

## ClinchRiverESPHFNPEM Resource

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**From:** Fetter, Allen  
**Sent:** Thursday, October 26, 2017 3:33 PM  
**To:** Schiele, Raymond Joseph  
**Cc:** Sutton, Mallecia; ClinchRiverESPSafNPPEM Resource; Colaccino, Joseph; Burkhardt, Lawrence; Bradford, Anna; Hart, Michelle; Taylor, Robert  
**Subject:** Draft RAI pertaining to Part 6 - Exemptions and Departures (RAI Number 10, eRAI-9206)  
**Attachments:** CRNS ESP Draft RAI RC-10\_9206.pdf

Good Afternoon,

Attached is a draft RAI (RAI Number 10, eRAI-9206) pertaining to Part 6 of the Clinch River Nuclear Site ESP application - Exemptions and Departures. It is a supplemental RAI to previously issued RAI Number 7, eRAI-8885.

This is the 10th draft safety RAI prepared (Number 10) for the Clinch River Nuclear Site ESP application review, and it has unique e-RAI identifying number of eRAI-9206.

TVA has ten working days to review this draft RAI and to decide whether a conference call is needed to clarify any of portion of the RAI and/or if TVA identifies any proprietary information or security-related information (SRI) located in the question. After the call, or after ten days, NRC will finish processing the RAI through the eRAI system and issue it to TVA as a final RAI. Subsequent to receipt of the final RAI, TVA will have 30 calendar days to respond to the RAI unless additional time is specifically requested.

Please let me know if you have any questions.

Thanks,

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Office of New Reactors  
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**Draft Request for Additional Information, Number 10, eRAI-9206**

Issue Date: 10/26/2017

Application Title: Clinch River Nuclear Site, ESP

Operating Company: Tennessee Valley Authority

Docket No. 52-047

Review Section: NONE - NO SRP SECTION

Application Section: Part 6, EP exemption

**QUESTIONS**

**Supplemental Question to eRAI-8885**

By letter dated August 24, 2017 (ADAMS Accession No. ML17237A175), the Clinch River Nuclear site early site permit application (ESPA) applicant, Tennessee Valley Authority (TVA) submitted a response to Request for Information (RAI) Letter No. 7, eRAI-8885. To address eRAI-8885 Question 2, TVA described a representative analysis that was done to show that the technical basis criteria for the plume exposure pathway emergency planning zone size given within Site Safety Analysis Report (SSAR) Section 13.3.3 can be met for one design included within the ESPA plant parameter envelope (PPE). The plant-related information submitted within this analysis was for the NuScale design only.

As described in SSAR 13.3.3.1.1 "Environmental Protection Agency Protective Action Guides," the category of more frequent less severe core melt accidents includes intact containment, beyond design basis accident scenarios and accident scenarios with a mean core damage frequency (CDF)  $> 1 \times 10^{-6}$  per reactor-year. For the less severe core melt accident category, the analysis discussed in the RAI response evaluated the dose consequences at the site boundary for the most probable scenario chosen from the internal events, at power, intact containment severe accident scenarios used to develop the NuScale design basis source term for the maximum hypothetical accident in NuScale design certification application Final Safety Analysis Report (FSAR) 15.0.3.9, which is currently under staff review.

As described in SSAR 13.3.3.1.2, "Substantial Reduction in Early Health Effects," the category of less frequent more severe core melt accidents include postulated containment failure or bypass events with mean CDF  $> 1 \times 10^{-7}$  per reactor-year. Accident sequences with mean CDF  $> 1 \times 10^{-8}$  per reactor-year should be considered in the initial sequence selection. The RAI response stated that there are no credible events for the NuScale design within the less frequent more severe accidents category.

Key Issue 1: TVA is using the PPE approach for the ESPA. Moreover, the analysis-related information provided in the RAI response is only specific to the NuScale design which is not the design that could potentially have the largest post-accident offsite dose consequences.

1. Please explain how providing information about one design that may fit in the Clinch River Nuclear site ESPA PPE is sufficient to support the exemption requests to the EPZ size for any plant design that may be covered by the PPE.

Key Issue 2: It is unclear that TVA followed the methodology in SSAR 13.3.3 with respect to the information provided about the NuScale design. In order to complete its review, the staff requires the following additional information about implementation of the SSAR 13.3.3 plume exposure pathway EPZ size technical basis methodology described in the referenced RAI response:

2. Please explain how TVA followed the methodology in SSAR 13.3.3 with respect to the NuScale design information provided in the RAI response.
3. With respect to the more frequent less severe accidents, provide the analysis describing consideration of severe accidents other than those used to develop the design basis source term or justify why it is not necessary to perform such an analysis.
4. With respect to the severe accident scenario selection in general, contrary to the methodology implementation discussion in SSAR 13.3.3.1.4, the analysis did not discuss all relevant plant states (i.e., the scenario selection only included full power events, and did not include discussion of low power and shutdown events) and did not consider external hazards. Provide this analysis or justify deviating from the SSAR 13.3.3.1.4 information on implementation of the SSAR plume exposure pathway size basis methodology.
5. The staff notes that the analysis does not appear to consider the beyond design basis event with highest risk described in the NuScale design certification application Environmental Report (ADAMS Accession No ML17013A296). The reactor building crane failure accounts for 99% of total CDF, its CDF is two orders of magnitude larger than the next highest release category and the source term fraction of core released is larger. Considering the discussion in SSAR 13.3.3, including the implementation information in 13.3.3.1.4, discuss whether this event would be included in severe accident scenario selection and explain why this event was not considered in the analysis provided to support the RAI response.