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# Tennessee Valley Authority

**Pre-Submittal Meeting for License Amendment Request  
to Change Emergency Action Level Scheme  
to adopt the guidance provided in NEI 99-01 Revision 7**

January 22, 2026



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# Agenda

- Purpose
- Background
- Submittal Contents and Format
- Schedule for Submittal
- Discussion and Feedback

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## Meeting Purpose

- TVA is proposing to submit a license amendment request (LAR) for Browns Ferry (BFN), Sequoyah (SQN), and Watts Bar (WBN) to change their Emergency Action Level (EAL) scheme to adopt the guidance provided in Revision 7 of NEI 99-01 “Development of Emergency Action Levels for Non-Passive Reactors” [ML24274A312].
- The purpose of this meeting is to discuss the proposed EAL schemes, format and contents of the submittal, and timeline.

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## Background

- On September 22, 2025, NRC endorsed the use of NEI 99-01 Rev 7 with the publication of Revision 7 to RG 1.101 “Emergency Response Planning and Preparedness for Nuclear Power Reactors” [ML25065A240]
- To date, the NRC has not approved a LAR based on NEI 99-01 Rev 7
- The proposed TVA LAR seeks to adopt the endorsed NEI 99-01 Rev 7 EAL scheme across the TVA fleet for BFN, SQN, and WBN.
- The BFN, SQN, and WBN proposed EAL schemes will align closely with the NEI 99-01 Rev. 7 guidance with only minor differences and no deviations

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# Submittal Contents and Format

- Cover Letter
- Enclosure 1
  - Summary Description
  - Technical Evaluation
  - Regulatory Evaluation
  - Environmental Consideration
  - References

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## Submittal Contents and Format (cont.)

- Enclosures 2, 3, and 4
  - Site specific enclosures with the following attachments
    - 1. NEI 99-01 Rev 6 Licensing Basis History
    - 2. NEI 99-01 Rev 7 Differences and Deviations
    - 3. EAL Emergency Plan Implementing Procedure (red-line version)
    - 4. EAL Emergency Plan Implementing Procedure (clean version)
    - 5. Calculations Supporting EAL Scheme

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## NEI 99-01 Rev 6 Licensing Basis History

The EAL Licensing Basis History compares the approved Rev 6 EALs with the EALs in the current version of the Emergency Plan Implementing Procedure using a markup format to annotate changes made under 10 CFR 50.54(q) since NRC approval.

Each EAL is broken into the following sections:

- Initiating Condition
- Threshold Value
- Basis and References

The basis for changes to the NRC approved wording is documented in each section.

# NEI 99-01 Rev 6 Licensing Basis History Example

Revised Section	Justification of Changes
<b>RG1 – IC, Operating Mode Applicability and Notes</b>	
<p><b>IC:</b> Release of gaseous radioactivity resulting in offsite dose greater than 1,000 mrem TEDE or 5,000 mrem thyroid CDE</p> <p><b>Operating Mode Applicability:</b> All</p> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>• The SED should declare the Site Area Emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.</li> <li>• If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded 15 minutes.</li> <li>• If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes.</li> <li>• The pre-calculated effluent monitor values presented in EAL #1 should be used for emergency classification assessments until the results from a dose assessment using actual meteorology are available</li> </ul>	<p>No changes from the SER approved wording.</p>

# NEI 99-01 Rev 6 Licensing Basis History Example (cont.)

RG1 – EAL Threshold Values																	
Mark-up of SER Approved Section	Justification of Changes																
<p>(1) Reading on ANY of the following radiation monitors greater than the reading shown for 15 minutes or longer:</p> <table border="1"> <thead> <tr> <th colspan="2">UNIT 1</th> </tr> </thead> <tbody> <tr> <td>Shield Building Exhaust, 1-RM-90-400</td> <td>1.9085E+078 μCi/s</td> </tr> <tr> <td>Condenser Vacuum Exhaust, 1-RM-90-256</td> <td>5.3206E+045 mR/hr</td> </tr> <tr> <td>SG Discharge, 1-RM-90-421 thru -424<sup>(1)</sup></td> <td>2.336-05E+053 mR/hr</td> </tr> <tr> <th colspan="2">UNIT 2</th> </tr> <tr> <td>Shield Building Exhaust, 2-RM-90-400</td> <td>1.9085E+078 μCi/s</td> </tr> <tr> <td>Condenser Vacuum Exhaust, 2-RM-90-256</td> <td>6.9370E+045 mR/hr</td> </tr> <tr> <td>SG Discharge, 2-RM-90-421 thru -424<sup>(1)</sup></td> <td>1.474-11E+053 mR/hr</td> </tr> </tbody> </table> <p>(1) These unit values are based on flow rates through one PORV of 970,000 lb/hr at 1185 psig, 600 degrees F. Before using these values, ensure a release to the environment is ongoing (e.g., PORV).</p> <p>(2) Dose assessment using actual meteorology indicates doses greater than 1,000 mrem TEDE or 5,000 mrem thyroid CDE at or beyond the site boundary.</p> <p>(3) Field survey results indicate <b>EITHER</b> of the following at or beyond the site boundary:</p> <ul style="list-style-type: none"> <li>• Closed window dose rates greater than 1,000 mR/hr expected to continue for 60 minutes or longer</li> <li>• Analysis of field survey samples indicate thyroid CDE greater than 5,000 mrem for one hour of inhalation.</li> </ul>	UNIT 1		Shield Building Exhaust, 1-RM-90-400	1.9085E+078 μCi/s	Condenser Vacuum Exhaust, 1-RM-90-256	5.3206E+045 mR/hr	SG Discharge, 1-RM-90-421 thru -424 <sup>(1)</sup>	2.336-05E+053 mR/hr	UNIT 2		Shield Building Exhaust, 2-RM-90-400	1.9085E+078 μCi/s	Condenser Vacuum Exhaust, 2-RM-90-256	6.9370E+045 mR/hr	SG Discharge, 2-RM-90-421 thru -424 <sup>(1)</sup>	1.474-11E+053 mR/hr	<p><b>Rev 49</b> Added new data threshold values to the gaseous and liquid effluent release tables in IC RG1, RS1, RA1 and RU1. These values are provided as design output in Engineering calculation WBNTSR115.</p> <p><b>Rev 55</b> The values for Unit 2 Condenser Vacuum Exhaust radiation monitors (2-RM-90-255/256) were updated based on design output from revision 24 of WBNTSR115. The calculation was updated due to installation of the Unit 2 replacement steam generators.</p> <p><b>Rev 56</b> The values for the Steam Generator Discharge radiation monitors (1,2-RM-90-421 thru -424) were updated based on design output from revision 26 of WBNTSR115. The calculation was updated at the request of EP to replace the calibration factors with Steam Generator Tube Rupture (SGTR) values that apply at the time of unit trip instead of 8 hours afterward.</p>
UNIT 1																	
Shield Building Exhaust, 1-RM-90-400	1.9085E+078 μCi/s																
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# NEI 99-01 Rev 6 Licensing Basis History Example (cont.)

RG1 – Basis and References	
Mark-up of SER Approved Section	Justification of Changes
<p>This IC addresses a release of gaseous radioactivity that results in projected or actual offsite doses greater than <del>or equal to</del> the EPA Protective Action Guides (PAGs). It includes both monitored and un-monitored releases. Releases of this magnitude will require implementation of protective actions for the public.</p> <p>Radiological effluent EALs are also included to provide a basis for classifying events and conditions that cannot be readily or appropriately classified on the basis of plant conditions alone. The inclusion of both plant condition and radiological effluent EALs more fully addresses the spectrum of possible accident events and conditions.</p> <p>The TEDE dose is set at the EPA PAG of 1,000 mrem while the 5,000 mrem thyroid CDE was established in consideration of the 1:5 ratio of the EPA PAG for TEDE and thyroid CDE.</p> <p>Classification based on effluent monitor readings assumes that a release path to the environment is established. If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes.</p> <p><b>References</b>            WBN Calculation WBNTSR115            WBN ODCM            NEI 99-01 R6 AS1  <a href="#">0-TI-328</a></p>	<p><b>Rev 60</b>            ICs RG1, RS1, and RA1 - Revised to delete "or equal to" from the first sentence of the bases to align the bases with the IC and EAL wording per industry OE. [CR 1894879]</p> <p><b>Rev 57</b>            Reference section updated to add 0-TI-328, Design Engineering Numeric Input to the Emergency Preparedness Program as a developmental reference, and added it to the reference of the basis of each Initiating Condition that contains numeric values from this TI.</p>

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## NEI 99-01 Rev 7 Differences and Deviations

The Differences and Deviations Table is based on RIS 2003-18 and provides the existing Emergency Plan Implementing Procedure EALs with the changes to implement NEI 99-01 Rev 7 EAL base scheme in a markup format to annotate changes.

Each EAL is broken into the following sections:

- Initiating Condition
- Threshold Value
- Basis and References

Site specific information is clearly annotated and identified as either a Difference or a Deviation in accordance with the definitions listed in RIS 2003-18.

# NEI 99-01 Rev 7 Differences and Deviations Example

RG1: INITIATING CONDITIONS	
NEI 99-01 Rev 7	Watts Bar
<p><b>Initiating Condition:</b> Release of gaseous radioactivity resulting in offsite dose greater than 1,000 mrem TEDE or 5,000 mrem thyroid CDE.</p> <ul style="list-style-type: none"> <li>• If dose assessment results based on actual conditions are available, then the radiation monitor readings in EAL #1 should not be used for emergency classification assessments.</li> <li>• The Shift Manager/Emergency Director should declare the General Emergency promptly upon determining that the applicable time has been exceeded or will likely be exceeded.</li> <li>• If an ongoing release is detected and the release start time is unknown, then assume that the release duration has exceeded 15 minutes.</li> <li>• If the flow past an effluent monitor has been stopped due to actions to isolate the release path, then the monitor reading is no longer valid for classification purposes.</li> </ul>	<p><b>Initiating Condition:</b> Release of gaseous radioactivity resulting in offsite dose greater than 1,000 mrem TEDE or 5,000 mrem thyroid CDE.</p> <ul style="list-style-type: none"> <li>• If dose assessment results based on actual conditions are available, then the radiation monitor readings in EAL #1 should not be used for emergency classification assessments.</li> <li>• The <i>SED</i> should declare the General Emergency promptly upon determining that the applicable time has been exceeded or will likely be exceeded.</li> <li>• If an ongoing release is detected and the release start time is unknown, then assume that the release duration has exceeded 15 minutes.</li> <li>• If the flow past an effluent monitor has been stopped due to actions to isolate the release path, then the monitor reading is no longer valid for classification purposes.</li> </ul>
<b>Difference / Deviation Justification</b>	
Difference – inserted existing Watts Bar site specific position title	

# NEI 99-01 Rev 7 Differences and Deviations Example (cont.)

RG1: THRESHOLDS																	
NEI 99-01 Rev 7	Watts Bar																
<p>(1) Reading on ANY of the following radiation monitors greater than the reading shown for 15 minutes or longer.</p> <p>(site-specific monitor list and threshold values)</p> <p>(2) Dose assessment using actual meteorology indicates doses greater than 1,000 mrem TEDE or 5,000 mrem thyroid CDE at or beyond (site-specific dose receptor point).</p> <p>(3) Field survey results indicate <b>EITHER</b> of the following at or beyond (site-specific dose receptor point):</p> <ul style="list-style-type: none"> <li>Closed window dose rates greater than 1,000 mR/hr are expected to continue for 60 minutes or longer.</li> <li>Analyses of field survey samples indicate thyroid CDE greater than 5,000 mrem for one hour of inhalation</li> </ul>	<p>(1) Reading on <b>ANY</b> of the following radiation monitors greater than the reading shown for 15 minutes or longer:</p> <table border="1"> <thead> <tr> <th colspan="2">UNIT 1</th> </tr> </thead> <tbody> <tr> <td>Shield Building Exhaust, 1-RM-90-400</td> <td>2.181.90E+08 <math>\mu</math>Ci/s</td> </tr> <tr> <td>Condenser Vacuum Exhaust, 1-RM-90-256</td> <td>6.105.32E+05 mR/hr</td> </tr> <tr> <td>SG Discharge, 1-RM-90-421 thru -424'</td> <td>2.6733E+06 mR/hr</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">UNIT 2</th> </tr> </thead> <tbody> <tr> <td>Shield Building Exhaust, 2-RM-90-400</td> <td>2.181.90E+08 <math>\mu</math>Ci/s</td> </tr> <tr> <td>Condenser Vacuum Exhaust, 2-RM-90-256</td> <td>7.946.93E+05 mR/hr</td> </tr> <tr> <td>SG Discharge, 2-RM-90-421 thru -424<sup>(+)</sup></td> <td>1.6847E+06 mR/hr</td> </tr> </tbody> </table> <p><sup>(+)</sup> These unit values are based on flow rates through one PORV of 970,000 lb/hr at 1185 psig, 600 degrees F. Before using these values, ensure a release to the environment is ongoing (e.g., PORV).</p> <p><b>OR</b></p> <p>(2) Dose assessment using actual meteorology indicates doses greater than 1,000 mrem TEDE or 5,000 mrem thyroid CDE at or beyond <i>the site boundary</i>.</p> <p><b>OR</b></p> <p>(3) Field survey results indicate <b>EITHER</b> of the following at or beyond <i>the site boundary</i>:</p> <ul style="list-style-type: none"> <li>Closed window dose rates greater than 1,000 mR/hr expected to continue for 60 minutes or longer.</li> <li>Analyses of field survey samples indicate thyroid CDE greater than 5,000 mrem for one hour of inhalation.</li> </ul>	UNIT 1		Shield Building Exhaust, 1-RM-90-400	2.181.90E+08 $\mu$ Ci/s	Condenser Vacuum Exhaust, 1-RM-90-256	6.105.32E+05 mR/hr	SG Discharge, 1-RM-90-421 thru -424'	2.6733E+06 mR/hr	UNIT 2		Shield Building Exhaust, 2-RM-90-400	2.181.90E+08 $\mu$ Ci/s	Condenser Vacuum Exhaust, 2-RM-90-256	7.946.93E+05 mR/hr	SG Discharge, 2-RM-90-421 thru -424 <sup>(+)</sup>	1.6847E+06 mR/hr
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<b>Difference / Deviation Justification</b>																	
<p>Difference – Threshold (1), included Watts Bar site specific monitors and updated values based on revised calculation WBNTSR115. A copy of this calculation is provided in Attachment X.</p> <p>Difference – Threshold (2), inserted existing Watts Bar site specific dose receptor point</p> <p>Difference – Threshold (3), inserted existing Watts Bar site specific dose receptor point</p>																	

# NEI 99-01 Rev 7 Differences and Deviations Example (cont.)

RG1 – BASIS AND REFERENCES	
Mark-up of current Revision 6 section	Justification of Changes
<p>This IC addresses a release of gaseous radioactivity that results in projected or actual offsite doses greater than or equal to the EPA Protective Action Guides (PAGs). It includes both monitored and un-monitored releases. Releases of this magnitude will require implementation of protective actions for the public.</p> <p>Radiological effluent EALs are also included to provide a basis for classifying events and conditions that cannot be readily or appropriately classified on the basis of plant conditions alone. The inclusion of both plant condition and radiological effluent EALs more fully addresses the spectrum of possible accident events and conditions.</p> <p>The TEDE dose is set at the EPA PAG of 1,000 mrem while the 5,000 mrem thyroid CDE was established in consideration of the 1:5 ratio of the EPA PAG for TEDE and thyroid CDE.</p> <p>Emergency classification based on radiation monitor readings or effluent monitor readings dose projection assumes that a there is a release path to the environment is established. If the effluent flow past an effluent monitor used to evaluate the EAL is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes.</p> <p>The precalculated radiation monitor thresholds in EAL #1 are determined (back calculated) using the dose value specified in the IC, and an assumed source term and meteorology. For this reason, the doses projected at the time of an event, which will be based on a source term determined from plant indications and actual metrological data, may be above or below the dose specified in the IC. Due to these expected differences, the radiation monitor readings in EAL #1 should not be used for emergency classification assessments if dose assessment results based on actual plant and meteorological conditions are available.</p> <p><b>References</b>            WBN Calculation WBNTSR115            WBN ODCM            NEI 99-01 R76 AG1            O-TI-328, Design Engineering Numeric Input to Emergency Preparedness Program</p>	<p>This change is administrative in nature and consistent with the conversion of NEI 99-01 Revision 6 to Revision 7 as approved by RG1.101, Emergency Response Planning and Preparedness for Nuclear Power reactors, Revision 7, dated Sept. 2025, endorsement of NEI 99-01, Revision 7.</p> <p>Revision updates radiation monitoring values based on results of calculation WBNTSR115, Revision 27, Radiological Emergency Plan Effluent Radiation Monitor EALs and Radiation Alert Levels.</p> <p>Revision 27 was performed in support of DCP WBN-22-002, which supports the increase of Tritium Producing Burnable Absorber Rods (TPBARs) from 1792 to 2496 and a change to a 108-feed equilibrium core from a 96-feed equilibrium core</p> <p>A copy of calculation WBNTSR115 is provided in Attachment X</p>

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## Schedule for Submittal

- January 22, 2026 – Pre-submittal meeting with NRC
- Second calendar quarter 2026 – Submit LAR to NRC
- Request NRC approval within 12 months of acceptance
- TVA implementation within 12 months of issuance of safety evaluation report

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## Discussion and Feedback

- Submittal contents and format
- Submittal schedule
- Additional questions/comments

**TVA**

**TENNESSEE  
VALLEY  
AUTHORITY**