

# North Anna Early Site Permit Application

NRC Meeting  
February 23, 2005



# Agenda

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## ■ DSER Open Item Status

- Discuss proposed approach to provide additional information

## ■ Permit Conditions/Action Items

- Discuss use of criteria to establish permit conditions and action items

## ■ Summary

# Activities Since DSER Issued

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- DSER issued December 20, 2004
- Open Item 2.5-1 response submitted January 25, 2005 (ML050320090)
- Dominion submitted feedback on DSER (ML050410133)
- Several phone calls to discuss open items and feedback
- Open Item 2.5-2 planned approach submitted February 18, 2005



# Open Item Status

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- 28 Open Items
- March 3, 2005 response date
  - Multi-part seismic response
- Status table (following pages) shows each item and summarizes response approach and status

# Open Item Status

Summary of Open Item	Response Status
<p>2.1-1 Demonstrate that the applicant has the legal right to control the exclusion area, or has an irrevocable right to obtain such control.</p>	<p>Response will state that there is reasonable assurance that DNNA will have control over the exclusion area prior to construction. The approvals necessary for construction will also provide DNNA with such control.</p>
<p>2.3-1 Provide acceptable fastest-mile design-basis wind speed.</p>	<p>Response will specify the 100-year return period 3-second gust wind speed of 96 mph as a site characteristic in lieu of basic wind speed.</p>
<p>2.3-2 Justify exclusive use of snowpack weight for calculating snow load or use alternate method.</p>	<p>Response will specify 3 site characteristics for snow:</p> <ul style="list-style-type: none"> <li>• 100-year snowpack (30.5 lb/sq ft)</li> <li>• 100-year snowpack plus 48-hour maximum snowfall (~46 lb/sq ft)</li> <li>• 48-hour winter PMP (20.75" rain)</li> </ul>
<p>2.3-3 Identify an additional UHS site characteristic for use in evaluating the potential for water freezing.</p>	<p>Response will specify the number of degree Fahrenheit-days as a site characteristic.</p>

# Open Item Status (cont.)

Summary of Open Item	Response Status
<p>2.3-4 Describe how potential increases in atmospheric temperature resulting from operation of closed-cycle dry cooling towers associated with proposed Unit 4 would impact plant design and operation.</p>	<p>Response will provide a semi-quantitative evaluation. Detailed analysis would be performed as part of detailed engineering.</p>
<p>2.4-1 Provide coordinate reference system for identification of plant parameter envelope (site footprint) location.</p>	<p>Response will provide a cross-reference to the Virginia State coordinate system.</p> <p><i>at units of measurement</i></p>
<p>2.4-2 Specify minimum distance between existing unit SSCs and proposed unit intake and discharge tunnels.</p>	<p>Response will describe the typical construction practices that will be used to preclude adverse interactions with the existing units.</p> <p><i>Caucus</i></p>
<p>2.4-3 Describe potential impacts of low-flow conditions on the operation of all units.</p>	<p>Response will describe potential impacts and the recent modifications to the Units 1 and 2 intakes.</p>



# Open Item Status (cont.)

Summary of Open Item	Response Status
<p>2.4-4 Address the possibility of an ice jam or an ice dam formation upstream of the ESP site, and evaluate the effect of a flood wave generated from the breakup of such an ice formation.</p>	<p>Response will assess the possibility of upstream ice formation and its potential impacts.</p>
<p>2.4-5 Provide minimum Lake Anna water temperature at the intake for the proposed additional units as a site characteristic.</p>	<p>Response will describe the methods that would be considered to address frazil and anchor ice formation.</p>
<p>2.4-6 Provide UHS construction and location details sufficient to assess reliability and stability of the UHS under the pressure head of ground water.</p>	<p>Response will provide a description of design approaches that could be used to account for groundwater conditions.</p>
<p>2.4-7 Correlate ESP ground water level measurements with data from long-term piezometers.</p>	<p>Response will describe that the long-term (SWR) piezometers do not correlate well with the ESP ground water level measurements.</p>



# Open Item Status (cont.)

Summary of Open Item	Response Status
<p>2.4-8 Explain why more conservative hydraulic conductivity was not used.</p>	<p>Response will specify a conservative hydraulic conductivity as a site characteristic.</p>
<p>2.4-9 Provide magnitude, frequency, and spatial location of upward hydraulic gradients at the ESP site.</p>	<p>Response will specify the upward hydraulic gradient as a site characteristic.</p>
<p>2.4-10 Provide data to support statement that the typical hydraulic gradient of ground water flow across the ESP site to Lake Anna and the Waste Heat Treatment Facility, is 0.03 m/m. Define the range of seasonal and long-term variation in the hydraulic gradient.</p>	<p>Response will provide additional data on the typical hydraulic gradient and its variation.</p>
<p>2.4-11 Provide onsite measured values of adsorption and retention coefficients for radioactive materials in soils.</p>	<p>Response will specify coefficient values based on onsite-measured soil characteristics data as site characteristics.</p>





# Open Item Status (cont.)

Summary of Open Item	Response Status
<p>2.5-1 Provide and evaluate criteria or weights used for ranking of model clusters and the judgments involved in balancing data consistency and adherence to seismological principles in the EPRI 2003 ground motion evaluation.</p>	<p>A response to this open item was submitted on January 25, 2005.</p>
<p>2.5-2 Define the SSE as the free field ground motion response spectra at the free ground surface and provide the site amplification or transfer function.</p>	<p>A description of our response approach was submitted on February 18, 2005. Our response will define the SSE at the top of rock surface (approx El. 250 ft.) and identify the site amplification or transfer function. A partial response will be submitted by March 3, 2005. Final results will be submitted by March 31, 2005.</p>
<p>13.3-1 Provide information on availability and capability of laboratories referred to in State and local emergency plans.</p>	<p>Information to respond to this open item was submitted on October 20, 2004, but could not be included in the DSER before publication.</p>



# Open Item Status (cont.)

Summary of Open Item	Response Status
<p>13.3-2 Describe periodic program in Orange County for informing public on how they will be notified of an emergency.</p>	<p>Information to respond to this open item was submitted on October 20, 2004, but could not be included in the DSER before publication.</p>
<p>13.3-3 Address adequacy of technical support center, emergency operations facility, and operational support center and related equipment in support of emergency response, and address with specificity such facility and equipment features as location, size, structure, function, habitability, communications, staffing and training, radiological monitoring, instrumentation, data system equipment, power supplies, technical data and data systems, and record availability and management.</p>	<p>Dominion intends to withdraw its request for approval of this major feature in its planned March 3, 2005 submittal.</p>

# Open Item Status (cont.)

Summary of Open Item	Response Status
<p>13.3-4 Provide additional information concerning assumptions regarding reliance on DOE for plume tracking.</p>	<p>Information to respond to this open item was submitted on October 20, 2004, but could not be included in the DSER before publication.</p>
<p>13.3-5 Provide additional information regarding use of Patrick Henry High School, agreements for assistance from offsite agencies, measures for dealing with impediments to use of evacuation routes, and when sheltering would be considered.</p>	<p>Information to respond to this open item was submitted on October 20, 2004, but could not be included in the DSER before publication.</p>
<p>13.3-6 Provide additional information on evacuation time estimate as specified in staff's request for additional information 13.3-15.</p>	<p>Dominion plans to submit additional information by March 3, 2005</p>

# Open Item Status (cont.)

Summary of Open Item	Response Status
13.3-7 Provide information on decision-making guidance and authority for exceeding exposure limits.	Information to respond to this open item was submitted on October 20, 2004, but could not be included in the DSER before publication.
13.3-8 Describe capabilities of local and backup hospital and medical services.	Information to respond to this open item was submitted on October 20, 2004, but could not be included in the DSER before publication.
13.3-9 Describe program for qualifying State and local directors of emergency response.	Information to respond to this open item was submitted on October 20, 2004, but could not be included in the DSER before publication.
13.3-10 Provide additional information on cross-references to Supplement 2 to NUREG-0654, as well as description of training programs and review/updates of Orange County emergency response program.	Information to respond to this open item was submitted on October 20, 2004, but could not be included in the DSER before publication.

# Permit Conditions/Action Items

- Need to be clear, concise and unambiguous
- Should be based on objective criteria
  - Ensure predictable and stable licensing process
  - Repeatable for future ESP licensing actions
  - Stand the test of time
- Usage in DSER appears inconsistent

# ESP Permit Condition Criteria (Proposed)

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- Limited to activities authorized under ESP
- Limits or identifies specific method by which compliance with requirements is authorized
  - Complete statement of permitted condition to support permit-holder compliance and NRC enforcement
  - Not duplicate or conflict with existing requirements, especially for site with existing units
  - Not duplicate or be inconsistent with existing regulations
- Locks in specific action--permit holder cannot change without prior NRC approval



# Permit Condition--Examples

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- *Permit Condition 2.5-4: Perform geologic mapping of future excavations for safety-related structures, evaluate any unforeseen geologic features that are encountered, and notify the NRC when any excavations for safety-related structures are open for NRC's examination and evaluation Meets criteria*
- *Permit Condition 2.4-9: Construct safety-related SSCs with ingress and egress opening located above elevation of 83 m (271 ft) MSL. Safety-related construction not authorized by ESP*
- *Permit Condition 2.4-4: Locate safety-related facilities above maximum water surface elevation produced by local intense precipitation COL design item that cannot be implemented as written*

## Permit Condition--Examples (cont.)

- *Permit Condition 2.4-2: Maximum additional water budget available for use by the new units is 71.9m<sup>3</sup>/s (2540 cfs)*  
Compliance and enforcement difficult because value described in ESP application is nominal flow
- *Permit Condition 2.4-12: Construct additional units within area where ground water levels do not exceed 82.3 (270 ft) MLS. Safety-related construction not authorized by ESP; COL action item could specify that an analysis be included in the COL application to show that the site grading plan design would ensure that ground water levels are at least one foot below final plant grade level within some specified distance around safety-related structures*



# COL Action Item Criteria (Proposed)

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- Assigned when an ESP applicant has specified an action to be implemented at COL
  - Complete statement of action to allow permit-holder to implement the action and the NRC to confirm
  - Not duplicate or conflict with COL requirements
  - For design-related actions, the Action Item should specify the requirement, but not how the design meets the requirement
- The future action is not legally binding, but NRC wants to confirm action occurs at COL or be advised if the action changes

# Action Item--Examples

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- *Action Item 2.1-1: Provide latitude, longitude, and Universal Transverse Mercator coordinates for new units Meets criteria*
- *Action Item 2.2-1: Evaluate hazards posed by nearby industrial area (10 CFR 50.34/52.79)*
- *Action Item 2.2-2: Evaluate design-specific interactions between existing and new units (10 CFR 50.59 and 50.34/52.79)*
- *Action Item 2.3-1: Evaluate dispersion of airborne radioactive materials to the control room (GDC-19)*

# Going Forward

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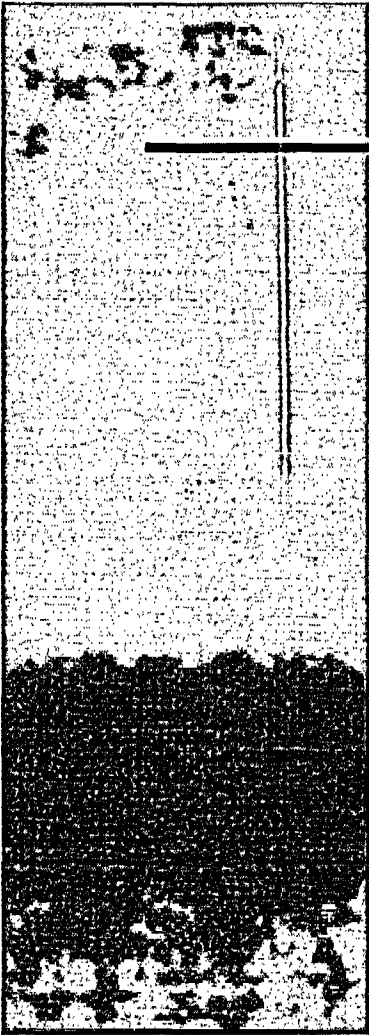
- Generic conditions could be incorporated in future rulemaking
- Generic COL action items:
  - NRC staff actions (e.g., reminders to review at COL) could be incorporated in COL review guidance
  - COL applicant actions could be reflected in industry COL guidance
- Lessons-learned about existing guidance should be reflected in guidance updates



# Summary

- Dominion working to submit timely response to DSER Open Items
- Process by which permit conditions and action items are established needs to be clearly defined and understood
- Dominion remains focused on supporting ESP licensing action





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