

PMTurkeyCOLNPEm Resource

From: Comar, Manny
Sent: Monday, June 08, 2015 7:41 AM
To: PMTurkeyCOLNPEm Resource
Subject: Audit Plan for Turkey Point Unit 6 and 7 related to Seismic Design
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Audit Plan
NRC Staff Audit of Florida Power & Light Company
Seismic Design Parameters and Seismic Subsystem Analysis and Stability of
Materials and Foundations for Turkey Point Units 6 and 7

Background

In June 2009, Florida Power and Light (the applicant) submitted an application for a combined operating license for two Westinghouse AP1000 reactors designated as Turkey Point (TP) Units 6 and 7. Turkey Point FSAR Sections 3.7 and 3.8 incorporate by reference AP1000 DCD Sections 3.7 and 3.8 and address applicable COL Action Items.

Thus far, the staff's review of TPFAR Sections 3.7 and 3.8 has identified several issues that have resulted in requests for additional information. The most notable examples include:

- (a) The impact of new site data on the selection of the Best Estimate, Upper Bound and Lower Bound profiles used in the SSI calculations as well as potential changes in the SSI results.
- (b) The soil uniformity below adjacent structures and the nuclear island (NI).
- (c) The potential for amplification of seismic demands under NI structure due to concrete fill placed over grouted layer.
- (d) The design and analysis model treatment of concrete fill material under the NI.

The applicant has provided responses to staff questions in the above areas. The purpose of this audit is to verify the adequacy of the technical basis supporting those responses.

Regulatory Audit Bases

TP FSAR Section 3.7 is being reviewed by the staff in accordance with the relevant requirements of 10 CFR Part 50 and Part 100. The regulatory basis of the information incorporated by reference is addressed in NUREG-1793 and its supplements. In addition, the acceptance criteria associated with the relevant requirements of the Commission regulations (GDC 2 of Appendix A to 10 CFR Part 50; Appendix S, "Earthquake Engineering Criteria for Nuclear Power Plants" to 10 CFR Part 50; and 10 CFR 100.23, "Geologic and seismic siting criteria") for the seismic design parameters are given in Section 3.7.1 of NUREG-0800.

For FSAR Section 3.8.5, the acceptance criteria associated with the relevant requirements of the Commission regulations (GDC 1, GDC 2, GDC 4, and GDC 5, "Sharing of Structures, Systems, and Components" of Appendix A to 10 CFR Part 50; 10 CFR 50.55(a) and Appendix B, to 10 CFR Part 50) for the foundations are given in Section 3.8.5 of NUREG-0800.

Regulatory Audit Scope or Methodology

June5, 2015

The staff will conduct this audit in accordance with the guidance provided in NRO-REG-108, "Regulatory Audits" (Reference 1)

Details regarding the site-specific seismic analysis and the design of foundation fill will be reviewed by the staff and used to support the evaluation of Sections 3.7.1, 3.7.2, and 3.8.5. Calculations supporting the applicant's RAI responses to RAIs **4975, RAI 6432, RAI 6433 and RAI 7815** will be reviewed. In particular, the staff plans to review calculations supporting the applicant's approach for:

1. Performing site-specific seismic analysis of the Unit 6 and 7 nuclear island.
2. Evaluating the effects of the concrete fill material on the seismic response of the AP1000 nuclear island.
3. The seismic analysis based on new ground motion.
4. Demonstrating that the selected backfill materials (supporting adjacent structures) are bounded by those considered in the AP1000 DCD.
5. Demonstrating adequacy of the design for concrete fill/features supporting the NI.
6. Demonstrating that the AP1000 Standard Design envelopes the site-specific seismic evaluation performed for Units 6 and 7.

Audit Task 1 (Day 1)

The applicant will provide an overall summary of the seismic analysis approach and identify DCD departures. The applicant will especially include the process of justifying results of the new limited analysis based on updated properties as compared with the previous full analysis to validate SSI results.

Audit Task 2 (Days 1,2)

The staff will review the assumed SSI input parameters (e.g., input control motion, shear wave velocity profiles, etc.) and the approach for which seismic ground motion was accounted for in the SASSI analysis. The staff will also review the grouting plan and the calculation for postulated voids in grouted and non grouted zone.

Audit Task 3 (Days 1, 2, 3)

The staff will review ISRS comparisons to AP1000 DCD and key locations, including vertical comparisons.

Audit Task 4 (Days 2,3)

The staff will review the foundation fill design basis.

Information and Other Material Necessary for the Regulatory Audit

This section identifies known information or material needed by the audit member(s) to complete the regulatory audit. This could include, but is not limited to, applicant reports, calculations, and computer codes.

June5, 2015

Team Assignments

Manny Comar , NRC, Senior Project Manager

Jim Xu, Branch Chief , SEB

Rebecca Karas, Branch Chief, RGS1

Pravin Patel, NRC, Seismic/ Structural Design

Vaughn Thomas, NRC, Structural Design

Alissa Neuhausen, NRC , Seismic/Structural Design

Carl Costantino, NRC Consultant, Seismic Analysis

Thomas Houston, NRC Consultant, Structural Design

Zuhan Xi, NRC, Senior Geotechnical Engineer

Logistics

The audit will be conducted at Rizzo Associates offices located at 500 Penn Center Boulevard, Penn Center East, Suite 100, Pittsburgh, PA 15235 beginning on 6/22/2015. An escort is requested to meet the audit team in the lobby of the building at 12:45 p.m. on the first day. The entrance briefing is scheduled for 1:00 p.m. An exit briefing is scheduled for 10:00 a.m. on 6/25/2015. This may change according to the requirements of the audit and the availability of principals.

All material subject to the site visit (hard copy or electronic) will be left at the site. If any documentation is required to support the staff's regulatory findings, the staff will identify it in a

Special Requests

Please make a space available for the team members to meet privately and discuss the progress of the audit. Audit team members will bring computers for note taking and preparation of a report on the audit. Access to relevant calculation reports and supporting documents (e.g., AP1000 DCD, FSAR) would make the audit more effective and efficient. In addition to workspace with power for the team's computers, please provide access to a local or network printer and an Ethernet connection to the Internet by which the team can remotely access computer resources at the NRC. (Additional computer monitors would also be helpful.) Finally, please arrange a teleconference line to permit the project manager, SEB branch chief, and others at NRC headquarters to participate as needed.

Deliverables

A summary report of the audit will be prepared and issued in accordance with NRO-REG-108.

June5, 2015

References

1. NRO-REG-108, "Regulatory Audits," April 2, 2009
2. NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants."