

## NorthAnnaRAIsPEm Resource

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**From:** Sutton, Mallecia  
**Sent:** Monday, September 19, 2016 9:09 AM  
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**Subject:** North Anna 3 RAI SAMA (Environmental)  
**Attachments:** RAI\_8695.docx

By letter dated November 26, 2007, Dominion Virginia Power (Dominion) submitted a Combined License Application for North Anna, Unit 3, pursuant to Title 10 of the *Code of Regulations*, Part 52. The U.S. Nuclear Regulatory Commission (NRC) staff is performing a detailed review of this COLA.

The NRC staff has identified that additional information is needed to address questions related to Severe Accident Mitigation Alternatives (SAMA). A Request for Additional Information (RAI), is enclosed., Dominion is requested to respond within 30 days of the date of this request..

Thanks

*Mallecia Sutton*  
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**From:** Sutton, Mallecia

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**Options**

**Priority:** Standard

**Return Notification:** No

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## Request for Additional Information

Issue Date:

Application Title: North Anna, Unit 3 - Docket Number 52-017

Operating Company: Dominion

Docket No. 52-017

Review Section: NONE - NO SRP SECTION

Application Section: Environmental Report Chapter 7

### QUESTIONS

#### NONE-XX

On May 4, 2016, the Commission issued a decision (CLI-16-07; Agencywide Documents Access and Management System (ADAMS) Accession No. ML16125A150) in the Indian Point license renewal proceeding. The Commission found that none of the parties involved in the Indian Point Severe Accident Mitigation Alternatives (SAMA) contention could provide a documented description outlining the technical foundation for two inputs (the time to decontaminate, TIMDEC, and the cost to decontaminate non-farmland, CDNFRM) used in the MACCS computer analyses. It was noted by the Commission that sensitivity analyses help demonstrate whether and to what extent variations in an uncertain input value might affect the overall cost-benefit conclusions. The Commission therefore directed the staff to perform additional sensitivity analyses varying the TIMDEC and CDNFRM input parameters using specific values.

The TIMDEC and CDNFRM parameters used in the Indian Point SAMA analysis are also commonly used in the off-site risk calculations applied in the Severe Accident Mitigation Design Alternatives (SAMDA) cost-benefit analyses performed for new reactor standard design certification and combined license applications, such as the North Anna Unit 3 Combined License (COL) application. These two input values were generally based on the values provided in NUREG 1150, "Severe Accident Risks: An Assessment for Five U.S. Nuclear Power Plants," and NUREG/CR-3673, "Economic Risks of Nuclear Power Reactor Accidents." The TIMDEC input value defines the time required for completing decontamination to a specified degree. The CDNFRM input parameter defines the cost (on a per person basis) of decontaminating non-farmland by a specified decontamination factor. The input values applied are set based on the level of contamination as specified by the decontamination factor parameter, DF. The CDNFRM values used in NUREG-1150 stem from decontamination cost estimates provided in NUREG/CR-3673, the same 1984 economic risk study referenced in support of the decontamination time inputs. These decontamination cost inputs are commonly set to specific values associate with different levels of contamination and escalated to account for inflation. Because the North Anna SAMA analysis uses the same basis for the TIMDEC and CDNFRM values as the Indian Point SAMA analysis, the staff intends to perform sensitivity on the above MACCS input parameters for the specific North Anna Unit 3 site conditions.

Additionally, since the publication of NUREG-1917, *Supplemental Environmental Impact Statement for the Combined License (COL) for North Anna Power Station Unit 3*, the NRC completed the ESBWR standard design certification rulemaking as incorporated into Appendix E to Part 52. For NUREG-1917, the SAMDA was based on Revision 1 of GEH Nuclear Energy's ESBWR SAMDA report, NEDO-33306. The ESBWR standard design certification is based on Revision 4 of NEDO-33306. The staff reviewed the changes made in NEDO-33306 from Revision 1 to Revision 4 by GEH Nuclear Energy and found revisions in technical data that would contribute to the off-site risk calculations (i.e., changes in the reactor design input parameters for the MACCS severe accident code). The staff also notes, as documented in Section 7.3 of Revision 7 of the North Anna COL Environmental Report, the revisions to the ESBWR SAMDA analysis for design certification apparently changed the maximum averted risk benefit for North Anna Unit 3.

The staff requires the following additional information in order to perform sensitivity analyses and complete its review of new information related to the environmental impacts of severe accidents and the SAMDA analysis for the North Anna Unit 3 COL:

Provide the North Anna Unit 3 site-specific MACCS input and output files which incorporated the ESBWR reactor design technical information from GEH Nuclear Energy's Revision 4 of NEDO-33306 and Revision 6 of NEDO-33201, "ESBWR Certification Probabilistic Risk Assessment."

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found that none of the parties involved in the Indian Point Severe Accident Mitigation Alternatives (SAMA) contention could provide a documented description outlining the technical foundation for two inputs (the time to decontaminate, TIMDEC, and the cost to decontaminate non-farmland, CDNFRM) used in the MACCS computer analyses. It was noted by the Commission that sensitivity analyses help demonstrate whether and to what extent variations in an uncertain input value might affect the overall cost-benefit conclusions. The Commission therefore directed the staff to perform additional sensitivity analyses varying the TIMDEC and CDNFRM input parameters using specific values.

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The staff requires the following additional information in order to perform sensitivity analyses and complete its review of new information related to the environmental impacts of severe accidents and the SAMDA analysis for the North Anna Unit 3 COL:

Provide the individual averted cost component values per NUREG/BR-0184 that supports the values of the maximum averted risk benefits for the 7 percent and 3 percent discount rates in Revision 7 of the ER, (i.e., the quantitative attributes of public health; offsite property damage; occupational health; onsite costs for cleanup and decontamination; and replacement power; see Table M-3 on page M-9 of NUREG-1917). In the response, provide a discussion of any changes in the cost-benefit methodology or assumptions that may be different from the prior site-specific ESBWR design cost-benefit SAMDA analysis in Revision 2 of the North Anna COL ER.