

## **Audit Plan In Support Of The Staff's Evaluation Of The Applicant's Response To RAI 130-7580, Question 04.02-1 For The Safety Review Of The North Anna Power Station, Unit 3, Combined License Application – Final Safety Analysis Report Chapter 4.2**

### **Background**

The U.S. Nuclear Regulatory Commission (NRC) staff will audit Dominion Virginia Power's analysis evaluating the fuel assembly and control blade structural response to site-specific seismic spectra, which supports the revised application for North Anna Power Station Unit 3 Combined License Application (COL). The NRC staff issued Request for Additional Information (RAI) 130-7580, Question 04.02-1 on June 24, 2014, to request additional information from the applicant detailing how the North Anna Unit 3 fuel assembly and control blade mechanical loads remained bounded by the component design analyses and testing performed for the Economic Simplified Boiling-Water Reactor certification. The purpose of the audit is to review technical material that the applicant uses as a basis for its safety assessment documented in the response to RAI 130-7580, Question 04.02-1 related to Final Safety Analysis Report Section 4.2 for North Anna Power Station Unit 3.

The NRC staff will review the work completed by the applicant to verify whether the North Anna 3 site-specific analysis results meet appropriate limits and are consistent with the referenced methodologies. The staff will also identify possible information that will require docketing to support the licensing basis and regulatory decisions. The NRC staff might generate RAIs based on review of the report and supplemental materials.

### **Regulatory Audit Basis**

The basis for the audit is found in the following regulations:

- Title 10 of *Code of Federal Regulations* (10 CFR) Part 50, Appendix A, GDC 2, "Design Bases for Protection against Natural Phenomena."
- 10 CFR Part 50, Appendix A, GDC 10, "Reactor Design."
- 10 CFR Part 50, Appendix S, "Earthquake Engineering Criteria for Nuclear Power Plants."
- NUREG-0800, Section 4.2, Appendix A, "Evaluation of Fuel Assembly Structural Response to Externally Applied Forces."
- NRC Information Notice (IN) 2012-009, "Irradiation Effects on Fuel Assembly Spacer Grid Crush Strength."

### **Regulatory Audit Scope or Methodology**

The scope of the audit is to review Dominion's North Anna 3 site-specific fuel assembly and control blade analysis. The audit is intended to provide the staff a clear and well-articulated understanding of how Dominion concludes in the response to RAI 130-7580, Question 04.02-1 that the North Anna 3 site-specific fuel assembly and control blade evaluations are bounded by previous testing and analyses.

Specific audit areas are listed below. Any significant findings during the audit will be documented in the audit report and RAls may be issued if necessary.

- EOL/BOL considerations for the North Anna 3 site-specific analysis, including the condition report relating to the assessment of NRC IN 2012-09.
- The applicant's methodology for determining North Anna 3 site-specific fuel assembly loads including analysis of load combinations (seismic + LOCA/SRV).
- The applicant's application of the methodology in the North Anna 3 site-specific analyses.
- All the models and calculations used to derive and in support of determining the North Anna 3 site-specific fuel assembly loads and channel oscillations, including input and boundary conditions to these models (e.g. natural frequencies of GE14E fuel, seismic spectra, scram insertion time testing/analysis to support control blade insertability, etc.).
- All the analyses done to determine if the North Anna 3 site-specific evaluations were bounded by previous testing and analyses, including all references used for the applicant's justifications.

#### **Information and Other Material Necessary for the Regulatory Audit**

A complete list of the applicant's calculations and the supporting documents related to the site-specific fuel assembly and control blade analysis should be made available to the staff at the audit. Two hard copies of the calculations and supporting documents should be made available for review during the audit. The staff requests an applicant-led walkthrough/presentation of the site-specific fuel assembly and control blade evaluations to provide the staff a clear and coherent understanding of how the applicant came to its site-specific fuel safety conclusion. The staff needs to understand the models and methodologies the applicant used for its site-specific fuel analysis, including any differences in site-specific models with respect to referenced, NRC-approved methodologies, in order to determine if the COL application is in compliance with the applicable regulations.

The NRC requests that Dominion provide:

- A working space for the duration of the audit at the GE-Hitachi facility in Wilmington, North Carolina.
- A small private conference room for NRC internal discussions.
- A telephone for contacting NRC staff and Headquarters personnel.
- A teleconference line for the audit entrance and exit meetings.
- An internet connection to be used by the staff to access NRC systems and online references.

### **Team Assignments**

Jim Shea – Lead Project Manager (NRC)  
Michael Eudy – Project Manager (NRC)  
Becky Karas – Technical Branch Chief (NRC)  
Jim Gilmer – Technical Reviewer (NRC)  
Matt Thomas – Technical Reviewer (NRC)  
Zuhan Xi – Technical Reviewer (NRC)

### **Logistics**

Date: March 23 - 25, 2016  
Time: 8:00 a.m. - 5:00 p.m.  
Location: GE Hitachi Offices  
3901 Castle Hayne Road  
Wilmington, NC 28401  
Point-Of-Contact Regina Borsh, Dominion

In addition, the staff proposes Dominion’s Electronic Reading Room as another means necessary for reviewing documents provided by the applicant.

### **Deliverables**

The staff will issue a regulatory audit summary within 90 days of the audit and place that on the docket and in the Agencywide Documents Access and Management System. The staff may generate RAI, in support of 10 CFR Part 50, Appendix A, GDC 2 and 10, and 10 CFR Part 50, Appendix S, based on review of the requested documents and supplemental materials.

### **Agenda**

#### **Wednesday, March 23, 2016**

- 8:00 a.m. – Audit Entrance Meeting
- 8:30 a.m. – Training
- 9:00 a.m. – 12:00 p.m.– Presentations/Discussions
- 1:00 p.m. – 5:00 p.m. – Review of Documents and Additional Discussions

#### **Thursday, March 24, 2016**

- 8:00 a.m. – 12:00 p.m. – Review/Discussion
- 1:00 p.m. – 5:00 p.m. – Review/Discussion
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#### **Friday, March 25, 2016**

- 8:00 a.m. – 12:00 p.m. – Review/discussion
- 1:00 p.m. – Audit Exit Meeting\*

\*The staff and applicant may mutually conclude that an audit exit meeting be held before 1:00 p.m. on March 25, 2016, if the staff and applicant feel comfortable no additional staff review/discussion is necessary.