



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
WASHINGTON, D.C. 20555-0001

September 27, 2019

ANO Site Vice President
Arkansas Nuclear One
Entergy Operations, Inc.
N-TSB-58
1448 S.R. 333
Russellville, AR 72802

**SUBJECT: ARKANSAS NUCLEAR ONE, UNIT 1 - ISSUANCE OF AMENDMENT NO. 266
RE: ADOPTION OF TECHNICAL SPECIFICATIONS TASK FORCE (TSTF)
TRAVELER TSTF-567, REVISION 1, "ADD CONTAINMENT SUMP TS TO
ADDRESS GSI [GENERIC SAFETY ISSUE]-191 ISSUES"
(EPID L-2018-LLA-0572)**

Dear Sir or Madam:

The U.S. Nuclear Regulatory Commission (NRC or the Commission) has issued the enclosed Amendment No. 266 to Renewed Facility Operating License No. DPR-51 for Arkansas Nuclear One, Unit 1 (ANO-1). The amendment consists of changes to the technical specifications (TSs) in response to your application dated December 19, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18353B044), as supplemented by letter dated June 18, 2019 (ADAMS Accession No. ML19169A140).

The amendment revises ANO-1 TS 3.5.2, "ECCS [Emergency Core Cooling System] – Operating"; TS 3.5.3, "ECCS – Shutdown"; and TS 5.5.15, "Safety Function Determination Program (SFDP)." The amendment also adds a new TS 3.6.7, "Reactor Building Sump," to TS Section 3.6, "Reactor Building Systems." The changes are based on Technical Specifications Task Force (TSTF) Traveler TSTF-567, Revision 1, "Add Containment Sump TS to Address GSI [Generic Safety Issue]-191 Issues," dated August 2, 2017 (ADAMS Accession No. ML17214A813). The NRC issued a final safety evaluation approving TSTF-567, Revision 1, on July 3, 2018 (ADAMS Accession No. ML18116A606).

A copy of the related safety evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

A handwritten signature in black ink, appearing to read "MOBamin for".

Thomas J. Wengert, Senior Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-313

Enclosures:

1. Amendment No. 266 to DPR-51
2. Safety Evaluation

cc: Listserv



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

ENTERGY OPERATIONS, INC.

DOCKET NO. 50-313

ARKANSAS NUCLEAR ONE, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 266
Renewed License No. DPR-51

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Entergy Operations, Inc. (the licensee), dated December 19, 2018, as supplemented by letter dated June 18, 2019, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.c.(2) of Renewed Facility Operating License No. DPR-51 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 266, are hereby incorporated in the renewed license. EOI shall operate the facility in accordance with the Technical Specifications.

3. This amendment is effective as of its date of issuance and shall be implemented within 90 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Robert J. Pascarelli, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Renewed Facility
Operating License No. DPR-51
and Technical Specifications

Date of Issuance: September 27, 2019

ATTACHMENT TO LICENSE AMENDMENT NO. 266

RENEWED FACILITY OPERATING LICENSE NO. DPR-51

ARKANSAS NUCLEAR ONE, UNIT 1

DOCKET NO. 50-313

Replace the following pages of the Renewed Facility Operating License No. DPR-51 and Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Renewed Facility Operating License

REMOVE

3

INSERT

3

Technical Specifications

REMOVE

3.5.2-2

3.5.3-2

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5.0-18

INSERT

3.5.2-5

3.5.3-2

3.6.7-1

3.6.7-2

5.0-18

- (5) EOI, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components;
 - (6) EOI, pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.
- c. This renewed license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:
- (1) Maximum Power Level

EOI is authorized to operate the facility at steady state reactor core power levels not in excess of 2568 megawatts thermal.
 - (2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 266, are hereby incorporated in the renewed license. EOI shall operate the facility in accordance with the Technical Specifications.
 - (3) Safety Analysis Report

The licensee's SAR supplement submitted pursuant to 10 CFR 54.21(d), as revised on March 14, 2001, describes certain future inspection activities to be completed before the period of extended operation. The licensee shall complete these activities no later than May 20, 2014.
 - (4) Physical Protection

EOI shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification, and safeguards contingency plans, including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans, which contains Safeguards Information protected under 10 CFR 73.21, is entitled: "Arkansas Nuclear One Physical Security Plan, Training and Qualifications Plan, and Safeguards Contingency Plan," as submitted on May 4, 2006.

SURVEILLANCE		FREQUENCY
SR 3.5.2.2	Verify each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head.	In accordance with the INSERVICE TESTING PROGRAM
SR 3.5.2.3	Verify each ECCS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.4	Verify each ECCS pump starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.3.1	<p>-----NOTE-----</p> <p>An LPI train may be considered OPERABLE during alignment and operation for DHR, if capable of being manually realigned to the LPI mode of operation.</p> <p>-----</p> <p>For all equipment required to be OPERABLE, the following SRs are applicable:</p> <p>SR 3.5.2.1 SR 3.5.2.4 SR 3.5.2.2 SR 3.5.2.3</p>	In accordance with applicable SRs

3.6 REACTOR BUILDING SYSTEMS

3.6.7 Reactor Building Sump

LCO 3.6.7 The reactor building sump shall be OPERABLE.

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

ACTIONS

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

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Reactor building sump inoperable for reasons other than Condition A.	<p>B.1 -----NOTES-----</p> <p>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 reactor building sump.</p> <p>2. Enter applicable Conditions and Required Actions of LCO 3.6.5, "Reactor Building Spray and Cooling Systems," for reactor building spray trains made inoperable by the reactor building sump.</p> <p>-----</p> <p>Restore the reactor building sump to OPERABLE status.</p>	72 hours
C. Required Action and associated Completion Time not met.	<p>C.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>C.2 Be in MODE 5.</p>	<p>6 hours</p> <p>36 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.6.7.1 Verify, by visual inspection, the reactor building sump does not show structural damage, abnormal corrosion, or debris blockage.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

5.0 ADMINISTRATIVE CONTROLS

5.5 Programs and Manuals

5.5.15 Safety Function Determination Program (SFDP)

This program ensures loss of safety function is detected and appropriate actions taken. Upon entry into LCO 3.0.6, an evaluation shall be made to determine if loss of safety function exists. Additionally, other appropriate limitations and remedial or compensatory actions may be identified to be taken as a result of the support system inoperability and corresponding exception to entering supported system Condition and Required Actions. This program implements the requirements of LCO 3.0.6. The SFDP shall contain the following:

- a. Provisions for cross train checks to ensure a loss of the capability to perform the safety function assumed in the accident analysis does not go undetected;
- b. Provisions for ensuring the plant is maintained in a safe condition if a loss of function condition exists;
- c. Provisions to ensure that an inoperable supported system's Completion Time is not inappropriately extended as a result of multiple support system inoperabilities; and
- d. Other appropriate limitations and remedial or compensatory actions.

A loss of safety function exists when, assuming no concurrent single failure, and assuming no concurrent loss of offsite power or loss of onsite diesel generator(s), a safety function assumed in the accident analysis cannot be performed. For the purpose of this program, a loss of safety function may exist when a support system is inoperable, and:

- a. A required system redundant to the system(s) supported by the inoperable support system is also inoperable; or
- b. A required system redundant to the system(s) in turn supported by the inoperable supported system is also inoperable; or
- c. A required system redundant to the support system(s) for the supported systems (a) and (b) above is also inoperable.

The SFDP identifies where a loss of safety function exists. If a loss of safety function is determined to exist by this program, the appropriate Conditions and Required Actions of the LCO in which the loss of safety function exists are required to be entered. When a loss of safety function is caused by the inoperability of a single Technical Specification support system, the appropriate Conditions and Required Actions to enter are those of the support system.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 266 TO

RENEWED FACILITY OPERATING LICENSE NO. DPR-51

ENTERGY OPERATIONS, INC.

ARKANSAS NUCLEAR ONE, UNIT 1

DOCKET NO. 50-313

1.0 INTRODUCTION

By application dated December 19, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18353B044), as supplemented by letter dated June 18, 2019 (ADAMS Accession No. ML19169A140), Entergy Operations, Inc. (the licensee), requested changes to the technical specifications (TSs) for Arkansas Nuclear One, Unit 1 (ANO-1).

The amendment would revise ANO-1 TS 3.5.2, "ECCS [Emergency Core Cooling System] – Operating"; TS 3.5.3, "ECCS – Shutdown"; and TS 5.5.15, "Safety Function Determination Program (SFDP)." The proposed changes would also add a new TS 3.6.7, "Reactor Building Sump," to Section 3.6, "Reactor Building Systems." The proposed changes are based on Technical Specifications Task Force (TSTF) Traveler TSTF-567, Revision 1, "Add Containment Sump TS to Address GSI [Generic Safety Issue]-191 Issues," dated August 2, 2017 (ADAMS Accession No. ML17214A813). The U.S. Nuclear Regulatory Commission (NRC or the Commission) issued a final safety evaluation (SE) approving TSTF-567, Revision 1, on July 3, 2018 (ADAMS Accession No. ML18116A606). The licensee has proposed several variations from the TS changes described in TSTF-567. The proposed variations are described in Section 2.2.5 of this SE and are evaluated in Section 3.5 of this SE.

In the license amendment request (LAR) dated December 19, 2018, the licensee stated that ANO-1 TS page 3.5.2-2 was currently under review by the NRC staff, as submitted in an LAR dated March 12, 2018 (ADAMS Accession No. ML18071A319), associated with TSTF-425, Revision 3, "Relocate Surveillance Frequencies to Licensee Control – RITSTF [Risk-informed TSTF] Initiative 5b" (ADAMS Accession No. ML090850642). By letter dated June 18, 2019, the licensee provided a revised TS page 3.5.2-2 to include the changes made for TSTF-425, which the NRC approved in Amendment No. 264 by letter dated May 22, 2019 (ADAMS Accession No. ML19098A955).

The supplemental letter dated June 18, 2019, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change

the NRC staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on February 26, 2019 (84 FR 6179).

2.0 REGULATORY EVALUATION

2.1 System Description and TS Requirements

The TSs include limiting conditions for operation (LCOs), which are the lowest functional capability or performance levels of equipment required for safe operation of the facility. Specified with each stated condition of the LCO are required action(s) and completion time(s) (CTs) to meet TS requirements.

2.1.1 TS 3.5.2, "ECCS – Operating"

The function of the ECCS is to provide core cooling and negative reactivity to ensure the reactor core is protected after any of the following accidents:

- a. Loss-of-coolant accident (LOCA), coolant leakage greater than the capability of the normal charging system;
- b. Rod ejection accident;
- c. Loss of secondary coolant accident, including uncontrolled steam release or loss-of-feedwater; and
- d. Steam generator tube rupture.

ANO-1 TS 3.5.2 is applicable in Modes 1 and 2, and in Mode 3 with reactor coolant system (RCS) temperature greater than ($>$) 350 degrees Fahrenheit ($^{\circ}\text{F}$). ANO-1 TS 3.5.2 requires that two independent ECCS trains be operable to ensure that sufficient ECCS flow is available, assuming a single failure affecting either ECCS train.

TS 3.5.2 helps ensure the following acceptance criteria for ECCS, established by Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.46, "Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors," will be met following a LOCA:

- a. Maximum fuel element cladding temperature is less than or equal to (\leq) 2200 $^{\circ}\text{F}$;
- b. Maximum cladding oxidation is ≤ 0.17 times the total cladding thickness before oxidation;
- c. Maximum hydrogen generation from a zirconium water reaction is ≤ 0.01 times the hypothetical amount generated if all of the metal in the cladding cylinders surrounding the fuel, excluding the cladding surrounding the plenum volume, were to react;
- d. Core is maintained in a coolable geometry; and
- e. Adequate long-term core cooling capability is maintained.

TS 3.5.2 also limits the potential for a post-trip return to power following a main steam line break event and ensures that reactor building temperature limits are met.

2.1.2 TS 3.5.3, "ECCS – Shutdown"

ANO-1 TS 3.5.3 is applicable in Mode 3 with RCS temperature ≤ 350 °F and in Mode 4. ANO-1 TS 3.5.3 requires two independent (and redundant) ECCS trains to be operable to ensure that sufficient ECCS flow is available to the core following a design-basis accident.

2.1.3 TS 5.5.15, "Safety Function Determination Program (SFDP)"

ANO-1 TS 5.5.15 establishes the SFDP, which implements the requirements of LCO 3.0.6. The SFDP ensures that loss of safety function is detected and that appropriate actions are taken. Upon entry into LCO 3.0.6, an evaluation shall be made to determine if loss of safety function exists. Additionally, other appropriate limitations and remedial or compensatory actions may be identified to be taken as a result of the support system inoperability and corresponding exception to entering a supported system condition and required actions.

2.2 Proposed Changes to the ANO-1 TSs

The proposed changes would revise ANO-1 TS 3.5.2, "ECCS – Operating"; TS 3.5.3, "ECCS – Shutdown"; and TS 5.5.15, "Safety Function Determination Program (SFDP)." The proposed changes would also add a new TS 3.6.7, "Reactor Building Sump," to Section 3.6, "Reactor Building Systems." The proposed changes are described below.

2.2.1 Proposed Changes to ANO-1 TS 3.5.2, "ECCS – Operating"

ANO-1 TS 3.5.2 currently contains Surveillance Requirement (SR) 3.5.2.5, which requires the following at a frequency in accordance with the Surveillance Frequency Control Program:

Verify, by visual inspection, each ECCS train reactor building sump suction inlet is not restricted by debris and screens show no evidence of structural distress or abnormal corrosion.

The licensee proposed to modify and relocate SR 3.5.2.5 from ANO-1 TS 3.5.2 to the new reactor building sump TS. Section 2.2.4 of this SE discusses the proposed addition of the new reactor building sump TS.

This change is evaluated in Section 3.1 of this SE.

2.2.2 Proposed Changes to ANO-1 TS 3.5.3, "ECCS – Shutdown"

ANO-1 TS 3.5.3 currently contains SR 3.5.3.1, which refers to applicable SRs under TS 3.5.2. One of those referenced SRs is SR 3.5.2.5, as described in Section 2.2.1 of this SE.

Because the licensee proposed to modify and relocate SR 3.5.2.5 from TS 3.5.2 to the new reactor building sump TS, the licensee also proposed to delete the reference to SR 3.5.2.5 in SR 3.5.3.1. In addition, the licensee proposed to delete the punctuation in the list of SRs in SR 3.5.3.1.

This change is evaluated in Section 3.2 of this SE.

2.2.3 Proposed Changes to ANO-1 TS 5.5.15, "Safety Function Determination Program (SFDP)"

The licensee proposed to add the following sentence at the end of TS 5.5.15:

When a loss of safety function is caused by the inoperability of a single Technical Specification support system, the appropriate Conditions and Required Actions to enter are those of the support system.

This change is evaluated in Section 3.3 of this SE.

2.2.4 Proposed Addition of a New Reactor Building Sump TS

The licensee proposed to add new TS 3.6.7, which requires the reactor building sump to be operable during Modes 1, 2, 3, and 4. Condition A specifies that if the reactor building sump is inoperable due to reactor-building-accident-generated and transported debris exceeding the analyzed limits, then the licensee is required to: (1) initiate action to mitigate the reactor building accident generated and transported debris immediately, (2) perform SR 3.4.13.1 once per 24 hours, and (3) restore the reactor building sump to OPERABLE status within 90 days (Required Actions A.1, A.2, and A.3, respectively). SR 3.4.13.1 requires verification that the RCS operational leakage is within limits by performance of an RCS water inventory balance in accordance with the Surveillance Frequency Control Program.

TS 3.6.7, Condition B, specifies that if the reactor building sump is inoperable for reasons other than Condition A, then the licensee is required to restore the reactor building sump to operable status within 72 hours (Required Action B.1). Required Action B.1 is modified by two notes, which direct (1) entering the applicable conditions and required actions of LCO 3.5.2 and LCO 3.5.3 for ECCS trains made inoperable by the reactor building sump and (2) entering the applicable conditions and required actions of LCO 3.6.5, "Reactor Building Spray and Cooling Systems," for reactor building spray (RBS) trains made inoperable by the reactor building sump.

TS 3.6.7, Condition C, specifies that if required actions and associated CTs under Conditions A and B are not met, then the licensee is required to be in Mode 3 in 6 hours and Mode 5 in 36 hours (Required Actions C.1 and C.2, respectively).

As discussed in Section 2.2.1 of this SE, the licensee proposed to modify and relocate SR 3.5.2.5, currently located in TS 3.5.2. The new SR 3.6.7.1 requires the licensee to "[v]erify, by visual inspection, the reactor building sump does not show structural damage, abnormal corrosion, or debris blockage" "in accordance with the Surveillance Frequency Control Program."

This change is evaluated in Section 3.4 of this SE.

2.2.5 Variations from TSTF-567, Revision 1

The licensee proposed the following variations from the TS changes described in TSTF-567, Revision 1, or the applicable parts of the NRC staff's SE of TSTF-567. The licensee stated that these variations do not affect the applicability of TSTF-567 or the NRC staff's SE to the proposed LAR.

TSTF-567, Revision 1, denotes the new reactor building sump TS as TS 3.6.8 in NUREG-1430, "Standard Technical Specifications Babcock and Wilcox Plants," Revision 4, Volume 1, dated April 2012 (ADAMS Accession No. ML12100A177). However, the licensee proposed to denote this new TS as TS 3.6.7, as it's the next sequential number in the ANO-1 TSs. ANO-1 TS 3.6.7 is equivalent to the requirements in TS 3.6.8 in NUREG-1430. TSTF-567, Revision 1 relocates SR 3.5.2.9 in NUREG-1430 from TS 3.5.2. In the ANO-1 TSs, the SR number differs (SR 3.5.2.5); however, this requirement itself is equivalent to the Improved Standard Technical Specifications version in NUREG-1430. In addition, the licensee proposes to remove punctuation from the list of SRs in ANO-1 SR 3.5.3.1 to be more consistent with NUREG-1430. Lastly, the licensee proposes to use "reactor building" in lieu of "containment building," which is consistent with the terminology used in the ANO-1 TSs.

2.3 Applicable Regulatory Requirements and Guidance

2.3.1 Regulatory Requirements

Under 10 CFR 50.92(a), determinations on whether to grant an applied-for license amendment are to be guided by the considerations that govern the issuance of initial licenses or construction permits to the extent applicable and appropriate. Both the common standards for licenses and construction permits in 10 CFR 50.40(a), and those specifically for issuance of operating licenses in 10 CFR 50.57(a)(3), provide that there must be "reasonable assurance" that the activities at issue will not endanger the health and safety of the public.

The regulations at 10 CFR 50.36(a)(1) require each applicant for a license authorizing operation of a utilization facility to include proposed TSs in the application. Paragraph 50.36(a)(1) of 10 CFR also states, in part, that "A summary statement of the bases or reasons for such specifications, other than those covering administrative controls, shall also be included in the application, but shall not become part of the technical specifications."

The regulations at 10 CFR 50.36(b) require:

Each license authorizing operation of a ... utilization facility ... will include technical specifications. The technical specifications will be derived from the analyses and evaluation included in the safety analysis report, and amendments thereto, submitted pursuant to [10 CFR] 50.34 ["Contents of applications; technical information"]. The Commission may include such additional technical specifications as the Commission finds appropriate.

The categories of items required to be in the TSs are provided in 10 CFR 50.36(c). As required by 10 CFR 50.36(c)(2), the TSs will include LCOs, which are "the lowest functional capability or performance levels of equipment required for safe operation of the facility." The regulation in 10 CFR 50.36(c)(2)(i) requires that "When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met."

The regulation at 10 CFR 50.36(c)(3) requires TSs to include SRs, which are "requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

The regulation at 10 CFR 50.36(c)(5) requires TSs to include administrative controls, which "are the provisions relating to organization and management, procedures, recordkeeping, review and audit, and reporting necessary to assure operation of the facility in a safe manner."

2.3.2 Regulatory Guidance

The guidance that the NRC staff considered in its review of this LAR includes the following:

- NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR [Light-Water Reactor] Edition," Chapter 16.0, Section 16, Revision 3, "Technical Specifications," dated March 2010 (ADAMS Accession No. ML100351425), provides guidance on review of TSs.
- NUREG-1430, Revision 4, Volume 1, "Specifications," and Volume 2, "Bases," dated April 2012 (ADAMS Accession Nos. ML12100A177 and ML12100A178, respectively).

3.0 TECHNICAL EVALUATION

3.1 Proposed Changes to ANO-1 TS 3.5.2

The licensee proposed to modify and relocate SR 3.5.2.5 from TS 3.5.2 to the new reactor building sump TS. Therefore, the licensee proposed deletion of SR 3.5.2.5.

The current SR 3.5.2.5 limits the visual inspection to the suction inlet and screens. The new SR 3.6.7.1 requires inspection of the entire reactor building sump system. The reactor building sump system consists of the reactor building drainage flow paths, any design features upstream of the reactor building sump that are credited in the reactor building debris analysis, the reactor building sump strainers (or screens), and the inlet to the ECCS and RBS piping.

Since the existing requirements are either unchanged or expanded and continue to ensure the reactor building sump is unrestricted (i.e., unobstructed) and stays in proper operating condition, the NRC staff concludes that the proposed change is acceptable. The proposed change meets the requirements of 10 CFR 50.36(c)(3) because it provides an SR to assure the necessary quality of systems and components are maintained, that facility operation will be within safety limits, and that the LCOs will be met.

3.2 Proposed Changes to ANO-1 TS 3.5.3

The licensee proposed to delete the reference to SR 3.5.2.5 in SR 3.5.3.1. In addition, the licensee proposed to delete the punctuation in the list of SRs in SR 3.5.3.1.

As discussed in Section 3.1 of this SE, the existing SR on the reactor building sump (SR 3.5.2.5) is augmented, by requiring inspection of additional sump components, and relocated to the new specification, TS 3.6.7. In addition, the duplicative requirement to perform the SR in TS 3.5.3 is removed. The new TS 3.6.7 retains or expands the existing requirements on the reactor building sump and the actions to be taken when the reactor building sump is inoperable, with the exception of adding new actions to be taken when the reactor building sump is inoperable due to reactor building 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. As a result, the NRC staff concludes the proposed change is acceptable since SR 3.5.2.5 was modified and relocated to the new reactor building

sump TS. The proposed change meets the requirements of 10 CFR 50.36(c)(3) because it provides SRs to assure the necessary quality of systems and components are maintained, that facility operation will be within safety limits, and that the LCOs will be met.

3.3 Proposed Changes to TS 5.5.15

ANO-1 LCO 3.0.6 states:

When a supported system LCO is not met solely due to a support system LCO not being met, the Conditions and Required Actions associated with this supported system are not required to be entered. Only the support system LCO ACTIONS are required to be entered. This is an exception to LCO 3.0.2 for the supported system. In this event, an evaluation shall be performed in accordance with Specification 5.5.15, "Safety Function Determination Program (SFDP)." If a loss of safety function is determined to exist by this program, the appropriate Conditions and Required Actions of the LCO in which the loss of safety function exists are required to be entered.

When a support system's Required Action directs a supported system to be declared inoperable or directs entry into Conditions and Required Actions for a supported system, the applicable Conditions and Required Actions shall be entered in accordance with LCO 3.0.2.

When a loss of safety function is determined to exist, the SFDP requires entry into the appropriate conditions and required actions of the LCO in which the loss of safety function exists. When a loss of function is solely due to a single TS support system, the appropriate LCO is the LCO for that support system. When the loss of function is the result of multiple support systems, the appropriate LCO is the LCO for the supported systems.

The licensee proposed to add the following sentence to ANO-1 TS 5.5.15:

When a loss of safety function is caused by the inoperability of a single Technical Specification support system, the appropriate Conditions and Required Actions to enter are those of the support system.

The NRC staff finds that the proposed addition to TS 5.5.15 clarifies the intent of the allowance (not to enter the conditions and required actions) provided by LCO 3.0.6 and the SFDP for single-train support systems. The NRC staff concludes that the proposed change is acceptable since the actions for the support system LCO adequately address the inoperability of that system. Therefore, as required by 10 CFR 50.36(c)(5), the proposed change continues to provide adequate administrative controls to assure safe operation.

3.4 Proposed Addition of Reactor Building Sump TS

3.4.1 Evaluation of the New TS 3.6.7

The licensee proposed to add a new TS to address operability requirements of the reactor building sump. The numbering for this new ANO-1 TS is TS 3.6.7.

The reactor building sump supports the post-accident operation of the ECCS and RBS. However, only the current ECCS TSs contain SRs related to the reactor building sump, and the

TSs do not specify required actions that specifically address an inoperable reactor building sump. If the reactor building sump was found to be inoperable, as an ECCS and RBS support system, those respective LCOs would not be met. In order to address concerns related to reactor building sump operability due to debris accumulation described in GSI-191, "Assessment of Debris Accumulation on Pressurized-Water Reactor Sump Performance," the licensee proposed to add a new specification to address reactor building sump inoperability and create a condition for when the sump is inoperable due to analyzed reactor building accident generated and transported debris.

Based on the below evaluation, the NRC staff determined that the proposed TS 3.6.7 satisfies the requirements of 10 CFR 50.36(c)(2) because the LCO specifies the lowest functional capability or performance levels of equipment required for safe operation of the facility. There is reasonable assurance that the required actions to be taken when the LCO is not met can be conducted without endangering the health and safety of the public.

3.4.2 Evaluation of the Applicability

The new ANO-1 TS 3.6.7 requires the reactor building sump to be operable during Modes 1, 2, 3, and 4. The ECCS and RBS TS currently in the ANO-1 TSs are applicable during Modes 1, 2, 3, and 4.

The NRC staff finds the proposed applicability is acceptable because the applicability is consistent with the applicability of the ECCS and RBS TS, which are the reactor building sump supported systems.

3.4.3 Evaluation of Condition A

The licensee has analyzed the susceptibility of the ECCS and RBS to the adverse effects of post-accident debris blockage and operation with debris-laden fluids. The licensee has established limits on the allowable quantities of reactor building accident generated debris that could be transported to the reactor building sump based on its current plant configuration. In the current TSs, if unanalyzed debris sources are discovered inside the reactor building, if errors are discovered in debris-related analyses, or if a previously unevaluated phenomenon that can affect the reactor building sump performance is discovered, the reactor building sump, and the supported ECCS and RBS, may be inoperable and the TSs would require a plant shutdown with no time provided to evaluate the condition.

In order to address this situation and to provide sufficient time to evaluate the condition, the licensee proposed Condition A, which is applicable when the reactor building sump is inoperable due to reactor building accident generated and transported debris exceeding the analyzed limits. Under Condition A, the operability of the reactor building sump with respect to debris is based on a quantity of debris evaluated and determined to be acceptable by the licensee. Conditions not evaluated under Condition A (reactor building accident generated and transported debris) and that affect the quantity of analyzed debris will be evaluated using a deterministic process.

Condition A, Required Action A.1, mandates immediate action to be initiated to mitigate the condition. By letter dated December 19, 2018, the licensee provided proposed changes to the

TS Bases. The licensee's proposed TS Bases for Required Action A.1 provided the following examples of mitigating actions:

- Removing the debris source from reactor building or preventing the debris from being transported to the reactor building sump;
- 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, such as reactor building coolers;
- Briefing operators on LOCA debris management actions; or
- Applying an alternative method to establish new limits.

The NRC staff finds that the proposed Required Action A.1 and its CT are acceptable because they place urgency on the initiation of the appropriate actions that could mitigate or reduce the impact of the identified conditions.

Concurrently, Required Action A.2 requires performance of SR 3.4.13.1, the RCS water inventory balance, 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 reactor building sump.

The NRC staff finds the proposed Required Action A.2 and its CT are acceptable because the more frequent monitoring allows operators to act in a timely fashion to minimize the potential for an RCS pipe break while the reactor building sump is inoperable.

In addition, Required Action A.3 requires the inoperable reactor building sump to be restored to operable status in 90 days.

The NRC staff finds that the proposed Required Action A.3 and its CT are acceptable because they provide a reasonable amount of time to diagnose, plan, and possibly reduce the severity of, or mitigate the unanalyzed debris condition and prevent a loss of ECCS and RBS safety function. In addition, 90 days is adequate given the conservatism in the reactor building debris analysis and the proposed compensatory actions required to be implemented immediately by Required Action A.1. Also, as discussed later in this SE section, the new SR will require visual inspection of the reactor building sump system (including the reactor building drainage flow paths, any design features upstream of the reactor building sump that are credited in the reactor building debris analysis, the reactor building sump strainers, and the inlet to the ECCS and RBS piping) for evidence of structural degradation, potential for debris bypass, and presence of corrosion or debris blockage to ensure no loose debris is present and there is no evidence of structural distress or abnormal corrosion.

3.4.4 Evaluation of Condition B

Condition B specifies the required actions for when the reactor building sump is inoperable for reasons other than reactor building accident generated and transported debris exceeding the analyzed limits (Condition A).

Required Action B.1 requires restoring the reactor building sump to operable status within 72 hours and is modified by two notes. These two notes direct entry into the conditions and required actions for the supported systems (ECCS and RBS) upon entering Required Action B.1. Since Required Action B.1 directs entry to the corresponding ECCS and RBS TSs, these notes retain the existing TS actions for ECCS or RBS trains made inoperable by an inoperable reactor building sump for reasons other than reactor building accident generated and transported debris exceeding the analyzed limits.

The NRC staff finds that the proposed change is acceptable since it continues to provide remedial actions for when the reactor building sump is inoperable for reasons other than Condition A and ensures safe operation of the plant. In addition, the proposed CT is acceptable since it provides a reasonable time for repairs, and there is a low probability of an accident occurring during this period that would require the use of the reactor building sump.

3.4.5 Evaluation of Condition C

If operators are unable to restore the affected reactor building sump to operable status under Condition A or B, Required Action C.1 requires the unit to be in Mode 3 in 6 hours followed by Mode 5 in 36 hours, as required by Required Action C.2.

The NRC staff finds that this proposed condition and its required actions are acceptable because the condition is consistent with the standard TSs and the required action requires the operators to place the unit in a condition in which the LCO no longer applies. In addition, the proposed CTs allow a reasonable amount of time to decrease from full power conditions to the required plant conditions in an orderly manner and without challenging plant systems.

3.4.6 Evaluation of the New SR 3.6.7.1

The licensee proposed a new SR 3.6.7.1 in the new reactor building sump TS. This SR was originally located in ANO-1 TS 3.5.2 and referred to in TS 3.5.3. In the supplement dated June 18, 2019, the licensee proposed the frequency of the new SR to be in accordance with the Surveillance Frequency Control Program.

The proposed SR requires verification, by visual inspection, that the reactor building sump does not show structural damage, abnormal corrosion, or debris blockage.

The new SR is stated in generic terms and expands the scope of the required visual inspection to include the entire reactor building sump system. The entire reactor building sump system consists of the reactor building drainage flow paths, the reactor building sump strainers (or screens), and the inlet to the ECCS and RBS piping.

The NRC staff finds that the proposed new SR is acceptable because it expands the scope of inspection of the original SR. In addition, the proposed frequency is acceptable because it is the same frequency that is currently required by the TSs in SR 3.5.2.5. Therefore, the NRC

staff finds that, as required by 10 CFR 50.36(c)(3), the necessary quality of systems will be maintained in accordance with the associated LCOs.

3.4.7 Conclusion Regarding Proposed Reactor Building Sump TS

The new reactor building sump TS retains and expands the existing TS requirements with the exception of the addition of Condition A. Condition A provides a condition for an inoperable reactor building sump due to reactor building accident generated and transported debris exceeding the analyzed limits.

The NRC staff reviewed the proposed changes against the regulations and concludes that the changes continue to meet the requirements of 10 CFR 50.36 for the reasons discussed above, and thus, provide reasonable assurance that adoption of this TS will have the requisite requirements and controls to operate safely. Therefore, the NRC staff concludes that the proposed TS changes are acceptable.

3.5 Variations

As discussed in Section 2.2.5 of this SE, the licensee proposed several variations to TSTF-567, Revision 1, related to the use of different numbering, titles, and nomenclature. For example, the licensee proposed to denote the new TS as TS 3.6.7 and use the term "reactor building" in lieu of "containment building," which are consistent with the ANO-1 TSs. The NRC staff reviewed these licensee's variations to TSTF-567 and finds them acceptable as the differences do not affect the applicability of traveler TSTF-567 to the ANO-1 TSs.

3.6 Technical Evaluation Conclusion

As required by 10 CFR 50.36(c)(2), the LCOs specify "the lowest functional capability or performance levels of equipment required for safe operation of the facility." The proposed changes to the SRs assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the LCOs will be met, and satisfy 10 CFR 50.36(c)(3). In addition, the proposed changes to the administrative controls include provisions to assure safe operation of the facility as required by 10 CFR 50.36(c)(5). Thus, the NRC staff concludes that the proposed TS changes meet the standards for TSs in 10 CFR 50.36 and are acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Arkansas State official was notified of the proposed issuance of the amendment on August 13, 2019. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration published in the *Federal Register* on February 26, 2019 (84 FR 6179) and there has been no public comment on such

finding. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) there is reasonable assurance that 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.

Principal Contributor: A. Russell, NRR

Date: September 27, 2019

SUBJECT: ARKANSAS NUCLEAR ONE, UNIT 1 - ISSUANCE OF AMENDMENT NO. 266
RE: ADOPTION OF TECHNICAL SPECIFICATIONS TASK FORCE (TSTF)
TRAVELER TSTF-567, REVISION 1, "ADD CONTAINMENT SUMP TS TO
ADDRESS GSI [GENERIC SAFETY ISSUE]-191 ISSUES"
(EPID L-2018-LLA-0572) DATED SEPTEMBER 27, 2019

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