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Document Update Notification

COPYHOLDER NO: **TRM-U2-102**

TO: **NRC**

ADDRESS: **OS-DOCUMENT CONTROL,
WASHINGTON, D.C. 20555**

DOCUMENT NO: **TRM-U2**

TITLE: **TECHNICAL REQUIREMENTS MANUAL
(UNIT 2)**

REVISION NO: **011**

CHANGE NO: **AP-11**

SUBJECT: **CONTROLLED DOCUMENT**

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ANO-1 Docket 50-313

ANO-2 Docket 50-368

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ARKANSAS NUCLEAR ONE
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A001

TECHNICAL REQUIREMENTS MANUAL REVISION 11

ARKANSAS NUCLEAR ONE, UNIT NO. 2

Revise the following pages of the associated Technical Requirements Manual with the attached pages.

REMOVE PAGES

INSERT PAGES

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BASES

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ADMINISTRATIVE CONTROLS

<u>SECTION</u>	<u>PAGE</u>
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1.0 USE AND APPLICATIONS (continued)

1.0.4 Changes To The TRM

Design modifications, procedure changes, license amendments, etc. have the potential to affect the TRM. If this occurs, the initiating department should complete a License Based Document Change form for submitting changes to the TRM. TRM changes are subject to the requirements of 10 CFR 50.59 due to the TRM being considered a part of the SAR and therefore a licensing basis document. Changes to the TRM will be issued on a replacement page basis to controlled document holders following approval of the change in accordance with site procedures on document control.

1.0.5 NRC Reporting Of TRM Revisions

Like the SAR, changes to the TRM are controlled under 10 CFR 50.59 and therefore do not require prior NRC approval unless the change involves a change to the TS or the need for a license amendment in accordance with 10 CFR 50.59 is required. The most recent revision of the TRM will be sent to the NRC as part of the periodic SAR update process.

1.0.6 TS Applicability To The TRM

The TRM may reference a TS LCO or Surveillance Requirement (SR) that applies to the relocated information. All TRM references to the TS will be preceded by "TS or Technical Specification" and then the associated specification number. The 3.0 and 4.0 sections of the TS and their associated bases are applicable to the TRM. Any exemptions to the associated TS section 3.0 and 4.0 requirements will be listed in the associated TR. The defined terms in TS section 1.0 are also applicable to the TRM.

LIMITING SAFETY SYSTEM SETTINGS

2.2 LIMITING SAFETY SYSTEM SETTINGS

REACTOR TRIP SETPOINTS

2.2.1 The reactor protective instrumentation setpoints shall be set consistent with the Trip Setpoint values shown in TRM Table 2.2-1.

APPLICABILITY: As shown for each channel in TRM Table 3.3-1

ACTION:

With a reactor protective instrumentation setpoint less conservative than the value shown in the Allowable Values column of TRM Table 2.2-1, declare the channel inoperable and apply the applicable ACTION statement requirement of TRM Specification 3.3.1.1 until the channel is restored to OPERABLE status with its trip setpoint adjusted consistent with the Trip Setpoint value.

TABLE 2.2-1

REACTOR PROTECTIVE INSTRUMENTATION TRIP SETPOINT LIMITS

<u>FUNCTIONAL UNIT</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
Steam Generator Level – High	≤ 85.8% (1)	≤ 86.5% (1)

TABLE NOTATION

- (1) % of the distance between steam generator upper and lower narrow range level instrument nozzles.

REACTIVITY CONTROL SYSTEMS

FLOW PATHS - SHUTDOWN

LIMITING CONDITION FOR OPERATION

- 3.1.2.1 As a minimum, one of the following boron injection flow paths shall be OPERABLE:
- a. A flow path from the boric acid makeup tank via either a boric acid makeup pump or a gravity feed connection and charging pump to the Reactor Coolant System if only the boric acid makeup tank in TRM Specification 3.1.2.7a is OPERABLE, or
 - b. The flow path from the refueling water tank via either a charging pump or a high pressure safety injection pump to the Reactor Coolant System if only the refueling water tank in TRM Specification 3.1.2.7b is OPERABLE.

APPLICABILITY: MODES 5 and 6.

ACTION:

With none of the above flow paths OPERABLE, suspend all operations involving CORE ALTERATIONS or operations that could introduce into the RCS, coolant with boron concentration less than required by Technical Specification 3.1.1.2 or 3.9.1 as applicable until at least one injection path is restored to OPERABLE status.

SURVEILLANCE REQUIREMENTS

- 4.1.2.1 At least one of the above required flow paths shall be demonstrated OPERABLE:
- a. At least once per 7 days by verifying that the temperature of the flow path from the discharge of the boric acid makeup tank to the suction of the charging pump is above 55°F when a flow path from the boric acid makeup tanks is used.
 - b. At least once per 31 days by verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.

REACTIVITY CONTROL SYSTEMS

CHARGING PUMPS - SHUTDOWN

LIMITING CONDITION FOR OPERATION

- 3.1.2.3 At least one charging pump in the boron injection flow path required OPERABLE pursuant to TRM Specification 3.1.2.1 shall be OPERABLE and capable of being powered from an OPERABLE emergency bus.

APPLICABILITY: MODES 5 and 6.

ACTION:

With no charging pump OPERABLE, suspend all operations involving CORE ALTERATIONS or operations that could introduce into the RCS, coolant with boron concentration less than required by Technical Specification 3.1.1.2 or 3.9.1 as applicable until at least one of the required pumps is restored to OPERABLE status.

SURVEILLANCE REQUIREMENTS

- 4.1.2.3 No additional Surveillance Requirements other than those required by the Inservice Testing program.

REACTIVITY CONTROL SYSTEMS

BORIC ACID MAKEUP PUMPS - SHUTDOWN

LIMITING CONDITION FOR OPERATION

- 3.1.2.5 At least one boric acid makeup pump shall be OPERABLE and capable of being powered from an OPERABLE emergency bus if only the flow path through the boric acid makeup pump in TRM Specification 3.1.2.1a above, is OPERABLE.

APPLICABILITY: MODES 5 and 6.

ACTION:

With no boric acid makeup pump OPERABLE as required to complete the flow path of TRM Specification 3.1.2.1a, suspend all operations involving CORE ALTERATIONS or operations that could introduce into the RCS, coolant with boron concentration less than required by Technical Specification 3.1.1.2 or 3.9.1 as applicable until at least one boric acid makeup pump is restored to OPERABLE status.

SURVEILLANCE REQUIREMENTS

- 4.1.2.5 No additional Surveillance Requirements other than those required by the Inservice Testing program.

REACTIVITY CONTROL SYSTEMS

BORATED WATER SOURCES - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.1.2.7 As a minimum, one of the following borated water sources shall be OPERABLE:

- a. One boric acid makeup tank with:
 1. A minimum indicated tank level of 36%,
 2. A boric acid concentration between 3.0 WT% and 3.5 WT%, and
 3. A minimum solution temperature of 55°F.
- b. The refueling water tank with:
 1. A minimum indicated tank level of 7.5%,
 2. A minimum boron concentration of 2500 ppm, and
 3. A minimum solution temperature of 40°F.

APPLICABILITY: MODES 5 and 6.

ACTION:

With no borated water sources OPERABLE, suspend all operations involving CORE ALTERATIONS or operations that could introduce into the RCS, coolant with boron concentration less than required by Technical Specification 3.1.1.2 or 3.9.1 as applicable until at least one borated water source is restored to OPERABLE status.

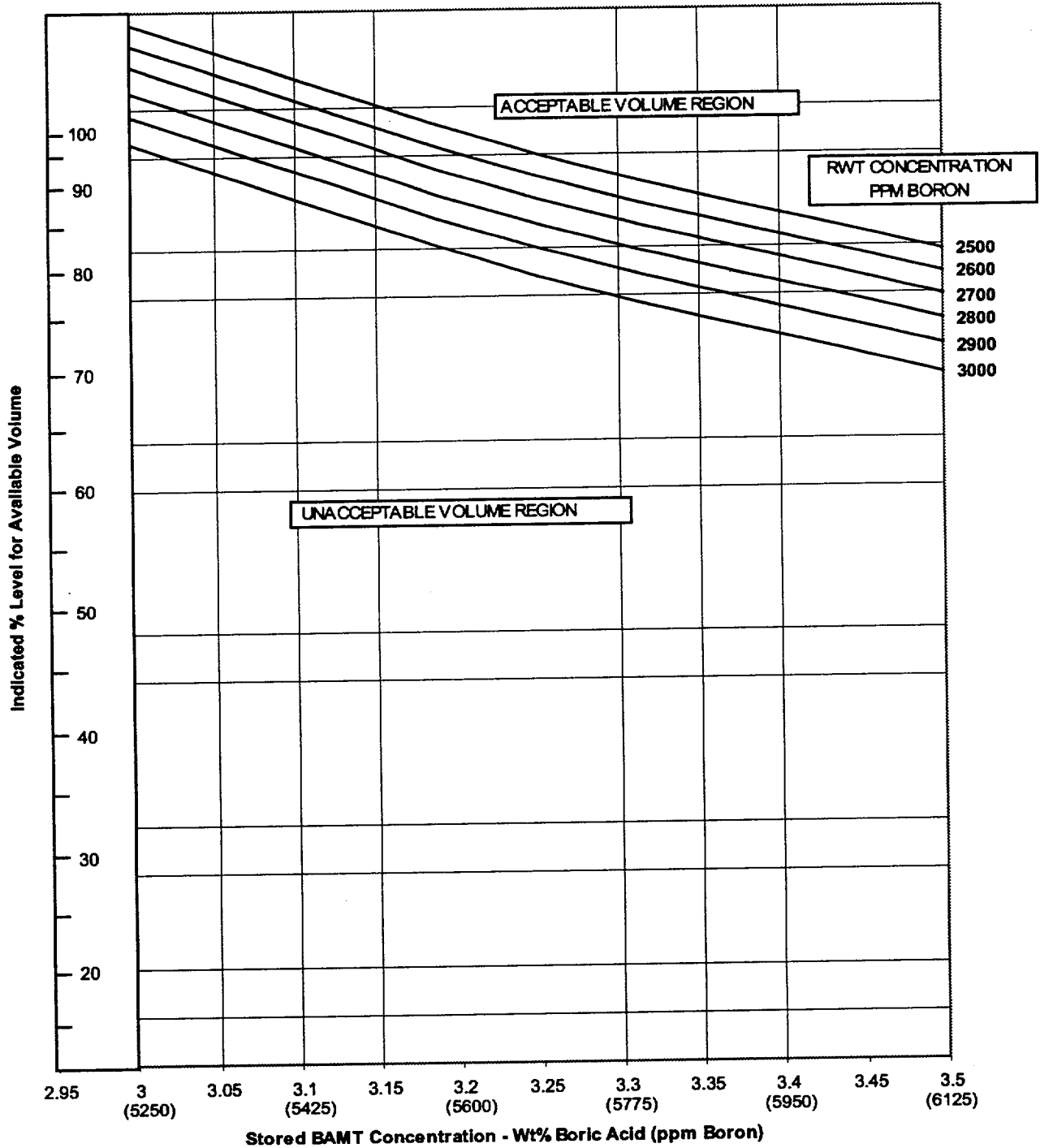
SURVEILLANCE REQUIREMENTS

4.1.2.7 The above required borated water source shall be demonstrated OPERABLE:

- a. At least once per 7 days by:
 1. Verifying the boron concentration of the water,
 2. Verifying the contained borated water volume of the tank, and
 3. Verifying the boric acid makeup tank solution temperature is greater than 55°F.
- b. At least once per 24 hours by verifying the RWT temperature when it is the source of borated water and the outside air temperature is < 40°F.

Figure 3.1-1

Minimum Boric Acid Makeup Tank Volume as a Function of Stored BAMT Concentration and Refueling Water Storage Tank Concentration



REACTIVITY CONTROL SYSTEMS

BORATED WATER SOURCES - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.8 Each of the following borated water sources shall be OPERABLE:

- a. At least one of the following sources with a minimum solution temperature of 55°F.
 1. One boric acid makeup tank, with the tank contents in accordance with TRM Figure 3.1-1, or
 2. Two boric makeup tanks, with the combined contents of the tanks in accordance with TRM Figure 3.1-1, and

- b. The refueling water tank with:
 1. An indicated tank level of between 91.7% and 100%,
 2. Between 2500 and 3000 ppm of boron,
 3. A minimum solution temperature of 40°F, and
 4. A maximum solution temperature of 110°F.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

- a. With the above required boric acid makeup tank(s) inoperable, restore the make up tank(s) to OPERABLE status within 72 hours or initiate a condition report to document the condition and determine any limitations for the continued operation of the plant.

- b. With the refueling water tank inoperable, enter the action of Technical Specification 3.5.4.

INSTRUMENTATION

METEOROLOGICAL INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3.4 The meteorological monitoring instrumentation channels shown in TRM Table 3.3-8 shall be OPERABLE.

APPLICABILITY: At all times.

ACTION:

- a. With one or more required meteorological monitoring channels inoperable for more than 7 days, immediately initiate a condition report to document the condition and determine any limitations for continued operation of the plant.
- b. The provisions of Technical Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.4 Each of the above meteorological monitoring instrumentation channels shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in TRM Table 4.3-5.

ADMINISTRATIVE CONTROLS

6.9 None

3.3 INSTRUMENTATION

TRM BASES

3/4.1.2 BORATION SYSTEMS

The boron injection system ensures that negative reactivity control is available during each mode of facility operations. The components required to perform this function include 1) borated water sources, 2) charging pumps, 3) separate flow paths, 4) boric acid makeup pumps, 5) an emergency power supply from OPERABLE diesel generators.

With the RCS average temperature above 200°F, a minimum of two separate and redundant boron injection systems are provided to ensure single functional capability in the event an assumed failure renders one of the systems inoperable. Allowable out-of-service periods ensure that minor component repair or corrective action may be completed without undue risk to overall facility safety from injection system failures during the repair period.

The boration capability of either system is sufficient to provide a SHUTDOWN MARGIN from expected operating conditions of that specified in the CORE OPERATING LIMITS REPORT after xenon decay and cooldown to 200°F. The maximum expected boration capability requirement occurs at EOL from full power equilibrium xenon conditions and requires boric acid solution from the boric acid makeup tanks in the allowable concentrations and volumes of TRM Specification 3.1.2.8 and a small fraction of the borated water from the refueling water tank required in TRM Specification 3.1.2.8.

The requirement in TRM Specification 3.1.2.8 for a minimum available volume of borated water in the refueling water tank ensures the capability for borating the RCS to the desired concentration. The value listed is consistent with the plant ECCS requirements.

With the RCS temperature below 200°F, one injection system is acceptable without single failure consideration on the basis of the stable reactivity condition of the reactor and the additional restrictions prohibiting CORE ALTERATIONS and positive reactivity change in the event the single injection system becomes inoperable.

The boron capability required below 200°F is based upon providing a sufficient SHUTDOWN MARGIN after xenon decay and cooldown from 200°F to 140°F. This condition requires either borated water from the refueling water tank or boric acid solution from the boric acid makeup tank(s) in accordance with the requirements of TRM Specification 3.1.2.7. The contained water volume limits includes allowance for water not available because of discharge line location and other physical characteristics.

The OPERABILITY of one boron injection system during REFUELING ensures that this system is available for reactivity control while in MODE 6.

The limits on water volume and boron concentration of the boric acid sources, when mixed with the trisodium phosphate, ensures a long term pH value of ≥ 7.0 for the solution recirculated within containment after a LOCA. This pH limit minimizes the evolution of iodine and helps to inhibit stress corrosion cracking of austenitic stainless steel components in containment during the recirculation phase following an accident.

3.1 REACTIVITY CONTROL SYSTEMS

TRM BASES

3/4.1.2 BORATION SYSTEMS (continued)

Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. Coolant added must be from sources that have a boron concentration greater than that required for minimum SDM or boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Temperature changes including temperature increases when operating with a positive MTC must also be evaluated to ensure they do not result in a loss of required SDM.