPERABLE status in 90 days. A 90-day Completion Time is reasonable for emergent conditions that involve debris in excess of the analyzed limits that could be generated and transported to the containment sump under accident conditions. The likelihood of an initiating event in the 90-day Completion Time is very small and there is margin in the associated analyses. The mitigating actions of Required Action A.1 provide additional assurance that the effects of debris in excess of the analyzed limits will be mitigated during the Completion Time.

B.1

When the containment sump is inoperable for reasons other than Condition A, such as blockage, structural damage, or abnormal corrosion that could prevent recirculation of coolant, it must be restored to OPERABLE status within 72 hours. The 72 hour Completion Time takes into account the reasonable time for repairs, and low probability of an accident that requires the containment sump occurring during this period.

Required Action B.1 is modified by two Notes. The first Note indicates that the applicable Conditions and Required Actions of LCO 3.5.2, "ECCS - Operating," and LCO 3.5.3, "ECCS - Shutdown," should be entered if an inoperable containment sump results in an inoperable ECCS train. The second Note indicates that the applicable Conditions and Required Actions of LCO 3.6.6, "Containment Spray System," should be entered if an inoperable containment sump results in an inoperable CSS train. This is an exception to LCO 3.0.6 and ensures the proper actions are taken for these components.

BASES

ACTIONS (continued)

C.1 and C.2

If the containment sump cannot be restored to OPERABLE status within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.16.1

Periodic inspections are performed to verify the containment sump does not show current or potential debris blockage, structural damage, or abnormal corrosion to ensure the operability and structural integrity of the containment sump (Ref. 1). The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

REFERENCES

1. UFSAR, Chapter 6 and Chapter 15.

2. UFSAR Section 6.3.2.2, “Equipment and Component Design.”

3. TVA Calculation MDQ0009992014000659, “Watts Bar Evaluation of Long Term Cooling Considering Particulate, Fibrous and Chemical Debris in the Recirculating Fluid using LOCADM."

4. TVA Calculation ALION-CAL-TVA-2739-03, “ALION-Watts Bar Reactor Building GSI-191 Debris Generation Calculation.”

5. TVA Calculation ALION-CAL-TVA-2739-04, “Watts Bar Reactor Building GSI-191 Debris Transport Calculation.”