



Tennessee Valley Authority, 1101 Market Street, Chattanooga, TN 37402

CNL-18-071

April 27, 2018

10 CFR 52.17

ATTN: Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Clinch River Nuclear Site  
NRC Docket No. 52-047

Subject: Supplemental Information Related to Emergency Planning Exemption  
Requests in Support of Early Site Permit Application for  
Clinch River Nuclear Site

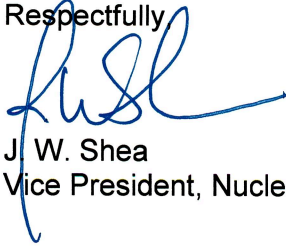
- References:
1. Letter from TVA to NRC, CNL-17-151, "Revision 1 of Application for Early Site Permit for Clinch River Nuclear Site," dated December 15, 2017
  2. USNRC Request for Additional Information No. 11, Review Section: 13.03 - Emergency Planning, Application Section: Part 6, EP Exemption, dated December 21, 2017 (eRAI-9227)
  3. Letter from TVA to NRC, CNL-18-009, "Response to Request for Additional Information Related to Emergency Planning Exemption Requests in Support of Early Site Permit Application for Clinch River Nuclear Site," dated January 22, 2018
  4. Letter from TVA to NRC, CNL-18-019, "Replacement Pages for Response to Request for Additional Information Related to Emergency Planning Exemption Requests in Support of Early Site Permit Application for Clinch River Nuclear Site," dated February 20, 2018

By letter dated December 15, 2017 (Reference 1), Tennessee Valley Authority (TVA) submitted Revision 1 of the application for an early site permit for the Clinch River Nuclear Site in Oak Ridge, TN. Based on the staff's review of ESPA Part 6, *Exemptions and Departures*, an electronic request for additional (eRAI) 9227 information necessary to support review of the proposed exemption requests was issued (Reference 2). TVA provided responses to eRAI-9227 in References 3 and 4. Based on the information provided in References 3 and 4, the staff requested supplemental information. TVA's response to the staff's request for supplemental information is contained in Enclosure 1 to this letter. Enclosure 2 contains markups of ESPA Part 6, indicating the proposed changes to the exemption requests. Enclosure 3 to this letter provides markups of conforming changes to ESPA Site Safety Analysis report (SSAR) Part 2. The SSAR markup provided in Enclosure 3 to this letter supersedes the markup provided in Reference 3, Enclosure 4, page E4-3. The ESPA markups included in Enclosure 2 and 3 will be incorporated in a future revision of the ESPA.

There are no new regulatory commitments associated with this submittal. If any additional information is needed, please contact Dan Stout at (423) 751-7642.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 27th day of April 2018.

Respectfully



J. W. Shea  
Vice President, Nuclear Regulatory Affairs and Support Services

Enclosures:

1. Supplemental Information Related to Emergency Planning Exemption Requests in Part 6 of the ESPA
2. Markup of ESPA Part 6, Table 1-2, Item No. 19
3. Markup of Conforming Changes to ESPA SSAR Part 2, Table 1.9-2

cc (w/ Enclosures):

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cc (w/o Enclosures):

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**Enclosure 1 to Letter CNL-18-071**

**Supplemental Information Related to Emergency Planning  
Exemption Requests in Part 6 of the ESPA**

## ENCLOSURE 1

### Supplemental Information Related to Emergency Planning Exemption Requests in Part 6 of the ESPA

#### NRC Introduction

10 CFR 52.17(b)(2)(i) addresses the required contents of an early site permit application (ESPA) that proposes major features of the emergency plan. For such an application, the applicant may address various requirements in Appendix E to 10 CFR Part 50. ESPA Part 2 (Site Safety Analysis Report (SSAR)), Section 13.3, "Emergency Preparedness," identifies major features Emergency Plan 5A (Site Boundary EPZ) in ESPA Part 5, which reflects various requested emergency planning (EP) exemptions in ESPA Part 6, Table 1-1, "Exemptions Requested from 10 CFR 50.33(g), 50.47(b), and (c)(2) for the Site Boundary EPZ Emergency Plan" and Table 1-2, "Exemptions Requested from 10 CFR 50, Appendix E for the Site Boundary EPZ Emergency Plan."

#### NRC Question 1

Table 1-2 includes exemption request Item No. 16, which addresses proposed changes (exemption) to Section IV.F.2.b of Appendix E to 10 CFR Part 50 (below). The proposed change (strikethrough text) would remove the reference to the principal functional areas of emergency response that consist of "protective action recommendation development, and protective action decision making."

*F.2.b. Each licensee at each site shall conduct a subsequent exercise of its onsite emergency plan every 2 years. Nuclear power reactor licensees shall submit exercise scenarios under § 50.4 at least 60 days before use in an exercise required by this paragraph 2.b. ~~The exercise may be included in the full participation biennial exercise required by paragraph 2.c. of this section.~~ In addition, the licensee shall take actions necessary to ensure that adequate emergency response capabilities are maintained during the interval between biennial exercises by conducting drills, including at least one drill involving a combination of some of the principal functional areas of the licensee's onsite emergency response capabilities. The principal functional areas of emergency response include activities such as management and coordination of emergency response, accident assessment, event classification, notification of offsite authorities, assessment of the onsite and offsite impact of radiological releases, ~~protective action recommendation development, protective action decision making,~~ plant system repair and mitigative action implementation. During these drills, activation of all of the licensee's emergency response facilities (Technical Support Center (TSC), Operations Support Center (OSC), and Emergency Operations Facility (EOF)) would not be necessary, licensees would have the opportunity to consider accident management strategies, supervised instruction would be permitted, operating staff in all participating facilities would have the opportunity to resolve problems (success paths) rather than have controllers intervene, and the drills may focus on the onsite exercise training objectives.*

*For a site boundary plume exposure pathway (PEP) emergency planning zone (EPZ), the principal functional areas of emergency response would still include 'protective action recommendation development and protective action decision making,' in support of the onsite emergency response. As such, please address whether the request for an exemption from the words "protection action recommendation development, protective action decision making" should be removed or revised to ensure appropriate protective actions are retained for emergency response personnel onsite, or explain why this is not required.*

*In addition, make any related, conforming changes to any other requested exemptions or regulatory requirements, including conforming changes to the major features emergency plans, as appropriate. For example, Section 14.2, "EXERCISES," of Emergency Plan 5A (second bullet, second sentence (in parenthesis)) does not include the words "protective action decision making,"*

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*which are included in the comparable Section 14.2 of Emergency Plan 5B (2-Mile EPZ). It appears that the words "protective action decision making" should be included in Section 14.2 of both Emergency Plan 5A and 5B to ensure appropriate protective actions are retained for emergency response personnel onsite.*

#### **TVA Response**

The requested exemption is appropriate because it applies to the requirement, that during an exercise, the licensee takes actions necessary to ensure adequate emergency response capabilities are maintained to develop protective action recommendations (PARs) for communication to Offsite Response Organizations (OROs) for their consideration and ultimately for OROs to communicate those protective action decisions to individuals within the Plume Exposure Pathway Emergency Planning Zone (EPZ). The criteria established in ESPA SSAR Section 13.3, provide for adequate protection of public health and safety. Defined EPZs beyond the CRN Site and formal offsite radiological emergency response plans are not necessary because there are no offsite consequences from any credible event in excess of the criteria provided in SSAR Section 13.3. TVA's Emergency Plan will describe the capabilities to determine if a radiological release is occurring and to promptly communicate that information to OROs for their consideration. Each ORO is responsible for deciding what, if any, protective actions should be taken utilizing its Comprehensive Emergency Management Plan (CEMP).

The requested exemption is not applicable to onsite protective actions. These actions will continue to be maintained in accordance with 10 CFR 50.47(b)(10) and will be demonstrated during drills and exercises. NUREG-0654 Planning Standard J, "Protective Response," addresses "a range of protective actions for emergency workers and the public. The specific evaluation criteria associated with the Planning Standard that address onsite protective actions remain applicable. Protective actions for onsite personnel are described in Section 10.1, "Onsite Protective Actions for Radiological Events," of Emergency Plan 5A. These protective actions address the need to determine the extent of radiological hazards and to determine the need for building and area evacuations, as well as the need to conduct accountability and evacuation of nonessential personnel. The need to survey potentially contaminated individuals and vehicles before being released is addressed. Section 10.2, "Onsite Protective Actions for Hostile Action Events," of Emergency Plan 5A addresses protective actions for onsite personnel during a hostile action event. The capability to ensure appropriate protective actions for onsite personnel as described in Sections 10.1 and 10.2 of Emergency Plan 5A is retained and will be demonstrated during biennial exercises.

Because the requested exemption is not applicable to onsite protective actions, no revision to the exemption request or to Emergency Plan 5A are necessary.

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#### NRC Question 2

Table 1-2 includes exemption request Item No. 18, which addresses proposed changes (exemption) to Section IV.F.2.d of Appendix E to 10 CFR Part 50 (below). The proposed change (strikethrough text) – which TVA had previously revised in its January 22, 2018, response to NRC's December 21, 2017, electronic request for additional information (eRAI)-9227 (ADAMS Accession No. ML18004A297) – would remove the requirement for State participation in hostile action exercises.

*F.2.d. Each State with responsibility for nuclear power reactor emergency preparedness should fully participate in the ingestion pathway portion of exercises at least once every exercise cycle. In States with more than one nuclear power reactor plume exposure pathway EPZ, the State should rotate this participation from site to site. ~~Each State with responsibility for nuclear power emergency preparedness should fully participate in a hostile action exercise at least once every cycle and should fully participate in one hostile action exercise by December 31, 2015. States with more than one nuclear power reactor plume exposure pathway EPZ should rotate this participation from site to site.~~*

*For a site boundary PEP EPZ, participation by the State(s) – including local agencies (e.g., local law enforcement agencies) – would still be required in support of the onsite emergency response. As such, please address whether the requested exemption language to remove the request for an exemption from the requirement associated with State participation in hostile action exercises should be removed or revised to ensure State participation in hostile action exercises, or explain why this is not required. In addition, make any related, conforming changes to any other requested exemptions or regulatory requirements, including conforming changes to the major features emergency plans, as appropriate.*

#### TVA Response

After the events of September 11, 2001, the NRC reviewed the emergency preparedness planning basis and found that the design-basis threat (DBT) posed by hostile action does not necessarily lead to an event that is beyond the bounds of design-basis accidents (DBAs) defined in the current licensing basis (NSIR/DPR-ISG-01, Interim Staff Guidance – Emergency Planning for Nuclear Power Plants, rev. 0 dated November 2011.) The criteria established in SSAR Section 13.3, provide for adequate protection of public health and safety. Because there are no offsite consequences from any credible event in excess of the criteria provided in SSAR Section 13.3, defined EPZs beyond the CRN Site and formal offsite radiological emergency response plans would not be required. Because development of formal offsite radiological emergency response plans would not be required, exercise of those plans per Section IV.F.2.d of Appendix E to 10 CFR Part 50 would not be required.

However, following the events of September 11, 2001, the NRC required licensees to develop, implement, and maintain procedures that describe the response to a potential aircraft threat in accordance with 10 CFR 50.54(hh)(1) (NSIR/DPR-ISG-01, Interim Staff Guidance – Emergency Planning for Nuclear Power Plants, rev. 0 dated November 2011.) In addition, in 2011, the NRC amended 10 CFR Part 50, Appendix E, Section IV, to ensure that licensees adequately plan for resource needs during hostile action events. Therefore, TVA's Emergency Plan will address hostile actions and resource needs in support of the onsite emergency response during hostile action events in accordance with 10 CFR Part 50, Appendix E, Section IV.A.7. Functionally, licensees are required to establish relations with Offsite Response Organizations (OROs) to coordinate emergency response efforts should they ever be needed. The scope of ORO support includes the

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implementation of State and local response plans to protect public health and safety in the event of a severe reactor accident and to provide fire, medical, and local law enforcement agency (LLEA) support to the site. However, as previously indicated, development of formal offsite radiological emergency response plans would not be required.

Because regulation requires TVA to address hostile actions, a level of security commensurate with the consequences of a hostile action event is required. The security plan will continue to provide high assurance against a potential security event impacting a designated target set. The classification of hostile action events, notification of offsite authorities, and coordination with offsite agencies under a CEMP would still be required. Local agencies (e.g., local law enforcement agencies) would support the onsite response to a hostile action event. However, this response would not be predicated on the CEMP. This response would be coordinated with the CRN Site security plan.

#### NRC Question 3

*Table 1-2 includes exemption request Item No. 19, which addresses proposed changes (exemption) to Section IV.F.2.f of Appendix E to 10 CFR Part 50 (below). The proposed change (strikethrough text) would remove the requirement for FEMA consultation, and for State and local participation in remedial exercises.*

*F.2.f. Remedial exercises will be required if the emergency plan is not satisfactorily tested during the biennial exercise, such that NRC, ~~in consultation with FEMA,~~ cannot (1) find reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency or (2) determine that the Emergency Response Organization (ERO) has maintained key skills specific to emergency response. ~~The extent of State and local participation in remedial exercises must be sufficient to show that appropriate corrective measures have been taken regarding the elements of the plan not properly tested in the previous exercises.~~*

*For a site boundary PEP EPZ, State and local participation in remedial exercises would still be required for ingestion pathway exercises. Since the ESPA does not request an exemption from the requirements for an ingestion pathway EPZ, the requested exempted language (requirements) must be retained. As such, please address whether the request for an exemption from State and local participation in remedial exercises should be removed or revised to ensure State and local participation in remedial ingestion pathway exercises, or explain why this is not required.*

#### TVA Response

Offsite participation would be required in the performance of ingestion pathway exercises. Therefore, the requested exemption related to FEMA consultation and the need for State and local participation in remedial exercises has been withdrawn to ensure State and local participation in remedial ingestion pathway exercises, if necessary. This exemption will be reevaluated at the Combined License Application (COLA) stage. The specific exemption listed in ESPA Part 6, Table 1-2, as Item No. 19, is eliminated as provided in Enclosure 2 of this letter. Because the revision to Table 1-2 eliminates the requested exemption (No.19) from Table 1-2 of Part 6, a clean version of the markup is not provided. This markup will be incorporated in a future revision of the ESPA.

**Enclosure 2 to Letter CNL-18-071**

**Markups of ESPA, Part 6, Table 1-2**



## ENCLOSURE 2

### Markup of ESPA Part 6, Table 1-2, Item No.19

Note: ESPA Part 6, Table 1-2, Item 19 is being deleted as indicated below. The strikethroughs indicate text to be deleted and the exemption request will not be pursued. Only the changed portions of the table are shown.

**Table 1-2 (Sheet 10 of 10)**  
**Exemptions Requested from 10 CFR 50, Appendix E for the Site Boundary EPZ Emergency Plan**

Item	Regulation in Appendix E to 10 CFR Part 50	Basis for Exemption
19	<del>F.2.f. Remedial exercises will be required if the emergency plan is not satisfactorily tested during the biennial exercise, such that NRC, in consultation with FEMA, cannot (1) find reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency or (2) determine that the Emergency Response Organization (ERO) has maintained key skills specific to emergency response. The extent of State and local participation in remedial exercises must be sufficient to show that appropriate corrective measures have been taken regarding the elements of the plan not properly tested in the previous exercises.</del>	<del>Because there are no offsite consequences from any credible event in excess of the criteria provided in SSAR Section 13.3, formal offsite radiological emergency response plans are not necessary. Therefore, neither a full participation nor associated remedial exercise is required. Also refer to basis for 10 CFR 50.47(b) and 10 CFR 50.47(b)(4) in Table 1-1 and 10 CFR Part 50, Appendix E, Section IV.F.2.a. TVA would continue to invite State and local support organizations to participate in the periodic drills and exercises conducted to assess its ability to perform responsibilities related to an emergency at the facility. FEMA is responsible for evaluating the adequacy of offsite response during an exercise. Consultation with FEMA is not required because there is no formal offsite emergency response plan. OROs will continue to take actions on a comprehensive emergency planning basis to protect the health and safety of the public as they would at any other industrial site.</del>

**Enclosure 3 to Letter CNL-18-071**

**Markups of Conforming Changes to ESPA SSAR Part 2, Table 1.9-2**

## ENCLOSURE 3

### Markups of Conforming Changes to ESPA SSAR Part 2, Table 1.9-2

Note: Strikethroughs indicates text to be deleted. Bold text with underlines indicates text to be added. Text not in bold with underlines represents current formatting. The below markup supersedes the markup provided in letter CNL-18-009, Enclosure 4, page E4-3.

**Table 1.9-2 (Sheet 3 of 6)**  
**Conformance with Standard Review Plan**

Section of NUREG-0800	Rev.	Title	Applicable SSAR Section(s)	Conformance <sup>(a)</sup>	Comments
2.5.2	5	Vibratory Ground Motion	2.5.2	Conforms	A sensitivity analysis was performed to evaluate the impact of the consideration of overburden on GMRS.
2.5.3	5	Surface Faulting	2.5.3	Conforms	
2.5.4	5	Stability of Subsurface Materials and Foundations	2.5.4	Conforms	Profiles illustrating the detailed relationship between the foundation and subsurface materials is provided in the COLA. While the foundation depth is provided, remaining information (e.g., information related to backfill and borrow) are provided in the COLA.
2.5.5	5	Stability of Slopes	2.5.5	Conforms	Site grading are developed and stability of any safety-related slopes are addressed in the COLA.
3.5.1.6	4	Aircraft Hazards	3.5.1.6	Conforms	
11.2	4	Liquid Waste Management System	11.2.3	Conforms	Information related to design is addressed in the COLA.
11.3	3	Gaseous Waste Management System	11.3.3	Conforms	Information related to design is addressed in the COLA.
13.3	3	Emergency Planning	13.3	Exception	<p><u>SRP Criterion 1:</u> Part 5A: TVA is requesting exemptions from certain elements of 10 CFR 50.47(b)(4)–(6), (9) and (10) and 10 CFR 50, Appendix E F.2, F.2.a, F.2.a(i)–(iii), <u>and</u> F.2.b–d, <del>and F.2.f</del> as they relate to offsite emergency planning.</p> <p><u>SRP Criterion 2:</u> Part 5A: TVA is requesting exemptions from certain elements of 10 CFR 50.47(b)(4)–(6), (9) and (10) and 10 CFR 50, Appendix E F.2, F.2.a, F.2.a(i)–(iii), <u>and</u> F.2.b–d, <del>and F.2.f</del> as they relate to offsite emergency planning.</p> <p><u>SRP Criterion 3:</u> Certain aspects of the technology-specific Emergency Action Levels (EALs) required by 10 CFR 50.47(b)(4) and 10 CFR 50 Appendix E Section IV.B are addressed in the COLA. An EAL scheme consistent with industry standards developed to address SMR technology will be adopted.</p>