PMNorthAnna3COLPEmails Resource

From: Dozier, Tamsen
Sent: Tuesday, May 24, 2011 11:33 AM
To: Tony Banks
Subject: courtesy copy of environmental RAIs
Attachments: North Anna Unit 3 COL Review Environmental RAIs.docx

For your convenience – a courtesy copy of the Environmental RAIs is attached. These have been signed out by management and are being processed by our Admin staff today.

Hearing Identifier: NorthAnna3_Public_EX
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Subject: courtesy copy of environmental RAIs
Sent Date: 5/24/2011 11:33:16 AM
Received Date: 5/24/2011 11:33:00 AM
From: Dozier, Tamsen

Created By: Tamsen.Dozier@nrc.gov

Recipients:
"Tony Banks" <tony.banks@dom.com>
Tracking Status: None

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U.S. Nuclear Regulatory Commission
Requests for Additional Information (RAIs)
North Anna Nuclear Power Station (NAPS), Unit 3
Combined License Application as Revised to Reference the US-APWR

Item Number	Regulatory Basis	RAI	Supporting Information
Hydrology (Water Quality)			
HYD-01 (reference Post Audit Item H-2)	10 CFR 51.71(d), ESRP 5.2.2 Environmental Quality Standards	The staff has reviewed Bechtel Calculation No. 25161-M-501 which provides details of the calculation for estimated tritium concentration in the NAPS discharge canal as a result of the operation of Unit 3. Concentration estimates in Lake Anna, the WHTF, and the discharge canal are of interest to the staff for evaluating water quality impacts of Unit 3 operation. Staff requests the following additional information related to Calc. No. 25161-M-501. 1. Calculation of the concentration of tritium in the discharge canal due to the operation of Unit 3 makes the assumption that the Unit 3 discharge will be diluted with 100,000 gpm of Lake Anna water. Provide the basis for the use of 100,000 gpm given that • Unit 3 may be in operation while Units 1 and 2 are not operating, and • Blowdown for Unit 3 may vary from zero (during periods when dry cooling alone is used) to 5565 gpm (in Energy Conservation mode). 2. The calculation of tritium concentration makes the assumption that tritium is completely mixed over the volumes of the WHTF and Lake Anna. Provide the basis for this assumption in the event that Units 1 and 2	Bechtel Calculation No. 25161-M-501, "Radiological Impacts of APWR Normal Operations," provides details of the calculation of tritium concentration that Dominion reported in the FSAR Rev 3. This calculation is based on the model described in North Anna Units 1 & 2 FSAR Section 11.2.5.1, which was also reviewed by staff. This model was derived to estimate concentrations in Lake Anna and the WHTF, from which concentration in the discharge canal can be calculated. The staff is requesting additional information to better understand the basis of the assumptions made to obtain the tritium concentration presented in the above referenced calculations.

ENCLOSURE

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		are not operating and explain the effect on tritium concentrations in the discharge canal, the WHTF, and Lake Anna when this assumption is not valid. 3. Calculation of the tritium concentration was completed using a long-term discharge from the dam of 300 cfs. Explain the impact on tritium concentrations in the discharge canal, the WHTF, and Lake Anna when discharge from the dam is 40 cfs or less for an extended period of time, such as during the 2002 drought. *4.* Calculation of the tritium concentration uses a steady-state model. Explain the impact on tritium concentrations of the temporal variability in inputs to (precipitation and streamflow) and outputs from (evaporation and dam discharge) the WHTF and Lake Anna. Explain whether the steady state analysis provides conservative estimates of tritium concentrations for evaluating the impact of Unit 3 operation on water quality.	
Meteorology/Air Quality			
RAI MET-01 (reference Post Audit Items Met-01 and ACC-10)	10 CFR 51.50 (c) (1), 51.71(d), ESRP 2.7	Dominion has indicated that distances to the EAB have been revised. EAB distances are used to evaluate the consequences of design basis accidents. The NRC staff requests the following information: Describe changes to the EAB distances that resulted from changing the method used to determine the distances. Describe the general magnitude of the changes including the number of distances that decreased, the maximum decrease in distance, and the	During the audit, NRC staff learned that Dominion has reevaluated EAB distances in all directions using a methodology different from what was used in the previous versions of their application. Dominion has claimed that most of the distance changes are small, but some distances decreased. During the audit, the staff requested that Dominion provide a statement to justify their conclusion that the changed distances are not significant new information.

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		effects of these changes on the X/Q values used to evaluate the consequences of design basis accidents.	On Feb 24, 2011, Dominion provided a statement in their reading room related to this matter. The statement was reviewed on Mar 22, 2011. Staff determined that the statement does not contain sufficient quantitative information to conclude that the information on EAB distances is not significant. The statement needs to specifically address the magnitudes of the differences in distance, identifying at least the largest decrease in distance. The statement also needs to address the net effect these differences have on the 50% and 95% X/Qs used in evaluating design basis accident doses.
RAI MET-02 (reference Post Audit Item Met-05)	10 CFR 51.71(d), RG-1.23 Rev 1 ESRP 2.7	Meteorological data are used in evaluation of the consequences of severe accidents. Data more than 10 years old have been used to evaluate potential consequences of APWR severe accidents at the NAPS site. Therefore, the staff requests the following information: Review the representativeness of the meteorological data used for the severe accident consequence assessment for the US-APWR reactor at the NAPS site and describe your assessment of the significance of any differences.	As a result of the change in reactor design, the staff is assessing the consequences of postulated accidents for the new design at the NAPS site. The evaluation of the potential consequences of severe accidents uses meteorological data. The meteorological data used by Dominion to evaluate potential consequences of severe accidents for the new reactor are now more than 10 years old. More recent meteorological data are available for the NAPS site because a meteorological program is required at operating reactor sites. The NRC staff bears the responsibility of ensuring that the applicant's process for identifying new and significant information is effective. During the site audit, the staff questioned Dominion as to the representativeness of the old meteorological data. Dominion representatives stated that more recent meteorological data were not significantly different than the data submitted in support of the NAPS ESP application. However, the representatives did not have documentation available to support this conclusion. Dominion agreed to provide documentation to support the conclusion. This documentation had not been provided to the Reading

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			Room as of April 21, 2011.
MET-03 (reference Post Audit Item Met-06)	10 CFR 51.71(d), ESRP 2.7	The NRC staff addresses the impacts of plant operation on air quality in its EISs. Rev 3 to the COL ER does not include estimates of criteria pollutant emissions associated with US-APWR reactor operations. Therefore the staff requests the following information: Provide estimates of the annual emissions of criteria pollutants associated with operation of an US-APWR at the NAPS site.	As part of the EIS discussion on air quality, the staff includes a table of estimated emissions of criteria pollutants associated with plant operations. Typically these emissions are from boilers and diesel generators. Dominion provided this information for various reactor types in its ER for an ESP at the NAPS site. Rev 3 to the COL ER does not include estimates of criteria pollutant emissions associated with US-APWR reactor operations.
Postulated Accidents			
RAI ACC-01 (reference Post Audit Item ACC-02)	10 CFR 51.71(d), ESRP 7.1	10 CFR 51.71 charges the NRC staff with independently evaluating and being responsible for the reliability of information in the draft EIS. The staff has been unable to fully verify the dose calculations for design basis accidents contained in Rev 3 of the ER. Therefore the staff requests the following information as described in ESRP 7.1: Describe how the LPZ doses presented in ER Section 7.1.4 were calculated. Verify the doses for the LPZ for intermediate time periods for each of the design basis accidents. Provide isotopic source terms for use in evaluating doses at the EAB.	In its review of analysis of the US-APWR design basis accidents for NAPS Unit 3 in Rev 3 of the Dominion ER, the staff was unable to duplicate the analysis using the procedure set forth in the ER because the US-APWR DCD does not include the LPZ doses for the 0 to 8 hr, 8 to 24 h, 1 to 4 day, and 4 to 30 day time periods specified in NRC guidance. Further, staff was unable to verify the 0 to 2 hour doses at the exclusion area boundary by direct calculation from isotopic release rates.
RAI ACC-02 (reference Post Audit	10 CFR 51.71(d), ESRP 7.2 ESRP 7.3	The staff intends to evaluate the potential consequences of severe accidents and severe accident mitigation alternatives for the US-APWR at the NAPS site in its supplemental EIS. The site characteristics data used in evaluation of potential	Section 7.2 in Rev 3 to the Dominion ER includes an analysis of the potential consequences of severe accidents for a US-APWR at the NAPS site. The severe accident consequence assessment in Section 7.2 is

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Item ACC-05)		consequences of US-APWR severe accidents in ER Rev 3 are now more than 10 years old. These site characteristics, particularly land use and population, may have changed significantly. Therefore the staff requests the following information: . Update the severe accident consequence assessment using more recent land use and population data. For population data more than ten years old, provide a comparison with more recent data, especially for those areas in the downwind direction.	based on site characteristics used in the severe accident consequence assessments for the NAPS ESP review. The data used to evaluate the site characteristic are now more than 10 years old. The site characteristics, particularly those associated with land use and population may have changed significantly. In addition, section 7.3 of the ER evaluates severe accident mitigation alternatives (SAMAs) for the US-APWR at the NAPS Site. The SAMA analysis is based on the results of the site specific severe accident consequences assessment. As a result, an acceptable SAMA analysis cannot be completed unless an up-to-date site-specific severe accident consequence assessment is available.
ACC-03 (reference Post Audit Item ACC-06)	10 CFR 51.71(d), ESRP 7.2	In its EIS, the NRC staff presents the potential consequences of severe accidents using several consequence descriptors. The tables in Section 7.2.1 of ER Rev. 3 do not list the consequences for all of the descriptors used by NRC staff. Also, in reviewing Section 7.2.4 of Rev 3 of the ER, the NRC staff noted that the there is a comparison of the risks of a US-APWR at the NAPS site with safety goals set forth in the NRC Safety Goal Policy Statement (51 FR 30028). However the description of how the latent health effects are calculated appear to be inconsistent with the definitions in the policy statement. Therefore the staff requests the following information: Provide the results of US-APWR severe accident consequence assessments at the NAPS site for all consequence descriptors shown in Table 5-19 of NUREG-1811 for each type of initiating event. Ensure that the average individual early and latent fatality risks	In its EIS, the NRC staff presents the potential consequence of severe accidents using several consequence descriptors. Table 5-19 of NUREG-1811 (NAPS ESP EIS) shows these consequence descriptors for the designs evaluated during the ESP review. While section 7.2.1 of Rev 3 of the Dominion ER presents the results of its evaluation of the potential consequences of a US-APWR at the NAPS site, the tables in Section 7.2.1 do not list the consequences for all of the descriptors used by NRC staff.

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		are estimated in a manner that is consistent with the definitions in the Safety Goal Policy Statement.	
ACC-04 (reference Post Audit Item ACC-11)	10 CFR 51.71(d), ESRP 7.3	The costs for SAMDA analysis should be adjusted to a common time frame for an appropriate cost comparison. Similarly, the cost of replacement power should be adjusted for the difference in capacity factor between the 60 to 65% capacity factor assumed in NUREG-BR-0184 and the anticipated capacity factor for the US-APWR. Therefore, the staff requests the following information: Provide a revised SAMDA analysis for a US APWR at the NAPS site. Adjust all costs to a common time frame to account for inflation using appropriate deflators and ensure that the replacement power costs appropriately accounts for the expected capacity factor for the US APWR. Provide the details of the SAMDA analysis, identifying all assumptions and input parameters.	Both the ER submitted by MHI for the US-APWR design certification and Section 7.3 of the NAPS ER review include SAMDA analyses. Neither of the analyses appears to adjust costs to a common time frame for use in determining whether there are potentially cost-beneficial SAMDAs. Similarly, although both analyses adjust the cost of replacement power for the difference between the 910 MWe assumed in NUREG/BR-0184 and 1610 MWe for the US-APWR, neither analysis appears to adjust the cost of replacement power for the difference in capacity factor between the 60 to 65% capacity factor assumed in NUREG-BR-0184 and a more realistic capacity factor for the US-APWR (90 to 95%). .
Cultural Resources (CR)			
CR-1	ESRP 2.5.3, 4.1.3 and 5.1.3 10 CFR 51.71 36 CFR 800 36 CFR 63	Staff requests that applicant commit to providing the following cultural resources information as it becomes available. Docketing should follow NRC guidelines regarding sensitive cultural resources location information. When submitting reports only include the cover page, abstract, introduction and conclusions. Do not include maps or coordinates of site location information. 1. Cultural resource reports that have been generated by the applicant after February 2, 2009. 2. Correspondence to and from Tribes, VDHR and	These reports and correspondence letters contain essential information on the cultural environment of the area, studies that have been done to fulfill Section 106 of the National Historic Preservation Act, and commitments for future studies required by the State Historic Preservation Office. The requested information is needed by the staffto evaluate impacts to these resources.

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		interested parties after February 2, 2009 which is not already on the docket. 3. Inventory of reports and correspondence regarding cultural resources that have been generated by the applicant and responses received from the Tribes, VDHR, and interested parties. This list will serve as the library or catalog for tracking purposes. Latest version of the Cultural and Historic Resources Management Plan for the North Anna Site.	