PMNorthAnna3COLPEmails Resource

From: Andrea Johnson
Sent: Tuesday, March 10, 2009 9:23 AM
To: Regina.Borsh@dom.com
Cc: Thomas Kevern; Michael Eudy; Janelle Jessie; NorthAnna3COL Resource
Subject: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 033 - North Anna Unit 3 COLA
Attachments: ML0906803120.pdf

Gina,

I hope you received a copy of this yesterday. Just in case you did not, attached please find RAI Letter No. 33.

Please let me know if you have any questions.

Andrea M. Johnson
Project Manager
U.S. Nuclear Regulatory Commission
Office of New Reactors
Division of New Reactor Licensing
NGE1 Projects Branch

Hearing Identifier: NorthAnna3_Public_EX
Email Number: 691

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Subject: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 033 - North Anna Unit 3 COLA
Sent Date: 3/10/2009 9:22:52 AM
Received Date: 3/10/2009 9:22:55 AM
From: Andrea Johnson

Created By: Andrea.Johnson@nrc.gov

Recipients:
"Thomas Kevern" <Thomas.Kevern@nrc.gov>
Tracking Status: None
"Michael Eudy" <Michael.Eudy@nrc.gov>
Tracking Status: None
"Janelle Jessie" <Janelle.Jessie@nrc.gov>
Tracking Status: None
"NorthAnna3COL Resource" <NorthAnna3COL.Resource@nrc.gov>
Tracking Status: None
"Regina.Borsh@dom.com" <Regina.Borsh@dom.com>
Tracking Status: None

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MESSAGE	367	3/10/2009 9:22:55 AM
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Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

March 9, 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. 033 (SRP 2.2.3, 2.4.2, 8.2, 12.2, AND 14.3.7) 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 U.S. 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) 415-2890 or andrea.johnson@nrc.gov.

Sincerely,

/RA/

Andrea M. Johnson, 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

March 9, 2009

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

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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 U.S. 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) 415-2890 or andrea.johnson@nrc.gov.

Sincerely,

/RA/

Andrea M. Johnson, 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:

TKevern, NRO	AJohnson, NRO	J-CDehmel, NRO	CCook,NRO	STammara, NRO
NRO_DNRL_NGE1	MLesser, Rgn2	TFrye, NRO	JJessie, NRO	CCox, NRO
SGreen, NRO	SBrock, OGC	MEudy, NRO	RRaione	APal, NRO

ADAMS Accession No.: ML090680312

OFFICE	TR: CHPB	BC: CHPB	PM:DNRL:NGE1	OGC (NLO)	PM:DNRL:NGE1
NAME	J-CDehmel*	TFrye*	AJohnson*	SBrock-Kirkwood*	TKevern*
DATE	2/5/09	2/6/09	2/11/09	2/26/09	3/6/09
OFFICE	TR:EEB	BC: EEB	PM:DNRL:NGE1	OGC (NLO)	PM:DNRL:NGE1
NAME	APal*	RJenkins*	MEudy*	SBrock-Kirkwood*	TKevern*
DATE	2/10/09	2/10/09	2/18/09	2/27/09	3/6/09
OFFICE	TR: RHEB	BC: RHEB	PM: DNRL:NGE1	OGC	PM:DNRL: NGE1
NAME	CCook*	RRaione*	AJohnson*	SBrock-Kirkwood*	TKevern*
DATE	2/20/09	2/20/09	2/23/09	2/27/09	3/6/09
OFFICE	TR: RSAC	BC: RSAC	PM: DNRL:NGE1	OGC	PM:DNRL:NGE1
NAME	STammara	CCox	AJohnson	SBrock-Kirkwood	TKevern
DATE	2/23/09	2/25/09	2/25/09	2/27/09	3/6/09

*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 Section: 02.02.03 - Evaluation of Potential Accidents, Application Section: 2.2.3

QUESTIONS for Siting and Accident Consequence Branch (RSAC)

02.02.03-5

In response to RAI 02.02.03-02, the applicant provided information/analysis pertaining to only chemicals Nitrogen and Carbon Dioxide. Please provide the rationale, bases and methodology used for analysis/screening the other chemicals in calculating the toxic chemical concentrations at the intake of control room, and potential toxic chemical concentration inside the control room for the addressed toxicity analysis in Section 6.4. Based on the FSAR Table 2.2-203, the other chemicals addressed for toxicity analysis in addition to Nitrogen and Carbon Dioxide are identified to be Sodium Hypochlorite, Nalco 3D, Nalco H-130, Hydrogen Peroxide, Hydrogen, Oxygen, Hydrazine, Bromotrifluoromethane.

SRP Section: 02.02.03 - Evaluation of Potential Accidents, Application Section: 2.2.3

QUESTIONS for Siting and Accident Consequence Branch (RSAC)

02.02.03-6

In response to RAI 02.02.03-04, the applicant stated that the vapor pressure of Sodium Hydroxide is 6.33 mmHg (6.33 torr) and if a chemical has vapor pressure below 10 torr it is not considered a hazard by referencing RG 1.78. The NRC staff interprets RG 1.78 guidance of vapor pressure of 10 torr as a guidance in considering to determine the rate of evaporation and time duration of release of a chemical but not to be a criterion for screening out a chemical from toxicity analysis. Please provide any other reference, methodology or justification for screening out the chemical from toxicity analysis.

SRP Section: 02.04.02 - Floods, Application Section: Section 2.4.2

QUESTIONS for Hydrologic Engineering Branch (RHEB)

02.04.02-2

Staff has follow-on information requests following Dominion Letter No. 028, dated September 16, 2008 (ML082680033) and the Revision 1 update to the COL application. These requests are associated with the locally-intense precipitation flood event described in FSAR Section 2.4.2, and assurances that this event will not adversely impact Unit 3's safety-related SSCs, or those that satisfy the RTNSS criteria. Staff requests that the applicant provide the following:

(a) As indicated in Table 2.4-201 of the FSAR, Revision 1, subbasin areas have increased to a total area of 50.55 acres, from 48.78 acres in Revision 0. Also, the composite runoff coefficient has decreased. This increase in area and decrease of the runoff coefficient has increased the peak flow reported in the Revision 1 (see Table 2.4-203). For the purpose of reviewing the Revision 1 information, NRC staff request that the applicant provide updated HEC-RAS input files used to conduct the FSAR Revision 1 analyses (i.e., provide an update to the input files provided by Dominion on October 2, 2008; see ML090260661).

(b) A lateral weir structure runs parallel to the south ditch between cross-section 820 to 497 in the HEC-RAS model (Rev 0, see ML090260661). NRC staff request that the FSAR be revised to include a description of the lateral-flow structure, the expected flow path, depth and velocity of flow, erosion control measures, and a list of buildings and structures (including their RTNSS categorization, if appropriate) that are intercepted.

(c) NRC staff review of the Revision 0 HEC-RAS output noted that supercritical flow occurs in both the north ditch and south ditch, along with velocities that exceed 10 ft/s. Additionally, the overland flow from the lateral weir along the south ditch could reach supercritical velocities during the PMP event. The transition of flow from supercritical to subcritical will produce a hydraulic jump. To clarify the potential impact of these supercritical flows and formation of hydraulic jumps, NRC staff request that the applicant provide a map showing the locations where supercritical flows and hydraulic jumps are likely to occur in the south ditch, north ditch, outfall channel, and associated overland-flow areas. In addition, the map(s) should indicate locations where flood events produce velocities larger than the design velocity for the channel bed material or are capable of eroding overland flow areas (i.e., where damage exceeding normal maintenance would result). At these locations, NRC staff request that the applicant describe how a potential failure of these drainage features could degrade any safety-related SSCs, or structures that satisfy RTNSS criteria.

(d) To ensure that flood events do not impact Unit 3's safety-related SSCs, or structures that satisfy RTNSS criteria, controls and requirements are necessary to ensure the north ditch, south ditch, and outfall canal remain clear of obstructions, the side-slopes remain stable, and the site-drainage system functions as described in the FSAR Section 2.4.2 for the length of the Unit 3 licensing period. NRC staff request that the applicant provide additional detail regarding Administrative Controls or surveillance requirements including the frequencies at which surveys will be conducted.

02.04.02-3

The COL must contain information to assure that construction of Unit 3 will not impact the existing units (see 10 CFR 52.79(a)(31)). Revision 1 of the application states "at the eastern edge of the Unit 3 site where the plant access road crosses the south drainage ditch, the grade elevation at the high point between the Unit 3 site and the Units 1 and 2 site is at Elevation 82.98 m (272.25 ft) msl. The maximum water level at the inline weir is Elevation 82.94 m (272.1 ft) msl, which is 0.05 m (0.15 ft) below the high point elevation and thus all Unit 3 PMP flows will be confined to the Unit 3 site and runoff generated from Unit 3 will not impact the Units 1 and 2 site." Because the (revision 0) HEC-RAS predicted water velocities in south ditch immediately upstream of the abrupt bend near the plant access road exceed 10 ft/s and because of the relatively small margin, NRC staff request that the applicant describe the design measures to ensure all discharge in the south ditch will complete the 90-degree abrupt bend during the PMP-generated flood event. This description should include how two-dimensional

effects, superelevation of flow, and the potential hydraulic jump were factored into the design. In addition, describe fortification measures to prevent failure of the plant access road when the SWM basin is at the PMP-generated maximum elevation.

SRP Section: 08.02 - Offsite Power System, Application Section: 8.2

QUESTIONS for Electrical Engineering Branch (EEB)

08.02-40

Section 8.2.2.1 discusses the reliability of the switchyard. Information relating to the potential for cable submergence in the switchyard has not been addressed. The staff requests that the applicant describe how low voltage power, control, and instrumentation cables that are expected to be partially or continuously submerged in manholes, trenches, and duct banks are qualified. In addition, please provide the design features and/or in-situ monitoring programs that will be implemented to avoid or arrest the degradation of cable insulation from the effects of moisture. Your response should include consideration of cables traversing the switchyard, as well as those from the switchyard to the North Anna 3 unit.

SRP Section: 12.02 - Radiation Sources, Application Section: FSAR Rev. 1, Sections 12.2.2.2 and 12.2.2.4

QUESTIONS for Health Physics Branch (CHPB)

12.02-13

A review of North Anna Unit 3 FSAR, Section 12.2.2.2 (Airborne Dose Evaluation Offsite) and Section 12.2.2.4 (Liquid Doses Offsite) indicates that variance NAPS ESP VAR 12.2-4 (Existing Units' and Site Total Doses) is not identified nor referenced in addressing compliance with Part 20.1301(e) and 40 CFR Part 190. This approach is inconsistent with the treatment of related variances identified in this section of the FSAR. The only citation of NAPS ESP VAR 12.2-4 is found in Table 12.2-203 with no details included. The applicant is requested to introduce a citation of NAPS ESP VAR 12.2-4 and supporting text in Sections 12.2.2.2 and 12.2.2.4 addressing compliance with Part 20.1301(e) and 40 CFR Part190 for radiation exposures and combined doses associated with the current operations of NAPS Units 1 and 2 and proposed operation of North Anna 3.

SRP Section: 14.03.07 - Plant Systems - Inspections, Tests, Analyses, and Acceptance Criteria Application Section: FSAR Part 10: Tier 1 ITAAC, Section 2.4.10

QUESTIONS for Health Physics Branch (CHPB)

14.03.07-1

A review of North Anna Unit 3 FSAR, Rev. 1, Part 10: Tier 1 ITAAC, Section 2.4.10 indicates that it still refers to a mobile system as being outside of the scope of the certified design. The ESBWR DCD, Rev. 5, Tier 2, Section 11.2 and DCD, Rev. 5, Tier 1 Section 2.10.1 no longer refer to the use of a mobile LWMS. Accordingly, the applicant is requested to revise the

designation of the LWMS in FSAR Rev. 1, Part 10: Tier 1 Section 2.4.10 and make it consistent with the corresponding Tier 1 and 2 Sections of the ESBWR DCD, Rev. 5.

SRP Section: 14.03.07 - Plant Systems - Inspections, Tests, Analyses, and Acceptance Criteria
Application Section: FSAR Rev. 1, Part 10: Tier 1 ITAAC, Section 2.4.11

QUESTIONS for Health Physics Branch (CHPB)

14.03.07-2

A review of North Anna Unit 3 FSAR, Rev. 1, Part 10: Tier 1 ITAAC, Section 2.4.11 indicates that it still refers to a mobile system as being outside of the scope of the certified design. The ESBWR DCD, Rev. 5, Tier 2, Section 11.4 and DCD, Rev. 5, Tier 1 Section 2.10.2 no longer refer to the use of a mobile SWMS. Accordingly, the applicant is requested to revise the designation of the SWMS in FSAR Rev. 1, Part 10: Tier 1 Section 2.4.11 and make it consistent with the corresponding Tier 1 and 2 Sections of the ESBWR DCD, Rev. 5.