



1101 Market Street, Chattanooga, Tennessee 37402

CNL-21-067

January 27, 2022

10 CFR 50.90
10 CFR 50, Appendix E

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-001

Browns Ferry Nuclear Plant, Units 1, 2, and 3
Renewed Facility Operating License Nos. DPR-33, DPR-52, and DPR-68
NRC Docket Nos. 50-259, 50-260, 50-296, and 72-052

Sequoyah Nuclear Plant, Units 1 and 2
Renewed Facility Operating License Nos. DPR-77 and DPR-79
NRC Docket Nos. 50-327, 50-328, and 72-034

Watts Bar Nuclear Plant, Units 1 and 2
Facility Operating License Nos. NPF-90 and NPF-96
NRC Docket Nos. 50-390, 50-391, and 72-1048

Subject: **Tennessee Valley Authority License Amendment Request to Revise
Emergency Plan Implementing Procedure Regarding Seismic Event
Emergency Action Level Change**

Reference: NRC Letter to Nuclear Energy Institute, "U.S. Nuclear Regulatory Commission
Review and Endorsement of NEI 99-01, Revision 6, dated November 2012
(TAC No. D92368)," dated March 28, 2013 (ML12346A463)

In accordance with the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) 50.90, "Application of amendment of license, construction permit, or early site permit," Tennessee Valley Authority (TVA) is submitting a request for an amendment to Renewed Facility Operating License Nos. DPR-33, DPR-52, and DPR-68 for the Browns Ferry Nuclear Plant (BFN), Units 1, 2, and 3, respectively, Renewed Facility Operating License Nos. DPR-77 and DPR-79 for the Sequoyah Nuclear Plant (SQN), Units 1 and 2, respectively, and Facility Operating License Nos. NPF-90 and NPF-96 for the Watts Bar Nuclear Plant (WBN), Units 1 and 2, respectively.

The proposed change involves revising the TVA Radiological Emergency Plan for the affected facilities to adopt the Nuclear Energy Institute (NEI) revised Notification of Unusual Event (NOUE) Emergency Action Level (EAL) scheme for seismic events based on NEI 99-01, Revision 6, "Development of Emergency Action Levels for Non-Passive Reactors." Specifically, TVA proposes to make an exception in Initiating Condition HU2, EAL to provide an additional method to declare this event. In the referenced letter, the Nuclear Regulatory Commission (NRC) endorsed NEI 99-01, Revision 6.

Per 10 CFR 50, Appendix E, Section IV.B.2, a licensee desiring to change its EAL scheme shall submit an application for an amendment to its license and receive NRC approval before implementing the change.

Enclosure 1 provides a description of the proposed change, technical evaluation, regulatory evaluation, and a discussion of environmental considerations. Enclosures 2 through 4 provide supporting information to the proposed change to the EAL for each site. The information contained in Enclosures 2 through 4 includes the following attachments for each site:

- EAL Comparison Matrix
- EAL Proposed Change (Markup Copy)
- EAL Proposed Change (Final Typed)

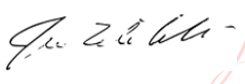
TVA has determined that there are no significant hazards considerations associated with the proposed changes and that the change qualifies for a categorical exclusion from environmental review pursuant to 10 CFR 51.22(c)(9). Additionally, in accordance with 10 CFR 50.91(b)(1), TVA is sending a copy of this letter and enclosures to the Alabama State Department of Public Health and the Tennessee State Department of Environment and Conservation.

TVA requests approval of the proposed changes by January 27, 2023, with an implementation period ending 180 days after issuance or ending July 27, 2023, whichever comes later, to accommodate scheduled refueling outages and operator training cycles.

There are no new regulatory commitments associated with this submittal. Please address any questions regarding this submittal to Kimberly D. Hulvey, Senior Manager, Fleet Licensing, at (423) 751-3275.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 27th day of January 2022.

Respectfully,

 Digitally signed by Carla Edmondson
Date: 2022.01.27 16:42:01 -05'00'

James T. Polickoski
Director, Nuclear Regulatory Affairs

Enclosures

cc: See Page 3

Enclosures:

1. Description and Evaluation of the Proposed Changes
2. Supporting Information for the Revision to the Browns Ferry Nuclear Plant Emergency Action Level Scheme
3. Supporting Information for the Revision to the Sequoyah Nuclear Plant Emergency Action Level Scheme
4. Supporting Information for the Revision to the Watts Bar Nuclear Plant Emergency Action Level Scheme

cc (with Enclosures):

NRC Regional Administrator – Region II
NRC Senior Resident Inspector – Browns Ferry Nuclear Plant
NRC Senior Resident Inspector – Sequoyah Nuclear Plant
NRC Senior Resident Inspector – Watts Bar Nuclear Plant
NRC Project Manager – Browns Ferry Nuclear Plant
NRC Project Manager – Sequoyah Nuclear Plant
NRC Project Manager – Watts Bar Nuclear Plant
State Health Officer, Alabama State Department of Public Health
Director, Division of Radiological Health – Tennessee State Department of Environment
and Conservation

Description and Evaluation of the Proposed Changes

**SUBJECT: Tennessee Valley Authority License Amendment Request to Revise
Emergency Plan Implementing Procedure Regarding Seismic Event
Emergency Action Level Change**

1.0 SUMMARY DESCRIPTION.....2
2.0 DETAILED SCRIPTON.....2
 2.1 Reason for Proposed Change.....2
 2.2 Description of Proposed Change.....2
3.0 TECHNICAL EVALUATION.....3
 3.1 Site-Specific Evaluation.....3
 3.2 Conclusions.....4
4.0 REGULATORY EVALUATION.....4
 4.1 Applicable Regulatory Requirements and Criteria.....4
 4.2 Precedent.....5
 4.3 No Significant Hazards Consideration.....6
 4.4 Conclusions.....7
5.0 ENVIRONMENTAL CONSIDERATOIN.....7
6.0 REFERENCES.....8

1.0 SUMMARY DESCRIPTION

Tennessee Valley Authority (TVA) requests an amendment to the licenses for Browns Ferry Nuclear Plant (BFN) Units 1, 2, and 3, Sequoyah Nuclear Plant (SQN) Units 1 and 2, and Watts Bar Nuclear Plant (WBN) Units 1 and 2. Specifically, TVA proposes to make an exception in Initiating Condition (IC) HU2, Emergency Action Level (EAL) to provide an additional method to declare this event. The Nuclear Regulatory Commission (NRC) endorsed the EAL schemes described in Nuclear Energy Institute (NEI) 99-01, Revision 6 (Reference 1), as documented in a letter dated March 28, 2013 (Reference 2). BFN, SQN, and WBN operate under the NEI 99-01, Revision 6 EAL scheme which was approved for the TVA fleet on December 22, 2017 (Reference 3).

2.0 DETAILED DESCRIPTION

2.1 Reason for the Proposed Change

Additional guidance is needed during a potential seismic event to allow the shift manager (SM) or site emergency director (SED) to make an independent decision based on feeling the seismic activity and receiving information from either the National Earthquake Information Center or the U.S. Geological Survey that the station has exceeded site specific values. This would ensure a timely classification if the Operating Basis Earthquake (OBE) alarm is out of service as the operators would not have to search for the declaration criteria under time pressure.

Revising the HU2 EAL would ensure that the SM/SED will make a timely determination by placing a 15-minute clock on the ability to gain additional information through the addition of a Note. Furthermore, having an additional method of event declaration may prevent avoidable notifications of unusual events by giving operators more flexibility in determination.

2.2 Description of the Proposed Change

The proposed change involves revising the EAL scheme to make an exception in IC HU2 to provide an additional method to declare the event if the OBE seismic alarm is out of service.

A deviation to HU2 is being taken to make use of guidance contained in Regulatory Guide (RG) 1.166, "Pre-Earthquake Planning and Immediate Nuclear Power Plant Operator Postearthquake Actions," Appendix A (Reference 4) that provides guidance to plants without OBE seismic detection on applicable OBE determination.

In addition, NEI 99-01, Rev 6 EALs provide an additional method should the OBE alarm not be assessable in the control room which is equivalent to an out of service condition.

The structure of the proposed deviation for IC HU2 is based on a review of:

- NEI 99-01, "Development of Emergency Action Levels for Non-Passive Reactors," Revision 6, dated November 2012 (Reference 1)
- RG 1.166, "Pre-Earthquake Planning and Immediate Nuclear Power Plant Operator Postearthquake Actions," dated March 1997 (Reference 4)
- Regulatory Issue Summary (RIS) 2003-18, Supplement 2, "Use of Nuclear Energy Institute (NEI) 99-01, 'Methodology for Development of Emergency Action Levels,' Revision 4, Dated January 2003," dated December 12, 2005 (Reference 5)

3.0 TECHNICAL EVALUATION

The proposed EAL change was evaluated in accordance with applicable regulatory requirements (e.g., Title 10 of the *Code of Federal Regulations* (10 CFR) 50.54(q) and Appendix E, Section IV.B.1). The evaluation assessed the conformance of the proposed EAL changes to those described in the endorsed guidance of NEI 99-01, Revision 6 to determine if the proposed EAL wording change resulted in:

- "No Change" to the guidance,
- A "Difference" in the wording provided or
- A "Deviation" from the guidance.

Any items considered to be "Differences" or "Deviations" are based on the definitions provided in RIS 2003-18, "Use of NEI 99-01, Methodology for Development of Emergency Action Levels," (Reference 6) and supporting supplements (References 5 and 7). The RIS and supporting supplements were issued to clarify technical positions regarding the revision of EALs. Specifically, the RIS documentation provides clarification on the level of detail licensees need to provide to support proposed changes to EALs. The RIS documents suggest that specific information be included with the EAL revision submittal to help facilitate the review process. The RIS information defines an EAL "Difference" and "Deviation" as follows:

- A "Difference" is an EAL change where the basis scheme guidance (e.g., NUREG, NUMARC, and NEI) differs in wording but agrees in meaning and intent, such that classification of an event would be the same, whether using the basis scheme guidance or the site-specific proposed EAL. Examples of "Differences" include the use of site-specific terminology or administrative reformatting of site-specific EALs.
- A "Deviation" is an EAL change where the basis scheme guidance differs in wording and is altered in meaning or intent, such that classification of the event could be different between the basis scheme guidance and the site-specific proposed EAL. Examples of "Deviations" include the use of altered mode applicability, altering key words or time limits, or changing words of physical reference (protected area, safety-related equipment, etc.).

3.1 Site-Specific Evaluation

A comparison matrix for each plant site has been developed that provides a tabular format of the proposed changes to IC HU2 including mode applicability. This matrix provides a means of assessing the proposed EAL in terms of "Deviations" and "Differences" from the NRC-endorsed guidance in NEI 99-01, Revision 6.

The comparison matrix for each plant site is included as an attachment to the corresponding site-specific enclosure to this letter.

- Enclosure 2, Attachment 1 – EAL Comparison Matrix for BFN
- Enclosure 3, Attachment 1 – EAL Comparison Matrix for SQN
- Enclosure 4, Attachment 1 – EAL Comparison Matrix for WBN

3.2 Conclusions

TVA has determined that this change constitutes a "Deviation" as it would be a change to the intent of the NEI 99-01, Revision 6. As noted in the developer notes in NEI 99-01 Revision 6, it is the intention of this IC to use the available OBE alarm and would be inconsistent with the meaning or intent of the approved EAL basis. Therefore, this change would put TVA out of compliance and result in a reduction in effectiveness if implemented without prior approval.

TVA has evaluated the proposed EAL change considering the requirements noted in the previous section. The proposed change to the EAL scheme contained in this submittal does not reduce the capability to meet the applicable emergency planning requirements established in 10 CFR 50.47 and 10 CFR 50, Appendix E for IC HU2.

4.0 **REGULATORY EVALUATION**

4.1 Applicable Regulatory Requirements and Criteria

Regulation 10 CFR 50.47, "Emergency plans," sets forth emergency plan requirements for nuclear power plant facilities. The regulation in 10 CFR 50.47(a)(1)(i) states, in part, that:

[...]no initial operating license for a nuclear power reactor will be issued unless a finding is made by the NRC that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.

Regulation 10 CFR 50.47(b) establishes the standards that the onsite and offsite emergency response plans must meet for NRC staff to make a positive finding that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. Planning standard (4) of this section requires that onsite and offsite emergency response plans contain:

A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.

Regulation 10 CFR 50.47(b)(4) specifies a standard emergency classification and action level scheme, assuring that implementation methods are relatively consistent throughout the industry for a given reactor and containment design while simultaneously providing an opportunity for a licensee to modify its EAL scheme as necessary to address plant-specific design considerations or preferences.

Regulation 10 CFR 50, Appendix E, Section IV.B, "Assessment Actions," states in subsection 1:

The means to be used for determining the magnitude of, and for continually assessing the impact of, the release of radioactive materials shall be described, including emergency action levels that are to be used as criteria for determining the need for notification and participation of local and State agencies, the Commission, and other Federal agencies, and the emergency action levels that are to be used for determining when and what type of protective measures should be considered within and outside the site boundary to protect health and safety. The emergency action levels shall be based on in-plant conditions and instrumentation in addition to onsite and offsite monitoring. By June 20, 2012, for nuclear power reactor licensees, these action levels must include hostile action

Enclosure 1

that may adversely affect the nuclear power plant. The initial emergency action levels shall be discussed and agreed on by the applicant or licensee and state and local governmental authorities, and approved by the NRC. Thereafter, emergency action levels shall be reviewed with the State and local governmental authorities on an annual basis.

The NRC also has supporting regulatory guidance documents to help interpret the regulation.

Regulatory Guide (RG) 1.219, (Reference 8) Section 4.4,e,(3):

“A change could require prior NRC approval if it would result in an EAL that is inconsistent with the meaning or intent of the approved EAL bases such that the classification of the event would be different from that approved by the NRC in a site-specific application or from an endorsed industry EAL scheme that had been approved for licensee use.”

Regulatory Information Summary (RIS) 2003-18, Supplement 2 (Reference 5):

“A deviation is an EAL change where the basis scheme guidance differs in wording and is altered in meaning or intent, such that classification of the event could be different between the basis scheme guidance and the site-specific proposed EAL. Examples of deviations include the use of altered mode applicability, altering key words or time limits, or changing words of physical reference (protected area, safety-related equipment, etc.).”

“Expanded clarification:

The following is a cited example of a deviation:

Any change to the IC and/or EAL, and/or basis, wording as stated in NEI 99-01 that alters the intent of the IC and/or EAL, i.e., the IC and/or EAL:

- Does not classify at the classification level consistent with NEI 99-01*
- Is not logically integrated with other EALs in the EAL scheme*
- Results in an incomplete EAL scheme (i.e., does not classify all potential emergency conditions)”*

Accordingly, this change cannot be made by TVA under the provisions of 10 CFR 50.54(q) as the proposed change would not continue to comply with the requirements because other methods to evaluate the seismic event are not specifically credited in the EAL. In addition, this would be considered a reduction in effectiveness because it would be inconsistent with the meaning or intent of the approved EAL basis. As such, TVA must submit an application for an amendment to its license and receive NRC approval before implementing the change.

4.2 Precedent

The NRC *has previously* issued license amendments for adopting this proposed deviation change to IC HU2. However, the identified amendments were part of a broader change to the NEI 99-01 Revision 6 EAL scheme.

- Letter from NRC to Exelon, “Calvert Cliffs Nuclear Power Plant, Units 1 and 2; Calvert Cliffs Independent Spent Fuel Storage Installation; Nine Mile Point Nuclear Station, Units 1 and 2; and R.E. Ginna Nuclear Power Plant – Issuance of Amendments Revising Emergency Action Level Schemes (CAC Nos. MF9836-MF9840, EPID L-2017-LLA-0237),” dated June 26, 2018 (ML18137A614)

4.3 No Significant Hazards Consideration

In accordance with 10 CFR 50.90, TVA requests amendment to the Facility Operating Licenses for BFN, SQN, and WBN plants. TVA proposes to make an exception in IC HU2 to an alternate method to declare a seismic event in addition to the OBE alarm. This alternate method would allow declaration based physical detection and verification using site specific values.

The proposed change to the IC HU2 does not reduce the capability to meet the emergency planning requirements established in 10 CFR 50.47 and 10 CFR 50, Appendix E. The proposed change does not reduce the functionality, performance, or capability of the Emergency Response Organizations (ERO) to respond in mitigating the consequences of an accident. All the ERO functions will continue to be performed as required.

The proposed changes have been reviewed considering the applicable requirements of 10 CFR 50.47, 10 CFR 50, Appendix E, and other applicable NRC documents. TVA has evaluated the proposed changes to the Emergency Plans and determined that the changes do not involve a significant hazards consideration. An analysis of the issue of no significant hazards consideration is presented below.

1. *Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?*

Response: No

The proposed change does not affect the physical configuration or function of plant structures, systems, or components (SSC) or the manner in which SSCs are operated, maintained, modified, tested, or inspected. No actual facility equipment or accident analyses are affected by the proposed changes.

The proposed change revises the IC HU2 scheme to be consistent with the NRC-endorsed EAL scheme contained in NEI 99-01, Revision 6, "Development of Emergency Action Levels for Non-Passive Reactors," but it does not alter any of the requirements of the operating license or the technical specifications. This change provides for an exception to allow diversity of seismic activity monitoring to ensure the seismic emergency action response remains unchanged.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. *Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?*

Response: No

The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed). The proposed change does not create any new failure modes for existing equipment or any new limiting single failures.

Additionally, the proposed change does not involve a change in the methods governing normal plant operation, and all safety functions will continue to perform as previously assumed in the accident analyses. Thus, the proposed change does not adversely affect the design function or operation of any structures, systems, and components important to safety.

No new accident scenarios, failure mechanisms, or limiting single failures are introduced as a result of the proposed change. The proposed change does not challenge the performance or integrity of any safety-related system.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. *Does the proposed amendment involve a significant reduction in a margin of safety?*

Response: No

The margin of safety associated with the acceptance criteria for Design Basis Events remains unchanged. The proposed change will have no effect on the availability, operability, or performance of safety-related systems and components. The proposed change will not adversely affect the operation of plant equipment or the function of equipment assumed in the accident analysis.

The proposed amendment does not involve changes to any safety analyses assumptions, safety limits, or limiting safety system settings. The changes do not adversely affect plant operating margins or the reliability of equipment credited in the safety analyses.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based upon the above analysis, TVA concludes that the proposed amendment does not involve a significant hazards consideration, under the standards set forth in 10 CFR 50.92(c), "Issuance of Amendment," and accordingly, a finding of "no significant hazards consideration" is justified.

4.4 Conclusions

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

5.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in the individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with the proposed amendment.

6.0 REFERENCES

1. NEI 99-01, "Development of Emergency Action Levels for Non-Passive Reactors," Revision 6, dated November 2012 (ML12326A805)
2. NRC Letter to NEI, "U.S. Nuclear Regulatory Commission Review and Endorsement of NEI 99-01, Revision 6, November 2012," dated March 28, 2013 (ML12346A463)
3. NRC Letter to TVA, "Browns Ferry Nuclear Plant, Units 1, 2, And 3; Sequoyah Nuclear Plant, Units 1 And 2; Watts Bar Nuclear Plant, Units 1 And 2 – Issuance of Amendments Regarding Request to Upgrade Emergency Action Level Scheme (CAC Nos. MF9054, MF9055, MF9056, MF9057, MF9058, MF9059, and MF9060; EPID L-2017-LLA-0160)," dated December 22, 2017 (ML17289A032)
4. NRC RG 1.166, "Pre-Earthquake Planning and Immediate Nuclear Power Plant Operator Postearthquake Actions," dated March 1997 (ML003740089)
5. NRC RIS 2003-18, Supplement 2, "Use of Nuclear Energy Institute (NEI) 99-01, 'Methodology for Development of Emergency Action Levels,' Revision 4, dated January 2003," dated December 12, 2005 (ML051450482)
6. NRC RIS 2003-18, "Use of NEI 99-01, 'Methodology for Development of Emergency Action Levels,' Revision 4, dated January 2003," dated October 8, 2003 (ML032580518)
7. NRC RIS 2003-18, Supplement 1, "Use of Nuclear Energy Institute (NEI) 99-01, 'Methodology for Development of Emergency Action Levels,' Revision 4, dated January 2003," dated July 13, 2004 (ML041550395)
8. NRC RG 1.219, "Guidance on Making Changes to Emergency Plans for Nuclear Power Reactors," dated November 2011 (ML102510626)

Enclosure 2

Supporting Information for the Revision to the Browns Ferry Nuclear Plant Emergency Action Level Scheme

Attachments:

1. BFN Emergency Action Level Comparison Matrix
2. BFN Emergency Action Level Proposed Change (Markup Copy)
3. BFN Emergency Action Level Proposed Change (Final Typed)

Enclosure 2
Attachment 1

Browns Ferry Nuclear Plant – Emergency Action Level Comparison Matrix

HU2: RECOGNITION CATEGORY	
NEI 99-01 Rev 6	Browns Ferry Nuclear (BFN) Proposed
Initiating Condition: Seismic event greater than OBE levels. Operating Mode Applicability: All Example Emergency Action Levels: (1)	Initiating Condition: Seismic event greater than OBE levels. Operating Mode Applicability: All Example Emergency Action Levels (EAL): (1 or 2)
Difference / Deviation / Justification	
<p>Deviation: Nuclear Energy Institute (NEI) 99-01 Rev 6 Initiating Condition does not contain the additional method, Emergency Action Level (2), related to when the OBE alarm window is unavailable.</p> <p>Justification: EAL (2) is included to allow declaration based on physical detection and verification using established site-specific values and ensures a timely classification if the OBE alarm is out-of-service.</p>	
THRESHOLDS	
NEI 99-01 Rev 6	Browns Ferry Proposed EAL
(1) Seismic event greater than Operating Basis Earthquake (OBE) as indicated by: (site-specific indication that a seismic event met or exceeded OBE limits)	(1) Seismic event greater than Operating Basis Earthquake (OBE) as indicated by: <ul style="list-style-type: none"> • Unit 1 Control Room Panel 1-XA-55-22C Window 6, 1/2 SSE RESPONSE SPECTRUM EXCEEDED <p style="text-align: center;">OR</p> (2) When seismic monitoring equipment is not available: <ol style="list-style-type: none"> a. Control room personnel feel an actual or potential seismic event. <p style="text-align: center;">AND</p> <ol style="list-style-type: none"> b. ANY one of the following confirmed in < 15 mins of the event: <ul style="list-style-type: none"> • Earthquake resulted in Modified Mercalli Intensity (MMI) Level VI or greater within 5 km (3.1 miles) from plant. • Earthquake was magnitude 6.0 (Richter scale) or greater. • Earthquake was magnitude 5.0 (Richter scale) or greater and occurred within 200 km (124.5 miles) from plant.

Enclosure 2
Attachment 1

Difference / Deviation / Justification

Deviation: NEI 99-01 Rev 6 Initiating Condition does not contain the additional method, Emergency Action Level (2), related to when the OBE alarm window is unavailable. Because this clarifying language is not contained in the NEI 99-01 Rev 6 basic scheme guidance, it is considered a deviation as it alters the intended use of the OBE alarm and therefore inconsistent with the meaning or intent of the approved EAL basis.

Justification: EAL (2) is included to allow declaration based on physical detection and verification using established site-specific values and ensures a timely classification if the OBE alarm is out-of-service as the operators would not have to search for the declaration criteria under time pressure. The above proposed changes provide an enhancement to NEI 99-01, Revision 6. The change is consistent with the guidance provided in NEI 99-01, Revision 6, Regulatory Issue Summary 2003-18, and Regulatory Guide 1.166, Revision 0.

BFN Unit 0	Emergency Classification Procedure Attachment 3 – Bases	EPIP-1 Revision 0061 Page 111 of 143
---------------	--	--

HU2

ECL: Unusual Event

Initiating Condition: Seismic event greater than OBE levels.

Operating Mode Applicability: All

Emergency Action Levels:

Note: For emergency classification, if EAL 2.b is not able to be confirmed, then the occurrence of a seismic event is confirmed in manner deemed appropriate by the Shift Manager or Site Emergency Director in < 15 mins of the event.

- (1) Seismic event greater than Operating Basis Earthquake (OBE) as indicated by:
- Unit 1 Control Room Panel 1-XA-55-22C Window 6, 1/2 SSE
RESPONSE SPECTRUM EXCEEDED

OR

- (2) When Seismic Monitoring Equipment is not available:
- a. Control Room personnel feel an actual or potential seismic event.

AND

- b. **ANY** one of the following confirmed in < 15 mins of the event:
- Earthquake resulted in Modified Mercalli Intensity (MMI) Level VI or greater within 5 km (3.1 miles) from plant.
 - Earthquake was magnitude 6.0 (Richter scale) or greater.
 - Earthquake was magnitude 5.0 (Richter scale) or greater and occurred within 200 km (124.5 miles) from plant.

Basis:

This IC addresses a seismic event that results in accelerations at the plant site greater than those specified for an Operating Basis Earthquake (OBE)¹. An earthquake greater than an OBE but less than a Safe Shutdown Earthquake (SSE)² should have no significant impact on safety-related systems, structures, and components; however, some time may be required for the plantstaff to ascertain the actual post-event condition of the plant (for example, performs walk-downs and post-event inspections). Given the time necessary to perform walk-downs and inspections, and fully understand any impacts, this event represents a potential degradation of the level of safety of the plant.

EAL #1 Basis

Event verification with external sources should not be necessary during or following an OBE. Earthquakes of this magnitude should be readily felt by on-site personnel and recognized as a seismic event. The Shift Manager or SED may seek external verification if deemed appropriate; however, the verification action must not preclude a timely emergency declaration.

EAL #2 Basis

EAL 2.b and the accompanying note is included to ensure that a declaration does not result from felt vibrations caused by a non-seismic source (e.g., a dropped load). The Shift Manager or SED may seek external verification if deemed appropriate (e.g., a call to the USGS, check internet news sources, etc.); however, the verification action must not preclude a timely emergency declaration. This guidance recognizes that it may cause the site to declare an Unusual Event while another site, similarly affected but with readily available OBE indications in the Control Room, may not.

Depending upon the plant mode at the time of the event, escalation of the emergency classification level would be via IC CA6 or SA9.

References

0-AOI-100-5

1-ARP-9-22C

NEI 99-01 R6 HU2

RG 1.166 Appendix A

¹An OBE is vibratory ground motion for which those features of a nuclear power plant necessary for continued operation without undue risk to the health and safety of the public will remain functional.

²An SSE is vibratory ground motion for which certain (generally, safety-related) structures, systems, and components must be designed to remain functional.

BFN Unit 0	Emergency Classification Procedure Attachment 3 – Bases	EPIP-1 Revision 0061 Page 111 of 143
---------------	--	--

HU2

ECL: Unusual Event

Initiating Condition: Seismic event greater than OBE levels.

Operating Mode Applicability: All

Emergency Action Levels:

Note: For emergency classification, if EAL 2.b is not able to be confirmed, then the occurrence of a seismic event is confirmed in manner deemed appropriate by the Shift Manager or Site Emergency Director in **< 15 mins** of the event.

- (1) Seismic event greater than Operating Basis Earthquake (OBE) as indicated by:
- Unit 1 Control Room Panel 1-XA-55-22C Window 6, 1/2 SSE
RESPONSE SPECTRUM EXCEEDED

OR

- (2) When Seismic Monitoring Equipment is not available:
- a. Control Room personnel feel an actual or potential seismic event.

AND

- b. **ANY** one of the following confirmed in **< 15 mins** of the event:
 - Earthquake resulted in Modified Mercalli Intensity (MMI) **Level VI or greater within 5 km (3.1 miles)** from plant.
 - Earthquake was magnitude **6.0 (Richter scale) or greater**.
 - Earthquake was magnitude **5.0 (Richter scale) or greater** and occurred **within 200 km (124.5 miles)** from plant.

Basis:

This IC addresses a seismic event that results in accelerations at the plant site greater than those specified for an Operating Basis Earthquake (OBE)¹. An earthquake greater than an OBE but less than a Safe Shutdown Earthquake (SSE)² should have no significant impact on safety-related systems, structures, and components; however, some time may be required for the plant staff to ascertain the actual post-event condition of the plant (for example, performs walk-downs and post-event inspections). Given the time necessary to perform walk-downs and inspections, and fully understand any impacts, this event represents a potential degradation of the level of safety of the plant.

EAL #1 Basis

Event verification with external sources should not be necessary during or following an OBE. Earthquakes of this magnitude should be readily felt by on-site personnel and recognized as a seismic event. The Shift Manager or SED may seek external verification if deemed appropriate; however, the verification action must not preclude a timely emergency declaration.

EAL #2 Basis

EAL 2.b and the accompanying note is included to ensure that a declaration does not result from felt vibrations caused by a non-seismic source (e.g., a dropped load). The Shift Manager or SED may seek external verification if deemed appropriate (e.g., a call to the USGS, check internet news sources, etc.); however, the verification action must not preclude a timely emergency declaration. This guidance recognizes that it may cause the site to declare an Unusual Event while another site, similarly affected but with readily available OBE indications in the Control Room, may not.

Depending upon the plant mode at the time of the event, escalation of the emergency classification level would be via IC CA6 or SA9.

References

0-AOI-100-5
1-ARP-9-22C
NEI 99-01 R6 HU2
RG 1.166 Appendix A

¹An OBE is vibratory ground motion for which those features of a nuclear power plant necessary for continued operation without undue risk to the health and safety of the public will remain functional.

²An SSE is vibratory ground motion for which certain (generally, safety-related) structures, systems, and components must be designed to remain functional.

Enclosure 3

Supporting Information for the Revision to the Sequoyah Nuclear Plant Emergency Action Level Scheme

Attachments:

1. SQN Emergency Action Level Comparison Matrix
2. SQN Emergency Action Level Proposed Change (Markup Copy)
3. SQN Emergency Action Level Proposed Change (Final Typed)

Enclosure 3
Attachment 1

Sequoyah Nuclear Plant - Emergency Action Level Comparison Matrix

HU2: RECOGNITION CATEGORY	
NEI 99-01 Rev 6	Sequoyah Nuclear (SQN) Proposed
Initiating Condition: Seismic event greater than OBE levels. Operating Mode Applicability: All Example Emergency Action Levels: (1)	Initiating Condition: Seismic event greater than OBE levels. Operating Mode Applicability: All Example Emergency Action Levels (EAL): (1 or 2)
Difference / Deviation / Justification	
Deviation: Nuclear Energy Institute (NEI) 99-01 Rev 6 Initiating Condition does not contain the additional method, Emergency Action Level (2), related to when the OBE alarm window is unavailable. Justification: EAL (2) is included to allow declaration based on physical detection and verification using established site-specific values and ensures a timely classification if the OBE alarm is out-of-service.	
THRESHOLDS	
NEI 99-01 Rev 6	Sequoyah Proposed EAL
(1) Seismic event greater than Operating Basis Earthquake (OBE) as indicated by: (site-specific indication that a seismic event met or exceeded OBE limits)	(1) Seismic event greater than Operating Basis Earthquake (OBE) as indicated by Panel 1-XA-55-15B alarm windows E-2 and D-1 activated. OR (2) When seismic monitoring equipment is not available: a. Control room personnel feel an actual or potential seismic event. AND b. ANY one of the following confirmed in < 15 mins of the event: <ul style="list-style-type: none"> • Earthquake resulted in Modified Mercalli Intensity (MMI) Level VI or greater within 5 km (3.1 miles) from plant. • Earthquake was magnitude 6.0 (Richter scale) or greater. • Earthquake was magnitude 5.0 (Richter scale) or greater and occurred within 200 km (124.5 miles) from plant.

Enclosure 3
Attachment 1

Difference / Deviation / Justification

Deviation: NEI 99-01 Rev 6 Initiating Condition does not contain the additional method, Emergency Action Level (2), related to when the OBE alarm window is unavailable. Because this clarifying language is not contained in the NEI 99-01 Rev 6 basic scheme guidance, it is considered a deviation as it alters the intended use of the OBE alarm and therefore inconsistent with the meaning or intent of the approved EAL basis.

Justification: EAL (2) is included to allow declaration based on physical detection and verification using established site-specific values and ensures a timely classification if the OBE alarm is out-of-service as the operators would not have to search for the declaration criteria under time pressure. The above proposed changes provide an enhancement to NEI 99-01, Revision 6. The change is consistent with the guidance provided in NEI 99-01, Revision 6, Regulatory Issue Summary 2003-18, and Regulatory Guide 1.166, Revision 0.

SQN Unit 0	Emergency Plan Classification Matrix Attachment 3 – Bases	EPIP-1 Revision 0057 Page 114 of 145
---------------	--	--

HU2

ECL: Unusual Event

Initiating Condition: Seismic event greater than OBE levels.

Operating Mode Applicability: All

Emergency Action Levels:

Note: For emergency classification, if EAL 2.b is not able to be confirmed, then the occurrence of a seismic event is confirmed in manner deemed appropriate by the Shift Manager or Site Emergency Director in < 15 mins of the event.

(1) Seismic event greater than Operating Basis Earthquake (OBE) as indicated by Panel 1-XA-55-15B alarm windows E-2 and D-1 activated.

OR

(2) When Seismic Monitoring Equipment is **not** available:

a. Control Room personnel feel an actual or potential seismic event.

AND

b. **ANY** one of the following confirmed in < 15 mins of the event:

- Earthquake resulted in Modified Mercalli Intensity (MMI) **Level VI or greater within 5 km (3.1 miles) from plant.**
- Earthquake was magnitude **6.0 (Richter scale) or greater.**
- Earthquake was magnitude **5.0 (Richter scale) or greater and occurred within 200 km (124.5 miles) from plant.**

Basis:

This IC addresses a seismic event that results in accelerations at the plant site greater than those specified for an Operating Basis Earthquake (OBE)¹. An earthquake greater than an OBE but less than a Safe Shutdown Earthquake (SSE)² should have no significant impact on safety-related systems, structures, and components; however, some time may be required for the plant staff to ascertain the actual post-event condition of the plant (for example, performs walk-downs and post-event inspections). Given the time necessary to perform walk-downs and inspections, and fully understand any impacts, this event represents a potential degradation of the level of safety of the plant.

EAL #1 Basis

Event verification with external sources should not be necessary during or following an OBE. Earthquakes of this magnitude should be readily felt by on-site personnel and recognized as a seismic event. The Shift Manager or SED may seek external verification if deemed appropriate (for example, a call to the NATIONAL EARTHQUAKE CENTER, check internet news sources, etc.); however, the verification action must not preclude a timely emergency declaration.

EAL #2 Basis

EAL 2.b and the accompanying note is included to ensure that a declaration does not result from felt vibrations caused by a non-seismic source (e.g., a dropped load). The Shift Manager or SED may seek external verification if deemed appropriate (e.g., a call to the USGS, check internet news sources, etc.); however, the verification action must not preclude a timely emergency declaration. This guidance recognizes that it may cause the site to declare an Unusual Event while another site, similarly affected but with readily available OBE indications in the Control Room, may not.

Depending upon the plant mode at the time of the event, escalation of the emergency classification level would be via IC CA6 or SA9.

References

1-AR-M15-B
AOP-N.05, Earthquake
NEI 99-01 R6 HU2
[RG 1.166 Appendix A](#)

¹An OBE is vibratory ground motion for which those features of a nuclear power plant necessary for continued operation without undue risk to the health and safety of the public will remain functional.

²An SSE is vibratory ground motion for which certain (generally, safety-related) structures, systems, and components must be designed to remain functional.

SQN Unit 0	Emergency Plan Classification Matrix Attachment 3 – Bases	EPIP-1 Revision 0057 Page 114 of 145
---------------	--	--

HU2

ECL: Unusual Event

Initiating Condition: Seismic event greater than OBE levels.

Operating Mode Applicability: All

Emergency Action Levels:

Note: For emergency classification, if EAL 2.b is not able to be confirmed, then the occurrence of a seismic event is confirmed in manner deemed appropriate by the Shift Manager or Site Emergency Director in **< 15 mins** of the event.

(1) Seismic event greater than Operating Basis Earthquake (OBE) as indicated by Panel 1-XA-55-15B alarm windows E-2 and D-1 activated.

OR

(2) When Seismic Monitoring Equipment is **not** available:

a. Control Room personnel feel an actual or potential seismic event.

AND

b. **ANY** one of the following confirmed in **< 15 mins** of the event:

- Earthquake resulted in Modified Mercalli Intensity (MMI) **Level VI or greater within 5 km (3.1 miles)** from plant.
- Earthquake was magnitude **6.0 (Richter scale) or greater**.
- Earthquake was magnitude **5.0 (Richter scale) or greater** and occurred **within 200 km (124.5 miles)** from plant.

Basis:

This IC addresses a seismic event that results in accelerations at the plant site greater than those specified for an Operating Basis Earthquake (OBE)¹. An earthquake greater than an OBE but less than a Safe Shutdown Earthquake (SSE)² should have no significant impact on safety-related systems, structures, and components; however, some time may be required for the plant staff to ascertain the actual post-event condition of the plant (for example, performs walk-downs and post-event inspections). Given the time necessary to perform walk-downs and inspections, and fully understand any impacts, this event represents a potential degradation of the level of safety of the plant.

EAL #1 Basis

Event verification with external sources should not be necessary during or following an OBE. Earthquakes of this magnitude should be readily felt by on-site personnel and recognized as a seismic event. The Shift Manager or SED may seek external verification if deemed appropriate (for example, a call to the NATIONAL EARTHQUAKE CENTER, check internet news sources, etc.); however, the verification action must not preclude a timely emergency declaration.

EAL #2 Basis

EAL 2.b and the accompanying note is included to ensure that a declaration does not result from felt vibrations caused by a non-seismic source (e.g., a dropped load). The Shift Manager or SED may seek external verification if deemed appropriate (e.g., a call to the USGS, check internet news sources, etc.); however, the verification action must not preclude a timely emergency declaration. This guidance recognizes that it may cause the site to declare an Unusual Event while another site, similarly affected but with readily available OBE indications in the Control Room, may not.

Depending upon the plant mode at the time of the event, escalation of the emergency classification level would be via IC CA6 or SA9.

References

1-AR-M15-B
AOP-N.05, Earthquake
NEI 99-01 R6 HU2
RG 1.166 Appendix A

¹An OBE is vibratory ground motion for which those features of a nuclear power plant necessary for continued operation without undue risk to the health and safety of the public will remain functional.

²An SSE is vibratory ground motion for which certain (generally, safety-related) structures, systems, and components must be designed to remain functional.

Enclosure 4

Supporting Information for the Revision to the Watts Bar Nuclear Plant Emergency Action Level Scheme

Attachments:

1. WBN Emergency Action Level Comparison Matrix
2. WBN Emergency Action Level (Markup Copy)
3. WBN Emergency Action Level (Final Typed)

Enclosure 4
Attachment 1

Watts Bar Nuclear Plant - Emergency Action Level Comparison Matrix

HU2: RECOGNITION CATEGORY	
NEI 99-01 Rev 6	Watts Bar Nuclear (WBN) Proposed
Initiating Condition: Seismic event greater than OBE levels. Operating Mode Applicability: All Example Emergency Action Levels: (1)	Initiating Condition: Seismic event greater than OBE levels. Operating Mode Applicability: All Example Emergency Action Levels (EAL): (1 or 2)
Difference / Deviation / Justification	
Deviation: Nuclear Energy Institute (NEI) 99-01 Rev 6 Initiating Condition does not contain the additional method, Emergency Action Level (2), related to when the OBE alarm window is unavailable. Justification: EAL (2) is included to allow declaration based on physical detection and verification using established site-specific values and ensures a timely classification if the OBE alarm is out-of-service.	
THRESHOLDS	
NEI 99-01 Rev 6	Watts Bar Proposed EAL
(1) Seismic event greater than Operating Basis Earthquake (OBE) as indicated by: (site-specific indication that a seismic event met or exceeded OBE limits)	(1) Seismic event greater than Operating Basis Earthquake (OBE) as indicated by Alarm Window 166-D, OBE SPECTRA EXCEEDED lit. OR (2) When seismic monitoring equipment is not available: a. Control room personnel feel an actual or potential seismic event. AND b. ANY one of the following confirmed in < 15 mins of the event: <ul style="list-style-type: none"> • Earthquake resulted in Modified Mercalli Intensity (MMI) Level VI or greater within 5 km (3.1 miles) from plant. • Earthquake was magnitude 6.0 (Richter scale) or greater. • Earthquake was magnitude 5.0 (Richter scale) or greater and occurred within 200 km (124.5 miles) from plant.

Enclosure 4
Attachment 1

Difference / Deviation / Justification

Deviation: NEI 99-01 Rev 6 Initiating Condition does not contain the additional method, Emergency Action Level (2), related to when the OBE alarm window is unavailable. Because this clarifying language is not contained in the NEI 99-01 Rev 6 basic scheme guidance, it is considered a deviation as it alters the intended use of the OBE alarm and therefore inconsistent with the meaning or intent of the approved EAL basis.

Justification: EAL (2) is included to allow declaration based on physical detection and verification using established site-specific values and ensures a timely classification if the OBE alarm is out-of-service as the operators would not have to search for the declaration criteria under time pressure. The above proposed changes provide an enhancement to NEI 99-01, Revision 6. The change is consistent with the guidance provided in NEI 99-01, Revision 6, Regulatory Issue Summary 2003-18, and Regulatory Guide 1.166, Revision 0.

WBN Unit 0	Emergency Plan Classification Logic Attachment 3 – Bases	EPIP-1 Revision 0054 Page 113 of 145
---------------	---	--

HU2

ECL: Unusual Event

Initiating Condition: Seismic event greater than OBE levels.

Operating Mode Applicability: All

Emergency Action Levels:

Note: For emergency classification, if EAL 2.b is not able to be confirmed, then the occurrence of a seismic event is confirmed in manner deemed appropriate by the Shift Manager or Site Emergency Director in < 15 mins of the event.

(1) Seismic event greater than Operating Basis Earthquake (OBE) as indicated by Alarm Window 166-D, OBE SPECTRA EXCEEDED lit.

OR

(2) When Seismic Monitoring Equipment is **not** available:

a. Control Room personnel feel an actual or potential seismic event.

AND

- b. **ANY** one of the following confirmed in < 15 mins of the event:
- Earthquake resulted in Modified Mercalli Intensity (MMI) **Level VI or greater within 5 km (3.1 miles) from plant.**
 - Earthquake was magnitude **6.0 (Richter scale) or greater.**
 - Earthquake was magnitude **5.0 (Richter scale) or greater** and occurred **within 200 km (124.5 miles) from plant.**

Basis:

This IC addresses a seismic event that results in accelerations at the plant site greater than those specified for an Operating Basis Earthquake (OBE)¹. An earthquake greater than an OBE but less than a Safe Shutdown Earthquake (SSE)² should have no significant impact on safety-related systems, structures, and components; however, some time may be required for the plant staff to ascertain the actual post-event condition of the plant (for example, performs walk-downs and post-event inspections). Given the time necessary to perform walk-downs and inspections, and fully understand any impacts, this event represents a potential degradation of the level of safety of the plant.

EAL #1 Basis

Event verification with external sources should not be necessary during or following an OBE. Earthquakes of this magnitude should be readily felt by on-site personnel and recognized as a seismic event. The Shift Manager or SED may seek external verification if deemed appropriate (for example, a call to the USGS, check internet news sources, etc.); however, the verification action must not preclude a timely emergency declaration.

EAL #2 Basis

EAL 2.b and the accompanying note is included to ensure that a declaration does not result from felt vibrations caused by a non-seismic source (e.g., a dropped load). The Shift Manager or SED may seek external verification if deemed appropriate (e.g., a call to the USGS, check internet news sources, etc.); however, the verification action must not preclude a timely emergency declaration. This guidance recognizes that it may cause the site to declare an Unusual Event while another site, similarly affected but with readily available OBE indications in the Control Room, may not.

Depending upon the plant mode at the time of the event, escalation of the emergency classification level would be via IC CA6 or SA9.

References

0-ARI-166-172
1, 2-AOI-9, Earthquake
NEI 99-01 R6 HU2
[RG 1.166 Appendix A](#)

¹An OBE is vibratory ground motion for which those features of a nuclear power plant necessary for continued operation without undue risk to the health and safety of the public will remain functional.

²An SSE is vibratory ground motion for which certain (generally, safety-related) structures, systems, and components must be designed to remain functional.

WBN Unit 0	Emergency Plan Classification Logic Attachment 3 – Bases	EPIP-1 Revision 0054 Page 113 of 145
---------------	---	--

HU2

ECL: Unusual Event

Initiating Condition: Seismic event greater than OBE levels.

Operating Mode Applicability: All

Emergency Action Levels:

Note: For emergency classification, if EAL 2.b is not able to be confirmed, then the occurrence of a seismic event is confirmed in manner deemed appropriate by the Shift Manager or Site Emergency Director in **< 15 mins** of the event.

- (1) Seismic event greater than Operating Basis Earthquake (OBE) as indicated by Alarm Window 166-D, OBE SPECTRA EXCEEDED lit.

OR

- (2) When Seismic Monitoring Equipment is **not** available:
- Control Room personnel feel an actual or potential seismic event.

AND

- ANY** one of the following confirmed in **< 15 mins** of the event:
 - Earthquake resulted in Modified Mercalli Intensity (MMI) **Level VI or greater within 5 km (3.1 miles)** from plant.
 - Earthquake was magnitude **6.0 (Richter scale) or greater**.
 - Earthquake was magnitude **5.0 (Richter scale) or greater** and occurred **within 200 km (124.5 miles)** from plant.

Basis:

This IC addresses a seismic event that results in accelerations at the plant site greater than those specified for an Operating Basis Earthquake (OBE)¹. An earthquake greater than an OBE but less than a Safe Shutdown Earthquake (SSE)² should have no significant impact on safety-related systems, structures, and components; however, some time may be required for the plant staff to ascertain the actual post-event condition of the plant (for example, performs walk-downs and post-event inspections). Given the time necessary to perform walk-downs and inspections, and fully understand any impacts, this event represents a potential degradation of the level of safety of the plant.

EAL #1 Basis

Event verification with external sources should not be necessary during or following an OBE. Earthquakes of this magnitude should be readily felt by on-site personnel and recognized as a seismic event. The Shift Manager or SED may seek external verification if deemed appropriate (for example, a call to the USGS, check internet news sources, etc.); however, the verification action must not preclude a timely emergency declaration.

EAL #2 Basis

EAL 2.b and the accompanying note is included to ensure that a declaration does not result from felt vibrations caused by a non-seismic source (e.g., a dropped load). The Shift Manager or SED may seek external verification if deemed appropriate (e.g., a call to the USGS, check internet news sources, etc.); however, the verification action must not preclude a timely emergency declaration. This guidance recognizes that it may cause the site to declare an Unusual Event while another site, similarly affected but with readily available OBE indications in the Control Room, may not.

Depending upon the plant mode at the time of the event, escalation of the emergency classification level would be via IC CA6 or SA9.

References

0-ARI-166-172
1, 2-AOI-9, Earthquake
NEI 99-01 R6 HU2
RG 1.166 Appendix A

¹An OBE is vibratory ground motion for which those features of a nuclear power plant necessary for continued operation without undue risk to the health and safety of the public will remain functional.

²An SSE is vibratory ground motion for which certain (generally, safety-related) structures, systems, and components must be designed to remain functional.