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

April 14, 2021

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 2 - ISSUANCE OF AMENDMENT NO. 324 RE: ADOPTION OF TECHNICAL SPECIFICATIONS TASK FORCE TRAVELER, TSTF-569, REVISION 2, "REVISE RESPONSE TIME TESTING DEFINITION" (EPID L-2020-LLA-0213)

Dear Sir or Madam:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 324 to Renewed Facility Operating License No. NPF-6 for Arkansas Nuclear One, Unit 2 (ANO-2). The amendment consists of changes to the Technical Specifications (TSs) in response to your application dated September 24, 2020.

The amendment revises the ANO-2 TSs to adopt Technical Specifications Task Force (TSTF) traveler TSTF-569, Revision 2, ''Revise Response Time Testing Definition.''

A copy of the related Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's monthly *Federal Register* notice.

Sincerely,

/RA/

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

Docket No. 50-368

Enclosures:
1. Amendment No. 324 to NPF-6
2. Safety Evaluation

cc: Listserv

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

ENTERGY OPERATIONS, INC.

DOCKET NO. 50-368

ARKANSAS NUCLEAR ONE, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 324
Renewed License No. NPF-6

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Entergy Operations, Inc. (the licensee), dated September 24, 2020, 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. NPF-6 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 324, are hereby incorporated in the renewed license. The licensee 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

Jennifer L. Dixon-Herrity

Digitally signed by Jennifer L. Dixon-Herrity
Date: 2021.04.14 15:40:08 -04'00'

Jennifer L. Dixon-Herrity, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to Renewed Facility
Operating License No. NPF-6 and the
Technical Specifications

Date of Issuance: April 14, 2021

ATTACHMENT TO LICENSE AMENDMENT NO. 324

RENEWED FACILITY OPERATING LICENSE NO. NPF-6

ARKANSAS NUCLEAR ONE, UNIT 2

DOCKET NO. 50-368

Replace the following pages of Renewed Facility Operating License No. NPF-6 and the 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	INSERT
-3-	-3-

Technical Specifications

REMOVE	INSERT
1-5	1-5
1-6	1-6

(4) EOI, pursuant to the Act and 10 CFR Parts 30, 40 and 70 to receive, possess and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

(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 or instrument calibration or associated with radioactive apparatus or components; and

(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 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; and 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 3026 megawatts thermal. Prior to attaining this power level EOI shall comply with the conditions in Paragraph 2.C.(3).

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 324, are hereby incorporated in the renewed license. The licensee shall operate the facility in accordance with the Technical Specifications.

Exemptive 2nd paragraph of 2.C.2 deleted per Amendment 20, 3/3/81.

(3) Additional Conditions

The matters specified in the following conditions shall be completed to the satisfaction of the Commission within the stated time periods following issuance of the renewed license or within the operational restrictions indicated. The removal of these conditions shall be made by an amendment to the renewed license supported by a favorable evaluation by the Commission.

2.C.(3)(a) Deleted per Amendment 24, 6/19/81.

AXIAL SHAPE INDEX

1.22 The AXIAL SHAPE INDEX shall be the power generated in the lower half of the core less the power generated in the upper half of the core divided by the sum of these powers.

REACTOR TRIP SYSTEM RESPONSE TIME

1.23 The REACTOR TRIP SYSTEM RESPONSE TIME shall be the time interval from when the monitored parameter exceeds its trip setpoint at the channel sensor until electrical power is interrupted to the CEA drive mechanism. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC, or the components have been evaluated in accordance with an NRC approved methodology.

ENGINEERED SAFETY FEATURE RESPONSE TIME

1.24 The ENGINEERED SAFETY FEATURE RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ESF actuation setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC, or the components have been evaluated in accordance with an NRC approved methodology.

PHYSICS TESTS

1.25 PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation and 1) described in Chapter 14.0 of the FSAR, 2) authorized under the provisions of 10 CFR 50.59, or 3) otherwise approved by the Commission.

SOFTWARE

1.26 The digital computer SOFTWARE for the reactor protection system shall be the program codes including their associated data, documentation and procedures.

PLANAR RADIAL PEAKING FACTOR F_{xy}

1.27 The PLANAR RADIAL PEAKING FACTOR is the ratio of the peak to plane average power density of the individual fuel rods in a given horizontal plane, excluding the effects of azimuthal tilt.

LIQUID RADWASTE TREATMENT SYSTEM

1.28 A LIQUID RADWASTE TREATMENT SYSTEM is a system designed and installed to reduce radioactive liquid effluents from the unit. This is accomplished by providing for holdup, filtration, and/or demineralization of radioactive liquid effluents prior to their release to the environment.

MEMBER(S) OF THE PUBLIC

1.29 MEMBER(S) OF THE PUBLIC shall include all persons who are not occupationally associated with the plant. This category does not include employees of the utility, its contractors or vendors. Also excluded from this category are persons who enter the site to service equipment or to make deliveries. This category does include persons who use portions of the site for recreational, occupational or other purposes not associated with the plant.

PURGE – PURGING

1.30 PURGE or PURGING is the controlled process of discharging air or gas from a confinement to reduce airborne radioactive concentrations in such a manner that replacement air or gas is required to purify the confinement.

EXCLUSION AREA

1.31 The EXCLUSION AREA is that area surrounding ANO within a minimum radius of .65 miles of the reactor buildings and controlled to the extent necessary by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials.

UNRESTRICTED AREA

1.32 An UNRESTRICTED AREA shall be any area at or beyond the exclusion area boundary.

CORE OPERATING LIMITS REPORT

1.33 The CORE OPERATING LIMITS REPORT is the ANO-2 specific document that provides core operating limits for the current operating reload cycle. These cycle-specific core operating limits shall be determined for each reload cycle in accordance with Technical Specification 6.6.5. Plant operation within these operating limits is addressed in individual specifications.

INSERVICE TESTING PROGRAM

1.34 The INSERVICE TESTING PROGRAM is the licensee program that fulfills the requirements of 10 CFR 50.55a(f).

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 324 TO

RENEWED FACILITY OPERATING LICENSE NO. NPF-6

ENTERGY OPERATIONS, INC.

ARKANSAS NUCLEAR ONE, UNIT 2

DOCKET NO. 50-368

1.0 INTRODUCTION

By application dated September 24, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20268B898), Entergy Operations, Inc. (the licensee), requested changes to the technical specifications (TSs) for Arkansas Nuclear One, Unit 2 (ANO-2). The proposed changes would revise TS definitions for engineered safety feature response time and reactor trip system response time that are referenced in surveillance requirements (SRs), hereafter referred to as response time testing (RTT).

The proposed changes are based on Technical Specifications Task Force (TSTF) traveler TSTF-569, Revision 2, "Revise Response Time Testing Definition," dated June 25, 2019 (ADAMS Accession No. ML19176A034). The U.S. Nuclear Regulatory Commission (NRC or the Commission) issued a final safety evaluation approving TSTF-569, Revision 2, on August 14, 2019 (ADAMS Accession No. ML19176A191). The description of the generic changes and their justification are contained in these two documents.

2.0 REGULATORY EVALUATION

2.1 Description of Response Time Testing

The reactor trip system initiates a unit shutdown, based on the values of selected unit parameters, to protect against violating the core fuel design limits and the reactor coolant system pressure boundary during anticipated operational occurrences and to assist the engineered safety feature actuation systems (ESFAS) in mitigating accidents. The ESFAS initiates necessary safety systems, based on the values of selected unit parameters, to protect against violating core design limits and the reactor coolant system pressure boundary, and to mitigate accidents.

The RTT verifies that the individual channel or train actuation response times are less than or equal to the maximum values assumed in the accident analyses. The RTT acceptance criteria are under licensee control. Individual component response times are not modeled in the

accident analyses. The analyses model the overall or total elapsed time, from the point at which the parameter exceeds the trip setpoint value at the sensor to the point at which the equipment reaches the required functional state (e.g., control and shutdown rods fully inserted in the reactor core).

2.2 Proposed Changes to the Technical Specifications

ANO-2 Limiting Condition for Operation (LCO) 3.3.1.1 requires the instrumentation for each Functional Unit in TS Table 3.3-1, "Reactor Protective Instrumentation," to be OPERABLE, and SR 4.3.1.1.3 requires the licensee to verify that REACTOR TRIP SYSTEM RESPONSE TIMES are within limits for each reactor trip function. Similarly, ANO-2 LCO 3.3.2.1 requires the ESFAS instrumentation for each Functional Unit in TS Table 3.3-3, "Engineered Safety Feature Actuation System Instrumentation," to be OPERABLE. To assure the LCO is met, SR 4.3.2.1.3 requires the licensee to verify that ENGINEERED SAFETY FEATURE RESPONSE TIMES are within limits for each ESFAS function. Sections 1.23 and 1.24 of the TSs define "REACTOR TRIP SYSTEM RESPONSE TIME," and "ENGINEERED SAFETY FEATURE RESPONSE TIME," respectively. The definitions state acceptable means to measure each response time and provide an alternative that may be used "[i]n lieu of measurement."

In the application, the licensee stated that it requests adoption of NRC-approved TSTF-569. The only revision of TSTF-569 that is NRC-approved is Revision 2. As described in Section 1, "Summary Description," of Revision 2 of TSTF-569:

> The proposed change revises the definitions to eliminate the requirement for prior NRC review and approval of the response time verification of similar components, while retaining the requirement for the verification to be performed using the methodology contained in Attachment 1, titled, "Methodology to Eliminate Pressure Sensor and Protection Channel (for Westinghouse Plants only) Response Time Testing." The proposed change will permit licensees to verify the response time of similar component types using the methodology contained in Attachment 1, without obtaining prior NRC approval for each component.

The application stated that the licensee concluded that the justifications presented in TSTF-569 and the safety evaluation prepared by the NRC staff are applicable to ANO-2 and provide the justification for the amendment request. The application identified the requested variations from the TS changes described in TSTF-569 or the applicable parts of the NRC staff's safety evaluation (e.g., definition titles and wording and minor administrative differences).

2.3 Applicable Regulatory Requirements and Guidance

Under Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.90, "Application for amendment of license, construction permit, or early site permit," whenever a holder of a license wishes to amend the license, including TSs in the license, an application for amendment must be filed, fully describing the changes desired. 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 to the extent applicable and appropriate. Both the common standards for licenses 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, and that the applicant will comply with the Commission's regulations.

The licensee's request involves adding an option used to satisfy SRs. As described in 10 CFR 50.36(c),

> Surveillance requirements 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.

3.0 TECHNICAL EVALUATION

The NRC staff reviewed the request by comparing the licensee's proposal against the changes described in TSTF-569, Revision 2. In particular, the NRC staff assessed whether or how the variations identified by the licensee affect the applicability of NRC-approved TSTF-569. To make this assessment, the NRC staff compared ANO-2's design and existing TSs with the design and TSs presumed in TSTF-569. As explained below, the NRC staff concluded that the design and license (including TSs) were sufficient to justify the licensee's reliance on the NRC staff's safety evaluation of TSTF-569 as justification for adopting TSTF-569 in the ANO-2 license.

TSTF-569 is designed to make changes to NUREG-1432, Revision 4.0, "Standard Technical Specifications, Combustion Engineering Plants," April 2012, Volume 1, "Specifications" (ADAMS Accession No. ML12102A165), and Volume 2, "Bases" (ADAMS Accession No. ML12102A169). The TSs for ANO-2 are based on the NUREG-0212, Revision 0, of the Combustion Engineering Plant standard TSs (issued March 1977). The NRC staff compared the TSs assumed in TSTF-569 with the current TSs for ANO-2. The NRC staff did not identify any material differences in the relevant TSs.

The TSTF-569 traveler is written for a plant design based on the General Design Criteria (GDC) in Appendix A to 10 CFR Part 50 that establish minimum requirements for the principal design criteria for water-cooled nuclear power plants similar in design and location to plants for which construction permits have been issued by the Commission. However, as stated in ANO-2 Safety Analysis Report (SAR) Section 3.1 (ADAMS Accession No. ML20294A315), ANO-2 was designed to comply with the "Proposed General Design Criteria for Nuclear Power Plant Construction Permits," published by the Atomic Energy Commission in the *Federal Register* (FR) on July 11, 1967 (32 FR 10213) (i.e., prior to the GDC being published in Appendix A to 10 CFR Part 50). Sections 3.1.1 through 3.1.6 of the ANO-2 SAR provide a comparison with the Atomic Energy Commission GDC published as Appendix A to 10 CFR Part 50 in 1971. The NRC staff compared the design assumptions used in the evaluation of TSTF-569 with the design of ANO-2. The NRC staff did not identify anything unique in the design of ANO-2 that would preclude the licensee's reliance on the NRC staff's evaluation of TSTF-569.

For the reasons stated in the NRC staff's safety evaluation for TSTF-569, the staff found that the methodology contained in TSTF-569, Revision 2, Attachment 1, provides a consistent, clear, and concise framework for determining that replacement components will operate at a level equivalent to that of the components being replaced. As such, using that methodology will assure that the necessary quality of the components is maintained and that the LCOs will be met. Accordingly, approving the incorporation of that methodology into the licensing basis, and amending the TSs to allow usage of the approved methodology, coupled with approving the

aspect of the license *amendment* request to use the methodology in the TSTF-569, Revision 2, Attachment 1 methodology, results in TSs that meet 10 CFR 50.36(c)(3) by assuring that performing SRs 4.3.1.1.3 and 4.3.2.1.3 will assure that associated aspects of LCOs 3.3.1.1 and 3.3.2.1 will be met.

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 March 23, 2021. 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 SRs. 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 December 1, 2020 (85 FR 77274), 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: K. West

Date: April 14, 2021

SUBJECT: ARKANSAS NUCLEAR ONE, UNIT 2 - ISSUANCE OF AMENDMENT NO. 324 RE: ADOPTION OF TECHNICAL SPECIFICATIONS TASK FORCE TRAVELER, TSTF-569, REVISION 2, "REVISE RESPONSE TIME TESTING DEFINITION" (EPID L-2020-LLA-0213) DATED APRIL 14, 2021

DISTRIBUTION:
PUBLIC
PM File Copy
RidsACRS_MailCTR Resource
RidsNrrDorlLpl4 Resource
RidsNrrDssStsb Resource
RidsNrrLAPBlechman Resource
RidsNrrPMANO Resource
RidsRgn4MailCenter Resource
KWest, NRR

ADAMS Accession No. ML21088A433 ***by e-mail**

OFFICE	NRR/DORL/LPL4/PM	NRR/DORL/LPL4/LA*	NRR/DSS/STSB/BC*
NAME	TWengert	PBlechman	VCusumano
DATE	4/9/2021	3/30/2021	3/26/2021
OFFICE	NRR/DORL/LPL4/BC*	NRR/DORL/LPL4/PM	
NAME	JDixon-Herrity	TWengert	
DATE	04/14/2021	04/14/2021	

OFFICIAL RECORD COPY