



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

November 13, 2017

MEMORANDUM TO: Joseph Colaccino, Branch Chief
Licensing Branch 3
Division of New Reactor Licensing
Office of New Reactors

FROM: Mallecia Sutton, Project Manager **/RA/**
Licensing Branch 3
Division of New Reactor Licensing
Office of New Reactors

SUBJECT: NOVEMBER 15, 2017, AUDIT OF CLINCH RIVER NUCLEAR
SITE EARLY SITE PERMIT APPLICATION – PART 6-
EXEMPTIONS AND DEPARTURES, EMERGENCY
PLANNING EXEMPTIONS

By letter dated May 12, 2016, Tennessee Valley Authority (TVA) submitted the Clinch River Nuclear Site (CRNS) Early Site Permit (ESP) application to the U. S. Nuclear Regulatory Commission (NRC). On December 30, 2016, the NRC accepted the application for docketing and detailed technical review. The NRC staff has identified a need for an audit to support the basis for a finding of reasonable assurance of no undue risk to the public health and safety related to the proposed exemptions to emergency preparedness requirements in support of the applicant's Part 6 of the CRNS ESP application. A regulatory audit will commence on November 15, 2017, and be carried out at the NuScale office in Rockville, Maryland, and via the TVA Electronic Reading Room. During this audit, the NRC staff will examine the calculation packages and supporting documents that comprise the accident radiological consequence analyses as they relate to the ESP application Part-6 Exemptions and Departures, Emergency Planning Exemptions. The audit is scheduled to conclude by February 9, 2018. The NRC may elect to hold a public exit meeting at the end of the audit to discuss technical topics related to the audit findings and their relevance to the staff's supplemental request for additional information. Portions of this meeting may be closed due to proprietary nature of the technical topics. A copy of the audit plan is enclosed.

Docket No.: 52-047

Enclosure:
As stated

CONTACTS: Mallecia Sutton, NRO/DNRL
301-415-0673

SUBJECT: NOVEMBER 15, 2017, AUDIT OF CLINCH RIVER NUCLEAR SITE EARLY PERMIT APPLICATION – PART 6- EXEMPTIONS AND DEPARTURES, EMERGENCY PLANNING EXEMPTIONS

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**CLINCH RIVER NUCLEAR SITE EARLY PERMIT APPLICATION SECTION
PART 6- EXEMPTIONS AND DEPARTURES, EMERGENCY PLANNING EXEMPTIONS**

A. Background

Tennessee Valley Authority (TVA) submitted an early site permit (ESP) application with emergency planning exemption requests in Part 6 of the early site permit application (ESPA). Under Title 10 of the *Code of Federal Regulations* (10 CFR) 50.12(a)(1), specific exemptions may be granted if they are “authorized by law, will not present an undue risk to the public health and safety, and are consistent with the common defense and security.” The applicant needs to provide sufficient information to show that application of certain regulations in 10 CFR 50.33(g), 10 CFR 50.47(b) and (c)(2), and 10 CFR Part 50, “Domestic Licensing of Production and Utilization Facilities,” Appendix E, “Emergency Planning and Preparedness for Production and Utilization Facilities,” in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule, as required by 10 CFR 50.12(a)(2)(ii), or that special circumstances exist under other provisions of the regulation. Additionally, the applicant must show that the exemption otherwise meets the requirements of 10 CFR 50.12(a)(1).

In Part 2 of the ESP application, Site Safety Evaluation Report (SSAR), Section 1.1 states that the Clinch River Nuclear Site (CRNS) ESPA is based on a surrogate design defined by bounding plant parameters as part of a Plant Parameter Envelope (PPE). SSAR Section 13.3 states that criteria to aid in determining the size of the plume exposure emergency planning zone (EPZ) are based on a dose-at-distance approach and a demonstration that any accident consequences are less than the Environmental Protection Agency (EPA) Protective Action Guide (PAG) criteria related to early phase protective actions (see EPA-400/R-17/001, “PAG Manual: Protective Action Guides and Planning Guidance for Radiological Incidents,” January 2017, for the most recent version of the PAG manual) and meet a proposed risk reduction criteria for potential very severe accidents. The SSAR goes on to state that the combined license application must demonstrate that the specific small modular reactor design chosen will justify the size of the selected EPZs that would be consistent with one of the two Emergency Plans evaluated during the ESPA review (see ESPA Part 5).

By letter dated August 24, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17237A175), the CRNS ESPA applicant, 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 SSAR Section 13.3.3 can be met for one design included within the ESPA PPE. The NRC issued a supplemental question eRAI-9206 to eRAI-8885 dated November 9, 2017 (ADAMS Accession No. ML17313B185).

Based on the staff review of the ESPA Part 6 and subsequent RAI response from TVA and the supplemental RAI, the NRC staff determined an audit is needed to review technical information that would further aid the staff understanding the information that TVA would provide in their supplemental response and facilitate the NRC staff’s evaluation of information related to the safety analyses evaluating to support review of the proposed exemption request.

B. Regulatory Audit Scope and Methodology

The purpose of this audit is for the staff to examine and evaluate non-docketed information to:

1. To gain a better understanding of representative radiological consequences analyses supporting the applicant's August 24, 2017 response to RAI Letter No. 7, eRAI-8885, Question 2, the supplemental question eRAI-9206 and
2. Identify any information needed on the docket to support the basis for a finding of reasonable assurance of no undue risk to the public health and safety related to the proposed exemptions to emergency preparedness requirements.

This audit will also include reviewing the following topics:

1. Implementation of CRNS ESPA, SSAR Section 13.3 methodology in the representative analysis that supports the applicant's response to RAI Letter No. 7, eRAI-8885, Question 2
2. Representative design vendor-related information used as input to the analysis
3. Selection of severe accident scenarios for the analysis
4. Vendor supplied information on design basis and severe accident releases for the ESPA PPE

C. Regulatory Audit Bases

This regulatory audit is based on the following:

- NUREG 0800, "Standard Review Plan"
- Regulatory Guide (RG) 1.206, "Combined License Applications for Nuclear Power Plants"
- Title 10 of the *Code of Federal Regulations* (10 CFR) Part 20, "Standards for Protection Against Radiation"
- 10 CFR 50.12(a)(1), "No undue risk to public health and safety"
- 10 CFR 50.12(a)(2)(ii), "Demonstrates special circumstances"
- 10 CFR 50.33(g),
- 10 CFR 50.47(b) and (c)(2),
- 10 CFR Part 50, Appendix E
- 10 CFR 52.7

- Methodology from NUREG-0396, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants," December 1978

D. Information and Other Background Material for the Regulatory Audit

The TVA should make available documents pertaining to the topic areas within the scope, as listed below. The audit team expects to look at portions of many of these documents.

- Calculation packages that support the response to RAI Letter No. 7, eRAI-8885, Question 2
- Documents supporting the selection of severe accident scenarios, including Level 2 probabilistic risk assessment documents
- Documents providing vendor-supplied information used as input to the calculation packages
- Documents providing vendor-supplied information on design basis and severe accident releases for the ESPA PPE

E. Audit Team

The following are the audit team members:

Mallecia Sutton, NRC Project Manager
Michelle Hart, NRC Technical Reviewer

F. Logistics

The audit will consist of two parts: (1) a face-to-face at NuScale Rockville Office 11333 Woodglen Drive, Suite 205 Rockville, MD 20852 office on November 15, 2017 and (2) review of additional relevant documents in TVA's Electronic Reading Room. The audit may be followed up by a public meeting, either as part of the audit's conclusion or separately, to discuss technical aspects of the supplemental RAI. The audit will conclude by February 9, 2018. The audit team plans to issue an audit report within 90 days after completing the audit.

The proposed schedule for the audits are as follows:

Date: Wednesday November 15, 2017

1:30 p.m. - Audit Opens
1:45 p.m. - Site Orientation and Safety Briefing
2:00 p.m. – Technical Portion of Audit Begins
4:30 p.m.-Team Debrief
5:00 p.m. - Audit Closes at NuScale Office

Location: NuScale Rockville Office
11333 Woodglen Drive, Suite 205
Rockville, MD 20852

G. Audit Exit

To Be Determined (on or before February 9, 2018)

* The NRC may elect to hold a public exit meeting at the end of the audit to discuss technical topics related to the audit findings and their relevance to the staff's supplemental RAI. Portions of this meeting may be closed due to proprietary nature of the technical topics.