RAS 13136

February 26, 2007

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OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
DOMINION NUCLEAR NORTH ANNA, LLC	)	Docket No. 52-008
	)	
(Early Site Permit for North Anna ESP Site)	)	ASLBP No. 04-822-02-ESP

DOMINION'S DECLARATIONS SUPPORTING RESPONSE TO THE LICENSING BOARD'S JANUARY 18, 2007 ORDER (ISSUING SAFETY-RELATED QUESTIONS)

On February 8, 2007, Dominion Nuclear North Anna, LLC ("Dominion") responded to the Atomic Safety and Licensing Board's Order of January 18, 2007 (Issuing Safety-Related Questions) and provided the Declaration of Eugene S. Grecheck attesting to the answers provided.

At a prehearing conference held February 14, 2007, the Board requested Dominion provide declarations from each author or Subject Matter Expert attesting to the accuracy of the relevant statements in Dominion's answers. Enclosed please find the requested declarations.

Respectfully submitted,

Lillian M. Cuoco
Senior Counsel
Dominion Resources Services, Inc.
Rope Ferry Road
Waterford, CT 06385
Tel. (860) 444-5316

David R. Lewis
Robert B. Haemer
PILLSBURY WINTHROP SHAW PITTMAN LLP
2300 N Street, N.W.
Washington, DC 20037-1128
Tel. (202) 663-8474

Dated: February 26, 2007

Counsel for Dominion Nuclear North Anna, LLC

Template = SECY-018

SECY-02

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NUCLEAR REGULATORY COMMISSION

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CERTIFICATE OF SERVICE

I hereby certify that copies of "Dominion's Declarations Supporting Response to the Licensing Board's January 18, 2007 Order (Issuing Safety-Related Questions)," including attachments, were served on the persons listed below by deposit in the U.S. mail, first class, postage prepaid, and where indicated by an asterisk by electronic mail, this 26th day of February, 2007.

*Administrative Judge
Alex S. Karlin, Chair
Atomic Safety and Licensing Board
Mail Stop T-3 F23
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001
ASK2@nrc.gov

*Administrative Judge
Dr. Thomas S. Elleman
5207 Creedmoor Road
Raleigh, NC 27612
TSE@nrc.gov
elleman@eos.ncsu.edu

*Administrative Judge
Dr. Richard F. Cole
Atomic Safety and Licensing Board
Mail Stop T-3 F23
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001
RFC1@nrc.gov

*Secretary
Att'n: Rulemakings and Adjudications Staff
Mail Stop O-16 C1
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001
secy@nrc.gov, hearingdocket@nrc.gov

Atomic Safety and Licensing Board Panel
Mail Stop T-3 F23
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

*Robert M. Weisman, Esq.
*Brooke D. Poole, Esq
*Patrick A. Moulding, Esq.
Office of the General Counsel
Mail Stop O-15 D21
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001
rmw@nrc.gov; bpd@nrc.gov; pam3@nrc.gov

Office of Commission Appellate Adjudication
Mail Stop O-16 C1
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

*Margaret Parish, Esq.
Atomic Safety and Licensing Board Panel
Mail Stop: T-3F23
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
MAP4@nrc.gov

Robert B. Haemer

Robert B. Haemer

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DECLARATION OF LOUIS TONY BANKS IN SUPPORT OF DOMINION'S RESPONSES TO THE LICENSING BOARD SAFETY-RELATED QUESTIONS

I, Louis Tony Banks, do hereby state the following:

I am a nuclear technical specialist for Dominion Resources Services, Inc. My business address is 5000 Dominion Boulevard, Glen Allen, VA 23060. I am the Environmental Lead responsible for Dominion Nuclear North Anna LLC's application for an Early Site Permit and performed work related to this project on safety and environmental matters. A statement of my professional qualifications is attached.

I am providing this declaration in support of Dominion's responses to the safety-related questions that the Atomic Safety and Licensing Board asked in its January 18, 2007 Order. I am responsible for those responses to Board questions (or portions of questions) in Dominion Exhibit 1 to Dominion's Response To The Licensing Board's January 18, 2007 Order (Issuing Safety-Related Questions) dated February 7, 2007 for which I am listed as author or Subject Matter Expert.

I attest to the accuracy of those statements, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those

statements, and my statements in this declaration, are true and correct to the best of my knowledge, information and belief.

Louis Tony Banks, MPH, CHMM

RESUME

TONY BANKS, MPH, CHMM

WORK EXPERIENCE

21 Years — **Dominion Resources – Nuclear Operations, Nuclear Engineering, Nuclear Projects, Nuclear Support Services – Mineral VA, Richmond VA.**
License Renewal, Early Site Permit & Combined License Projects. Nuclear Technical Specialist/Project Lead. NEPA Environmental Reviews for North Anna ESP/COL, and North Anna/Surry Power Stations and Surry ISFSI license renewals. Federal and State regulatory agencies interface. Project Communications.
Health Physics. Staff Health Physicist for Radiological Protection programs, Company ALARA Program Coordinator. QA, shutdown chemistry with EPRI, Westinghouse Owners Group Lead for system decons.
Safety. Employee Safety Committee Chairman. OSHA inspections, Industrial Hygiene investigations.
Environmental. Environmental Compliance assistance.

4 Years — **Carolina Power & Light Co (Progress Energy) - Brunswick Nuclear Project, Southport NC.**
Environmental & Radiation Control. Instrumentation, respiratory protection, training, radwaste & DOT, exposure calcs & dosimetry studies, environmental monitoring, regulatory compliance/consultation.

1 Year — **Radiation Management Corporation - Washington DC.**
Health Physics. Licensing, radiation safety and emergency response training, QA/QC, dosimetry, environmental monitoring, counting lab, industrial decontamination, Business Development.
NIH, US Army Aberdeen Proving Ground, large regional medical facilities.

3 Years — **Virginia Department of Environmental Quality (State Water Control Board) - Virginia Beach VA, Rockingham County Health Department – Eden NC.**
Environmental Health / Public Health. Ambient and industrial effluent water quality, pollution patterns, NPDES permit compliance. Facility design, regulatory compliance, safety, hygiene, solid waste management, illness investigation, public information.

1 Year — **Independent Consulting in Public Health & Safety, Material Loss Control - Virginia.**

PRESENTATIONS/PAPERS

License Renewal Environmental Review: Preparation and Process – Charleston SC
Rad Safety for HazMat Operations, Lead and Asbestos Inspectors – Richmond VA
North Anna's Unit 1 Steam Generator Replacement Project – Pittsburgh PA
Virginia Power's Five-Year Exposure Reduction Plan; Source Term Reduction – Pittsburgh PA
Virginia Power's Source Term Reduction Program – Journal of Radiation Protection Management
ALARA Initiatives and Solutions – Williamsburg VA

AFFILIATIONS/INVOLVEMENT

Academy of Certified Hazardous Materials Managers
American Nuclear Society Virginia Chapter

EDUCATION

Virginia Tech
BS Biology, Health Physics Option
Medical College of Virginia
Master of Public Health

CERTIFICATION

Certified Hazardous Materials Manager, Master Level

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DECLARATION OF ARTHUR CARTER COOKE IN SUPPORT OF DOMINION'S RESPONSES TO THE LICENSING BOARD SAFETY-RELATED QUESTIONS

I, Arthur Carter Cooke, do hereby state the following:

I am a Senior Environmental Compliance Coordinator for Dominion Generation. My business address is P.O Box 402, Mineral Virginia, 23117. I am the Environmental Compliance Coordinator for North Anna Power Station and performed work on environmental matters related to Dominion's application for an Early Site Permit. A statement of my professional qualifications is attached.

I am providing this declaration in support of Dominion's responses to the safety-related questions that the Atomic Safety and Licensing Board asked in its January 18, 2007 Order. I am responsible for those responses to Board questions (or portions of questions) in Dominion Exhibit 1 to Dominion's Response To The Licensing Board's January 18, 2007 Order (Issuing Safety-Related Questions) dated February 7, 2007 for which I am listed as author or Subject Matter Expert.

I attest to the accuracy of those statements, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those

statements, and my statements in this declaration, are true and correct to the best of my knowledge, information and belief.

Arthur Carter Cooke

ARTHUR CARTER COOKE

Education: B.A. Biology, University of Virginia 1969
M.A. Marine Science, College of William and Mary, Virginia Institute of Marine Science 1974

Experience: 1989-Present—Environmental Compliance Coordinator, North Anna Power Station.

1980-1989—Senior Biologist, Virginia Power—North Anna

1976-1980—Associate Biologist, Virginia Power—Richmond

Certifications/Licenses (current):
Registered Environmental Manager—National Registry of Environmental Professionals
Waterworks Operator License—Class V—Commonwealth of Virginia
Wastewater Works Operator License—Class 3—Commonwealth of Virginia

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DECLARATION OF JOHN B. COSTELLO IN SUPPORT OF DOMINION'S RESPONSES TO THE LICENSING BOARD SAFETY-RELATED QUESTIONS

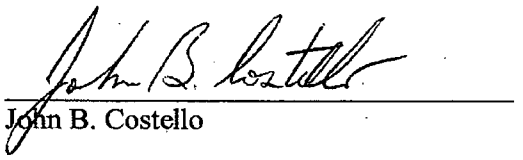
I, John B. Costello, do hereby state the following:

I am Supervisor, Nuclear Emergency Preparedness (Virginia), for Dominion Resources Services, Inc. My business address is 5000 Dominion Boulevard, Glen Allen, VA 23060. I am a subject matter expert supporting Dominion Nuclear North Anna LLC's application for an Early Site Permit and performed work related to this project on emergency planning matters. A statement of my professional qualifications is attached.

I am providing this declaration in support of Dominion's responses to the safety-related questions that the Atomic Safety and Licensing Board asked in its January 18, 2007 Order. I am responsible for those responses to Board questions (or portions of questions) in Dominion Exhibit 1 to Dominion's Response To The Licensing Board's January 18, 2007 Order (Issuing Safety-Related Questions) dated February 7, 2007 for which I am listed as author or Subject Matter Expert.

I attest to the accuracy of those statements, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those

statements, and my statements in this affidavit, are true and correct to the best of my knowledge, information and belief.



John B. Costello

Dominion Resources Services, Inc.
Nuclear Protection Services and Emergency Preparedness
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, Virginia 23060

Phone: (804) 273-2527
Facsimile: (804) 273-2958
E-mail: john.costello@dom.com

John B. Costello

Experience

1984–Present Dominion (and predecessor companies)

Supervisor Nuclear Emergency Preparedness (EP)

- Supervisor On-Site EP with 8 direct reports at 3 work locations providing direct services to Surry & North Anna Power Stations (2004-Present)
- Plan and Procedures Administrator, EP Action Tracking and Emergency Responder Assignment/Qualification System Administrator and Industry Information Coordinator (Surry and North Anna Power Stations, 1996-2004)
- Lead on-site EP Coordinator (Surry Power Station, 1986-1996)
- Station Commitment Tracking System and Plant Operating Review Committee Coordinator (Surry Power Station, 1984-1986)
- Author North Anna Early Site Permit Major Features Emergency Plan (2003-2004)
- Industry Peer for Institute of Nuclear Power Operations (INPO) EP Review at Farley (2006) and EP Assistance Visit at Point Beach (2003); Technical Specialist for 50.54(t) reviews at Fitzpatrick (1995), Oconee (1996), Catawba (1998), Seabrook (2001), Harris (2003), Pilgrim (2004), Turkey Point (2005) and Robinson (2007); Peer-Assessor at Millstone (1997, 2001 and 2004); and Independent Assessment Reviewer for Comanche Peak (1997) and Seabrook (1998).

1979–1983 United States Army

Captain, Adjutant General Corps

- Administrative and management positions

Education

1986–1989 College of William and Mary Williamsburg, VA

- Master in Business Administration

1975–1979 Virginia Polytechnic Institute and State University Blacksburg, VA

- Bachelor of Science in Business, Major: Management

Professional Development Activities

Nuclear Energy Institute

- Drill and Exercise Threat-Based Scenario Issue Task Force (2005-2006)
- Combined Operating License Working Group EP Subcommittee (2004-2006)
- Emergency Action Level (EAL) Issue Task Force (1998-2000)
- Emergency Preparedness Forum (1997, 1998, 1999 (EAL Panel Speaker), 2000 (50.54(t) Breakout Session Moderator) & 2006 (Emerging Issues Panel Speaker)

Dominion Professional Development

- Root Cause Program Training, 2002
- Supervisory Development Program, 1990, 1991, 1992, 2004, 2005 & 2006
- Basic Systems Training (Nuclear Plant), 1986 & 1993

Additional Professional Development

- Enercon Services, Inc., Course for Quality Assurance Auditors on Conduct of the 10CFR50.54(t) Review of Emergency Preparedness, 1989
- Harvard University School of Public Health Advanced Workshop on Nuclear Emergency Planning, 1988
- Quality Services International, Inc., Corrective Action Root Cause Analysis, 1987
- Harvard University School of Public Health Planning for Nuclear Emergencies, 1987

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DECLARATION OF JOSEPH D. HEGNER IN SUPPORT OF DOMINION'S RESPONSES TO THE LICENSING BOARD SAFETY-RELATED QUESTIONS

I, Joseph D. Hegner, do hereby state the following:

I am a consulting engineer for Dominion Resources Services, Inc. My business address is 5000 Dominion Boulevard, Glen Allen, VA 23060. I am the Licensing Lead responsible for Dominion Nuclear North Anna LLC's application for an Early Site Permit and performed work related to this project on licensing matters. A statement of my professional qualifications is attached.

I am providing this declaration in support of Dominion's responses to the safety-related questions that the Atomic Safety and Licensing Board asked in its January 18, 2007 Order. I am responsible for those responses to Board questions (or portions of questions) in Dominion Exhibit 1 to Dominion's Response To The Licensing Board's January 18, 2007 Order (Issuing Safety-Related Questions) dated February 7, 2007 for which I am listed as author or Subject Matter Expert.

I attest to the accuracy of those statements, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those

statements, and my statements in this declaration, are true and correct to the best of my knowledge, information and belief.

Joseph D. Hegner

Joseph D. Hegner

5000 Dominion Blvd.
Glen Allen, VA 23060
804-273-2770
joseph.hegner@dom.com

Member, American Nuclear Society

Employment History

Nuclear Experience

Licensing Lead—ESP/COL Project

2001-Present, Dominion Generation, Glen Allen, VA

- Lead team responsible for preparing North Anna Early Site Permit and Combined License applications
- Coordinate assigned resources to prepare and support applications that meets NRC requirements
- Represent Dominion NEI COL and ESP task forces and (ESBWR Design-Centered Working Group

Project Supervisor

1997-2001, Dominion Generation, Glen Allen, VA

- Led team responsible for reconstituting design and licensing bases for North Anna and Surry Power Stations
- Coordinated Millstone Power Station license transfer to Dominion
- Represented Dominion on NEI 50.59 and FSAR task forces

Project Manager

1995-1996, Dominion Generation, Glen Allen, VA

- Led team responsible for preparing Improved Technical Specifications for North Anna and Surry Power Stations

Licensing Supervisor/Engineer

1983-1995, Virginia Power/Dominion Generation, Glen Allen, VA

- Led team responsible for licensing interface with NRC Office of Nuclear Reactor Regulation
- Lead engineer responsible for managing licensing interface with NRC for Surry Power Station
- Represented Dominion on NEI EQ task force and Westinghouse Owners Group Licensing Subcommittee

Project Manager/Inspector/Technical Specialist

1975-1983, U.S. Nuclear Regulatory Commission, Washington, D.C.

- Inspected nuclear power stations for compliance with NRC requirements
- Managed NRC licensing actions to support operating reactors
- Supported NRC incident response and enforcement activities

Education/Training

- B.S., Nuclear Engineering, University of Maryland, 1978
- B.A.., Physics, University of Pittsburgh, 1971
- NRC certified reactor inspector
- Numerous technical, engineering, and supervisory development courses

Other Experience

U.S. Air Force, Military intelligence, 1971-1974

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DECLARATION OF MARVIN L. SMITH IN SUPPORT OF DOMINION'S RESPONSES TO THE LICENSING BOARD SAFETY-RELATED QUESTIONS

I, Marvin L. Smith, do hereby state the following:

I am a project director for Dominion Resources Services, Inc. My business address is 5000 Dominion Boulevard, Glen Allen, VA 23060. I am the director responsible for Dominion Nuclear North Anna LLC's application for an Early Site Permit and performed work related to this project involving overall project management. A statement of my professional qualifications is attached.

I am providing this declaration in support of Dominion's responses to the safety-related questions that the Atomic Safety and Licensing Board asked in its January 18, 2007 Order. I am responsible for those responses to Board questions (or portions of questions) in Dominion Exhibit 1 to Dominion's Response To The Licensing Board's January 18, 2007 Order (Issuing Safety-Related Questions) dated February 7, 2007 for which I am listed as author or Subject Matter Expert.

I attest to the accuracy of those statements, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those

statements, and my statements in this affidavit, are true and correct to the best of my knowledge, information and belief.

Marvin L. Smith

Marvin L. Smith

Marvin L. Smith, P.E.

Project Director
Dominion

SUMMARY OF QUALIFICATIONS

Project Manager
Early Site Permitting — *2000 -2007*

SPECIFIC DUTIES/RESPONSIBILITIES: PROJECT MANAGER FOR EARLY SITE PERMITTING PROJECT. RESPONSIBLE FOR LICENSING THE NORTH ANNA SITE FOR POTENTIAL NEW NUCLEAR REACTOR DEPLOYMENT AND FOR FINANCIAL AND TECHNICAL EVALUATIONS OF NEW NUCLEAR TECHNOLOGIES.

- PROJECT DIRECTOR FOR COOPERATIVE AGREEMENT PROJECT BETWEEN DOMINION, BECHTEL AND DOE FOR AN EARLY SITE PERMIT LICENSING DEMONSTRATION PROJECT FOR DOMINION'S NORTH ANNA SITE.
- PROJECT MANAGER FOR COOPERATIVE AGREEMENT WITH DOE, TVA, ENTERGY, TLG AND BECHTEL TO EVALUATE OPERATIONS AND MAINTENACE STAFFING AND COST, CONSTRUCTION SCHEDULES AND DECOMISSIONING COSTS AND FUNDING REQUIREMENTS FOR NEW NUCLEAR TECHNOLOGIES.
- PROJECT MANAGER FOR COOPERATIVE AGREEMENT PROJECT BETWEEN DOMINION, BECHTEL AND DOE TO STUDY POTENTIAL SITES FOR THE DEPLOYMENT OF NEW NUCLEAR PLANTS IN THE UNITED STATES [STUDY PUBLISHED SEPTEMBER 27, 2002]
- DEVELOPED AND OBTAINED APPROVAL OF STRATEGIC PLAN FOR EARLY SITE PERMITTING PROJECT. THIS STRATEGIC PLAN INCLUDES DEVELOPOMENT OF A PROCESS TO SCREEN POTENTIAL SITES FOR NEW NUCLEAR PLANTS AGAINST INDUSTRY, NRC AND ENVIRONMENTAL CRITERIA; REVIEW OF ADVANCED NUCLEAR POWER PLANT TECHNOLOGIES; DEVELOP THE BUSINESS CASE FOR NEW NUCLEAR GENERATION; AND PREPARE EARLY SITE PERMIT AND COMBINED CONSTRUCTION AND OPERATING LICENSE APPLICATIONS TO NRC.
- PARTICIPATED IN NEI AND INDUSTRY GROUPS TO DEVELOP PLANS FOR IMPLEMENTING NEW NUCLEAR POWER PLANTS INCLUDING THE NEI EARLY SITE PERMIT WORKING GROUP.

Principal Engineer
Nuclear Analysis and Fuels — *1999 - 2000*

SPECIFIC DUTIES/RESPONSIBILITIES: PROVIDED SPENT NUCLEAR FUEL CONSULTING SERVICES TO THE DOE AND THE COMMERCIAL NUCLEAR INDUSTRY INCLUDING VIRGINIA POWER'S FOUR NUCLEAR PLANTS, TWO DRY INDEPENDENT SPENT FUEL STORAGE INSTALLATIONS (ISFSIS) AND TWO WET POOL FACILITIES. CONSULTED ON SNF FACILITY AND CASK SYSTEM DESIGN, LICENSING, AND OPERATIONAL ISSUES. MANAGED CORPORATE EXTERNAL RELATIONS ON SPENT NUCLEAR FUEL WITH INDUSTRY, DOE, EPRI, ASTM, IAEA AND STATE GOVERNMENT.

- DEVELOPED LONG TERM PROCUREMENT AND LICENSING STRATEGY FOR SPENT NUCLEAR FUEL STORAGE AND TRANSPORT SYSTEMS.
- MEMBER, SENIOR OVERSIGHT COMMITTEE FOR COMMONWEALTH EDISON'S DRESDEN ISFSI PROJECT.
- CONSULTANT ON YUCCA MOUNTAIN OPERATIONAL EXPERIENCE REVIEW THAT LED TO RECOMMENDATIONS FOR IMPROVED FUEL HANDLING, DRY TRANSFER, AND HVAC SYSTEMS.
- REVIEWED DESIGN AND LICENSING BASIS FOR FUEL HANDLING OPERATIONS FOR THE PEACH BOTTOM ATOMIC POWER PLANT ISFSI.

- Provided ISFSI advisory services to Sacramento Municipal Power District for Rancho Seco Nuclear Station.
- Performed baseline study for the privately owned Owl Creek dry spent fuel storage system planned for Wyoming by NAC. Recommended use of the DOE-developed Central Interim Spent Fuel Storage Design to reduce overall design and licensing costs by $10 million.
- Consulted on the design, construction, and licensing of the North Anna ISFSI that received its operating license and became operational in July 1998.
- Published study on above and below boiling thermal loading strategies for disposal of waste packages at Yucca Mountain repository.

System Engineer *1990 - 1998*
Nuclear Analysis and Fuels

Specific Duties/Responsibilities: Oversaw development of long-term plans and options for SNF storage and disposal, with emphasis on design and licensing of the North Anna ISFSI and continued operation of the Surry ISFSI. Served as company representative in DOE interfaces on SNF disposal. Key participant in DOE, industry, IAEA and EPRI studies involving spent fuel storage, transport and disposal systems. Also developed methods and performed safety evaluations of potential off-site doses from reactor accidents. Supported project to rerack Virginia Power SNF pools to increase storage capacity.

- Conceived concept of multi-purpose canister (MPC) to provide for storage, transport and disposal of spent fuel. Performed studies to show that waste packages could be disposed in drift rather than boreholes. Obtained endorsement of Utility Users Group for concept and funding by DOE for procurement of MPC designs.
- Received EPRI Technology Transfer Award for advancing new technology in Dry Spent Fuel Storage.
- Provided consulting services to NAC on design and licensing of the NAC Universal Multi-Purpose Canister system.

Project Manager *1984 - 1990*
Spent Fuel Storage

Specific Duties/Responsibilities: Managed a 10-person office and $50 million ISFSI design/construct budget. Project manager for development of dry storage at Surry Power Station, which was the first dry storage system licensed in the United States, and program manager for Virginia Power/EPRI/DOE cooperative agreement program on dry storage. Managed facility licensing as well as licensing of the dry storage casks used at Surry including the CASTOR V/21, NAC I-28, and Westinghouse MC-10. This program included dry container storage thermal testing by the Department of Energy at the Idaho National Engineering and Environmental Laboratory (INEEL) with containers and used fuel provided by Virginia Power. Planned and coordinated 23 shipments of spent fuel from Surry to INEEL.

- Chairman of Technical Management Committee (including representatives from DOE, EPRI) for oversight of the $33 million cooperative demonstration project to license at reactor dry storage. In this demonstration project, participants used an integrated approach to coordinate research at INEEL funded by DOE and EPRI with an NRC licensed demonstration project at Virginia Power's Surry ISFSI.

- Received EPRI First Use Award for developing dry spent fuel storage, which saved over $90 million (NPV) compared with constuction and operation of a new spent fuel pool.
- Led analysis effort to develop SNF burnup credit for spent fuel storage and transport packages, including interaction with ORNL to use reactor critical data for benchmarking.
- Served as U.S. representative at meetings of International Atomic Energy Agency and for exchange programs with Korea.

Project Manager *1979 - 1983*
Nuclear Plant Capital Improvements

Specific Duties/Responsibilities: Project manager for 10-person office responsible for annual budget of $25 million for all capital improvement projects at the North Anna Power Station including the projects required to respond to new NRC requirements developed as a result of the TMI accident.

Engineer to Supervisor *1973 - 1978*
Nuclear Fuel Design and Safety
Analysis

Specific Duties/Responsibilities: Responsible for development of reload core design and safety analysis methods. During this period, promoted from entry-level engineer to supervisor. Developed reload core physics and thermal hydraulic analysis methods and obtained NRC approval of these methods. Developed the first 18 month reload core design used by a US PWR reactor and implemented low leakage loading patterns at Virginia Power's reactors.

- Designed and licensed new reload core configuration that extended the reactor operating cycle from 12 to 18 months. This design, now adopted as an industry standard, reduces refueling and replacement power costs resulting in savings of over $20 per year for each nuclear unit.
- Implemented first-of-a- kind low neutron leakage core loading patterns at Virginia Power's reactors. This loading technique is now an industry standard and reduces uranium and enrichment requirements for each reload core.

EDUCATION

Virginia Tech *1967 - 1973*

BS IN PHYSICS (1972)

M.E. IN NUCLEAR ENGINEERING (1973)

SPECIAL TRAINING: COURSES/SEMINARS/WORKSHOPS INCLUDING FUEL UTILIZATION AND PERFORMANCE ANALYSIS COMPUTER CODE SYSTEM; REACTOR PHYSICS ANALYSIS; RETRAN-REACTOR SYSTEM SAFETY ANALYSIS CODE; BASIC PWR CORE PHYSICS AND THERMAL/HYDRAULIC ANALYSIS; NON-LOCA SAFETY ANALYSIS; PWR INFORMATION; NUCLEAR DESIGN CONTROL MANUAL TRAINING; CRITICALITY ANALYSIS USING SCALE SYSTEM; 10CRF50.59 TRAINING; CORRECTIVE ACTION PROGRAM TRAINING; SELF ASSESSMENT PROGRAM TRAINING; FOREIGN MATERIAL EXCLUSION TRAINING; PROJECT MANAGEMENT; DEALING WITH THE MEDIA.

PROFESSIONAL ACTIVITIES

REGISTERED PROFESSIONAL ENGINEER (VIRGINIA)

MEMBER OF AMERICAN NUCLEAR SOCIETY

US REPRESENTATIVE ON INTERNATIONAL ATOMIC ENERGY AGENCY COMMITTEE TO DEVELOP STANDARDS FOR OPERATION OF DRY SPENT FUEL STORAGE INSTALLATIONS

AWARDS RECEIVED

EPRI FIRST USE AWARD FOR DRY STORAGE OF SPENT FUEL IN METAL CASKS

EPRI TECHNOLOGY TRANSFER AWARD FOR DRY SPENT FUEL STORAGE

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(Early Site Permit for North Anna ESP Site)	)	ASLBP No. 04-822-02-ESP

DECLARATION OF Stephen Ray Tipsword IN SUPPORT OF DOMINION'S RESPONSES TO THE LICENSING BOARD SAFETY-RELATED QUESTIONS

I, Stephen Ray Tipsword, do hereby state the following:

I am a Health Physicist - III for Dominion Resources Services, Inc. My business address is 1022 Haley Drive, Mineral Virginia 23117. I am a Staff Health Physicist at North Anna Power Station and my duties have included compiling the Radiological Environmental Operating Report. A statement of my professional qualifications is attached.

I am providing this declaration in support of Dominion's responses to the safety-related questions that the Atomic Safety and Licensing Board asked in its January 18, 2007 Order. I am responsible for those responses to Board questions (or portions of questions) in Dominion Exhibit 1 to Dominion's Response To The Licensing Board's January 18, 2007 Order (Issuing Safety-Related Questions) dated February 7, 2007 for which I am listed as author or Subject Matter Expert.

I attest to the accuracy of those statements, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those statements, and my statements in this declaration, are true and correct to the best of my knowledge, information and belief.

Stephen Ray Tipsword

Stephen R. Tipsword
10046 Black Walnut Court
Gordonsville, VA 22942

Work History:

August 1, 1996 – present:
Health Physicist III. Duties include Bioassay Program, Count Room, Radiological Event Investigations, Radioactive Waste/Material Program, and production of REOR

August 1, 1984 to July 31, 1996:
Training Instructor for HP Development & Continuing Training Programs.
December 30, 1993 NRRPT Certification

November 1, 1982 to July 31, 1984:
Health Physics Shift Leader & ALARA Coordinator.

September 18, 1978 to October 31, 1982:
Completed Health Physics Development Program, HP Technician

June 1978:
Graduated from Virginia Tech with a Bachelors of Science and a Minor in Health Physics

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
DOMINION NUCLEAR NORTH ANNA, LLC	)	Docket No. 52-008
	)	
(Early Site Permit for North Anna ESP Site)	)	ASLBP No. 04-822-02-ESP

DECLARATION OF JOHN D. WADDILL IN SUPPORT OF DOMINION'S RESPONSES TO THE LICENSING BOARD SAFETY-RELATED QUESTIONS

I, John D. Waddill, do hereby state the following:

I am a mechanical engineer for Dominion Resources Services, Inc. My business address is 5000 Dominion Boulevard, Glen Allen, VA 23060. I am the Mechanical Engineering Lead responsible for technical review and support of Dominion Nuclear North Anna LLC's application for an Early Site Permit and performed work related to this project on engineering matters. A statement of my professional qualifications is attached.

I am providing this declaration in support of Dominion's responses to the safety-related questions that the Atomic Safety and Licensing Board asked in its January 18, 2007 Order. I am responsible for those responses to Board questions (or portions of questions) in Dominion Exhibit 1 to Dominion's Response To The Licensing Board's January 18, 2007 Order (Issuing Safety-Related Questions) dated February 7, 2007 for which I am listed as author or Subject Matter Expert.

I attest to the accuracy of those statements, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those

statements, and my statements in this declaration, are true and correct to the best of my knowledge, information and belief.

John D. Waddill

John D. Waddill
5000 Dominion Blvd.
Glen Allen, VA 23060
804-273-2770
John_Waddill@dom.com

Professional Engineer in North Carolina

Member, American Society of Mechanical Engineers

Employment History

Civil/Mechanical Engineering Lead—ESP/COL Project

2005-Present, Dominion Generation, Glen Allen, VA

- Provide technical reviews of assigned systems for the proposed new power station at North Anna
- Provide technical input concerning the conceptual design of the cooling system for the new unit.
- Provide review and support for financial and economic aspects of decision making for the new unit.

Mechanical Engineer

1987 - 2005, Dominion Generation, Glen Allen, VA

- Lead Mechanical Engineer on capital projects for modifications to North Anna and Surry Power Stations.
- Corporate engineer performing engineering studies, analysis, and conceptual designs for North Anna and Surry Power Stations.
- Performed evaluations of plant cooling systems and participated in heat exchanger analysis and performance testing for Surry Power Station. Member of a team that developed an on-line heat exchanger monitoring system.
- Performed spent fuel pool cooling system capability testing and analysis.
- Mechanical engineering representative on safety system functional inspections performed by the NRC.
- Project engineering responsibility for station modifications at Surry Power Station.

Nuclear Production Engineer

1985 - 1987, Duke Power Company, Charlotte, NC

- Technical and economic evaluation of system and equipment modifications for radioactive waste processing systems at Duke's three operating nuclear power stations.
- Developed a demonstration mass balance program for a fluidized bed incinerator/dryer system.

Engineer Assistant / Associate / Design Engineer I

1978 - 1985, Duke Power Company, Charlotte, NC

- Licensing engineer responsibilities for Operating Licenses for McGuire and Catawba Nuclear Stations and the Construction Permit for Perkins Nuclear Station.
- Analysis of pipe stress and support design for Catawba Nuclear Station.
- Design engineer for modifications to Oconee Nuclear Station.
- Prepared modification packages for installation of mechanical and electrical equipment and systems at a client's radioactive waste processing facility.
- Design engineer for modifications to Duke's hydroelectric stations.

Education

- B.S., Mechanical Engineering (Nuclear Option),
  Virginia Polytechnic Institute & State University, 1978
- M.B.A., Queens University of Charlotte, 1986

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In the Matter of	)	
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DOMINION NUCLEAR NORTH ANNA, LLC	)	Docket No. 52-008
	)	
(Early Site Permit for North Anna ESP Site)	)	ASLBP No. 04-822-02-ESP

DECLARATION OF Judson W. White IN SUPPORT OF DOMINION'S RESPONSES TO THE LICENSING BOARD ENVIRONMENTAL-RELATED QUESTIONS

I, Judson W. White, do hereby state the following:

I am an Environmental Policy Manager for Dominion Resources Services, Inc. My business address is 5000 Dominion Boulevard, Glen Allen, VA 23060. I provided environmental support for Dominion Nuclear North Anna LLC's application for an Early Site Permit and performed work related to this project on environmental matters. A statement of my professional qualifications is attached.

I am providing this declaration in support of Dominion's responses to the environment-related questions that the Atomic Safety and Licensing Board asked in its February 7, 2007 Order. I am responsible for those responses to Board questions (or portions of questions) in Dominion Exhibit 3 to Dominion's Response To The Licensing Board's February 7, 2007 Order (Issuing Environment-Related Questions) dated March 1, 2007 for which I am listed as author or Subject Matter Expert.

I attest to the accuracy of those statements, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those

statements, and my statements in this declaration, are true and correct to the best of my knowledge, information and belief.

Judson W. White, Ph.D.

RESUME

Dr. Judson W. White (Jud) 2007
Dominion Resources, Inc.
5000 Dominion Blvd.
Richmond, Virginia 23060
804-273-2948 (work)
804-360-4225 (home)
E-mail: judson.white@dom.com

Objective: Apply vast experience, knowledge, organizational, and communication skills in the environmental protection and conservation field to promote sustainable resource use and awareness of current environmental issues.

Education:

- B.S. in Biology - University of Richmond, 1972
- M.S. in Biology - University of Richmond, 1974
- Ph.D. in Public Policy and Administration - Virginia Commonwealth University, 2000 (Dissertation Title: Accountability Issues For A Point/Nonpoint Source Effluent Trading Program In Virginia – available upon request))

Experience: General: Employed by an energy company, Virginia Power (now Dominion), since 1975 serving in various supervisory positions associated with environmental protection programs to ensure compliance with laws and regulations while minimizing both the risk of adverse environmental impact and the cost of compliance. Also has extensive experience in environmental policy/regulatory development at state and federal levels and has served on many advisory committees and stakeholder groups involved in developing various proposed regulations and policies. Has experience in effective negotiations with many stakeholders including the public, government representatives, and non-profit organizations on environmental issues (advised company on philanthropic activity). Noted environmental/conservation subject areas with experience include watershed planning; market-based water trading; air and surface water quality; groundwater quality; drought planning, aquatic resource management including fisheries, invertebrates, and wetlands; climate change; oil storage tanks and pollution planning; and various other resource and energy issues.

- 1975-1985: Station Biologist at North Anna Nuclear Power Station in Louisa, Virginia; supervised 15 employees that evaluated the affects of station operation on the ecology of Lake Anna and the lower North Anna River; completed 10 year effort and final report that indicated no adverse impact.
- 1986-1996: Director of Environmental Services; supervised 8 employees responsible for water and waste permitting and compliance in Virginia, West Virginia, and North Carolina.
- 1997-2000: Environmental Affairs Director; performed a lead role in environmental policy issues, state/federal legislation, and public affair activities with general public and advocacy groups.
- 2001-2004: Manager-Electric Environmental Support; managed a staff of 10 involved in water, waste, and oil permitting and compliance programs in multiple states; oversaw due diligence activity for power station acquisitions
- Currently: Environmental Policy Manager; focuses on tracking and influencing water/waste policy decision-making at the federal level and in 9 states; involved in many multi-stakeholder groups to develop effective state regulations (e.g., groundwater, water quality standards, antidegradation, nutrient trading); serves as key company contact with regulatory agencies and other stakeholders such as environmental organizations; oversees major projects for the company including the environmental permitting of potential new nuclear units.
- Has served since 2002 as adjunct professor at Virginia Commonwealth University's Center for Environmental Studies; teaches graduate course titled "Business and the Environment" (syllabus available upon request)

Knowledge/ Skills:

- Broad knowledge of state and federal water and waste environmental laws and regulations; some experience with air
- Maintains high ethical standards and displays competency and credibility to other stakeholders
- Vast experience in policy development (laws and regulations)
- Strategic planning skills to achieve a mission or long term goal
- Effective interpersonal skills with general public, legal and academic professions; excellent team player
- Competence in public speaking and effective communications
- Environmental program management and leadership ability
- Effective negotiation and conflict resolution skills
- PC applications (windows environment)
- Supervision and office management

Professional Affiliations:

- Appointed by Governor Kaine to Virginia Water Resources Research Advisory Board at Virginia Tech
- Vice Chairman of James River Basin Association
- Serves on Steering Committee of national Utility Water Act Group representing electric utility companies
- Past member of Public Advisory Board of Christopher Newport University
- Previous Chairman of Government Affairs Committee of Virginia Water Environment Association
- Previous Chairman of Water Quality Subcommittee of Virginia Manufacturers Association
- Member of Several Energy Industry Environmental Committees

Additional Information:

Hobbies include fishing, reading, and activities at home with family; active in church activities and teaches Sunday school as well as at Gayton Terrace Retirement Home on a monthly basis.

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In the Matter of	)	
	)	
DOMINION NUCLEAR NORTH ANNA, LLC	)	Docket No. 52-008
	)	
(Early Site Permit for North Anna ESP Site)	)	ASLBP No. 04-822-02-ESP

DECLARATION OF YIJEN LIN IN SUPPORT OF DOMINION'S
RESPONSES TO THE LICENSING BOARD SAFETY-RELATED QUESTIONS

I, Yijen Lin, do hereby state the following:

I am a Senior Meteorological Scientist for Bechtel Power Corporation. My business address is 5275 Westview Drive, Frederick, Maryland 21703. I am one of the Meteorologists responsible for climatological characterization in support of the Dominion Nuclear North Anna LLC's application for an Early Site Permit and performed work related to this project on licensing matters. A statement of my professional qualifications is attached.

I am providing this declaration in support of Dominion's responses to the safety-related questions that the Atomic Safety and Licensing Board asked in its January 18, 2007 Order. I am responsible for those responses to Board questions (or portions of questions) in Dominion Exhibit 1 to Dominion's Response To The Licensing Board's January 18, 2007 Order (Issuing Safety-Related Questions) dated February 7, 2007 for which I am listed as author or Subject Matter Expert.

I attest to the accuracy of those statements, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those

statements, and my statements in this declaration, are true and correct to the best of my knowledge, information and belief.

Yijen Lin

Y. J. Lin
Senior Meteorological Scientist

WORK HISTORY

SENIOR METEOROLOGICAL SCIENTIST - Bechtel (28 Years)

Dr. Lin is currently serving as a mechanical/environmental staff responsible for air quality impact analyses, dispersion modeling, ambient monitoring, emission estimates, siting studies, stack height determinations and environmental impact assessments. He is the lead air dispersion modeler for Bechtel Power in Frederick Office. He is also in charge of cooling tower environmental impact studies in plume downwash, icing, fogging, and salt deposition for fossil and nuclear projects. He had developed many widely used computer programs for Bechtel projects. In addition, he performed detailed analyses pertaining to control room habitability, flammable vapor clouds, fires, explosions for accidental chemical spills, and releases from nuclear power and chemical processing plants. He has prepared many air permit applications for fossil-fuel and chemical processing facilities; environmental reports, and safety analysis reports for many nuclear projects, as well as technical specifications for meteorological and air quality monitoring systems. He advised industrial clients in interpreting and applying Federal, State, and international organizations' air pollution regulations. Also, Dr. Lin was in charge of several environmental monitoring management programs that included data collection, data processing, document preparation, and technology transfer. Other assignments included performing air quality analyses and air quality data processing for the Boston Central Artery/Tunnel Project (CA/T) concerning emissions from ventilation buildings and fugitive emissions from construction activities and truck traffic. He was also in charge of dust and carbon monoxide ambient monitoring program for the CA/T Project.

He evaluated the results of wind tunnel tests for nuclear plant control room habitability studies, in addition to other wind tunnel tests for highway ventilation buildings. Recent assignments included conducting atmospheric dispersion modeling, and preparing air permit applications for the CA/T ventilation building emergency diesel generators.

Recently, he has been responsible for conducting air quality analyses, stack height determinations, and monitoring siting studies for six gas-fired combined cycle power plants located in Egypt. He has also conducted a plume impact analysis and a stack height determination for the Iraq Infrastructure Reconstruction Project. Also, he has been responsible for preparing Environmental Report and Site Safety Analysis Report for sections related to site characteristics, meteorology and air quality, population distribution, cooling system impacts, and meteorological monitoring in an Early Site Permit application for new generation nuclear power plants for the North Anna, Vogtle, SNC and STP Projects.

NUCLEAR POWER-RELATED X/Q ESTIMATE EXPERIENCE (1979 - Present)

In charge of performing studies involving control room habitability analyses, accidental chemical releases or determinations of Exclusion Area Boundary and Low Population Zone dispersion factors for numerous nuclear power projects: Grand Gulf, Turkey Point, Davis Besse, Calvert Cliffs, San Onofre, Edwin I. Hatch, Vogtle, Palisades, SNNUPS, Ginna, North Anna, Farley, Browns Ferry, Surry, Brunswick, Byron, ANO-2, STP2, Shearon Harris, Connecticut Yankee, Braidwood, Perry, and Angra (Brazil).

He performed siting analyses for two Dominion new nuclear plants, preparing proposal for Entergy's Early Site Permit (ESP) application, and in charge of writing Environmental Report and Site Safety Analysis Report for environmental-related sections for submittal to the NRC. He also conducted a generic X/Q analysis for the new-generation nuclear containment building (AP1000). Recent assignments included preparing ESP and COL permit application for new nuclear plants (Vogtle, SNC and STP) and conducted environmental, meteorology and climatology related analyses and calculations.

He was also responsible for conducting calculations for natural gas pipeline break and oil tank leak accidental analyses for the Connecticut Yankee Repowering Project.

RESEARCH ASSISTANT - (5 Years)

Dr Lin was involved in planning and operating experiments in the hydrodynamics laboratory at the Catholic University of America. He also designed and developed a water channel for investigation of density stratification and internal gravity waves.

DR. Lin participated in the summer internship program at the Atmospheric Technology Division of the National Center for Atmospheric Research in Boulder, Colorado.

TEACHING ASSISTANT (1 Year 9 Months)

Dr. Lin was a teaching assistant in the Department of Earth Sciences, Iowa State University, responsible for teaching a weather observation course.

EDUCATION

PhD, Atmospheric Science/Fluid Mechanics, Catholic University, Washington, DC
MS, Meteorology, Iowa State University, Ames, Iowa
BS, Meteorology, Chinese Culture University, Taiwan

REGISTRATION/CERTIFICATION

Certified Consulting Meteorologist (No. 444)
Qualified Environmental Professional (No.12960299)

PROFESSIONAL MEMBERSHIPS

American Meteorological Society
Institute of Professional Environmental Practice

PUBLICATIONS

Practical User Tips for ARCON96, 10th Nuclear Utility Meteorological Data Users Group Meeting, Wilmington, NC, 2005.

Natural Gas Pipeline Accidental Analysis, 12th Joint Conference on the Applications of Air Pollution Meteorology with A&WMA, Norfolk, Virginia, May 2002.

Primary Dispersion factors to be Considered in Nuclear Power Plant Applications, 7th nuclear Utility meteorological Data Users Group Meeting, Las Vegas, 2000.

Portable PM-10 Monitoring for a Large Roadway Tunnel Project, 90th Annual Meeting & Exhibition, A&WMA, Toronto, Ontario, Canada, 1997.

Meteorological Considerations for Assessing Air Quality Impacts Associated With Large Scale Urban Construction Projects, 9th Joint Conference on the Application of Air Pollution Meteorology, Atlanta, Georgia, 1996.

Atmospheric Transportation of Vehicle Emissions From Nearby Tunnel Portals, 89th Annual Meeting, A&WMA, Nashville, Tennessee, June 1996.

Air Quality Impact Assessment Techniques for Tunnel Ventilation Systems, Vehicle Emissions and Air Quality Symposium, Minneapolis, 1995.

An Innovative PM_{10} Monitoring Program, 4th International Conference on Atmospheric Sciences and Applications to Air Quality, Seoul, Korea, 1994.

An Evaluation of Seasonal Impacts of A Mechanical Draft Cooling Tower, 56th American Power Conference, Chicago, 1994.

Air Quality Impact Assessment for the Memorial Tunnel Fire Ventilation Test Program, 8th International Symposium on Aerodynamics and Ventilation of Vehicle Tunnels, Liverpool, UK, 1994.

Explosion Hazard Analysis, Engineering Report No. GGN891/0060, Grand Gulf Nuclear Power Plant, 1992.

Chlorine Related Accidental Releases and Their Dispersions, International Conference and Workshop on Modeling and Mitigating the Consequences of Accidental Releases of Hazardous Materials, AIChe, New Orleans, Louisiana, 1991.

Accidental Chemical Releases Into the Atmosphere, 6th Joint Conference on Air pollution Meteorology, American Meteorological Society, Anaheim, California, 1989.

Surface Inflow Of Light Water Into An Ambient Fluid: A Comparison Between Laboratory Experiments and Theoretical Results, Proceedings of the 3rd Specialty Conference, Engineering Mechanical Division ASCE, 1979.

A Study Of Inflow Characteristics In A Stratified Fluid, Ph.D. dissertation, Catholic University, 1978.

Wave Collapse And Internal Gravity Waves, 2nd Conference on Atmospheric and Oceanic Waves and Stability of the American Meteorological Society, Boston, Massachusetts, 1978.

An Analytical Study of the Tornado Flow Field, M.S. dissertation, Iowa State University, 1973.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
DOMINION NUCLEAR NORTH ANNA, LLC	)	Docket No. 52-008
	)	
(Early Site Permit for North Anna ESP Site)	)	ASLBP No. 04-822-02-ESP

DECLARATION OF SCOTT C. LINDVALL IN SUPPORT OF DOMINION'S RESPONSES TO THE LICENSING BOARD SAFETY-RELATED QUESTIONS

I, Scott C. Lindvall, do hereby state the following:

I am a consulting geologist for William Lettis & Associates, Inc. My business address is 27220 Turnberry Lane, Suite 110, Valencia, CA 91355. I am the author/subject matter expert for the seismic source characterization and surface faulting for Dominion Nuclear North Anna LLC's application for an Early Site Permit and performed work related to this project on licensing matters. A statement of my professional qualifications is attached.

I am providing this declaration in support of Dominion's responses to the safety-related questions that the Atomic Safety and Licensing Board asked in its January 18, 2007 Order. I am responsible for those responses to Board questions (or portions of questions) in Dominion Exhibit 1 to Dominion's Response To The Licensing Board's January 18, 2007 Order (Issuing Safety-Related Questions) dated February 7, 2007 for which I am listed as author or Subject Matter Expert.

I attest to the accuracy of those statements, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those

statements, and my statements in this declaration, are true and correct to the best of my knowledge, information and belief.

Scott C. Lindvall

SCOTT C. LINDVALL, M.S., C.E.G.

Vice President, Principal Geologist

Seismic Hazard Assessment
Paleoseismology
Engineering Geology

EDUCATION

San Diego State University, CA: *M.S., Geology, 1988*
Stanford University, CA: *B.S., Geology, 1984*

REGISTRATION

Registered Geologist, California, No. 5486
Certified Engineering Geologist, California, No. 1711

PROFESSIONAL HISTORY

William Lettis & Associates, Inc., Valencia, CA, Principal and Senior Geologist, 1998-present
Harza Engineering Company, Los Angeles, CA, Senior Geologist 1995-1997
Lindvall Richter Benuska Associates, Los Angeles, CA, Project and Senior Geologist 1990-1995
Lindvall Richter & Associates, Los Angeles, CA, Staff and Project Geologist 1985-1990
Harding Lawson & Associates, Novato, CA, Staff Geologist, 1984

REPRESENTATIVE EXPERIENCE

Mr. Lindvall, a Certified Engineering Geologist in California, with over 18 years experience performing seismic and geologic hazard analyses, fault investigations, ground motion studies, and engineering geology investigations for both existing and proposed critical facilities. He has extensive experience in identifying project needs and implementing field investigation programs and is specialized in the evaluation and mitigation of earthquake and geologic hazards. Mr. Lindvall is experienced in a variety of investigative techniques including detailed geologic mapping, aerial photo and geomorphic analyses, subsurface exploration with trenches, borings, CPT, and geophysical surveys, and the installation of piezometers. He has performed numerous ground motion studies that include seismic source characterization, probabilistic and deterministic seismic hazard analyses, and the development of earthquake time histories.

Mr. Lindvall has directed the geologic and seismic evaluations for multiple recent ESP and COL applications for new nuclear power plants and in this capacity has prepared and reviewed data reports, calculation packages, and SAR sections under QA/QC programs. These projects involved his participation in NRC license review meetings, RAI responses, Technical Advisory Group meetings, and industry group meetings, such as the AP1000 seismic advisory working group.

Mr. Lindvall has provided technical peer review for several large projects including the Pacific Gas & Electric Diablo Canyon Power Plant Independent Spent Fuel Storage Installation (ISFSI) and the U.S. Bureau of Reclamation investigations of the seismic hazard at Bradbury Dam. Mr. Lindvall also served on the advisory committee of the Earthquake-Induced Landslides Working Group for the California Division of Mines and Geology Seismic Hazards Mapping Program

Mr. Lindvall's expertise in neotectonics, paleoseismology, and seismic hazards has enabled him to pursue research projects designed to better quantify the slip rate, surface displacement, style of deformation, and timing of past earthquakes on active faults throughout southern California. Since 1991, Mr. Lindvall has been awarded over one dozen research grants funded by the U.S. Geological Survey National Earthquake Hazards Reduction Program (NEHRP) and the Southern California Earthquake Center (SCEC). A significant component of Mr. Lindvall's earthquake hazard research, has involved the analysis and mapping of fluvial geomorphic surfaces that can be used to assess fault activity, kinematics, and slip rate. Mr. Lindvall has performed detailed mapping of surface ruptures of earthquakes in southern California and abroad including the 1986 Superstition Hills, 1992 Landers, 1999 Izmit, 1999 Duzce and the 1999 Hector Mine earthquake ruptures.

REPRESENTATIVE PROJECTS

Geologic and Seismic Studies for Combined Operating License (COL) Application – V.C. Summer Nuclear Station, SC

Mr. Lindvall is currently directing the geologic and seismic studies in support of a COL application for the siting of two Westinghouse AP1000 nuclear reactors at the existing V. C. Summer Nuclear Station operated by South Carolina Electric & Gas. Studies of this bedrock site included a comprehensive update of existing geologic, seismic, and geophysical data for the site region, detailed geologic mapping, and characterization of earthquake sources to update the Electric Power Research Institute (EPRI) seismic source model. Geologic and seismic evaluations focused on assessing the site region for capable tectonic sources, finalizing the seismic source model, and assessing the potential for surface rupture in order to prepare Sections 2.5.1, 2.5.2, and 2.5.3 of the Safety Analysis Report.

Geologic and Seismic Studies for Combined Operating License (COL) Application – Duke Lee Site, SC

Mr. Lindvall is currently directing the preparation of Safety Analysis Report sections 2.5.1, 2.5.2, and 2.5.3 in support of a COL application for the siting of two Westinghouse AP1000 nuclear reactors at the Duke Lee Site in northern South Carolina. Geologic and seismic evaluations of this bedrock site included a comprehensive update of existing geologic, seismic, and geophysical data for the site region, detailed geologic mapping, and characterization of earthquake sources to update the Electric Power Research Institute (EPRI) seismic source model and evaluate the potential for surface faulting in the site vicinity.

Geologic and Seismic Studies for Early Site Permit Application – Vogtle Electric Generating Plant, GA

Mr. Lindvall performed geologic and seismic studies in support of an Early Site Permit for the siting of two new Westinghouse AP1000 nuclear reactors at the existing Vogtle Electric Generating Plant in Georgia. Studies of the Coastal Plain site included a comprehensive update of existing geologic, seismic, and geophysical data for the site region, detailed geologic mapping, and characterization of earthquake sources to update the Electric Power Research Institute (EPRI) seismic source model. Geologic and geomorphic mapping included analysis of aerial photography, field and aerial reconnaissance, newly acquired seismic reflection surveys, and Quaternary geomorphic surfaces in order to identify the presence of any potential capable tectonic sources or seismogenic sources that were not identified in the EPRI studies. Updating of the seismic source model for the PSHA included the development of a new SSHAC Level 2 model for the Charleston earthquake source, which is the most significant earthquake source in the region.

Geologic and Seismic Studies for Early Site Permit Application - North Anna Power Station, VA

Mr. Lindvall performed geologic and seismic studies in support of an Early Site Permit for the siting of a new nuclear power electrical generating facility at the existing North Anna Nuclear Power Station in Virginia. Studies included a comprehensive update of existing geologic, seismic, and geophysical data for the site region, detailed geologic mapping, and characterization of earthquake sources to update the Electric Power Research Institute (EPRI) seismic source model. Geologic and geomorphic mapping include analysis of aerial photography, field reconnaissance, and aerial reconnaissance in order to identify the presence of any potential capable tectonic sources or seismogenic sources that were not identified in the EPRI studies. Updating of the seismic source model by WLA allowed the project team to perform detailed sensitivity studies to study the impact of new source parameters, and complete the probabilistic seismic hazard analysis (PSHA) to develop the Safe Shutdown Earthquake (SSE) design spectrum. Data, analyses and reports are documented in a series of report sections that were performed in accordance with NRC guidelines and regulations. WLA's work was also performed in compliance with NRC-approved Quality Assurance requirements. Final results were presented in Sections 2.5.1, 2.5.2, and 2.5.3 of the Safety Analysis Report for incorporation the Early Site Permit Application.

Diablo Canyon Nuclear Power Plant ISFSI Project, San Luis Obispo County, CA

Mr. Lindvall served as the Independent Technical Reviewer (ITR) for site characterization studies of an Independent Spent Fuel Storage Installation (ISFSI) at the Diablo Canyon Nuclear Power Plant. Investigations for the proposed dry cask storage facility included detailed geologic mapping, exploratory trenches, rock core borings, downhole P- and S-wave surveys, optical televiewer surveys, surface refraction geophysical surveys, laboratory testing of clay bed and rock samples, petrographic analyses, rock mass characterization (Barton and Hoek methods), structural analysis of faults and folds, rock wedge kinematic and pseudostatic stability analyses. The studies were performed under a formal QA/QC program, and submitted to the U.S. NRC for formal review. As the ITR, Mr. Lindvall was responsible for performing a comprehensive review of the various field and laboratory data sets collected during each phase of investigation and numerous reports. The reviews included evaluating the quality and consistency of the data, verifying that data acquisition was performed according to technical specifications and standards, and interpretation of data was used appropriately in subsequent analyses, calculations, and reports.

Liquefaction Susceptibility Mapping, Southern California Gas Company

Project manager for the detailed liquefaction susceptibility mapping of over thirty 1:24,000 scale 7.5 minute quadrangles in Los Angeles and Orange counties for the Southern California Gas Company. The GIS-based mapping effort integrated layers of Quaternary geology, groundwater, and borehole data that were used to assess and delineate areas of low, moderate, high, and very high liquefaction susceptibility. The WLA susceptibility mapping provides a much more detailed representation of the liquefaction hazard, than do the regulatory Liquefaction Hazard Zones established by the California Geological Survey. The digital susceptibility maps were readily incorporated into the SoCalGas GIS system to facilitate the evaluation of liquefaction hazards to their pipeline network.

JPL Goldstone Deep Space Communications Complex (GDSCC), Mojave Desert, CA

Mr. Lindvall directed the seismic hazard assessment of the GDSCC, which encompasses approximately 175 square km of the northeast Mojave Desert. The Complex contains several parabolic antennas at multiple sites, including the 70-meter diameter Mars antenna. These facilities, which are a vital part of the NASA Space Exploration Program, perform tracking and data acquisition operations for spacecraft and satellites of the Deep Space Network. The principal goal of these studies, which included the seismic hazard assessment, engineering analyses of control buildings, and a 3D NASTRAN finite element analysis of the 70-meter Mars antenna, was to quantify the risk of damage to GDSCC from future earthquakes. For the seismic hazard analysis, Mr. Lindvall reviewed and analyzed the regional seismicity, reviewed published geologic maps, analyzed stereo-paired aerial photography, and performed reconnaissance fault mapping near the Mars site. These tasks allowed us to characterize the potential seismic sources of the region and develop source parameters to quantify the ground motion hazard at multiple antenna sites within the Complex. The ground motion hazard was quantified using both probabilistic and deterministic methods and multiple response spectra and scenario time histories were developed to evaluate the structural performance of critical structures. WLA also assessed the surface rupture hazard at the Mars site, with emphasis on the 70-m antenna structure.

Sunset Millennium Project, West Hollywood, CA

Mr. Lindvall managed multiple phases of a state-of-the-art investigation to characterize the subsurface geologic conditions and evaluate the fault rupture potential for the Sunset Millennium Project site, which spans multiple city blocks along the Sunset Strip. Given the challenges presented by the dense urbanization and thick Holocene alluvial fan deposits, an innovative investigation was designed using multiple transects of

closely-spaced continuously cored borings (vertical and inclined), supplemented with bucket auger borings, CPTs, and trenches at key locations. The subsurface exploration program included drilling and logging of 90 closely-spaced, continuously–cored hollow stem auger borings, downhole logging of 8 bucket auger borings, and 8 CPT soundings totaling over 7,000 lineal feet of exploration. These data were used to construct detailed geologic cross sections from which a 3-dimensional model of subsurface geology was developed to include the distribution of quartz diorite bedrock, marine abrasion platform, alluvial fan stratigraphy, faults, and groundwater. These explorations discovered a buried marine abrasion platform and beach deposit associated with a mid-Pleistocene shoreline, which provided an excellent strain marker to assess the presence or absence of faulting. Multiple, inactive secondary strands of the Hollywood fault zone were encountered and further evaluated for recency of activity by mapping subsurface, continuous buried soil horizons across faults.

AFFILIATIONS

Association of Engineering Geologists
Geological Society of America
American Geophysical Union
Earthquake Engineering Research Institute
Seismological Society of America

SELECTED TECHNICAL PAPERS AND ABSTRACTS

Christopher Hitchcock, Erhan Altunel, Aykut Barka, Jeffrey Bachhuber, William Lettis, Ozgur Kozaci, John Helms, Scott Lindvall, 2003, Timing of Late Holocene Earthquakes on the Eastern Düzce Fault and Implications for Slip Transfer between the Southern and Northern Strands of the North Anatolian Fault System, Bolu, Turkey: Turkish Journal of Earth Sciences, Volume 12, Issue 1, pp. 119-136.

Lindvall, S. C., Rockwell T. K., Dawson, T. E., Helms, J. G., and Weaver, K. D., 2002, Evidence for two surface ruptures in the past 500 years on the San Andreas fault at Frazier Mountain, California, Bulletin of the Seismological Society of America, v. 92, p. 2689-2703.

Rockwell, T. K., Lindvall, S., Dawson, T., Langridge, R., Lettis, W., and Klinger, Y., 2002, Lateral offsets on surveyed cultural features resulting from the 1999 Izmit and Duzce earthquakes, Turkey, Bulletin of the Seismological Society of America, v. 92, no. 1, p. 79-94.

Rockwell, T. K., Lindvall, S., Herzberg, M., Murbach, D., Dawson, T., and Berger, G., 2000, Paleoseismology of the Johnson Valley, Kickapoo, and Homestead Valley faults: clustering of earthquakes in the Eastern California Shear Zone, Bulletin of the Seismological Society of America, v. 90, p 1200-1236.

Rubin, C. M., Lindvall, S. C., and Rockwell, T. K., 1998, Evidence for large earthquakes in metropolitan Los Angeles: Science, v. 281, p. 398-402.

Lindvall, S.C. and Rockwell, T.K., 1995, Holocene activity of the Rose Canyon fault zone in San Diego, California: Journal of Geophysical Research, v. 100, p. 24,121-24,132.

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
DOMINION NUCLEAR NORTH ANNA, LLC	)	Docket No. 52-008
	)	
(Early Site Permit for North Anna ESP Site)	)	ASLBP No. 04-822-02-ESP

DECLARATION OF SHARAD JHA IN SUPPORT OF DOMINION'S
RESPONSES TO THE LICENSING BOARD SAFETY-RELATED QUESTIONS

I, Sharad Jha, do hereby state the following:

I am a Principal Nuclear Engineer for Bechtel Power Corporation. My business address is 5275 Westview Drive, Frederick, MD 21703. I am the radiological lead for Dominion Nuclear North Anna LLC's application for an Early Site Permit and performed work related to this project on licensing matters. A statement of my professional qualifications is attached.

I am providing this declaration in support of Dominion's responses to the safety-related questions that the Atomic Safety and Licensing Board asked in its January 18, 2007 Order. I am responsible for those responses to Board questions (or portions of questions) in Dominion Exhibit 1 to Dominion's Response To The Licensing Board's January 18, 2007 Order (Issuing Safety-Related Questions) dated February 7, 2007 for which I am listed as author or Subject Matter Expert.

I attest to the accuracy of those statements, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those statements, and my statements in this declaration, are true and correct to the best of my knowledge, information and belief.

Sharad Jha

S. JHA
Principal Nuclear Engineer

EXPERIENCE SUMMARY

Mr. Jha has over 25 years of experience in radiation protection and shielding design for nuclear power plants. He has performed radiological analyses in support of over 50 PWR and BWR plants. His analytical experience includes accident analysis, normal effluent releases, radwaste management, alternative source terms, control room habitability, equipment qualification, steam generator replacement, reactor head replacement, fuel cycle change, fuel burnup, power uprate, decommissioning, and early site permits.

WORK HISTORY

MECHANICAL/NUCLEAR ENGINEERING STAFF SPECIALIST – Bechtel (1989 to Present)

Since 1989, Mr. Jha has supervised and performed radiological protection and shielding evaluations in support of many plants. He has worked on early site permit applications for Dominion, Southern Company, and South Texas; performed control room habitability analyses using alternative source terms for Surry, Hatch, and San Onofre; performed equipment qualification dose analyses for Browns Ferry, Farley, and Hatch; performed decommissioning analyses for Haddam Neck and San Onofre; performed steam generator replacement analyses for Byron, Braidwood, North Anna, Sequoyah, South Texas, and Watts Bar; performed reactor head replacement analyses for Davis-Besse, North Anna, Surry, Beaver Valley, Fort Calhoun, and Comanche Peak; and performed fuel burnup analysis for Palo Verde.

Mr. Jha served on the Nuclear Energy Institute task force on control room habitability. He has authored six technical papers. Using his programming skills, he has developed Excel versions of MAP-101 and ISFSI computer programs; developed an Excel user interface for the LOCADOSE (NE319) computer program; and converted the RESRAD and RESRAD-BUILD dose codes into standard computer programs. He has also developed the following Windows programs using Visual Basic: Taskman (a multi-user, task management software used on staff and project), PMRS (a document management program used on the Sprint Spectrum project), MCCR (an accounting program used by a project in Egypt), and SAP (an assessment program used by Environmental Safety & Health).

From 1989 to 1994, Mr. Jha performed and supervised radiation protection and shielding work of the Nuclear Systems and Analysis Group of the staff, including equipment qualification, control room doses, steam generator replacement, power uprate, and decommissioning; prepared performance reviews of selected employees in the analysis group; served as technical specialist for several standard computer programs; served as instructor for training courses on standard computer programs as well as PC automation topics related to DOS, Windows, and networking; lead a continuous improvement team on budget, schedule, and quality metrics; lead the Nuclear Staff automation steering committee.

NUCLEAR ENGINEERING STAFF ENGINEER – Bechtel (1988 to 1989)

During this period, Mr. Jha performed radiation shielding and dose analyses; compiled the PC version of the MORSE computer program and performed skyshine dose analysis for the Central Interstate low level radwaste facility; gave a business development presentation to Virginia Power on the CONTDOSE (MAP142) and LOCADOSE (NE319) computer programs. He also performed radiation shielding and dose analyses for Three Mile Island, Farley, Palisades, San Onofre, Turkey Point, Kewaunee, and other plants; made enhancements to PROCESS (MAP119) and QAD-CG (NE007) computer programs.

LICENSING ENGINEER, DAVIS-BESSE PROJECT – Bechtel (1987 to 1988)

Mr. Jha coordinated the preparation of the plant design criteria manual, getting input from all the disciplines and interfacing with reprographics personnel; and taught a course on radiation analysis at the Davis-Besse plant. During this period, he also performed the validation of a TVA computer code while on assignment at the client office in Knoxville, TN.

NUCLEAR ENGINEERING STAFF ENGINEER – Bechtel (1984 to 1987)

Mr. Jha performed fuel cycle change evaluation for Davis-Besse, equipment qualification dose analyses for Browns Ferry, and miscellaneous radiation shielding and dose assessment analyses for various projects; made enhancements to the CONTDOSE (MAP142) computer program; performed spent fuel pool boiling dose analysis for Turkey Point personnel and equipment dose evaluations for Three Mile Island 2, Hatch, Grand Gulf, and other plants; performed safety evaluations for the Surry spent fuel storage; and worked on a computer program for penetration streaming doses.

While assigned to the Hope Creek in the San Francisco office in 1985, Mr. Jha performed penetration shielding analyses using the CYLSEC (NE650) computer program in support of the field room turnover schedule. While on assignment at the Turkey Point site in 1984, Mr. Jha performed licensing reviews of plant modification packages for the auxiliary power uprate program.

LICENSING AND FIELD ALARA ENGINEER – Bechtel (1983 to 1984)

While on assignment at the Limerick site, Mr. Jha performed an ALARA design review of the plant by walking down all areas of the plant through which radioactive piping was routed; documented walkdown findings and made recommendations on design changes for reducing personnel doses; and coordinated with the San Francisco office.

While assigned to the Three Mile Island Project in 1983, Mr. Jha prepared various licensing documents pertaining to the design and procurement of fuel canisters to be used for removing waste from the damaged TMI-2 core.

FIELD ALARA COORDINATOR – Bechtel (1981 to 1983)

Between 1982 and 1983, Mr. Jha worked at the San Onofre Nuclear Generating Station, serving as a liaison between Bechtel and Southern California Edison Health Physics Department. During this assignment, he monitored radiation exposure to Bechtel personnel, performed plant

walkdowns, prepared man-rem estimates for work in radiation areas, and made recommendations for reducing doses to workers.

Previously, Mr. Jha performed radiation shielding and equipment qualification analyses for various plants, including Farley, Hatch, Calvert Cliffs, and Callaway. He also conducted a shielding review walkdown while on assignment at the Grand Gulf plant.

EDUCATION

BS, Nuclear Engineering, University of Maryland

PROFESSIONAL MEMBERSHIPS

Member, American Nuclear Society

Registered Professional Engineer, Virginia

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
DOMINION NUCLEAR NORTH ANNA, LLC	)	Docket No. 52-008
	)	
(Early Site Permit for North Anna ESP Site)	)	ASLBP No. 04-822-02-ESP

DECLARATION OF DOUGLAS A. KEMP IN SUPPORT OF DOMINION'S RESPONSES TO THE LICENSING BOARD SAFETY-RELATED QUESTIONS

I, Douglas A. Kemp, do hereby state the following:

I am an Engineering Group Supervisor for Bechtel Power Corp. My business address is 5275 Westview Drive, Frederick, MD 21703. I am a mechanical engineer responsible for mechanical system design in support of Dominion Nuclear North Anna LLC's application for an Early Site Permit and performed work related to this project on licensing matters. A statement of my professional qualifications is attached.

I am providing this declaration in support of Dominion's responses to the safety-related questions that the Atomic Safety and Licensing Board asked in its January 18, 2007 Order. I am responsible for those responses to Board questions (or portions of questions) in Dominion Exhibit 1 to Dominion's Response To The Licensing Board's January 18, 2007 Order (Issuing Safety-Related Questions) dated February 7, 2007 for which I am listed as author or Subject Matter Expert.

I attest to the accuracy of those statements, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those

statements, and my statements in this declaration, are true and correct to the best of my knowledge, information and belief.

Douglas A. Kemp

Douglas Kemp

Mechanical EGS

EXPERIENCE SUMMARY

2005–Present	Mechanical Engineering Group Supervisor, New Generation Group
2004–2005	Senior Mechanical Systems Engineer, Mechanical Engineering Staff
1999–2004	Mechanical Engineering Group Supervisor, Ghazlan II Power Plant
1996–1999	Senior Mechanical Systems Engineer, Nuclear Operating Plant Services
1995–1996	Mechanical Engineering Group Supervisor, Calvert Cliffs Emergency Diesel Generator Project
1994–1995	Senior Mechanical Systems Engineer, Nuclear Operating Plant Services
1989–1994	Senior Mechanical Systems Engineer/Assistant Group Supervisor, Calvert Cliffs Engineering Services
1987–1988	Mechanical Systems Engineer, Davis-Besse
1986–1987	Mechanical Systems Engineer/Lead, Turkey Point
1983–1986	Mechanical Engineer, Pilgrim Station
1981–1983	Career Development Engineer, (Stone & Webster), Shoreham Nuclear Plant

STRENGTHS AND REASONS FOR SELECTION

- Over 25 years of power plant experience
- 19 years nuclear experience on a variety of plants and systems
- Involved in ESP and COL application preparation for Bechtel clients

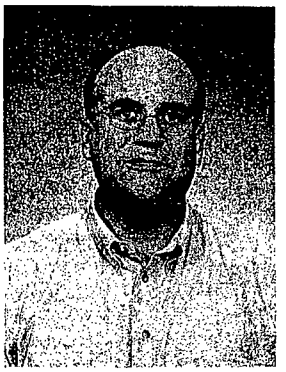
TECHNICAL QUALIFICATIONS

Registered Professional Engineer, Virginia

EDUCATION

B.S., Mechanical Engineering, Virginia Polytechnic Institute & State University (Virginia Tech)

Doug Kemp, as part of the New Generation group, is responsible for planning, coordination and completion of mechanical tasks performed in support of Early Site Permits, Combined Licenses, and other development activities for new nuclear generation in the United States.



DETAILED CONTRIBUTIONS ON RELEVANT PROJECTS

- Involved in site planning, development of scope boundaries for Owner/reactor vendor interfaces, development of budgets and schedules, and site engineering for Dominion's North Anna Unit 3 COL.
- Supported development of Southern Company's ESP/Environmental Report for the Vogtle site, including establishment of bounding plant parameters, evaluation of water use, and cooling tower design for selected potential nuclear technologies.
- Assisted in a cost and schedule study for the construction of two advanced boiling water reactors at the TVA Bellefonte site in Alabama. In support of this study, prepared conceptual P&IDs and system requirements for the facility's fire protection system.
- Performed engineering tasks for various utilities' nuclear units. Engineering tasks included disposition of design change packages for safety-related and nonsafety-related systems, performance of calculations and engineering studies, preparation of 10 CFR 50.59 safety evaluations, and preparation of safe shutdown analyses.
- Prepared design basis documents for many systems, including containment isolation, containment systems, emergency diesel generators, condensate and feedwater, auxiliary feedwater, station drains and sumps, and topical on feedwater system faults.
- Provided startup support and construction support for the Calvert Cliffs Diesel Generator Project. Coordinated engineering response and provided technical justification to audit findings identified in Calvert Cliffs Diesel Generator Project Safety System Functional Inspection.
- Mechanical lead for 13.8kV voltage regulator project, with specific responsibility for fire protection system design and regulator support facilities, including oil collection system.

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DOMINION NUCLEAR NORTH ANNA, LLC	)	Docket No. 52-008
	)	
(Early Site Permit for North Anna ESP Site)	)	ASLBP No. 04-822-02-ESP

DECLARATION OF J. LORAN MATTHEWS IN SUPPORT OF DOMINION'S RESPONSES TO THE LICENSING BOARD SAFETY-RELATED QUESTIONS

I, J. Loran Matthews, do hereby state the following:

I am a Senior Geologist for Bechtel Power Corporation. My business address is 5275 Westview Drive, Frederick, MD, 21703. I am the G&HES Engineering Group Supervisor responsible for geologic and hydrogeologic input in support of Dominion Nuclear North Anna LLC's application for an Early Site Permit and performed work related to this project on licensing matters. A statement of my professional qualifications is attached.

I am providing this declaration in support of Dominion's responses to the safety-related questions that the Atomic Safety and Licensing Board asked in its January 18, 2007 Order. I am responsible for those responses to Board questions (or portions of questions) in Dominion Exhibit 1 to Dominion's Response To The Licensing Board's January 18, 2007 Order (Issuing Safety-Related Questions) dated February 7, 2007 for which I am listed as author or Subject Matter Expert.

I attest to the accuracy of those statements, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those

statements, and my statements in this declaration, are true and correct to the best of my knowledge, information and belief.

J. Loran Matthews

J. Loran Matthews

G&HES Engineering Group Supervisor

EXPERIENCE SUMMARY

2005–Present	Engineering Group Supervisor, NUGEN Projects
1974–2005	Geologist, G&HES
1969–1974	Geologist, Consulting Engineering Firms

STRENGTHS AND REASONS FOR SELECTION

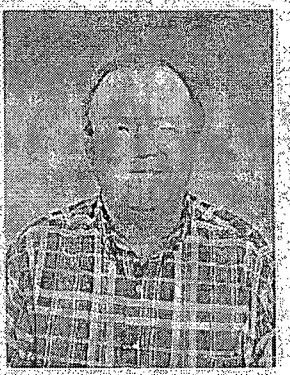
- Over 37 years of engineering geology/geotechnical investigations
- Investigations for various types of civil works structures
- Construction experience includes the inspection and supervision of rock slope excavation, earthwork, and deep foundation construction

TECHNICAL QUALIFICATIONS

Certified Professional Geologist by the American Institute of Professional Geologists
Member, Association of Environmental & Engineering Geologists
Member, National Ground Water Association

EDUCATION

B.S., Geology, Ohio University



Loran Matthews has over 37 years of experience performing field and office engineering geology and geotechnical investigations for the design and construction of various civil works structures including fossil and nuclear fuel power plants, hydroelectric projects, industrial and infrastructure facilities, a radioactive waste repository, highways, and mining and petroleum development facilities. He has also conducted investigations to determine the presence and extent of subsurface soil and groundwater contamination. His construction experience includes the inspection and supervision of rock slope excavation, earthwork, and deep foundation construction.

DETAILED CONTRIBUTIONS ON RELEVANT PROJECTS

- Engineering Group Supervisor for G&HES in the New Generation projects group. His duties consist of participation in the preparation of geology and hydrogeology input to Early Site Permit and Combined License applications for new nuclear-fuel electrical generation facilities in the United States. He provides coordination efforts between the New Generation projects and G&HES staff groups, and continues to support other nonnuclear efforts related to geologic and hydrogeologic activities performed by the G&HES group.

- Senior Geologist, G&HES, Gaithersburg/Frederick, MD office responsible for the performance of geologic and geotechnical tasks associated primarily with the development, design, and construction of fossil-fuel power plants. He contributed groundwater and geology input to the preparation of an Early Site Permit for a potential future nuclear power plant site in Virginia.

- Geologist, G&HES, San Francisco, CA office responsible for studies associated with the initial development of an underground radioactive waste storage facility. Participated in geologic studies for the development of petroleum, hydroelectric, and mining facilities. Also contributed to the evaluation of hazardous waste contamination of soil and ground water.

- Geologist, G&HES, Ann Arbor, MI office, responsible for providing geologic and hydrogeologic input to preparation of the PSAR for a proposed nuclear power plant in Michigan, and support to the design and construction of fossil-fuel power plants.

- Geologist, G&HES, Saudi Arabia office, responsible for assisting in geologic and geotechnical studies and construction inspection for road and pipeline projects, and barge unloading facilities.

- Geologist, G&HES, Gaithersburg, MD office, responsible for providing geologic input to studies for the siting of power plant and hydroelectric facilities. Performed various studies and geologic foundation mapping for nuclear power plants.

- Geologist, Consulting Engineering firms, Pittsburgh, PA. Participated in geologic site reconnaissance and evaluation programs, supervised subsurface investigations for foundation design and construction, and supervised earthwork and deep foundation construction.

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In the Matter of	)	
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DOMINION NUCLEAR NORTH ANNA, LLC	)	Docket No. 52-008
	)	
(Early Site Permit for North Anna ESP Site)	)	ASLBP No. 04-822-02-ESP

DECLARATION OF MICHAEL D. MAZAIKA IN SUPPORT OF DOMINION'S RESPONSES TO THE LICENSING BOARD SAFETY-RELATED QUESTIONS

I, Michael D. Mazaika, do hereby state the following:

I am an Environmental Meteorologist for Bechtel Power Corporation. My business address is 5275 Westview Drive, Frederick, Maryland 21703. I am one of the Meteorologists responsible for climatological characterization in support of the Dominion Nuclear North Anna LLC's application for an Early Site Permit and performed work related to this project on licensing matters. A statement of my professional qualifications is attached.

I am providing this declaration in support of Dominion's responses to the safety-related questions that the Atomic Safety and Licensing Board asked in its January 18, 2007 Order. I am responsible for those responses to Board questions (or portions of questions) in Dominion Exhibit 1 to Dominion's Response To The Licensing Board's January 18, 2007 Order (Issuing Safety-Related Questions) dated February 7, 2007 for which I am listed as author or Subject Matter Expert.

I attest to the accuracy of those statements, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those

statements, and my statements in this declaration, are true and correct to the best of my knowledge, information and belief.

Michael D. Mazaika

Michael D. Mazaika

Michael David Mazaika.

SUMMARY

17.5 Years	Science Specialist, Bechtel Power Corporation
8 Years	Senior Environmental Meteorologist, NUS Corporation
3 Years	Air Pollution Meteorologist

EDUCATION

BS Aeronautical Meteorology, Parks College of Saint Louis University, July 1975

EXPERIENCE

Bechtel Power Corporation, Gaithersburg/Frederick, Maryland
(1988 to Present)

As Science Specialist, is often responsible for: technical oversight of Initial Certification of Continuous Emissions Monitoring Systems (CEMS) and Continuous Opacity Monitoring Systems (COMS) for domestic (U.S.) and international clients; technical oversight of Permit and Contract compliance stack emissions test programs; climatological studies related to facility design and siting; licensing and impact analysis; broad-based project environmental support; routine regulatory tracking, review and interpretation; and related client/regulatory agency liaison. Has also been responsible for: performing air quality dispersion modeling analyses for facility design and development; and technical oversight of and/or input to ambient air quality and meteorological (AQ/Met) monitoring programs for domestic and international clients. Related assignments and skills development have included:

- Technical oversight of 40 CFR Part 75 (Appendix A) Initial Certification and 40 CFR 60.13 performance evaluations of CEMS and COMS for coal-fired power plants and natural gas-fired, combined cycle units, including 11 units within the span of only 7 months. Oversight activities have included: development and/or review of technical specifications; input to bid review; review of related, regulatory-mandated documents – that is, Monitoring Plans (hard copy and Electronic Data Reporting (EDR) versions), Initial Certification Test Protocols, COMS Certificates of Conformance and Quality Assurance/Quality Control Plans; review of data acquisition and handling system (DAHS) software verifications; in-the-field oversight and support of Initial Certification testing; review of test reports and EDR files of Initial Certification test results; and related agency/client interface.

  Have advised or assisted projects, clients and client's environmental consultants on a variety of topics which include, but are not limited to: revisions to 40 CFR Parts 72 and 75 as they relate to Initial Certification of CEMS/COMS; the relationships between and implications of CEMS/COMS commissioning in support of contractual Substantial Completion and regulatory-mandated tests; the potential for certain Start-Up activities to trigger regulatory deadlines for completion of Initial Certification and performance evaluation tests; the drafting of requests to EPA for Applicability Determinations to resolve disparities between Part 75 Initial Certification and Part 60 performance evaluation requirements; and averaging and excess emissions reporting requirements of the Oklahoma Department of Environmental regulations on continuous emissions monitoring.

  Have authored the Engineering Instruction titled "Technical and Regulatory Oversight of Initial CEMS and COMS Certification" and generated input for corresponding work process flow chart.

Michael David Mazaika.

- Technical oversight of Permit and Contract compliance stack emissions testing and/or emissions monitoring programs. Oversight activities have included: development and/or review of technical specifications; input to bid review; emissions test protocol review; in-the-field oversight and support; test report review; and related agency/client interface. Have authored Guide Engineering Specification titled "Stack and Emission Source Testing" and generated input for corresponding work process flow chart.

- Climatological studies have required the development and management of data resources (in-house and on-line) for domestic (US) and international locations. Applications have included: preparation of project-specific design basis climate summaries of mean and extreme conditions; wind direction frequency studies for plant layout; snow load, extreme wind speed and tornado strike probability analyses; documentation of weather-related force-majeure events and data evaluation of counter-claims. Have also assembled a matrix of climatological characteristics for four hypothetical nuclear power plant sites (i.e., continental-hot, -temperate and –cool, and maritime-temperate) as input to the development of early site permit process (ESP) based on USNRC Regulatory Guides 1.70 and 4.2; and subsequent preparation, review and revision of ESP Application presentations of this information and other severe weather characteristics for several clients.

- Technical oversight of and/or input to ambient AQ/Met monitoring programs for power plant sites (three in US, two in Egypt) and a natural gas/oil production facility in Abu Dhabi has involved: development of work scopes and technical specifications; bid review and technical negotiations; monitoring plan preparation and review; monitoring station and network siting; routine data review, validation and reporting; agency/client interface; and contractor oversight. Have also conducted a systems audit of an eleven-station AQ/Met monitoring network at a copper smelter located in coastal Peru based on USEPA guidance.

- Air quality dispersion modeling experience (USEPA-related) has included assignments as lead modeler for three coal-fired power plants in the US; two gas/oil-fired combustion turbine power plants in Egypt (one along Mediterranean coast, the other adjacent to the Red Sea); and one heavy oil-fired combustion turbine power plant in Iraq as part of USAID Iraq Infrastructure Reconstruction Project (IIRP). Analyses for these and other projects have been used to support Permit applications, AQ/Met monitoring network siting, and fatal flaw evaluations requiring familiarity with USEPA screening-level and refined dispersion models and related utilities as well as USEPA, World Bank, and in-country regulations.

  Specific studies required: determination of GEP stack height (including an optimization study of a sub-GEP stack height for the IIRP based on World Bank and onsite health and safety standards, wind direction- and wind speed-specific impacts, and recommendation of an administrative control approach to help mitigate such impacts; development of fugitive dust emissions estimates and control plans; development and review of point source emissions inventories; preparation of modeling protocols and presentation materials for public meetings; and agency/client interface.

- Air quality dispersion studies (USNRC-related) have included modeling and/or technical review assignments involving the use of: the XOQDOQ (long-term, routine release) and PAVAN (short-term, accidental release) codes; control room habitability assessments; and the development of related input data bases (e.g., meteorological, receptor locations, and building wake effects parameters).

- Broad-based environmental support has been provided to a coal-fired, mine-mouth power project located in Mississippi. As Project Environmental Lead, issues to be addressed during engineering design and through preparation of a Construction Environmental Control Plan encompassed air quality (e.g., plant emissions, fugitive dust mitigation, prescribed burning), water quality (e.g., construction storm water and erosion control, waste water, and wetlands), construction waste management (e.g., hazardous/non-hazardous classification, storage and disposal procedures, sanitary waste, and waste minimization), spill prevention and response. Responsibilities also included routine site inspections and agency/client interface. Also supported the close-out of environmental and construction waste disposal issues at another power plant in Pennsylvania.

  Have coordinated, developed, and/or supported the development of procedures for environmental characterization, sampling and related activities to be implemented by Bechtel Jacobs Company, LLC in their conduct of self-performed work at the US Department of Energy's Oak Ridge Reservation. Topical areas include: sampling related to decontamination and decommissioning; collection of surface water, groundwater, soils and sediment samples; sampling of drums and other containers; calibration of field equipment; and quality assurance/ quality control-related activities and documentation (e.g., field logbooks, equipment decontamination, Chain-of-Custody).

NUS Corporation, Gaithersburg, Maryland
(1981 to 1988)

As Senior Environmental Meteorologist, was responsible for climatological and air quality impact studies related to siting and permitting a permanent repository for high-level radioactive waste; performing air quality dispersion modeling for facility permitting and licensing compliance; technical support of AQ/Met monitoring programs for several nuclear utilities and industrial facilities; and routine regulatory tracking, review and interpretation. Related key assignments and skills development:

- Climatological studies in support of the nuclear waste repository program included: characterization of two candidate sites in the Texas Panhandle; and development of an innovative method for estimating the potential effects of severe weather on routine facility operations and waste transport based on the NOAA publication "Storm Data" which normalizes such events to the significance that they have for a specific location allowing better comparison of candidate sites. Provided extensive technical and task management support by preparing detailed input to project Environmental Assessment, Site Characterization Report and Site Study Plans for meteorology and air quality.

- Air quality modeling assignments (USEPA-related) included analyses in conjunction with Consent Order and Agreement compliance actions, permitting activities for facility purchase and expansion. Studies required consideration of dispersion in simple and complex terrain, development of process emissions inventories, GEP stack height determinations, and evaluation of aerodynamic building wake effects on dispersion.

- Air quality dispersion studies (USNRC-related) have included modeling and technical review assignments in support of Safety Analysis Report (SAR) updates and required the use of the XOQDOQ and PAVAN codes for several nuclear plants located in land-water interface, complex, rolling and desert terrain environments. Also carried out design basis snow load, wind load and tornado load evaluations as part of these SAR updates.

Michael David Mazaika.

- Technical support of Met monitoring programs for several nuclear utilities involved routine review, processing, validation, and reporting of meteorological data and system operations, as well as coordination with field service staff. Similarly, technical and project management support of multi-station air quality (i.e., particulate and lead), air toxics (i.e., hexavalent chromium, nickel, lead and manganese) and meteorological monitoring networks was carried out on a regular basis for two secondary lead smelters and a specialty steel manufacturing plant in Pennsylvania. Also participated in the development and review of draft technical procedures manuals for AQ/Met sampling at hazardous waste sites under the EPA's Superfund Program.

Environmental Measurements, Inc. Arnold, Maryland
(1978 to 1981)

As Air Quality Meteorologist, was responsible for task planning, management and execution as part of multi-disciplinary research programs designed to measure the characteristics of atmospheric pollutant dispersion and plume chemistry. Information gathered during these studies supported plume model development ranging from local- to regional-scale transport and diffusion (horizontal and vertical, in real time) to building-specific dispersion of emissions during all diurnal periods, as well as transformation of plume chemistry over time. These projects included:

- the USEPA-sponsored Tennessee Plume Study and Northeast Regional Oxidant Study,
- several studies funded by the Maryland Power Plant Siting Program, and
- studies commissioned by a private utility (lake shore dispersion) and an aluminum smelter (roof monitor dispersion).

These field programs required coordination between federal and state agencies, universities, private contractors and industry.

Routinely assisted in or was responsible for: meteorological data collection using tower-mounted and remote sensors (e.g., Doppler SODAR and pilot balloon soundings); air quality measurements using continuous analyzers, remote sensors (i.e., correlation spectrometer or COSPEC), integrated bag and canister samplers, and tracer gas releases; and data processing, analysis, report preparation and related QA/QC activities. Also prepared operational weather forecasts for project and field experiment scheduling.

Michael David Mazaika.

PUBLICATIONS/PRESENTATIONS

"Meteorological and Air Quality Characterization of the Deaf Smith and Swisher County Locations in the Palo Duro Basin, Texas" (co-author), BMI/ONWI-527, prepared by NUS Corporation for the Office of Nuclear Waste Isolation, Battelle Memorial Institute, Columbus, Ohio, March 1984.

"Quantification of SO2 Plume Rise with a Remote Sensor: Comparison of Field Measurements with Model Predictions" (co-author), Proceedings of 73rd Annual Meeting, Air Pollution Control Association, Paper 80-44.3, Montreal, Canada, 1980.

"Meteorological Instrumentation of a Tall Tower in the Baltimore-Washington Metropolitan Area: A Preliminary Study", PMPP-22, prepared by Environmental Measurements, Inc. for the State of Maryland, Power Plant Siting Program, 1980.

MEMBERSHIP

American Meteorological Society

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
DOMINION NUCLEAR NORTH ANNA, LLC	)	Docket No. 52-008
	)	
(Early Site Permit for North Anna ESP Site)	)	ASLBP No. 04-822-02-ESP

DECLARATION OF ROBIN K. McGUIRE IN SUPPORT OF DOMINION'S RESPONSES TO THE LICENSING BOARD SAFETY-RELATED QUESTIONS

I, Robin K. McGuire, do hereby state the following:

I am the President of Risk Engineering, Inc. My business address is 5144 Darley Avenue, Suite A, Boulder, Colorado. I provided calculations and conclusions in support of Dominion Nuclear North Anna LLC's application for an Early Site Permit and performed work related to this project on seismic licensing issues. A statement of my professional qualifications is attached.

I am providing this declaration in support of Dominion's responses to the safety-related questions that the Atomic Safety and Licensing Board asked in its January 18, 2007 Order. I am responsible for those responses to Board questions (or portions of questions) in Dominion Exhibit 1 to Dominion's Response To The Licensing Board's January 18, 2007 Order (Issuing Safety-Related Questions) dated February 7, 2007 for which I am listed as author or Subject Matter Expert.

I attest to the accuracy of those statements, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those

statements, and my statements in this declaration, are true and correct to the best of my knowledge, information and belief.

Robin K. McGuire

15 February 2007

Curriculum Vitae

RISK ENGINEERING, INC.

ROBIN K. MCGUIRE

EDUCATION:

Ph.D Degree - Structural Engineering, Massachusetts Institute of Technology
M.S. Degree - Structural Engineering University of California, Berkeley
S.B. - Civil Engineering, Massachusetts Institute of Technology

QUALIFICATIONS:

Seismic hazard and risk analyses
Numerical methods and analyses
Statistical analyses

PRESENT POSITION:

President and Principal, Risk Engineering, Inc., Boulder, Colorado

RELEVANT EXPERIENCE

- Technical Director of seismic hazard projects for North Anna, Vogtle, Summer, Lee, Bellefonte, South Texas, Comanche, and Calvert Cliffs nuclear plant sites, to support ESP and COL applications for new generation nuclear facilities at those sites. Geologic and tectonic information developed by other consultants is integrated into the calculations. Work is performed under Quality Assurance procedures. 2002-present.
- Technical Director of project for the Electric Power Research Institute to examine seismic design levels at 28 nuclear plant sites in the eastern US, apply the ASCE 43-05 performance-based procedure. Results were compared to existing seismic design levels and to results from publishes seismic plant PRAs. 2004-2005.
- Technical Director of project for the US Nuclear Regulatory Commission to revise seismic ground motion design requirements, to achieve levels of seismic safety consistent with risk-based performance goals (balancing seismic risks with those from external and internal accidents). 1996-2001.
- Lead consultant on probabilistic performance assessment of the Yucca Mountain site as possible high-level waste repository, for the Electric Power Research Institute. This effort coordinated input from ten consultants on environmental and engineering factors that affect evaluation of the potential repository performance regarding radionuclide release and recommended site studies to balance uncertainties and risks. 1989-2001.
- Technical Director of project funded by the US Dept. of Energy to develop seismic design requirements for a Yucca Mountain nuclear waste repository. The recommendations must consider the seismic response of structures and components, safety factors in design, and probabilistic seismic hazards to achieve target seismic risk-based performance levels that are consistent with other risks to the repository. The report from this project was taken as Seismic Topical Report III. 1994-1996.
- Consultant to Senior Seismic Hazard Analysis Committee on developing and documenting methods of probabilistic seismic hazard calculations. Wrote Appendix I of SSHAC report. March 1993-September 1996.
- Technical Director of major project for Electric Power Research Institute to develop and apply methods of evaluating earthquake hazards in the central and eastern U.S. This work involved directing efforts of 50 earth scientists in characterizing the earthquake potential of the region, and in using this information to characterize the earthquake hazard. Results calculated for 57 nuclear plants in the CEUS. Oct 1984-Dec 1989.
- Consultant to numerous clients overseas on earthquake risk to major facilities, including applications to Switzerland, Japan, Korea, Italy, Taiwan, China, Norway, Germany and South Africa. March 1986-present.

EMPLOYMENT HISTORY:	Risk Engineering, Inc., 1984 – Present Dames & Moore, 1979 – 1981 and 1983-1984 Earth Technology Corp, 1981-1983 U.S. Geological Survey, 1974-1979
PROFESSIONAL AFFILIATIONS AND AWARDS:	Member, National Academy of Engineering (elected 2007) President, Seismological Society of America, 1991-1992, and Board of Directors, 1989-1995 Board of Directors, Earthquake Engineering Research Institute, 1989-1993, and Chair, Seismic Risk Committee, 1984-1990. Member since 1975. Chair, Panel on Risk Assessment Techniques, Commission on Earthquake Hazards for the International Association of Seismology and Physics of the Earth's Interior, 1983-1995. Member, Committee on Seismology, National Research Council (National Academy of Sciences), 1984-1987. Fellow, American Society of Civil Engineers and Member, Technical Council on Lifeline Earthquake Engineering, 1982-present. Member since 1968. Member, Society for Risk Analysis. Member since 1981. Member, Chi Epsilon (National Civil Engineering Honorary Fraternity), Tau Beta Pi (National Engineering Honorary Fraternity), Sigma Xi (National Scientific Society). Registered Professional Engineer, Colorado (#13654), Massachusetts (#27930)
REPRESENTITIVE PUBLICATIONS:	McGuire, R.K., *Seismic Hazard and Risk Analysis,* Monograph MNO-10, Earthq. Eng. Res. Inst., Oakland, CA, 2004. McGuire, R.K. et al, "Technical Basis for Revision or Regulatory Guidance on Design Ground Motions: Development of Hazard and Risk-consistent Seismic Spectra for Two Sites," US Nuclear Regulatory Commission, NUREG/CR-6769, Apr. 2002. McGuire, R.K. et al, "Technical Basis for Revision or Regulatory Guidance on Design Ground Motions: Hazard- and Risk-consistent Ground Motion Spectra Guidelines," US Nuclear Regulatory Commission, NUREG/CR-6728, Oct. 2001. McGuire, R.K., "Probabilistic Seismic Hazard Analysis and Design Earthquakes: Closing the Loop," *Bull. Seis. Soc. Am.,* Oct. 1995. McGuire, R.K., ed., *The Practice of Earthquake Hazard Assessment*, International Association of Seismology and Physics of the Earth's Interior and European Seismological Commission, Dec. 1993. McGuire, R.K., "Perceptions of Earthquake Risk," Presidential Address, *Bull. Seis. Soc. Am.*, 82, 4, 1977-1982, Aug. 1992. (A full list of publications numbering more than one hundred is available upon request.)

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
DOMINION NUCLEAR NORTH ANNA, LLC	)	Docket No. 52-008
	)	
(Early Site Permit for North Anna ESP Site)	)	ASLBP No. 04-822-02-ESP

DECLARATION OF KIT YIN NG IN SUPPORT OF DOMINION'S
RESPONSES TO THE LICENSING BOARD SAFETY-RELATED QUESTIONS

I, Kit Yin Ng, do hereby state the following:

I am the Assistant Chief Engineer of the Geotechnical and Hydraulic Services for the Bechtel Power Corporation. My business address is 5275 Westview Drive, Frederick, MD 21703. I am the Hydrology and Hydraulics Engineer responsible for Dominion Nuclear North Anna LLC's application for an Early Site Permit and performed work related to this project on hydrologic characterization and hydraulic analyses. A statement of my professional qualifications is attached.

I am providing this declaration in support of Dominion's responses to the safety-related questions that the Atomic Safety and Licensing Board asked in its January 18, 2007 Order. I am responsible for those responses to Board questions (or portions of questions) in Dominion Exhibit 1 to Dominion's Response To The Licensing Board's January 18, 2007 Order (Issuing Safety-Related Questions) dated February 7, 2007 for which I am listed as author or Subject Matter Expert.

I attest to the accuracy of those statements, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those

statements, and my statements in this declaration, are true and correct to the best of my knowledge, information and belief.

Kit Yin Ng

Kit Yin Ng

G&HES Assistant Chief

EXPERIENCE SUMMARY

2006-Present	G&HES Assistant Chief
2000-2006	Hydraulics and Hydrology Group Supervisor, G&HES
1999-2000	Senior Engineering Specialist, Hydraulics and Hydrology, G&HES
1995-1998	Senior Engineer, West Rail Project, Hong Kong
1991-1995	Senior Engineer, G&HES
1989-1991	Hydraulic Engineer, G&HES
1983-1989	Research Assistant, California Institute of Technology
1985-1989	Teaching Assistant, California Institute of Technology

STRENGTHS AND REASONS FOR SELECTION

- Over 17 years of technical experience in facility design, analysis and modeling of hydraulic, hydrodynamic, hydrologic and groundwater flow and transport processes; 8 of the 17 years dedicated to power plant engineering and the last 5 years supporting nuclear power early site permit (ESP) and combined construction and operating license (COL) applications.
- Performed analyses and authored Site Characteristics subsections of the Safety Analysis Report and the Environmental Report of the ESP and COL applications with focuses on hydrology, flood protection, site drainage, cooling system hydraulics, water use and thermal impacts.
- Performed siting study, cooling system optimization studies for nuclear power projects and fossil power projects.
- Participated in NRC audit and drafted responses to RAI and to questions from ASLB.
- Performed special hydrology, hydraulics and thermal studies to address issues raised by public contenders and state agencies.
- Provide technical and administrative oversight of the hydrology, water use and cooling water hydraulics related subsections of ESP and COL applications.

TECHNICAL QUALIFICATIONS

Registered Professional Engineer, California
Member, American Society of Civil Engineers

EDUCATION

Ph.D., Environmental Fluid Mechanics, California Institute of Technology
M.S., Environmental Engineering Science, California Institute of Technology
B.S., Civil Engineering, University of Hong Kong

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Kit Ng, Principal Engineering Specialist, has over 17 years of technical and supervisory experience in the design, analyses and modeling of hydraulics, hydrodynamic, hydrologic and groundwater flow and transport processes. This includes 8 years of experiences supporting fossil and nuclear power plant engineering including flood analysis and routing, flood protection design, stormwater management, cooling water intake and pump sump hydraulic design, circulating water system hydraulic transient analyses, near-field thermal plume mixing analysis and far field modeling, outfall hydraulic design, cooling pond thermal performance analyses, and water budget modeling.

DETAILED CONTRIBUTIONS ON RELEVANT PROJECTS

- Assistant Chief, Geotechnical and Hydraulic Engineering Services (G&HES), Bechtel, responsible for the technical performance of the hydraulic and hydrology discipline in supporting nuclear and fossil power project projects including site engineering, ESP/COL application processes. This includes technical approval reviews of the deliverables with hydraulics and hydrology contents in addition to performing special thermal and water use modeling calculations. Also responsible for budgeting and scheduling of G&HES activities and coordinating resources and technical activities within the G&HES group to support nuclear and fossil power plant projects.

- Hydraulics and Hydrology Group Supervisor, Geotechnical & Hydraulic Engineering Services (G&HES), Bechtel, responsible performing and providing technical oversight of the hydraulic and hydrologic contents of nuclear power plant ESP/COL application submittals and site engineering, supporting owners in NRC audits, RAI responses, depositions and performing special studies to assess issues in contention. The most recent projects includes North Anna Nuclear Power Project ESP and COL projects that involve performing the cooling lake thermal and water budget analyses for North Anna Nuclear Power Projects, and drafting the subsections on cooling water system design and thermal impacts in the Environmental Report of the ESP application, reviewing of all subsections on hydrology and water uses, providing review and technical approval to all hydrologic sections in FSAR and ER. Contributions to other nuclear power plant COL projects include defining scope and budget for the Southern Nuclear ESP and COL projects; makeup water intake and outfall siting study for the South Carolina Electric and Gas COL project. Support to fossil power generation projects includes engineering supports to Mountainview, Rijnmond, Spalding, Springerville, Cairo North, Nubaria, Island Power, and Elm Road. Activities include specifically the cooling water and makeup water intake design, pump and traveling water screen sizing, circulating water intake physical model testing, outfall design, system head and hydraulic transients, open channel analysis, site flooding and drainage design, thermal plume modeling.

- Senior Engineering Specialist, Hydraulics and Hydrology, G&HES, responsible for developing stormwater management and erosion plan/drainage design for power plant sites, performing thermal plume modeling for Jubail Desalination Project and evaluating the hydraulic transient of circulating water system to establish system operation logics.

- Senior Engineer for the West Rail Project in Hong Kong, responsible for developing the hydrology/drainage design criteria and scope of work for the technical study contracts of the 50 km heavy rail system in Hong Kong.

- Senior Engineer, G&HES, responsible for performing storm and flood frequency analyses, simulating river hydraulics and sediment routing, and performing urban stormwater runoff analysis and modeling.

- Hydraulic Engineer for Geotech, responsible for performing 3-D model simulations, simulating the impact of expansion of a man-made landfill island, and modeling and analyzing the impact of multiple thermal discharges on near shore coastal waters.

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DOMINION NUCLEAR NORTH ANNA, LLC	)	Docket No. 52-008
	)	
(Early Site Permit for North Anna ESP Site)	)	ASLBP No. 04-822-02-ESP

DECLARATION OF DANIEL C. PATTON IN SUPPORT OF DOMINION'S RESPONSES TO THE LICENSING BOARD SAFETY-RELATED QUESTIONS

I, Daniel C. Patton, do hereby state the following:

I am a senior engineer for Bechtel Power Corporation. My business address is 5275 Westview Drive, Frederick, Maryland 21703. I am the Bechtel Nuclear and Environmental Lead for Dominion Nuclear North Anna LLC's application for an Early Site Permit and performed work related to this project on licensing matters. A statement of my professional qualifications is attached.

I am providing this declaration in support of Dominion's responses to the safety-related questions that the Atomic Safety and Licensing Board asked in its January 18, 2007 Order. I am responsible for those responses to Board questions (or portions of questions) in Dominion Exhibit 1 to Dominion's Response To The Licensing Board's January 18, 2007 Order (Issuing Safety-Related Questions) dated February 7, 2007 for which I am listed as author or Subject Matter Expert.

I attest to the accuracy of those statements, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those

statements, and my statements in this declaration, are true and correct to the best of my knowledge, information and belief.

Daniel C. Patton

Daniel C. Patton, P.E.

Nuclear / Environmental Discipline EGS

EXPERIENCE SUMMARY

2006 – Present	Nuclear / Environmental EGS for Nuclear NUGEN Projects
1999–2005	Assistant Chief Mechanical Engineer, Mechanical/Nuclear/Environmental Discipline
1992–1999	Senior Engineer, Mechanical Group
1989–1992	Group Lead, Nuclear Systems Analysis Group
1984–1989	Product Line Manager, Nuclear Plant Life Extension
1983–1984	Group Lead, Containment and Subcompartment Analysis Group
1977–1983	Engineer, Containment Analysis Group
1973–1977	Co-op Student, Assigned to Bechtel Nuclear Staff

STRENGTHS AND REASONS FOR SELECTION

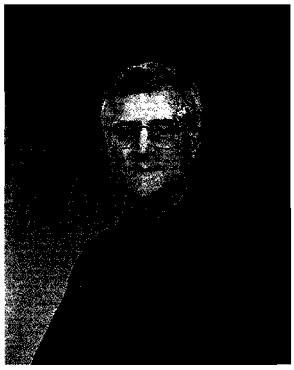
- Over 25 years of nuclear experience
- Extensive nuclear system design, design analysis, and design modifications
- Experience with first-of-a-kind engineering at Three Mile Island post-event evaluation and decontamination plan
- Extensive knowledge of nuclear analytical methods and tools

TECHNICAL QUALIFICATIONS

Registered Professional Engineer, Virginia

EDUCATION

M.S., Mechanical Engineering, University of Maryland
B.S., Nuclear Engineering, North Carolina State University



Dan Patton, Nuclear / Environmental Engineering Group Supervisor, has more than 25 years of experience in the nuclear power industry. This experience includes design and licensing of new generating facilities, continuing services, and design modifications for operating facilities. Dan brings a strong background in nuclear and environmental engineering activities in many NRC-regulated operating nuclear plants, including safety evaluations, ALARA, and Appendix R review, and more recently, preparation of Early Site Permit and Combined Construction and Operating License Permit Applications.

DETAILED CONTRIBUTIONS ON RELEVANT PROJECTS

- Nuclear / Environmental Engineering Group Supervisor, responsible for preparation and oversight of Environmental Report and site-related chapters of the Safety Analysis Report for Early Site Permit Applications and Combined Construction and Operating License Permit Applications. Also coordinated the preparation of nuclear-related (normal and accident dose) portions of the Safety Analysis Report.
- Assistant Chief Mechanical/Nuclear/Environmental Engineer, responsible for technical oversight of nuclear projects, staffing, and resource management in the functional discipline.
- Senior Engineer/Deputy Group Supervisor, responsible for coordination and execution of mechanical engineering, coordination in support of many NRC-regulated operating nuclear plants, 10 CFR 50.59 safety evaluations, ALARA, and Appendix R reviews.
- Group Lead, responsible for program development, coordination, and execution of post-accident containment and subcompartment analysis for nuclear power plant projects.
- Product Line Manager for Nuclear Plant Life Extension, responsible for Bechtel's Life Extension/License Renewal program, beyond the original 40-year licensed period for nuclear plants.
- Product Manager, responsible for developing and marketing Bechtel's innovative Computerized Technical Specification System, which related status of components, systems, parameters, and plant procedures to plant operating technical specifications.
- Engineer, responsible for performing nuclear power plant design analysis and equipment qualification, thermal-hydraulics, heat transfer, and hydrogen generation/mitigation, system design for the residual heat removal system, reactor coolant system, accumulator safety injection system, and borated water storage tank.

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DECLARATION OF CRAIG J. TALBOT IN SUPPORT OF DOMINION'S RESPONSES TO THE LICENSING BOARD SAFETY-RELATED QUESTIONS

I, Craig J. Talbot, do hereby state the following:

I am a Senior Hydrologic Engineering Specialist for Bechtel Power Corporation. My business address is 5275 Westview Drive, Frederick, MD 21703. I am the Hydrologic Engineering Specialist responsible for flood analysis and surface water drainage in support of Dominion Nuclear North Anna LLC's application for an Early Site Permit and performed work related to this project on licensing matters. A statement of my professional qualifications is attached.

I am providing this declaration in support of Dominion's responses to the safety-related questions that the Atomic Safety and Licensing Board asked in its January 18, 2007 Order. I am responsible for those responses to Board questions (or portions of questions) in Dominion Exhibit 1 to Dominion's Response To The Licensing Board's January 18, 2007 Order (Issuing Safety-Related Questions) dated February 7, 2007 for which I am listed as author or Subject Matter Expert.

I attest to the accuracy of those statements, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those

statements, and my statements in this declaration, are true and correct to the best of my knowledge, information and belief.

Craig J. Talbot

CRAIG J. TALBOT
Senior Hydrologic Engineering Specialist

EXPERIENCE SUMMARY

Mr. Talbot has more than 19 years experience in hydrologic and hydraulic engineering design on many types of industrial and residential development projects. This experience includes hydrologic runoff analysis, hydraulic flood routing, flood level determination, dam break modeling, storm water management plan development, site drainage design, flood protection design, and hydraulic structure design. Mr. Talbot also has experience with both fossil and nuclear power projects and is familiar with NRC design regulations. Mr. Talbot has experience with projects located many parts of the United States as well as South America, Europe, and Asia.

WORK HISTORY

HYDROLOGIC ENGINEER (October 1991-March 1999)/SENIOR HYDROLOGIC ENGINEER (March 1999-April 2002)/HYDROLOGIC ENGINEERING SPECIALIST (April 2002 to March 2006)/SENIOR HYDROLOGIC ENGINEERING SPECIALIST (March 2006 to present)—Bechtel

As a Senior Hydrologic Engineering Specialist with the Geotechnical and Hydraulic Engineering Services Group in Bechtel's Frederick, Maryland regional office, Mr. Talbot is responsible for hydrologic and hydraulic studies and design related to drainage and hydraulic structures. His responsibilities include the following: Performing hydrologic analysis including flood and rainfall frequency as well as runoff analyses; Determination of probable maximum precipitation (PMP) depths and Probable Maximum Flood (PMF) levels using current NOAA HMR procedures; Dam Break Flood Modeling; The development of storm water management (SWM) and erosion and sediment control plans which are in compliance with all federal state and local environmental criteria; Design of SWM facilities and erosion protection structures including, embankments, riser structures, oil/water separators, outfalls, energy dissipaters, and spillways, etc.; Design of coal pile runoff collection systems; Design of water storage and piping systems; Flood studies including hydrologic routing and flood level determination by backwater analysis; Steady state and hydraulic transient pipeline analysis; Sizing of intake structures; Design of shore protection structures; And providing support assistance to field personnel in support of construction activities.

Project Examples:

- *Dominion North Anna ESP Project, Virginia (Sep 2001-Oct 2003):* Performed a Probable Maximum Flood (PMF) Analysis for Lake Anna to determine PMF elevations for an Early Site Permit (ESP) application. The analysis included determining specific Probable Maximum Precipitation (PMP) values for various durations for the site, performing a runoff calibration analysis and PMP runoff analysis for the Lake Anna watershed, and a flood routing analysis through Lake Anna. The project also included preparation of licensing documents and reports for the ESP application.

- *Southern ALWR ESP Project, Georgia (Sep 2005 – Sep 2006):* Performed a dam breach analysis to assess the flooding potential at the proposed ESP site on the Savannah River adjacent to the existing Vogtle Nuclear Power Station. The analysis considered the flooding potential as a result of 5 dams breaking in series on the Savannah River watershed. The dam breach and unsteady modeling options of the U.S. Army Corps of Engineers computer program HEC-RAS were used to model the dam breaches and flood wave routing downstream.

- *(1991 – Present)* Development of Storm Water Management and Erosion & Sediment Control Plans for power and other types of projects located in Maryland, Pennsylvania, New York, New Jersey, Rhode Island, Massachusetts, Georgia, Florida, California, Mississippi, Texas, Wisconsin, Colombia, Chile, India, Australia, and Great Britain. Visits were made to many of the sites to develop the plans. The plans were in accordance with local regulations at the project sites.

- *Copper Mountain Power Project, Clark Co. Nevada (2005 – Present)* Determination of 100-year flood potential on a large (230 square miles) alluvial fan and the design of flood protection measures for a proposed power plant.

- *Elm Road Generating Station, Wisconsin (Sep 2003 – Present):* Developed erosion and sediment control plan and storm water management plan for large coal fired power plant including 5 storm water management basins in the power island, coal pile storage, rail yard, and soil disposal areas. Designed the plant storm drain collections system in the power island area.

- *Fjardaal Aluminum Smelter Project, Iceland (Nov. 2003 – Present):* Developed design concepts for large diversion channels to by-pass flows from existing streams around the proposed smelter site. The diversion channels are located on steep mountain slopes and include many drop structures. Additonally, assisted in the development of a "green" storm water management design that included vegetated soil profiles and treatment wetlands. Storm water runoff and diversion runoff analysis included the effects of frozen ground conditions as well as snow melt runoff.

- *Hanford Waste Treatment Plant, Washington (Feb 2002-Sep 2002):* Developed site drainage system for a nuclear waste treatment plant. The development included performing an analysis of the system for the "project flood event", a specific rainfall event determined for the site similar to a Probable Maximum Precipitation.

- *Occidental Water Project, Venezuela (1998-1999):* Hydraulic review of pumping stations and pipelines for water supply and waste water systems; and hydrologic review of storm water drainage plans for coastal communities in the State of Falcon, Venezuela. Coordination with local engineering sub-contractors.

- *Quezon Power Project, Philippines (1996 – 1999):* Development of site design rainfall intensities and performing rainfall frequency analysis. Also, the design of site drainage facilities.

- *Jacuí Power Project, Brazil (1998)*: Determination of adequacy of existing shore protection measures against river flooding (Jacuí River) at the existing job site and development of additional shore protection measures to be incorporated.

- *EMCali Power Project, Colombia (1997-1998)*: Determination of flood water levels in the Cauca River using historic data. The development and design of site storm water management plan. The determination of steady state pump head requirements and hydraulic transient pressures for the circulating water and the auxiliary cooling water-piping systems.

- *Cataula Power Project flood study, Georgia (1996-1997)*: A 100-year flood study was performed on Heiferforn Creek near Columbus, Georgia to determine the flood levels for a proposed power project. The analysis included both a runoff analysis and flood routing analysis for the upstream watershed. The upstream drainage included two reservoirs formed by earthen embankments. The flood runoff analysis and backwater analysis included the effects of these two existing structures. The computer models HEC-1 and HEC-2 were used to perform the analysis.

- *Trujillo Water Project, Venezuela (1995-1997)*: Determination of river flood levels in Venezuela using historic data and computer modeling. The US Corps of Engineers backwater model HEC-2 was used to compute the water levels. The effects of proposed intake and sediment removal structures on the flood water levels were determined.

- *PEPCO's Dickerson and Morgantown Power plants, Maryland (1995-1997)*: Development and design of a coal pile runoff collection systems. Features of the systems include lined coal pile runoff ponds, lined coal piles, pumping and piping systems, overflow structures, runoff containment and diversion, and caustic injection systems. The existing drainage systems were inspected and incorporated into the new systems.

- *Dabhol Power Project, India (1995-1997)*: Development of site design rainfall intensities and the design and development of site storm water management, drainage, and erosion and sediment control measures. Also the design of a shore line breakwater protection structure for an on-shore intake.

- *Renca Power Project, Chile (1995-1996)*: Design of the circulating water intake structure located in the cooling tower basin. Determination of steady state pump head requirements for the circulating water piping system. Development and sizing of the storm drain system for the project site.

- *Indiantown Power Project, Florida (1992-1994)*: Development of an erosion and sediment control plan for the installation of a 20-mile pipeline. The plan included 6 wetland crossings. Also the development of the plant site storm water management plans. Site visits were made to incorporate protection for environmentally sensitive areas into the plans. Both plans met all local and federal guidelines.

- *The Hartwell Power Project, Georgia (1992-1993) and Ocean State Power, Rhode Island (1994-1996) water storage pond projects*: The designs included piping networks, pumping systems, overflow structures, embankment design, and connections to groundwater pumping systems and existing make-up water systems. Site storm water management plans were also developed for each project.

- *Keystone Power Project, New Jersey (1992-1993)*: Determination of steady state pump head requirements for the make-up water system.

- *Peryman Unit 5 Power Project, Maryland (1991-1993):* Assisted in the development and design of the site storm water management and erosion and sediment control plan in accordance with state and local regulations. Also assisted in the design of the site drainage system.

- *Calvert Cliffs Nuclear Power Plant Diesel Generator Project, Maryland (1991-1993)*: Determining the maximum Probable Maximum Precipitation (PMP) for the site and the associated flood levels from local site drainage. The PMP analysis was performed using Hydrometeorological Reports 51, 52, and 53. Surface drainage measures were designed to preclude flooding of safety related structures during the PMP and integrate with the existing plant drainage system. Additionally, the design roof snow and ice load for a proposed diesel generator building was determined. The snow and ice load was determined from a combination of the 100-year snow pack load and the weight of the 48-hour probable maximum winter precipitation (winter PMP). The determination also included analyzing the proposed roof drainage and a determination of the maximum snowfall from the winter PMP. All analyses and designs were in accordance with NRC regulations.

- *Chevron Oil Refinery, Pennsylvania (1991)*: The design of storm water catch basin trap inserts to prevent the emission of hazardous gases form a storm water drainage system. The design required passage of the 2- and 10- year storm runoff into the catch basins without increasing ponding in the plant yard.

Mr. Talbot has had extensive experience with various types of hydrologic and hydraulic computer modeling and is familiar with the usage of many computer programs including HEC-RAS, HEC-2, HEC-HMS, HEC-1, TR-20, TR-55, XP-SWMM, WSPRO, and others. Mr. Talbot is also familiar with the most common word processing, spreadsheet, and database programs as well as having experience in locating and retrieving data from public databases accessible through the Internet.

WATER RESOURCES ENGINEER—Greenhorne & O'Mara, Inc (May 1987 to October 1991)

As a Water Resources Engineer with Greenhorne & O'Mara, Inc. located in Greenbelt, MD, Mr. Talbot provided support on the following projects:

- A culvert analysis and design for a proposed Maryland State Highway project. The analysis included comparing three different design alternatives and ensuring that none of the designs produced increases in the 100-year flood elevations.

- The hydraulic design of a proposed bridge for the Delaware Department of Transportation. The design requirements included analyzing bridge effects on flood elevations and minimizing impacts to wetland areas.

- The determination of storm water management needs and preliminary design of storm water management facilities for a proposed road in the City of Rockville, Maryland.

- The conceptual design of a hazardous materials storage facility at a military installation for the Department of the Army. The design required determining the hazardous constituents and properties of over 500 materials and designing a layout that would provide separate containment for each property type. All current EPA and military safety requirements for hazardous materials facilities were included in the design.

- The design of storm water management facilities for highway improvements to U.S. Route 58 in southern Virginia for the Virginia Department of Transportation.

- Bridge scour analysis for a proposed bridge in Anne Arundel County, Maryland. The analysis included providing countermeasures to reduce or eliminate scour at the bridge site. Procedures outlined in the Federal Highway Administration's "Interim Procedures for Evaluation Scour at Bridges" were used to determine the scour potential.

Mr. Talbot also served on the project team for the Federal Emergency Management Agency (FEMA) project. His responsibilities there included supervising a group of three engineers and four geographers responsible for engineering quality control; review of hydrologic and hydraulic analyses; review of Flood Insurance Studies (FIS's); providing instruction on hydraulic models (HEC-2 and WSPRO); and coordinating both written and oral correspondence with the client (FEMA), contractors, and community officials.

EDUCATION

BS, Civil Engineering, Brigham Young University, Provo, UT, 1987

REGISTRATION/CERTIFICATION

Professional Engineer, State of Maryland, License No. 19556

PROFESSIONAL MEMBERSHIPS

American Society of Civil Engineers

TECHNICAL PUBLICATIONS

"Storm Water Management for Fossil Power Generation Facilities" Craig J. Talbot, Presented at World Water And Environmental Resources Congress, Sponsored by EWRI, ASCE, Orlando, FL, May 2001.

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DOMINION NUCLEAR NORTH ANNA, LLC	)	Docket No. 52-008
	)	
(Early Site Permit for North Anna ESP Site)	)	ASLBP No. 04-822-02-ESP

DECLARATION OF STEWART W. TAYLOR IN SUPPORT OF DOMINION'S RESPONSES TO THE LICENSING BOARD SAFETY-RELATED QUESTIONS

I, Stewart W. Taylor, do hereby state the following:

I am the Manager of Geotechnical and Hydraulic Engineering Services for Bechtel Corporation. My business address is 5275 Westview Drive, Frederick, MD 21703. I am responsible for SSAR Section 2.4.1, Hydrologic Description and SSAR Section 2.4.13, Accidental Releases of Liquid Effluents to Ground and Surface Waters in Dominion Nuclear North Anna LLC's application for an Early Site Permit and performed work related to this project on licensing matters. A statement of my professional qualifications is attached.

I am providing this declaration in support of Dominion's responses to the safety-related questions that the Atomic Safety and Licensing Board asked in its January 18, 2007 Order. I am responsible for those responses to Board questions (or portions of questions) in Dominion Exhibit 1 to Dominion's Response To The Licensing Board's January 18, 2007 Order (Issuing Safety-Related Questions) dated February 7, 2007 for which I am listed as author or Subject Matter Expert.

I attest to the accuracy of those statements, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those

statements, and my statements in this declaration, are true and correct to the best of my knowledge, information and belief.

Stewart W. Taylor

Stewart W. Taylor
Corporate Manager
Geotechnical and Hydraulic Engineering Services

SUMMARY

Over twenty-five years experience in hydrology, hydrogeology, contaminant fate and transport, ground water modeling, and soil and ground water remediation. Specialist in subsurface biological processes, natural attenuation of contaminants, and mathematical modeling of these phenomena. Graduate degrees. Professional registration. Project engineering and project management experience.

EDUCATION

Ph.D. Civil Engineering, Water Resources Program, Princeton University, 1990
M.S. Civil Engineering, Hydraulics Program, Colorado State University, 1982
B.S. Civil Engineering, University of Kansas, 1979

PROFESSIONAL DATA

Professional Registrations:
- Professional Engineer, State of California, License No. C37292 (Active)
- Professional Geologist, State of Tennessee, Registration No. TN3839 (Inactive)

Scientific and Professional Societies:
- American Geophysical Union, Member
- American Society of Civil Engineers (ASCE), Member
- Environmental and Water Resources Institute (EWRI), Member
- National Ground Water Association (NGWA), Member

Professional Activities:
- Chair, Ground Water Council, ASCE/EWRI
- Past-Chair, Ground Water Hydrology Committee, ASCE/EWRI
- Member, KSTAT Standards Committee, ASCE/EWRI
- Member, Department of Civil and Environmental Engineering Advisory Council, Princeton University
- Instructor, Hydrogeology, Engineering Professionals Program, Johns Hopkins University

PROFESSIONAL EXPERIENCE

2006 – Present: *Corporate Manager of Geotechnical & Hydraulic Engineering Services and Bechtel Fellow, Bechtel Corporation, Frederick, Maryland.* Overall responsibility for geology, hydrology, hydrogeology, seismology, and geotechnical and hydraulic engineering for the Bechtel group. Serves as a technical specialist in the areas of hydrology, hydrogeology, and contaminant hydrogeology. Selected recent experience is as follows.

- *Southern Nuclear Operating Company.* Completed radionuclide transport analysis to assess accidental releases of liquid effluents to ground and surface waters. Authored groundwater and accidental release sections of the Early Site Permit application submitted to the NRC.

1998 - 2006: *Senior Principal Engineer, Geotechnical & Hydraulic Engineering Services, Bechtel Power Corporation, Frederick, Maryland.* Provided geotechnical and hydraulic engineering support to the engineering, procurement, and construction of fossil and nuclear power plants. Supported other Bechtel businesses in the areas of environmental restoration and waste management. Selected experience is summarized below.

- *North Anna Power Station, Dominion Energy, Inc.* Completed water balance study to quantify impacts of additional thermal discharges to Lake Anna on lake levels and releases. Authored hydrology, water use, and water quality sections of the Early Site Permit application submitted to the NRC.

- *Coachella Stormwater Channel, Coachella Valley Water District.* Developed two-dimensional floodplain model to map extent of flooding due to breaches in the levees of a major stormwater channel.

- *Savannah River Site, U. S. Department of Energy.* Developed model to assess the potential for eroding and transporting radiologically contaminated sediments deposited in the Savannah River floodplain.

- *Connecticut Yankee Atomic Power Corporation, Haddem Neck Plant Decommissioning Project.* Completed dose modeling (RESRAD) necessary to determine Derived Concentration Guideline Levels for soil and concrete debris in compliance with 10 CFR 20.1402. Co-authored related sections of the License Termination Plan submitted to the NRC. Provided rebuttal testimony at an Atomic Safety Licensing Board hearing.

- *Central Interstate Compact, Low-Level Radioactive Waste Disposal Facility.* Prepared and provided testimony on ground water issues at a public hearing on the proposed license decision. Served as an expert witness on ground water in the matter of Entergy et al. versus the State of Nebraska.

- *Oak Ridge Reservation, On-Site Disposal Facility.* Peer reviewed the performance assessment of a low-level radioactive disposal facility located at Y-12 for the Department of Energy. Review included the conceptual hydrologic model, the ground water flow model (MODFLOW) used to determine pathways, and the performance assessment model (PATHRAE) used to assess risk and to determine waste acceptance criteria.

1992 - 1998: *Principal Scientist, Bechtel National, Inc., Oak Ridge, Tennessee.* Responsibilities included technical support and management of environmental projects. Selected project experience is summarized below.

- *Central Interstate Compact, Low-Level Radioactive Waste Disposal Facility.* Project Hydrogeologist responsible for site characterization modeling work supporting the licensing of this disposal facility. Supervised the conceptualization, development, and calibration of regional- and local-scale ground water flow models (MODFLOW) used for site characterization. Authored sections of the Safety Analysis Report dealing with hydrogeology and ground water flow modeling. Authored responses to comments made by Nebraska's technical review team. Familiar with requirements of 10 CFR 61.50, associated guidance documents, and Branch Technical Position papers for low-level radioactive waste performance assessment.

- *Oak Ridge National Laboratory.* Project Manager for this technical support services contract for the laboratory's environmental restoration/waste management programs. The scope of this contract

included site investigations, remedial investigations, treatability and pilot studies, decision documents, and environmental sampling.

- *Pease Air Force Base, Air Force Center for Environmental Excellence.* Project Engineer for this full service environmental remediation service contract. Supervised a team of engineers and scientists tasked with designing, constructing, and operating soil and ground water remedial actions at 20 sites located across the base. Remedial actions included landfill capping, bioventing, air sparging, soil vapor extraction, ground water containment and treatment, and monitored natural attenuation. Noteworthy contributions included application of the simulation-optimization modeling approach to design a pumping system for containing TCE-contaminated ground water, and the use of a permeable reaction wall for the *in situ* treatment of ground water contaminated with chlorinated solvents. Primary point of contact for the Air Force and State and Federal regulators on all technical aspects of the work.

- *Navy Southern Division, Environmental Response Action Contract.* Project Engineer responsible for remedial actions at Navy and Marine bases in Georgia and Florida. Developed remediation work plans, procured field services, and provided oversight during construction. Remedial technologies applied include ground water pump-and-treat, *in situ* and *ex situ* bioremediation of ground water, soil vapor extraction, and excavation, treatment, and disposal of contaminated soils.

- *Navy Southwestern Division, Comprehensive Long-Term Environmental Action, Navy Contract.* Supervised statistical analyses of soil and ground water data to develop background and exposure concentrations in support of the Long Beach Naval Shipyard and the MCAS El Toro remedial investigations. These analyses included estimation of uncertainty limits, estimation of tolerance intervals, and hypothesis testing using both parametric and non-parametric methods.

- *U. S. Environmental Protection Agency, Region IV.* Supported the Florida Petroleum Reprocessors RI/FS, which included site characterization, interpretation of hydrogeologic and chemical data, and development and evaluation of remedial alternatives for this TCE-contaminated, karst aquifer. Provided support for the Twelve Mile Creek/Hartwell Lake RI/FS. Supervised sediment transport modeling, water quality modeling, and food chain modeling to assess PCB fate and transport in a 56,000 acre reservoir.

1989-1992: *Assistant Professor, Department of Civil Engineering, State University of New York at Buffalo.* Taught courses in Groundwater Hydrology, Transport Phenomena in Groundwater, Environmental Fluid Mechanics, and Numerical Methods in Water Resources and Environmental Engineering. Conducted research in biological fate of organic contaminants in subsurface systems, subsurface flow and transport modeling, and sediment transport modeling.

1985-1989: *Research Assistant, Department of Civil Engineering and Operations Research. Princeton University.* Conducted study to quantitatively assess changes in permeability, porosity, and dispersivity in porous media due to *in situ* bacterial growth, and developed a two-dimensional finite element model to simulate *in situ* biological remediation of contaminated ground water. Developed a three-dimensional, finite-element ground water model to predict the migration of a chlorinated solvent plume, and assess the performance of a proposed well field for recovering the contamination.

1981-1985: *Senior Engineer, Bechtel Corporation, San Francisco, California.* Served as a hydrologist to support projects in the areas of infrastructure, power, mining, and hazardous and radioactive waste management. Technical responsibilities included analyses of stream erosion and sedimentation, stream flow prediction, hydraulic analyses of open channel flows, and sediment transport modeling

1979-1981: *Research Assistant, Civil Engineering Department, Colorado State University.* Assessed effects of bridge encroachments on water surface elevation, flood wave propagation, and stream bed scour using mathematical modeling techniques. Participated in physical model study of deep draft vessels moored in Mississippi River, including model construction, data acquisition and interpretation.

PUBLICATIONS

Refereed Journal Articles:

Taylor, S. W., C. R. Lange, and E. A. Lesold, Biofouling of contaminated ground water recovery wells: Characterization of microorganisms, Ground Water, 35(6), 973-980, 1997.

Hoyal, D. C. J. D., J. F. Atkinson, J. V. DePinto, and **S. W. Taylor**, The effect of turbulence on sedimentation to a fully absorbing bed, J. Hydraul. Res., 33(3), 349-360, 1995.

Irvine, K. N., **S. W. Taylor**, M. Leonard, K. McFarland, and E. J. Pratt, Impacts of fluctuating water levels and flows to hydropower production on the Great Lakes: Planning for the extremes, The Great Lakes Geographer, 2(1), 67-85, 1995

Atkinson, J. F., S. Blair, **S. Taylor**, and U. Ghosh, Surface aeration in a stratified river, J. Environ. Eng., 121(1), ASCE, 113-118, 1995.

Jaffe, P. R., and **S. W. Taylor**, "Reply," Water Resour. Res., 28(5), 1483-1484, 1992.

Taylor, S. W., and P. R. Jaffe, "Enhanced in-situ biodegradation and aquifer permeability reduction," J. Environ. Eng., 117(1), 25-46, ASCE, 1991.

Taylor, S. W., and P. R. Jaffe, "Substrate and biomass transport in porous media," Water Resour. Res., 26(9), 2181-2194, 1990.

Taylor, S. W., and P. R. Jaffe, "Biofilm growth and the related changes in the physical properties of a porous medium, 3. Dispersivity and model verification," Water Resour. Res., 26(9), 2171-2180, 1990.

Taylor, S. W., P. C. D. Milly, and P. R. Jaffe, "Biofilm growth and the related changes in the physical properties of a porous medium, 2. Permeability," Water Resour. Res., 26(9), 2161-2169, 1990.

Taylor, S. W., and P. R. Jaffe, "Biofilm growth and the related changes in the physical properties of a porous medium, 1. Experimental investigation," Water Resour. Res., 26(9), 2153-2159, 1990.

Taylor, S. W., and H. W. Shen, "Simple methods for estimating backwater and constriction scour at bridges and abrupt encroachments, *In* Improving Estimates From Flood Studies," *Transportation Research Record*, 922, National Research Council, 54-64, 1983.

Book Chapters:

Jaffe, P. R., and **S. W. Taylor**, Assessment of the Potential for Clogging and Its Mitigation During In-Situ Bioremediation, In G. A. Lewandowski and L J. DeFilippi (ed.), Biological Treatment of Hazardous Waste, John Wiley & Sons, Inc., New York, 1998.

Conference Papers:

Taylor, S. W., and L. C. Headland, Analysis and design of infiltration seawater intakes, ASCE/EWRI World Water and Environmental Resources Congress, Anchorage, Alaska, May 15-19, 2005.

Ng, K. Y., Y. Zheng, and **S. W. Taylor**, Recent developments in hydraulic design of power plants cooling water intake structures, ASCE/EWRI World Water and Environmental Resources Congress, Anchorage, Alaska, May 15-19, 2005.

Taylor, S. W., L. C. Smith, R. K. Carr, A. Carson, and E. Darois, Developing site-specific derived concentration guideline levels for multiple media at the Connecticut Yankee Haddam Neck Plant, Waste Management '03 Conference, Tucson, Arizona, February 23-27, 2003.

Taylor, S. W., and D. M. Wagner, Dose modeling approach for buried concrete debris under a resident farmer scenario, ASCE/EWRI World Water and Environmental Resources Congress, Orlando, Florida, May 20-24, 2001.

Wagner, D. M., and **S. W. Taylor**, The effect of pre-existing ground water radioactivity on derived concentration guideline levels for residual radioactivity in soil, ASCE/EWRI World Water and Environmental Resources Congress, Orlando, Florida, May 20-24, 2001.

Taylor, S. W., S. A. Underhill, and A. L. Ditto, Optimizing LNAPL recovery using the observational approach, the 1999 International Water Resource Engineering Conference, Groundwater Management Symposium, Seattle, Washington, August 8-11, 1999.

Taylor, S. W., R. K. Lambert, and A. L. Ditto, Application of the simulation-optimization approach to groundwater management: Pease Air Force Base case study, 1998 International Water Resources Engineering Conference, Groundwater Management Symposium, Memphis, Tennessee, August 3-7, 1998.

Findikakis, A. N., V. Yucel, **S. W. Taylor**, S. C. Mehrotra, M. Sabbe, and J. DeOld, Effect of variable recharge rates on groundwater transport of radionuclides at a LLRW disposal facility, Waste Management '96, Tucson, Arizona, February 25-29, 1996.

Underhill, S. A., **S. W. Taylor**, and J. V. DePinto, Groundwater flow and transport modeling within a geographic information system, International Groundwater Management Symposium, San Antonio, Texas, August 14-18, 1995.

Taylor, S. W., M. G. Sholley, M. A. Sabbe, and J. H. DeOld, Groundwater flow modeling for the Central Interstate Compact, Butte, Nebraska, low-level radioactive waste disposal facility, Waste Management '95, Tucson, Arizona, February 26 - March 2, 1995.

Taylor, S. W., In-situ bioremediation of petroleum-contaminated groundwater: Theory, 40th Anniversary Conference, Air & Waste Management Association, Mid-Atlantic States Section, Atlantic City, New Jersey, September 19-23, 1994.

Taylor, S. W., Modeling enhanced in-situ biodegradation in groundwater: Model response to biological parameter uncertainty, 1993 Ground Water Modeling Conference, International Ground Water Modeling Center, Golden, Colorado, June 9-12, 1993.

Conference Presentations:

Ng, K., and **S. W. Taylor**, Case Study of Power Plant Intake System Selection and Design Under the Clean Water Act 316(b) Regulations, Electric Power 2004, Baltimore, Maryland, March 30 – April 1, 2004.

Taylor, S. W., Modeling biodegradation in groundwater under conditions of biokinetic parameter uncertainty, 1994 National Conference on Environmental Engineering, ASCE, Boulder, Colorado, July 11-13, 1994.

Hayashida, T., and **S. W. Taylor**, "Non-point source contaminant loading to the Buffalo River from contaminated groundwater," 34th Meeting, International Association for Great Lakes Research, Buffalo, New York, June 2-6, 1991.

Jaffe, P. R., and **S. W. Taylor**, "Transport of biomass and growth substrate in a porous medium," EOS Trans., AGU, 71(17), 1990.

Jaffe, P. R., **S. W. Taylor**, N. Singhal, and N. H. Baek, "The anaerobic bioremediation of TCE contaminated aquifers: A feasibility study," U. S. Geological Survey National Symposium on Water Quality, Tampa, Florida, November 12-17, 1989.

Taylor, S. W., and P. R. Jaffe, "Constitutive equations for biofilm-affected groundwater flow and solute transport parameters," EOS Trans., AGU, 69(44), 1988.

Milly, P. C. D., **S. W. Taylor**, and P. R. Jaffe, "Reduction of permeability by a biofilm, Chapman Conference on Microbial Processes in the Transport, Fate, and In-Situ Treatment of Subsurface Contaminants," AGU, Snowbird Resort, Snowbird, Utah, October 1-3, 1986.

Research Reports:

Taylor, S. W., Groundwater Flow to a Horizontal Well, Du Pont Remediation Services, Wilmington, Delaware, October, 1993.

Taylor, S. W., C. R. Lange, and J. C. Fountain, Investigation of Biofouling at Groundwater Extraction Wells, Eastman Kodak Company, Rochester, New York, Department of Civil Engineering, State University of New York at Buffalo, Buffalo, New York, April, 1993.

Irvine, K. N., M. Leonard, and **S. W. Taylor**, Hydropower Evaluation for the Mainstem Projects in the Great Lakes-St. Lawrence River Basin, International Joint Commission, Great Lakes Water Levels Reference, Phase II, Report to Working Committee 3, March, 1992.

Taylor, S. W., and D. M. Wagner, Biological and Physical Factors Affecting Sorption of Bacteria to Subsurface Particles, Department of Civil Engineering, State University of New York at Buffalo, Buffalo, New York, September, 1992.

Taylor, S. W., and M. T. Panek, Mathematical Simulation Models for Evaluating the Biological Fate of Organic Contaminants in Groundwater, New York State Center for Hazardous Waste Management, State University of New York at Buffalo, Buffalo, New York, March 1991.

Taylor, S. W., Pollutant Loadings to the Buffalo River Area of Concern From Inactive Hazardous Waste Sites, Department of Civil Engineering, State University of New York at Buffalo, Buffalo, New York, December, 1991.

Jaffe, P. R., and **S. W. Taylor**, Design of Aquifer Bioremediation, Report No. 90-WR-1, Department of Civil Engineering and Operations Research, Princeton University, Princeton, New Jersey, January, 1990.

Jaffe, P. R., **S. W. Taylor**, N. H. Baek, P. C. D. Milly, and A. C. Marinucci, Biodegradation of Trichloroethylene and Biomanipulation of Aquifers, Report No. WR-88-3, Department of Civil Engineering and Operations Research, Princeton University, Princeton, New Jersey, August, 1988.

Traille, L. A., D. L. Chery, H. W. Shen, and **S. Taylor**, Flow Modifications by Storage Loss Through Flood Plain Encroachment - User's Manual, NCHRP, Project 15-7, August 1982.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
DOMINION NUCLEAR NORTH ANNA, LLC	)	Docket No. 52-008
	)	
(Early Site Permit for North Anna ESP Site)	)	ASLBP No. 04-822-02-ESP

DECLARATION OF PING K. WAN IN SUPPORT OF DOMINION'S
RESPONSES TO THE LICENSING BOARD SAFETY-RELATED QUESTIONS

I, Ping K. Wan, do hereby state the following:

I am a Senior Principal Environmental Engineer for Bechtel Power Corporation. My business address is 5275 Westview Drive, Frederick, MD 21703. I am the Environmental Engineering Specialist responsible for Dominion Nuclear North Anna LLC's application for an Early Site Permit and performed work related to this project on licensing matters. A statement of my professional qualifications is attached.

I am providing this declaration in support of Dominion's responses to the safety-related questions that the Atomic Safety and Licensing Board asked in its January 18, 2007 Order. I am responsible for those responses to Board questions (or portions of questions) in Dominion Exhibit 1 to Dominion's Response To The Licensing Board's January 18, 2007 Order (Issuing Safety-Related Questions) dated February 7, 2007 for which I am listed as author or Subject Matter Expert.

I attest to the accuracy of those statements, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those

statements, and my statements in this declaration, are true and correct to the best of my knowledge, information and belief.

Ping K. Wang

P. K. WAN
Senior Principal Engineer
Environmental Specialist

WORK HISTORY

SENIOR PRINCIPAL ENGINEER – Bechtel (34 Years)

As the Environmental Technology Manager, Ms Wan is responsible for tracking current and emerging environmental issues and regulatory requirements, performing technology evaluations and impact assessments, and coordinating studies leading to recommendations of cost-effective engineering solutions and impact mitigation measures. She has authored environmental technology bulletins and white papers, and made technical presentations in seminars and workshops regarding environmental regulations and air emission control technology. She has also provided input for business development strategic planning.

As a Lead Environmental Engineer, Ms Wan is responsible for providing environmental engineering support to project development, proposals preparation, project engineering, plant construction and plant startup, both in the United States and overseas.

Ms. Wan has actively participated in nuclear power plant licensing activities. Her early assignments involved working with the Shanghai Nuclear Engineering Research and Design Institute in China to successfully resolve all environmental issues raised by the EX-IM Bank for financial closing of the Qinshan Nuclear Power Project, provided dispersion estimates input to the control room habitability evaluations and/or off-site dose assessments for Hatch, Calvert Cliffs, Harris, and Brunswick nuclear projects, and provided technical support to Connecticut Yankee Atomic Power Company regarding decommissioning and decontamination of their Haddam Neck Site.

Her recent assignments have included providing extensive technical service to Korea Power Engineering Company for production of the KEDO LWRP Units 1 & 2 Environmental Report, developing siting requirements and performing site evaluations of new nuclear power generation stations for Exelon Nuclear Corporation and Dominion Energy, Inc., and preparation of Early Site Permit (ESP) and Combined License (COL) applications for several U.S. utilities. She was the environmental task manager, responsible for all the environmental tasks and coordination with other internal disciplines and outside environmental consultants for production of the ESP for deployment of an advanced nuclear power plant at the existing North Anna Site.

CONSULTANT METEOROLOGIST (2 Years)

As a consultant to NUS Corporation, Ms. Wan assisted with investigating the environmental effects of a heat dissipation system, including studies of vapor plume and its dispersion characteristics. She also contributed to the development and application of mathematical models to determine the frequency of fogging and icing conditions resulting from an evaporative heat dissipation system.

EDUCATION

BS, Physics, Chung Chi College, Hong Kong
MS, Physics, Montana State University
MS, Natural Science, Pacific Lutheran University
PhD course work completed in Meteorology, University of Maryland

REGISTRATION/CERTIFICATION

Certified Consultant Meteorologist (CCM)

PROFESSIONAL MEMBERSHIPS

Member, Air and Waste Management Association (AWMA)
Member, American Nuclear Society (ANS)
Member, American Meteorological Society (AMS)
Member, Nuclear Utility Meteorological Data Users Group (NUMUG)
Member, Academic Advisory Board for the Graduate Part-time Program in Environmental Engineering and Science, Johns Hopkins University (since1996)
Member, ANS 2.15 Standard Committee on Criteria for Modeling and Calculating Atmospheric Transport of Routine Releases from Nuclear Facilities
Member, ANS 2.16 Standard Committee on Criteria for Modeling Design – Basis Accidental Releases from Nuclear Facilities
Member, ANS 2.21 Standard Committee on Criteria for Assessing Atmospheric Effects on the Ultimate Heat Sink
Member, ANS 3.8-10 Standard Committee on Criteria for Modeling Real-time Accidental Releases from Nuclear Facilities
Member, ANS-3.11 Standard Committee on American National Standard for Determining Meteorological Information at Nuclear Facilities

PUBLICATIONS

Ms. Wan has written numerous project-specific environmental reports. In addition, she has authored or co-authored over 30 technical papers that have been published in professional journals and in national and international conference proceedings.

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DOMINION NUCLEAR NORTH ANNA, LLC	)	Docket No. 52-008
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DECLARATION OF JOHN R. DAVIE IN SUPPORT OF DOMINION'S RESPONSES TO THE LICENSING BOARD SAFETY-RELATED QUESTIONS

I, John R. Davie, do hereby state the following:

I am a Senior Principal Geotechnical Engineer for Bechtel Power Corporation. My business address is 5275 Westview Drive, Frederick, MD 21703. I am the Geotechnical Engineering Specialist responsible for geotechnical engineering in support of Dominion Nuclear North Anna LLC's application for an Early Site Permit and performed work related to this project on licensing matters. A statement of my professional qualifications is attached.

I am providing this declaration in support of Dominion's responses to the safety-related questions that the Atomic Safety and Licensing Board asked in its January 18, 2007 Order. I am responsible for those responses to Board questions (or portions of questions) in Dominion Exhibit 1 to Dominion's Response To The Licensing Board's January 18, 2007 Order (Issuing Safety-Related Questions) dated February 7, 2007 for which I am listed as author or Subject Matter Expert.

I attest to the accuracy of those statements, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those

statements, and my statements in this declaration, are true and correct to the best of my knowledge, information and belief.

John R. Davie

John R. Davie

JOHN R. DAVIE
Senior Principal Engineer
Geotechnical Specialist

WORK HISTORY

SENIOR PRINCIPAL ENGINEER - Bechtel (28 Years)

Dr. Davie is currently a senior principal engineer and group supervisor with the Geotechnical Group in Bechtel's Frederick office, engaged in geotechnical investigations and foundation engineering for power plant facilities and other Bechtel projects, including major industrial, petroleum, and transportation work, both in the United States and overseas.

Dr. Davie's assignments for Bechtel have included onshore and offshore field and laboratory investigations; bearing capacity and settlement analyses; design and testing of pile and pier foundations; design of retaining structures, including reinforced soil walls; stability analyses; evaluation of liquefaction potential; and road and railroad foundation design. He has supervised several ground improvement projects, including installation of mini-piles and stone columns, chemical grouting, large-scale underpinning, and accelerated consolidation of soft clay using wick drains.

In 1988, Dr. Davie completed a 6-month engineering and construction assignment on the Ankara-Gerede Motorway in Turkey. From 1989 to 1999, he was an advisor to the Bechtel/Parsons Brinckerhoff geotechnical team on the Boston Central Artery/Third Harbor Tunnel Project.

GEOTECHNICAL CONSULTANT - McClelland Engineers, Inc. (5 Years)

Before joining Bechtel, Dr. Davie was a member of the staff of McClelland Engineers, Inc., geotechnical consultants in Houston, Texas. His field experience included offshore pile driving inspection and supervision of drilling operations in the Gulf of Mexico and the Persian Gulf. Dr. Davie was also involved in foundation design studies for offshore structures in various parts of the world. Onshore foundation design projects included refineries, natural gas liquefaction facilities, chemical plants and other industrial and commercial projects, and high-rise office buildings in downtown Houston.

LECTURER - University of Glasgow (4 Years)

Earlier, Dr. Davie was a member of the teaching staff at the University of Glasgow with primary teaching interests in traffic engineering and soil mechanics. His research projects included investigation of the behavior of cohesive soils under vertical uplift forces.

EDUCATION

PhD, Soil Mechanics, University of Glasgow, Scotland (1974)
ME, Civil Engineering, Cornell University (1969)
BS, Civil Engineering, University of Glasgow, Scotland (1968)

REGISTRATION/CERTIFICATION

Professional Engineer in Maryland, Oregon, Ohio and Wisconsin
Chartered Engineer, United Kingdom
NCEES Council Record Holder

PROFESSIONAL MEMBERSHIPS

Member, Institution of Civil Engineers (ICE)
Member, American Society of Civil Engineers (ASCE)
Secretary, Shallow Foundations Committee, ASCE
Member, American Society for Testing and Materials (ASTM)
Member, International Society for Soil Mechanics and Geotechnical Engineering
Member, European Federation of National Engineering Associations (FEANI)

PUBLICATIONS

Dr. Davie has written numerous project-specific geotechnical reports. In addition, he has authored or co-authored over 40 technical papers that have been published in professional journals and in national and international conference proceedings. He recently co-edited an ASCE Geotechnical Publication on the effects of construction on existing structures.

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DECLARATION OF JOE J. LITEHISER IN SUPPORT OF DOMINION'S RESPONSES TO THE LICENSING BOARD SAFETY-RELATED QUESTIONS

I, Joe J. Litehiser, do hereby state the following:

I am a Principal Engineer for Bechtel Corporation. My business address is 50 Beale Street, San Francisco, CA 94105. I am the Chief Seismologist responsible for Dominion Nuclear North Anna LLC's application for an Early Site Permit and performed work related to this project on licensing matters. A statement of my professional qualifications is attached.

I am providing this declaration in support of Dominion's responses to the safety-related questions that the Atomic Safety and Licensing Board asked in its January 18, 2007 Order. I am responsible for those responses to Board questions (or portions of questions) in Dominion Exhibit 1 to Dominion's Response To The Licensing Board's January 18, 2007 Order (Issuing Safety-Related Questions) dated February 7, 2007 for which I am listed as author or Subject Matter Expert.

I attest to the accuracy of those statements, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those statements, and my statements in this declaration, are true and correct to the best of my knowledge, information and belief.

Joe J. Litehiser

Joe J. Litehiser

Joe Litehiser, Ph.D.

Seismology

EXPERIENCE SUMMARY

1994–Present	Chief Seismologist
1992–1994	Manager of Geology for Bechtel's G&HES Group
1974–1992	Seismologist, G&HES

STRENGTHS AND REASONS FOR SELECTION

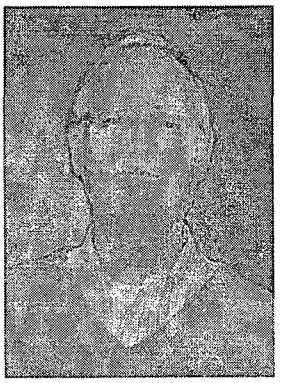
- Over 35 years of nuclear experience
- Participation in licensing of over 20 nuclear plants
- Recent experience with two ESP/COL applications for SEUS nuclear plants
- Group leader of the Bechtel Earth Science Team in the EPRI study of earthquake hazard for nuclear plants in the CEUS
- Demonstrated competence coordinating geologic, geotechnical, seismic hazard studies, and subcontractor reports for incorporation into SSARs

TECHNICAL QUALIFICATIONS

Registered Geologist, California
Member, Seismological Society of America
Member, Earthquake Engineering Research Institute

EDUCATION

Ph.D., Seismology, University of California
M.A., Geophysics, University of California
B.S., Geology
A.B., Geology, Indiana University



Dr. Joe Litehiser supervises the Bechtel seismology group for all seismologic investigations and analyses related to engineered structures. These studies include characterization of earthquake parameters for Environmental Impact and Safety Analysis Reports, statistical earthquake hazard analyses, interpretation of seismographic records, evaluation of regional seismicity, development of foundation and structural response spectra, seismic refraction surveying for evaluation of foundation materials, and seismic monitoring of blast induced vibrations to demonstrate compliance with particle velocity criteria.

DETAILED CONTRIBUTIONS ON RELEVANT PROJECTS

- Seismic design technical supervisor for Vibratory Ground Motions Sections of North Anna ESP SSAR. Responsibilities included coordination of regional and local geology and subsurface material properties information with probabilistic seismic hazard analysis for the development of free-field, competent rock SSE ground motion spectra. This first-out-of-the-gate ESP application following implementation of NRC RG 1.165 and publication of NUREG/CR-6728 amounted to a beta-test of the new regulatory environment that emerged after the licensing of the last new nuclear plant in the U.S. several decades ago. Among the lessons learned are that "very hard rock" exists nowhere in the SEUS at the surface or any likely plant grade horizon, requiring some consideration of site-specific foundation amplification factors, and that the V/H ratios of NUREG/CR-6728 cannot be applied uncritically.

- Seismic design technical supervisor for Vibratory Ground Motions Sections of Southern Nuclear Company ESP SSAR for the Vogtle site. Responsibilities are similar to those for North Anna.

- Earth Science Team group leader for the Bechtel team providing state-of-the-art characterization of potential earthquake sources in the CEUS. One of six such teams providing information for use in the EPRI study, "Seismic Hazard Methodology for the Central and Eastern United States—Tectonic Interpretations," the in-depth background on CEUS seismic sources has provided the basis for current NRC regulatory guidance for developing seismic design ground motion.

- Led characterization and analysis of regional and local geologic and seismologic information for PSAR/FSAR licensing documents for numerous nuclear plants including several in the CEUS.

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