

May 12, 2006

APPLICANT: Dominion Nuclear North Anna, LLC

FACILITY: North Anna Early Site Permit (ESP) Site

SUBJECT: SUMMARY OF SITE AUDIT TO SUPPORT REVIEW OF EARLY SITE PERMIT APPLICATION FOR THE NORTH ANNA SITE

On May 3 and 4, 2006, the U.S. Nuclear Regulatory Commission (NRC) staff and its contractor from Pacific Northwest National Laboratory (PNNL) participated in a site audit at the the North Anna site to support the review of the Dominion Nuclear North Anna, LLC (Dominion) early site permit (ESP) application. The staff and its contractor toured portions of the North Anna River, Lake Anna, the downstream river system and and the ESP site. The primary goal of the site visit was to review documentation, gather information to ensure that environmental requirements as codified in Title 10 of the *Code of Federal Regulations* Part 51 (10 CFR Part 51) are met, and to meet with officials in the Virginia Department of Game and Inland Fisheries (VDGIF) to obtain related information. Attachment 1 is the list of NRC and contractor personnel, and Dominion representatives that participated in the audit at the site and in the meeting with VDGIF.

Prior to the site tour the staff discussed the hybrid wet dry cooling tower system with the applicant.

Discussion Topics and Information

1. Discussion of information that the staff needs to complete its review (see Attachment 2).
2. Discussion of cooling tower options and location prior to driving tour.
3. Option of raising lake level 6 to 12" to maintain flow over dam during drought. This is only considered one option and is not currently planned. Raising the lake level may impact local dock owners and could affect nearshore wetlands, especially in areas uplake of the North Anna dam. Dominion biologists believe that raising the lake level would shift the wetlands, but would probably not result in a significant gain or loss of wetlands.
4. Plant personnel consider the impingement and entrainment associated with the proposed Unit 3 to be minor, given the expected low water use and the configuration of new intake.
5. Discussion of wedgewire option (1-mm screen on intakes). The NRC and Dominion biologists believe the wedge wire screens are impractical in reservoirs because there is no sweeping current to remove the organisms impinged on the screens, and it is not required by EPA under Phase 2 rules.

6. Coastal Zone Management Act (CZMA): Dominion is working with the Commonwealth of Virginia and expects the review to restart now that Dominion has provided the information requested by the Commonwealth. Note: By letter dated May 3, 2006, the Commonwealth of Virginia restarted its CZMA review.
7. Discussion of whether a “normative flow” regime would be a better way to discharge water from Lake Anna. This scenario would vary flow and may reduce aquatic plant and algae growth in the North Anna river below the dam. This scenario is currently not being considered due to flow requirements at the dam imposed by VDGIF.

Site Tour

The site tour focused on areas relevant to the environmental review, including the intake and discharge area, cooling tower area, the general plant layout, current (Units 1 and 2) National Pollution Discharge Elimination System (NPDES) permitted outfalls, and the discharge canal and dikes associated with the Waste Heat Treatment Facility (WHTF). In addition the tour included:

1. Visual inspection of areas designated for new construction, including areas for major buildings, wet/dry towers, cofferdam area where the proposed Unit 3 intake would be constructed, and the location of the proposed Unit 3 water discharge into the current discharge canal.
2. The area designated for wet/dry towers.

Boat Tour of Lake Anna

1. Overview of plant setting from water perspective.
2. Uplake tour under Route 208 bridge to Stubbs Bridge.
3. Observations of general topography, nearshore vegetation, wetland presence, and dock height.
4. Downlake tour along Dikes 1, 2 and 3, and the North Anna Dam.

After touring the site and the lake with Dominion, the NRC and contractor biologists toured the areas around Lake Anna and the downstream river system. The tour was conducted during May 3 and 4, 2006.

On May 3, 2006, the staff and its contractor observed Contrary Creek and the northwestern area of the lake and its tributaries. On May 4, the staff and its contractor conducted a reconnaissance of the river system downstream of the dam.

River Reconnaissance

1. Reconnaissance of North Anna River below dam to Pamunkey River. Water levels relatively low due to lack of rain in the region.

2. Fall line inspection at two locations. Characteristics of fall line suggest a potential impediment to fish passage, but numerous resting pools are present in some areas that could facilitate passage.

Meeting with VDGIF

On May 4, 2006, the NRC and its contractor met with officials from the VDGIF.

Discussion Topics

1. Discussion of current cooling options for Unit 3.
2. Discussion of the area on the North Anna River that NRC/PNNL considers the upstream extent of shad migration: Anderson Mill fall line.
3. Discussion of potential environmental stressors associated with wet/dry cooling configuration: temperature is not an issue in the North Anna River, but flow might be.
4. Discussion of possible acceptable flow regimes.
5. John Kauffman (VDGIF) presentation: brood fish catch analysis versus river flow near Richmond. According to VDGIF, preliminary results suggest that catch per unit effort (CPUE) for shad is correlated to flow rate, with the highest CPUE corresponding to highest flows. VDGIF assumes 1/3 of the water flow in the Pamunkey at Hanover comes from the North Anna River.
6. VDGIF mentioned the presence of an active eagle nest a few miles from ESP site. The staff stated that it planned to contact Jeff Cooper, the VDGIF eagle expert.
Note: Following the meeting with VDGIF the staff informed Dominion of the existence of the eagles nest. Dominion stated that it follows the eagle nesting guidelines provided by the VDGIF and would provide the reference to the guidelines in their followup information in response to the site audit.
7. VDGIF considers that impingement and entrainment have been significantly reduced, based on the current wet/dry cooling method described in Revision 6 of the ESP application, but still is concerned about consumptive water use.
8. VDGIF and the NRC discussed the use of 1-mm wedgewire intake screens for Unit 3.

/RA/

Jack Cushing, Senior Project Manager
New Reactor Environmental Projects Branch
Division of New Reactor Licensing
Office of Nuclear Reactor Regulation

Attachments: As stated

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Jack Cushing, Senior Project Manager
New Reactor Environmental Projects Branch
Division of New Reactor Licensing
Office of Nuclear Reactor Regulation

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OFFICE	PM: NEPB	OGC	BC:NEPB
NAME	J. Cushing	R. Weisman*	AKugler-TKenyon for:
DATE	05/12/06	05/11/06	05/12/06

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DMatthews/BBeckner

JCushing

ACabbage

CNolan

AKugler

MParkhurst (PNNL)

NPitel

SMonarque

JBlake, RII

OGC

NEPB R/F

BMiller (PNNL)

KLandis, RII

KClark, RII

RHannah, RII

RIDSRgn2MailCenter

BZalcman

JReece, RII

RWeisman

LIST OF ATTENDEES SITE AUDIT

May 3, 2006

Participants

Affiliations

Jack Cushing	U.S. Nuclear Regulatory Commission (NRC)
Michael Masnik	NRC
Gerald Wilson	NRC
Jeff Ward	Pacific Northwest National Laboratory (PNNL)
Bill Bolin	Dominion Nuclear North Anna LLC (Dominion)
Jud White	Dominion
Tony Banks	Dominion

LIST OF ATTENDEES VISIT WITH
THE VIRGINIA DEPARTMENT OF GAME AND INLAND FISHERIES (VDGIF)

May 4, 2006

Participants

Affiliations

Jack Cushing	U.S. Nuclear Regulatory Commission (NRC)
Michael Masnik	NRC
Jeff Ward	Pacific Northwest National Laboratory (PNNL)
Gary Martel	Virginia Department of Game and Inland Fisheries (VDGIF)
Andrew Zadnik	VDGIF
John Kauffman	VDGIF

Clarification of Statements and Additional Information Needs

Part 3, Table 3.1-1

Clarify the use of cooling tower height value (as related to upper bounds for aesthetic and salt drift analysis) presented here as compared to 3.1.2.2 and other sections in the document. Specify which cooling tower heights were used in each analysis, state why the particular height was chosen for each analysis, and specify whether use of the value represents an upper bound impact and why.

Part 3, Section 3.8

Provide new ORIGEN code run for the ESBWR with the updated power level (4500 MWt) as used for analysis in Revision 6 of the ER to justify conclusion of a small increase in the radionuclide inventory of the spent fuel.

Part 3, Section 5.2

Provide information on the SACTI code. This should include reference to the EPRI report on the code and user manual that serves as documentation regarding the statement in the ER that the code has been verified. In addition, listing of the Code inputs and outputs should be provided so the origin of the data used in the calculation, including barometric pressure data collected at the site, can be verified. Specific code output products requested should be in the form of tables, or specification information, regarding the joint occurrence of plume height and length.

Part 3, Section 5.3.2.1

Explain how the onsite barometric pressure was obtained.

Part 3, Section 5.3.3.1

Provide documentation for observations that steam fog, drift, and icing would be localized.

Clarify the statement "In a COL application, when a specific reactor design is selected, a more detailed evaluation would be made of the fogging and salt deposition, and specific design consideration would be given to mitigate the effects of these phenomena." It is unclear if the intent is that Dominion will review the design information at the COL application stage to ensure that the specifications fall within the PPE (or similar wording).

Part 3, Section 5.3.4.2

Provide a complete reference for the CADNA/A computer code.

Part 3, Section 5.8.1.2

Clarify meaning concerning the need for and purpose of low-frequency noise study to be performed as part of the final selection process of Unit 3 and 4 cooling systems.

NORTH ANNA EARLY SITE PERMIT
SERVICE LIST

Mr. David A. Christian
Senior Vice President and Chief Nuclear
Officer
Dominion Resources Services, Inc.
Innsbrook Technical Center
5000 Dominion Blvd.
Glen Allen, VA 23060-6711

Ms. Lillian M. Cuoco, Esq.
Senior Counsel
Dominion Resources Services, Inc.
Rope Ferry Road
Building 475, 5th Floor
Waterford, CT 06385

Mr. C. Lee Lintecum
County Administrator
Louisa County
P.O. Box 160
Louisa, Virginia 23093

Mr. David R. Lewis
Pillsbury Winthrop Shaw Pittman
2300 N Street, N.W.
Washington, D.C. 20037

Dr. W. T. Lough
Virginia State Corporation Commission
Division of Energy Regulation
P. O. Box 1197
Richmond, Virginia 23209

Office of the Attorney General
Commonwealth of Virginia
900 East Main Street
Richmond, Virginia 23219

Senior Resident Inspector
North Anna Power Station
U. S. Nuclear Regulatory Commission
1024 Haley Drive
Mineral, Virginia 23117

Mr. Robert B. Strobe, M.D., M.P.H.
State Health Commissioner
Office of the Commissioner
Virginia Department of Health
P. O. Box 2448
Richmond, Virginia 23218

Mr. David Lochbaum
Union of Concerned Scientists
1707 H Street, NW
Suite 600
Washington, DC 20006-3919

Mr. Paul Gunter
Director of the Reactor Watchdog Project
Nuclear Information & Resource Service
1424 16th Street, NW, Suite 404
Washington, DC 20036

Mr. Adrian Heymer
Nuclear Energy Institute
Suite 400
1776 I Street, NW
Washington, DC 20006-3708

Mr. Russell Bell
Nuclear Energy Institute
Suite 400
1776 I Street, NW
Washington, DC 20006-3708

Mr. James Riccio
Greenpeace
702 H Street, NW, Suite 300
Washington, DC 20001

Ms. Patricia Campbell
Morgan, Lewis & Bockius, LLP
1111 Pennsylvania Avenue, NW
Washington, DC 20004

Mr. Gary Wright, Manager
Division of Nuclear Safety
Illinois Emergency Management Agency
1035 Outer Park Drive
Springfield, IL 62704

Mr. Glenn H. Archinoff
AECL Technologies
481 North Frederick Avenue
Suite 405
Gaithersburg, MD. 20877

Mr. Ed Wallace, General Manager
Projects
PBMR Pty LTD
PO Box 9396
Centurion 0046
Republic of South Africa

Mr. Brendan Hoffman
Research Associate on Nuclear Energy
Public Citizens Critical Mass Energy
and Environmental Program
215 Pennsylvania Avenue, SE
Washington, DC 20003

NORTH ANNA EARLY SITE PERMIT
SERVICE LIST

-2-

Mr. Paul Leventhal
Nuclear Control Institute
1000 Connecticut Avenue, NW
Suite 410
Washington, DC 20036

Mr. Thomas Mundy
Director, Project Development
Exelon Generation
200 Exelon Way, KSA3-N
Kennett Square, PA 19348

Dr. Jack W. Roe
Nuclear Energy Institute
1776 I Street, NW
Washington, DC 20006-3708

Ms. Joanne Tetrault
Librarian
Louisa County Public Library
881 Davis Highway
Mineral, VA 23117

Mr. Charles Brinkman
Westinghouse Electric Co.
Washington Operations
12300 Twinbrook Pkwy., Suite 330
Rockville, MD 20852

Ms. Abhaya Thiele
406 Key West Drive
Charlottesville, VA 22911

Mr. Marvin Fertel
Senior Vice President
and Chief Nuclear Officer
Nuclear Energy Institute
Suite 400
1776 I Street, NW
Washington, DC 20006-3708

Mr. J. Randall Wheeler
Spotsylvania County Administrator
P.O. Box 99
Spotsylvania Courthouse
Spotsylvania, VA 22553

Dr. Glenn R. George
Co-Head, Energy Capital Markets
Nomura Securities International, Inc.
2 World Financial Center, Bldg. B, 21st
Floor
New York, NY 10281-1198

Mr. William C. Rolfe
Assistant County Administrator
P.O. Box 111
Orange, VA 22690

Mr. Arthur R. Woods
Enercon Services, Inc.
500 TownPark Lane
Kennesaw, GA 30144

Ms. Sandra Sloan
Areva NP, Inc.
3315 Old Forest Road
P.O. Box 10935
Lynchburg, VA 24506-0935

Ms. Vanessa E. Quinn, Chief
Radiological Emergency Preparedness
Branch
Nuclear and Chemical Preparedness and
Protection Division
Department of Homeland Security
1800 South Bell Street, Room 837
Crystal City-Arlington, VA 22202-3546

Ms. Kathryn Sutton, Esq.
Morgan, Lewis & Bockius, LLP
1111 Pennsylvania Avenue, NW
Washington, DC 20004

Mr. Michael M. Cline, State Coordinator
Virginia Department of Emergency
Management
10501 Trade Court
Richmond, Virginia 23236-3713

Mr. Robert E. Sweeney
IBEX ESI
4641 Montgomery Avenue
Suite 350
Bethesda, MD 20814

Mr. Jim Debiec
Director - Power Production
Old Dominion Electric Cooperative
4201 Dominion Blvd
Glen Allen, VA 23060

Mr. Dick Clark
President, Oakridge Civic Assn.
2212 Founders Bridge Rd.
Midlothian, VA 23113

Internal e-mail

SCollins
MDapas
RBlough
MGamberoni
BHollan
WTravers
LPlisco
VMcCree
CCasto
JCaldwell
GGrant
CPederson
MSatorius
BMalet
TGwynn
DChamberlain
AHowell

External E-mail

tom.miller@hq.doe.gov or
tom.miller@nuclear.energy.gov
Eugene_Grecheck@dom.com
Jack_Davis@dom.com
Marvin_Smith@dom.com
Joseph_Hegner@dom.com
Tony_Banks@dom.com
Lillian_Cuoco@dom.com
David_Sommers@dom.com
Vicki_Hull@dom.com
Margaret_Bennett@dom.com
david.lewis@pillsburylaw.com
gzinke@entergy.com
sandra.sloan@areva.com
mwetterhahn@winston.com
whorin@winston.com
gcesare@enercon.com
louis.quintana@ge.com
steven.hucik@ge.com
david.hinds@ge.com
chris.maslak@ge.com
james1beard@ge.com
eddie.grant@exeloncorp.com