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

April 13, 2018

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 – REQUEST FOR ADDITIONAL INFORMATION REGARDING LICENSE AMENDMENT REQUEST TO REVISE TECHNICAL SPECIFICATION BASES 3.7.5, "EMERGENCY FEEDWATER (EFW) SYSTEM" (EPID L-2017-LLA-0349)

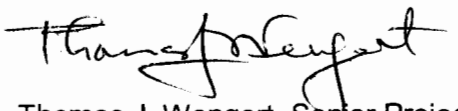
Dear Sir or Madam:

By letter dated October 2, 2017, Entergy Operations, Inc. (Entergy) submitted a license amendment request to revise Technical Specification (TS) Bases 3.7.5, "Emergency Feedwater (EFW) System" for Arkansas Nuclear One, Unit 1 (ANO-1). The proposed change would stipulate the conditions for which the TS 3.7.5, Condition A, 7-day Completion Time should apply to the ANO-1 turbine-driven EFW pump steam supply motor-operated valves.

The U.S. Nuclear Regulatory Commission staff has reviewed Entergy's application and, based upon this review, determined that additional information is needed, as set forth in the enclosure. On April 4, 2017, a draft version of the request for additional information (RAI) was sent to your staff to ensure that the request was understandable, the regulatory basis for the request was clear, and to determine if the requested information had been previously docketed. The Entergy staff subsequently informed me that a clarification call was not required. It was agreed that Entergy would provide a response to this RAI within 30 days of the date of this letter.

If you have any questions, please contact me at (301) 415-4037 or by e-mail at Thomas.Wengert@nrc.gov.

Sincerely,



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

Docket No. 50-313

Enclosure:
RAI

cc: Listserv

REQUEST FOR ADDITIONAL INFORMATION

REGARDING LICENSE AMENDMENT REQUEST TO

REVISE TECHNICAL SPECIFICATION BASES 3.7.5,

EMERGENCY FEEDWATER SYSTEM

ENTERGY OPERATIONS, INC.

ARKANSAS NUCLEAR ONE, UNIT 1

DOCKET NO. 50-313

By letter dated October 2, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17275A910), Entergy Operations, Inc. (the licensee) requested changes to the Technical Specification (TS) Bases for the Arkansas Nuclear One, Unit 1 (ANO-1), TS 3.7.5, "Emergency Feedwater (EFW) System." The proposed change would stipulate the conditions for which the TS 3.7.5, Condition A, 7-day Completion Time should apply to the ANO-1 turbine-driven EFW pump steam supply motor-operated valves (MOVs).

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the submittal and determined that additional information is required in order to complete the review, as indicated below.

Request for Additional Information (RAI) SCPB-1

Regulatory Requirements-1

Title 10 of the *Code of Federal Regulations* (10 CFR) paragraph 50.36(a)(1) states:

> Each applicant for a license authorizing operation of a production or utilization facility shall include in his application proposed technical specifications in accordance with the requirements of this section. 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

Issue-1

While the TS Bases are not part of the TSs, they are provided to explain and clarify the more abbreviated language of the TS limiting condition for operation (LCO).

Page 7 of 14 of the enclosure to the license amendment request (LAR) identifies a former ANO-1 TS Bases statement, added in 1994, that referred to the "redundant" steam supplies, as does NUREG-1430, "Standard Technical Specifications [STSs] — Babcock and Wilcox Plants: Volume 2, Bases" (Revision 4) at B 3.7.5. However, the current version of the LCO section of ANO-1 TS Bases for B 3.7.5 states, in part:

> This requires that the turbine driven EFW pump be OPERABLE with two steam supplies (one from each of the main steam lines upstream of the MSIVs [main steam isolation valves]) and capable of supplying EFW flow to the steam generators.

RAI-1

a. Does the omission of the word "redundant" in the TS Bases indicate a change in the operability requirements for the turbine-driven EFW pump?

b. What are the operability requirements with respect to the direct current (DC) valves in the steam supply lines for the EFW turbine-driven pump to be operable?

RAI SCPB-2

Regulatory Requirements-2

The regulation at 10 CFR 50.36(c)(2)(i) states, in part:

> Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. 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)(2)(ii) states, in part:

> A technical specification limiting condition for operation of a nuclear reactor must be established for each item meeting one or more of the following criteria:
>
> ...
>
> (C) *Criterion 3.* A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

Issue-2

On pages 9 and 10 of the enclosure to the LAR, the licensee provides a table that identifies and assesses the various single failures for the accidents of interest, and the corresponding EFW response. The last line item on page 9 identifies a single failure of motor-driven EFW Pump P-7B and states for all accidents that the EFW function is met by (turbine-driven pump) P-7A via the remaining steam path. However, the NRC staff notes that for a main steamline break (MSLB) accident associated with the steam generator that would supply the remaining steam path, the remaining steam path would not be available.

RAI-2

Please clarify the meaning of "ALL" in the table on page 9 of 14 of the enclosure to the LAR, as it appears that the listed EFW response does not consider a MSLB on the remaining steam path.

RAI SCPB-3

Regulatory Requirements-3

The regulation at 10 CFR 50.36(c)(2)(i) states, in part:

> Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. 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.

"Use of Probabilistic Risk Assessment Methods in Nuclear Activities; Final Policy Statement," published in the *Federal Register* on August 16, 1995 (60 FR 42622), states, in part:

> The use of PRA [probabilistic risk assessment] technology should be increased in all regulatory matters to the extent supported by the state-of-the-art in PRA methods and data and in a manner that complements the NRC's deterministic approach and supports the NRC's traditional defense-in-depth philosophy.

Issue-3

In the LAR, the licensee is requesting NRC approval to revise the TS Bases to state that the 7-day Completion Time of Condition A of TS 3.7.5 is applicable for inoperable DC MOVs, provided a steam supply to the turbine-driven EFW pump is operable. This request is already in alignment with the STSs in NUREG-1430. However, for additional defense-in-depth analysis, the licensee provided a table with the EFW response for accidents when only one steam path is operable for the turbine-driven EFW pump, concurrent with an additional single failure. The analysis, as presented in a table in the LAR, identifies three potential single failures ("Remaining DC-powered steam MOV and/or bypass MOV" and "EFIC [Emergency Feedwater Initiation and Control] Channel A" or "Red Train DC") where manual initiation of EFW would be needed.

RAI-3

Proceduralized manual actions are a means of providing defense-in-depth for component failures. Are the manual actions identified in the LAR table for the above scenarios included in existing procedures and covered in training?

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