ClinchRiverESPHFNPEm Resource

From: Fetter, Allen
Sent: Wednesday, April 12, 2017 4:01 PM
To: Schiele, Raymond Joseph
Subject: Clinch River May 8-9 Site Audit Plan Draft-v3.docx
Attachments: Clinch River May 8-9 Site Audit Plan Draft-v3.docx

Minor changes. Note update in information needs under 2.5.2

Hearing Identifier: ClinchRiver_ESP_HF_NonPublic
Email Number: 145

Mail Envelope Properties (Allen.Fetter@nrc.gov20170412160100)

Subject: Clinch River May 8-9 Site Audit Plan Draft-v3.docx
Sent Date: 4/12/2017 4:01:03 PM
Received Date: 4/12/2017 4:01:00 PM
From: Fetter, Allen

Created By: Allen.Fetter@nrc.gov

Recipients:
"Schiele, Raymond Joseph" <rjschiele@tva.gov>
Tracking Status: None

Post Office:

Files	**Size**	**Date & Time**
MESSAGE	62	4/12/2017 4:01:00 PM
Clinch River May 8-9 Site Audit Plan Draft-v3.docx	49947	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

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 Heeszel, 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 initially discuss issues identified by the staff during the review of the application at the TVA Knoxville Office Complex in downtown Knoxville, TN. The first part of the audit will include discussions of probabilistic seismic hazard analysis evaluations methodology, and karst formation evaluation proposed in the Site Safety Analysis Report, as well as calculation packages (as needed). The audit will also consist of a tour of the ESP site and examination of geologic core samples collected during site investigations. In addition to the site tour, staff will visit nearby offsite locations to study geologic structures, features and textures relevant to the ESP review.

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.

Attachment A

Agenda: May 8-9, 2017
TVA Clinch River Nuclear (CRN) ESP Site Audit
Pertaining to the Review of the CRN SSAR, Section 2.5
TVA Knoxville Office, Knoxville, Tennessee
TVA CRN Proposed Site, Oak Ridge, 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 calculations[1] ..... [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 features[2]) [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

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

Attachment B

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 how rates and recurrence values for the ETSZ are considered in CEUS-SSC and how the treatment of the ETSZ distributed seismicity might impact the site-specific PSHA

Discuss development of 1-D site response analysis profiles in consideration of local geology (e.g. single velocity profile adjusted up or down vs depth or formation specific velocity profile).

Discuss total site variablility considered in site response in comparison to the total observed variability in geophysical data collected at the site.

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.