PMNorthAnna3COLPEmails Resource

From: Thomas Kevern
Sent: Wednesday, July 09, 2008 3:46 PM
To: Dominion.Naps3ColaRAI@DOM.COM
Cc: Regina.Borsh@dom.com; john.hayden@dom.com; Wanda.K.Marshall@dom.com; NorthAnna3COL Resource
Subject: North Anna RAI Letter #016
Attachments: RAI Ltr#016ML0819103160.pdf

Gina:

Attached is the subject RAI letter - includes questions re SRP Sections 08.02, 09.05.04, and 12.02.
Please contact me if questions.

Tom

Hearing Identifier: NorthAnna3_Public_EX
Email Number: 99

Mail Envelope Properties (CEEA97CC21430049B821E684512F6E5E85266988F9)

Subject: North Anna RAI Letter #016
Sent Date: 7/9/2008 3:45:44 PM
Received Date: 7/9/2008 3:45:45 PM
From: Thomas Kevern

Created By: Thomas.Kevern@nrc.gov

Recipients:
"Regina.Borsh@dom.com" <Regina.Borsh@dom.com>
Tracking Status: None
"john.hayden@dom.com" <john.hayden@dom.com>
Tracking Status: None
"Wanda.K.Marshall@dom.com" <Wanda.K.Marshall@dom.com>
Tracking Status: None
"NorthAnna3COL Resource" <NorthAnna3COL.Resource@nrc.gov>
Tracking Status: None
"Dominion.Naps3ColaRAI@DOM.COM" <Dominion.Naps3ColaRAI@DOM.COM>
Tracking Status: None

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RAI Ltr#016ML0819103160.pdf	103442	

Options
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Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

July 9, 2008

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. 016 (SRP SECTIONS: 08.02, 09.05.04, and 12.02) 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 45 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

July 9, 2008

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

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/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
Distribution:

RidsNroDnrlNge1	RHolmes, OGC	TKevern, NRO	AJohnson, N RO
RidsNroDnrlNge2	MLesser, Rgn2	JCDehmel, NRO	GMakar, NRO
RWeisman, OGC	DDodson, NRO	TFrye, NRO	AHowe, NRO
DGalvin, NRO	APal, NRO	OChopra, NRO	MEudy, NRO
			RJenkins, NRO

E-RAI Tracking No. 342, 413, 664
ADAMS Accession No.: ML081910316

OFFICE	TR: CHPB	BC:CHPB	PM:DNRL:NGE1	OGC (NLO)	PM:DNRL:NGE1
NAME	JCDehmel*	TFrye*	AJohnson*	RHolmes*	TKevern *
DATE	06/05/2008	06/06/2008	06/13/2008	07/01/2008	07/07/2008
OFFICE	TR:CIB2	BC:CIB2	PM:DNRL:NGE1	OGC (NLO)	PM:DNRL:NGE1
NAME	GMakar*	KGruss*	DGalvin*	RHolmes*	TKevern *
DATE	05/21/2008	05/23/2008	05/28/2008	06/25/2008	07/07/2008
OFFICE	TR: EEB	BC:EEB	PM:DNRL:NGE1	OGC (NLO)	PM:DNRL:NGE1
NAME	APal*	OChopra for RJenkins*	MEudy*		TKevern *
DATE	07/03/2008	07/03/2008	07/07/2008		07/09/2008

*Approval captured electronically in the electronic RAI system.

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Request for Additional Information
North Anna, Unit 3
Dominion
Docket Number 52-017
SRP Sections: 08.02 - Offsite Power System;
09.05.04 - Emergency Diesel Engine Fuel Oil Storage and Transfer System;
12.02 - Radiation Sources Application: FSAR Sections 8.2, 9.5.4, 12.2.2.4

QUESTIONS

08.02-27

FSAR Section 8.2.2.1, Reliability and Stability Analysis, NAPS COL 8.2.4-10A, identified maximum and minimum switchyard voltage limits of 534 kV and 505 kV. Please explain how these limits were established and confirm that these voltage limits are acceptable for auxiliary power system equipment operation including safety-related battery chargers and safety-related uninterruptible power supplies during different operating conditions. The confirmation should include the following (assumptions, acceptance criteria and summary of results): load flow analysis (bus and load terminal voltages of the station auxiliary system), short circuit analysis, equipment sizing studies, protective relay setting and coordination, and motor starting with minimum and maximum grid voltage conditions. A separate set of calculations should be performed for each available connection to offsite power supply. In addition, please discuss how the results of the calculations will be verified.

08.02-28

Since all North Anna units share the same switchyard, the offsite power system provided for the site should have sufficient capacity and capability to safely shutdown all units. As documented in NRC generic communications (e.g., NRC Generic Letter 2007-01, "Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients" NRC Information Notice 98-07, "Offsite Power Reliability Challenges from Industry Deregulation," and NRC Information Notice. 95-37, "Inadequate Offsite Power Voltages During Design-Basis Events") operational experience has shown the need to demonstrate that the offsite power system operation supports equipment important to safety and avoids plant transients. In addition, NRC Generic Letter 2006-02, Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power, states that " For nuclear plants licensed in accordance with the GDC in Appendix A to 10 CFR Part 50, the design criteria for onsite and offsite electrical power systems are provided in GDC 17… which requires, among other things, that an offsite electric power system be provided to permit the functioning of certain SSCs important to safety in the event of anticipated operational occurrences." Please discuss the capacity and capability of the offsite system (i.e., the 500 kV lines and associated switchyard equipment) to mitigate the consequences of anticipated abnormal operational occurrences associated with unit operation.

09.05.04-3

FSAR Section 9.5.4, Diesel Generator Fuel Oil Storage and Transfer System, addresses STD COL 9.5.4-1-A ("Fuel Oil Capacity") of the ESBWR DCD by describing in general terms how the fuel oil quantity will be moniotored and stating that the procedures will be developed in accordance with the milestone and processes described in FSAR Section 13.5.

However, Section 13.5 does not include specifics about the fuel quantity monitoring. Please identify the document in which the procedures for fuel quantity monitoring willl be located and if known, the anticipated date for development of these procedures.

09.05.04-4

FSAR Section 9.5.4, Diesel Generator Fuel Oil Storage and Transfer System, addresses NAPS COL 9.5.4-2-A. The staff notes that the ESBWR DCD, Subsections 9.5.4.2 and 9.5.4.3, is to be revised such that corrosion protection will be addressed for the underground portion of the system rather than only the piping. This DCD revision is to address the staff's concern that portions of fuel oil storage tanks could be placed underground. Please revise NAPS COL 9.4.5-2-A consistent with the DCD regarding corrosion control for underground portions of the fuel oil transfer system.

09.05.04-5

Staff review of FSAR Section 9.5.4, Diesel Generator Fuel Oil Storage and Transfer System, indicates that the FSAR does not identify that controls are in place to ensure periodic fuel oil testing and inspection is performed as described in ESBWR DCD Section 9.5.4.4. Please revise the FSAR to address fuel oil testing and inspection. This information is needed to determine if the system meets the design requirements of providing a supply of fuel to operate the diesel generators to support RTNSS functions.

12.02-3

The staff's review of FSAR Section 12.2.2.4, Liquid Doses Offsite, identifies apparent inconsistencies in the supporting data and results on source terms and doses as compared with the ESBWR DCD, North Anna Environmental Report – Combined License Stage, and the North Anna ESP Environmental Report. Specifically, please address and resolve the following:

a. The ESP-ER doses and Unit 3 doses listed in FSAR Table 12.2-20bR are lower by a factor of 100 as compared to Table 5.4-2 of the Applicant's Environmental Report – Combined License Stage (Rev. 0, Nov. 2007).

b. To demonstrate compliance with the unity rule of Table 2 (Column 2) of Appendix B to Part 20, add a listing to FSAR Table 12.2-19bR showing the ratio of each radionuclide and sum-of-the-ratios for all radionuclides. Currently, the tabulation does not present the sum-of-the-ratios.

c. The comparison of radionuclides with higher activity levels between the North Anna ESP-ER and the FSAR (p.12-8) indicates that Table 12.2.19bR lists only 11 highlighted radionuclides and not 12 as stated in the FSAR. Confirm whether Ba-139 should be highlighted as well in Table 12.2-19bR to be consistent with Table 5.4-1 of the Applicant's Environmental Report – Combined License Stage (Rev. 0, Nov. 2007).

d. FSAR Table 12.2-19bR indicates that the source term (Ci/yr) is based on a plant capacity factor of 0.8 while the ESBWR design is rated at 0.92. The staff's analysis reveals that all FSAR results are low by a factor of 1.15 (0.92/0.8).

e. FSAR Table 12.2-19bR indicates that “Unit 3 Concentrations” (Bq/ml) for nine radionuclides were found to be higher than the staff’s analysis by factors ranging from 1.11 to 1.7. The radionuclides are tritium, Mn-54, Fe-55, Co-60, Zn-65, Sr-90, Zr-95, Cs-134, and Cs-137. Note that the staff’s analysis matches the corresponding FSAR liquid effluent source terms (Ci/yr) for the same radionuclides, as presented in Table 12.2-19bR.

f. Provide the technical basis and year of data in FSAR Table 12.2-19bR for the incremental liquid effluent concentrations for North Anna Units 1 and 2 in making up the total effluent concentration from all three units, listed as “Units 1, 2 & 3 Concentration” in the tabulation. This information is not included in this subsection, nor included as a footnote to the table.