UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D.C. 20555-0001

April 8, 2005

MEMORANDUM TO: ACRS Members
ACRS Staff

FROM: Med El-Zeftawy, Senior Staff Engineer M.E-
ACRS

SUBJECT: CERTIFIED MINUTES OF THE ACRS SUBCOMMITTEE MEETING ON EARLY SITE PERMITS (NORTH ANNA), MARCH 2, 2005, ROCKVILLE, MARYLAND

The proposed minutes of the subject meeting have been certified as the official record of the proceedings for that meeting.

Attachment:
Certified Minutes of the ACRS Subcommittee
on Early Site Permits, March 2, 2005

MEMORANDUM TO: Med El-Zeftawy, Senior Staff Engineer
ACRS

FROM: Dana A. Powers, Chairman
Early Site Permits Subcommittee

SUBJECT: CERTIFICATION OF THE MINUTES FOR THE MEETING OF THE ACRS SUBCOMMITTEE ON EARLY SITE PERMITS, MARCH 2, 2005–ROCKVILLE, MARYLAND

I do hereby certify that, to the best of my knowledge and belief, the minutes of the subject meeting on March 2, 2005, are an accurate record of the proceeding for that meeting.

Dana A. Powers 8/APR/2005

Dana A. Powers Date
Subcommittee Chairman

UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D.C. 20555-0001

March 29, 2005

MEMORANDUM TO: Dr. Dana A. Powers
Early Site Permits Subcommittee

FROM: Med El-Zeftawy, Senior Staff Engineer
ACRS

SUBJECT: WORKING COPY OF THE MINUTES FOR THE MEETING OF THE ACRS SUBCOMMITTEE ON EARLY SITE PERMITS, MARCH 2, 2005–ROCKVILLE, MARYLAND

A working copy of the minutes of the subject meeting is attached for your review. Please review and comment on them at your earliest convenience. Copies are being provided to each ACRS member who attended the meeting for information and/or review.

Attachment: As Stated

cc: ACRS Members
J. Larkins
M. Scott
M. Snodderly

CERTIFIED **Issued: 3/29/2005**

4/8/2005

By DANA A. POWERS

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
EARLY SITE PERMITS SUBCOMMITTEE MEETING MINUTES
MARCH 2, 2005
ROCKVILLE, MARYLAND

INTRODUCTION

The ACRS Subcommittee on Early Site Permits met on March 2, 2005, at 11545 Rockville Pike, Rockville, Maryland, in Room T-2B3. The purpose of the meeting was to review and discuss the staff's draft safety evaluation report (DSER) for North Anna early site permit (ESP) and the application submitted by Dominion (the applicant). The Subcommittee planned to gather information, analyze relevant issues and facts to formulate proposed positions, as appropriate, for deliberation by the full Committee. The entire meeting was open to public attendance. Med El-Zeftawy was the cognizant staff engineer and the Designated Federal Official for this meeting. The Subcommittee has received no written comments, or requests for time to make oral statements from any members of the public regarding this meeting. The meeting was convened at 1:00 pm and adjourned at 5:00 pm.

ATTENDEES

ACRS

D. Powers, Chairman
G. Apostolakis, Member
M. Bonaca, Member
T. Kress, Member
W. Shack, Member
J. Sieber, Member
G. Wallis, Member

NRC

L. Dudes, NRR
M. Scott, NRR
B. Sosa, NRR
B. Poole, OGC
K. Campe, NRR
C. Munson, NRR
G. Bagchi, NRR
B. Harvey, NRR
P. Prescott, NRR
J. Segala, NRR
J. Lee, NRR
R. Weisman, OGC
D. Barss, NSIR
K. Heck, NRR
D. Thatcher, NRR
B. Musico, NRR

plant(s) falling within a plant parameter envelope (PPE) that Dominion specified in its application. The current regulations of 10 CFR Part 52 and 10 CFR Part 100 that apply to an ESP do not require that an ESP applicant provide specific design information.

In the process of performing the review of Dominion's ESP application, the staff has identified several generic issues. One issue is associated with "major features" of emergency plans. Another issue involves seismic analyses. Dominion has initially submitted application that contained a new "performance-based" methodology for determining the Safe Shutdown Earthquake (SSE) ground motion for the site. The staff had not previously reviewed this methodology and informed the applicant that the choice of this method could result in a delay in completion of the staff's seismic review of the ESP application. Subsequently, Dominion elected to rely on the staff approved methodology in the regulatory guide and revised its application accordingly.

The proposed North Anna site will have reactors founded on hard rock with seismically induced accelerations that extend to frequencies in excess of 10 Hz. Dominion seeks a 20-year ESP. Some generic issues arose during the staff's review of the application include Dominion's concept for emergency planning, approach for determining safe shutdown earthquake, and design/site interface.

The Site Safety Analysis Report (SSAR) of the ESP application, Dominion provided a list of postulated design parameters in the form of PPE. The applicant stated that the PPE approach provides sufficient design details to support the NRC's review of the ESP application, while recognizing that new reactor technologies, not envisioned at the time Dominion submitted its ESP application, may become available in the future. Dominion states that the PPE is intended to bound multiple reactor designs. Dominion also states that the actual reactor design selected would be reviewed at the combined license (COL) stage to ensure that the design fits within the PPE. The PPE references the following designs:

- ACR-700 (Atomic Energy of Canada, Ltd.)
- Advanced Boiling Water Reactor (General Electric)
- AP1000 (Westinghouse)
- Economic and Simplified Boiling Water Reactor (General Electric)
- Gas Turbine Modular Helium Reactor (General Atomics)
- International Reactor Innovative and Secure (IRIS) Project (Consortium led by Westinghouse)
- Pebble Bed Modular Reactor (PBMR (Pty) Ltd.)

The staff has reviewed the proposed PPE values and has found them to be acceptable. Should an ESP be issued for the North Anna ESP site, an entity might wish to reference that ESP, as well as a certified design, in a COL or construction permit (CP) application. Such a COL or CP applicant would need to demonstrate that the site characteristics established in the ESP bound

the postulated site parameters established for the chosen design, and that the design characteristics of the chosen design fall within the PPE values specified in the ESP application.

The DSER summarizes the staff's technical evaluation of the North Anna ESP site. The DSER focused on the following matters:

- population density and land use characteristics of the site environs including seismology, meteorology, geology, and hydrology.
- potential hazards to a nuclear power plant(s) that might be constructed on the ESP site posed by man made facilities and activities, transportation accidents, and the existing nuclear power plants.
- potential capability of the site to support the construction and operation of a nuclear power plant(s) with design parameters falling within those specified in the applicant's PPE.
- suitability of the site for development of adequate physical security plans and measures.
- proposed major features for an emergency plan.
- quality assurance measures applied to the information submitted by the applicant.
- the acceptability of the applicant's proposed exclusion area and low population zone (LPZ) under the dose consequence evaluation factors of 10 CFR 50.34(a)(1).

In developing the DSER, the staff identified certain issues that require additional information. The staff refer to these issues as "Open Items". There are currently 28 open items. In addition, the staff has identified one item (verification of information obtained from the Internet) as resolved, but for which the staff needs confirmation that the applicant has taken the planned action. Also, the staff has identified 18 permit conditions and 19 site-related COL action items that it will recommend the Commission impose should an ESP be issued to the applicant. Most of the open items are near resolution.

The applicant (Chapter 15, Accident Analysis- SSAR) analyzed and provided the radiological consequences of design-basis accidents (DBAs) to demonstrate that new nuclear units could be sited at the proposed ESP site without undue risk to the health and safety of the public. The applicant, however, did not identify a particular reactor design to be considered for the proposed ESP site. Instead, the applicant developed a set of reactor DBA source term parameters using surrogate reactor characteristics.

In selecting DBAs for dose consequence analyses, the applicant focused on two light-water reactors, the certified ABWR and the AP1000 designs, to serve as surrogates. Using source terms developed from these two designs, the applicant performed radiological consequence analyses for the following DBAs:

- PWR main steamline break
- PWR feedwater system pipe break
- locked rotor accident
- reactor coolant pump shaft break
- PWR rod ejection accident
- BWR control rod drop accident
- failure of small lines carrying primary coolant outside containment
- PWR steam generator tube failure
- BWR main steamline break
- PWR and BWR LOCAs
- fuel handling accident

The applicant calculated site-specific DBA doses by first obtaining DBA dose information from the ABWR and AP1000 design control documents (DCDs), then calculated site-specific χ/Q values using onsite meteorological information. The applicant, then multiplied the doses from the two designs by the ratio of the site-specific χ/Q values to the assumed χ/Q values from the DCDs. The applicant cited Regulatory Guide (RG 1.183), "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors"- issued July 2000, as the applicable NRC regulations. The NRC staff finds the applicant's site-specific χ/Q values and dose consequence evaluation methodology to be acceptable. In addition, the staff concludes that the proposed distances to the exclusion area boundary (EAB) and the LPZ outer boundary of the proposed ESP site, in conjunction with the fission product release rates to the environment provided by the applicant as PPE values, to be adequate.

General Questions and Observations from the Subcommittee Members

1. Dr. Powers expressed concern that not enough information was provided in either the applicant's SSAR or the staff's DSER to understand and reproduce the atmospheric dispersion (χ/Q) calculations.

2. Dr. Powers stated that the applicant is requesting for a site permit applicable for the next 20 years, and in some respect prognosticating what the future is, yet throughout the application there is very little prognostication.

3. Dr. Apostolakis expressed concern that due to recent earthquake data, the recurrence period has been changed from several thousands years to about 500 years, yet the regulators do not consider such changes in approving early site permits applications.

4. Dr. Apostolakis expressed concern regarding the depth of the staff's review of seismic issues.

5. Dr. Powers stated that the applicant has used staff's approved methods to deduce the consequences of radionuclide release at the proposed site . However, neither the application nor the DSER provide sufficient information to reproduce these analyses.

6. Dr. Powers indicated that he is skeptical of accepting categorization of possible quaternary seismic features published in archival documents without scrutinizing the bases for the categorization.

7. Subcommittee members questioned the need for detailed examinations of emergency plans for proposed sites that are on or adjacent to sites with operating plants having approved emergency plans.

Subcommittee's Action

The staff and the applicant plan to provide a briefing regarding this matter to the full Committee during the March 3-5, 2005 ACRS meeting.

Documents Provided to the Subcommittee

1. Status Report by M. El-Zeftawy, dated February 7, 2005.

2. DSER, North Anna Early Site Permit, December 2004.

3. North Anna Early Site Permit Application, Revision 3, September 2004 (CD- Form).

4. ACRS Letter, Draft Review Standard, RS-002: "Processing Applications For Early Site Permits", dated March 13, 2003.

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NOTE : Additional details of this meeting can be obtained from a transcript of this meeting available for downloading or viewing on the Internet at http://www.nrc.gov/reading-rm/adams.html or http://www.nrc.gov/reading-rm/doc-collections/ can be purchased from Neal R. Gross and Co., 1323 Rhode Island Ave., N.W., Washington, DC 20005 (202) 234-4433.

at the opening and incomplete backfilling of the shaft and future settlement and/or shifting of the material could lead to unintentional venting of mine gases. The petitioner further states that capping and venting the shaft would not be practical due to the mine spoil placement activities associated with the valley fill. The petitioner asserts that the proposed alternative method would provide at least the same measure of protection as the existing standard.

Request for Comments

Persons interested in these petitions are encouraged to submit comments via Federal eRulemaking Portal: *http://www.regulations.gov;* e-mail: *Comments@MSHA.gov;* Fax: (202) 693–9441; or Regular Mail/Hand Delivery/Courier: Mine Safety and Health Administration, Office of Standards, Regulations, and Variances, 1100 Wilson Boulevard, Room 2350, Arlington, Virginia 22209. All comments must be postmarked or received in that office on or before March 17, 2005. Copies of these petitions are available for inspection at that address.

Dated in Arlington, Virginia this 9th day of February 2005.

Rebecca J. Smith,

Acting Director, Office of Standards, Regulations, and Variances.

[FR Doc. 05–2882 Filed 2–14–05; 8:45 am]

BILLING CODE 4510–43–P

NUCLEAR REGULATORY COMMISSION

Advisory Committee on Reactor Safeguards, Ad Hoc Subcommittee Meeting on Early Site Permit Applications; Notice of Meeting

The ACRS Ad Hoc Subcommittee on Early Site Permit Applications will hold a meeting on March 2, 2005, Room T–2B3, 11545 Rockville Pike, Rockville, Maryland.

The entire meeting will be open to public attendance.

The agenda for the subject meeting shall be as follows: Wednesday, March 2, 2005—1 p.m. until 5 p.m.

The Subcommittee will review and discuss the North Anna Draft Safety Evaluation Report for early site permit, and the industry proposed plant parameter envelope information. The Subcommittee will hear presentations by and hold discussions with representatives of the NRC staff and Dominion Nuclear regarding this matter. The Subcommittee will gather information, analyze relevant issues and facts, and formulate proposed positions and actions, as appropriate, for deliberation by the full Committee.

Members of the public desiring to provide oral statements and/or written comments should notify the Designated Federal Official, Dr. Medhat M. El-Zeftawy (telephone 301–415–6889) between 7:30 a.m. and 5 p.m. (e.t.) five days prior to the meeting, if possible, so that appropriate arrangements can be made. Electronic recordings will be permitted.

Further information regarding this meeting can be obtained by contacting the Designated Federal Official between 7:30 a.m. and 5 p.m. (e.t.). Persons planning to attend this meeting are urged to contact the above named individual at least two working days prior to the meeting to be advised of any potential changes to the agenda.

Dated: February 9, 2005.

John H. Flack,

Acting Branch Chief, ACRS/ACNW.

[FR Doc. 05–2855 Filed 2–14–05; 8:45 am]

BILLING CODE 7590–01–P

NUCLEAR REGULATORY COMMISSION

Sunshine Federal Register Notice

AGENCY HOLDING THE MEETINGS: Nuclear Regulatory Commission.

DATE: Weeks of February 14, 21, 28, March 7, 14, 21, 2005.

PLACE: Commissioners' Conference Room, 11555 Rockville Pike, Rockville, Maryland.

STATUS: Public and closed.

MATTERS TO BE CONSIDERED:

Weeks of February 14, 2005

Tuesday, February 15, 2005

9:30 a.m. Briefing on Office of Nuclear Material Safety and Safeguards Programs, Performance, and Plans—Waste Safety (Public Meeting) (Contact: Jessica Shin, 301–415–8117).

This meeting will be Webcast live at the Web address—*http://www.nrc.gov.*

Week of February 21, 2005—Tentative

Tuesday, February 22, 2005

9:30 a.m. Briefing on Status of Office of the Chief Information Officer (OCIO) Programs, Performance, and Plans (Public Meeting) (Contact: Patricia Wolfe, 301–415–6031).

This meeting will be Webcast live at the Web address—*http://www.nrc.gov.*

1:30 p.m. Briefing on Emergency Preparedness Program Initiatives (Closed—Ex. 1).

Wednesday, February 23, 2005

9:30 a.m. Briefing on Status of Office of Chief Financial Officer (OCFO) Programs, Performance, and Plans (Public Meeting) (Contact: Edward New, 301–415–5646).

This meeting will be Webcast live at the Web address—*http://www.nrc.gov.*

Thursday, February 24, 2005.

1 p.m. Briefing on Nuclear Fuel Performance (Public Meeting) (Contact: Frank Akstulewicz, 301–415–1136).

This meeting will be Webcast live at the Web address—*http://www.nrc.gov.*

Week of February 28, 2005—Tentative

There are no meetings scheduled for the Week of February 28, 2005.

Week of March 7, 2005—Tentative

Monday, March 7, 2005

10 a.m. Briefing on Office of Nuclear Material Safety and Safeguards Programs, Performance, and Plans—Materials Safety (Public Meeting) (Contact: Shamica Walker, 301–415–5142).

This meeting will be Webcast live at the Web address—*http://www.nrc.gov.*

Week of March 14, 2005—Tentative

Wednesday, March 16, 2005

9:30 a.m. Meeting with Advisory Committee on Nuclear Waste (ACNW) (Public Meeting) (Contact: John Larkins, 301–415–7360).

This meeting will be Webcast live at the Web address—*http://www.nrc.gov.*

Weeks of March 21, 2005—Tentative

There are no meetings scheduled for the Week of March 21, 2005.

The schedule for Commission meetings is subject to change on short notice. To verify the status of meetings call (recording)—(301) 415–1292. Contact person for more information: Dave Gamberoni, (301) 415–1651.

Additional Information: "discussion of Security Issues (Closed—Ex. 1)." originally scheduled for Thursday, February 24, 2005, at 9 a.m. was canceled.

The NREC Commission Meeting Schedule can be found on the Internet at: *http://www.nrc.gov/what-we-do/policy-making/schedule.html.*

The NRC provides reasonable accommodations to individuals with disability where appropriate. If you need a reasonable accommodation to participate in these public meetings, or need this meeting notice or the transcript or other information from the public meetings in another format (e.g.

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
MEETING OF THE AD HOC SUBCOMMITTEE ON
EARLY SITE PERMITS
MARCH 2, 2005
ROCKVILLE, MARYLAND

Contact: Dr. Medhat El-Zeftawy (301/415-6889, mme@nrc.gov)

PROPOSED AGENDA

TOPIC	PRESENTER	TIME
I. Introductory Remarks, ACRS Subcommittee Chairman	Dr. D. Powers	1:00-1:05 pm
II. Dominion, LLC - Overview of Application - Response to NRC issues - Schedule	Dominion's Representatives	1:05- 1:45 pm
III. NRC Staff's Presentation: - Review Status - DSER Review - Open Items - Upcoming Milestones - Schedule	M. Scott, et..al	1:45- 4:45 pm **(Break 2:45- 3:00 pm)**
IV. Public Comments		4:45- 4:55 pm
V. General discussion / Adjourn		4:55- 5:00 pm

NOTE:

- Presentation time should not exceed 50 percent of the total time allocated for specific item. The remaining 50 percent of the time is reserved for discussion.
- 35 copies of the presentation materials to be provided to the Subcommittee.

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

Ad HOC SUBCOMMITTEE MEETING ON EARLY SITE PERMITS

March 2, 2005
Date

NRC STAFF SIGN IN FOR ACRS MEETING

PLEASE PRINT

NAME	NRC ORGANIZATION
Laura Dudes	NRR/DRIP/RNRP
Michael Scott	NRR/DRIP/RNRP
Beiky Sosa	NRR/DRIP/RNRP
Brad Harvey	NRR/DSSA/SPSB-C
Brooke Poole	NRC/OGC
Kaz Campe	NRR/DSSA/SPSB
Thomas Cheng	NRR/DE/EMEB
Cliff Munson	NRR/DE/EMEB
Goutam Bagchi	NRR/DE/EMEB
Paul Prescott	NRR/DIPM/IPSB
John Segala	NRR/DRIP/RNRP
Jay Lee	NRR/DSSA/SPSB
Yong L	NRR/DE/EMEB
Bob Weisman	OGC/RP
Dan Barss	NSIR/DPR/EPD
Ken Heck	NRR
Pale Thatch	NRR/DIPM/IPSB

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

Ad HOC SUBCOMMITTEE MEETING ON EARLY SITE PERMITS

March 2, 2005
Date

PLEASE PRINT

NAME	AFFILIATION
Richard Baker	Bechtel Power Corporation
MIKE SCHOPPMAN	FRAMATOME ANP
Tomoho Yamada	JNES
Charles Mueller	U.S. Geological Survey
Anthony J. Crone	U.S. Geological Survey
Steve Rooth	Bechtel
George Zinke	Entergy / NUSTART
Eddie R Grant	Exelon
Joe Hegner	Dominion
Brendan Hoffman	Public Citizen
Eugene Grecheck	Dominion

Presentation to the Early Site Permit Subcommittee of the Advisory Committee on Reactor Safeguards

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Safety Review of the North Anna Early Site Permit Application

Presented by
Michael Scott
Senior Project Manager
New, Research and Test Reactors Program
March 2, 2005

Purpose

- Brief the Subcommittee on the North Anna early site permit (ESP) application and the status of the NRC staff's safety review of that application
- Support the Subcommittee's review of the application and subsequent interim Committee letter to the Commission
- Answer the Subcommittee's questions

Agenda

• Background	5 min
• Milestones	5 min
• North Anna ESP Application	10 min
• Plant Parameter Envelope Concept	10 min
• Draft Safety Evaluation Report (DSER)	10 min
• DSER Issues	10 min
• Future-Oriented Items	40 min
• DSER Conclusions	5 min
• Presentation Conclusions	5 min
• Discussion / Subcommittee questions	

Background and Regulatory Framework

- Subpart A to 10 CFR Part 52 governs ESPs
- Subpart B to 10 CFR Part 100 contains applicable siting evaluation factors
- 10 CFR 52.23 requires ACRS to report to Commission on portions of application that pertain to safety (i.e., Site Safety Analysis Report)
- Purpose of ESP process is to resolve issues related to siting at early stage
- North Anna is first of three ESP applications the NRC staff is currently reviewing - others follow at two-month intervals

Completed Milestones

- Dominion Nuclear North Anna, LLC (hereafter Dominion) submitted ESP application 9/25/03
- Staff docketed application 10/23/03
- Staff issued draft environmental impact statement 12/10/04
- Staff issued draft safety evaluation report (DSER) 12/20/04

Future Milestones

- ACRS interim letter to the Commission assumed 03/18/05
- Staff provides final SER (FSER) to ACRS late May 2005 (prior to final division director and Office of the General Counsel concurrence)
- Staff issues FSER 06/16/05
- ACRS letter to the Commission assumed 07/25/05
- Staff incorporates ACRS letter and issues FSER as NUREG 08/29/05
- Mandatory hearings begin fall 2005
- Commission decision assumed mid 2006

North Anna ESP Application

- Submitted for a site wholly within the existing North Anna Power Station (NAPS) site, adjacent to existing North Anna units 1 and 2 and partially overlaying site of canceled units 3 and 4 (partially constructed in early 1980s; most structures subsequently removed)
- NAPS is owned by Virginia Power and Old Dominion Electric Cooperative and controlled by Virginia Power
- ESP applicant, Dominion, is a wholly-owned subsidiary of Dominion Resources, Inc. (as is Virginia Power)
- Dominion seeks authorization for limited work in accordance with 10 CFR 52.17(c) and 10 CFR 50.10(e)(1)

North Anna ESP Application

- Dominion requests site be approved for location of two "units" of up to 4300 MWt
- Each unit may be one large reactor or multiple smaller reactors
- Dominion has chosen not to submit a specific design but instead has submitted a plant parameter envelope (PPE) based on a number of current and future reactor designs

ACR700	ESBWR
AP1000	ABWR
GT-MHR	IRIS
PBMR	

PPE CONCEPT

- Staff's review of PPE values in ESP applications limited to whether they are reasonable
- Applicant retains flexibility to choose a design at combined license (COL) or construction permit stage rather than at ESP
- ESP would not approve siting of any particular design
- Staff plans to include, in any ESP that might be issued for the site, PPE values used in ESP compliance demonstrations [e.g., source term, atmospheric dispersion factors (X/Q)]
- COL applicant will need to show that design falls within the PPE values specified in the permit or will need to show regulations have been met

North Anna ESP Application

- Unit 3 to use once-through cooling
- Unit 4 to use "dry" closed-loop (radiative) cooling to atmosphere to eliminate/minimize lake temperature increase and water demand on lake
- Underground ultimate heat sink (UHS) if design selected requires a UHS
- Dominion considering use of intake and discharge structure of canceled units 3 and 4
- Dominion seeks 20-year ESP term

DSER

- First ESP DSER
- Benefited from resolution of a number of generic issues prior to application submittal
- Review guidance is RS-002, "Processing Applications for Early Site Permits," which updates the site-related sections of NUREG-0800 and addresses ESPs
- Despite "up front" issue resolution reflected in guidance, some additional "generic" issues arose during application review and needed to be resolved during DSER development

Safety Review Areas and Lead Staff Reviewers

- Meteorology: Brad Harvey
- Hydrology: Goutam Bagchi (contract support from Pacific Northwest Laboratory) (PNL)
- Site Hazards: Kaz Campe (contract support from PNL)
- Geology/seismology: Cliff Munson (support from U.S. Geologic Survey)
- Demography/Geography: Jay Lee
- Emergency Planning: Bruce Musico (consultation with Federal Emergency Management Agency)
- Quality Assurance: Paul Prescott
- Physical Security: Al Tardiff
- Radiological Consequence Analysis: Jay Lee

Issues - Emergency Planning

- Dominion has elected to seek acceptance of "major features" of emergency plans as provided in 10 CFR 52.17(c)(ii)
- Concept is not defined in detail in regulations
- NRC/FEMA have issued draft guidance document, Supplement 2 to NUREG-0654
- Generic industry concern with degree of finality associated with major features
- Staff can grant finality as to the overall description but will need to address implementation details at COL

Issues - Seismic

- Dominion proposed new "performance-based" approach for determining safe shutdown earthquake (SSE)
  - Not entirely consistent with NRC-approved method in RG 1.165
  - ASCE Standard 43-05 describes this approach
  - Risk-based approach that targets performance goal
    - $1x10^{-5}$ annual probability of unacceptable performance of Category 1 systems, structures, and components
    - Target seismic risk based on core damage frequencies for existing nuclear power plants

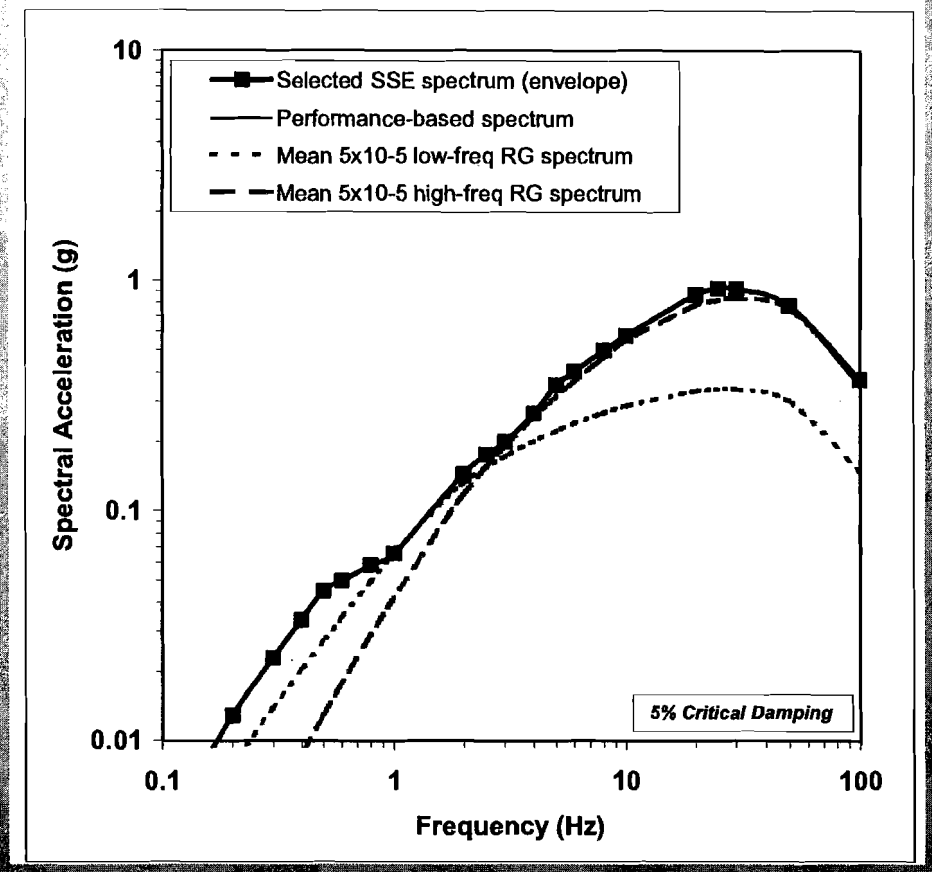
Issues - Seismic

- Because staff had not reviewed or approved the performance-based approach, staff advised Dominion that time required for review of this method would likely result in delay in issuance of staff's review products for the ESP application
- Applicant ultimately elected to use RG 1.165 method with justification for use of reference probability $5x10^{-5}$ per year

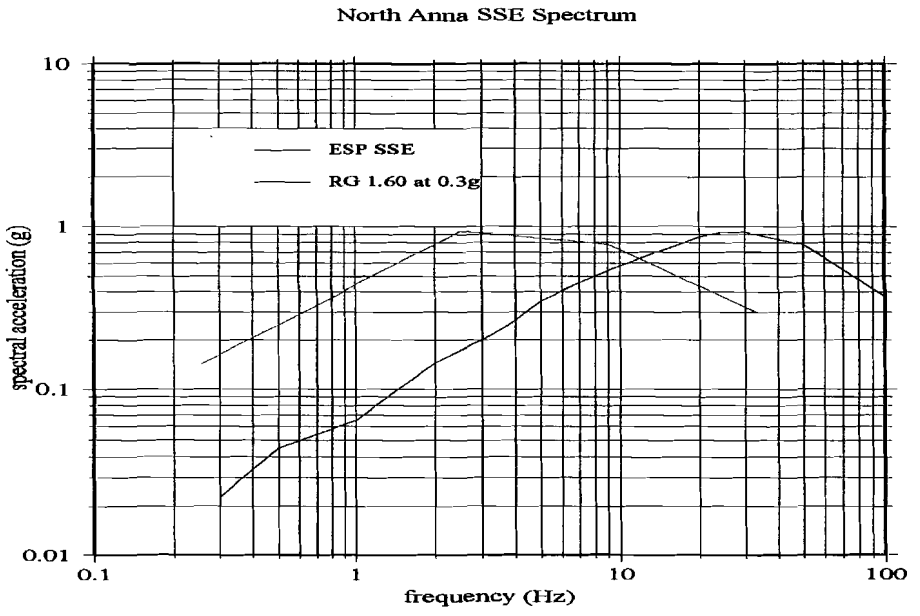
Issues - Seismic

- Because North Anna is a rock site, site SSE exceeds design SSE at high frequencies for designs certified to date
- COL applicant would need to resolve disparity if one exists (dependent on design selected)
- See SSE vs. RG 1.60 diagram

North Anna SSE



SSE vs RG 1.60


North Anna SSE Spectrum
ESP SSE
RG 1.60 at 0.3g
spectral acceleration (g)
10
1
0.1
0.01
0.1
1
10
100
frequency (Hz)

Issues - Site Characteristics vs Design Inputs

- 10 CFR 100.21(d) states:
  - The physical characteristics of the site, including meteorology, geology, seismology, and hydrology must be evaluated and site parameters established.
- General Design Criterion 2, while largely not required at ESP, states:
  - The design bases for these structures, systems, and components shall reflect: (1) Appropriate consideration of the most severe of the natural phenomena that have been historically reported for the site and surrounding area, with sufficient margin for the limited accuracy, quantity, and period of time in which the historical data have been accumulated…

Issues - Site Characteristics vs Design Inputs

- Issue is what is needed and/or appropriate at ESP
  - Staff has given Dominion credit for appropriate consideration of most severe natural phenomena including margin
  - Dominion concerned that ESP should not specify design bases, but rather may specify site characteristics that would serve as minimum site-related design inputs at COL

Issues - Design/Site Interface

- Several examples involving interface between site (intended to be subject of ESP) and design (intended to be subject of design certification and/or COL)
  - Potential interferences between new and existing plants
  - Potential underground UHS in presence of water table near surface
  - Potential for frazil and anchor ice
- These individual items will be discussed in later slides

Future-Oriented Items in DSER

- Open items – Staff needs additional information prior to developing FSER
- Confirmatory item – Staff needs to verify applicant's planned actions as stated in its responses to requests for additional information
- COL action items – Site-related items that are more appropriately addressed at COL stage
- Permit conditions – Conditions the staff proposes be imposed on holder of the ESP should one be issued

Open Items

- 2.1-1, Control of exclusion area
  - Applicant must have control over exclusion area or irrevocable right to obtain control
  - Legal issue being addressed in Office of General Counsel
- 2.3-1, Basic wind speed (fastest mile)
  - Dominion used 100-year return fastest mile value from industry standard
  - Observed data point exceeds 100-year return from standard
  - Dominion has chosen to provide 100-year return 3-second gust in lieu of fastest mile

Open Items

- 2.3-2, Snowpack weight vs snow load
  - Regulatory Guide 1.70 states weight of 100-year snowpack and 48-hour probable max winter precipitation (PMWP) should be used to provide weight of snow and ice on safety-related structures
  - Staff branch technical position provides clarification:
    - Normal winter precipitation load should be weight of 100-year snowpack
    - Extreme winter precipitation load should be weight of 100-year snowpack plus 48-hour PMWP
  - Dominion plans to provide 100-year snowpack, 48-hour maximum snowfall, and 48-hour winter PMP
  - COL applicant will determine how to combine these characteristics for comparison with design for extreme environmental load category unless otherwise justified

Open Items

- 2.3-3, Site characteristic to assess potential for freezing in UHS
  - Dominion plans to submit accumulated degree-days below freezing
  - Issues remain regarding choice of weather station and methodology for calculating
- 2.3-4, Impact of dry cooling on atmospheric temperature
  - Dominion plans to provide qualitative or semi-quantitative assessment
  - Approach recognizes system not designed
- 2.4-1, Coordinate reference system
  - Dominion plans to submit reference system and units of measure

Open Items

- 2.4-2, Minimize distance to existing systems, structures, and components (SSCs)
  - Existing NAPS Units 3 and 4 discharge tunnel likely within 1 foot of Units 1 and 2 service water piping
  - What will happen if COL applicant finds it cannot use existing structure?
  - Dominion states:
    - Not feasible or necessary to specify vertical separation distance
    - Only one of many examples of possible interferences that can and will be addressed at construction stage
    - 10 CFR 50.59 review of changes provides protection for operating plant

Open Items

- 2.4-3, Impacts of low-flow conditions
  - Dominion plans to propose minimum lake level same as for NAPS units
- 2.4-4, Ice jam formation and breakup
  - Dominion plans to show impact bounded by already-analyzed impact of breach of upstream dams
- 2.4-5, Minimum intake water temperature
  - No clear quantitative site characteristic regarding frazil ice
  - Dominion plans to note in application that frazil ice conditions could occur at the site
  - COL applicant would need to describe engineered measures to handle frazil ice

Open Items

- 2.4-6, Stability of underground UHS against ground water pressure head
  - Water table near surface, could lift empty or partially full UHS
  - Absent construction details, would have site characteristic for groundwater elevation
- 2.4-7, Correlate ground water level measurements taken in support of the ESP application with data from long-term piezometers
  - Dominion states they do not correlate well (different purposes and locations)
  - Need to show post-drought data not anomalous
  - Dominion plans to take additional data
  - Dominion will need to assess impact of lack of correlation

Open Items

- 2.4-8, Conservative hydraulic conductivity
  - Dominion plans to provide more conservative method
- 2.4-9, Upward hydraulic gradients
  - Dominion plans to show such gradient is small fraction of horizontal flow and bound its impact
- 2.4-10, Variation in hydraulic gradient
  - Dominion plans to provide additional seasonal data
- 2.4-11, Onsite measurement of adsorption and retention coefficients
  - Dominion plans to use onsite measurements of soil conditions and a lookup table from the Environmental Protection Agency to determine coefficients

Open Items

- 2.5-1, Criteria for ground motion model weighting in the model clusters for the EPRI 2003 ground motion evaluation
  - Dominion has responded to this item
  - Staff has questions regarding evaluation
    - Heavy weighting in one cluster for three ground motion models
    - Seismic attenuation parameter for three models in one cluster
    - Criteria for overall weighting for clusters not clearly explained

Open Items

- 2.5-2, Incorporate site-specific geologic properties and their uncertainties into the determination of safe-shutdown earthquake (SSE)
  - Dominion plans to determine SSE at hypothetical rock outcrop consistent with NRC guidance and determine transfer function
  - Dominion has provided method to staff, and staff has no questions on it

Open Items

- 13.3-1, Offsite laboratories
- 13.3-2, Orange County emergency notification program
- 13.3-4, Reliance on DOE for plume tracking
- 13.3-5, Various additional details on offsite emergency response measures
- 13.3-7, Guidance and authority for exceeding exposure limits
- 13.3-8, Capabilities of hospital and emergency services
- 13.3-9, Qualification for directors of emergency response
- 13.3-10, Cross-references to NUREG-0654 Supplement 2 and review of Orange County emergency response program

Applicant has provided information to address the above open items, and staff has no additional questions on them

Open Items

- 13.3-3, Adequacy of technical support center, emergency operations facility, and operational support center
  - Applicant does not plan to provide details on these subjects and plans to withdraw request for the associated major feature
- 13.3-6, Additional information on evacuation time estimate (ETE)
  - Applicant referenced existing NAPS ETE
  - Staff has a number of questions on details of the plan
  - Dominion is reviewing document against staff questions

COL Action Items

- Identify/highlight work needed at COL
- Similar to established concept in design certifications
- Regulatory standing under discussion (unlike design certification, not written into a rule)
- Not all-inclusive
- Applicant believes some are unnecessary when already required by regulations
- Specific items in backup slides
- Based on staff's evaluation of open item responses, some of these items may be changed or deleted in FSER

Proposed Permit Conditions

- Should an ESP be issued for the site, NRC staff believes the ESP holder needs to be constrained by these conditions
- Based on staff's evaluation of open item responses, some of these items may be changed or deleted in FSER
- May also reclassify some of these as COL action items
- Dominion plans to identify technical concerns with some of these items

Permit Conditions

- 2.1-1, Obtain authority to restore site before undertaking limited work activities
- 2.4-1, Maintain minimum separation distance from NAPS SSCs
  - This item likely to be revised based on Dominion's response to open item 2.4-2
- 2.4-2, Maximum water budget
  - Dominion believes minimum lake level is adequate limit

Proposed Permit Conditions

- 2.4-3, Design slopes based on drainage without need for engineered drainage systems that can be blocked
- 2.4-4, Locate safety-related facilities above maximum water level from local intense precipitation
- 2.4-5, Minimum free-surface elevation of UHS
  - This item may be revised based on applicant's response to open item 2.4-6
- 2.4-6, Minimum UHS storage capability
- 2.4-7, Design UHS capacity to address potential for freezing

Proposed Permit Conditions

- 2.4-8, No reliance on Lake Anna for safety-related water supply
- 2.4-9, Locate ingress/egress opening for safety-related SSCs above 271 ft MSL
- 2.4-10, Provide erosion protection for slopes at intake
- 2.4-11, No compromise of flood control measures for existing NAPS units during construction of new units
- 2.4-12, Locate new units where ground water level does not exceed 270 ft MSL
  - Dominion believes appropriate condition is distance above water table

Proposed Permit Conditions

- 2.5-1, Replace fractured/weathered rock at foundations
- 2.5-2, Perform additional borings to identify weathered or fractured rock at foundations
- 2.5-3, Do not use saprolite as engineered fill
- 2.5-4, Perform geologic mapping of future excavations for safety-related facilities
- 2.5-5, Improve Zone II saprolitic soils if locating safety-related structures on them

DSER Conclusions

- DSER defers general regulatory conclusion regarding site suitability to FSER after open items addressed
- Some conclusions from individual sections without open items
  - Applicant has provided appropriate quality assurance measures equivalent to those in 10 CFR Part 50 Appendix B
  - Site characteristics are such that adequate security plans and measures can be developed

DSER Conclusions

- Additional conclusions from individual sections without open items
  - Population center distance, as defined in 10 CFR100.3, is at least one and one-third times the distance from the reactor to the outer boundary of the low population zone and compliant with 10 CFR 100.21(b) and (h)
  - Applicant has established appropriate atmospheric dispersion characteristics to support radiological calculations
  - Based on PPE and site characteristics, site meets radiological dose consequence criteria in 10 CFR 50.34(a)(1)

DSER Conclusions

- Additional conclusion from individual section without open items
  - Potential hazards associated with nearby transportation routes, industrial and military facilities pose no undue risk to facility that might be constructed on the site

Presentation Conclusions

- Staff has issued first-of-a-kind DSER for North Anna ESP application
- Most open item responses expected by March 3, 2005
- Because of first-of-a-kind nature of this action, staff is working through some issues identified during the review
- Looking forward to seeing interim ACRS letter and to briefing the Subcommittee and the full Committee this summer on final results of staff's review of this application
- Staff is identifying lessons learned for possible inputs to future rulemakings and revisions to guidance

Backup Slides

COL Action Items

- 2.1-1, Specific unit locations
- 2.1-2, Agency control of water bodies within exclusion area
- 2.2-1, Hazards of nearby industrial area
  - Currently undeveloped
  - Zoning could permit hazardous operations in future
- 2.2-2, Design-specific interactions between NAPS and new facility
  - Depends on layout and design of new units

COL Action Items

- 2.3-1, Dispersion of radionuclides to control room
- 2.3-2, Release point characteristics and receptor locations for routine release dose computations
- 2.4-1, Restriction on operations posed by low-water conditions
- 2.5-1, Additional soil borings
- 2.5-2, Compare plot plans with subsurface profile and material properties
- 2.5-3, Submit excavation and backfill plans

COL Action Items

- 2.5-4, Evaluate groundwater impact on foundation stability and dewatering plans
- 2.5-5, Perform soil column amplification/attenuation analyses
- 2.5-6, Analyze stability of safety-related structures
- 2.5-7, Provide design-related structural criteria
- 2.5-8, Provide plans for ground improvement
- 2.5-9, Verify average shear-wave velocity of materials underlying containment

COL Action Items

- 2.5-10, Provide more detailed slope stability analysis
- 2.5-11, Provide plans for safety-related slopes
- 13.6-1, Provide designs for protected area barriers

North Anna Early Site Permit Application

ACRS Ad Hoc Subcommittee
on Early Site Permits
March 2, 2005

Dominion

North Anna ESP Chronology

Submitted ESP Application	Sept. 2003
Revision 1	Oct. 2003
Revision 2	July 2004
Revision 3	Sept. 2004
NRC Issued Draft SER	Dec. 2004
Response to DSER Open Items	March 2005

Dominion

Activities Since DSER Issued

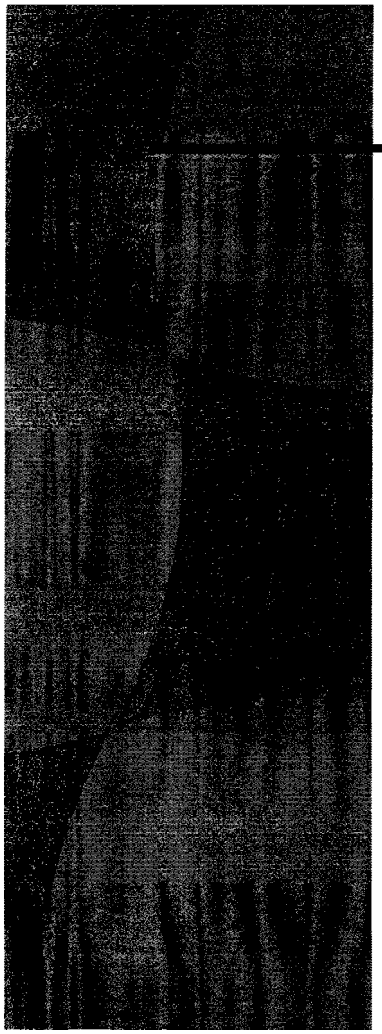
- One seismic open item response submitted January 25, 2005 (ML050320090)
- Dominion submitted feedback on DSER (ML050410133)
- Several phone calls to discuss open items and feedback
- Planned approach on second seismic open item submitted February 18, 2005
- Public meeting held February 23, 2005

Dominion

Technical Issues

- Technical resolution for ESP issues appears achievable
- Additional information on seismic to be provided
- Permit conditions/action items need to be clear, concise and unambiguous
  - Based on objective criteria
  - Stand the test of time

Dominion



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