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2CAN070801

July 8, 2008

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: Supplement to License Amendment Request
Regarding Technical Specification Changes Associated with
Adoption of TSTF-359
Arkansas Nuclear One, Unit 2
Docket No. 50-368
License No. NPF-6

- REFERENCES:
1. Entergy letter dated October 22, 2007, "License Amendment Request: Technical Specification Changes Regarding Mode Change Limitations and Associated Bases Using the Consolidated Line Item Improvement Process" (2CAN100701) (TAC NO: MD7179)
 2. Entergy letter dated April 22, 2008, "Supplemental to "License Amendment Request: Technical Specification Changes Regarding Mode Change Limitations and Associated Bases Using the Consolidated Line Item Improvement Process" (2CAN040805) (TAC NO: MD7179)

Dear Sir or Madam:

By letter (Reference 1), Entergy Operations, Inc. (Entergy) proposed a change to the Arkansas Nuclear One, Unit 2 (ANO-2) Technical Specifications (TSs) to support adoption of Technical Specification Task Force (TSTF) 359, "Increased Flexibility in Mode Restraints." By follow-up letter (Reference 2), Entergy provided clarifying information with regard to proposed changes to TS 3.4.3, "Pressurizer Safety Valves," and revised TS 3.8.1 by removing the Limiting Condition for Operation (LCO) 3.0.4 exemption related to the 30-day allowed outage time for Startup Transformer #2.

During the final NRC review process of the aforementioned submittals, a question with regard to LCO 3.0.4 applicability was introduced by the NRC's TS Branch. The question involved the differences between the TSTF-359 supporting topical report and the mark-up of TS pages included in TSTF-359 proper. The topical report included a list of high risk

systems for all modes of operation. The TSTF TS mark-up pages did not include any Mode 5 or 6 high risk systems. The industry implementation guidance explained that Mode 5 and 6 high risk systems were not included in the TSTF because these specifications required immediate action to place the plant in a safe condition or exit the mode of applicability if the associated LCO was not met. Therefore, application of LCO 3.0.4.b allowance to enter such a mode of applicability with the LCO not met, provided risk is assessed and managed, would be rendered ineffective.

With respect to this implementation guidance, three ANO-2 Mode 5 or 6 TSs are applicable: 1) TS 3.8.1.2, "Electrical Power Systems – Shutdown, 2) TS 3.9.8.1, "Shutdown Cooling – One Loop," and 3) TS 3.9.8.2, Shutdown Cooling – Two Loops." The TS actions associated with these high risk systems require immediate steps to be taken to place the plant in a safe condition or exit the mode of applicability. However, another ANO-2 Mode 5 or 6 TS associated with Low Temperature Overpressure Protection (LTOP) was listed in the topical report as a high risk system (for the given mode of applicability). This specification does not require immediate action, but instead allows up to 24 hours to restore operability prior to requiring action to exit the mode of applicability.

TSTF-359 was developed to exclude application of LCO 3.0.4.b for any high risk system. Based on the above, it appears this exclusion should be incorporated into ANO-2 TS 3.4.12 for operation in Modes 5 and 6. This is a deviation from the TSTF TS mark-up pages, but is needed to meet the intent of the TSTF and associated NRC Safety Evaluation.

The affected ANO-2 TS page was included in the original submittal (Reference 1), with the following statement added:

"NOTE: Specification 3.0.4.b is not applicable to LTOP relief valves when entering Mode 4."

The note is being modified to state:

"NOTE: Specification 3.0.4.b is not applicable to LTOP relief valves when entering Modes 4, 5, or 6."

A mark-up of the affected page is included in Attachment 1 and a revised page is included in Attachment 2 of this submittal. A mark-up of the associated TS Bases page was included in the original submittal, for information only. Therefore, a revised mark-up page is included in Attachment 3 of this submittal, for information only.

This letter contains no new commitments. The commitments identified in the April 22, 2008 submittal (Reference 2) remain applicable and are unchanged by this letter.

The changes made in by this supplemental letter meets the intent of TSTF-359 and does not affect the original finding of No Significant Hazards Consideration.

If you have any questions or require additional information, please contact Dale James at 479-858-4619.

I declare under penalty of perjury that the foregoing is true and correct. Executed on July 8, 2008.

Sincerely,



TGM/dbb

Attachments:

1. Proposed Technical Specification Change (mark-up)
2. Revised Technical Specification Page
3. Proposed Technical Specification Bases Mark-Up (For Information Only)

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Attachment 1

To

2CAN070801

Proposed Technical Specification Change (mark-up)

REACTOR COOLANT SYSTEM

LOW TEMPERATURE OVERPRESSURE PROTECTION (LTOP) SYSTEM

LIMITING CONDITION FOR OPERATION

- 3.4.12 The LTOP system shall be OPERABLE with each SIT isolated that is pressurized to ≥ 300 psig, and a maximum of one HPSI pump capable of injecting into the RCS and:
- Two LTOP relief valves with a lift setting of ≤ 430 psig, or
 - The Reactor Coolant System depressurized with an RCS vent path ≥ 6.38 square inches.

APPLICABILITY: MODE 4 with $T_C \leq 220^\circ\text{F}$, MODE 5, MODE 6 with reactor vessel head in place.*

ACTION:

NOTE: Specification 3.0.4.b is not applicable to LTOP relief valves when entering Modes 4, 5, or 6.

- With one LTOP relief valve inoperable in MODE 4, restore the inoperable valve to OPERABLE status within 7 days or depressurize and vent the RCS through a ≥ 6.38 square inch vent path within the next 8 hours.
- With one LTOP relief valve inoperable in MODE 5 or 6, restore the inoperable relief valve to OPERABLE status within 24 hours or depressurize and vent the RCS through a ≥ 6.38 square inch vent path within the next 8 hours.
- With both LTOP relief valves inoperable, depressurize and vent the RCS through a ≥ 6.38 square inch vent path within 8 hours.
- With a SIT not isolated and pressurized to ≥ 300 psig, isolate the affected SIT within 1 hour. If the affected SIT is not isolated within 1 hour, either:
 - Depressurize the SIT to < 300 psig within the next 12 hours, or
 - Increase cold leg temperature to $> 220^\circ\text{F}$ within the next 12 hours.
- With more than one HPSI pump capable of injecting into the RCS, immediately initiate action to verify a maximum of one HPSI pump capable of injecting into the RCS.

~~f. The provisions of Specification 3.0.4 are not applicable.~~

* - when starting the first reactor coolant pump, the pressurizer water volume will be $< 910 \text{ ft}^3$.

Attachment 2

To

2CAN070801

Revised Technical Specification Page

REACTOR COOLANT SYSTEM

LOW TEMPERATURE OVERPRESSURE PROTECTION (LTOP) SYSTEM

LIMITING CONDITION FOR OPERATION

- 3.4.12 The LTOP system shall be OPERABLE with each SIT isolated that is pressurized to ≥ 300 psig, and a maximum of one HPSI pump capable of injecting into the RCS and:
- Two LTOP relief valves with a lift setting of ≤ 430 psig, or
 - The Reactor Coolant System depressurized with an RCS vent path ≥ 6.38 square inches.

APPLICABILITY: MODE 4 with $T_C \leq 220^\circ\text{F}$, MODE 5, MODE 6 with reactor vessel head in place.*

ACTION:

NOTE: Specification 3.0.4.b is not applicable to LTOP relief valves when entering Modes 4, 5, or 6.

- With one LTOP relief valve inoperable in MODE 4, restore the inoperable valve to OPERABLE status within 7 days or depressurize and vent the RCS through a ≥ 6.38 square inch vent path within the next 8 hours.
- With one LTOP relief valve inoperable in MODE 5 or 6, restore the inoperable relief valve to OPERABLE status within 24 hours or depressurize and vent the RCS through a ≥ 6.38 square inch vent path within the next 8 hours.
- With both LTOP relief valves inoperable, depressurize and vent the RCS through a ≥ 6.38 square inch vent path within 8 hours.
- With a SIT not isolated and pressurized to ≥ 300 psig, isolate the affected SIT within 1 hour. If the affected SIT is not isolated within 1 hour, either:
 - Depressurize the SIT to < 300 psig within the next 12 hours, or
 - Increase cold leg temperature to $> 220^\circ\text{F}$ within the next 12 hours.
- With more than one HPSI pump capable of injecting into the RCS, immediately initiate action to verify a maximum of one HPSI pump capable of injecting into the RCS.

* - when starting the first reactor coolant pump, the pressurizer water volume will be < 910 ft³.

Attachment 3

To

2CAN070801

**Proposed Technical Specification Bases Mark-Up
(For Information Only)**

REACTOR COOLANT SYSTEM

BASES

3/4.4.12 LOW TEMPERATURE OVERPRESSURE PROTECTION SYSTEM

Low temperature overpressure protection (LTOP) of the RCS, including the reactor vessel, is provided by redundant relief valves on the pressurizer which discharge from a single discharge header. Each relief valve is isolated from the RCS by two motor operated block valves. Each LTOP relief valve is a direct action, spring-loaded relief valve, with orifice area of 6.38 in² and a lift setting of ≤ 430 psig, and is capable of protecting the RCS from overpressurization from the limiting transient. The relief valves will be able to mitigate (1) the starting of the first reactor coolant pump when the pressurizer water volume is < 910 ft³, and when the secondary water temperature of the steam generator is less than or equal to 100°F above the RCS cold leg temperature (energy addition event), or (2) the simultaneous injection of one HPSI pump and all three charging pumps (mass addition event). The action to prevent the capability of injection of more than one HPSI pump into the RCS will typically be accomplished by placing the HPSI pumps in pull-to-lock. The limiting LTOP design basis event is the energy addition event. The analyses assume that the safety injection tanks (SITs) are either isolated or depressurized such that they are unable to challenge the LTOP relief setpoints.

Since neither the LTOP relief valves nor the RCS vent is analyzed for the pressure transient produced from SIT injection, the LCO requires each SIT that is pressurized to ≥ 300 psig to be isolated. The isolated SITs must have their discharge valves closed and the associated MOV power supply breaker in the open position. The individual SITs may be unisolated when pressurized to < 300 psig. The associated instrumentation uncertainty is not included in the 300 psig value and therefore, the procedural value for unisolating the SITs with the LTOPs in service will be reduced.

The LTOP system, in combination with the RCS heatup and cooldown limitations of LCO 3.4.9.1 and restrictions on RCP operation, provides assurance that the reactor vessel non-ductile fracture limits are not exceeded during the design basis event at low RCS temperatures. These non-ductile fracture limits are identified as LTOP pressure-temperature (P-T) limits, which were specifically developed to provide a basis for the LTOP system. These LTOP P-T limits, along with the LTOP enable temperature, were developed using guidance provided in ASME Code Section XI, Division 1, Code Case N-641. This code case allows using an alternate means of determining LTOP P/T condition but limits "the maximum pressure in the vessel to 100% of the pressure" using the K_{1C} approach allowed by the Code Case.

The enable temperature of the LTOP isolation valves is based on any RCS cold leg temperature reaching 220°F (including a 20°F uncertainty). Although each relief valve is capable of mitigating the design basis LTOP event, both LTOP relief valves are required to be OPERABLE below the enable temperature to meet the single failure criterion of NRC Branch Technical Position RSB 5-2, unless any RCS vent path of 6.38 in² (equivalent relief valve orifice area) or larger is maintained.

[A Note prohibits the application of LCO 3.0.4.b to inoperable LTOP relief valves. There is an increased risk associated with entering MODES 4, 5, or 6 with relief valves used for LTOP inoperable and the provisions of LCO 3.0.4.b, which allow entry into a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk assessment addressing inoperable systems and components, should not be applied in this circumstance.](#)