UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of:	)	
	)	
DTE ELECTRIC COMPANY	)	Docket No. 52-033-COL
	)	
(Fermi Nuclear Power Plant, Unit 3)	)	

APPLICANT'S WITNESS LIST FOR THE FERMI UNIT 3 HEARING ON UNCONTESTED ISSUES

DTE Electric Company ("DTE") provides its list of witnesses for whom written testimony is being submitted or who may appear in the above captioned matter at the hearing on uncontested issues scheduled for February 4, 2015. Statements of professional qualifications for each of the potential witnesses are provided as attachments to this exhibit.[1]

DTE Electric Company	Ron May Peter Smith Michael Brandon Randall Westmoreland
Black and Veatch	Steven Thomas Ed Meyer Brandon Gomer
GE-Hitachi	David Hinds Patricia Campbell
Sargent & Lundy	Robert Hooks Javad Moslemian
AMEC Foster Wheeler	Robert Youngs

[1] The Statement of Professional Qualification for Peter Smith was provided as an attachment to Exhibit DTE000001.

Respectfully submitted,

/s/ signed electronically by

David A. Repka
Tyson R. Smith
Winston & Strawn LLP
1700 K Street, NW
Washington, DC 20006

Bruce R. Maters
Jon P. Christinidis
DTE Electric Company
One Energy Plaza
Detroit, Michigan 48226

COUNSEL FOR DTE ELECTRIC COMPANY

Dated at Washington, District of Columbia
this 14th day of January 2015

One Energy Plaza, Detroit, MI 48226-1221

DTE Energy

Biography

Ron A. May

Executive Vice President, Major Enterprise Projects
DTE Energy

Ron A. May is executive vice president of Major Enterprise Projects at DTE Energy (NYSE:DTE), a Detroit-based diversified energy company involved in the development and management of energy-related businesses and services nationwide. DTE Energy's operating units include an electric utility serving 2.1 million customers in Southeastern Michigan and a natural gas utility serving 1.2 million customers in Michigan. The DTE Energy portfolio also includes non-utility energy businesses focused on power and industrial projects, midstream services and energy trading. Major Enterprise Projects is an ISO 9001 organization and was recognized by the Project Management Institute as a Project Management Organization finalist for PMO of the Year 2014.

May is responsible for major generation construction and environmental projects at DTE Energy's power plants, the company's new nuclear power plant development project, FERMI 2 modifications, gas projects, development of renewable, metering and distribution assets, along with strategic facilities and service projects including business revitalization.

May previously served as senior vice president of DTE2, an enterprise resource planning project. Prior to that, he served as senior vice president of Energy Distribution, responsible for engineering, operation, construction and maintenance of the company's electric distribution and transmission system. Additional responsibilities included customer service, corporate facilities, and security. He also held a variety of nuclear leadership positions at DTE Energy, including in materials management, maintenance, and administration. Prior to joining the company, May was vice president at Project Management Associates, a project controls consulting business. Earlier in his career, he held leadership positions at Townsend and Bottum, Inc., a heavy utility construction business.

May earned a bachelor of science degree in civil engineering at the University of Michigan, and completed the Advanced Management Program at Harvard University. Additionally, he completed graduate course work at Eastern Michigan University, Youngstown State University, and Pennsylvania State University. May is also a certified Lean Six Sigma Black Belt, Project Management Professional, and holds a Michigan real estate license.

May serves as the chairman of the Oakland University School of Engineering and Computer Science Advisory Council and the past chairman of the Michigan Roundtable for Diversity and Inclusion. He serves on the board of directors of numerous educational and civic organizations, including Construction Industry Institute, University of Michigan Engineering Advisory Council, Arab Community Center for Economic and Social Services, Think Detroit PAL and the United Way 2-1-1. He is a member of the American Association of Cost Engineers, American Society of Civil Engineers, American Nuclear Society and the Engineering Society of Detroit. He is a distinguished volunteer for the Association of Fundraising Professionals Greater Detroit Chapter. Formerly, May was a board member of the Warren Conner Development Coalition, Crossroads for Youth, the campaign for the United Negro College Fund and Leadership Oakland. May received the Diversity Champion awards from the DTE Energy African American Action Association, Birmingham-Bloomfield Diversity Task Force and the Detroit Chapter of the Association of Asian Pacific Americans, the Distinguished Leader Award from Leadership Oakland and the Honorary Alumni Award from Oakland University.

MICHAEL K. BRANDON

Mr. Brandon is a degreed Nuclear Professional with 15 years Nuclear Licensing Management experience. He has well-rounded knowledge of the 10CFR Part 52 and Part 50 licensing processes. He has a Management Operations Certification in Boiling Water Reactor (BWR) Operations and training in multiple light water reactor technologies.

Mr. Brandon currently performs as the Licensing Manager for the Fermi 3 Combined Operating License Application. He has held that position for 4 years. Prior to joining DTE Energy, Mr. Brandon was the Director Safety and Licensing at Watts Bar Nuclear Unit 1 with the Tennessee Valley Authority. In that capacity he provided leadership in the Emergency Preparedness, Licensing, Performance Improvement, and Document Management areas. Mr. Brandon was previously the Licensing Manager at the Waterford 3 Nuclear Unit with Entergy.

Mr. Brandon has a Bachelor's Degree in Nuclear Engineering from Georgia Institute of Technology and has completed coursework for a Master of Science Degree in Engineering Management at the University of Tennessee at Chattanooga.

RANDALL D. WESTMORELAND

EDUCATION

MICHIGAN STATE UNIVERSITY
Bachelor of Science, Geology, 1983

WAYNE STATE UNIVERSITY
Masters of Arts in Teaching Program, Secondary Science Education
Teaching Certificate; GPA 4.0

EMPLOYMENT HISTORY

DETROIT EDISON—MAJOR ENTERPRISE PROJECTS, NUCLEAR DEVELOPMENT PROGRAM
Licensing – Technical Expert, Fermi 3 Combined Operating License, March 2008 to Present
Project lead for all environmental related aspects of the Fermi 3 licensing project. Managed the development of the environmental report including oversight of associated field work, was the NRC point-of-contact for all communications on the environmental side, managed the responses to 255 environmental RAIs from the NRC and other federal and state environmental agencies, and worked with attorneys to develop responses to numerous environmentally related contentions. In addition, supervised the development and submittal of the Fermi 3 National Pollution Discharge Elimination System permit and the Joint Federal and State Wetland Permit including the development of a wetland mitigation design plan on the property of the Monroe Power Plant.

DETROIT EDISON—FERMI 2 NUCLEAR POWER PLANT
Environmental Engineer, Environmental Health Department, January 1998 to February 2008
Worked in all aspects of facility environmental compliance, including: biennial waste reporting; Tier II reporting; Toxic Release Inventory reporting; stormwater program; NPDES permit reporting and management; air permit program; sanitary sewer permit program; Fermi 1 decommissioning environmental oversight; ISO 14001 program; underground and above ground storage tank programs; herbicide application program; environmental reviews for chemical material reviews (CMEs); preparation of the Annual Non-Radiological Environmental Report to the NRC, per Appendix B of the Operating License; Comprehensive Emergency Response Plan (CERP) development and management; site contamination investigations; assisted in providing information for the Fermi 3 combined license application; and, participation in site tritium and hydrogeological investigations.

Other activities included incident command- spill response; RERP-dose assessor; procedure changes; environmental project reviews; risk management plan development per MWC15; environmental training development; and working through capitol dollar environmental project funding and implementation. Assisted in obtaining Clean Corporate Citizen and ISO 14001 site designations.

REGULATORY COMPLIANCE SERVICES, INC.
Environmental, Health and Safety Project Manager, September 1995 to January 1998
Project management of various environmental, health and safety compliance activities including industrial compliance audits, permitting, hazardous waste management program development and SARA Title III report preparation. Also managed environmental site investigations, remedial activities, risk assessments and phase I and II site assessments. Work included proposals, planning, on-site supervision, regulatory agency contact and report writing.

CONSOLIDATED ENVIRONMENTAL SERVICES, INC.
Project Manager/Geologist, March 1994 to September 1995
Project Manager of sixteen leaking underground storage tank sites. Work included planning, contracting, site investigation activities, report preparation and regulatory agency contacts.

INDEPENDENT CONSULTING
Environmental, Health and Safety Consultant, March 1993 to March 1994
Conducted consulting activities primarily through Eaton Environmental, Inc., Absolute Environmental Services, Inc. and Wayne Kidder and Associates, Inc. Work included site contamination investigations, phase I and II site assessments, and health and safety compliance audits.

ACOME AND ASSOCIATES, LTD.
Project Geologist, March 1989 to July 1992
Landfill studies, environmental site investigations, remedial activities, phase I and II site assessments, and environmental litigation support.

PROFESSIONAL EXPERIENCE

- Experience with the development of environmental reports for federal actions to meet the requirements of the National Environmental Policy Act.
- Managed wetland permit for Fermi 3 Project with the MDEQ and USACE, including plan for mitigation site.
- Environmental site investigations and corrective actions under Part 211, Part 213 and Part 201.
- Underground storage tank removals.
- Proficient with rapid groundwater plume definition using slotted augers, hydropunch, temporary wells, geoprobes, and mobile laboratories. Knowledge of EPA chemical and biological sampling protocols.
- Numerous phase I and II environmental property assessments.
- Dredging, stormwater, and soil erosion permitting.
- NPDES, and POTW permit preparation and management.
- Managed under-ground and above-ground storage tank programs.
- Application of risk assessment principles (RBCA) for closure of sites of environmental contamination.
- Written numerous Stormwater Plans and managed of Fermi II's Stormwater Plan.
- Prepared and managed SPCC and PIPP Plans. Participated in preparation and management of Fermi's Comprehensive Emergency Response Plan (CERP).
- Ten years as Fermi Radiological Emergency Response Plan (RERP) Dose Assessor.
- Participated in comprehensive environmental, health, and safety compliance audits at industrial facilities. Formerly RAB provisionally certified environmental management system auditor.
- Participated ISO 14001 environmental management system implementation and management at Fermi 2.
- Extensive hazardous, mixed, and regulated waste management experience including waste sampling, characterization, approvals, manifesting, shipping, lab packs, and waste minimization.
- Preparation of Biennial Hazardous Waste Reports.
- SARA Tier II and TRI review and reporting.
- Incident command- spill response.
- Fermi environmental training development.

TRAINING

ISO 14000 Lead Auditor Training Course, 1998
Certified Storm Water Operator, Industrial Sites—02503
40 Hour HAZWOPER Hazardous Waste Site Worker
40 Hour HAZWOPER Emergency Response
Hazardous Waste, Advanced Hazardous Management, and DOT Hazardous Materials Training—Lions
Radioactive Waste Packaging, Transportation, IATA and Disposal Training—Energy Solutions
State of Michigan Risk Based Corrective Action (RBCA) Training
Full Radiation Worker Training

Fermi Power Plant Systems Course
Fermi 3 Engineering Training Program: Fundamentals, Reactor Theory, Thermodynamics, Components
Radiological Emergency Response Program—Dose Assessment
EPA Potential Responsible Party (PRP) Identification training
USWAG Toxic Release Inventory Reporting Seminar
MDEQ SARA Tier II Workshop

PROFESSIONAL AFFILIATIONS

American Nuclear Society, Michigan Chapter, Executive Committee Member

Steven D. Thomas

Senior Consultant / Project Mechanical - Nuclear Projects

Specialization: Nuclear Power Plant Licensing; Regulatory Issues; Programs; Configuration Management

Education
Bachelor of Science, Nuclear Engineering, University of California, 1982

Westinghouse PWR Nuclear Plant SRO Certification

Total Years Experience
29

Joined Black & Veatch
2007

Language Capabilities
English

Since joining Black & Veatch in January 2007, Steve Thomas has functioned as the Engineering Manager on the COL project for the DTE Fermi site. In this role, Steve is responsible for technical aspects of the project. This includes the site investigation activities, site specific systems conceptual designs, document development, quality assurance plan development, etc.

Prior to joining Black & Veatch, Steve Thomas advanced to a Principal Engineer/Design Engineering Supervisor at a two unit nuclear station. He was responsible for all mechanical issues on all assigned projects.

REPRESENTATIVE PROJECT EXPERIENCE

Black & Veatch
2007-Present
Engineering Manager. Steve is currently the Engineering Manager for the COL project for the Detroit Edison Fermi project. In this role, Steve reports directly to the Project Manager and is responsible for technical aspects of the project. This includes the site investigation activities, site specific systems conceptual designs, document development, quality assurance plan development, etc.

Subsequent to submitting the COLA to the NRC, Steve has been involved with assisting with the regulatory reviews. In this role, Steve's responsibilities include interfacing directly with the client and outside agencies, and developing and managing responses to requests related to the application.

Prairie Island Nuclear Generating Plant
2005-2006
Design Engineering Supervisor. Prairie Island is one of several nuclear power plants operated as a fleet by the Nuclear Management Company (NMC). Steve supervised a diverse group of design engineers in the Configuration Management and Analyses Group. The Configuration Management and Analyses Group establish and maintain the Configuration Management Processes at Prairie Island. This group also provides the majority of the mechanical (hydraulic and thermal), electrical, and civil / structural analyses for the site. These analyses are either performed by personnel in the group, off-site vendors, or the fleet analyses department. These analyses may be relatively straightforward or quite complex, involving sophisticated computer modeling tools.

As supervisor of this group, Steve had responsibility for implementation and oversight of the processes used to perform

analyses and evaluate proposed changes to the facility. Associated responsibilities include participating in fleet teams, providing training, monitoring industry activities, implementing self assessments, responding during inspections and, overall, ensuring the quality of the products developed using these processes. The Configuration Management Group also maintains the Updated Safety Analyses Report, including providing the required updates to the Nuclear Regulatory Commission.

Prairie Island Nuclear Generating Plant
1997-2005
Principal Engineer. As part of the Configuration Management group he has been involved in several design bases and configuration management related projects. These projects include design bases reconstitution efforts, performing or directing various types of analyses, responding to Regulatory Correspondence and assessing Industry experience.

In the role of Principal Engineer, Steve demonstrated the ability to work independently, taking the lead in his areas of responsibility. For example, Steve functioned as the site lead for response to significant regulatory issues. This included forming teams to evaluate the issues, determine the necessary actions, coordinate performance of the identified actions, and monitor the completion of these actions. In addition, when responding to selected issues, Steve also functioned as the fleet technical lead for the plants within the NMC. These responsibilities included coordinating the efforts of the technical leads at each NMC site and evaluating and implementing areas that the sites could gain efficiencies through working together.

Steve has been involved in other broad based industry initiatives involving important technical issues and revisions to change control processes used at nuclear power plants. These efforts involved interaction with personnel from other utilities (outside the NMC) and the Nuclear Regulatory Commission.

During this time, Steve also successfully completed the Nuclear Certification program at Prairie Island.

Automated Engineering Services
1995-1997
Project Manager. Steve assisted Prairie Island with issue resolution stemming from assessment of licensing and regulatory initiatives at other facilities. Steve participated in a project to perform a comprehensive review and update of design bases documentation.

Technical efforts included interface with, and use of, computer based modeling tools to analyze hydraulic response to various system configurations, evaluation of component performance, working with other organizations to develop sophisticated computer modeling for two phase flow analyses, compartment pressure and temperature analyses, and ventilation system capability studies.

TENERA
1990-1995
Project Manager. Steve was assigned to the Systems Engineering Group with TENERA. He performed design and implementation reviews of electrical and mechanical systems. These reviews focused on ensuring components and associated systems satisfied their design and licensing bases. He successfully managed a program used to assess design discrepancies discovered during these reviews. When discrepancies were discovered, the significance of the discrepancy was evaluated, compliance with regulatory commitments was assessed and, when necessary, efficient and cost effective solutions were proposed.

Mare Island Naval Shipyard
1983-1990
Chief Test Engineer. As a Chief Test Engineer, Steve performed activities related to supervising and coordinating the activities of personnel (planning, engineers, and maintenance) engaged in nuclear repair, design modification, overhaul and testing. Planning and scheduling activities involved working closely with other groups such as the Ship Engineering Officers, Plant Design Organizations, and the Naval Reactors Office (the Regulatory Oversight Organization).

Edwin W. Meyer

Edwin W. Meyer is a geotechnical engineer within Black & Veatch's energy business, with experience that encompasses both geotechnical engineering, and investigation and remediation of contaminated sites. His geotechnical experience includes the evaluation of foundations, retaining walls, earth structures, soil-structure interaction, and slope stability for fossil and nuclear electric plants, earth dams, landfills, water treatment plants, office buildings, river intakes, and transmission lines. For nuclear plants, he has participated in licensing new plants using the Combined Construction and Operating License Application (COLA) and development of a standard plant design. He has extensive field experience throughout the country and has developed investigation programs designed to evaluate hydrogeologic conditions, the extent of contamination, and engineering properties of subsurface materials. For contaminated sites, he has prepared investigation and feasibility study reports and performed remedial evaluations and design.

REPRESENTATIVE PROJECT EXPERIENCE

Fermi 3; DTE Energy; Monroe, Michigan, United States
2007-Present

Geotechnical Engineer. Performed an assessment and investigation in support of the Combined Construction and Operating License Application (COLA) submittal for the Fermi 3 nuclear unit. Developed geotechnical and hydrogeology subsurface investigation programs to support preparation of licensing submittals. The programs were tailored to collect information required by the Nuclear Regulatory Commission (NRC). Managed implementation of the investigation programs that extended over approximately 4 months. Directed preparation of the geotechnical, seismic hazard/site response, geology, and hydrogeology sections of the COLA. The document was submitted on schedule and docketed by the NRC. Providing support to respond to NRC requests for additional information, NRC audits, and ACRS meetings. Participated in NRC audits and ACRS meetings.

Port Westward 2; Portland General Electric Company; Oregon, United States
2012-2013

Geotechnical Engineer. Acted as Lead Geotechnical Engineer for the addition of 12 reciprocating natural gas fueled engines/generators and support equipment. Developed and supervised the subsurface investigation program. Directed geotechnical assessment including liquefaction analysis for the site. The site conditions required implementation of ground improvement to provide adequate foundation support. The selected ground improvement consisted of stone columns. Provided construction support during installation of the stone columns.

GEOTECHNICAL ENGINEER

Specialization:
Geotechnical Design and Analysis

Education
Master of Science, Civil Engineering,
University of Illinois, 1980
Bachelor of Science, Civil Engineering,
Michigan State University, 1979

Professional Registration
1984, Kansas,
Professional Engineer, 9766

Total Years of Experience
35

Joined Black & Veatch
1980

Language Capabilities
English

Liquefied Natural Gas Export Terminal; Confidential; West Coast of United States, United States
2013-Present

Geotechnical Engineer. Acted as Lead Geotechnical Engineer for a liquefied natural gas export facility. The project included a marine terminal, liquefaction trains, gas conditioning area, and two, three-on-one combined cycle units. Developed and supervised a three phase subsurface investigation program that included shear and compression wave velocity measurements to a depth of 280 feet. Coordinated with an outside consultant who had been engaged previously by the client. Directed development of site-specific seismic hazard studies, evaluation and treatment of soil liquefaction, foundation evaluations, and slope stability evaluations. Directed preparation of a Geotechnical Data Report, Geotechnical and Soil Liquefaction Reports for submittal to the Federal Energy Regulatory Commission and the state Energy Facility Siting Commission, and a Geotechnical Report for internal staff. Made presentations to the client and potential buyers of the LNG. Assessed design codes applicable for the project. Planned and managed performance of a ground improvement testing program to assess the most effective approach to densify the existing soil to prevent soil liquefaction. Tested vibro-compaction and vibro-replacement techniques. Participated in construction planning and estimating.

Nuclear Standard Plant Design; Confidential; United States, United States
2010-2011

Geotechnical Engineer. Directed the soil-structure interaction (SSI) analyses for the standard plant Turbine Building.

Cane Island Power Park; Florida Municipal Power Authority; Kissimmee, Florida, United States
2008-2010

Geotechnical Engineer. Supervised an investigation to evaluate the presence of karst features at the location of a proposed new combustion turbine. As Owner's Engineer provided oversight for further investigation to evaluate the potential of future karst activity and the need to implement measures to prevent karst activity below the new unit. This has resulted in the development of a compaction grouting and stone column ground improvement program by the design engineer / contractor. Reviewed the ground improvement program and specifications for compaction grouting and stone columns, and currently providing construction support for the ground improvement program as the Owner's Engineer. Using data collected from previous investigations prepared a report to discuss the risk of potential karst activity associated with future pumping from emergency water supply wells.

Big Stone II; Big Stone II Power Partners; Big Stone, South Dakota, United States
2006-2008

Geotechnical Engineer. Managed the accelerated design of a 1 square mile makeup water pond for the plant. Design activities included slope stability and seepage analysis. The design was complicated by glacial soils that contained intermittent sand layers. Produced permit drawings and specifications. Supported permitting by preparing a presentation. The dams were successfully permitted. Developed a subsurface investigation program to determine engineering properties of the soil and bedrock for the design of a new coal fired generating unit. The investigation program consisted of borings, piezometers, and laboratory testing. Prepared the specification for the subsurface investigation. Supervised implementation of the subsurface investigation program. The investigation results were used to perform detailed geotechnical engineering design for the new coal fired unit. The results of the detailed geotechnical engineering were presented in a geotechnical design report. Managed all geotechnical aspects of the project.

Sibley Generating Station; Aquila; Sibley, Missouri, United States
2007-2007

Geotechnical Engineer. Developed a subsurface investigation program to determine the engineering properties of the soil and bedrock for the design of foundations for a selective catalytic reduction (SCR). The investigation program consisted of borings, piezometers, and laboratory testing. Provided construction support during micropile load testing and start of production piling.

Emporia Energy Center; Westar Energy; Emporia, Kansas, United States
2006-2007

Geotechnical Engineer. Developed a subsurface investigation program to determine the engineering properties of the soil and bedrock for the design of seven simple cycle gas fired turbines. The investigation program consisted of borings, piezometers, and laboratory testing. Prepared the specification for the subsurface investigation. Managed the geotechnical analysis and design of the shallow foundation system and reporting. The presence of swelling soils required the use of lime treated soil and flowable fill immediately below the foundations to aid in controlling the volume change of the soil. Prepared the construction specifications.

Weston Unit 4; Wisconsin Public Service Corporation; Wausau, Wisconsin, United States
2004-2006

Geotechnical Engineer. Developed a subsurface investigation program to determine the engineering properties of the soil and bedrock for the design of a new coal fired generating unit. The investigation program consisted of borings, piezometers, and laboratory testing. Prepared the specification for the subsurface investigation. Managed the geotechnical analysis and design of a shallow foundation system and preparation of the geotechnical design report. Because of high estimated settlements for the boiler and turbine areas, the foundation design included overexcavating 10 feet and replacement with fly ash stabilized soil. Prepared construction drawings and specifications. Provided construction support.

A.S. King Plant Retrofit; Xcel Energy, Inc.; Bay Port, Minnesota, United States
2003-2005

Geotechnical Engineer. Reviewed existing information and planned retrofit activities, then developed a subsurface investigation program to determine the engineering properties of the soil and bedrock. The investigation program was complicated by the bedrock, which consisted of weak, friable sandstone. Prepared the specification for the subsurface investigation. Kicked off the subsurface investigation program and personally observed the initial bedrock unconfined compression testing to gain a better understanding of the behavior of the bedrock. Supervised a testing program to develop design parameters for the bedrock and soil. Managed geotechnical analysis and design of micropiles and piers and preparation of a design memorandum for use by the design team. Managed the preparation of a geotechnical data report that summarized the subsurface conditions and provided laboratory testing data. Provided construction oversight at the beginning of pier and micropile installation. Because of constructability issues identified during installation of the first pier, the installation approach was changed from traditional pier installation to procedures used to install auger cast piles. Use of the auger cast pile approach was a new application in this area of the country because the augers were required to penetrate a weak sandstone approximately 20 feet.

Dresden Energy Center; Dominion Energy, Inc. (DEI); Dresden, Ohio, United States
2000-2005

Geotechnical Engineer. Managed the development and implementation of a subsurface investigation and geotechnical design to establish plant grade on the side of a hill. The subsurface investigation consisted of borings, piezometers, soil sampling, seismic refraction surveys, seismic crosshole testing, resistivity testing, and laboratory testing. The establishment of plant grade resulted in the design of 60 foot rock cuts, 50 feet of fill with 2-to-1 slopes, design of a 25 foot high mechanically stabilized earth wall, and use of wick drains to accelerate native clay consolidation. A geotechnical data report was prepared summarizing the site conditions. Managed the development and implementation of a subsurface investigation and geotechnical design for the intake structure on the Muskingum River. The investigation consisted of land and barge borings. Design elements included slope stability, settlement and bearing capacity, deep foundations, cellular sheet pile and cantilever sheet pile retaining walls, subgrade reinforcement, and preparation of construction drawings and specifications. Performed extensive reviews of excavation support systems and a sheet pile retaining wall along the Muskingum River. The review resulted in a design change from a tied back wall to an open cell sheet pile wall. Participated in the evaluation of the suitability of collector wells and an in-river infiltration gallery for water supply. Prepared the specification for the specialty contractor to perform testing and evaluate the site. Testing results showed this alternative would not provide sufficient water for the plant. As the Owner's Engineer, provided input for water treatment plant. The proposed approach was for ground improvement using deep dynamic compaction (DDC) with shallow foundations. Observed the performance of the DDC test pad. Developed a slope monitoring program and observed the installation of inclinometer casings. Reviewed data during construction to ensure that slope was stable. Supported permitting activities with the Ohio Environmental Protection Agency (EPA) and the US Army Corps of Engineers (COE).

Greenup Lock and Dam Mooring Cells; US Army Corps of Engineers; Grays Branch, Kentucky, United States
2003-2003

Geotechnical Engineer. Evaluated the approach to excavate bedrock in the Ohio River to facilitate mooring cell construction. Considered blasting and mechanical excavation. The blasting effects on mussel beds were evaluated. Prepared the specifications for blasting and underwater monitoring of ground vibrations and water pressure waves at the mussel beds.

Bluestone Dam; US Army Corps of Engineers; Hinton, West Virginia, United States
2003-2003

Geotechnical Engineer. Directed the initial subsurface investigation for the expansion of an existing road located on a steep slope. Performed a slope stability analysis of the existing road and found that the factor of safety of the existing road was marginal. Developed a supplemental investigation program consisting of drilling with coring and refraction surveys. Performed an additional slope stability evaluation to determine a stable configuration for expanding the existing road. Loads were established and provided to structural engineers for the design of a tied-back HZ retaining wall that will be socketed into the bedrock.

SCR Construction; Northern Indiana Public Service Company (NIPSCO); Michigan City, Indiana, United States
2002-2002

Geotechnical Engineer. Provided construction oversight for the installation of critical auger cast piles. Work was performed in low headroom conditions. Provided direction to the testing contractor and participated in an evaluation to reduce the time between installations of adjacent piles to 18 hours.

Brandon M. Gomer

Brandon M. Gomer is a geologist in the Geotechnical Section of the Civil/Structural Engineering Department within Black & Veatch (B&V) Energy. Mr. Gomer is experienced in completing subsurface engineering and environmental geology studies, seismic hazard analyses, and groundwater investigations to assist clients in meeting their goals. In addition to his geologic capabilities, Mr. Gomer's technical competencies are as follows: geotechnical investigations, geophysical investigations, slope stability analysis, seismic hazard evaluation, site response analysis, well installation, aquifer testing, groundwater modeling, environmental sampling, environmental site assessments, installation and operation of environmental remediation systems, and environmental risk assessment.

REPRESENTATIVE PROJECT EXPERIENCE

Patillas Dam; Puerto Rico Electric Power Authority; Puerto Rico
2014-2015

Geologist. Responsible for development of acceleration time histories for dynamic analysis of an embankment dam concurrently with the U.S. Bureau of Reclamation (USBR). Advised and reviewed evaluation of liquefaction potential and slope stability of the embankment under seismic loading. Coordinated with USBR on appropriate return period for liquefaction and deformation analyses, and appropriate dynamic properties for the embankment analyses.

Townes and Talbott Dam Stability; City of Danville; Virginia, United States
2013-2014

Geologist. In response to FERC comments on a previous stability analysis report, the analyses for the stability of the abutments at two dams were revised. The revised stability analyses determined factors of safety for planar and wedge failure along rock joints due to the forces from the weight of the rock, dam thrust, and hydrostatic forces. The dam thrust forces were determined from a finite element model of the dams. A memorandum describing the revised analyses and the results was prepared that explained the analyses and the assumptions. Then the results were discussed. This discussion included an evaluation of modeling assumptions that led to low factor of safety wedges that - if correct - should have already failed. Sensitivity analyses were completed to demonstrate that slightly less conservative assumptions led to adequate factors of safety that better represent the observed site conditions.

GEOLOGIST

Specialization:
Dams & Control Structures;
Geotechnical Investigations;
Geotechnical Design;
Hydrogeologic Evaluations;
Hydrogeologic Investigations;
Environmental Impact Investigations and Analysis

Education
Masters, Geology,
Northwestern University, 2000
Bachelors, Geology,
University of Missouri, 1998

Professional Registration
2014, California,
Professional Geologist, 9175
2006, Missouri,
Registered Geologist,
2007006633

Total Years of Experience
17

Joined Black & Veatch
2008

Professional Associations
American Geophysical Union
Association of Engineering Geologists
Association of Missouri Geologists
Missouri Groundwater Association

Language Capabilities
English
Spanish

Selected Presentations & Publications
Please see the end of this document for details.

Healy NOx Compliance Project; Golden Valley Electric Association; Alaska, United States
2013-2014

Geologist. Determined appropriate uniform hazard response spectrum for bedrock based on evaluation of probabilistic seismic hazard analyses, deterministic seismic hazard analyses, and code-based spectra. Developed a subsurface profile for the site based on site measurement of shear wave velocity and the subsurface investigation data. Completed equivalent linear site response analysis with sensitivity evaluations and statistical consideration of the subsurface conditions. Prepared a report documenting the seismic ground motion evaluation and response spectra for subsequent dynamic analyses.

Tilbury Island LNG Expansion; Fortis BC Energy; British Columbia, Canada
2013-2014

Geologist. Reviewed and verified seismic design parameters developed by the client for use by LNG tank vendor in seismic design. The verification included revising the site response analysis to modify the vertical response spectra for the LNG tank design, which had not led to a conservative design. The revised vertical spectra impacted the LNG tank design due to the high seismic loads anticipated at the site.

Jordan Cove LNG Export Facility and South Dunes Power Plant; Jordan Cove Energy; Oregon, United States
2013-2015

Geologist. Responsible for review of consultant testing for development of a site-specific ground motion response analysis. Completed initial evaluation of liquefaction susceptibility and settlement for LNG and power facilities. Assisted in developing additional subsurface investigation to refine site-response analysis and liquefaction evaluation for design of structures and slopes at the site. Slope design included evaluation of soil improvements to accommodate up to 30 feet of fill material to mitigate tsunami inundation, scour, and slope stability.

Significant evaluation of soil liquefaction and determination of appropriate mitigation by ground improvement. The ground improvement included a test program to optimize the type, depth, and spacing of the treatment due to the project's size.

NTTF Recommendations 2.1; Cooper Nuclear Station; Nebraska, United States
2013-2015

Geologist. In support of the response by the Cooper Nuclear Station (CNS) to NTTF Recommendation 2.1, prepared soil failure evaluation in accordance with NUREG-1407 and EPRI NP-6041. Soil failure evaluation identified liquefaction as the primary concern related to potential soil failure hazards that could impact safe shutdown equipment. Evaluation documented that the safe shutdown equipment would not be impacted by soil liquefaction at the design level (i.e., safe shutdown earthquake) or beyond the design basis defined by the NUREG-1407Individual Plant Examination of External Events (IPEEE) review level earthquake. Continued support in development of report and response to NRC comments.

Lake Wohlford Dam Replacement; City of Escondido; California, United States
2013-2015

Geologist. Developed spectrally matched time histories in accordance with FERC requirements for dynamic modeling of a proposed roller compacted concrete dam to replace the existing Lake Wohlford Dam. Selected and modified natural time histories through time-domain spectral matching to better match the hazard spectrum identified by the DSHA and PSHA. Evaluated rock slope stability for modifications to road cuts, excavations for dam construction, and global dam stability. Provided slope reinforcement recommendations that included a rock bolt design, and assisted in addressing comments from review by the Board of Consultants and the California Division of Safety of Dams (DSOD).

Fermi 2 NTTF Recommendation 2.1; DTE Energy; Michigan, United States
2012-2014

Geologist. Developed site response analysis inputs for the Fermi 2 nuclear power plant based on existing site data and data from the adjacent Fermi 3 COLA. These inputs form the basis for dynamic site amplification calculations that will be completed by EPRI to address the potential seismic hazard based on the CEUS SSC model. Prepared the calculation that determined the inputs and completed a memorandum to the client under the Black & Veatch Nuclear QA program. Provided third party review of report to NRC documenting the Seismic 2.1 evaluation by DTE.

Craig Station NOx Reduction; Tri-State Generation & Transmission; Colorado, United States
2013-2013

Geologist. Responsible for specification development, bid review, and geotechnical investigation at an existing coal power plant for design of foundations for an AQCS expansion. Coordinated development and review of technical bids and site activities with client and subcontractors. Logged soil for 18 borings and provided oversight of the additional subsurface investigation activities including pressuremeter testing and shear wave velocity measurements. Prepared portions of the engineering design report for B&V use in obtaining designing foundations for the AQCS expansion project.

Chaffey Dam; State Water Corporation; New South Wales, Australia
2012-2014

Geologist. Responsible for development of acceleration time histories for input to the three-dimensional finite-element model of the Chaffey Dam to assess deformation during a proposed dam raise. Completed study using finite element analysis to determine appropriate soil properties based on measured deformation data. This analysis included the influence of the phreatic surface and the static loading. Once the finite element model was calibrated to the measured data, multiple deformation analyses were completed. These included finite element models to determine the deformation and stresses during the anticipated construction sequence; the long term deformation and stresses after completion of the project; and dynamic deformation due to earthquake shaking. The results were included in a design report to the client with recommendations on completing the dam raise.

Lower Paint Dam; WE Energies; Michigan, United States
2012-2012

Geologist. Mapped the geologic conditions of bedrock beneath a replacement canal wall that was beginning construction. The mapping was requested by FERC to verify rock joints were not present that could create a failure mode for the canal wall. The geologic mapping confirmed preferential jointing was not present and that the wall should remain stable using the current design. A memorandum was prepared to document the work for FERC and the client.

Shepard Energy Center; KBV; Alberta, Canada
2011-2012

Geologist. Coordinated nondestructive testing of more than 1000 drilled pier foundations. Worked with the testing contractor to develop a method for assessing the pier integrity when traditional methods did not produce reliable results. Communicated with the project and client concerning the testing results, and developed a testing plan to provide confidence in the pier construction methods. Provided oversight and critic of drilled pier construction process to mitigate practices.

Campbell Units 1 & 2 AQCS Expansion; Consumers Energy; Michigan, United States
2011-2012

Geologist. Responsible for specification development, bid review, and geotechnical investigation at an existing coal power plant for design of foundations for an AQCS expansion. Coordinated development and review of technical bids and site activities with client and subcontractors. Coordinated activities to allow onsite contractors to complete the work on an accelerated schedule. Logged soil for five borings and provided oversight of the additional subsurface investigation activities including electrical resistivity testing and shear wave velocity measurements. Prepared portions of the engineering design report for B&V use in obtaining designing foundations for the AQCS expansion project.

Campbell Unit 3 AQCS Expansion; Consumers Energy; Michigan, United States
2011-2012

Geologist. Responsible for geotechnical investigation at an existing coal power plant for design of foundations for an AQCS expansion. Coordinated site activities with client and subcontractors. Logged soil for six borings and provided oversight of the additional subsurface investigation activities including cone penetrometer soundings, electrical resistivity testing, shear wave velocity measurements, dilatometer testing, and hydraulic conductivity testing. Prepared engineering design report for B&V use in obtaining designing foundations for the AQCS expansion project.

Unit 1 SCR Addition; Orlando Utilities Commission; Florida, United States
2012-2012

Geologist. Provided oversight of cone penetrometer and geophysical investigation to determine shear wave profile and soil strengths beneath existing ID fans. Responsible for coordinating and overseeing the field investigation, reporting progress and preliminary results to the client, and developing seismic velocity profile for subsequent dynamic analysis by B&V structural engineers.

Site-Specific Response Analysis; Coal Fired Power Plant; Therma South; Davao, Philippines
2012-2013

Geologist. Determined appropriate uniform hazard response spectrum for bedrock based on evaluation of probabilistic seismic hazard analyses, deterministic seismic hazard analyses, and code-based spectra. Developed spectrally matched time histories appropriate for the seismic sources contributing to the seismic hazard. Developed a subsurface profile for the site, and statistically determined the lower and upper bound profile based on site measurement of shear wave velocity. Completed equivalent linear and nonlinear site response analysis with sensitivity evaluations. Prepared a report documenting the seismic ground motion evaluation.

Twin Falls Dam; WE Energy; Iron Mountain, Michigan, United States
2011-2013

Geologist. Logged rock cores for evaluation of rock strength and joint orientation, and completed surface mapping of exposed rock outcrops to evaluate local joint, bedding, and foliation patterns. Assisted with an evaluation of geologic data for analyses of the bedrock stability for construction excavation. Completed core wall investigation in Fall of 2012. This investigation used subsurface sampling methods to determine the as-built location of a core wall adjacent to the Auxiliary Spillway. The elevation of the top of the core wall was confirmed and the interface with a known bedrock outcrop was confirmed. The location of the core wall interface with the bedrock outcrop more accurately determined the relative location of the spillway and refined the potential failure calculation for the spillway.

Oakley Generating Station; Oakley Power Constructors; Oakley, California, United States
2011-2011

Geologist. Developed engineering geology report consistent with guidelines for the State of California. Evaluated seismicity, geologic hazards, liquefaction, and potential slope stability issues. Prepared a report documenting the evaluation for the CBO

Oakley Generating Station; Oakley Power Constructors; Oakley, California, United States
2011-2011

Geologist. Determined bedrock uniform hazard response spectrum from probabilistic seismic hazard analysis. Developed spectrally matched time histories appropriate for the seismic sources contributing to the probabilistic and deterministic seismic hazard. Developed a subsurface profile for the site, and statistically determined the lower and upper bound profile based on site measurements of shear wave velocity. Completed the site response analysis with sensitivity evaluation of the depth to seismic bedrock. Prepared a report documenting the evaluation for the CBO.

Oneida Dam; PacifiCorp; Franklin County, Idaho, United States
2011-2011

Geologist. Provided oversight of geophysical investigation to determine shear wave profile and depth to bedrock on a soil and rock slope containing a surge tank. Responsible for development of acceleration time histories for input to the finite-element model of surge tank at the Oneida Dam. Selected and modified natural time histories through time-domain spectral matching to better match the hazard spectrum identified by the PSHA. Developed a site specific response spectrum based on the results of the geophysical investigation and site response analysis using SHAKE2000. Completed analysis of the soil slope to evaluate factor of safety for static and pseudo-static failure. Evaluated dynamic bearing capacity of soil beneath the surge tank.

Oberon Dam; State Water Corporation; New South Wales, Australia
2011-2014

Geologist. Responsible for development of acceleration time histories for input to the three-dimensional finite-element model of the Oberon Dam. Selected natural time histories of earthquakes to represent similar magnitude and distance based on deaggregation of a probabilistic seismic hazard analysis (PSHA). Modified the time histories through time-domain spectral matching to better match the hazard spectrum identified by the PSHA.

Fermi 3 COLA; DTE Energy; Detroit, Michigan, United States
2010-2015

Geologist. Prepared and reviewed responses to requests for additional information (RAI) from the NRC related to the Final Safety Analysis Report (FSAR) Chapter 2 for the Fermi 3 combined license application (COLA). Participated in NRC audit of FSAR Chapters 2 and 3 for portions concerning geotechnical properties, seismic site response analyses, and development of the seismic inputs for site-specific soil-structure interaction (SSI) modeling. Provided ongoing review and assistance to respond to NRC questions from the audit concerning geotechnical properties, site response analyses, and the seismic inputs. Successfully helped close all RAIs and questions concerning the site-response analysis and seismic inputs to the SSI analysis. Provided input and review for addressing RAI 01.05-1 concerning the CEUS SSC model. Assisted in development of approach for incorporating the CEUS SSC results into the Fermi 3 COLA and revised SSI analyses. Participated in multiple meetings with the client, industry experts, and the NRC to determine the path forward.

Finite Element Analysis of Earthquake Loading; Toketee Dam; PacifiCorp; Douglas County, Idaho, United States
2010-2010

Geologist. Responsible for development of acceleration time histories for input to the finite-element model of retaining wall at the Toketee Dam. Selected natural time histories of earthquakes to represent similar magnitude and distance based on deaggregation of a probabilistic seismic hazard analysis (PSHA). Modified the time histories through time-domain spectral matching to better match the hazard spectrum identified by the PSHA. Completed pseudo-static analysis of the retaining wall for sliding and overturning.

Ragged Mountain Dam; City of Charlottesville; Charlottesville, Virginia, United States
2010-2010

Geologist. Responsible for geotechnical investigation of a cyclopean concrete dam and earth-fill embankment. Coordinated site activities with the client and multiple subcontractors to complete drilling, testing and downhole televiewer (OTV and ATV) surveys. Logged concrete and rock cores for three borings to document the quality of the cyclopean concrete and foundation rock. Completed packer tests to evaluate the amount of fracture in the concrete and foundation rock. Prepared report to document investigation activities and results to provide client with an alternative proposal to building a new dam. Proposal estimate was approximately $4 million less than the dam replacement alternative.

Advanced Boiling Water Reactor (ABWR) Combined Operating License Application (COLA) Field Investigation; River Bend Nuclear Station; St. Francisville, Louisiana, United States
2008-2008

Geologist. Geologist on subsurface investigation for COLA at the River Bend Nuclear Station. Completed excavation plan and slope stability analysis. Directed drilling and sampling, and logged soils on geotechnical borings. Conducted deviation surveys in completed borings.

SELECTED PRESENTATIONS & PUBLICATIONS

Gomer, Brandon M., J. C. Borrero, J. Bu, C. Saiang, B. Uslu, J. Freckman, E. A. Okal, and C. E. Synolakis. "Field Survey and Preliminary Modeling of the Wewak, Papua New Guinea Earthquake and Tsunami of September 9, 2002." Seismological Research Letters, Volume 74, pp. 393-405. 2003.

Gomer, Brandon M. and E. A. Okal. "Multiple-ScS Probing of the Ontong-Java Plateau." Physics of the Earth and Planetary Interiors, Volume 138, pp. 317-331. 2003.

Gomer, Brandon M., E. A. Okal, L. Dengler, S. Araya, J. C. Borrero, S. Koshimura, G. Laos, D. Olcese, M. Ortiz, M. Swensson, V. V. Titov, and F. Vegas. "A Field Survey of the Camaná, Peru Tsunami of June 23, 2001." Seismological Research Letters, Volume 73, pp. 904-917. 2002.

Gomer, Brandon M. and E. A. Okal. "Multitaper Multiple-ScS Analysis Beneath the Southwestern Pacific." The American Geophysical Union. Fall 2002.

Gomer, Brandon M., S. Lebedev, E. A. Okal, R. D. van der Hilst, K. G. Mackey, and L. V. Gunbina. "The Upper Mantle Velocity Structure Beneath the Sea of Okhotsk." The American Geophysical Union. Spring 2001.

Gomer, Brandon M., E. A. Okal, S. Araya, J. C. Borrero, L. Dengler, S. Koshimura, G. Laos, D. Olcese, M. Ortiz, M. Swensson, V. V. Titov, and F. Vegas. "The Peruvian Tsunami of 23 June 2001: Preliminary Report by the International Tsunami Survey Team." The American Geophysical Union. Spring 2001.

Gomer, Brandon M. and E. A. Okal. "Multiple ScS Analysis beneath the Ontong-Java Plateau." The American Geophysical Union. Spring 2000.

Gomer, Brandon M., H. Li, and R. M. Russo. "Seismic Attenuation of Aftershocks to the July 9, 1997 Cariaco, Venezuela Earthquake." The American Geophysical Union. Spring 1999.

Gomer, Brandon M., S. Stein, and T. Dixon. "Resolution of Seismogenic Zone Interface Geometry and Slip Process with GPS Data." The American Geophysical Union. Spring 1999.

Gomer, Brandon M., S. Stein, and T. Dixon. "Resolution of Seismogenic Zone Interface Geometry by the Inversion of GPS Data." UNAVCO. Spring 1999.

Patricia L. Campbell
Vice President, Washington Regulatory Affairs
GE Hitachi Nuclear Energy

Ms. Campbell began her service with GE Hitachi Nuclear Energy (GEH) in July 2006. She supported the ESBWR Design Certification review and continues to support reviews of Combined Operating License applications that reference the ESBWR design.

Ms. Campbell has extensive experience in the nuclear industry. Prior to joining GEH, she practiced nuclear law and advised numerous nuclear utilities in areas of nuclear regulation, including seismic and environmental qualification of equipment, ASME Code, fire protection, change processes, new reactors, license renewal, and enforcement. Ms. Campbell served as a regulator at the NRC in the Division of Engineering. She also has years of experience in regulatory affairs and engineering during construction, startup, and operations of nuclear power plants, with a major nuclear utility.

Ms. Campbell received a BSME from Memphis State University, a MS in Engineering from the University of Arkansas, and a Juris Doctor in law from George Washington University. She is a registered professional engineer in the State of Arkansas and is admitted to the Bar in Maryland and the District of Columbia.

David Hinds
Technical Engineering Manager
GE Hitachi Nuclear Energy

David Hinds has an extensive background in the nuclear industry. Mr. Hinds was a Naval Nuclear Propulsion Officer in the U.S. Navy, and then held various positions, including Shift Superintendent, Shift Operations Manager, Site Engineering Manager, and Plant General Manager, at a commercial nuclear power plant before joining GEH and managing the engineering efforts for the ESBWR Design Certification. Mr. Hinds was a leader in the application efforts beginning in 2005 through the final certification rule in 2014 and is responsible for technical engineering scope for licensing and design of GEH new nuclear power plants.

Mr. Hinds received a BSME from the University of South Carolina and has previously held a Senior Reactor Operator's License.

Engineering Director – Robert W. Hooks, P.E., S.E.

Mr. Hooks is a registered as both a professional engineer and a structural engineer with more than 40 years of civil/structural engineering experience in the analysis, design and construction of fossil and nuclear generating stations.

He is a Technical Project Director and Vice President at Sargent & Lundy LLC with extensive experience in analysis and design. He has directed or managed civil and structural design, including seismic analysis on several projects. He has had direct responsibility for interface with the NRC staff and their consultants and has made presentations to the NRC ACRS committee and the NRC staff on multiple projects.

He is currently the Technical Director for SSI and SSSI analyses in support of Fermi 3 ESBWR COL application. He is also the structural engineering director responsible for preparation of responses to NRC RAIs on Chapters 3.7 and 3.8 for the STP 3&4 ABWR COL application. In his most recent prior assignment as the Building Design Director for STP 3&4, he was directing the seismic analysis and design for all Seismic Category I structures.

Education

- Ohio State University - B. S. Civil Engineering - 1971

Licenses

- Licensed Structural Engineer – Illinois
- Licensed Professional Engineer – New Hampshire, New York, and Texas

Membership

- American Concrete Institute
- American Society of Civil Engineers
- American Society of Mechanical Engineers
- Structural Engineers Association of Illinois

Nuclear Project Experience

- DTE Energy
  - Fermi, Unit 3, Technical Project Director (2012-Present)
- South Texas Project Nuclear Operating Company (STPNOC)
  - STP 3&4, Building Design Director (2007 to 2012), Continuing licensing support (2007 to present)
- KEPCO E&C
  - Consulting assignments for current and potential PWRs, Project Director (2012-Present)
- American Electric Power
  - D. C. Cook, Manager of AEP's Structural Engineering Department at the plant during restart efforts (1999-2000)

- Korea Electric Power Corporation
  - Yonggwang 5&6 and Ulchin 5&6, Project Director (1998-1999), Chicago Office Manager (1996 to 1997)
  - Ulchin 3&4, Project Director (1998-1999), Chicago Office Manager (1993 to 1997)
  - Yonggwang 3&4, Project Director (1998-1999), Chicago Office Manager (1993 to 1997), Project Manager (1991 to 1993), Engineering Manager (1987 to 1991)

Other Nuclear Project Experience

- Commonwealth Edison Company
  - Byron 1&2 and Braidwood 1&2 (1982 to 1987)
  - NRC IE Bulletin 79-02, all of client's operating plants (1979 to 1980)
  - Carroll County 1 and 2, (1977 to 1979)
- PSI Energy
  - Marble Hill 1&2 (1979 to 1984)
- Illinois Power
  - Clinton 1 (1972 to 1979)

Engineering Manager – Javad Moslemian, P.E.

Mr. Moslemian is a registered professional engineer with more than 30 years of civil/structural engineering experience in the analysis, design and construction of new and existing nuclear power plants.

He is a Senior Manager and Vice President at Sargent & Lundy LLC with extensive experience in analysis and design including seismic analysis, Soil-Structure-Interaction (SSI) analysis, Structure-Soil-Structure Interaction (SSSI) analysis and interface with the NRC staff and their consultants. He has made presentations to the NRC ACRS committee and the NRC staff.

Mr. Moslemian is a member of the AISC N690 Code Committee TC12 for design of nuclear facilities. He is the engineering manager of Sargent and Lundy's seismic analysis group and the process owner of Sargent & Lundy's engineering processes for Earthquake Engineering, Evaluation of Supporting Structures in Nuclear Plants, and Tornado Analysis. He is currently the engineering manager for SSI and SSSI analyses in support of Fermi 3 ESBWR COL application. He is also the structural engineering manager responsible for preparation of responses to NRC RAIs on Chapters 3.7 and 3.8 for the STP 3&4 ABWR COL application. In his recent prior assignment as the structural engineering manager for STP 3&4, he was supervising the seismic analysis and design for all Seismic Category I structures.

Education

Purdue University - M.S. Civil Engineering – 1983
University of Nebraska - B.S. Civil Engineering – 1981

Licenses

Professional Engineer – Illinois

Committee

AISC Committee on Specification, Task Committee TC12 - Nuclear Facilities Design

Recent Nuclear Project Experience

- Fermi 3
  Site-specific soil-structure interaction (SSI) and structure-soil-structure interaction (SSSI) analysis for Fermi3 new ESBWR plant (2012 – present)
- South Texas Project
  Analysis, design, and licensing of new STP 3&4 ABWR plants (2007 – present)

- Exelon
  Seismic hazard screening and IPEEE adequacy evaluation for Exelon mid-west fleet (2013 – 2014)
- Millstone
  IPEEE adequacy evaluation for Millstone Units 2 & 3 (2013)
- Davis-Besse
  Heavy load drop analysis for Containment Building (2013 – 2013)
- Oconee
  Seismic analysis of PSW Building (2013 – 2013)

Robert R. Youngs, PE, GE

Principal Engineer

Current projects

- NGA-EAST:SSHAC Level 3 CEUS Ground Motions, Pacific Earthquake Engineering Research Center
- Fermi 3 COLA, Detroit Edison
- TVA-Expert Technical Review, Tennessee Valley Authority
- SWUS GMC SSHAC, GeoPentech, Inc
- Geo Site Characterization, BC Hydro and Power Authority
- Beaver Valley Nuclear, Westinghouse Electric Company
- Energy Northwest Support, Energy Northwest
- PEGASOS Refinement Project, Swissnuclear
- Seismic Hazard Assessments for Indian Point, Entergy
- Seismic Hazard Assessments for Pilgrim, Entergy

Core skills

Over 40 years of Program Management experience; serves as a pioneer for integrating earth sciences data and associated uncertainties into probabilistic hazard analysis; extensive experience with development of hazard methodologies and uncertainty treatment, performance assessments of natural systems, hazard analyses for development of design criteria, hazard analyses for performance assessment of built structures, seismic source and ground motion characterization for hazard analysis, and regional seismic hazard mapping and microzonation studies; presentation of and publication of various probabilistic seismic hazard analyses and related studies.

Professional summary

Dr. Youngs has more than 40 years of consulting experience, with primary emphasis on hazard and decision analysis. He has pioneered approaches for incorporating earth sciences data, along with their associated uncertainties, into probabilistic hazard analyses. The focus of this work has been on developing quantitative evaluations of hazard by combining statistical data and expert judgment. As Manager of the Decision Analysis (DA) practice area at AMEC Foster Wheeler Environment and Infrastructure, Dr. Youngs has helped develop capabilities within the firm that integrate the fields of earth sciences, hazard analysis, and risk assessment. He was awarded the 2012 Jesuit Seismological Award by the Easter Section of the Seismological Society of America for contributions to observational seismology.

Dr. Youngs has extensive experience performing studies for nuclear facilities under quality assurance programs. These include probabilistic seismic hazard analyses and ground motion studies for Washington Public Power Supply System's facilities at Hanford and Satsop; Portland (Oregon) General Electric's Trojan Power Plant; Pacific Gas and Electric Company's facilities at Diablo Canyon and Humboldt Bay; U.S. Department of Energy (DOE) nuclear facilities at Hanford, Idaho National Engineering, the Environmental Laboratory, Savannah River, Rocky Flats, Los Alamos National Laboratory, and the Nevada Test Site, the proposed commercial nuclear waste repository at Yucca Mountain, Nevada; and applications for new power plants in Illinois, North Carolina, Florida, Michigan, Louisiana, and Ontario, Canada. He is a member of the SSHAC Level 3 Technical Integration (TI) teams developing updated seismic hazard assessments for the Hanford Washington DOE site, the Southwest US (SWUS) project developing ground motion models for Post Fukushima response for the Diablo Canyon and Palo Verde nuclear power plants, and the PEER NGA-East team developing a ground motion model for the central and eastern United States (CEUS).

Dr. Youngs has considerable experience in assessing earthquake hazards in central and eastern North America (CENA). He was a member of the project team that developed the Electric Power Research Institute's (EPRI) 1989 seismic hazard assessment for nuclear power plants in the central and eastern U.S. and EPRI sponsored research projects to assess ground motions (1993) and maximum magnitudes (1994) for the CEUS. He was also a member of the project team for the U.S. Nuclear Regulatory Commission project to develop response spectral shapes for analysis of nuclear facilities (NUREG/CR-6728) and the EPRI (2004) project to characterize ground motions in the CEUS for analysis of nuclear facilities. More recently, he was a member of the TI team that developed the EPRI (2004) CEUS ground motion model, the TI team that developed the EPRI/USDOE/USNRC seismic source characterization model for the CEUS (NUREG-2115), and the TI team that developed the EPRI (2013) updated ground motion model for the CEUS.

Dr. Youngs completed an extensive seismic hazard analysis of nuclear power plants in Ontario, Canada, for the Canadian Atomic Energy Control Board and recently evaluated the seismic hazards at proposed geologic repositories for low and

intermediate level nuclear waste at Bruce and Chalk River, Ontario, Canada. He was the technical lead for ground motion analyses for a regional dam safety seismic hazard assessment for the Tennessee Valley Authority (TVA) region.

Professional qualifications/registration(s)

Geotechnical Engineer: CA No. 924, 1987
Professional (Civil) Engineer: CA No. 22519, 1973

Education

Ph.D., Geotechnical Engineering, University of California, Berkeley, CA, 1982
M.S., Geotechnical Engineering, University of California, Berkeley, CA 1973
B.S., Civil Engineering, California State Polytechnical University, Pomona, CA, 1969

Memberships/affiliations

American Society of Civil Engineers
American Geophysical Union
Earthquake Engineering Research Institute
Seismological Society of America

Representative projects

Development of Hazard Methodologies and Uncertainty Treatment

- Seismic Hazard in the Eastern United States, Electric Power Research Institute (EPRI-SOG, 1989)
- Maximum Earthquakes in Eastern United States, EPRI (1994)
- Expert Elicitation Methodology Demonstration for Yucca Mountain Performance Assessment, EPRI
- Expert Elicitation Studies fo***r*** Waste Package Corrosion, Unsaturated Groundwater Flow Parameters and Saturated Groundwater Flow Parameters for the Yucca Mountain Performance Assessment, CRWMS M&O
- Expert Elicitation Study for Seismic Hazard Assessment of Swiss Nuclear Power Plants (PEGASOS Study), NAGRA
- CEUS Ground Motion models for use in Early Site Permit Applications, EPRI (2004)
- CEUS SSC Project EPRI/USNRC/DOE, NUREG-2115
- NGA-East development of updated ground motion models for the CEUS, PEER
- EPRI 2004/2006 Ground Motion Review Project

Performance Assessments of Natural Systems

- Demonstration of risk-based total system performance assessment, EPRI, DOE
- Earthquakes and tectonics expert elicitation project, EPRI
- Probabilistic volcanic hazard analysis using Expert Elicitation for Yucca Mountain, DOE
- Ground motion and fault displacement hazard analysis using Expert Elicitation for Yucca Mountain, USGS, DOE

Hazard Analyses for Development of Design Criteria

- New Production Reactor at Savannah River Site and Idaho National Engineering Laboratory, Department of Energy (DOE)
- WNP-1, 2, and 4 Hanford and WNP-3, 5 Satsop, WPPSS
- Waste Tank Sites at Hanford, Washington, Westinghouse Hanford Co.
- Seismic hazard assessment of ground motions and fault displacement for Private Fuel Storage Facility, Skull Valley, Utah, Stone & Webster
- Seismic hazard assessment for BART extension into San Jose, California, Silicon Valley Rapid Transit
- Seismic hazard assessment for Early Site Permit, EGC ESP Site, Exelon Generation Company, Illinois
- Seismic Hazards Evaluation, Belefonte, Fermi, River Bend, Harris and Levy COLAs

Hazard Analyses for Performance Assessment of Built Structures

- San Francisco-Bay Area bridges, CALTRANS
- Humboldt Bay bridges, California Department of Transportation.
- K-reactor, Westinghouse Savannah River Co.
- Operating nuclear power plants in Spain, Westinghouse Europe
- Seismic hazard analysis and development of earthquake ground motions for Blue River Dam, Oregon, U.S. Army Corps of Engineers
- Pickering and Darlington nuclear generating stations, Ontario, Canada, Atomic Energy Control Board of Canada
- BART Retrofit, Bay Area Rapid Transit, San Francisco, CA

Seismic Source and Ground Motion Characterization for Hazard Analysis

- Diablo Canyon Power Plant, PG&E
- WNP-2 Hanford Power Plant, WPPSS
- Trojan Nuclear Plant, PGE

- Hanford Reservation, Westinghouse Hanford Co.
- Palo Verde Nuclear Generating Station, Arizona Power
- PEGASOS Project, Switzerland
- CEUS Ground Motion Model, EPRI, 2004 and 2013
- CEUS Seismic Source Characterization, EPRI/USDOE/USNRC
- PEER NGA, NGA-West 2, and NGA-East projects

Regional Seismic Hazard Mapping and Microzonation Studies

- Ech Cheliff Region, Algeria
- San Juan and Mendoza Provinces, Argentina
- Seismic Design Mapping Project, State of Oregon, preparation of state-wide seismic hazard maps for Oregon Department of Transportation
- Dam Safety Seismic Hazard Assessment, preparation of regional seismic hazard maps and dam-specific ground motion assessments for the Tennessee Valley Authority
- BC Hydro Seismic Hazard Project, member of expert team developing a province-wide seismic hazard model for BC Hydro

Publications and presentations

"BC Hydro SSHAC Level 3 PSHA Study: Model Implementation & Computations," V. Montaldo Falero, K. Addo, and R. Youngs. *Proceedings of the 10th National Conference on Earthquake Engineering, Anchorage, AK*, July 2014.

"Update of the Chiou and Youngs NGA Model for the Average Horizontal Component of Peak Ground Motion and Response Spectra," B.S-J. Chiou and R.R. Youngs. *Earthquake Spectra*, v. 30, pp. 1117-1153. 2014.

"Epistemic Uncertainty for NGA-West2 Models," L. Al Atik and R.R. Youngs. *Earthquake Spectra*, v. 30, pp. 1301-1318. 2014.

"Ground-Motion Attenuation Model for Small-to-Moderate Shallow Crustal Earthquakes in California and Its Implications on Regionalization of Ground-Motion Prediction Models," B. Chiou, R. Youngs, N. Abrahamson, and K. Addo. *Earthquake Spectra*, v. 26, pp. 907-926. 2010.

"Quantifying the Earthquake Threat in the Sacramento-San Joaquin Delta, California: How Bad Can It Get?" I. Wong, P. Thomas, J. Unruh, K. Hanson, and R. Youngs. *Proceedings from the Third Conference on Earthquake Hazards in the Eastern San Francisco Bay Area, Hayward, CA*. 2009.

"Comparisons of the NGA Ground Motion Relations," N. Abrahamson, G. Atkinson, D. Boore, Y. Bozorgnia, K. Campbell, B. Chiou, I.M. Idriss, W. Silva, and R. Youngs. *Earthquake Spectra*, v. 24, pp. 45-66. Winner of 2008 Outstanding Paper Award. 2008.

"An NGA Ground Motion Model for the Average Horizontal Component of Peak Ground Motion and Response Spectra." B.S.-J. Chiou and R.R. Youngs. *Earthquake Spectra*, v. 24, pp. 173-215. 2008.

"Probabilistic Hazard Assessment for Engineering Design: Methodologies and Approaches to Evaluate Geohazards for Offshore Facilities." K.L. Hanson, R.R. Youngs, K.J. Coppersmith, M.M. Angell, and F.H. Swan. *2005 Offshore Technology Conference Proceedings, Offshore Technology Conference, Houston, TX*, OTC Paper Number 17675, 16 pp. 2005.

"Probabilistic Fault Displacement Hazard Analysis: A Case Study from Skull Valley, Utah." K.L. Hanson, R.R. Youngs, and F.H. Swan. *Proceedings Volume Western States Seismic Policy Council, Basin and Range Province Seismic Hazards Summit II, Reno Nevada, May 17 to 19, 2004*: Utah Geological Survey (UGS) Miscellaneous Publication, 13 pp. W.R. Lund (ed.). 2005.

"Incorporation of Real-Time Recurrence Probabilities, Site Response Effects, and Rupture Directivity Effects in Site-Specific Response Spectra, Utah State Capitol, Salt Lake City, Utah." M.S. Power, R.R. Youngs, and S. Chen. *Proceedings of the 13th World Conference on Earthquake Engineering, Vancouver, British Columbia*. 15 pp. 2004.

"Design Ground Motions for Cooper River Bridge, Charleston, South Carolina." M.S. Power, D.L. Wells, R.R. Youngs, and B.S.J. Chiou. *Proceedings of Geo-Trans 2004: Geotechnical Engineering for Transportation Projects, Los Angeles, CA*, 12 pp. 2004.

"Probabilistic Fault Displacement Hazard Assessment for Flowlines and Export Pipeline, Mad Dog and Atlantis Field Developments, Deepwater Gulf of Mexico." M.M. Angell, K. Hanson, F.H. Swan, R.R. Youngs, and H. Abramson. *2003 Offshore Technology Conference Proceedings, Offshore Technology Conference, Houston, TX*, OTC Paper Number 15402, 24 pp. 2003.

"Probabilistic Fault Displacement Hazard Analysis (PFDHA)." R.R. Youngs and 24 others. *Earthquake Spectra*, v. 19, pp. 191-219. 2003.

"Ground Motion Attenuation Relationships for Cascadia Subduction Zone Megathrust Earthquakes Based on a Stochastic Finite-Fault Model." N.J. Gregor, W.J. Silva, I.G. Wong, and R.R. Youngs, *Bulletin of the Seismological Society of America*, v. 92, pp. 1923-1932. 2002.

"Probabilistic Seismic Hazard Analysis for Fault Displacement and Ground Motions at Yucca Mountain, Nevada." J.C. Stepp, I. Wong, J. Whitney, R. Quittmeyer, N. Abrahamson, G. Toro, R. Youngs, K. Coppersmith, J. Savy, T. Sullivan, and Yucca Mountain PSHA Project Members. *Earthquake Spectra*, v. 17, pp. 113-151. Winner of 2001 Outstanding Paper Award. 2001.

"Probabilistic Seismic Hazard Analysis and Source Characterization for Central and Eastern North America." M. Angell, K. Hanson, S.J. Chiou, R.R. Youngs, T. Crampton, and M. Power. *Proceedings of the 6th International Conference on Seismic Zonation, Palm Springs, CA*, 6 pp. November 2000.

"Data Needs for Probabilistic Fault Displacement Hazard Analysis." K.J. Coppersmith and R.R. Youngs. *Journal of Geodynamics*, v. 29, pp. 329-343. 2000.

"Addressing Uncertainties in Seismic Source Characterization." K.J. Coppersmith, R.C. Perman, and R.R. Youngs. *Proceedings of the OECD-NEA Workshop on Engineering Characterization of Seismic Input, Brookhaven, NY*, 12 pp. November 15-17, 1999.

"Development of Design Response Spectral Shapes for Central and Eastern U.S. (CEUS) and Western U.S. (WUS) Rock Site Conditions." W.J. Silva, R.R. Youngs, and I.M. Idriss. *Proceedings of the OECD-NEA Workshop on Engineering Characterization of Seismic Input, Brookhaven, NY*, p. 83. November 15-17, 1999.

"Use of Expert Elicitation to Quantify Uncertainties in Process Models for Total System Performance Assessment." K.J. Coppersmith, R.C. Perman, and R.R. Youngs. *Proceedings of the Eighth International Conference on High Level Radioactive Waste Management, Las Vegas, NV*, p. 318-320. May 11-14, 1998.

"Strong Ground Motion Attenuation Relationships for Subduction Zone Earthquakes." R.R. Youngs, S.J. Chiou, W. Silva, and J. Humphrey. *Seismological Research Letters*, v. 68, no. 1, pp. 58-73. January/February 1997.

"Attenuation Relationships for Shallow Crustal Earthquakes Based on California Strong Motion Data." K. Sadigh, C.-Y. Chang, J.A. Egan, F. Makdisi, and R.R. Youngs. *Seismological Research Letters*, v. 68, no. 1, pp. 180-189. January/February 1997.

"Seismic Hazard Mapping for Highway Design in the State of Oregon." R.R. Youngs. *Proceedings of the Design of Highway Bridges for Extreme Events, Federal Highway Administration, Atlanta, GA*. December 1996.

"Regional Probabilistic Seismic Hazard Mapping With Uncertainty--An Example from the State of Oregon, USA." R.R. Youngs, K.J. Coppersmith, K. Hanson, L. DiSilvestro, and D. Wells. *Proceedings of the Fifth International Conference on Seismic Zonation, Nice, France*. Oct. 17-18, 1995.

"Magnitude Dependent Variance of Peak Ground Acceleration." R.R. Youngs, N. Abrahamson, F. Makdisi, and K. Sadigh. *Bulletin of the Seismological Society of America*, v. 85, pp. 1161-1176. 1995.

"Earthquake Ground Shaking Hazard in Utah." R.R. Youngs. *Proceedings of the EERI Wasatch Front Seismic Risk Regional Seminar, Salt Lake City, UT*, v. 1. November 29-30, 1994.

"Computer Applications in Geotechnical Earthquake Engineering." C.Y. Chang and R.R. Youngs. *Geotechnical News*, v. 12, no. 2, pp. 36-38. June 1994.

"Specification of Ground Motions and Response Spectra for Seismic Evaluation of Nuclear Power Plants." R.R. Youngs. *Proceedings of the Fourth Symposium on Current Issues Related to Nuclear Power Plant Structures, Equipment, and Piping, Orlando, FL*. December 1993.

"Assessing Fault Rupture Hazard for the Proposed Repository at Yucca Mountain, Nevada: Demonstration of a Methodology Using Expert Judgments." R.C. Perman, K.J. Coppersmith, R.R. Youngs, and R. Shaw, *Proceedings of the Fourth Annual International Conference on High Level Radioactive Waste Management*, v. 1, pp. 2086-2091. 1993.

"Preliminary Assessment of Fault Rupture Hazard at the Yucca Mountain Site Based on Expert Judgment." K.J. Coppersmith, R.R. Youngs, R. Perman, and R. Shaw. *Proceedings of the Fourth Annual International Conference on High Level Radioactive Waste Management*, v. 1, pp. 6-13. 1993.

"A Comprehensive Seismic Hazard Model for the San Francisco Bay Region." R.R. Youngs, K.J. Coppersmith, C. Taylor, M.S. Power, L. Di Silvestro, M. Angell, T. Hall, J. Wesling, and L. Mualchin. *Proceedings of the Second Conference on*

Earthquake Hazards in the Eastern San Francisco Bay Area, California Division of Mines and Geology Special Publication 113, p. 431-441. 1992.

"A Stable Algorithm for Regression Analyses Using the Random Effects Model." N.A. Abrahamson and R.R. Youngs. *Bulletin of the Seismological Society of America*, v. 82, no. 1, pp. 505-510. 1992.

"Modeling Fault Rupture Hazard for the Proposed Repository at Yucca Mountain, Nevada." K.J. Coppersmith and R.R. Youngs. *Proceedings of the 1992 International High Level Radioactive Waste Management Conference*, v. 1, pp. 1142-1150. 1992.

"Site Specific Ground Motion Assessment for K-Reactor, Savannah River Site." K.J. Coppersmith, R.R. Youngs, and others. *Proceedings of the 3rd Department of Energy Natural Phenomena Hazards Mitigation Conference*, pp. 184-194. 1991.

"Assessment of Liquefaction Potential in the San Jose, California Urban Area." M.S. Power, R. Perman, J. Wesling, R.R. Youngs, and M. Shimamoto. *Proceedings of the 4th International Conference on Seismic Micro Zonation, Stanford, CA*, v. II, pp. 677-625. 1991.