

## **Well Construction/Operation and Subsurface Modeling Workshop Participants**

### **Anthony Badalamenti, Chief Global Technical Advisor, Cementing Product Service Line, Halliburton Energy Services, Inc.**

Anthony Badalamenti is Chief Global Technical Advisor for Halliburton Cementing. In this capacity, Badalamenti is helping customers establish zonal isolation in oil or gas wells by overcoming issues such as excessive pressures, extremely high temperatures and expansive water depths offshore. Prior to this, Badalamenti lead the research and development initiatives of Halliburton's Cementing Product Service Line and served on the company's Information Technology advisory board. Among many other innovations, under his leadership the industry has benefitted from the development of new chemistries that enhance slurry properties such as free water control, compressive strength development and rheology, as well as the development of mechanical devices that enhance zonal isolation for greater wellbore integrity. Badalamenti can also be credited with the vision for and development of a predictive analysis tool built on finite element analysis and computational fluid dynamics. Badalamenti holds a BS in Civil Engineering from Tulane University and a BA in History from Nicholls State University.

### **Travis Baer, Engineering Specialist, San Antonio District Office, Field Operations, Oil & Gas Division, Railroad Commission of Texas**

Travis Baer is an Engineering Specialist at the San Antonio District Office, Field Operations, Oil & Gas Division of the Railroad Commission of Texas. Baer's expertise includes well construction, design and plugging, oil and gas waste management, Railroad Commission oil and gas rules and regulations and reservoir modeling. His three years of well-rounded experience at the Railroad Commission include evaluation of completion and plugging proposals as they pertain to statewide rules and regulations, technical application review and permit writing for oil and gas waste management facilities and activities and participation in rulemaking for well casing, cementing, drilling and well control. His primary focus and duties have been on oil and gas well drilling, completion and production operations in the Eagle Ford Shale and south-central Texas region. Baer is a member of the Society of Petroleum Engineers and is the Commission representative for the Environmentally Friendly Drilling program run by Texas A & M University and the Houston Advanced Research Center. He graduated in December 2008 with a BS in Petroleum Engineering from the University of Texas at Austin.

### **Karl Bandilla, Associate Professional Specialist, Civil and Environmental Engineering Department, Princeton University**

Karl Bandilla is an Associate Professional Specialist in porous medium flow at Princeton University. He is a hydrogeologist with expertise in single- and multi-phase subsurface flow modeling, with over eight years of research experience. He has worked on projects related to contaminant transport and geologic carbon sequestration. He is currently an Associate Professional Specialist in the Civil and Environmental Engineering Department at Princeton University, where he conducts research on multi-phase flow in the subsurface. In the area of hydraulic fracturing, he is especially interested in the leakage of fracturing fluid and methane to overlying sources of drinking water. He has a Dipl-Ing in Civil Engineering (Technical University

of Darmstadt), a MS in Civil and Environmental Engineering (SUNY at Buffalo) and a PhD in Civil and Environmental Engineering (SUNY at Buffalo).

### **Timothy Beard, Manager of Operations, Engineering Technology Group, Chesapeake Energy Corporation**

Timothy Beard is the Manager of Operations within the Engineering Technology Group for Chesapeake Energy Corporation, working out of the company headquarters in Oklahoma City, OK. At Chesapeake, he currently manages discipline experts in completions (hydraulic fracturing), drilling, artificial lift, chemicals, water reclamation and environmental engineering. Beard was previously the Senior Engineering Advisor - Completions within the Engineering Technology Group at Chesapeake. Beard presented in the first set of US EPA technical workshops on hydraulic fracturing in the well construction and operations section in May of 2011. The title of the presentation/abstract was "Fracture Design in Horizontal Shale Wells - Data Gathering to Implementation." Beard has been very involved with the modeling and design of hydraulic fractures in horizontal wells since the early days of horizontal wells in the Barnett Shale. He has modeled and supervised the pumping of hydraulic fractures in the majority of the large shale plays across the continental United States. Prior to joining Chesapeake in 2006, he was a Completions Engineer for ConocoPhillips, working out of the companies Midland, TX, office. He earned a BS in Mechanical Engineering from Texas Tech University.

### **John Bolakas, Senior Principal Hydrogeologist, Stantec Consulting Services, Inc.**

John Bolakas, a Senior Principal at Stantec Consulting Services, Inc., has more than 27 years of experience directing and managing the delivery of environmental services to the oil and gas industry. In his position as Sub-Sector Lead, Upstream Oil and Gas, he is responsible for developing strategy and providing technical direction on environmental investigation and response projects related to oil and gas exploration, production and completion. Bolakas is the Senior Principal and Project Director on client confidential projects related to investigating the potential release of hydraulic fracturing and well completion fluids to surface and subsurface media. He has worked closely with experts in industry, chemical analytics, toxicology and data validation to develop methodologies, interpret data and provide technical recommendations for these investigations and response actions. He continues to work with industry clients and laboratory experts to develop an understanding of unique signature chemicals that may assist as reliable marker parameters for these investigations. Bolakas, as Senior Principal Hydrogeologist, provides technical expertise on groundwater and surface investigation and response cases related to stray gas, gas migration and shallow groundwater disturbance. He was previously selected to participate in US EPA's 2011 Technical Workshop on Well Construction and Operations for the Hydraulic Fracturing Study. Bolakas is Professional Geologist in DE, FL, PA, TX and WY and is a Licensed Site Remediation Professional in NJ. He has his BA from Franklin and Marshall College, where he majored in Geology, and his MS in Geology from University of Delaware.

### **Richard Boone, Technical Associate, O'Brien & Gere**

Richard Boone is a Technical Associate with O'Brien & Gere. He is an experienced Project Manager and Hydrogeologist with more than 26 years of diversified consulting, regulatory and research experience involving industrial/hazardous waste management, environmental due diligence and groundwater resource investigations. Boone has project management and technical experience on environmental investigation and remediation projects involving commercial properties, closed or abandoned landfills, petroleum refineries, chemical manufacturing facilities and other industrial companies. He has performed groundwater flow and transport modeling in a variety of hydrogeologic settings involving industrial, chemical, petroleum, power and water supply facilities. His experience includes area-of-review evaluations to assess adequate confining zones; the application of borehole geophysical logging, drill-stem testing and injection tests and hydraulic analysis to establish permit injection pressures. Boone is an active member of the Marcellus Shale Coalition, serving on various regulatory and technical committees associated with the shale gas industry as well as an active member of the Ohio Oil & Gas Association and its environmental committee. He is a Professional Geologist and has a BA in Geology from Miami University (Ohio) and a MS in Hydrology/Hydrogeology from the Mackay School of Mines, University of Nevada-Reno, awarded while a Research Fellow at the Desert Research Institute in Reno, NV.

### **Bill Carey, Los Alamos National Laboratory**

Bill Carey is an expert in fluid-rock interactions applying experimental and computational methods to study fluid flow and reaction coupled to geomechanics. For the last ten years he has worked on CO<sub>2</sub> sequestration problems with a focus on wellbore integrity and the potential for sequestration activities to damage wellbore integrity. He has a PhD from Harvard University and joined the Los Alamos National Laboratory 20 years ago.

### **Michael Celia, Professor, Department of Civil and Environmental Engineering, Princeton University**

Michael Celia is a professor in the Department of Civil and Environmental Engineering at Princeton University. He is also the Theodora Shelton Pitney Professor of Environmental Studies, and served as Department Chair in the CEE Department from 2005 to 2011. In 1985 he joined the faculty of MIT, and returned to Princeton to join the Civil Engineering faculty in 1989. Celia's areas of research include ground-water hydrology, multi-phase flow in porous media, numerical modeling and new subsurface technologies for climate-change mitigation and sustainability. Ongoing projects include development of new simulation tools to model CO<sub>2</sub> injection, migration and possible leakage associated with carbon capture and storage technologies and studies of multi-phase flow and transport in porous media with a focus on multi-scale models, hysteresis and phase trapping. The carbon work is part of a large multi-disciplinary effort at Princeton known as the Carbon Mitigation Initiative. As a contributing author for the IPCC Working Group III Special Report on Carbon Dioxide Capture and Storage, Celia shares, with many colleagues, the 2007 Nobel Peace Prize. Celia received a BS in Civil Engineering from Lafayette College in 1978, a MS in Civil Engineering from Princeton University in 1979 and a PhD from Princeton in 1983.

### **Arash Dahi Taleghani, Assistant Professor, Department of Petroleum Engineering, Louisiana State University**

Arash Dahi-Taleghani is an Assistant Professor in the department of Petroleum Engineering at the Louisiana State University. A particular focus of his research has been on mechanistic modeling of hydraulic fractures especially in the presence of natural fractures. He is also conducting research on geomechanical aspects of underground blowout, zonal fractures at injector wells, microseismicity and geothermal engineering. Arash has a PhD in Petroleum Engineering from The University of Texas at Austin and is a registered engineer in the state of Texas. He earned his BS in Civil Engineering and MS in Structural Mechanics and Material from Sharif Institute of Technology.

### **Tim Ellison, Senior Research Associate, ExxonMobil Upstream Research Company**

Tim Ellison is the Well Injection Design/Operations Advisor at ExxonMobil's Upstream Research Company. He began his career in 1985 at Mobil's Dallas Research Laboratory and has spent most of his career in research, with a wide variety in experience including Enhanced Oil Recovery, Reservoir Engineering, Well Construction and Completions and Unconventional resource development. Since 2010, he has served as the Senior Technical Professional Advisor in the ExxonMobil upstream, where he supports ExxonMobil's worldwide operations in the area of injection well design and operations, and advises on the direction of injection research. He led the well injection team from its inception in 2005 through 2011 to progress injection technology, and applied that technology to projects across the upstream. A key element that the team addressed was the prediction of the extent of fractures that are formed during long-term injection processes, often providing fracture containment predictions that were used in the regulatory process to permit injection wells. He currently is an advisor for the Unconventional Gas and Tight Oil Recovery Project that develops technology for application to unconventional resource within ExxonMobil. In several previous assignments he worked on projects with significant geomechanics elements, including California diatomite (1993-1997, hydraulic and steam-induced fracturing), Venezuelan Cerro Negro heavy oil development (1997-2000, compaction) and Canadian Cold Lake development (2000-2003, steam-induced fracturing). He holds a BS in Chemical Engineering from the University of Missouri-Rolla and a MS and PhD in Chemical Engineering from the University of Illinois at Urbana-Champaign.

### **Stuart Ellsworth, Engineering Manager, Colorado Oil and Gas Conservation Commission**

Stuart Ellsworth is the Engineering Manager for the Colorado Oil and Gas Conservation Commission (COGCC). His responsibilities include managing a 9 member staff, who review drilling permits, completion reports, workover plans, cement bonding, casing repairs, plugging and abandonment procedures for COGCC regulation approval. Implimentated programs have been the Wattenberg Bradenhead Testing Program, East Mamm Creek Study and the Adena Field Inactive Well Monitor Program. Prior to working for the COGCC he worked for engineering and oil and gas companies throughout the Rocky Mountains, Mid-Continent, Saudi Arabia and

Algeria. He is a Colorado Professional Engineer and a Licensed Geologist with BS in Geology from Western Michigan University and Civil Engineering from the University of Colorado.

### **Jay Foreman, Completions Manager, WPX Energy**

Jay Foreman is Completions Manager for WPX Energy in Denver, CO, where he is responsible for Completions Engineering and Operations for the company's Piceance Basin asset. He has over 26 year of industry experience, designing, pumping and evaluating cementing and hydraulic fracturing treatments or managing those operations. He is a member of the Society of Petroleum Engineers and has coauthored several papers on the subjects. He holds a BS in Mechanical Engineering from the University of Missouri-Rolla.

### **Marc Glass, Principal, Downstream Strategies, LLC**

Marc Glass has over thirteen years of experience in environmental consulting and management, including nine years as a West Virginia Department of Environmental Protection Licensed Remediation Specialist. He is skilled in the evaluation and remediation of environmental contamination. Glass' experience includes Phase I and Phase II environmental site assessments, petroleum and chlorinated solvent site investigations, design and installation of monitoring well networks, aquifer testing, asbestos and biological remediation and project supervision, preparation of facility Spill Prevention Plans for above ground and underground storage tank facilities and mold investigation and remediation. Glass' experience includes management of remediation projects in the West Virginia Voluntary Remediation and Redevelopment Program and Pennsylvania Department of Environmental Protection Land Recycling Program.

### **Gang Han, Consultant, Aramco Services Company**

Gang Han is a consultant at Aramco Services Company in Houston, TX. He is a rock mechanics/geomechanics expert in the oil and gas industry with over 16 years of research and professional experience. He addresses global geomechanical issues related to hydraulic fracturing, well construction, well integrity, reservoir performance, unconventional rock characterization and borehole stability. He is elected as a "Future Leader" for American Rock Mechanics Association. He has over 40 journal and conference publications and been invited regularly to present for American Association of Petroleum Geologists, Society of Exploration Geophysicists, Drilling Engineer Association, Society of Petroleum Engineers (SPE) and American Rock Mechanics Association. His work has been nominated three times for SPE Ferguson Medal (2009, 2011, 2012). He is a leading author of the book titled [Drilling in Extreme Environments - Penetration and Sampling on Earth and Other Planets](#). He holds a BS in Petroleum Engineering, a MS in Reservoir Engineering and a PhD in Chemical Engineering from the University of Waterloo, Canada.

### **Susan Harvey, Owner, Harvey Consulting, LLC**

Susan Harvey has over 25 years of experience as a Petroleum and Environmental Engineer, working on oil and gas exploration and development projects. Harvey is the owner of Harvey Consulting, LLC, a consulting firm providing oil and gas, environmental, regulatory compliance

advice and training to clients. Harvey held engineering and supervisory positions at both Arco and BP including Prudhoe Bay Engineering Manager and Exploration Manager. Harvey has planned, engineered, executed and managed both on and offshore exploration and production operations, and has been involved in the drilling, completion, stimulation, testing and oversight of hundreds of wells in her career. Harvey's experience also includes air and water pollution abatement design and execution, best management practices, environmental assessment of oil and gas project impacts and oil spill prevention and response planning. Harvey has worked on oil and gas projects in Alaska, New York, Pennsylvania, Ohio, West Virginia, Texas, New Mexico and Oklahoma, as well as in Canada, Australia, Russia, Greenland and Norway. Harvey has authored numerous technical reports related to oil and gas project construction, operation and abandonment, including best practices for oil and gas well construction, air and water pollution abatement design and execution, environmental assessments of oil and gas projects and oil spill prevention and response planning. Harvey holds a MS in Environmental Engineering from the University of Alaska Anchorage and a BS in Petroleum Engineering from the University of Alaska Fairbanks.

**Courtney Hemenway, President, Hemenway Groundwater Engineering, Inc.**

Courtney Hemenway is the President of Hemenway Groundwater Engineering, Inc. He is a civil engineer with expertise in groundwater hydrology and modeling, well design and construction, Aquifer Storage and Recovery (ASR) and hydraulic fracturing of deep bedrock aquifer wells, with over 32 years of experience in these areas. In his groundwater hydrology consulting, Hemenway has conducted numerous municipal groundwater development programs and has participated in many water resources management projects involving the conjunctive use and interaction of groundwater and surface water. Over his career, Hemenway has been involved in the design, drilling and testing of over 100 deep Denver Basin wells, numerous shallow alluvial wells and over 1,500 soil shallow alluvial soil borings and monitoring wells. He has also been the project engineer on ASR projects since 1991 and has managed the installation and operation of 33 ASR wells in the Denver Basin. Throughout his groundwater consulting, Hemenway has consistently focused on improving well design and development techniques to increase well yields and sustainability. Hemenway has developed innovative methods to stimulate yields from water wells through horizontal well technologies and hydrofracturing techniques and has developed successful programs to rehabilitate existing wells. In addition, Hemenway is currently involved with the design, installation, development, testing and operation of deep wells for the disposal of the brine effluent from an advanced nanofiltration, reverse osmosis water treatment plant. Hemenway recently managed the installation of two deep brine disposal wells that were drilled to over 6,000 feet. Hemenway is a Colorado native and graduate of Colorado State University with BS and MS degrees in Civil Engineering focused on Groundwater Hydrology.

**Anthony Ingraffea, Professor of Engineering, Cornell University**

Anthony Ingraffea is the Dwight C. Baum Professor of Engineering and Weiss Presidential Teaching Fellow at Cornell University where he has been since 1977. Ingraffea's research concentrates on computer simulation and physical testing of complex fracturing processes. He



and his students performed pioneering research in the use of interactive computer graphics and realistic representational methods in computational fracture mechanics. He has authored with his students and research associates over 250 papers in these areas, and is Director of the Cornell Fracture Group. For his research achievements in hydraulic fracturing he has won the International Association for Computer Methods and Advances in Geomechanics "1994 Significant Paper Award" for one of five most significant papers in the category of Computational/Analytical Applications in the previous 20 years, and he has twice won the National Research Council/US National Committee for Rock Mechanics Award for Research in Rock Mechanics (1978, 1991). His group won a National Aeronautics and Space Administration (NASA) Group Achievement Award in 1996 and a NASA Aviation Safety /Turning Goals into Reality Award in 1999 for its work on the aging aircraft problem. He became Co-Editor-in-Chief of Engineering Fracture Mechanics in 2005. In 2006, he won American Society for Testing and Materials' George Irwin Award for outstanding research in fracture mechanics, and in 2009 was named a Fellow of the International Congress on Fracture. TIME Magazine named him one of its "People Who Mattered" in 2011. He holds a BS in Aerospace Engineering from the University of Notre Dame, a MS in Civil Engineering from Polytechnic Institute of New York and a PhD in Civil Engineering from the University of Colorado.

### **Marty Link, Associate Director of Programs, Water Quality Division, Nebraska Department of Environmental Quality**

Marty Link has worked for the Nebraska Department of Environmental Quality since 1988. Her positions have been Program Specialist in the Ground Water Management Area program, Unit Supervisor of the Ground Water Unit in the Water Quality Assessment Section and most recently the Associate Director of the Water Quality Division. Programs in the Water Quality Division include National Pollutant Discharge Elimination System, Leaking Underground Storage Tank, State Revolving Fund, Underground Injection Control, Wellhead Protection, Source Water Assessment Program, Clean Water Act Section 319, Total Maximum Daily Loads, livestock, surface and groundwater quality regulations. Link received her Geology MS degree from University of Nebraska-Lincoln in 1989, BS in Geology from University of Kansas in 1982 and a BA in Science Education from University of Iowa in 1979.

### **Theodore Loukides, Chief of the Oil & Gas Compliance and Enforcement Section, Division of Mineral Resources, New York State Department of Environmental Conservation**

Theodore (Ted) Loukides is Chief of the Oil & Gas Compliance and Enforcement Section in the Division of Mineral Resources with the New York State Department of Environmental Conservation (NYSDEC), located in Albany, NY. His primary program areas include: abandoned well plugging; complaint investigation and resolution; violations enforcement; state land leasing and financial security. His professional career has included: geophysical prospecting; mud logging; well drilling and groundwater consulting related to impacted sites in the eastern and central US. Loukides has been part of the NYSDC's Mineral Resources team for the past ten years, serving in various capacities, including: permitting; inspections; drilling and plugging oversight; annual reporting; statistical compilation and evaluation and information technology

coordination. He has been a key participant in the development of NYSDEC's Supplemental Generic Environmental Impact Statement, particularly in the topic areas of public and private water supplies, surface-water and groundwater impacts and mitigation measures, well construction and fluid migration, flowback characterization, hydraulic fracturing technologies and naturally-occurring radioactive materials. He received a BS degree in Geology from the State University of New York at Oneonta in 1981, and was a graduate teaching assistant in Earth Sciences at Montana State University in the early 1980s.

### **Hugh MacMillan, Senior Researcher, Food & Water Watch**

Hugh MacMillan is a senior researcher at Food & Water Watch, where his work focuses on environmental and public health impacts of unconventional oil and gas development. Prior to joining Food & Water Watch, he served one year as a science advisor in the US Senate and five years as an Assistant Professor of Mathematical Sciences at Clemson University. He is a computational scientist with deep knowledge of numerical methods for developing multiscale models of reaction-diffusion-advection systems. He has experience working on diverse computational problems, including multiphase fluid flow through porous and fractured media, crack formation and propagation and chemical and microbiological processes. Further, he is experienced in mathematical and statistical methods for quantifying the uncertainties inherent to such modeling, toward model validation and verification.

### **Bryce McKee, Senior Staff Geologist, Shell Exploration & Production Company**

Bryce McKee is the senior staff geologist at Shell Exploration & Production Company's Pittsburgh, Pennsylvania office. He is responsible for oversight and technical assurance of well planning and operations within Shell Appalachia's development team. Prior to working in the Pittsburgh office, McKee was the Lead Reservoir Modeler for Shell's deepwater Perdido Development Project (Alaminos Canyon Block 857) responsible for building geologically realistic and detailed geocellular reservoir models of the structurally complex WM12, FR22 and FR24/26 reservoirs in the Great White Field based on high-resolution 3D seismic, petrophysical data and well cores. These models were used as the basis for booking SEC-compliant reserve volumes and for numerical simulation of multi-phase hydrocarbon flow for field development and well planning. McKee is recognized as a focal point/subject matter expert/technical resource within the production geology community at Shell. McKee is also the subsurface technical focal point for Shell's multidisciplinary groundwater protection and stray gas mitigation team. McKee has 26 years of oil industry experience, having worked on both exploration and production projects in the North Sea, Middle East, Poland, Trinidad, Argentina, offshore Brazil, offshore Australia, offshore West Africa, East Texas, South Texas, the Permian Basin and the Gulf of Mexico. He earned a BS in 1984 and a MS in 1986, both in Geology, from Baylor University in Waco, Texas. McKee is a member of the American Association of Petroleum Geologists, the Pittsburgh Society of Petroleum Geologists, the Society of Exploration Geophysicists, the Pittsburgh Geological Society and the Houston Geological Society. Licensed Professional Geologist in the State of Pennsylvania (Lic. No. PG005046) and Texas (Lic. No. 11365).



### **George Moridis, Staff Scientist, Earth Sciences Division, Lawrence Berkeley National Laboratory**

George Moridis has been a Staff Scientist in the Earth Sciences Division of Lawrence Berkeley National Laboratory (LBNL) since 1991, where he is the Deputy Program Lead for Energy Resources, leads the development of the new generation of LBNL simulation codes and is in charge of the LBNL research programs on hydrates and tight/shale gas and on the analysis of the environmental impact of hydraulic fracturing. Moridis is a visiting professor in the Petroleum Engineering Department at Texas A&M University and in the Guangzhou Center for Gas Hydrate Research of the Chinese Academy of Sciences; he is also an adjunct professor in the Chemical Engineering Department at the Colorado School of Mines and in the Petroleum and Natural Gas Engineering Department of the Middle East Technical University, Ankara, Turkey. Moridis is the author or coauthor of over 65 papers in peer-reviewed journals, more than 175 LBNL reports, paper presentations and book articles and three patents. He was a Society of Petroleum Engineers (SPE) Distinguished Lecturer for 2009-10, and was elected an SPE Distinguished Member in 2010. He is the recipient of a 2011 Secretarial Honor Award of the US Department of Energy. He is an Associate Editor of four scientific journals and a reviewer for 24 scientific publications. He holds MS and PhD degrees from Texas A&M University and BS and ME degrees in Chemical Engineering from the National Technical University of Athens, Greece.

### **Thomas Myers, Hydrologic Consultant, Great Basin Hydrology**

Thomas Myers is an independent hydrologic consultant based in Reno, NV. He is a hydrogeologist with 15 years of experience in contaminant transport and numerical modeling. After earning his PhD, Myers has been consulting and conducting research in various aspects of hydrogeology concerning mining, mine dewatering, energy development including hydraulic fracturing, groundwater monitoring and water rights. He has published three articles on numerical modeling and an article on contaminant pathways as related to hydraulic fracturing - "Potential contaminant pathways from hydraulically fractured shale to aquifers" in the journal Ground Water in 2012. Myers is a member of the National Groundwater Association, International Association of Hydrogeologists, American Water Resources Association and American Geophysical Union. He has a PhD and MS in Hydrology/Hydrogeology from the University of Nevada, Reno.

### **Kris Nygaard, Senior Stimulation Consultant, ExxonMobil Production Company**

Kris Nygaard is the Senior Stimulation Consultant at ExxonMobil Production Company. He is the company's recognized expert on hydraulic fracturing and is responsible for coordinating ExxonMobil's Upstream Fracturing Center of Excellence. During the last 20 years at ExxonMobil, he has held numerous technical and management positions and has extensive background and expertise in unconventional resources, hydraulic fracturing, subsurface engineering and related technologies. In 2009, he became Senior Supervisor of URC's Unconventional Resources - Recovery Section responsible for developing ExxonMobil's next generation completion and reservoir recovery technologies focused on unconventional resources (tight gas, shale gas, tight oil and coal-bed methane) and providing global technical support to business units in the broad area of unconventional resources. In 2010, Nygaard moved to EMPC to form and lead

ExxonMobil's Upstream Fracturing Center of Excellence. In his current role, he is relied upon widely across ExxonMobil for his expertise in stimulation technology and applications to new and existing business opportunities. He holds a BS in Mechanical Engineering, a MS in Aerospace Engineering and a PhD in Mechanical Engineering all from the University of Arizona.

### **Karen Olson, Completion Engineering Chief, Southwestern Energy Company**

Karen Olson is the Completion Engineering Chief for Southwestern Energy in Houston, TX. She has been a Completion/Reservoir Engineer for over 29 years with expertise in the design/modeling (both pre and post) and operational execution of hydraulic fracturing. Her expertise of hydraulic fracturing and the desire to really understand what is happening during the fracturing process began while working on her Master's Thesis, "Evaluation of Massive Hydraulic Fracturing Experiments In the Devonian Shale in Lincoln County, West Virginia" (Topical Report - GRI May 1987). Since that time she has worked conventional and unconventional reservoirs where hydraulic fracturing was required. She has gained an expertise for knowing how to gather the appropriate data required understand/model hydraulic fracturing in the various reservoir types and how to optimize them. She has done this in multiple horizons across the United States, in the North Sea (horizontal wellbores with large hydraulic fractures) and in Deep Water Gulf of Mexico. She is also heading up research with Terra Tek, Colorado School of Mines and Texas A&M to better understand the complexity of discreet fracture networks during hydraulic fracturing and the transport of proppant into these networks. Olson has been a committee member of numerous Society of Petroleum Engineers (SPE) forums, workshops and conference related to hydraulic fracturing. She is the Guest Editor for the Hydraulic Fracturing section of the Journal of Petroleum Technology. She was recently recognized by her industry peers by being selected the 2014 Chairman for the SPE Hydraulic Fracturing Conference. She holds a BS degree in Petroleum Engineering from Louisiana State University (1983) and a MS degree in Petroleum Engineering from Texas A&M (1987).

### **Marco op de Weegh, Well Control & Design Integrity Team Lead, Shell Exploration and Production Company**

Marco op de Weegh is currently a Well Control & Design Integrity Team Lead for Shell UA (Americas). He is responsible for regional implementation of pressure control and casing-tubing design standards for wells. His implementation efforts include electronic Well Control Assurance Tool. Prior to his current function, op de Weegh was a Staff Drilling Engineer for the Magnolia asset, Haynesville Shale, North Louisiana and high-pressure/high-temperature unconventional shale gas, having responsibilities for Nabors 102 and F06. Previously, op de Weegh held responsibility as Senior Drilling Engineer and Asset Team Lead for the South Texas Javelina Field and Nabors F37 and 719 and Senior Drilling Engineer for Nabors 715 and 30 in the Barnett Shale. During this time, he was also responsible for rig start up, pacesetter implementation and key performance indicators tracking. Prior to his well engineering assignments, op de Weegh was the drilling the limit coordinator for EPW, a Drilling Foreman on Nabors 784 in Pinedale, WY, and a HSE Risk Management Engineer in New Orleans, LA. Before joining Shell in 2001, he worked for ModuSpec Engineering BV and USA Inc., Inter-Services Ltd / Unique International NV, Tesco Corporation, Noble Drilling, Neddrill Nederland BV, Deutag

Drilling, Penrod Drilling Company and Sedco Forex. Marco has over 20 years in the oil & gas industry, including over ten years with Shell; he holds a MS in Mechanical and Offshore Engineering from Robert Gordon University in Aberdeen, UK, and an ing. (Dutch engineering degree) from the Institute for Petroleum & Gas Technology "Noorder Haaks", in Den Helder / University of Amsterdam, NL.

### **George Pinder, Professor, University of Vermont**

George Pinder is a Professor at the University of Vermont in Burlington, VT. He is a subsurface flow and transport theoretician and modeler with expertise in the fate and transport of natural and anthropogenic contaminants in groundwater, with over 45 years of research and professional experience. He has worked on natural systems as well those that have been impacted by industrial activities. He has evaluated environmental conditions at many such sites in the United States. After completing his PhD, he was a Research Hydrologist in the U.S. Geological Survey's National Research Program, where he conducted research on subsurface flow and transport modeling. He has served on a number of national and international committees and is a member of the National Academy of Engineering and a Distinguished Member of the American Society of Civil Engineers. He has published over 120 papers and ten books in the area of groundwater flow and transport modeling. He has a BS in Geology from the University of Western Ontario and PhD in Geology with minors in Civil Engineering and Statistics from the University of Illinois.

### **Robert Podgorney, Senior Scientist, Idaho National Laboratory**

Robert Podgorney is a Senior Scientist and Department Manager at the Idaho National Laboratory and an affiliate faculty member with the Center for Advanced Energy Studies, a public-private research partnership between the Idaho National Laboratory and Idaho public research universities. He is currently leading the development of a parallel, fully coupled hydro-thermal-mechanical simulator for modeling discrete hydraulic stimulation (fracturing) within reservoir scale (continuum) models, with targeted applications for simulating enhanced geothermal systems and unconventional gas reservoirs. His research interests in general center on water and energy related issues, focusing on experimental, numerical and analytical investigations of multiphase fluid flow in fractures and fracture networks and the development of massively parallel simulators for describing these systems. The International Partnership for Geothermal Technology has recently recognized his expertise in geothermal simulation, as he has been appointed to serve as the United States Convenor to the Reservoir Modeling Working Group for an indefinite term. His experiences span from field based well drilling and monitoring activities to regional scale groundwater management and modeling, for both environmental and energy applications.

### **Steven Pohler, Marathon Oil Corporation**

Steven Pohler has 32 years of industry experience, 24 years of those with Marathon Oil Corporation, three years with an Independent and five years with ExxonMobil. He has experience in deepwater completions, production operations, well optimization, workover/completions and drilling. He worked on the start up of Marathon Sakhalin Project,

working in Equatorial Guinea and Angola for ExxonMobil on deep water completions on floaters and tension leg platforms. He helped in the development of the Marathon Oil Corporation owned Annual Velocity Enhancer Technology, the true bore sliding sleeve and toe sleeve. Also, Pohler was the start up Completions Manager for the Eagle Ford Shale Play that Marathon Oil entered in 2011. Pohler is presently involved with drilling and completion issues that are handled by World Wide Drilling and Completions in areas that Marathon is presently working in. Perform Peer reviews and review procedures on operations handled throughout the world for Marathon Oil. Pohler holds a BS in Petroleum Engineering from Texas Tech University.

### **Emily Reader, Engineering Geologist, Division of Oil, Gas and Geothermal Resources, California Department of Conservation**

Emily Reader is an Engineering Geologist for the Department of Conservation's Division of Oil, Gas and Geothermal Resources for the State of California. Her primary role is assisting the Chief Deputy of the Division by conducting geological and engineering research and work in investigations and studies associated with special projects within the Division and preparing reports for briefing of the Chief Deputy. She is the technical expert and a research member of the team responsible for composing the proposed Hydraulic Fracturing Regulations for the State of California. She has performed in-depth research of standards and recommended practices from a scientific and regulatory perspective with regards to well construction, testing and monitoring to ensure adequate confinement and isolation of potential flow zones and fluids. With over three years of experience within the Division, she also worked as an Energy and Mineral Resources Engineer with extensive experience in regulating all operations of oil and natural gas fields to make sure their compliance with current California laws, regulations and policies on and offshore. In the field and in the office, she has evaluated subsurface condition of wells to confirm isolation of fluids between zones and identified problems associated with the mechanical integrity of wells. In the area of hydraulic fracturing she is particularly interested from a regulatory standpoint in well integrity testing, modeling and monitoring of hydraulic fracturing operations and water quality monitoring to ensure new hydraulic fracturing regulations are set in place to foster oil and gas production while providing preservation, good stewardship and protection of all California's resources. She has a BS in Geology from Texas Christian University and a MS in Geological Sciences from San Diego State University.

### **Blaine Reely, Civil Engineer, Monsoon Consultants**

Blaine Reely is a Civil Engineer with over 30 years of professional experience with a significant portion of that experience in the area of water resources. He has worked in the public and private sectors as well as academia. His private sector experience includes staff and management positions with mining, natural resources and construction companies. In the public sector, he has held positions in municipal government with primary responsibility of managing and operating numerous public water supply systems. In academia, he has lectured courses in the water resources engineering and environmental fluid mechanics. Supplementing his corporate, government and academia experience, he has served as an industry consultant, working primarily with municipalities and local government agencies, community services

districts, public and private water companies, irrigation districts, electric utility companies, wastewater treatment agencies, solid waste management companies, oil and gas producers, mining companies and agricultural producers. His experience and expertise have been utilized on numerous occasions in litigation matters, where Reely has served as an expert witness in local, state and federal courts. He has authored numerous professional papers and frequently makes presentations to his peers at meetings of professional societies.

### **David Russell, Director of Completions, QEP Resources**

David Russell is the Director of Completions at QEP Resources with over 25 years of industry experience including ten years with Dowell Schlumberger and nine years with QEP Resources. He has experience in vertical and horizontal well completions in several tight gas sand and shale areas in the US including: Haynesville, Bakken/Three Forks, Mesa Verde/Lance, Cana Woodford, Granite Wash, Baxter, Mancos and Niobrara. He has a BS in Petroleum Engineering from the University of Missouri-Rolla and a ME in Petroleum Engineering from the Colorado School of Mines.

### **Saeed Salehi, Assistant Professor of Petroleum Engineering, University of Louisiana Lafayette**

Saeed Salehi is currently Assistant Professor of Petroleum Engineering at University of Louisiana at Lafayette. Prior to work in academia, he worked as a drilling engineer and well construction specialist for both exploration and production and service companies, as well doing consultancy. His research interests are: well construction, including well and cement integrity, computational modelling of hydraulic fractures and wellbore geomechanics about which he has published more than 30 journal and conference papers. Salehi has a MS in Petroleum Engineering from University of Calgary at Canada with specialization on Well Construction and PhD degree in Petroleum Engineering from Missouri University of Science and Technology (formerly University of Missouri-Rolla).

### **Gary Schein, Technical Advisor, Pioneer Natural Resources**

Gary Schein provides technical and engineering support throughout the areas in which the Pioneer Natural Resources has operations including, South Texas, Permian, North Texas, Alaska and Midcontinent. In these areas Pioneer is actively drilling unconventional reservoirs such as Barnett Shale, Eagle Ford Shale, Wolfcamp Shale, as well as tight and conventional oil reservoirs in West Texas and Alaska. The primary focus of this support is in the area of completions and stimulation technology as well as well construction for completion design. He has worked in well completions and stimulation for over 34 years and has worked in several other areas including R&D, technical support, marketing and field engineering positions. The majority of this focus has been on improving production from unconventional reservoirs such as shale gas and tight gas sands. Schein established the first use of the simultaneous fracturing process (simo frac) in the Barnett Shale. This technique has produced many of the most prolific wells to date in the Barnett Shale. Schein's previous position was as Vice President of Engineering & Technical Operations at Dale Resources, LLC located in Dallas, TX, for over four years. Dale Resources is the leader in the development of urban oil and gas resources. Schein's prior 30

years of experience included working as Region Technical Manager for BJ Services. In this position he was responsible for the daily technical support for the region operations including region and corporate sales personnel. This experience includes providing engineering and design data for products application and equipment. His responsibility also included the treatment design and completions engineering for the East Region, which included North Texas, East Texas, North Louisiana and Mississippi.

### **Talib Syed, Principal Engineer and President, TSA, Inc.**

Talib Syed heads his consulting practice based out of Colorado. Syed has over 35 years of domestic and international experience in oil and gas production operations (both onshore and offshore) and in groundwater and protection of drinking water resources from oil and gas production and injection activities, and has worked in most of the major geological oil and gas provinces in the US. His current areas of work have focused on hydraulic fracturing of tight oil and gas reservoirs (drilling and completion), CO<sub>2</sub> geologic sequestration, slurry fracture injection of drill cuttings/muds and well integrity management (casing design and cement design and execution). Syed's diverse background includes a unique blend of expertise in both oil and gas production operations. He holds a BTech in Chemical Engineering from the University of Madras, India and a MS in Petroleum Engineering from the University of Oklahoma, and is a Registered Professional Petroleum Engineer in Colorado and Wyoming.

### **D. Steven Tipton, Operations/Completion Engineer, Newfield Exploration Company**

D. Steve Tipton is a registered professional engineer in Oklahoma and Texas with over 45 years experience primarily in drilling, completion and production operations throughout the US, Canada, Trinidad and Yemen. He has engineered and supervised the drilling and completion of several hundred horizontal wells in Oklahoma, Texas, Louisiana, North Dakota and New Mexico. He is currently employed by Newfield Exploration in Tulsa, OK. His primary responsibilities have included drilling, completion, production and water management for the company's operations. Tipton is a primary mentor for newly hired engineers and summer interns, and provides technical expertise to the company's engineering staff. He has made presentations at numerous technical meetings and conferences on water management including the US EPA's Technical Workshops for Hydraulic Fracturing in 2011, Society of Petroleum Engineers Advanced Technology Workshops, the University of Tulsa, the Oklahoma Independent Petroleum Association Unconventional Resource Forum, Oil Sands Water Management Initiatives, Water Management for Shale Plays and in-house training at Newfield for new engineers and geoscientists.

### **Thomas Tomastik, Geologist, Division of Oil & Gas Resources Management, Ohio Department of Natural Resources**

Thomas Tomastik has 30 years experience in oil and gas drilling, completion and production operations, cementing, hydraulic fracturing, geophysical log interpretation and injection well operations, and has conducted several hundred groundwater investigations of alleged oil and gas and mining water well complaints. As a geologist in the Underground Injection Control (UIC)



Section of the Division of Oil and Gas Resources Management within the Ohio Department of Natural Resources, he plans and performs independent review of all drilling, conversion and plugging applications for Class II injection wells and Class III salt-solution mining wells and issues permits; reviews all geologic projects including disposal, secondary recovery and other fluid injection well applications using hydrology, geology and engineering specialization; reviews engineering designs for well construction and operation; reviews and recommends geophysical logging of Class II and III injection wells, determine impact of injection on receiving formation, surrounding wells and freshwater aquifers; provides technical and geologic expertise on Class I, II and III wells in Ohio; prepares UIC grant and budget; reviews and corrects all UIC inspection reports, cementing records and mechanical integrity tests submitted by Mineral Resources Inspectors; orders and maintains inventory of UIC equipment; assists in rule-making and policy decisions regarding UIC; takes annual Mine Safety Training and knows quarry safety issues and regulations and oversees the Division's UIC enforcement action. Tomastik has been involved in interagency issues with US EPA and Ohio EPA regarding Class I, II and III injection wells and facilities; and provides expert testimony in civil and enforcement court cases. Additionally, he reviews and comments on Ohio EPA permits-to-operate and land ban petitions related to Class I injection wells in Ohio and reviews and comments on new Class V permit applications for Ohio EPA.

### **Norman Warpinski, Technology Fellow, Pinnacle - A Halliburton Service**

Norman Warpinski has worked for 36 years on hydraulic fracturing, in situ stress, geomechanics, natural fracturing, formation evaluation, hydraulic fracturing diagnostics and many other related petroleum engineering and geosciences areas and applications. The first 28 of those years was at Sandia National Laboratories where he performed lab, field, theoretical and numerical studies for the Department of Energy and the Gas Research Institute (now Institute of Gas Technology); the last eight years have been with Pinnacle Technologies, which was acquired by Halliburton and is now Pinnacle - A Halliburton Service. Pinnacle specializes in hydraulic fracture diagnostics such as microseismic, tiltmeter and fiber optic services, as well as fracture analysis and modeling. Warpinski oversaw and partially developed much of the work flow and software for microseismic monitoring, was a lead investigator in two of the primary research projects on fracturing (the DOE Multiwell experiment and the GRI/DOE M-Site experiment) and has been exposed to the monitoring results of over 15,000 fracture treatments. He has worked in several other consortia, such as the Mounds Drill Cuttings Injection project and the Cotton Valley Hydraulic Fracturing projects.

### **John Williams, Hydrologist Groundwater Specialist, U.S. Geological Survey**

John Williams has worked for the U.S. Geological Survey (USGS) since 1980. As a project chief and technical advisor, Williams has participated in groundwater investigations in cooperation with State agencies, US EPA, US Nuclear Regulatory Commission and US Army Corp of Engineers in Pennsylvania, New York and New England. He currently is the Groundwater Specialist for the New York Water Science Center, and is responsible for technical oversight of the USGS groundwater program in the State. In addition, he is an integral part of the nationwide technology transfer program of the USGS Office of Groundwater - Branch of Geophysics.

Williams has published more than 30 reports, journal articles and proceeding papers focused on fractured-rock and glacial-drift aquifer investigations and borehole-geophysical applications for groundwater studies. Williams' recent research, in cooperation with colleagues at the USGS Pennsylvania Water Science Center and the Pennsylvania Geological Survey, has been focused on the characterization of freshwater, saltwater and gas penetrated by deep coreholes above the Marcellus shale play in north-central Pennsylvania. Williams participated in the US EPA Hydraulic Fracturing Study's March 2011 Technical Workshop on Well Construction and Operations where he presented "Evaluation of Well Records and Geophysical Logs to Determine the Presence of Freshwater, Saltwater and Gas above the Marcellus Shale, South-Central New York". Also in 2011, Williams made an invited presentation to the Natural Gas Subcommittee of the Secretary of Energy Advisory Board, which was charged with identifying measures that can be taken to reduce the environmental impact and to help assure the safety of shale gas production. Williams received a MS in Geosciences from the Pennsylvania State University in 1980.

**Lloyd Wilson, Research and Special Projects Coordinator, Bureau of Water Supply Protection, New York State Department of Health**

Lloyd Wilson is an environmental scientist with more than 25 years of research and professional experience focused on preventing human exposure to contaminants in the environment. His work has involved assessing potential sources of exposure to various compounds through different media. He has overseen projects investigating asthma emergency room visits and ambient air pollutants, polychlorinated biphenyls in public drinking water supplies that use the Hudson River as a source of water, mold and indoor air quality issues, climate change and numerous other drinking water quality issues. For the last five years he has been evaluating potential concerns with impacts of high volume hydraulic fracturing (HVHF) used in development of gas and oil wells. Specifically, he has been involved with reviewing all aspects of the New York State Department of Environmental Conservation's HVHF environmental impact statement. He received his PhD from the University at Albany School of Public Health in Toxicology and Occupational Health, where he also currently holds a position as an Assistant Professor.