ATTACHMENT E
COMBINED STATEMENTS OF PROFESSIONAL QUALIFICATIONS FOR NRC STAFF RESPONSES TO THE LICENSING BOARD'S INITIAL QUESTIONS

Tim Allison
Statement of Professional Qualifications

CURRENT POSITION

Economist
Decision and Information Sciences Division
Argonne National Laboratory
Argonne, Illinois

EDUCATION

M.S., Mineral and Energy Resource Economics, West Virginia University
M.A., Geography, West Virginia University
B.S., Economics and Geography, University of Portsmouth, UK

PROFESSIONAL

Association of American Geographers

QUALIFICATIONS

Mr. Allison is an economist with over 21 years of work experience at Argonne National Laboratory. He has been working in the areas of local and regional economic development impacts, with specific regard to nuclear fuel plant licensing and reactor licensing. He received a Bachelor's degree in Economics and Geography from Portsmouth University, UK, and Master's degrees from West Virginia University specializing in local and regional economic development impacts of energy and nuclear waste policy. His expert areas include input-output and economic base modeling, statistical analysis, fiscal analysis and the analysis of social and health impacts of energy and waste programs as they relate to low-income and minority populations.

Mr. Allison has written over 50 technical reports, published 10 papers in high-rated, peer-reviewed journals mostly as a senior author, and made over 30 presentations to professional conferences and workshops.

Halil Avci
Statement of Professional Qualifications

CURRENT POSITION

Team Lead
Nuclear Materials and Waste Disposition Team
Environmental Science Division
Argonne National Laboratory
Argonne, Illinois

EDUCATION

Ph.D., Nuclear Engineering, University of Wisconsin, Madison
M.S., Nuclear Engineering, University of Wisconsin, Madison
B.S., Nuclear Engineering, University of Wisconsin, Madison

PROFESSIONAL

American Nuclear Society, Member
Health Physics Society, Member
Chicago Council on Science and Technology, Member

QUALIFICATIONS

Dr. Avci is a nuclear engineer with over 33 years of experience in energy and environmental fields, including the environmental effects of energy production and use, nuclear energy, nuclear reactor licensing and license renewals, waste management, radiation effects, risk assessment, and accident analysis. He has managed and mentored a diverse group of technical staff for over 18 years, managed large programs and individual projects, and served as a technical analyst or task leader as part of project teams. Dr. Avci has also taught at the College level for about 10 years.

As a section manager or a team lead since 1993, Dr. Avci's responsibilities have included recruitment, development, performance evaluation, and advancement of a diverse group of scientists and engineers with varying cultural and technical backgrounds, including health physicists, nuclear engineers, environmental engineers, environmental toxicologists, chemical risk assessors, and computational scientists. As manager of Argonne's Technical Assistance Program to the U.S. Nuclear Regulatory Commission (NRC) for licensing of new reactors (since April 2010) and license renewal of operating reactors (Since 2006), he manages over 30 task orders. The technical work performed by Argonne staff under this program involves both environmental and safety aspects of reactor siting, construction and operation and is spread over three Divisions. Dr. Avci has also directed the technical support work provided by Argonne to the U.S. Department Energy's (DOE) Depleted Uranium Hexafluoride Management Program since 1999. Under this program, Argonne prepared one programmatic and two site-specific environmental impact statements, and provided other technical and logistical support to DOE.

Dr. Avci has also served as a project manager, team lead, or a technical analyst on a number of projects since joining Argonne in 1990. The major projects include GE-Hitachi Global Laser Enrichment Facility Environmental Impact Statement (EIS) (project team lead and project manager), Victoria County Station Early Site Permit EIS (co-team lead and project manager), Nuclear Reactor License Renewal Environmental Reviews (served as the subject matter expert for health physics on license renewal teams for four license renewal applications, and served as the Deputy Project Manager and a Tech Lead for waste management and uranium fuel cycle analysis on the Generic EIS (GEIS) for License Renewal of Nuclear Plants Update project), Depleted Uranium Hexafluoride Management Program Programmatic EIS (PEIS) and Site-Specific EISs (served as the project team lead for the preparation of a programmatic EIS for analyzing the alternative strategies for the long-term management and use of DOE's inventory of depleted uranium hexafluoride (DUF_6) and two site site-specific EISs for the construction and operation of DUF_6 conversion facilities at the Paducah, KY, and Portsmouth, Ohio sites), Mixed Oxide Fuel Fabrication Facility EIS (served as the assistant project manager and a technical team member, and later as the project manager after the previous project manager retired), Draft Waste Management Programmatic EIS (served as the technical director responsible for the oversight and coordination of Argonne's technical work in support of the draft PEIS; this work involved characterization of wastes and assessment of the facilities used to treat, store, and dispose DOE's inventory of radioactive, mixed, and hazardous wastes), and New Production Reactor EIS (served as the Tech Lead for radiological impacts analysis from normal operations and postulated accidents in the proposed New Production Reactors and associated support facilities).

Prior to joining Argonne, Dr. Avci worked for about 10 years for Battelle Memorial Institute, where his principal responsibilities included postclosure performance assessment of the then proposed second geologic repository in the U.S. for the disposal of spent fuel and high-level waste, and developing computer models designed to predict the consequences of nuclear reactor accidents. Dr. Avci has also been teaching at Northwestern University's School of Continuing Studies as an adjunct faculty member since 2003, and taught full time for two years in the early 1980s at the Bogazici University in Istanbul Turkey.

Dr. Avci is the author or co-author of 50+ journal papers, reports, conference publications, and presentations.

Merritt N. Baker
Statement of Professional Qualifications

Current Position
Senior Project Manager
Fuel Manufacturing Branch
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Material Safety and Safeguards
U. S. Nuclear Regulatory Commission
Washington, D.C.

Education
B.S., Mechanical Engineering, Clarkson College of Technology

Professional
Professional Engineer, Pennsylvania

Qualifications
Mr. Baker is a Senior Project Manager with over 35 years of work experience in various private and government facilities. He has been working in fuel facility licensing and inspection since 1997.

He received a Bachelor of Science degree from Clarkson College of Technology (now Clarkson University) in Potsdam, NY.

In his current position as a certified project manager in the NRC, Mr. Baker is the NRC's point of contact for virtually all actions related to applicants or licensees in his cognizance, beginning with the initial submittal of an application or request for amendment. In this role, he has been the lead or backup project manager for all of the fuel manufacturing facilities, as well as Purdue University.

As a certified license reviewer in the NRC, Mr. Baker is responsible for reviewing fuel cycle applications and amendment requests, primarily in the areas of Chemical Safety and Integrated Safety Analysis (ISA) methods. In this role, he reviewed applications for the DOE Tank Waste Remediation System (TWRS) at the Hanford Reservation, AREVA-Richland, AREVA-Lynchburg, B&W NOG, General Atomics, GNF-A, Global Laser Enrichment (GLE), Honeywell International, NFS, Westinghouse, and Purdue University. He was a member of the teams that reviewed the ISA's for AREVA-Richland, AREVA-Lynchburg, B&W NOG, GNF-A, GLE, and NFS.

As a certified fuel cycle safety inspector, Mr. Baker has been responsible for execution of inspection modules, primarily in Chemical Safety and Fire Protection, at the fuel manufacturing facilities, as well as Honeywell International, Paducah Gaseous Diffusion Plant (PGDP), and Portsmouth Gaseous Diffusion Plant (PORTS). He has been an acting resident inspector at B&W NOG and PORTS.

Prior to his current service in the NRC, Mr. Baker was a Senior Engineer for West Valley Nuclear Services (Westinghouse), the managing contractor at the DOE West Valley Demonstration Project, West Valley, NY from 1984 to 1997. Mr. Baker's duties included plant operations, readiness reviews and startup, safety evaluations, waste form development, & quality assurance. At West Valley, Mr. Baker was certified as a shift engineer in a number of

radioactive operations: LLW evaporator, LLW cement encapsulation, HLW tank farm, and HLW vitrification. He also obtained certifications in HAZWOPER, Radiation Worker, Respiratory Protection, Classroom instructor, and OJT instructor. He was a member of the Emergency Operations Center.

Prior to his employment at the West Valley Demonstration Project, Mr. Baker was employed by Dravo Corporation Eastern Construction Division and Chemical Plants Division in Pittsburgh, PA, from 1974 to 1984. He was responsible for plant design and operation, startup, capital equipment purchase and installation.

Mr. Baker has written a number of technical papers on radioactive waste processing, and has presented them at industry forums. He is currently a presenter at a multi-agency course on nuclear awareness and technical response to nuclear threats. He is a member of the Fuel Cycle Safety Team in the NRC Incident Response Center.

Matthew Bartlett
Statement of Professional Qualifications

CURRENT POSITION

Project Manager and Health Physics Reviewer
Conversion, Deconversion, and Enrichment Branch
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C.

EDUCATION

Ph.D., Physics, Clemson University, South Carolina, 2004
M.S., Physics, Clemson University, South Carolina, 2000
B.S., Physics, Bob Jones University, 1997

PROFESSIONAL

Project Management Qualification, NRC, 2007
Health Physics Reviewer Qualification, NRC, 2007

QUALIFICATIONS

Dr. Bartlett is a project manager and health physics (HP) reviewer with more than 7 years of work experience as a license reviewer at the NRC. His experience includes the HP review of the license renewal for the Westinghouse Electric Company Nuclear Fuels, Columbia, SC.; the HP review of renewal for Babcock & Wilcox Nuclear Operations Group, Inc., Lynchburg, VA.; and the HP review of the license application for the Mixed Oxide Fuel Fabrication Facility, Aiken SC. He serves as the technical contact on the working group to incorporate Integrated Safety Analysis requirements into 10 Code of Federal Regulations (CFR) 40, similar to 10 CFR Part 70. He also serves as the Nuclear Material Safety and Safeguard Offices Radiation Safety Officer. As a project manager he has overseen the licensing review of the proposed International Isotopes Fluorine Project, Inc. facility in Hobbs, NM. He has also overseen numerous licensing actions for fuel facilities including: physical protection plan, amendments, and decommissioning requests.

Prior to working for the NRC, he was a teaching and research assistant in graduate school at Clemson University, Clemson, South Carolina, where his responsibilities included teaching undergraduate physics courses, research in biomedical optics, and development of his own thesis.

Bruce M. Biwer
Statement of Professional Qualifications

CURRENT POSITION

Environmental Chemist
Modeling and Analytics Team Lead
Radiological and Chemical Risk Management
Environmental Science Division
Argonne National Laboratory
Argonne, Illinois

EDUCATION

Ph.D., Princeton University, Chemistry
M.S., Princeton University, Chemistry
B.A., St. Anselm College, Chemistry

PROFESSIONAL

American Chemical Society, Member
American Nuclear Society, Member
Society for Risk Analysis, Member

QUALIFICATIONS

Dr. Biwer is an environmental chemist with over 20 years of work experience concerned with radiological pathway analysis and dose calculations for environmental impact assessments for the U.S. Department of Energy (DOE), the U.S. Environmental Protection Agency (EPA), and the U.S. Nuclear Regulatory Commission (NRC). He is also involved in work related to determinations of chemical fate and transport in the environment. His expert areas include radiological transportation risk and waste management.

Now as an environmental chemist and a team lead in Argonne's Environmental Science Division, he is responsible for project management, technical analyses, and development of computer models for radiological risk assessment. For current NRC projects, Dr. Biwer is responsible for the transportation sections in the Fermi 3 Combined License (COL) and the Victoria County Station Early Site Permit (ESP), and the accident analysis section in the Nine Mile Point 3 COL. For current DOE work, he is responsible for the transportation and facility accident sections in a programmatic Environmental Impact Statement (EIS) on the disposal of Greater-Than-Class C (GTCC) Low-Level Radioactive Waste and shares responsibility for disposal facility design, the waste inventory database, and the terrorism analysis (analysis of intentional destructive acts).

Dr. Biwer has a strong background in risk assessment codes/models and in data analysis with custom and commercial software. He has extensive experience in computer program conception and development and is a project lead for the MILDOS-AREA computer code.

MILDOS-AREA is sponsored by the NRC and is used to assess human health impacts from exposure to airborne emissions from uranium mining and milling operations. Dr. Biwer is also a member of the RESRAD-OFFSITE development team. RESRAD-OFFSITE is sponsored by DOE and the NRC and is used primarily to assess human health impacts from exposure to areas with low levels of radioactive contamination (e.g., during site cleanup or decommissioning activities).

Prior to his current position, Dr. Biwer worked in Argonne's Chemical Technology Division (1987 – 1992) as an Assistant Chemist where he investigated the leaching mechanism of radionuclides immobilized in glass for storage in a high level waste repository. He utilized a multi-disciplinary approach with optical microscopy, Raman, SIMS, SEM, and EXAFS to study radionuclide speciation within unreacted and leached nuclear waste glasses.

Following graduate studies, Dr. Biwer was a Postdoctoral Appointee in Argonne's Chemistry Division (1985 – 1987) where he investigated interfacial phenomena related to corrosion. He developed second harmonic generation as a new general purpose laser-based in-situ technique, in conjunction with voltammetry, to study metal corrosion that could occur in nuclear reactor cooling systems. He was also involved with other surface analysis projects using AES, SIMS, ELS, and PES techniques.

In graduate school (1980 – 1985), he studied the effect of catalyst support on catalyst performance from the perspective of electronic and structural modifications. He designed and constructed a surface analysis system incorporating AES, ELS, PES, and TDS analytical techniques to provide complementary methods for a comprehensive investigation of material interfaces.

Dr. Biwer is the author or co-author of 90+ journal, book, report, and conference publications.

Young-Soo Chang
Statement of Professional Qualifications

CURRENT POSITION

Environmental Systems Engineer
Atmospheric Science and Climate Research Program
Environmental Science Division
Argonne National Laboratory
Argonne, Illinois

EDUCATION

Ph.D., Chemical Engineering, University of Iowa
M.S., Chemical Engineering, University of Iowa
B.S., Chemical Engineering, Seoul National University, Korea

PROFESSIONAL

Air & Waste Management Association (A&WMA), Member
Korean-American Scientists and Engineers Association (KSEA), Member
Korean Air Pollution Research Association (KAPRA), Member
Journal Reviewer: Atmospheric Environment, A&WMA, Water, Air, & Soil Pollution

QUALIFICATIONS

Dr. Chang is an environmental systems engineer with about 25 years of work experience. His primary responsibilities include air quality and noise impact analyses and human health risk assessments related to both energy development and cleanup projects for radiologically and chemically contaminated sites. With his graduate research specialty in air dispersion modeling, Dr. Chang's expertise areas include meteorology and climatology, air quality, climate change, noise, risk assessment, and modeling for both operational and accidental releases.

Since 2007, Dr. Chang has contributed to a number of U.S. Nuclear Regulatory Commission (NRC) projects, providing technical evaluations that address meteorology and climatology, air quality, and climate change, as well as noise analyses and cooling tower modeling. Projects have included the generic environmental impact statement (GEIS) for license renewal of nuclear power plants, both main report updates and supplements (Palo Verde Nuclear Generating Station, Diablo Canyon Power Plant, Seabrook Station, Davis-Besse Nuclear Power Station, and Grand Gulf Nuclear Station). He has also provided air quality modeling analyses for the Environmental Impact Statement (EIS) for the Proposed Eagle Rock Enrichment Facility in Bonneville County, Idaho. Dr. Chang is currently involved in the EIS for the combined license (COL) for Enrico Fermi Unit 3 in Monroe County, Michigan, along with a safety evaluation (meteorology and air quality analysis), as well as the EIS for constructing and operating the GE-Hitachi Global Laser Enrichment, LLC Facility in Wilmington, North Carolina.

Since joining Argonne in 1988, Dr. Chang has contributed to a considerable number of EISs, environmental assessments (EAs), and research projects for federal sponsors that range from the NRC, Federal Energy Regulatory Commission (FERC), Department of Energy (DOE), Western Area Power Administration (WAPA), Bureau of Land Management (BLM), Bureau of Ocean Energy Management (BOEM), and Bureau of Reclamation (BoR), Forest Service (FS), to the Department of Homeland Security (DHS), U.S. Environmental Protection Agency (EPA), U.S. Air Force (USAF), Department of the Army (DOA), and U.S. Army Corps of Engineers (USACE). He has also conducted similar technical evaluations for research institutes and private companies. Dr. Chang is responsible for air pollution modeling and impact assessments, including the analysis of location-specific meteorological/climatological and ambient air quality data, preparation of emission inventories and air quality modeling for projected activities and facilities, and development of mitigative measures related to conventional and renewable energy projects such as oil and gas both on land and on the outer continental shelf, coal-bed methane, oil shale and tar sands, nuclear, solar, wind, and oil and gas pipelines. He has developed tailored air quality models and associated algorithms and model application approaches to address unique project-specific needs. In addition, Dr. Chang has conducted noise propagation modeling and noise impact assessments for major industrial facilities as well as for federal oil and gas exploration projects (including offshore). He is a key contributor to human health risk and other impact assessments associated with federal contaminated sites such as the DOE Weldon Spring Site in Missouri and the USACE Niagara Falls Storage Site in New York. He has also led the dense gas modeling of toxic air pollutants associated with accidental or intentional releases of chemical, biological, nuclear, and radiological (CBNR) agents.

From 1987 to 1988, as a postdoctoral fellow at the University of Iowa, Dr. Chang developed a regional-scale air quality model, the Sulfate Transport Eulerian Model-II (STEM-II), which was one of the most advanced chemical/transport/removal models in the 1980s and 1990s. With this model, he conducted extensive analyses of long-range transport of photochemical oxidants and acidic species over central Japan, in cooperation with the National Institute for Environmental Studies (NIES) in Japan. He also developed a group of subroutines for an advanced chemistry mechanism for use in a three-dimensional mesoscale model (CALGRID) developed by the California Air Resources Board.

In 1986, Dr. Chang worked at NIES in Japan as a visiting scientist. As part of his graduate study, he joined the comprehensive meteorological and chemical species data collection field program to better understand the long-range transport of polluted air masses in central Japan. He also surveyed the geographical and topographical areas along the prevailing route of polluted air masses. He constructed the emission inventories for nitrogen oxides (NO_x), sulfur oxides (SO_x), and reactive organic compounds based on the traffic and fuel usage data for the area of interest for use as input to air quality modeling.

Prior to his graduate study, from 1977 to 1982, Dr. Chang worked for the Agency for Defense Development in Korea, where he served as plant manager for manufacturing propellants and explosives on pilot and production scales. In this position, he was responsible for mechanical properties measurements of propellants and explosives, particle size analyses and controls for the components of propellants and explosives, and computer analyses of shell trajectories.

Dr. Chang is the author or coauthor of more than 100 publications, including peer-reviewed journal papers, conference papers, presentations to professional conferences and workshops, technical reports, and sponsor reports.

Asadul H. Chowdhury
Statement of Professional Qualifications

CURRENT POSITION

Staff Engineer
Center for Nuclear Waste Regulatory Analyses
Geosciences and Engineering Division
Southwest Research Institute
San Antonio, Texas

EDUCATION

Ph.D., Structural Mechanics, Cornell University, 1974
M.S., Structural Mechanics, Cornell University, 1971
B.S., Civil Engineering, East Pakistan University of Engineering & Technology (now Bangladesh University of Engineering and Technology), 1966

PROFESSIONAL

Registered Professional Engineer, Ontario, Canada
Earthquake Engineering Research Institute (EERI)
American Society of Civil Engineers (ASCE)
American Concrete Institute (ACI)
ASCE, ACI, and EERI Technical and Design Code Committee Member

QUALIFICATIONS

Dr. Chowdhury is a structural engineer with more than 35 years of teaching, research, consulting, and industrial experience in the areas of structural and geotechnical engineering. He has conducted structural and geotechnical research under seismic, blast, impact, and thermal loads. His studies include field and laboratory investigations and modeling on a variety of structural and geotechnical engineering systems and components. Dr. Chowdhury is particularly experienced in evaluating the analysis, design, and operations of various nuclear facilities dealing with the enrichment of uranium; fabrication of nuclear fuel; spent fuel storage; and storage, handling, and disposal of high-level radioactive waste. He is experienced in conducting numerical analysis of components of nuclear power plants. Dr. Chowdhury is very experienced with the design codes and standards for the design of structural and foundation systems of nuclear facilities, with special emphasis on seismic design. Dr. Chowdhury is well experienced in conducting construction inspection of nuclear facilities

Dr. Chowdhury has managed a team of experts in structural, mechanical, geotechnical, and mining engineering; rock mechanics; and risk and reliability analysis; providing research and technical services in geotechnical and facility engineering and infrastructure areas. He has conducted research in the areas of seismic rock mechanics involving discrete and finite element numerical studies, full and small scale experimental studies, and field investigations of weapons effects and rockburst-induced seismic effects; structural analyses of transportation and storage casks subjected to explosive and missile loads; and analyses of building structures under aircraft crash impact and seismic loads, including soil-structure interaction analysis. Dr.

Chowdhury contributes to safety evaluation reports for licensing and renewal of independent spent fuel storage installations, the Yucca Mountain repository, and fuel cycle facilities.

Before joining Southwest Research Institute, Dr. Chowdhury worked in the nuclear power plant industry, leading a group of structural and mechanical engineers for conducting seismic, dynamic, and thermal analyses of piping systems and the torus of a boiling water reactor, including design to ASME Boiler and Pressure Vessel Codes. He provided technical support to users of proprietary piping analysis and design computer programs. In the field of soil/rock mechanics, Dr. Chowdhury's emphasis has been in the analysis and design of underground openings subjected to transient loads such as seismic, dynamic, impact, and shock loads; nuclear weapons effects; and transient thermal loads. He worked on various other projects such as Repository Design in Basalt, Deep Underground Openings Under Nuclear Weapons Effects (sponsored by Defense Threat Reduction Agency), and Effects of Explosion of Penetrating Projectile on Underground Structures (sponsored by Air Force Office of Scientific Research).

Dr. Chowdhury is the author/co-author of over 125 technical papers and reports.

Jennifer Davis
Statement of Professional Qualifications

CURRENT POSITION

Senior Project Manager
Environmental Review Branch
Environmental Protection and Performance Assessment Directorate
Division of Waste Management and Environmental Protection
Office of Federal and State Materials and Environmental Management Programs
U.S. Nuclear Regulatory Commission
Washington, D.C.

EDUCATION

B.A., Historic Preservation/Classical Civilization, Mary Washington College

PROFESSIONAL

Duke University Environmental Leadership Courses: The Law of NEPA, Accounting for Cumulative Effects
The Shipley Group: Cultural and Natural Resource Management
National Preservation Institute: Integrating Cultural Resources in NEPA Compliance: Environmental Assessment, Cultural Resource Management and Historic Preservation Responsibilities and their Implementation Through the NEPA Process
SWCA Environmental Consultants: Issues in Section 106: Advanced
Advisory Council on Historic Preservation: The Section 106 Essentials, Section 106 – An Advanced Seminar

QUALIFICATIONS

Ms. Davis has 10 years of experience managing and participating in major, multidisciplinary environmental projects for U.S. Nuclear Regulatory Commission (NRC) within the Offices of Nuclear Reactor Regulation (NRR) and the Office of Federal and State Materials and Environmental Management Programs (FSME). This experience includes National Environmental Policy Act (NEPA) reviews and preparation of environmental impact statements (EISs). She also supports environmental reviews managed by other NRC staff, reviews NEPA documents prepared by others, analyzes and determines NEPA documentation requirements for nuclear materials facilities, and contributes to the development of guidance associated with the preparation of NRC NEPA documents. Ms. Davis also serves as a technical reviewer for field of historic and cultural resources and National Historic Preservation Act (NHPA) Section 106 compliance and has provided technical support to other program offices.

As a Senior Project Manager at the NRC, Ms. Davis has planned, led, and participated in major, complex multidisciplinary environmental reviews and development of EISs for licensing of nuclear facilities under NRC regulations in Title 10 of the *U.S. Code of Federal Regulations* (10 CFR) Parts 40, 70, 51, and 54. She serves as the EIS project manager for the proposed

General Electric-Hitachi Global Laser uranium enrichment facility near Wilmington, North Carolina. During this review, Ms. Davis also provided technical support in finalizing the first three in-situ recovery supplemental EISs and assisted project managers in Section 106 compliance.

Prior to joining FSME, Ms Davis served both as an environmental scientist and project manager in the Division of License Renewal (DLR) within NRR. Ms. Davis has served in a leadership role on a number of significant projects including the update to *Generic Environmental Impact Statement (GEIS) for License Renewal of Nuclear Plants* (NUREG-1437, Volumes 1 and 2) and supported the associated rulemaking, lead project manager for Monticello LR application (NUREG-1437, Supplement 26); provided technical oversight/support for 25 license renewal reviews; support and authored historic and archaeological resource sections for Susquehanna, Beaver Valley, Three Mile Island, Prairie Island, Kewaunee, Cooper, and Prairie Island supplemental EISs to NUREG-1437; developed NRC's Section 106 through NEPA approach used in both NRR and NRO licensing reviews, and provided technical support to other license renewal, early site permit, and combined operating license reviews.

Prior to serving as an environmental scientist and project manager in DLR, Ms. Davis was a general scientist who supported environmental project managers in the assessment of environmental impacts associated with nuclear power plant operations and the preparation of EISs for license renewal and early site permit applications. This support included preparation of correspondence to external stakeholders; preparation of management briefing and public presentation materials; participation in environmental site audits, public meetings, and EIS writing sessions; and the review of technical assessments for EISs. Ms. Davis assisted in the preparation of environmental assessments for license amendments and exemptions for nuclear power plants. She assisted in the preparation and review of standards, guidelines, procedures, and requirements for assessing the impact of nuclear power plants on the environment. Ms. Davis also attended and participated in technical conferences and seminars sponsored by the NRC and/or professional societies, for the purpose of emphasizing the safety and environmental impact of nuclear power plants while serving as a technical expert in the field of archaeology.

Prior to joining the NRC, Ms. Davis worked for Old Dominion University Research Foundation and served as their payroll coordinator. She also served as a field archaeologist for Louis Berger and Associates in 1996.

Craig Dean
Statement of Professional Qualifications

CURRENT POSITION

Senior Regulatory Specialist
ICF International
1725 Eye Street, N.W.
Washington, D.C

EDUCATION

Graduate Courses in Economic and Statistics, American University
J.D., Georgetown University Law Center
M.A., Russian History, Columbia University
B.A., History, Carleton College

PROFESSIONAL

District of Columbia Bar Association, Member

QUALIFICATIONS

Mr. Dean is an attorney with almost 30 years of experience in the design and implementation of financial assurance programs for the decontamination and decommissioning of a wide variety of facilities, including nuclear fuel cycle and reactor facilities. He has provided consulting support to the U.S. Nuclear Regulatory Commission for the review of the financial assurance components of the license applications for the Louisiana Energy Services, Areva-Eagle Rock, U.S. Enrichment Services, and General Electric-Hitachi uranium enrichment facilities, and participated in the development of the Safety Evaluation Reports for each of those facilities. He testified as an expert witness in the contested ASLBP hearing on the Louisiana Energy Services application and was qualified as an expert witness in the Areva-Eagle Rock ASLBP hearing.

Mr. Dean's experience in financial assurance began in the early 1980's, when he participated as an attorney/consultant in the pioneering development for the U.S. Environmental Protection Agency (USEPA) of regulatory programs for the closure and post-closure care of hazardous waste management facilities. He developed requirements for closure and post-closure plans and cost estimates, and participated in the identification and design of financial instruments and procedures to assure that funds would be available to conduct the work when necessary. He subsequently provided similar support to USEPA for the development of financial assurance programs for municipal solid waste management facilities, underground storage tanks containing petroleum, underground injection wells, and programs to eliminate the ocean dumping of municipal solid waste. He delivered training to USEPA and State personnel on decommissioning cost estimating and financial assurance.

Mr. Dean has supported the U.S. Nuclear Regulatory Commission continuously since 1985 in the development and implementation of financial assurance requirements for nuclear materials facilities. He participated in the development of the technical basis for the NRC's 1988 Decommissioning Rule, and assisted the NRC in the review of the initial submissions by licensees under the new requirements. He provided support to the Office of Research in the

review of financial tests and guarantees as potential financial assurance instruments, and managed the development of financial tests for hospitals, universities, and other not-for- profit entities as well as for-profit firms that had not issued bonds. He also has assisted in the development of guidance documents on financial assurance, including the recent revisions to NUREG-1757, Volume 3, Rev. 1 (February 2012), and has delivered over one dozen training workshops on financial assurance to NRC Headquarters and Regional personnel and Agreement State personnel. He managed several research tasks, including bankruptcy analysis, evaluation of potential financial assurance risk from firms organized as Limited Liability Companies rather than corporations, the use of intangible assets as components of a financial test, and the reevaluation of selected financial assurance mechanisms, in support of the technical basis for the NRC's recent Decommissioning Planning Rule.

Mr. Dean has assisted the NRC in numerous licensing and enforcement actions involving financial assurance. Since 1988 he has personally provided technical support for the review of over 100 decommissioning plans, decommissioning cost estimates, and financial assurance instruments from a wide variety of nuclear materials licensees, and he has managed other ICF International staff members providing such support to the NRC.

Diana Diaz-Toro
Statement of Professional Qualifications

CURRENT POSITION

Project Manager
Environmental Review Branch
Environmental Protection and Performance Assessment Directorate
Division of Waste Management and Environmental Protection
Office of Federal and State Materials and Environmental Management Programs
U.S. Nuclear Regulatory Commission
Washington, D.C.

EDUCATION

M.B.A., American University, Washington, DC
B.S., Chemical Engineering, University of Puerto Rico, Mayagüez Campus, Mayagüez, PR

PROFESSIONAL

Duke University Environmental Leadership Courses: The Law of NEPA; Scoping, Public Involvement and Environmental Justice; and Socioeconomic Impact Analysis

QUALIFICATIONS

Mrs. Diaz-Toro has 10 years of experience as technical reviewer and project manager of licensing of projects of nuclear materials facilities under NRC regulations in Title 10 of the U.S. Code of Federal Regulations (10 CFR) Parts 40, 70, and 51. This experience includes National Environmental Policy Act (NEPA) reviews and preparation of environmental impact statements (EISs) and environmental assessments (EAs).

As a Project Manager at the U.S. Nuclear Regulatory Commission (NRC), Mrs. Diaz-Toro plans, coordinates, and participates in projects involving the environmental review of license applications and regulatory activities of fuel cycle facilities, spent fuel storage, uranium recovery facilities, and other nuclear materials facilities. She provides technical assistance on environmental reviews managed by other NRC staff, reviews NEPA documents prepared by others, analyzes and determines NEPA documentation requirements, and contributes to the development of guidance associated with the preparation of NRC NEPA documents. She also plans and coordinates outreach activities as part of the NEPA reviews and participates in the development of regulatory policy documents by reviewing and commenting on changes to drafts or proposals.

Prior to her Project Manager position, Mrs. Diaz-Toro was the Branch Chief of the Environmental Review Branch A in the Office of Federal and State Materials and Environmental Management Programs in the NRC. As a Branch chief, she led and managed technical teams of project managers and scientists who perform environmental reviews, prepare environmental impact statements and environmental assessments, and provide guidance consistent with. She also led and coordinated public outreach activities to inform and engage the communities and members of the public about the environmental review process and other regulatory-related matters. As a Branch Chief, Mrs. Diaz-Toro managed the group's contract management and procurement activities. She managed the workload priorities and schedules to ensure the

availability of resource, development of high quality products issued in a timely manner, and appropriate balance of work and professional development. She also developed the organizational unit's budget.

Mrs. Diaz-Toro also served as an Executive Technical Assistant in the Office of the Executive Directors for Operations. In this position she advised the Deputy Executive Director for Operations on technical and programmatic matters regarding the regulatory programs. She also developed briefings, speeches, presentations, issue papers, and discussion points on technical and regulatory-related matters. She was responsible for keeping abreast of and identifying major issues requiring senior management attention and generating alternative solutions and recommendations. Mrs. Diaz-Toro participated in an international assignment assisting the Nuclear Safety Attaché at the U.S. Mission to International Organizations before the U.N's International Atomic Energy Agency (IAEA) in Vienna, Austria. During this assignment, she served as liaison on technical and programmatic issues related to the NRC's regulatory programs.

As a chemical engineer in the Office of Nuclear Material Safety and Safeguards, Mrs. Diaz-Toro served as a technical reviewer. She performed chemical safety reviews concerning license applications of fuel cycle facilities. She was also responsible for reviewing the integrated safety analyses submitted by applicants and licensees. She prepared technical and safety evaluation reports documenting the review's findings. She also managed the technical and administrative requirements associated with contract management, and provided oversight of contracts. She prepared presentations and led discussion groups at meetings and workshops. During an assignment to NRC's Region I, she collaborated with senior inspectors during the development and implementation of inspection plans during routine and reactive inspections, and preparation of inspection reports concerning nuclear materials licensees.

Prior to joining the NRC, Mrs. Diaz-Toro supported the GLOBE-Guest K-12 program, sponsored by the National Science Foundation and the National Aeronautics and Space Administration, which promotes and supports students, teachers, and scientist to collaborate on inquiry-based investigations of the environment.

James Downs
Statement of Professional Qualifications

CURRENT POSITION

Fire Protection Engineer
Uranium Enrichment Branch
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Materials Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C.

EDUCATION

B.S., Fire Protection Engineering, University of Maryland

PROFESSIONAL

National Fire Protection Association, Member
Society of Fire Protection Engineers, Member
Professional Engineer, registered in Maryland
Fuel Cycle Safety Reviewer Qualification, NRC, 2007

QUALIFICATIONS

Mr. Downs is a fire protection engineer with over 12 years of work experience at various federal and local governments. He has been working on the areas of nuclear fire safety, nuclear materials risk assessment, and nuclear materials facility licensing. He received a Bachelor's of Science degree in Fire Protection Engineering from the University of Maryland. His expert areas include fire dynamics, fire protection hydraulics, fire protection systems design, building and life safety code compliance, and risk, safety, and uncertainty analyses.

As a fire protection engineer for the Nuclear Regulatory Commission, Mr. Downs is responsible for reviewing nuclear material facility license applications, especially the facility's fire hazard analysis and integrated safety analysis. He has worked on several new facility license applications (Louisiana Energy Services, AREVA Eagle Rock, GE-Hitachi GLE, International Isotopes, and MOX Services), some renewals of licenses at existing facilities (Nuclear Fuel Services, Global Nuclear Fuels America, and several greater than critical mass facilities) and many license amendments at existing facilities. He is responsible for performing evaluations of fire protection issues in support of nuclear materials facilities licensing, updating and improving licensing regulatory rules and technical guides and criteria, and managing technical assistance contracts.

Prior to his current position, Mr. Downs was assigned (2003~2006) to the Office of Nuclear Reactor Regulation (NRR), Division of Safety Systems and Analysis, Special Projects Branch. During his time with NRR, Mr. Downs participated in technical reviews of the licensing basis submittals (D.C. Cook License Renewal, Palisades License Renewal, and Peach Bottom CO_2 Suppression License Amendment), and was involved with the transition to NFPA 805, the Performance Based, Risk Informed Fire Protection Rule for existing reactors. Mr. Downs also assisted in the publication of NUREG-1805, "Fire Dynamics Tools (FDTs) Qualitative Fire

Hazard Analysis Methods for the U.S. Nuclear Regulatory Commission Fire Protection Inspection Program" and participated in resolving fire protection issues related to operator manual actions and fire induced circuit failure.

From 1999 to 2003, Mr. Downs worked for the Prince George's County Government, in their Office of Building Permits and Plan Review where he served as a senior fire protection engineer. His major responsibilities included administering the building and life safety codes, performing fire protection systems design evaluation, and inspecting building construction and fire protection systems installation.

J. Keith Everly
Statement of Professional Qualifications

CURRENT POSITION

Senior Program Manager (Licensee Security)
Information Security Branch
Division of Security Operations
Office of Nuclear Security and Incident Response
U.S. Nuclear Regulatory Commission
Washington, D.C

EDUCATION

B.S. in Business Administration, University of Maryland

PROFESSIONAL

Former member of the American Society for Industrial Security

QUALIFICATIONS

Mr. Everly is the Senior Program Manager responsible for the policy and implementation of NRC programs which enable licensees to have access to classified information related to technology and threat. This includes the development of policy for physical security of information which meets national standards through 10 CFR Part 95, inspections of licensee facilities which possess classified information, as well as oversight of NRC's Foreign Ownership, Control, or Influence Program. With the advent of the privatization of enrichment services in the U.S., the size and complexity of the programs for which Mr. Everly is responsible have increased significantly and include both U.S. companies and international partners. Mr. Everly is the lead for implementation of two international agreements with Australia and with four European countries combined (The Netherlands, Great Britain, France and Germany).

Since 2005, Mr. Everly has managed a special contract for additional security services for oversight of enrichment facilities.

Karl Fischer, CHP*
Statement of Professional Qualifications

CURRENT POSITION

Environmental Systems Engineer
Environmental Science Division
Argonne National Laboratory
Argonne, Illinois

EDUCATION

M.Eng., Radiological Health Engineering, University of Michigan
B.S.E., Nuclear Engineering, University of Michigan

PROFESSIONAL

*Certified Health Physicist, 2004 (recertified 2008)
Health Physics Society, Member

QUALIFICATIONS

Mr. Fischer is a health physicist with over 15 years of work experience in environmental, defense, and biomedical research applications. At Argonne, he has provided health physics and programmatic support for various Federal sponsors, including technical analysis (in resource areas including radiological health, transportation, and waste management), cumulative impacts analysis, program management, and document management for NEPA-based environmental impact assessments; MARSSIM-based closure survey design; and inventory of radiological sources and facilities for use in vulnerability assessment and threat reduction. His areas of expertise are health physics and radiological health risk.

Prior to joining Argonne in 2008, Mr. Fischer worked for three years at Northrop Grumman Information Technology, serving as Deputy Program Manager for the Nuclear Test Personnel Review Program, Defense Threat Reduction Agency (U.S. Department of Defense). He provided comprehensive support of day-to-day program activities, including program administration and management, radiation dose reconstruction policy analysis and development, case management, and interagency relations.

From 1997 to 2005, Mr. Fischer worked as a health physicist and senior health physicist for the National Institutes of Health (NIH), Division of Radiation Safety (U.S. Department of Health and Human Services), ensuring radiological protection of personnel and compliance with regulations governing the use of ionizing radiation at the federal government's premier biomedical research institution. He provided independent health physics oversight of laboratory operations and new/developing research protocols, including the NIH Cyclotron Facility and associated radiochemical synthesis and research laboratories. His responsibilities included radiation safety surveillance, consultation, and policy enforcement; personnel and environmental effluent monitoring; intake/exposure and security investigations; waste stream analysis, minimization,

and incident investigation; emergency and spill response; and decontamination/clearance of rooms and equipment. He periodically functioned as Acting Branch Chief, providing day-to-day oversight of branch operations, coordinating incident response, and participating in policy development.

Prior to earning his graduate degree, Mr. Fischer worked as a health physics intern for the University of Michigan Radiation Safety Service, and as an environmental intern for Westinghouse Hanford Company at the U.S. Department of Energy's Hanford Site.

Elizabeth K. Hocking
Statement of Professional Qualifications

CURRENT POSITION

Policy Analyst
Environmental Policy Analysis Section
Environmental Sciences Division
Argonne National Laboratory
Washington, D.C.

EDUCATION

J.D., Washington College of Law
M.A., Guidance and Counseling, University of Wisconsin-Oshkosh
B.A., English and Psychology, University of Wisconsin-Eau Claire

PROFESSIONAL

Pennsylvania Bar (Retired Status)

QUALIFICATIONS

Ms. Hocking is a policy analyst with 20 years of experience at Argonne National Laboratory and has provided support to multiple federal agencies. She received her law degree from the Washington College of Law at American University. Her Master's degree was in guidance and counseling from the University of Wisconsin-Oshkosh and her undergraduate degree was awarded in English and psychology by the University of Wisconsin-Eau Claire.

She has prepared the legal and regulatory sections of environmental impact statements for the Nuclear Regulatory Commission (Final Environmental Impact Statement for the Proposed Eagle Rock Enrichment Facility in Bonneville County, Idaho) and the Bureau of Land Management of the U.S. Department of the Interior (solar energy, oil shale/tar sands, wind, energy corridor, Trans-Alaska Pipeline license renewal). As a consultant to the National Research Council's Committee on the Remediation of Buried and Tank Wastes, Ms. Hocking contributed information on legal issues surrounding institutional controls and the closure of Department of Energy weapons sites.

Ms. Hocking is the author or co-author of nine peer-reviewed journal articles and over 20 presentations.

Sui-Min (Simon) Hsiung
Statement of Professional Qualifications

CURRENT POSITION

Staff Engineer
Center for Nuclear Waste Regulatory Analyses (CNWRA®)
Geosciences and Engineering Division
Southwest Research Institute® (SwRI®)
San Antonio, Texas

EDUCATION

1984 Ph.D., Mining Engineering, West Virginia University
1979 M.S., Rock Mechanics, National Cheng Kung University
1974 B.S., Mining Engineering, National Cheng Kung University

PROFESSIONAL

International Society of Rock Mechanics

QUALIFICATIONS

Dr. Hsiung is a mining engineer with a broad range of experience in geotechnical engineering, integrated safety analysis, and natural phenomena and human-induced hazard assessments. He has more than 35 years of research and consulting experience in the disciplines of mining engineering and rock mechanics. For the last 30 years, Dr. Hsiung has conducted research and provided technical assistance in rock mechanics, geotechnical engineering, and natural phenomena and human-induced hazard assessment to the U.S. Nuclear Regulatory Commission (NRC) and other clients.

Dr. Hsiung worked on numerous research and consulting projects included solving practical ground control problems, designing longwall chain and yield pillars, evaluating room-and-pillar and multiple seam mining practices, investigating interactions of hydraulic power supports with rock strata of underground coal mines, and monitoring to support abandoned mine subsidence abatement. He also was responsible for a number of field investigations of entry roof deformation, roof strata movement at the longwall face, pillar stability, effectiveness of roof supports and hydraulic power supports, and surface subsidence induced by longwall mining.

At the Geosciences and Engineering Division of SwRI, Dr. Hsiung provided technical support to NRC on license application reviews of fuel cycle facilities. His experience includes (i) reviewing structural designs for mixed oxide and gas centrifuge facilities; (ii) developing safety evaluation reports for NRC on several license applications for mixed oxide, gas centrifuge, laser enrichment, and independent spent fuel storage installation facilities with focuses on tornado and high-wind evaluation; slope stability, liquefaction potential, aircraft crash, snow, and hurricane hazard characterizations; tornado and human-made missile impact assessments; settlement and soil bearing capacity determinations; (iii) performing final structural design review (including foundation design and soil-structure interaction analyses) and construction inspections on gas centrifuge facilities; and (iv) reviewing several integrated safety analysis summaries for the NRC-licensed nuclear fuel fabrication facilities.

Dr. Hsiung also provides technical support on performance and design review of a potential high-level waste geologic repository, including conduct of independent site-response and soil-structure interaction analyses. He lead an effort of conducting soil-structure interaction analyses of a hypothetical waste handling facility to investigate the effects of characteristics of seismic ground accelerations, soil spatial variations, and soil geotechnical properties on structural seismic responses. In conducting the soil-structure interaction analyses, he also assessed the effects of key modeling parameters on analysis results. Dr. Hsiung has significantly contributed to (i) the design of a direct shear apparatus for dynamic experiments on large specimens, (ii) development of a rock joint constitutive model to better describe the dynamic joint behavior observed from laboratory experiments, (iii) field instrumentation and investigation of the effects of mining-induced seismicity on excavation response and local hydrology, and (iv) a small-scale (similitude) rock mass model experiment under scaled earthquake loads. He was a lead investigator in thermal-mechanical-hydrologic modeling of the U.S. Department of Energy Drift Scale Heater Test under the international cooperative program DECOVALEX, developed an analytic relationship to assess effects of joint deformation on joint hydraulic conductivity, and developed a methodology to predict rockbursts in deep underground mines. Dr. Hsiung has developed technical evaluation reports for uranium tailings, reclamation plans for source material licenses in areas related to dynamic and static stability of slopes, potential liquefaction of foundation soils, and settlement effects on radon barrier integrity.

Dr Hsiung has authored over 130 technical papers and reports.

Timothy C. Johnson
Statement of Professional Qualifications

CURRENT POSITION

Senior Project Manager
Uranium Enrichment Branch
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C.

EDUCATION

M.S., Nuclear Engineering, Ohio State University
B.S., Mechanical Engineering, Worcester Polytechnic Institute

PROFESSIONAL

American Nuclear Society, Member
American Society of Mechanical Engineers, Member
American Society for Testing and Materials, Member

QUALIFICATIONS

Mr. Johnson is a nuclear engineer with over 39 years of work experience in industry and in the Federal government. He has been working in the areas of radioactive waste processing, low-level radioactive waste management, high-level radioactive waste management, decommissioning, and uranium enrichment facility licensing.
Mr. Johnson is currently the Licensing Project Manager of the General Electric-Hitachi Global Laser Enrichment (GE) uranium enrichment plant project in the Uranium Enrichment Branch, Division of Fuel Cycle Safety and Safeguards, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission. Mr. Johnson received a Bachelor of Science degree in Mechanical Engineering from Worcester Polytechnic Institute in Worcester, Massachusetts, in 1971 and a Master of Science degree in Nuclear Engineering from Ohio State University, in Columbus, Ohio, in 1973. Courses he has taken that are pertinent to his present discipline are in the areas of advanced mathematics, engineering design, mass and heat transport, thermodynamics, reactor theory, nuclear physics, nuclear power plant engineering, and health physics. He was elected to membership in Pi Mu Epsilon, the mathematics honorary society.

From January 1973 to August 1977, Mr. Johnson was employed by Stone & Webster Engineering Corporation in Boston, Massachusetts. As the offgas and ventilation filter system specialist, he was responsible for the technical adequacy of offgas and ventilation filter systems for pressurized water reactor, boiling water reactor, high temperature gas cooled reactor, and liquid metal fast breeder reactor projects. His responsibilities included ensuring that equipment met both applicable regulatory and equipment code requirements. He prepared master specifications for offgas and ventilation filter systems for use by project staff. He reviewed project specifications and performed technical reviews of vendor proposals. He also reviewed vendor procedures for qualification and testing of offgas and ventilation system components.

Since September 1977, Mr. Johnson has been employed by the U.S. Nuclear Regulatory Commission in the areas of radioactive waste management, decommissioning, and fuel cycle facility licensing.

From September 1977 to April 1984, Mr. Johnson had lead responsibility for the waste form performance aspects of low-level radioactive wastes to include radwaste processing, solidification, high integrity containers, and volume reduction systems. In this capacity, he developed programs for analyzing, evaluating, coordinating, and recommending licensing actions related to the waste form and waste classification areas of 10 CFR Part 61. These responsibilities have specifically included coordinating the development of the waste form and waste classification requirements and preparing the appropriate sections for: (1) the low-level waste management regulation, 10 CFR Part 61; (2) the draft and final environmental impact statements that support 10 CFR Part 61; and (3) the technical positions on waste form and waste classification that provide guidance to waste generators for complying with the 10 CFR Part 61 requirements. He also acted as lead for an intra-agency task group for implementation for the 10 CFR Part 61 requirements at nuclear power plants.

During this time, Mr. Johnson also participated on a Task Force responsible for Three Mile Island Unit 2 (TMI-2) waste disposal issue resolution to include the evaluation of EPICOR-II, Submerged Demineralizer System, and decontamination solution wastes. He also prepared and coordinated the waste disposal section for the TMI-2 Programmatic Environmental Impact Statement.

From April 1984 to April 1987, Mr. Johnson was Section Leader of the Materials Engineering Section in the Division of Waste Management. In this capacity, he supervised a section that performed technical and engineering evaluations of low-level and high-level radioactive waste packages. This included planning and executing section programs, providing technical direction and integration of materials concerns into NRC low-level and high-level waste licensing activities, and supervising the management of technical assistance programs.

From April 1987 to May 1992, Mr. Johnson was Section Leader of the Special Projects Section in the Division of Waste Management. In this capacity, he supervised a section responsible for mixed wastes, decommissioning of materials licensee facilities and power reactors, financial assurance for decommissioning materials licensees and low-level waste disposal facilities, greater than Class C wastes, low-level waste disposal site quality assurance, and the low-level waste data base.

From May 1992 to November 1999, Mr. Johnson was Section Chief of decommissioning sections in the Division of Waste Management responsible for developing and executing the Site Decommissioning Management Plan (SDMP), an agency effort to ensure that 17 decommissioning policy issues were resolved and over 40 non-routine decommissioning sites would be properly decommissioned. During this time, he acted as Project Manager for the decommissioning of the Chemetron site in Cleveland, Ohio, a controversial contaminated site located in a residential neighborhood. The site was remediated and the license terminated in 1998.

From November 1999 to the present, Mr. Johnson was a Senior Project Manager in the Division of Fuel Cycle Safety and Safeguards. In this position, he acted as deputy project manager for the Mixed Oxide Fuel Fabrication Facility licensing and project manager for the licensing of gas centrifuge uranium enrichment facilities. He also was the Project Manager of the Louisiana

Energy Services uranium enrichment plant from the project's inception in 2000, through licensing, and into initial plant construction until 2009. As Project Manager, he coordinated the licensing review of the licensing application. He also provided testimony in contested and mandatory hearings for this facility in the areas of uranium enrichment facility licensing, the disposition of depleted uranium, and decommissioning financial assurance. He is currently the Project Manager for the General Electric-Hitachi Global Laser Enrichment uranium enrichment plant responsible for coordinating the licensing review of the facility.

Mr. Johnson has prepared over 25 presentations and papers given at conferences and has been an instructor at American Society of Mechanical Engineering, Harvard School of Public Health, and NRC training courses in the areas of low-level waste management, decommissioning, and uranium enrichment facility licensing.

Sunita Kamboj
Statement of Professional Qualifications

CURRENT POSITION

Environmental Systems Engineer
Environmental Science Division
Argonne National Laboratory
Argonne, Illinois

EDUCATION

Ph.D., Health Physics, Georgia Institute of Technology
M.S., Health Physics, Georgia Institute of Technology

PROFESSIONAL

International Commission on Radiological Protection – Member ICRP C5 Task Group
American National Standard Institute (ANSI) N14.36 Subcommittee
Journal Reviewer: Journal of Environmental Radioactivity, Health Physics
Certified Health Physicist by the American Board of Health Physics (1997)
Health Physics Society – Member of the Continuing Education Committee
American Academy of Health Physics – Part 2 Panel Member

QUALIFICATIONS

Dr. Kamboj is a certified health physicist (CHP) with over 18 years of work experience. She has been working in the areas of human and non-human (biota) dose and risk assessment, the NRC license termination process, reactor licensing, radiation protection standards and regulations, and release of real and non-real property for reuse and recycle. She received Bachelor of Science and Master of Science degrees in Physics from Rajasthan University in India, and Master's and Doctoral degrees from Georgia Institute of Technology specializing in Health Physics.

From July 2006 - current, Dr. Kamboj has been involved in many NRC projects including the generic environmental impact statement (GEIS) for license renewal of nuclear plants, the environmental impact statement (EIS) for combined license (COL) for Enrico Fermi Unit 3, and the EIS for the construction and operation of a uranium enrichment facility in North Carolina. She has mainly worked on the human health, waste, and decommissioning Sections of the EISs. She is currently working on the environmental impact statement for an early site permit for Victoria County Site in Texas. In support of the reference animals and plants (RAP) Dosimetry Modeling Task Group to ICRP Committee 5, she calculated internal and external dose coefficients (DCC) using Monte Carlo transport code, MCNP, for five ICRP reference animals and plant (RAP) geometries selected from the terrestrial and freshwater ecosystem. To enable consistent implementation in accordance with Department of Energy (DOE) directives, she reviewed and updated Argonne National Laboratory (ANL) documentation related to the health physics program. She provided technical support to the Mound Site in the proper use of the RESRAD-BUILD code in the T-Building dose modeling, and performed independent verification of the dose estimates. To provide a defensible technical basis for supporting DOE's decision-

making process, she was involved in the risk and cost analysis of different technical strategies in the decontamination, decommissioning, and demolition of building 301 at ANL.

From July 2001 - June 2006, she co-developed cleanup standards for a radiological dispersal device (RDD) event, which involved developing guidelines for the following decisions: stay times that an emergency responder can spend for a given dose limit; the protective action (evacuation or sheltering) required in the early phase; relocation, which involved allowing temporary access and allowing access to transportation routes in the intermediate phase; release of real property from radiological control in the late phase; use of food and whether it could be grown in a contaminated area after an RDD event. She provided assistance in the development of the parameter distributions for the RESRAD-OFFSITE code, and also in the evaluation of the probabilistic future land use scenarios in the radiological dose assessment for license termination. She worked on the NRC training course titled "Evaluation of Dose Modeling for Compliance with Radiological Criteria for License Termination". She was a lead on evaluating site-specific derived concentration guideline levels (DCGLs) for decommissioning the Connecticut Yankee's Haddam Neck Plant. She calculated internal and external dose coefficients (DCC) using Monte Carlo transport code MCNP for the eight reference geometries in the RESRAD-BIOTA code. She participated in NRC license termination and license release plan for the Seneca Army Depot. She evaluated contamination migration to groundwater from different source components at the Brookhaven Graphite Research Reactor. In 2004 she received a Pacesetter Award for the development of the operational guidelines for the consequence management of a radiological dispersal device incident.

From December 1997 - July 2001, Dr. Kamboj co-developed risk-based (probabilistic) default parameters for RESRAD and RESRAD-BUILD computer codes, conducted probabilistic dose analysis using parameter distributions for RESRAD and RESRAD-BUILD codes, and verified RESRAD-BUILD computer code calculations with EXCEL spread sheet calculations for different pathways. She was involved in the development of standardized protocol for concrete disposition to assist DOE sites in releasing concrete and conducted concrete release protocol case studies for decommissioning work at the Idaho National Engineering and Environmental Laboratory. She generated unit dose factors for different disposition alternatives in the development of DOE complex-wide authorized release protocols regarding radioactive scrap metals for reuse and recycle. She conducted sensitivity analysis for averaging the contamination found at different depths of the 116-C-1 process effluent trench at the Hanford Site. In 2000 she received a Pacesetter Award for the development of risk-based (probabilistic) default parameters for the RESRAD and RESRAD-BUILD codes.

In October 1994 Dr. Kamboj began her career at ANL as an Assistant Environmental Systems Engineer in the Environmental Assessment Division. She developed an external exposure model to improve the external ground pathway dose estimation in the RESRAD family of codes. For this work, she published one journal paper, multiple conference presentations, and one Technical Memorandum (TM). She tested the external exposure model using Monte-Carlo simulation and Micro Shield computer code calculations. She performed dose and risk analysis for many projects related to the release of DOE's real and non-real property for reuse and recycle. She performed RESRAD calculations for different sites and derived uranium guidelines for the residual radioactive materials in the soil for many FUSRAP sites. She helped in preparing and modifying supporting documents for the RESRAD family of codes. She also performed Monte-Carlo simulations for neutron and gamma doses from cylindrical surface sources in the RISKIND bench marking efforts. Many sponsor reports and TMs were published on this work.

From July 1994 - September 1994, Dr. Kamboj worked for MGP Instruments in Smyrna, GA, where she performed Monte Carlo simulations for in-duct monitoring of gaseous effluent releases from a nuclear reactor. Dr. Kamboj calculated the detection sensitivity of a selected set of isotopes for an encapsulated NaI(T1) detector placed inside the monitoring duct.

In August 1989 Dr. Kamboj joined as a graduate research assistant in the Environmental Radiation Laboratory which was operated for the Environmental Protection Division of the Georgia Department of Natural Resources by the Office of Interdisciplinary Programs, Georgia Institute of Technology. There, as part of her research, she analyzed environmental samples collected throughout Georgia. Using Monte-Carlo simulations, she analyzed and quantified different interactions in thick germanium detectors under various geometric conditions. After graduating in 1994 she served as an instructor for a problem-solving health physics practice course. During the course of her research she published three journal papers.

Dr. Kamboj is author or co-author of more than 180 publications, including 30 journal articles, and more than 150 reports, NUREG/CR documents, conference papers and posters.

Kenneth M. Kline
Statement of Professional Qualifications

CURRENT POSITION

Project Manager
Decommissioning & Uranium Recovery Licensing Directorate
Division of Waste Management and Environmental Protection
Office of Federal State Materials and Environmental Management Programs
U.S. Nuclear Regulatory Commission
Washington, DC

EDUCATION

B.S., Finance, University of Maryland at College Park

QUALIFICATIONS

Mr. Kline is a Financial Project Manager with over 14 years of work experience at various Federal agencies. He has been working on the areas of financial assurance for decommissioning, licensing of deepwater ports (offshore terminals for Liquefied Natural Gas carriers) and ship financing (financing of new vessel construction).

He currently evaluates decommissioning cost estimates and associated financial assurance for licensees under 10 CFR Parts 30, 40 and 70. He also reviews the decommissioning cost estimates for power reactors which are submitted in license termination plans. Mr. Kline also evaluates transfer of control applications which are submitted when there is a corporate restructuring. Finally, Mr. Kline is involved during bankruptcy and in the event NRC seeks to draw on financial assurance for decommissioning.

Prior to his current position, Mr. Kline worked for the Maritime Administration, an agency within the United States Department of Transportation. There he worked on the agency's two premiere programs, Deepwater Ports and Ship Financing. In the Deepwater Ports program, Mr. Kline served as the lead for three new Deepwater Port Applications (again, offshore terminals for Liquefied Natural Gas carriers). This included overseeing the NEPA and EIS reviews for two terminals being built offshore in California, participating in public meetings and determining the applicant's qualifications to construct such a project. In the Ship Financing program, Mr. Kline managed a portfolio of loan guarantees for the construction of new vessels and for ship yard modernization projects. He managed these projects from start to finish (from loan approval to overseeing underwriting to monitoring the loan after origination (up to 25 year amortization).

Mr. Kline has made numerous presentations at professional conferences and workshops.

Daniel J. O'Rourke, RPA*
Statement of Professional Qualifications

CURRENT POSITION

Principal Cultural Resources Specialist
Cultural and Visual Resources Team
Environmental Science Division
Argonne National Laboratory
Argonne, Illinois

EDUCATION

M.S., Michigan Technological University, Industrial Archaeology, 1997
B.A., Michigan State University, History and Anthropology, 1991

PROFESSIONAL

*Register of Professional Archaeologists (RPA), Member
Society for Historical Archaeology, Member
Society for Industrial Archaeology, Member

QUALIFICATIONS

Mr. O'Rourke is an archaeologist with over 20 years of professional experience. He has 13 years of experience in conducting archaeological assessments and environmental reviews and assessments for various federal agencies including the Nuclear Regulatory Agency (NRC), the Department of Energy, and the Bureau of Land Management. He received a Bachelor of Arts degree in History and Anthropology from Michigan State University in East Lansing, Michigan and a Master of Science degree in Industrial Archaeology from Michigan Technological University in Houghton, Michigan. His expert area is cultural resources.

Mr. O'Rourke provides cultural resource support on Environmental Science Division projects through data collection, analysis, and interpretation and the preparation of written reports. Duties include developing/synthesizing historic contexts and assessing project impacts in environmental impact statements (EISs), preparing historical building evaluations and documentation reports, and conducting archaeological surveys. NRC projects include cultural resource analyses for the relicensing of the Vermont Yankee Nuclear Power Station, the Susquehanna Steam Electric Station, the Duane Arnold Energy Center, and Seabrook Station. He updated the cultural resources sections for the Generic EIS for relicensing of nuclear power plants. He also assessed the effects on cultural resources, land use, and visual resources on the GE Silex Enrichment facility EIS.

Prior to becoming regular staff at Argonne National Laboratory, he provided technical project support for various cultural resource firms on projects for clients such as the University of Chicago, the National Forest Service, and private developers.

From 2000-2000, Mr. O'Rourke served as a project director for the Public Service Archaeology Program of the Department of Anthropology University of Illinois at Chicago. Responsibilities involved the compiling of historical documentation for three buildings at the University of Chicago, the documentation and examination of the Ferris Wheel Foundation from the Chicago's Worlds Fair which was unearthed in 2000, and the archaeological assessment of the Pullman Water Tower Foundation for the University of Chicago. His duties included development of a research strategy, documentation of the remains, historical research, interviews, report preparation, and consultation with the State Historic Preservation Office.

From 1999-2000 he was a Project Archaeologist for Commonwealth Cultural Resource Group (CCRG) in Jackson, Michigan. While at CCRG he directed and conducted archaeological surveys for the USDA Forest Service on the Ottawa National Forest and the Chequamegon National Forest. Duties included extensive field reconnaissance surveys, supervision of field personnel, documentation of all cultural resources observed, compilation of background historical information on survey areas, consultations with Forest Service personnel, and report preparation. He also assisted in archaeological excavations and field reconnaissance surveys for several private clients.

Mr. O'Rourke is the author/co-author of more than 40 technical reports and conference papers.

Kurt Picel
Statement of Professional Qualifications

CURRENT POSITION

Team Lead
Technology and Engineering Assessment Team
Ecological Resources and Systems Program
Environmental Science Division
Argonne National Laboratory
Argonne, Illinois

EDUCATION

Ph.D., Environmental Health Sciences, University of Michigan
M.S., Environmental Health Sciences, University of Michigan
B.S., Chemistry, Western Michigan University

PROFESSIONAL

American Chemical Society, Member
Sigma Xi, Member

QUALIFICATIONS

Dr. Picel is an environmental scientist with over 30 years of work experience and with over 27 years at Argonne National Laboratory (ANL). He has been working on the areas of environmental chemistry, hazardous waste site characterization and remediation, and health and environmental assessments supporting environmental reviews under the National Environmental Policy Act (NEPA). His expert areas include environmental and occupational health risk, environmental and analytical chemistry, environmental sampling and analysis, site remediation, and technology assessment.

Now as a Team Lead for the Technology and Engineering Assessment Team in the Environmental Science Division (EVS) at ANL, he is responsible for leading and performing environmental reviews of federal actions, focusing on the intersection between technology and engineered systems and the environment. He has been the project manager for the preparation of a programmatic environmental Impact statement (EIS) for oil shale and tar sands resources on public lands for the past year. He has also managed the preparation of EISs for several transmission line projects over the past few years. Recently, he was a member of the project team that prepared the EIS for Areva's proposed Eagle Rock Enrichment Facility in Idaho (NUREG-1945, 2011), performing chemical health and safety, accident, and cumulative impacts analyses. Currently, he is a member of a team preparing the programmatic EIS for solar energy development on public lands in the six southwestern states. In this work, he has been responsible for analysis of human health and safety, chemical hazards and wastes, and cumulative impacts.

Prior to his current position, Dr. Picel was a member of the Environmental and Radiological Health Risk Section of the EVS Division at ANL (2003-2011). As an environmental scientist, he performed environmental reviews under NEPA for a number of transmission line and renewable energy projects and programs, and supported environmental restoration at several federal sites under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). In this work he helped design sampling and site characterization programs, waste characterization and management programs, site operational history reviews, and remedy selection and implementation.

From 1992 to 2003, Dr. Picel was a member of the EVS Division, where he performed human health risk assessments and supported the Department of Energy on a number of risk management programs in their site cleanup program under CERCLA involving both chemical and radiological contamination.

From 1986 to 1992, Dr. Picel was a member of the Environmental Research Division at ANL where he performed research on the environmental behavior of coal liquids and on environmental analytical chemistry methods.

From 1985 to 1986, Dr. Picel was a post-doctoral fellow performing research in the coal toxicology program in the Energy and Environmental Systems Division at Argonne. From 1983 to 1985, he was in ANL's Ph.D Laboratory Graduate program in the same division, while a student at the University of Michigan. He received his Ph.D from Michigan in April of 1985.

From 1979 to 1983, following receipt of his M.S. degree, Dr. Picel worked at Environmental Research Group, an environmental testing laboratory in Ann Arbor, Michigan, leading and performing analysis of organic contaminants using U.S. EPA methods.

Dr. Picel has authored or co-authored more than of 70 journal, book chapter, report, and conference publications.

Blake A. Purnell
Statement of Professional Qualifications

CURRENT POSITION

Project Manager
Generic Communications Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C.

EDUCATION

M.A., Physics, University of California, Santa Barbara, CA
B.S., Physics and Chemistry, Western Washington University, Bellingham, WA

PROFESSIONAL

Reactor Regulation Project Manager Qualification, NRC, 2011
Nuclear Safety Professional Development Program, NRC, 2007
Nuclear Criticality Safety Inspector Qualification, NRC, 2007
Nuclear Criticality Safety Review Qualification, NRC, 2006

QUALIFICATIONS

Mr. Purnell has 7 years of work experience at the U.S. Nuclear Regulatory Commission (NRC), including 5 years experience as a nuclear criticality safety (NCS) specialist in the Division of Fuel Cycle Safety and Safeguards, Office of Nuclear Material Safety and Safeguards. His NCS experience includes nuclear fuel facility inspection, licensing, enforcement, guidance development, and special projects.

His experience in inspection has included routine and supplemental inspections. Inspections included all the currently operating low- and high-enrichment fuel fabrication facilities, as well as the Paducah Gaseous Diffusion Plant which enriches uranium. Several of these inspections included follow-up activity related to enforcement actions. In addition, he assisted the lead NCS inspector for the operational readiness review of the National Enrichment Facility being constructed in Eunice, NM.

His experience in licensing has included NCS reviews of applications for new enrichment facilities, license renewals, new processes, and other activities. He was the NCS reviewer for the AREVA Eagle Rock Enrichment Facility and the GE-Hitachi Global Laser Enrichment Facility applications for new facilities until he obtained his current position in the Office of Nuclear Reactor Regulation in 2010. He was the primary NCS reviewer for the license renewal applications for the AREVA fuel fabrication facility in Richland, WA, the Global Nuclear Fuel-Americas fuel fabrication facility in Wilmington, NC, and the National Institute of Standards and Technology. He reviewed new processes for AREVA in Richland, WA, and for Nuclear Fuel Services in Erwin, TN. He also supported the license renewal and amendments for Babcock and Wilcox in Lynchburg, TN, and an amendment to remove high-enriched uranium from the Kodak facility in Rochester, NY.

His experience in developing guidance has included the development of an NRC Regulatory Guide for the fuel facility change process (10 CFR 70.72) and an Interim Staff Guidance document for the 10 CFR Part 70 reporting requirements. He helped develop guidance as a member of the working group for Standard 8.19 of the American Nuclear Society.

As a special project, he served as the NCS representative for NRC nuclear reprocessing activities, which included a review of NCS practices at the Thermal Oxide Reprocessing Plant in Sellafield, UK. He also reviewed the NCS aspects of the Department of Energy's regulatory process for the Hanford Waste Treatment and Isolation Plant.

John J. Quinn, Ph.D.
Statement of Professional Qualifications

CURRENT POSITION

Principal Hydrogeologist
Environmental Science Division
Argonne National Laboratory
Argonne, Illinois

EDUCATION

Ph.D. University of Minnesota, Hydrogeology
M.S. University of Minnesota, Hydrogeology, Civil Engineering minor
B.S.E. Purdue University, Geo-Engineering
B.S. Purdue University, Geology, German minor

PROFESSIONAL

Professional Engineer
National Ground Water Association - journal reviewer, member since 1989
Geological Society of America - member since 1990

QUALIFICATIONS

John Quinn, Ph.D. is a principal hydrogeologist at Argonne National Laboratory (ANL) with a focus on groundwater, soil, and surface water. Since 1993, he has provided technical support to the U.S. Department of Energy (EPA), Department of Defense, Nuclear Regulatory Commission (NRC), Bureau of Land Management, Environmental Protection Agency, and other sponsors for environmental impact statements (EISs), site characterizations, remedial investigations, feasibility studies, and remedial system assessments. Key capabilities include evaluating the environmental impacts of the energy-water relationship, conceptual and numerical groundwater flow models and contaminant transport models, geostatistical data analysis, subsurface 3-D visualization, and phytoremediation studies. Study areas have involved various geologic settings, including glacial, karst, alluvial, and coastal plain environments. Tasks have included developing and calibrating three-dimensional groundwater flow models; designing optimized groundwater containment systems using linear programming techniques; performing contaminant transport modeling; evaluating natural attenuation and phytoremediation processes; estimating soil excavation volumes; analyzing aquifer test data; producing visualization of analytical, hydrogeological, and geological data; performing geostatistical analyses of soil and groundwater analytical results and geological and hydrogeological data; creating and updating project websites to promote communication among team members; and conducting field work, including project oversight, stratigraphic logging, well installation, and groundwater sampling. Sites have included Aberdeen Proving Ground, Maryland; Weldon Spring Site, Missouri; Joliet Army Ammunition Plant, Illinois; Argonne National Laboratory, Illinois; New York and Ohio FUSRAP sites; Camp Ripley (National Guard), Minnesota; Kansas City Plant, Missouri; and Hohenfels Combat Maneuver Training Center, Germany.

Dr. Quinn has had growing involvement in projects dealing with the relationship of energy and water. For the NRC, he has served as the hydrology task leader for many EISs focused on power plant relicensing, an EIS for a proposed fuel fabrication facility, and an EIS and hydrological safety analysis of a proposed new reactor. These projects involved site visits, review of potential water impacts of construction and operations, review of regulations, and discussion with state regulators. He developed the water-related portions of the Knowledge Management Tool (a training device for NRC staff) and the revision of the Generic EIS for license renewal. He has worked closely with NRC counterparts and mentored new staff in these roles.

Several other energy-water projects have been closely related to the oil industry. For the Oil Shale Tar Sands Programmatic EIS, Dr. Quinn served as task leader for water resources and for geology/soils, and was responsible for the affected environment and impacts discussions for these areas. Another project was an analysis of downhole gas/water separation, for which he studied the success or failure of systems relative to hydrogeologic settings. In an analysis of heavy oil, he contributed to a review of the impact of its development on water resources. For a private client on the Arabian peninsula, he provided modeling analyses to quantify the impact of NORM waste disposal options on groundwater resources. These analyses included development of conceptual and numerical models of contaminant fate and transport in specific hydrogeologic settings.

Prior to his employment at ANL, Dr. Quinn worked for two years as a geological engineer for Black and Veatch Waste Science, Inc., Chicago, Illinois. His activities included performing CERCLA Screening Site Inspections and Expanded Site Inspections and RCRA Facility Assessments. He also logged stratigraphy and well construction information in support of an RI, reviewed a groundwater model for U.S. EPA, and provided field oversight for U.S. EPA at several Superfund sites.

Dr. Quinn is the author or co-author of 11 journal articles and book chapters, and 100+ reports, conference proceedings and presentations, and university seminars.

Deborah Seymour
Statement of Professional Qualifications

CURRENT POSITION

Branch Chief
Construction Projects Branch 1
Division of Construction Projects
U.S. Nuclear Regulatory Commission
Region II, Atlanta, GA

EDUCATION

B.S., Chemical Engineering and Materials Engineering, University of Connecticut.

PROFESSIONAL

Material Control and Accountability Inspector Qualification, NRC, 1988
Heath Physics Inspector Qualification, NRC, 1990
PWR Operations Inspector Qualification, NRC, 1994
Senior Resident Inspector Development Program Graduate, NRC 1997
Fuel Cycle Safety Inspector Qualification, NRC, 2000
Sigma Xi, member
Tau Beta Pi, member

QUALIFICATIONS

Ms. Seymour has worked for the NRC for 25 years. Currently, she is the branch chief for Construction Projects Branch 1 in the Division of Construction Projects in NRC's Region II Office in Atlanta, GA. Her primary responsibility is providing direction and oversight to the construction inspection programs at fuel facilities under construction in the United States, including the Mixed Oxide (MOX) Fuel Fabrication Facility at the Savannah River Site in Aiken, SC. She has held a number of other positions at the NRC, including:

- Senior Project Inspector, National Enrichment Facility
- Senior Fuel Facilities Project Inspector for Westinghouse Electric Company, Global Nuclear Fuels, Babcock and Wilcox Nuclear Operations Group, AREVA Lynchburg, and AREVA-Washington.
- Resident Inspector, Sequoyah Nuclear Power Plant
- Project Engineer, Vogtle , Hatch, and Sequoyah Nuclear Power Plants
- Inspector for Radiological Effluents and Chemistry (fuel facilities and reactors)
- Inspector, Material Control and Accounting (fuel facilities and reactors)

Prior to joining the NRC, she also held positions at the Institute of Material Sciences, at the University of Connecticut; and at the J.M. Ney Company, a precious metal refinery in Bloomfield Connecticut.

John Stamatakos
Statement of Professional Qualifications

CURRENT POSITION

Director of the Rockville Office and Technical Programs
Center for Nuclear Waste Regulatory Analyses (CNWRA)
Geosciences and Engineering Division
Southwest Research Institute™ (SwRI™)
Rockville, MD

EDUCATION

Ph.D., Geology, Lehigh University, Bethlehem, Pennsylvania (Geology)
M.S., Geology, Lehigh University, Bethlehem, Pennsylvania (Geology)
B.A., Geology, Franklin and Marshall College, Lancaster, Pennsylvania

PROFESSIONAL

Geological Society of America, Member
Seismological Society of America, Member

QUALIFICATIONS

Dr. Stamatakos is a structural geologist and geophysicist with international research experience. His areas of expertise include paleomagnetism, magnetostratigraphy, paleogeography, exploration geophysics, neotectonics, and earthquake seismology. Dr. Stamatakos applies his expertise to investigations of seismic sources in earthquake hazard studies; kinematics of fault block rotations in strike-slip, normal, and thrust fault systems; effects of internal strain on the magnetic properties of deformed rocks; evolution of curvature in arcuate mountain belts; and age and sequence of deformation in folded and faulted mountain belts. He brings a global perspective on structural geology, having conducted investigations in the Basin and Range in the western United States, the northern and central Appalachians in the eastern United States and Canada, the Hercynian mountains in Germany and northern Spain, and the northern Cordilleran Mountains in Alaska.

Dr. Stamatakos serves as the director of technical programs for the CNWRA and provides technical support to tectonics research at CNWRA, including geologic and geophysical analyses of the tectonic elements of the Basin and Range province in southwestern United States, evaluation of seismic hazards at nuclear facilities, and development of tectonic models. These U.S. Nuclear Regulatory Commission (NRC)-sponsored investigations support evaluations of earthquake and volcanic risks at critical nuclear facilities. Dr. Stamatakos has provided technical reviews on seismic hazard and seismic design for a number of NRC-licensed facilities in Nevada, Utah, Idaho, California, Ohio, Kentucky, and South Carolina. He has provided expert testimony on seismic and volcanic issues on behalf of the NRC staff before the Atomic Safety Licensing Board. In addition, Dr. Stamatakos administers the Rockville Office as an offsite facility of the division, with the preponderance of its functions and uses being on behalf of Center for Nuclear Waste Regulatory Analyses (CNWRA®). Dr. Stamatakos manages and provides day-to-day interfaces with the NRC on CNWRA projects.

Before joining Southwest Research Institute, Dr. Stamatakos held positions of visiting faculty at the University of Michigan and postdoctoral fellow at the Eidgenössische Technische Hochschule in Zurich, Switzerland. At the University of Michigan, Dr. Stamatakos taught courses in field mapping, structural geology, geophysics, and tectonics.

Dr. Stamatakos has written or collaborated on more than 60 papers and reports on structural geology, tectonics, and geophysics. He has made presentations at international conferences in the United States, Canada, and Europe and has won an outstanding paper award from the American Geophysical Union. Dr. Stamatakos is past associate editor of the Geological Society of America Bulletin, and has served as a regular reviewer of papers for the Journal of Geophysical Research, Earth and Planetary Science Letters, Reviews of Geophysics, Journal of Structural Geology, Physics of the Earth and Planetary Sciences, and Geophysical Research Letters, as well as for grant proposals for the National Science Foundation.projects.

Christopher S. Tripp
Statement of Professional Qualifications

CURRENT POSITION

Sr. Nuclear Process Engineer (Criticality)
Technical Support Branch
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C.

EDUCATION

Ph.D., Physics, Rensselaer Polytechnic Institute, 1995
M.S., Physics, Rensselaer Polytechnic Institute, 1994
B.S., Physics, Rensselaer Polytechnic Institute, 1989

PROFESSIONAL

Nuclear Criticality Safety Technical Reviewer Qualification, NRC, 1999
Nuclear Criticality Safety Inspector Qualification, NRC, 1997

QUALIFICATIONS

Dr. Tripp is a nuclear criticality safety (NCS) specialist with more than 16 years of work experience as an inspector and license reviewer at the NRC. His experience has included nuclear fuel facility inspection, licensing, enforcement, and regulatory guidance development, both in technical and programmatic aspects of NCS and Integrated Safety Analysis (ISA).

His experience in inspection has included routine and reactive inspections at both low-enriched and high-enriched fuel fabrication facilities and enrichment facilities, including Babcock and Wilcox and AREVA in Lynchburg, VA; Global Nuclear Fuels in Wilmington, NC; Westinghouse Electric Company in Columbia, SC; Nuclear Fuel Services in Erwin, TN; AREVA in Richland, WA; Portsmouth and Paducah Gaseous Diffusion Plants in Portsmouth, OH and Paducah, KY; and Louisiana Energy Services' enrichment plant in Eunice, NM. Several of these have involved NRC follow-up to criticality safety-significant events and enforcement actions.

His experience in licensing has included new facility licensing, at the Mixed Oxide Fuel Fabrication Facility at the Savannah River Site, SC; USEC's American Centrifuge Plant in Portsmouth, OH; AREVA's Eagle Rock Enrichment Facility in Bonneville County, ID; and GNF-A's Global Laser Enrichment facility in Wilmington, NC. He also provided technical assistance on LES's National Enrichment Facility in Hobbes, NM. His experience also includes assisting in the license renewal for Westinghouse Electric Company in Columbia, SC. His experience also includes major amendments at Nuclear Fuel Services in Erwin, TN and the High-Assay Upgrade Project at the Paducah Gaseous Diffusion Plant in Paducah, KY.

His experience in regulatory issues and regulatory guidance development has included being part of the team that developed ISG-03, “Nuclear Criticality Safety Performance Requirements and Double Contingency Principle” and the primary author of ISG-01, “Methods for Qualitative Evaluation of Likelihood,” and ISG-10, “Justification for Minimum Margin of Subcriticality for Safety.” He was also the primary author of Chapter 5 and Appendix A of NUREG-1718, the Standard Review Plan for a Mixed Oxide Fuel Fabrication Facility, and provided numerous comments on Revision 1 of Chapter 5 of NUREG-1520, the Standard Review Plan for a Fuel Cycle Facility. More recently, he was part of an industry-wide panel that is recommending changes to NUREG-1537, the Standard Review Plan for Non-Power Reactors, to address the use of aqueous homogeneous reactors for medical isotope production. Most recently, he is the primary reviewer for Revision 2 of Chapter 5 of NUREG-1520. He has also participated in several Part 70 and ISA working groups, including Part 70 Appendix A event reporting, risk-informing the enforcement policy for fuel cycle facilities, and the design features working group. He has also authored or co-authored numerous papers at national and international meetings (e.g., ANS Topical Meetings, International Conference on Nuclear Criticality) on these topics, and has participated in ANS and ISO standards working groups (ANS-8.12 on mixed oxide criticality safety, ANS-8.24 on criticality code validation, and ISO standards on mixed oxide, burnup credit, emergency response, and estimating fission yields).

Prior to working for the NRC, he was a teaching and research assistant in graduate school at Rensselaer Polytechnic Institute, where his responsibilities included teaching undergraduate physics courses, grading, and participating in medium-energy nuclear physics experiments at Brookhaven National Laboratory, Saskatchewan Accelerator Laboratory, and his own thesis experiment at the Bates-MIT Linear Accelerator Center. He also participated in the design of experimental detectors for the Thomas Jefferson National Accelerator Facility (formerly named CEBAF). His thesis experiment culminated his doctoral dissertation, entitled “A Longitudinal-Transverse Separation of the ^{3}He(e,e′d) Reaction,” RPI, 2005.

William S. Vinikour
Statement of Professional Qualifications

CURRENT POSITION

Environmental Scientist
Environmental Science Division
Argonne National Laboratory
Argonne, Illinois

EDUCATION

M.S., Biology with Environmental Emphasis, Northern Illinois University
B.S., Biology, Northern Illinois University

QUALIFICATIONS

Mr. Vinikour is an environmental scientist with over 35 years of work experience. In his current position at Argonne National Laboratory (ANL), Mr. Vinikour is principally involved in the preparation of National Environmental Policy Act (NEPA) documents to assess the effects of human activities and energy-related developments on aquatic, terrestrial, and wetland ecosystems with an emphasis on animal populations and habitats. Assessments have examined the impacts of construction and operation of nuclear power plants, electrical transmission lines, Trans-Alaska Oil Pipeline, oil shale and tar sands development, wind and solar energy developments, off-shore oil and gas leasing, mixed-oxide fuel fabrication facility, and disposal of radioactive wastes. These assessments have involved project in all geographic regions of the United States. Other activities have included the preparation of ecological risk assessments for solid waste management units at Yuma Proving Grounds, Arizona, and for contaminated soils at Aberdeen Proving Ground, Maryland; and evaluation of environmental enhancements to offset potential impacts (i.e., entrainment and impingement) of cooling water intakes structures.

From 1999-2000, Mr. Vinikour was an environmental scientist at Adecco/TAD Technical, working under contract for ANL. Principal activity during this period included contributions to the preparation of four environmental impact statements (EISs) on riparian and aquatic habitat management in New Mexico. Responsibilities included technical assessments of past disturbances to riparian areas under the jurisdiction of the Bureau of Land Management; and the evaluation of various livestock grazing management options on the recovery and management of these areas.

From 1975 through 1999, Mr. Vinikour was an environmental scientist at ANL. Activities included the preparation of NEPA documents involving nuclear power plants, coal fuel cycle, power plant conversions, transmission lines, hydroelectric facilities, airports, accelerators, oil shale development, military-bases, storage of radioactive/mixed wastes, waste-site restoration, and multiple land uses of western riparian habitats. Other activities included field research on the impacts of pipeline construction, coal mining and reclamation, contaminant disposal, and toxic waste cleanup/restoration on macroinvertebrates and fishes.

Mr. Vinikour has author or co-authored of over 125 NEPA documents, reports, journal articles, book chapters, and conference publications and presentations. These include the preparation of the aquatic ecology sections (including biological assessments and essential fish habitat assessments, as necessary) for eight nuclear plant license renewals, co-authoring the ecology sections for the revised generic environmental impact statement for license renewal of nuclear plants, and the ecological resource sections for the proposed GE-Hitachi Global Laser Enrichment Facility. He is also currently preparing aquatic resource sections for the Victoria County Station Early Site Permit EIS.