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From: Mark McBride
Sent: Monday, February 23, 2009 1:44 PM
To: Christopher Cook
Subject: North Anna/S: Comments on Phil Meyer's Draft RAIs for 2.4.12 and 2.4.13
Attachments: NA 2_4_12 and _13 Draft RAIs - MSM Comments.doc

Attached are the two new draft RAIs on 2.4.12 and 2.4.13, together with my suggested revisions. These are the RAIs that Phil Meyer drafted and sent in his 2/18/08 e-mail. As you suggested, I added a paragraph to each to provide some regulatory background.

Mark McBride
U.S. Nuclear Regulatory Commission
NRO/DSER/RHEB, Mail Stop T7E18
11555 Rockville Pike
Rockville, MD 20852-2738
(301)415-0670

Hearing Identifier: NorthAnna3_Public_EX
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Mail Envelope Properties (Mark.McBride@nrc.gov20090223134400)

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North Anna 3 COL
Hydrology (Section 2.4) Review
Comments on Draft RAIs from Phil Meyer, PNNL
Mark McBride 2/23/09

FSAR Section 2.4.12

RAI 2.4.12-X. The purpose of this RAI is to address the requirements of 10 CFR 50.55a, GDC 2, GDC 4, GDC 5, 10 CFR 100.20(c)(3), 10 CFR 100.23(d), and 10 CFR 100.20(c). These regulations require (1) a complete description of the effects of groundwater levels on the design bases of plant foundations, and (2) a complete description of the site dewatering system, including its reliability in maintaining groundwater conditions within the design bases of structures, systems, and components important to safety.

The applicant conducted groundwater modeling to estimate maximum post-construction groundwater elevations. A narrative description of the groundwater modeling was provided to Staff in the applicant's Letter No. 024 dated September 19, 2008 (in response to RAI 2.4.12-1). Based on the results of the modeling, the applicant concluded that the maximum post-construction groundwater elevation in the power block area will be 86.26 m (283 ft) NAVD88, 2.134 m (7 ft) below the design plant grade elevation. Since the maximum groundwater elevation is less than the DCD site parameter value of 0.61 m (2 ft) below plant grade (87.79 m, or 288 ft msl), the applicant concluded that a permanent dewatering system is not needed for safe operation of Unit 3.

Staff has concluded that the groundwater elevations predicted by the model are strongly dependent on the characteristics of the model drain cells that represent the site surface water drainage system (i.e. the drainage ditches) surrounding the power block. Staff request additional information supporting the applicant's conclusion that the groundwater elevations in the power block area will meet the maximum groundwater level requirement of the DCD over the life of the facility. Such information may include the following elements.

- Model sensitivity studies demonstrating the impact on groundwater elevations of the drain cell characteristics (elevations, conductance, and recharge rates).

- Additional evidence that the surface water drainage system will behave as a groundwater drain (as predicted by the groundwater model) over the life of the facility. This may include, for example, additional details of the surface water drainage system design and maintenance.

- Discussion of whether high water levels in the drainage ditches (such as during storms) can cause high groundwater levels in the power block area as a result of infiltration from the drains.

- ~~The use of operational~~A discussion of how groundwater monitoring data obtained during plant operation will be used to evaluate groundwater elevations in the power block area.

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Talking Point 4: FSAR Section 2.4.13

RAI 2.4.13-X. The purpose of this RAI is to address the requirements of 10 CFR 20, Appendix B, which requires that radionuclides released in liquid effluents do not result in concentrations at the nearest source of potable water that exceed the concentrations listed in Table 2, column 2.

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Staff request additional information demonstrating that the applicant's transport analysis constitutes a bounding analysis, i.e. an analysis that is based on the largest or smallest parameter values measured onsite, which consequently calculates the highest receptor-point radionuclide concentrations consistent with onsite measurements.

As currently presented in the FSAR, the transport analysis uses a groundwater hydraulic conductivity (to compute groundwater velocity) that is less than the maximum value observed at the site. In addition, the transport analysis uses K_d values based on literature data that, in some cases, are greater than the minimum observed site-specific values. Staff request the results of a transport analysis that uses the maximum observed hydraulic conductivity and the minimum site-specific K_d values for comparison with the 10 CFR 20, Appendix B, Table 2 effluent concentration limits.