

ClinchRiverESPHFNPEm Resource

From: Fetter, Allen
Sent: Monday, April 10, 2017 5:04 PM
To: Schiele, Raymond Joseph; pshastings (pshastings@tva.gov)
Subject: Clinch River May 8-9 Site Audit Plan Draft-v2.docx
Attachments: Clinch River May 8-9 Site Audit Plan Draft-v2.docx

RGS provided a revised draft audit plan sooner than expected. Please make sure any changes are consistent with what TVA understood during last week's clarification call. If markups are needed, please use do so in track-changes. Thanks.

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Recipients:

"Schiele, Raymond Joseph" <rjschiele@tva.gov>
Tracking Status: None
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Draft Audit Plan for Areas Covered in Section 2.5 of the Site Safety Analysis Report, Clinch River Nuclear Site Early Site Permit Application

APPLICANT: Tennessee Valley Authority (TVA)

DATES: May 8-9, 2017

LOCATIONS: TVA Knoxville Office Complex
400 West Summit Hill Drive
Knoxville, Tennessee 37902

Clinch River Nuclear Site
Oak Ridge, Tennessee

AUDIT TEAM: David Heeszal, Team Leader (NRO/DSEA/RGS)
Alice Stieve (NRO/DSEA/RGS)
Weijun Wang (NRO/DSEA/RGS)
Ricardo Rodriguez (NRO/DSEA/RGS)
Laurel Bauer (NRO/DSEA/RGS)

PROJECT MANAGER: Allen Fetter (NRO/DNRL/LB3)

AUDIT OBJECTIVE

The objective of the planned audit is to discuss issues identified by the staff during the review of the application. The audit will consist of a tour of the ESP site and surroundings, review of geologic core collected during site investigations, and discussions of probabilistic seismic hazard analysis evaluations methodology, and karst formation evaluation proposed in the Site Safety Analysis Report. In addition, staff will visit locations at the site and in the surrounding area to study geologic structure and texture, and audit calculation packages as needed.

AUDIT ACTIVITIES AND SCHEDULE

NRC staff will conduct the review over a period of two business days, May 8 & 9, 2017. If necessary, the audit can be extended until noon May 10, 2017. The need for an extension will be determined by the NRC staff responsible for the audit before the planned adjournment of the meeting on May 9.

An agenda for the audit is presented in Attachment A. Attachment B contains specific information needs for each review section. If necessary, any circumstances related to the conductance of the audit will be communicated to the safety PM, Allen Fetter (NRC), at 301 415-8556 or at allen.fetter@nrc.gov.

Agenda
TVA Clinch River Nuclear (CRN) ESP Site Audit
Pertaining to the Review of the CRN SSAR, Section 2.5
May 8-9, 2017
TVA CRN Proposed Site, Oak Ridge, Tennessee
TVA Knoxville Office, Knoxville, Tennessee

Monday, May 8, 2017, MORNING SESSION: AUDIT - proprietary

- 08:30-08:45** Audit Entrance / Introduction [NRC/TVA]
- 08:45-12:00** Documentation Review and Discussion: Methodology for seismic calculations and analysis, void formation evaluation and associated calculations¹
..... [NRC/TVA]
- 12:00-13:00** Lunch

Monday, May 8, 2017, AFTERNOON SESSION: AUDIT - proprietary

- 13:00-16:30** Documentation Review and Discussion continued and field trip for geology review [NRC/TVA]
- 16:30-16:45** NRC Internal Caucus..... [NRC]
- 17:00** Adjourn

Tuesday, May 9, 2017, MORNING SESSION: AUDIT - proprietary

- 09:00-12:15** Site Tour (examinations of cores/samples, area/vicinity geologic features²)
[NRC/TVA]
- 12:15-13:00** Lunch

Tuesday, May 9, 2017, AFTERNOON SESSION: AUDIT - proprietary

- 13:00-16:30** Site Tour (area/vicinity geologic features continued)..... [NRC/TVA]
- 16:30-16:45** NRC Internal Caucus..... [NRC]
- 16:45-17:00** Exit Meeting..... [NRC/TVA]
- 17:00** Adjourn

¹SSAR and Electronic Reading Room documents should be available to facilitate discussion.
²Seismologists and Geotechnical Engineers only need to see prospective sites within the boundary.

Information needs specific to SSAR Sections

2.5.1 Geologic Information

Field trip to visit features described in SSAR text or illustrated in SSAR figures (if possible):

1. Visit the surface projection location of Shear Fracture Zone on site (Figure 2.5.1-65) and across the river if that location is accessible and currently exposed as indicated in CNL-16-162, p E1-36.
2. Visit location of Chestnut Ridge and Copper Creek faults in site location.
3. Visit Quaternary deposits and landforms (terraces) in site area.
4. Visit 2 Sinkhole clusters on site (northern boundary) and to the SE (as indicated on fig 2.5.1-46)
5. Visit pinnacle and cutter exposure near Copper Ridge Cave (fig 2.5.1-40), an abandoned phreatic cave within site area. Visit both the hillside exposure and the cave.

Examine specific core for:

1. Examples of shear fracture zone and other fracture zones (to distinguish the difference between shear fracture zones from fracture zones) in boreholes: 21 ft. in **MP 423** (718-697 ft. elev, runs 13,14,15,16,17,18); 18 and 6 ft in **MP 201** (644-626 ft elev, runs 27,28,29,30) and (497-491 ft elev, runs 56 & 57)); and 6 ft in **MP 101** (553-547 ft elev, runs 47, 48), based on information from Tables 2.5.1-16 and -17.
2. Examples of open voids in boreholes (information from ESP Table 2.5.1-11) MP 418 (void at ~ 756 and ~735 ft elev)
3. Examples of clay or soil filled voids as described in CNL-16-162:

CNL-16-162, pE2-17: A number of the cavities encountered in the boreholes were partially to completely filled with clay or soil.
4. Examples of Knox unconformity (Blackford/Knox contact) from borehole **MP 201**, suggest 305-315 ft depth, and **MP 423** suggest 275-280 ft depth, based on information in ESP SSAR Table 2.5.1-2

Discussion topics:

Discuss your evaluation of landslide hazard at the site location in consideration of SSAR section 2.5.3.8.2.2 and regional scale Figures 2.5.1-22 & 2.4.9-5.

Discuss information in Tables 2.5.1-16 and 2.5.1-17.

2.5.2 Vibratory Ground Motion

Discussion topics:

Discuss consideration of rates and b-values for the ETSZ in CEUS-SSC SSHAC update and

Discuss epistemic uncertainty and profile development used in 1-D site response analysis

2.5.4 Geotechnical Engineering

Examine specific core/sample for:

Borings MP101, MP201, and MP202 with emphasis on shear fracture features

Discussion Topics:

Plaxis model calculation package

Bearing capacity and settlement packages

Discuss the material in Section 2.5.1.2.3.4 *Estimation of hypothetical large void* in consideration of the material in the Rizzo Report.

DRAFT