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**Ron Gaston**  
Director, Nuclear Licensing

10 CFR 50.90

1CAN092101

September 30, 2021

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

Subject: License Amendment Request  
Proposed Technical Specifications 3.4.12 and 3.4.13  
Revised Dose Calculations

Arkansas Nuclear One, Unit 1  
NRC Docket No. 50-313  
Renewed Facility Operating License No. DPR-51

In accordance with 10 CFR 50.90, Entergy Operations, Inc. (Entergy) is submitting a request for an amendment to the Technical Specifications (TSs) for Arkansas Nuclear One, Unit 1 (ANO-1).

The proposed amendment would revise the DOSE EQUIVALENT I-131 (DEI) and the Reactor Coolant System (RCS) primary activity limits required by TS 3.4.12, "RCS Specific Activity". In addition, the primary-to-secondary leak rate limit provided in TS 3.4.13, "RCS Leakage," is being revised. These proposed changes are due to non-conservative inputs used in the Steam Generator Tube Rupture (SGTR) accident, the Main Steam Line Break (MSLB) accident, and the Control Rod Ejection accident dose calculations. All other design basis accident dose consequence calculations are not impacted by the proposed changes.

The current licensing bases for the licensing basis accidents listed above use the alternative source term (AST) methodology as allowed by 10 CFR 50.67, "Accident source term," and described in Regulatory Guide (RG) 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors" to determine dose consequences.

The enclosure provides a description and assessment of the proposed changes. In addition, the enclosure concludes that the proposed amendment does not involve a significant hazards consideration. Attachment 1 of the enclosure provides the existing TS pages marked to show the proposed changes. Attachment 2 of the enclosure provides revised (clean) TS pages.

Entergy requests approval of the proposed license amendment by November 1, 2022. The proposed changes would be implemented within 60 days of issuance of the amendment.

No new regulatory commitments are made in this submittal.

In accordance with 10 CFR 50.91, "Notice for public comment; State consultation," paragraph (b), a copy of this license amendment request, with enclosure, is being provided to the designated State Officials.

If there are any questions or if additional information is needed, please contact Riley Keele, Manager, Regulatory Assurance, Arkansas Nuclear One, at 479-858-7826.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on September 30, 2021.

Respectfully,

Ronald W. Gaston  
Digitally signed by  
Ronald W. Gaston  
Date: 2021.09.30  
16:17:00 -05'00'

Ron Gaston

RWG/rwc

Enclosure: Evaluation of the Proposed Change

Attachments to Enclosure:

1. Technical Specification Pages Markup
2. Retyped Technical Specification Pages

cc: NRC Region IV Regional Administrator

NRC Senior Resident Inspector – Arkansas Nuclear One

NRC Project Manager – Arkansas Nuclear One

Designated Arkansas State Official

**Enclosure, Attachment 1**

**1CAN092101**

**Technical Specification Pages Markup**  
(4 pages)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.12 RCS Specific Activity

LCO 3.4.12 RCS DOSE EQUIVALENT I-131 and DOSE EQUIVALENT XE-133 specific activity shall be within limits.

APPLICABILITY: MODES 1, 2, 3, and 4

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. DOSE EQUIVALENT I-131 not within limit.</p>	<p>-----NOTE----- LCO 3.0.4.c is applicable. -----</p> <p>A.1 Verify DOSE EQUIVALENT I-131 <math>\leq</math> <del>660</del> <math>\mu</math>Ci/gm.</p> <p><u>AND</u></p> <p>A.2 Restore DOSE EQUIVALENT I-131 to within limit.</p>	<p>Once per 4 hours</p> <p>48 hours</p>
<p>B. DOSE EQUIVALENT XE-133 not within limit.</p>	<p>-----NOTE----- LCO 3.0.4.c is applicable. -----</p> <p>B.1 Restore DOSE EQUIVALENT XE-133 to within limit.</p>	<p>48 hours</p>

<p>C. Required Action and associated Completion Time of Condition A or B not met.</p> <p><u>OR</u></p> <p>DOSE EQUIVALENT I-131 &gt; 60 <math>\mu</math>Ci/gm.</p>	<p>C.1 Be in MODE 3.</p> <p><u>AND</u></p>	6 hours
	<p>C.2 Be in MODE 5</p>	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.12.1	<p>-----NOTE-----</p> <p>Only required to be performed in MODE 1 and 2, MODE 3 with RCS average temperature <math>\geq</math> 500 °F.</p> <p>-----</p> <p>Verify reactor coolant DOSE EQUIVALENT XE-133 specific activity <math>\leq</math> 2200 <math>\mu</math>Ci/gm.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.4.12.2	<p>Verify reactor coolant DOSE EQUIVALENT I-131 specific activity <math>\leq</math> 0.254-0 <math>\mu</math>Ci/gm.</p>	In accordance with the Surveillance Frequency Control Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.13 RCS Operational LEAKAGE

LCO 3.4.13 RCS operational LEAKAGE shall be limited to:

- a. No pressure boundary LEAKAGE;
- b. 1 gpm unidentified LEAKAGE;
- c. 10 gpm identified LEAKAGE; and
- d. ~~39~~150 gallons per day primary to secondary LEAKAGE through any one Steam Generator (SG).

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RCS unidentified or identified LEAKAGE not within limits, except for primary to secondary LEAKAGE.	A.1 Reduce LEAKAGE to within limits.	18 hours
B. Required Action and associated Completion Time of Condition A not met.  <u>OR</u>  Pressure boundary LEAKAGE exists.  <u>OR</u>  Primary to secondary LEAKAGE not within limit.	B.1 Be in MODE 3.  <u>AND</u>  B.2 Be in MODE 5.	6 hours          36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.4.13.1 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Not required to be performed until 12 hours after establishment of steady state operation at or near operating pressure.</li> <li>2. Not applicable to primary to secondary LEAKAGE.</li> </ol> <p>-----</p> <p>Verify RCS operational LEAKAGE is within limits by performance of an RCS water inventory balance.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.4.13.2 -----NOTE-----</p> <p>Not required to be performed until 12 hours after establishment of steady state operation.</p> <p>-----</p> <p>Verify primary to secondary LEAKAGE is <math>\leq</math> <del>39</del>150 gallons per day through any one SG.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

**Enclosure, Attachment 2**

**1CAN092101**

**Retyped Technical Specification Page**  
(4 pages)



3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.12 RCS Specific Activity

LCO 3.4.12 RCS DOSE EQUIVALENT I-131 and DOSE EQUIVALENT XE-133 specific activity shall be within limits.

APPLICABILITY: MODES 1, 2, 3, and 4

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. DOSE EQUIVALENT I-131 not within limit.	<p>-----NOTE----- LCO 3.0.4.c is applicable. -----</p> <p>A.1 Verify DOSE EQUIVALENT I-131 <math>\leq 6 \mu\text{Ci/gm}</math>.</p> <p><u>AND</u></p> <p>A.2 Restore DOSE EQUIVALENT I-131 to within limit.</p>	<p>Once per 4 hours</p> <p>48 hours</p>
B. DOSE EQUIVALENT XE-133 not within limit.	<p>-----NOTE----- LCO 3.0.4.c is applicable. -----</p> <p>B.1 Restore DOSE EQUIVALENT XE-133 to within limit.</p>	48 hours
<p>C. Required Action and associated Completion Time of Condition A or B not met.</p> <p><u>OR</u></p> <p>DOSE EQUIVALENT I-131 <math>&gt; 6 \mu\text{Ci/gm}</math>.</p>	<p>C.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>C.2 Be in MODE 5</p>	<p>6 hours</p> <p>36 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.12.1	<p>-----NOTE-----                      Only required to be performed in MODE 1 and 2,                      MODE 3 with RCS average temperature <math>\geq 500</math> °F.                      -----</p> <p>Verify reactor coolant DOSE EQUIVALENT XE-133                      specific activity <math>\leq 2200</math> <math>\mu\text{Ci/gm}</math>.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.4.12.2	Verify reactor coolant DOSE EQUIVALENT I-131 specific activity $\leq 0.25$ $\mu\text{Ci/gm}$ .	In accordance with the Surveillance Frequency Control Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.13 RCS Operational LEAKAGE

LCO 3.4.13 RCS operational LEAKAGE shall be limited to:

- a. No pressure boundary LEAKAGE;
- b. 1 gpm unidentified LEAKAGE;
- c. 10 gpm identified LEAKAGE; and
- d. 39 gallons per day primary to secondary LEAKAGE through any one Steam Generator (SG).

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RCS unidentified or identified LEAKAGE not within limits, except for primary to secondary LEAKAGE.	A.1 Reduce LEAKAGE to within limits.	18 hours
B. Required Action and associated Completion Time of Condition A not met.  <u>OR</u>  Pressure boundary LEAKAGE exists.  <u>OR</u>  Primary to secondary LEAKAGE not within limit.	B.1 Be in MODE 3.  <u>AND</u>  B.2 Be in MODE 5.	6 hours          36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.4.13.1 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Not required to be performed until 12 hours after establishment of steady state operation at or near operating pressure.</li> <li>2. Not applicable to primary to secondary LEAKAGE.</li> </ol> <p>-----</p> <p>Verify RCS operational LEAKAGE is within limits by performance of an RCS water inventory balance.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.4.13.2 -----NOTE-----</p> <p>Not required to be performed until 12 hours after establishment of steady state operation.</p> <p>-----</p> <p>Verify primary to secondary LEAKAGE is ≤ 39 gallons per day through any one SG.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>