

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSIONBEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	Docket No. 070-03098
DUKE COGEMA STONE & WEBSTER	)	
	)	
Mixed Oxide (MOX) Fuel Fabrication Facility	)	
(Construction Authorization Request)	)	

NRC STAFF'S IDENTIFICATION OF EXPERT WITNESSES

As discussed below, the staff of the United States Nuclear Regulatory Commission (NRC Staff) is identifying its expert witnesses in this proceeding.

In its initial order referring requests for hearing to the Atomic Safety and Licensing Board Panel, the Commission established special discovery procedures to govern this proceeding. See *Duke Cogema Stone & Webster* (Savannah River Mixed Oxide Fuel Fabrication Facility), CLI-01-13, 53 NRC 478, 481-485 (2001). Discovery against the NRC Staff was deferred until after issuance of the final safety evaluation report pertaining to the Construction Authorization Request (CAR). *Id.*, at 481. The NRC Staff presently expects to issue this safety evaluation report by the end of September, 2003. Assuming for purposes of this filing only that the NRC Staff in its safety evaluation report makes findings which support granting the CAR, this would trigger a 45-day period in which discovery against the NRC Staff would have to be completed with respect to the presently-admitted contentions. *Id.*, at 485. See also Board's April 30, 2002 discovery order (unpublished), at 5 (establishing November 17, 2003 discovery cut-off date for such contentions).

To facilitate the completion of any discovery against the NRC Staff within the above-referenced 45-day period, and consistent with the Commission's intent that parties exchange expert witness information without waiting for formal discovery requests (see CLI-01-13, at 481), the NRC Staff is identifying its expert witnesses now. With the one exception as noted below, the following

persons work at NRC Headquarters and are NRC employees. Information on their educational backgrounds, job-related experience, and present positions is attached.

1. With respect to contention # 1 on material control and accounting (MC&A) issues submitted by Georgians Against Nuclear Energy (GANE), the NRC Staff designates Thomas Pham as an expert witness. See attached Exhibit 1 for Mr. Pham's background.
2. With respect to GANE contention # 2 on physical protection issues, the NRC Staff designates Edward Johannemann as an expert witness. See attached Exhibit 2 for Mr. Johannemann's background.
3. With respect to GANE contention # 3 on seismic issues, the NRC Staff designates Dr. John Stamatakos as an expert witness. Dr. Stamatakos is employed by Southwest Research Institute, located in San Antonio, Texas. See attached Exhibit 3 for further information regarding Dr. Stamatakos' background.
4. With respect to GANE contention # 5 on controlled area boundary issues, and GANE contention # 11 on aqueous polishing waste issues, the NRC Staff designates David Brown as an expert witness. See attached Exhibit 4 for Mr. Brown's background.
5. With respect to GANE contention # 6 on safety analysis issues, the NRC Staff designates Rex Wescott and David Brown as expert witnesses. See attached Exhibit 5 for Mr. Wescott's background.

The NRC Staff reserves the right to identify additional expert witnesses at a later date.

Respectfully submitted,

**/RA/**

John T. Hull  
Counsel for NRC Staff

Dated at Rockville, Maryland  
this 16<sup>th</sup> day of May, 2003

EXHIBIT 1

**Thomas N. Pham**  
Curriculum Vitæ

Born 11 September 1949, Saigon, Vietnam

Citizenship: USA

Marital Status: Married, two children

Employment:

U.S. Nuclear Regulatory Commission  
Office of Nuclear Security and Incident Response  
Division of Nuclear Security - Mail Stop: T-4D8  
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Home address:

10018 Founders Way, Damascus, MD 20872  
Telephone: 301-515-5157

Education:

M.S., Chemistry, University of Pittsburgh, Pittsburgh, PA, April 1985

B.S., Chemistry, University of Dalat, Dalat, Vietnam, July 1974

MBA Program credits, University of South Carolina, Columbia, SC, December 1987

Professional Experience:

At NRC, serve as the current principal licensing reviewer in the safeguards area of material control and accounting (MC&A) in the Office of Nuclear Security and Incident Response (NSIR). Served as an MC&A inspector and licensing reviewer in the Office of Nuclear Material Safety and Safeguards (NMSS) since 1990. Areas of expertise include MC&A licensing and inspection programs, MC&A rulemaking, and MC&A guidance development.

In the private industry, served for eleven years as a chemist for Westinghouse Electric Corporation at the Columbia Manufacturing Plant of the Commercial Nuclear Fuel Division, and the Pittsburgh Research & Development Center. Areas of expertise include analytical chemistry measurement methods, measurement control, instrumentation, quality control and product assurance.

April 2002 - Present:	Sr. Safeguards Technical Analyst U.S. NRC - Office of Nuclear Security and Incident Response, Division of Nuclear Security, Rockville, MD
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November 1996 - April 2002:	Sr. Safeguards Technical Analyst U.S. NRC - Office of Nuclear Material Safety and Safeguards, Division of Fuel Cycle Safety and Safeguards, Rockville, MD
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August 1990 - November 1996: MC&A Physical Scientist  
U.S. NRC - Office of Nuclear Material Safety and Safeguards, Division of Fuel Cycle Safety and Safeguards, Rockville, MD

May 1985 - July 1990: Sr. Nuclear Chemist  
Westinghouse Commercial Nuclear Fuel Division, Analytical Services Laboratory, Columbia, SC

September 1979 - February 1985: Research Technician  
Westinghouse Research and Development Center, Chemical Sciences Division, Pittsburgh, PA

Publications and Training Sessions:

“U.S. Domestic Nuclear Material Control and Accounting Program - Past, Present, and Future,” American Nuclear Society Winter Meeting, Chicago, IL, November 1992.

“NRC Safeguards Inspection for LEU Facilities,” 9<sup>th</sup> and 10<sup>th</sup> International Training Courses on Implementation of State Systems of Accounting for and Control of Nuclear Materials - IAEA/DOE/NRC, Richland, WA, May 1993, and St. Louis, MO, May 1995.

“NRC Inspection Guidelines Under the MC&A Reform Rule,” 35<sup>th</sup> Annual Meeting, Institute of Nuclear Materials Management (INMM), Naples, FL, July 1994.

“NRC Measurement Verification Program,” 36<sup>th</sup> INMM Annual Meeting, Palm Desert, CA, July 1995, and New Brunswick Laboratory Safeguards Measurement Program Annual Meeting, Chicago, IL, October 1995.

“NRC Inventory Verification Activities at the Paducah and Portsmouth Gaseous Diffusion Plants,” 38<sup>th</sup> INMM Annual Meeting, Phoenix, AZ, July 1997.

“U.S. NRC Material Control and Accounting Inspection Methods,” NRC Training Courses presented to Russian GAN, Moscow, Russia, October 1997, and Novosibirsk, Siberia, August 1998.

“NRC Experience in Licensing and Inspecting of MC&A Systems at Commercial Nuclear Fuel Cycle Facilities,” INMM/ESARDA Workshop on Science and Modern Technology for Safeguards, Albuquerque, NM, September 1998.

“Revision of NRC Regulatory Guides in Material Control and Accounting Program,” 43<sup>rd</sup> INMM Annual Meeting, Orlando, FL, June 2002.

NUREG-0430, “Licensed Fuel Facility Status Report - Inventory Difference Data,” Annual Publication, U.S. NRC, Washington, D.C.

**EDUCATION:** Bachelors Degree in Business Administration

**RELEVANT EMPLOYMENT HISTORY:**

**March 2000 to Present**

Physical Protection Specialist, US Nuclear Regulatory Commission Office of Nuclear Security and Incident Response (NSIR), Division of Nuclear Security, Materials Safeguards section

Duties include inspecting nuclear fuel facilities for compliance with NRC physical protection requirements

**January 1998 to March 2000 - Washington Hospital Center, Washington, D.C.**

Manager of the uniformed security division of the WHC's 70-member Protective Services Unit

Duties included assigning patrol areas, scheduling shifts, performing security surveys, and acting as liaison officer between uniformed security division and medical staff

**March 1995 to December 1997 - Electronic Security Services, Camp Springs, MD.**

Commercial Design Consultant and Training Coordinator

Duties included engineering CCTV systems, accessing control and security systems, maintaining training records, and conducting classes in security compliance required by state law

**September 1984 to September 1994 - Cain Security, Alexandria, VA.**

Vice President of Marketing and Sales

Duties included training new sales representatives in the proper design of commercial and residential security systems, and overseeing the installation of such systems

**August 1977 to September 1984 - Alexandria VA Police Department**

My duties as a police officer included work at the Crime Prevention Unit, performing vulnerability studies for businesses and residential properties

### **July 1966 to May 1972 - United States Marine Corp**

Joined the Marines directly out of high school. Received training in the use of rifles, handguns, shoulder fired rockets, explosives, machine guns and flame throwers. Honorably discharged in May of 1972.

### **HONORS, AWARDS, AND SPECIAL ACCOMPLISHMENTS:**

Routh Robbins Award ( Police Officer of the Year)	1977
Commendation from FBI Director Judge W. H. Webster	1982
Liberty Bell Award from Alexandria Bar Association	1984
First Lifetime Member of the Northern Virginia Crime Prevention Association	1986
President of the Alexandria Noonday Optimist Club	1993
President of the Alexandria Police Youth Camp Foundation	1997-1998

### **MEMBERSHIPS:**

The American Society of Industrial Security	1993-present
National Rifle Association for approximately 20 years	

**John A. Stamatakos****EXHIBIT 3**

Center for Nuclear Waste Regulatory Analysis  
Southwest Research Institute  
6220 Culebra Rd. (Bldg. 189)  
San Antonio, Texas 78238

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**EDUCATION**

BA, Franklin and Marshall College, Lancaster, PA (Geology), 1981.  
MS, Lehigh University, Bethlehem, PA (Geology), 1988.  
Ph.D., Lehigh University, Bethlehem, PA (Geology), 1990.

**POSITIONS HELD SINCE PH.D.**

**2001-2003:** Principal Research Scientist, Center for Nuclear Waste Regulatory Analyses, Southwest Research Institute, San Antonio, Texas.  
**1996-2001:** Senior Research Scientist, Center for Nuclear Waste Regulatory Analyses, Southwest Research Institute, San Antonio, Texas.  
**1995-1996:** Research Scientist, Center for Nuclear Waste Regulatory Analyses, Southwest Research Institute, San Antonio, Texas.  
**1995-2001:** Adjunct Research Scientist, Department of Geological Sciences, University of Michigan, Ann Arbor, Michigan  
**1999-2001:** Adjunct Professor, Incarnate Word University, Palo Alto College, University of Texas at San Antonio, all in San Antonio, Texas.  
**1992-1994:** Visiting Assistant Professor, Department of Geological Sciences, University of Michigan, Ann Arbor, Michigan.  
**1990-1992:** Research Associate: Eidgenössische Technische Hochschule (ETH), Institut für Geophysik, Zürich, Switzerland.

**RESEARCH INTERESTS**

Global and regional tectonics through the study of earthquake seismology, paleomagnetism, structural geology, neotectonics, magnetostratigraphy, potential-field geophysics (gravity and magnetics), fission-track thermochronology, and numerical modeling.

**NRC TECHNICAL ASSISTANCE**

Principal Investigator for Structural Deformation and Seismicity Key Technical Issue, Yucca Mountain, Nevada. Principal Investigator for the Diablo Canyon Independent Spent Fuel Storage Installation (ISFSI) Safety Evaluation Report. Technical reviewer of seismic and geologic issue for USEC Paducah Gaseous Diffusion Plant, Idaho National Engineering and Environmental Laboratory Naval Reactors Spent Fuel ISFSI, and the Private Fuel Storage Facility ISFSI. NRC expert witness on seismic contentions raised during the Atomic Licensing Board hearings on the Private Fuel ISFSI license application.

## OTHER RELEVANT EXPERIENCES

Associate Editor for Geological Society of America Bulletin, former EOS Editor of GP section of AGU, reviewer for Journal of Geophysical Research, Tectonophysics, Earth and Planetary Science Letters, Journal of Structural Geology, Journal of Geology, Geophysical Journal International, Geological Society of America Bulletin, Geophysical Research Letters, and NSF. Acquired NSF and similar institutional grant support for research. Taught geology and geophysics at both undergraduate and graduate levels, including two summer field camp sessions. Co-developed and taught advanced field course for petroleum-industry geologists. Supervised undergraduate, master, and Ph.D. research, including service as an external committee member on several masters theses and one Ph.D. dissertation.

## PUBLICATIONS

- Murray, D.A., K.D. Ridgway, and J.A. Stamatakos. 2003. Stratigraphy of Oligocene and Lower Miocene Strata—Yucca Mountain Region: *Proceedings of the 10<sup>th</sup> International High-level Radioactive Waste Management Conference*. La Grange Park, Illinois: American Nuclear Society. 2003. (CD ROM publication).
- Waiting, D.J., J.A. Stamatakos, D. A. Ferrill, D. W. Sims, A. P. Morris, P. S. Justus, A-B. K. Ibrahim. 2003. Methodologies For The Evaluation of Faulting at Yucca Mountain, Nevada: *Proceedings of the 10th International High-level Radioactive Waste Management Conference*. La Grange Park, Illinois: American Nuclear Society. 2003. (CD ROM publication).
- La Femina, P., C.B. Connor, J.A. Stamatakos, and D.A. Ferrill. 2002. Imaging an active normal fault in alluvium by high-resolution magnetic and electromagnetic surveys. *Environmental and Engineering Geoscience*, v. VIII, p. 193–207.
- Stamatakos, J.A., J. M. Trop, and K. D. Ridgway, 2001, Late Cretaceous paleogeography of Wrangellia: Paleomagnetism of the MacColl Ridge Formation, southern Alaska, Revisited: *Geology*, v. 29, p.947–950.
- Ferrill, D.A., A.P. Morris, J.A. Stamatakos, and D. Sims, 2000, Crossing Conjugate Normal Fault: *American Association of Petroleum Geologists*, v. 84, p. 1543–1559.
- Connor, C.B., J.A. Stamatakos, D.A. Ferrill, B.E. Hill, G.O. Ofoegbu, M.F. Conway, B. Sagar, and J. Trapp, 2000, Geological factors controlling patterns of small-volume basaltic volcanism: Application to a volcanic hazards assessment at Yucca Mountain, Nevada: *Journal of Geophysical Research*, v. 105, p. 417–432.
- Ferrill, D.A., J.A. Stamatakos, and D. Sims, 1999, Normal fault corrugation: Implications for growth and seismicity of active normal faults: *Journal of Structural Geology*, v. 21, p.1027-1038, 1999.
- D. Sims, D.A. Ferrill, and J.A. Stamatakos, 1999, Role of ductile décollement zone horizons in the development of pull-apart basins: Experimental results and natural examples: *Journal of Structural Geology*, v. 21, p. 533–554.
- Stamatakos, J.A., and D.A. Ferrill, 1998, Comment on “Strike-slip fault system in Amargosa Valley and Yucca Mountain, Nevada,” *Tectonophysics*, v. 294, p. 151–160.



- Stamatakis, J.A., D.A. Ferrill, and K.P. Spivey, 1998, Paleomagnetic constraints on the tectonic evolution of Bare Mountain, Nevada, *Geological Society of America Bulletin*, v. 100, p. 1530–1546.
- Connor, C.B., J.A. Stamatakis, D.A. Ferrill, and B.E. Hill, 1998, Comment on “Anomalous strain accumulation in the Yucca Mountain area”, Nevada, *Science*, v. 282, p.107b.
- Ferrill, D.A., Morris, A.P., S.M. Jones, and J.A. Stamatakis, 1998, Extensional layer-parallel shear and normal faulting, *Journal of Structural Geology*, v. 20, p. 355–362.
- Gray, M. B., and J. A. Stamatakis, 1997, A new model for evolution of fold and thrust belt curvature based on integrated structural and paleomagnetic results around the Pennsylvania salient, *Geology*, v. 25, p.1067–1070.
- Clyde, W. C., J. P. Zonneveld, J. A. Stamatakis, G. G. Gunnell, and W. S. Bartels, 1997, Magnetostratigraphy across the Wasatchian-Bridgerian boundary (Early to Middle Eocene) in the western Green River basin, *Journal of Geology*, v. 105, p. 657–669.
- Ofoegbu, G. I., D. A. Ferrill, K. J. Smart, and J.A. Stamatakis, 1997, Uncertainties in earthquake magnitudes from surface displacements based on finite element modeling, *International Journal of Rock Mechanics and Mining Science*, v. 34, no 3-4, paper number 233.
- Van der Voo, R., J. A. Stamatakis, and J.M. Parés, 1997, Kinematic constraints on thrust-belt curvature from syndeformational magnetizations in the Lagos del Valle Syncline in the Cantabrian Arc, Spain, *Journal of Geophysical Research*, v. 102, p.10,105–10,119.
- Connor, C. B., S. Lane-Magsino, J. A. Stamatakis, R. H. Martin, P. C. LaFemina, B. H. Hill, and S. Lieber, 1997, Magnetic surveys help reassess volcanic hazards at Yucca Mountain, Nevada, *EOS, Transactions of the American Geophysical Union*, v. 78: p. 73, 77–78.
- Ferrill, D.A., J.A. Stamatakis, and H.L. McKague, Quaternary slip history of the Bare Mountain fault (Nevada) from the morphology and distribution of alluvial fan deposits: REPLY, *Geology*, v. 25, p. 190.
- Conway, F.M., D.A. Ferrill, C.M. Hall, A.P. Morris, J.A. Stamatakis, C.B. Connor, A. Halliday, and C. Condit, 1997, Timing of volcanism along the Mesa Butte Fault in the San Francisco Volcanic Field, Arizona from  $^{40}\text{Ar}/^{39}\text{Ar}$  Ages: Implications for the longevity of cinder cone alignments, *Journal of Geophysical Research*, v. 102, p. 815–824.
- Stamatakis, J.A., C.B. Connor, and R.H. Martin, 1997, Quaternary volcanism and basin evolution of Crater Flat, Nevada from detailed ground magnetic surveys of the Little Cones, *Journal of Geology*, v. 105, p. 319–330.
- Ferrill, D.A., Stamatakis, J.A., S.M. Jones, Rahe, B., McKague, H.L., R.H. Martin, and A.P. Morris, 1996, Quaternary slip history of the Bare Mountain Fault (Nevada) from the morphology and distribution of alluvial fan deposits, *Geology*, v. 24, p. 559–562.
- Todaro, S. M., J. Stamatakis, B. A. van der Pluijm, and R. Van der Voo, 1996, Near-Laurentian paleogeography of the Lawrence Head volcanics of central Newfoundland, northern Appalachians, *Tectonophysics*, v. 263, p. 107–121.
- Parés, J. M., R. Van der Voo, and J. Stamatakis, 1996, Paleomagnetism of Permian and Triassic redbeds of NW Spain and their bearing on the tectonic evolution of the Cantabrian Arc, *Geophysical Journal International*, v. 126, p. 893–901.

- Stamatakis, J., A. M. Hirt, and W. Lowrie, 1996, The age and timing of folding in the central Appalachians from paleomagnetic data, *Geological Society of America Bulletin*, v. 108, p.815–829.
- Stamatakis, J., A. Lessard, R., B. A. van der Pluijm, and R. Van der Voo, 1995, Paleomagnetic and magnetic fabric results from the Springdale and Wigwam redbeds of Newfoundland and their implications for the Silurian paleopole controversy, *Earth and Planetary Science Letters*, v. 132, p.141–155.
- Pares, J. M., R. Van der Voo, J. Stamatakis, and A. Pérez-Estaún, 1994, Remagnetization and post-folding oroclinal rotations in the Cantabrian/Asturian Arc, northern Spain, *Tectonics*, v. 13, p.1461–1471.
- Clyde, William C., J. Stamatakis, and P. D. Gingerich, 1994, Chronology of the Wasatchian Land-Mammal Age (Early Eocene): Magnetostratigraphic results from the McCullough Peaks Section, northern Bighorn Basin Wyoming, *Journal of Geology*, v. 102, p. 367–377.
- Stamatakis, J., R. Van der Voo, B. van der Pluijm, S. Potts, and T. Torsvik, 1994, Comment on the Early Silurian Paleolatitude of the Springdale Group redbeds of central Newfoundland: A paleomagnetic determination with a remanence anisotropy test for inclination error, *Geophysical Journal International*, v. 119, p.1009–1013.
- van Der Pluijm, B. A., R. Van der Voo, S. S. Potts, and J. Stamatakis, 1993, Early Silurian paleolatitudes for central Newfoundland from paleomagnetism of the Wigwam Formation: Discussion, *Canadian Journal of Earth Sciences*, v. 30, p.644–645.
- Stamatakis, J. and A. M. Hirt, 1993, Paleomagnetic considerations of the development of the Pennsylvania salient in the central Appalachians, *Tectonophysics*, v. 231, p. 237–255.
- Stamatakis, J. and K. P. Kodama, 1991, The effects of grain scale deformation on the Bloomsburg Formation pole; *Journal of Geophysical Research*, v. 96, p. 17,919–17,933.
- Stamatakis, J. and K. P. Kodama, 1991, Flexural flow folding and the paleomagnetic fold test; An example of strain reorientation of remanence in the Mauch Chunk Formation; *Tectonics*, v. 10, p. 807–819.
- Stamatakis, J., K. P. Kodama, T. P. Pavlis, and L. Vittorio, 1989, Paleomagnetism of Cretaceous and Paleocene sedimentary rocks across the Castle Mountain Fault, south central Alaska: in J. W. Hillhouse ed., *Deep Structure and Past Kinematics of Accreted Terranes*, IUGG, *Geophysics Monograph* 50, p. 151-177.
- Stamatakis, J., K. P. Kodama and T. P. Pavlis, 1988, Paleomagnetism of Eocene plutonic rocks, Matanuska Valley, Alaska, *Geology*, v. 16, p. 618–622.

## Reports

- Stamatakos, J.A., A. Chowdhury, B. Dasgupta, D. Dunn, A. Ghosh, D. Gute, S. Hsiung, P. Mackin, C. Manepally, D. Pomerening, G. Ofoegbu, O. Povetko, R.T. Sewell, and M. Smith. 2003. Diablo Canyon Independent Spent Fuel Storage Installation Safety Evaluation Report— Draft Letter Report. San Antonio, Texas. Center for Nuclear Waste Regulatory Analyses.
- Stamatakos, J.A., A. Chowdhury, B. Dasgupta, D. Dunn, A. Ghosh, D. Gute, S. Hsiung, P. Mackin, C. Manepally, D. Pomerening, G. Ofoegbu, O. Povetko, B. Russell, and M. Smith. 2002. Acceptance Review of License Application and Safety Analysis Report for the Diablo Canyon Independent Spent Fuel Storage Installation. San Antonio, Texas. Center for Nuclear Waste Regulatory Analyses. March 2002.
- Stamatakos, J.A., A. Chowdhury, B. Dasgupta, D. Dunn, A. Ghosh, D. Gute, S. Hsiung, P. Mackin, C. Manepally, D. Pomerening, G. Ofoegbu, O. Povetko, R.T. Sewell, and M. Smith. 2002. Request for Additional Information on the License Application and Safety Analysis Report for Diablo Canyon Independent Spent Fuel Storage Installation. San Antonio, Texas. Center for Nuclear Waste Regulatory Analyses.
- Stamatakos, J.A., S. Hsiung, A. Chowdhury, and R. Chen. 2002. Review of Seismic and Geotechnical Hazards Assessments for Mixed Oxide Fuel Fabrication Facility, Savannah River, South Carolina. San Antonio, Texas, Center for Nuclear Waste Regulatory Analyses.
- Murray, D. A., J.A. Stamatakos, and K. D. Ridgway. Regional Stratigraphy of Oligocene-Lower Miocene Strata in the Yucca Mountain Region. 2002. San Antonio, Texas. Center for Nuclear Waste Regulatory Analyses.
- Hill, B.E., and J.A. Stamatakos. 2002. Evaluation of Geophysical Information Used to Detect and Characterize Buried Volcanic Features in the Yucca Mountain Region. Center for Nuclear Waste Regulatory Analyses, Southwest Research Institute, San Antonio, Texas.
- Dasgupta, B., A. Ghosh, A. H. Chowdhury, B.E. Hill, J.A. Stamatakos, and M. Lescher. 2002. Hazard Identification for the Geologic Repository Operations Area: A Progress Report. Center for Nuclear Waste Regulatory Analyses, Southwest Research Institute, San Antonio, Texas.
- Waiting, D.J., R. Chen, J.G. Crider, W.M. Dunne, R.W. Fedors, D.A. Ferrill, M.B. Gray, B.E. Hill, P.C. LaFemina, H.L. McKague, A.P. Morris, D.W. Sims, and J.A. Stamatakos. 2001. Technical Assessment of Structural Deformation and Seismicity at Yucca Mountain, Nevada: Center for Nuclear Waste Regulatory Analyses, Southwest Research Institute, San Antonio, Texas.
- Stamatakos, J.A., S. Hsiung, and A.H. Chowdhury. 2001. Final Review Plan for Seismic and Geotechnical Hazards Assessment of Mixed Oxide Fuel Fabrication Facility, Savannah River Site, South Carolina: Center for Nuclear Waste Regulatory Analyses, Southwest Research Institute, San Antonio, Texas.
- Ressler, T.R., J.A. Stamatakos, K.D. Ridgway, and J. Winterle. 2000. Preliminary Hydrostratigraphy of the Valley-Fill Aquifer in Fortymile Wash and the Amargosa Desert. Center for Nuclear Waste Regulatory Analyses, Southwest Research Institute, San Antonio, Texas.
- Stamatakos, J.A., and K.P. Kodama. 2001. Strain and Paleomagnetism in the Bloomsburg Formation at the Delaware Gap Fold: *Guidebook for the 66<sup>th</sup> Annual Field Conference of Pennsylvania Geologists*, p. 28–34.

- Stamatakis, J.A., A.H. Chowdhury, M.P. Miklas, R.T. Green, T. Krauthammer, and C.B. Connor, 2000, Review of Site Characteristics of Naval Reactors Spent Fuel ISFSI Site at INEEL: Preliminary Safety Evaluation Report - Final Letter Report, Center for Nuclear Waste Regulatory Analyses, Southwest Research Institute, San Antonio, Texas.
- Farrell, D.A., A. Armstrong, J.R. Winterle, D.R. Turner, D.A. Ferrill, J.A. Stamatakis, N.M. Coleman, M.B. Gray, S.K. Sandberg. 1999. Structural controls on groundwater flow in the Yucca Mountain region, Center for Nuclear Waste Regulatory Analyses, Southwest Research Institute, San Antonio, Texas.
- Chen, R., J.A. Stamatakis, A.H. Chowdhury. 1999. Review of the Probabilistic Seismic Hazard Analyses for the Paducah Gaseous Diffusion Plant - Final Report, Center for Nuclear Waste Regulatory Analyses, Southwest Research Institute, San Antonio, Texas.
- Stamatakis, J.A., R. Chen, M.W. McCann, Jr, A.H. Chowdhury. 1999. Seismic Ground Motion and Faulting Hazard at Private Fuel Storage Facility in the Skull Valley Indian Reservation, Tooele County, Utah - Draft Report, Center for Nuclear Waste Regulatory Analyses, Southwest Research Institute, San Antonio, Texas.
- Ghosh, A., D. J. Pomeroy, J. Weldy, J.A. Stamatakis, J.P. Hageman, R. Chen, M. W. McCann, G.I. Ofoegbu, S. Abt, A. Armstrong, J.C. Simonis, B. Sagar, M. P. Miklas, and A.H. Chowdhury. 1999. Safety Evaluation Report of Private Fuel Storage Facility Safety Analysis Report -Draft, Center for Nuclear Waste Regulatory Analyses, Southwest Research Institute, San Antonio, Texas.
- Justus, P.S., J.A., Stamatakis, D.A., Ferrill, and H.L. McKague. 1998, U.S. Nuclear Regulatory Commission's Resolution Report on Type I Faults and Tectonic Models: *Proceedings of the Eighth International Conference of High-Level Radioactive Waste Management, American Nuclear Society*, p. 233–235.
- Chen, R., J.A. Stamatakis, and A.H. Chowdhury. 1998. Final Review Plan for Probabilistic Seismic Hazard Assessment of Paducah Site: Center for Nuclear Waste Regulatory Analyses, Southwest Research Institute, San Antonio, Texas.
- Ferrill, D.A., J.A. Stamatakis, and D. Sims, 1997, Faults, traps, compartments and conduits: What hydrocarbons find that you may miss, Advance Field Course for Petroleum Geologists. Southwest Research Institute, San Antonio, Texas.
- Stamatakis, J.A., P.S. Justus, D.A. Ferrill, R. Chen, and G.I. Ofoegbu, 1997, Structural Deformation and Seismicity, in *NRC High-Level Radioactive Waste Program Annual Progress Report: Fiscal Year 1996. NUREG/CR-6513, CNWRA96-OIA*, Budhi Sagar, ed., San Antonio, Texas.
- Stamatakis, J.A., D.A. Ferrill, D.P. Cederquist, and R. Van der Voo, 1996, Structural framework of Alleghanian sequential deformation in the southwestern limb of the Pennsylvania salient from paleomagnetic and rock magnetic studies, in R. P. Nickelsen ed., *61<sup>st</sup> Annual Field Conference of Pennsylvania Geologists Guidebook*, p. 14–26.
- McKague, L. J.A. Stamatakis, and D.A. Ferrill, 1996, Type I faulting in the Yucca Mountain Region, CNWRA 96-007, Center for Nuclear Waste regulatory Analyses, San Antonio, Texas.

- Stamatakis, J.A., and D.A. Ferrill, 1996, *Tectonic Processes in the Central Basin and Range Region*, NRC High-Level Radioactive Waste Research at CNWRA, July-December, 1995, CNWRA 95-02S, B. Sagar, ed., Center for Nuclear Waste Regulatory Analyses, San Antonio, Texas, p. 6.1–6.25.
- Ferrill, D.A., G.L. Stirewalt, D.B. Henderson, J.A. Stamatakis, A.P. Morris, B.P. Wernicke, and K.H. Spivey, 1996, *Faulting in the Yucca Mountain region: Critical review and analyses of tectonic data from the Central Basin and Range*, NUREG/CR-6401, CNWRA 95-017, Center for Nuclear Waste Regulatory Analyses, San Antonio, Texas.
- Ferrill, D.A., D.B. Henderson, J.A. Stamatakis, K.H. Spivey, and A.P. Morris, 1995, *Tectonic Processes in the Central Basin and Range Region*, NRC High-Level Radioactive Waste Research at CNWRA, January-June, 1995, CNWRA 95-01S, B. Sagar, ed., Center for Nuclear Waste Regulatory Analyses, San Antonio, Texas, p. 6.1–6.27.

**DAVID D. BROWN, CHP**

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**EXHIBIT 4**

**Education** Master of Science in Environmental Health Physics  
Clemson University, Clemson, SC

August 1993

Bachelor of Science in Physics  
Muhlenburg College, Allentown, PA

May 1990

**Experience**      **Health Physicist**

June 2000 to present

U. S. Nuclear Regulatory Commission, Mail Stop T-8A33, Washington, DC, 20555  
phone: (301) 415-5257; e-mail: DDB@nrc.gov

- Health Physicist in the Office of Nuclear Materials Safety & Safeguards, Division of Fuel Cycle Safety & Safeguards. My duties include being lead reviewer in the areas of both radiation safety and environmental protection on an application for a uranium-plutonium mixed oxide (MOX) fuel fabrication facility.
- My duties also include coordinating the National Environmental Policy Act reviews for both the MOX project and future licensing requests for uranium enrichment gas centrifuge technology with the NMSS Division of Waste Management.

**Senior Health Physicist**

July 1998 to May 2000

URS Corporation, 3065 Southwestern Blvd, Suite 202, Orchard Park, NY, 14127

Customer: U. S. Army Corps of Engineers, Buffalo District

- Project Manager for writing Final Status Survey Plans and Reports and Project Completion Reports in accordance with the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM). These reports were provided to the USACE in support of decontamination and decommissioning of the Bliss & Laughlin and Linde/Praxair FUSRAP sites in Western New York.

Customer: West Valley Nuclear Services, Inc. (M&O Contractor) and the  
U. S. Department of Energy at the West Valley Demonstration Project, West Valley, NY

*Nuclear Safety Group*

- I. Technical Lead for the WVDP Remote Handled Waste Project Preliminary Safety Analysis Report, the documented safety basis for construction approval from the Department of Energy. This PSAR was completed on schedule and approved by NRC and the DOE in September 2000.
- Designated as a WVDP nuclear safety analyst in February 1999. As one of five safety analysts, I wrote and reviewed Unreviewed Safety Question Determinations and USQ safety evaluations, and safety analysis reports (SARs) as part of maintaining the WVDP Authorization Basis.
  - In December 1998, I updated the West Valley Demonstration Project's Nuclear Criticality Safety Program Manual and wrote a policy and procedure that implemented the requirements of DOE Order 420.1, *Facility Safety*.
  - Performed and reviewed radiation shielding design, including designs for the Remote Handled Waste Facility at the WVDP and WVDP main plant cell demolition.

## **Experience** (*continued*)

### **Project Health Physicist**

October 1994 to July 1998

*Environmental Monitoring Group*  
URS Corporation  
c/o West Valley Nuclear Services Company, Inc.  
10282 Rock Springs Road  
West Valley, NY 14171-9799

- Provided general technical support for WVDP compliance with 40 CFR 61, Subpart H (radionuclide NESHAP), the standard applicable to the WVDP for radioactivity emissions to the atmosphere. Technical support included writing and performing retrospective dose assessments for annual reports and calculation of potential radioactivity emissions to the atmosphere and prospective doses to the public from new construction or plant modifications in accordance with 40 CFR 61, Subpart H and related technical guidance. Technical support also included designing monitoring systems.
- Provided technical expertise in preparing data quality objectives (DQOs) for environmental and waste management sampling activities. I was formally recognized as a WVDP Technical Specialist in the areas of DQO team facilitation and statistical sampling design.
- Wrote and peer reviewed environmental data evaluation reports, including the WVDP Monthly Trend Analysis Report, the annual Site Environmental Report, Effluent Information System/On-Site Discharge Information System report and the air emissions annual report to the EPA (i.e., NESHAP report).
- Investigated trends of radioactivity concentrations in WVDP air and liquid effluents and environmental surveillance samples. Prepared reports and presentations on these investigations for WVDP management, DOE and regulatory agencies. Formally recognized as a WVDP Technical Specialist in the areas of health physics and nuclear engineering.
- Provided troubleshooting and method development expertise for radiochemistry procedures used by both the on-site WVDP Environmental Laboratory and subcontracted off-site laboratories.
- Provided technical support to WVDP Waste Management, including low-level radioactive waste assay system calibration, maintenance and operations procedure writing and waste stream characterization support.

### **Chemist II and Radiation Safety Officer**

February 1994 to October 1994

Clemson University, Environmental Systems Engineering, 342 Computer Court, Anderson, SC

- Developed and tested radiochemical procedures towards the understanding of radionuclide migration through basalt and sedimentary interbed material in the Snake River Plain, Idaho. Advised graduate students performing radiochemical research on improved methods for removal of cesium-137 from high-level nuclear waste; plutonium geochemical stability in simulated groundwaters; and evaluation of polonium-210 radiochemical procedures for soil.
- Planned, organized, and administered departmental radiation safety program in accordance with South Carolina regulations.

## **Experience** (*completed*)

### **Graduate Teaching/Research Assistant**

August 1990 to February 1994

Clemson University, Environmental Systems Engineering, 342 Computer Court, Anderson, SC

- Graduate Research/Teaching Assistant. Conducted feasibility study on the measurement of elevated radiocarbon levels in vegetation in the vicinity of nuclear power plants. Performed radiation safety tasks including source leak tests, contamination monitoring, licensing and inventories, and personnel dosimetry.
- Teaching assistant for graduate courses in environmental risk assessment and environmental radiation detection. Performed analyses for radioactivity in various media as part of the U.S. Environmental Protection Agency's (EPA's) Environmental Monitoring Systems Laboratory (EMSL) intercomparison program.

### **Computer Skills**

- Very proficient with radiological engineering and health physics software, including: Grove Engineering's MicroShield, MicroSkyshine, RadDecay; EPA's CAP88-PC
- Experience with other advanced dose modeling and pathway modeling software, including: GENII, PRESTO, MCNP4A (criticality), SCALE, RASCAL, MACSS2 and ARCON96

### **Recent Training**

- How to Manage the NEPA Process and Write Effective NEPA Documents (4 days)  
The Shipley Group, October 23-26, 2001
- SCALE Source Terms & Shielding Course (5 days)  
Oak Ridge National Laboratory, October 15-19, 2001
- Radiological Accident Assessment Concepts (5 days)  
Federal Emergency Management Agency, August 13-17, 2001
- Cumulative Effects Assessment (3 days)  
Environmental Impact Training, August 1-3, 2000
- Hazards Evaluation: Quantitative Frequency Analysis Methods (4 days)  
Process Safety Institute, July 25-28, 2000
- Hazards Evaluation: Consequence Analysis Methods (5 days)  
Process Safety Institute, June 19-23, 2000
- Hazards Evaluation: Qualitative Methods of Hazard Identification and Assessment (4 days)  
Process Safety Institute, June 13-16, 2000

### **Publications & Presentations**

- Brown, D.D., Sowder, A.G., Fjeld, R.A., and Cadieux, J.R. June 21-25, 1992. Evaluation of Combined Liquid-Liquid Extraction and Alpha Liquid Scintillation for the Measurement of Alpha-Emitting Radionuclides. 37<sup>th</sup> Annual Meeting of the Health Physics Society, Columbus, Ohio.
- Brown, D.D., Fjeld, R.A., and Cadieux, J.R. January 24-28, 1993. Minimum Detectable Concentrations of Actinides Using Liquid-Liquid Extraction and Liquid Scintillation Counting with Pulse Shape Discrimination. 26<sup>th</sup> Mid-year Topical Meeting of the Health Physics Society on Environmental Health Physics. Coeur d'Alene, Idaho.



## **Publications & (continued)**

### **Presentations**

- Brown, D.D., Fjeld, R.A., and Cadieux, J.R. October 11-15, 1993. Evaluation of the Minimum Detectable Concentrations of U-234/-238 and Am-241 in Aqueous Solutions by Liquid-Liquid Extraction and Alpha Liquid Scintillation Spectrometry. 39<sup>th</sup> Annual Conference on Bioassay, Analytical and Environmental Radiochemistry, Colorado Springs, Colorado.
- DeVol, T.A., Brown, D.D., Leyba, J.D., and Fjeld, R.A. A Comparison of Four Aqueous-Miscible Liquid Scintillation Cocktails with a Alpha/Beta Discriminating Wallac 1415 Liquid Scintillation Counter. *Health Physics* vol. 70, no. 1, January 1996.
- Fjeld, R.A., DeVol, T.A., Goff, R.W., Blevins, M.D., Brown, D.D., Ince, S.M., Elzerman, A.W., and Newman, M.E., "Characterization of the Mobilities of Selected Actinides and Fission/Activation Products in Laboratory Columns Containing Subsurface Material from the Snake River Plain," *Nuclear Technology*, vol. 135, August 2001.
- Leyba, J.D., Volmar, H.S., Fjeld, R.A., DeVol, T.A., Brown, D.D., Cadieux, J.R. Evaluation of a Direct Extraction/Liquid Scintillation Counting Technique for the Measurement of Uranium in Water. *Journal of Radioanalytical and Nuclear Chemistry*, vol. 194, no. 2, 1995.
- Persinko, A. and Brown, D.D. June 23-27, 2002. Mixed Oxide Fuel Fabrication Facility: U.S. NRC Regulations and Construction Safety Assessment. 43<sup>rd</sup> Annual Meeting of the Institute for Nuclear Materials Management, Orlando, Florida.

### **Professional**

#### **Affiliations**

- Health Physics Society, since 1992
- Baltimore-Washington Chapter of the HPS, 2000-present
- Ad Hoc Part II Panel of Examiners of the American Board of Health Physics (term expires December 2004)

### **Certifications**

#### **& Awards**

- I. U.S. N.R.C. Qualified Health Physics Reviewer, March 29, 2002
- U.S. N.R.C. Performance Award, December 18, 2001
  - United States Patent 6,303,936, October 16, 2001
  - Certified Health Physicist, November 1999
  - Two West Valley Nuclear Services Level II Top Performer Awards: May 1998 and November 1998
  - Three Letters of Commendation from Dames & Moore: August 1996, December 1998 and March 1998
  - Environmental Systems Engineering Alumni Scholarship, 1990-1993

EDUCATION:

1966-1970 Clarkson College of Technology, Potsdam, NY  
B.S. Physics 1970

1972-1973 Clarkson College of Technology, Potsdam, NY  
M.S. Engineering Science 1974

1975-1978 Polytechnic Institute of New York  
Graduate credit hours in fluid mechanics and coastal engineering

1985-1988 University of Maryland, College park, MD  
B.S. Fire Protection Engineering 1988

1991 to present Short courses in Probabalistic Risk Assessment and Reliability Engineering

EMPLOYMENT HISTORY

1970–1972 United States Army

1973-1975 Woodward Clyde Consultants, Clifton NJ; Staff Engineer, Nuclear and non-nuclear projects.

1975-1978 Ebasco Services, New York, NY; Staff Engineer, surface water aspects of nuclear projects

1978-present U.S. Nuclear Regulatory Commission, Rockville, MD; Hydraulic Engineer, Plant Systems Engineer, Senior Fire Protection Engineer - Responsible for review and inspection of nuclear power plants and other nuclear facilities including waste disposal facilities.

Presently responsible for Integrated Safety Analysis review for the Mixed Oxide (MOX) Fuel Fabrication Facility

OTHER PERTINENT INFORMATION:

Registered Professional Engineer in Maryland since 1983

PUBLICATIONS RELATED TO RISK ASSESSMENT

“Joint Probability Calculation of Storm Depths”, ASCE Hydraulics Conference Proceedings, August 1989, New Orleans.

“Very Low Probability Precipitation Frequency Estimates - A Perspective” (co-authored with F. P Richards), Proceedings of the International symposium on Flood Frequency and Risk Analysis, Louisiana State University, May 1985.

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
DUKE COGEMA STONE & WEBSTER	)	Docket No. 70-3098
	)	
(Savannah River Mixed Oxide Fuel	)	
Fabrication Facility)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing "NRC STAFF'S IDENTIFICATION OF EXPERT WITNESSES" and the Exhibits referenced therein have been served upon the following persons this 16<sup>th</sup> day of May, 2003, by electronic mail, and by U.S. mail, first class (or as indicated by an asterisk (\*)) through the Nuclear Regulatory Commission's internal distribution system).

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**/RA/**

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Counsel for NRC Staff