

February 14, 2012

FINAL SAFETY ANALYSIS REPORT SECTION 6.4  
CHEMICAL ANALYSIS AUDIT PLAN

February 16, 2012

NORTH ANNA UNIT 3 FSAR APPLICATION  
Dominion Energy, Inc.  
Docket 52-017

Location: Enercon Services, Inc.  
12420 Milestone Center Dr.  
Germantown, MD

Purpose:

The purpose of this audit is to review calculations method and indentify the input related to the control room habitability calculations during a postulated hazardous chemical release. The audit will evaluate the calculation details for the Dominion Virginia Power North Anna Unit 3 Final Safety Analysis Report (FSAR) Section 6.4.

Background:

North Anna Unit 3 chemical analysis reports, "25161-ENV-505, US-APWR Onsite Chemical Hazards Analysis, Revision 3" and "25161-ENV-507, US-APWR Unit 3, Offsite Chemical Hazards Analysis, Revision 2" have been audited by the NRC staff on July 2011.

In the applicant's calculation of the case of postulated Dimethylamine (40 percent) solution release inside the turbine building, the puddle was assumed to be contained by a dike with an area of 20 m<sup>2</sup>. A dike of this size or smaller (i.e., forming a deeper puddle) was necessary in order to alleviate the threat from this chemical. The U.S. Nuclear Regulatory Commission (NRC) staff could not verify in the FSAR committing the dike design. A Request for Additional Information (RAI) 5953 was generated to request more information from the applicant.

In its response to RAI 5953, dated December 12, 2011, the applicant stated that:

The confinement of a 40% dimethylamine solution spill is not required to satisfy GDC 19, but is required for the delayed ignition explosion hazard analysis. Calculation "25161-ENV-505, US-APWR Onsite Chemical Hazards Analysis" has been revised to include an additional chemical hazard evaluation for main control room (MCR) habitability, assuming an unconfined, uniform 1 cm deep spill of 40% dimethylamine solution. For comparison, Table 1 shows the unconfined spill toxicity hazard results along with the confined spill toxicity hazard results from FSAR Table 6.4-201.

The NRC staff would like to audit the revised calculation "25161-ENV-505" to confirm that the applicant's analysis is satisfactory according to regulatory bases.

Regulatory Audit Bases:

To satisfy the licensing requirements the following regulatory bases are identified below:

- Regulatory Guide 1.78 "Evaluating the Habitability of a Nuclear Power Plant Control Room During a Postulated Hazardous Chemical Release", Revision 1
- General Design Criteria (GDC) 4, "Environmental and Dynamic Effects Design Bases," of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix A
- GDC Criteria 19, "Control Room," of 10 CFR Part 50, Appendix A

Regulatory Audit Scope:

The scope of regulatory audit will be focusing on attributes listed below:

- Computer models
- Input parameters
- Assumptions
- Chemical release scenario
- Environmental conditions
- Control room chemical concentration history

Team Assignment:

John McKirgan – Lead Auditor  
Nan Chien – Team Member  
Ruth Reyes – Project Manager

Logistics:

The audit is planned for February 16, 2012, at the office of Enercon Services, Inc. located in Germantown, Maryland.

Special Requests:

Appropriate handling and protection of proprietary information shall be acknowledged and observed throughout the audit.

Deliverables:

The NRC staff may request an ad-hoc extension of the audit if findings during the ongoing audit reveal the need for additional time. Such an extension will be requested before the audit is adjourned by the NRC staff responsible for the audit. An audit report will be generated after the completion of the audit. The audit outcome will be used to identify any additional information and issuance of further RAls for the licensing review of the US-APWR North Anna Unit 3 FSAR Application, Section 6.4.

Deliverables:

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(Revised 01/26/2012)

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