

February 18, 2009

Mr. Eugene S. Grecheck
Vice President - Nuclear Development
Dominion
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 032
(SRP SECTIONS: 08.02, 11.04, 11.05, 13.01.02-13.01.03, 14.03.06) RELATED
TO THE NORTH ANNA UNIT 3 COMBINED LICENSE APPLICATION

Dear Mr. Grecheck:

By letter dated November 26, 2007, Dominion Virginia Power (Dominion) submitted a combined license application for North Anna Unit 3 pursuant to 10 CFR Part 52. The Nuclear Regulatory Commission (NRC) staff is performing a detailed review of this application.

The staff has identified that additional information is needed to continue portions of the review and the request for additional information (RAI) is contained in the enclosure to this letter. To support the review schedule, Dominion is requested to respond within 30 days of the date of this letter. If the RAI response involves changes to application documentation, Dominion is requested to include the associated revised documentation with the response.

Should you have questions, please contact me at (301) 415-0224 or Thomas.Kevern@nrc.gov.

Sincerely,

/RA/

Thomas A. Kevern, Senior Project Manager
ESBWR/ABWR Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Docket No. 52-017

Enclosure: Request for Additional Information

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Vice President - Nuclear Development
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E-RAI Tracking No: 1871, 1947, 2026, 2027, 2120, 2121

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NAME	J-CDehmel*	TFrye*	AJohnson*	SBrock-Kirkwood*	TKevern*
DATE	02/04/09	02/05/09	02/05/00	02/12/09	02/18/09
OFFICE	TR:EEB	BC: EEB	PM:DNRL:NGE1	OGC (NLO)	PM:DNRL:NGE1
NAME	APal*	RJenkins*	MEudy*	SBrock-Kirkwood*	TKevern*
DATE	01/12/09	01/13/09	01/23/09	02/06/09	02/18/09

*Approval captured electronically in the electronic RAI system.

OFFICIAL RECORD COPY

**Request for Additional Information
North Anna, Unit 3
Dominion
Docket Number 52-017**

SRP Sections: 08.02 - Offsite Power System, 11.04 - Solid Waste Management System, 11.05 - Process and Effluent Radiological Monitoring Instrumentation and Sampling Systems, 13.01.02-13.01.03 - Operating Organization, 14.03.06 - Electrical Systems - Inspections, Tests, Analyses, and Acceptance Criteria

Application: FSAR Sections: 8.2, 11.4.1, 11.5.4.5, 13.1.2.1.1.8, 13.1.2.1.1.10, 14.3.6

QUESTIONS

08.02-38

In response to RAI 8.2-27, the applicant stated that the switchyard voltage limits were established for the operation of Units 1 and 2. Since Unit 3 will be interconnecting into the same switchyard, Unit 3 will be operating under the same voltage limits. The staff finds that the applicant did not address the effect of largest unit (NA 3) trip on the switchyard voltage and frequency limits. Per GDC-17 requirements, the staff requests that the applicant discuss the effect of largest unit (NA 3) trip on the switchyard voltage and frequency.

08.02-39

In response to RAI 8.2-29, the applicant stated that no periodic testing will be required for 230 kV underground cables because Dominion will use 230 kV cables with design features (metallic sheath) that will avoid insulation degradation from moisture. The staff does not agree with the applicant because operating experience (licensee's responses to NRC Generic Letter 2007-1) have indicated that metallic sheathed cables, with similar design features as described by the applicant, have failed. Contributing causes to the failed cables were submergence or wet conditions for an extended period of time and installation issues. The operating experience has also shown that cross-linked polyethylene (XLPE) or high-molecular-weight polyethylene insulation materials are most susceptible to water tree formation. The formation and growth of water trees vary directly with operating voltage.

Cable failures have a variety of causes, including exposure to electrical transients or aging effects caused by moisture intrusion and water treeing due to adverse abnormal environmental conditions during operation. Contributing causes, such as manufacturing defects or damage caused by shipping and installation, could initiate the aging effects. The likelihood of failure from any of these causes increase over time as the cable insulation degrades. Therefore, periodic testing will determine the health of the cable. The staff is in the process of developing a regulatory guide for cable monitoring program. For license renewals, the staff has used Generic Aging Lessons Learned (GALL) Aging Management Program (AMP) XI.E3, "Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 environmental Qualification requirements Program". The above AMP requires both testing and inspection of water accumulation. The staff requests that the applicant provide a revised response to include both testing and inspection for water accumulation for their 230 kV underground cables.

11.04-4

A review of FSAR, Rev. 1, Section 11.4.1 (top of p.11-8) indicates that the commitment on the development of certain types of operating procedures refers to the “mobile/portable SWMS.” The ESBWR DCD, Rev. 5, Sections 11.4.1 and 11.4.2 no longer refer to the use of portable and mobile SWMS. Accordingly, the applicant is requested to revise the description of the type of SWMS in FSAR Section 11.4.1 and make it consistent with the ESBWR DCD, Rev. 5, Sections 11.4.1 and 11.4.2.

11.05-5

A review of FSAR, Rev. 1, Section 11.5.4.5 (p.11-10) indicates that the provisions for sampling liquid and gaseous waste stream is missing an ESBWR DCD table citation. The citation of ESBWR DCD Table 11.5-6 is appropriate for gaseous streams, but a corresponding ESBWR DCD table citation is missing for liquid streams, such as ESBWR DCD Table 11.5-7. Accordingly, the applicant is requested to revise the applicable references in FSAR, Rev. 1, Section 11.5.4.5 describing liquid and gaseous sampling provisions and make it consistent with ESBWR DCD, Rev. 5 tables.

13.01.02-13.01.03-5

A review of FSAR, Rev. 1, Section 13.1.2.1.1.8 indicates that the listing of responsibilities for the Manager of Radiation Protection and Chemistry is incomplete. The 7th item in the listing should be revised to include programs for managing radioactive liquid and gaseous effluent releases and associated offsite doses, in addition to radioactive wastes. The applicant is requested to revise the responsibilities of the Manager in demonstrating compliance with Part 20.1301 and Appendix I to Part 50.

13.01.02-13.01.03-6

A review of FSAR, Rev. 1, Section 13.1.2.1.1.10 indicates that the listing of responsibilities for Radiation Protection Technicians is incomplete. Specifically:

- a. The 4th item in the listing should be revised to include radioactive wastes destined for offsite processing, storage, and disposal.
- b. A new item should be added to the listing in identifying responsibilities for managing radioactive liquid and gaseous effluent releases, and conducting radiological environmental monitoring in assessing offsite doses to members of the public.
- c. The applicant is requested to revise the responsibilities of Technicians in demonstrating compliance with Part 20.1301 and Appendix I to Part 50.

14.03.06-1

Section 4, “Interface material” of ESBWR DCD, Tier 1, rev.5 states that an applicant for a COL that reference the ESBWR certified design must provide design features or characteristics that comply with the interface requirements for the plant design and inspections, tests, analyses, and acceptance criteria (ITAAC) for the site specific portion of the facility design, in accordance with 10 CFR 52.79(c). However, no interface requirements were identified for the offsite power system in the certified design. In RAIs 14.3-394 and

14.3-394 S1, the NRC staff asked GEH to revise Section 4 of DCD, Tier 1 to include interface requirements for the offsite power system for demonstrating the capacity and capability of the offsite power system. In response to RAI 14.3-394 S1, GEH stated that a COL applicant referencing the ESBWR certified design shall develop an ITAAC to verify that the as-built offsite portion of the preferred power supply (PPS) from the transmission network to the interface with the onsite portions of the PPS satisfy the applicable provisions of GDC 17. Specifically, the ITAAC shall verify :

- a. At least two independent circuits supply electric power from the transmission network to the interface with the onsite portions of the PPS.
- b. Each offsite circuit interfacing with the onsite portions of the PPS is adequately rated to supply the load requirements during design basis operating modes.
- c. During steady state operation, the offsite portion of the PPS is capable of supplying voltage at the interface with the onsite portions of the PPS that will support operation of safety-related loads during design basis operating modes.
- d. During steady state operation, the offsite portion of the PPS is capable of supplying required frequency at the interface with the onsite portions of the PPS that will support operation of safety-related loads during design basis operating modes.
- e. The fault current contribution of the offsite portion of the PPS is compatible with the interrupting capability of the onsite fault current interrupting devices.

The applicant is requested to provide an ITAAC to verify that the as-built offsite portion of the PPS from the transmission network to the interface with the onsite portions of the PPS satisfy the applicable provisions of GDC 17.