



Entergy Operations, Inc.
1448 S.R. 333
Russellville, AR 72801
Tel 501-858-4888

Craig Anderson
Vice President
Operations ANO

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OCAN060101

U. S. Nuclear Regulatory Commission
Document Control Desk
Mail Station OP1-17
Washington, DC 20555

Subject: Arkansas Nuclear One – Unit 1 and Unit 2
Docket No. 50-313 and 50-368
License No. DPR-51 and NPF-6
Supplement to Amendment Request Concerning Revisions to Unit 1 Technical
Specification (TS) 3.4.1.3 and Unit 2 TS 3.7.1.3; Use of QCST

Gentlemen:

By letters dated January 27, 2000 (OCAN010004) and March 1, 2001 (OCAN030101), Entergy Operations, Inc. (Entergy) proposed a revision to the Arkansas Nuclear One, Unit 1 (ANO-1) Technical Specification (TS) 3.4.1.3 and Unit 2 (ANO-2) 3.7.1.3 related to the qualified condensate storage tank (QCST). Entergy proposed the change based on the design criteria of the QCST, which is to provide the source of emergency feedwater for both units for at least 30 minutes. However, subsequent conversations with the NRC Staff identified that the proposed Limiting Condition for Operation should be revised to reflect a conservative QCST level beyond the 30-minute transfer period. Per telephone communications Entergy agreed to revert to the volume requirements in the existing specifications.

Please find attached revised markups of the proposed changes for the unit specific TS and TS bases. The new volumes are more conservative than those previously requested. Additionally, the design volume originally proposed accounts for the planned power uprate and therefore, the higher volumes agreed upon in this letter are more than adequate to remove the increased decay heat that will be generated by power uprate. The proposed revisions do not affect the no significant hazards consideration previously provided to the NRC.

Entergy Operations requests that the implementation date for this TS change to be within 60 days of approval. Although this request is neither exigent nor emergency, your prompt review is requested. No additional commitments are contained in this letter beyond those provided in OCAN030101 dated March 1, 2001.

Acc

I declare under penalty of perjury that the foregoing is true and correct. Executed on
June 12, 2001.

Very truly yours,

A handwritten signature in black ink, appearing to read "C. G. Anderson", with a long horizontal flourish extending to the right.

C. G. Anderson
Vice President, Operations
Arkansas Nuclear One

CGA/dm
Attachment

cc: Mr. Ellis W. Merschhoff
Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

NRC Senior Resident Inspector
Arkansas Nuclear One
P.O. Box 310
London, AR 72847

Mr. Bill Reckley
NRR Project Manager Region IV/ANO-1
U. S. Nuclear Regulatory Commission
NRR Mail Stop 07-D1
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

Mr. Thomas W. Alexion
NRR Project Manager Region IV/ANO-2
U. S. Nuclear Regulatory Commission
NRR Mail Stop 04-D-03
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

Mr. David D. Snellings
Director, Division of Radiation
Control and Emergency Management
Arkansas Department of Health
4815 West Markham Street
Little Rock, AR 72205

MARKUP OF CURRENT TECHNICAL SPECIFICATIONS AND BASES

3.4 STEAM AND POWER CONVERSION SYSTEM

Applicability

Applies to the turbine cycle components for removal of reactor decay heat.

Objective

To specify minimum conditions of the turbine cycle equipment necessary to assure the capability to remove decay heat from the reactor core.

Specifications

3.4.1 The reactor shall not be heated above 280°F unless the following conditions are met:

1. Capability to remove decay heat by use of two steam generators.
- *2. Fourteen of the steam system safety valves are operable.
3. A minimum of 267,000 gallons of water is available in condensate storage tank, T41B, when required for both units. A minimum of 11.1 feet (107,000 gallons) of water is available in Tank T41B when only required for Unit 1.
4. (Deleted)
5. Both main steam block valves and both main feedwater isolation valves are operable.

3.4.2 Components required to be operable by Specification 3.4.1 shall not be removed from service for more than 24 consecutive hours. If the system is not restored to meet the requirements of Specification 3.4.1 within 24 hours, the reactor shall be placed in the hot shutdown condition within 12 hours. If the requirements of Specification 3.4.1 are not met within an additional 48 hours, the reactor shall be placed in the cold shutdown condition within 24 hours.

3.4.3 Two (2) EFW trains shall be operable as follows:

1. The motor driven EFW pump and its associated flow path shall be operable when the RCS is above CSD conditions and any Steam Generator is relied upon for heat removal.
2. The turbine driven EFW pump and its associated flow path shall be operable when the RCS temperature is $\geq 280^{\circ}\text{F}$.**

* Except that during hydrotests, with the reactor subcritical, fourteen of the steam system safety valves may be gagged and two (one on each header), may be reset for the duration of the test, to allow the required pressure for the test to be attained.

** Except that the surveillance testing of the turbine driven EFW pump shall be performed at the appropriate plant conditions as specified by Surveillance Requirement 4.8.1.

The T41B condensate storage tank is seismically qualified and a portion of the tank is protected from tornado missiles. The protected volume of water in the tank can provide a source of emergency feedwater (EFW) for both units for at least 30 minutes. Thirty minutes is adequate for the operators to manually switch the EFW suction alignment to the service water system (SWS), if required. The SWS provides the assured source of cooling water.

The TS volume requirements for the condensate storage tank are based on the EFW systems of both units being aligned to T41B simultaneously or only Unit 1 being aligned. The minimum TS volume requirements are sufficient to support several hours of cooling flow for both units and provide significant margin over the 30-minute supply of water required to satisfy the licensing basis. The TS volume requirements are therefore conservative. As a result of the conservative volume, instrument uncertainty does not need to be considered in converting the volume requirement to an indicated level.

~~The minimum amount of water in tank T41B would be adequate for about 4.5 hours of operation. This based on the estimate of the average emergency flow to a steam generator being 390 gpm. This operation time with the volume of water specified would not be reached, since the decay heat removal system could be brought into operations within 4 hours or less.~~

~~A portion of tank T41B is protected from tornado missiles. The protected volume is sufficient to provide a thirty minute supply of water. This thirty minute period is sufficient to allow manual operator action, if required, to transfer suction of the emergency feedwater pumps to service water.~~

PLANT SYSTEMS

CONDENSATE STORAGE TANK

LIMITING CONDITION FOR OPERATION

3.7.1.3 At least one condensate storage tank (CST) shall be OPERABLE with a minimum water volume of either: 160,000 gallons (equivalent to an indicated level of 80% of one tank).

- a. 160,000 gallons in either 2T41A or 2T41B, or
- b. A minimum of 267,000 gallons of water is available in condensate storage tank, T41B, when required for both units. A minimum of 160,000 gallons of water is available in T41B when only required for Unit 2.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

With the required condensate storage tank inoperable, within 4 hours either:

- a. Restore at least one CST to OPERABLE status or be in HOT SHUTDOWN within the next 12 hours, or
- b. Demonstrate the OPERABILITY of the service water system as a backup supply to the emergency feedwater pumps and restore at least one condensate storage tank to OPERABLE status within 7 days or be in HOT SHUTDOWN within the next 12 hours.

SURVEILLANCE REQUIREMENTS

4.7.1.3.1 The above required condensate storage tank shall be demonstrated OPERABLE at least once per 12 hours by verifying the contained water volume is within its limits when the tank is the supply source for the emergency feedwater pumps.

4.7.1.3.2 The service water system shall be demonstrated OPERABLE at least once per 12 hours by verifying that at least one service water loop is operating and that the service water system - emergency feedwater system isolation valves are either open or OPERABLE whenever the service water system is the supply source for the emergency feedwater pumps.

PLANT SYSTEMS

BASES

3/4.7.1.2 EMERGENCY FEEDWATER SYSTEM

The OPERABILITY of the emergency feedwater (EFW) system ensures that the Reactor Coolant System can be cooled down to Shutdown Cooling (SDC) entry conditions from normal operating conditions in the event of a total loss of off-site power.

The EFW system is designed to supply sufficient water to the steam generator(s) to remove decay heat with steam generator pressure at the setpoint of the MSSVs. Subsequently, the EFW system supplies sufficient water to cool the unit to SDC entry conditions, and steam is released through the ADVs.

SR 4.7.1.2.b.1 verifies that each EFW pump's developed head at the flow test point is greater than or equal to this required developed head. This test ensures that EFW pump performance has not degraded during the cycle. Flow and differential head are normal tests of pump performance required by Section XI of the ASME Code. Because it is undesirable to introduce cold EFW into the steam generators while they are operating, this testing is performed on recirculation flow. This test confirms one point that is indicative of pump overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. Performance of inservice testing, discussed in the ASME Code, Section XI, satisfies this requirement. The SR for the turbine driven EFW pump is allowed to be deferred for up to 24 hours after exceeding 700 psia in the steam generators. This allowance will ensure the test is completed within a reasonable period of time after establishing sufficient steam pressure to perform the test.

SR 4.7.1.2.c ensures that EFW can be delivered to the appropriate steam generator, in the event of any accident or transient that generates an EFAS signal. This is assured by demonstrating that each automatic valve in the flow path actuates to its correct position on an actual or simulated actuation signal. The 18 month frequency is based on the need to perform the SRs under the conditions that apply during a unit outage and the potential for an unplanned transient if the SRs were performed with the reactor at power.

SR 4.7.1.2.d ensures that the EFW System is properly aligned by verifying the flow path from the condensate storage tank (CST) to each steam generator prior to entering MODE 2 operation, after more than 30 days below MODE 3. OPERABILITY of the EFW flow paths must be verified before sufficient core heat is generated that would require the operation of the EFW System during a subsequent shutdown. The Frequency is reasonable, based on engineering judgment, and other administrative controls to ensure that flow paths remain OPERABLE. To further ensure EFW System alignment, the OPERABILITY of the flow paths is verified following extended outages to determine that no misalignment of valves has occurred. This SR ensures that the flow path from the CST to the steam generators is properly aligned.

3/4.7.1.3 CONDENSATE STORAGE TANK

The OPERABILITY of the condensate storage tank with the minimum water volume ensures that sufficient water is available to maintain the RCS at HOT STANDBY conditions for one hour with steam discharge to atmosphere with concurrent with total loss of off-site power. The contained water volume limit includes an allowance for water not usable because of tank discharge line location or other physical characteristics.

PLANT SYSTEMS

BASES

3/4.7.1.3 CONDENSATE STORAGE TANK

The design of the ANO-2 condensate storage system includes two non-seismic condensate storage tanks (2T41A and 2T41B). In addition, ANO-2 is capable of being aligned to the seismically qualified condensate storage tank (T41B). Each of these tanks is designed to provide condensate-grade water to the suction of the emergency feedwater system (EFW) pumps. The service water system (SWS) provides the assured source of water for EFW.

The allowance to align to the non-safety, non-seismically-qualified condensate storage tanks (2T41A and 2T41B) has been retained for operational flexibility. The minimum volume for 2T41A/B is consistent with the original technical specification (TS) requirements. In the event of a failure of one of these tanks in conjunction with an emergency feedwater actuation, EFW pump suction will be automatically re-aligned to draw from the SWS. Should the EFW be aligned to the Unit 1 tank (T41B), the automatic suction re-alignment to SWS may be disabled. Therefore, the OPERABILITY requirements for the service water system - emergency feedwater system isolation valves listed in SR 4.7.1.3.2 do not include the automatic re-alignment to SWS capability when EFW is aligned to T41B.

The T41B condensate storage tank is seismically qualified and a portion of the tank is protected from tornado missiles. The protected volume of water in the tank can provide a source of EFW for both units for at least 30-minutes. Thirty minutes is adequate for the operators to manually switch the EFW suction alignment to the SWS, if required.

The TS volume requirements for the condensate storage tank are based on the EFW systems of both units being aligned to T41B simultaneously or only Unit 2 being aligned. The minimum TS volume requirements are sufficient to support several hours of cooling flow for both units and provide significant margin over the 30-minute supply of water required to satisfy the licensing basis. The TS volume requirements are therefore conservative. As a result of the conservative volume, instrument uncertainty does not need to be considered in converting the volume requirement to an indicated level.