

**U.S. NUCLEAR REGULATORY COMMISSION REGULATORY AUDIT OF AREVA'S  
FUKUSHIMA CONTAINMENT ANALYSIS USING GOTHIC TO SUPPORT THE SAFETY  
REVIEW OF THE U.S. EPR DESIGN CERTIFICATION**

**Docket No. 52-020**

**AUDIT PLAN**

**Background/Purpose**

The U.S. Nuclear Regulatory Commission (NRC) staff is preparing to audit the applicant's (AREVA NP, Inc.'s) containment analysis using GOTHIC to support Fukushima event mitigation in response to the Fukushima Near-Term Task Force (NTTF) Recommendation 4.2, Station Blackout (SBO) Request for Additional Information (RAI) submitted to all applicants. The GOTHIC computer code is a state-of-the art program for modeling multiphase, multi-component fluid flow. GOTHIC is rapidly becoming the industry-standard code for performing both containment design basis accident analyses and analyses to support equipment qualification. NRC considers the use of this code acceptable for making regulatory decisions. The purpose of the audit is to review the Fukushima containment analysis and supporting calculations. The objective is to gain in-depth understanding of the containment analysis and supporting assumptions and uncertainties used to verify information, and/or to identify information that will require docketing to support the basis of the licensing or regulatory decision. Performing this audit will help the NRC staff conduct its review of the applicant's response to RAI 563, Question 19-356 more efficiently.

**Regulatory Audit Basis**

1. Staff Requirements Memo (SRM)-SECY-12-0025, "Proposed Orders and Requests for Information in Response to lessons learned from Japan's March 11, 2011, Great Tohoku Earthquake and Tsunami," February 17, 2012
2. Title 10 of the *Code of Federal Regulations* (10 CFR) 52.79, "Contents of applications; technical information in final safety analysis report"

**Regulatory Audit Scope or Methodology**

The staff proposes the audit take place via the AREVA Electronic Reading Room. The staff may seek to return to the Electronic Reading Room over a period of 30 days during the course of the audit, as necessary. Specifically, the staff will be auditing the following information:

1. GOTHIC model development and Fukushima event analysis calculation(s) and supporting documents
2. GOTHIC output files

**Audit Logistics**

Audit Dates: May 8 – 31, 2013

Audit Team: Shie-Jeng Peng, Technical Reviewer  
Tanya Ford, Project Manager

Audit Location: The documents to be audited will be placed in the AREVA Electronic Reading Room for the staff to access and review.

Deliverables: A regulatory audit summary will be placed on the docket within 90 days of the completion of the audit. The audit outcome will be used to identify any additional information needed for making regulatory decisions in support of the staff's safety review of the U.S. EPR Design Certification application.

### **AUDIT AGENDA**

(May 8 – 31, 2013)

**May 8, 2013\*:**

2:00 P.M – 3:00 P.M.

Audit Entrance Meeting – Introduction and overview of Fukushima containment analysis and supporting documents provided in the Electronic Reading Room *(this discussion will take place via telephone conference call between the NRC staff and AREVA).*

**May 9 – 29, 2013:**

(Periodic Phone Calls)

During the audit, the staff requests that the applicant be available for periodic discussions regarding documents being reviewed in the Electronic Reading Room. The staff will coordinate periodic phone calls with AREVA, as needed and based on availability, to discuss the information being reviewed throughout the audit.

**May 30, 2013\*:**

2:00 P.M – 3:30 P.M.

Audit Exit Meeting – Discussion/review of any audit findings or needs for additional requests for information *(this discussion will take place via telephone conference call between the NRC staff and AREVA).*

*\* Note that the dates and times provided above are proposed and may change based on availability of the staff and AREVA.*