

Welcome, New DEG Officers!

We are pleased to introduce the members of our 2015-16 DEG Executive Committee:

President – Jeffrey B. Aldrich, MHA Petroleum Consultants, Denver.

Vice president – Bruce D. Smith, U.S. Geological Survey, Denver.

Secretary-treasurer – Sean Kimiagar, C&C Reservoirs, Houston.

President-elect (2016-17) – Timothy Murin, AECOM Corp., Pittsburgh.

Past president – Jeffrey G. Paine, Bureau of Economic Geology, The University of Texas, Austin, Texas.

Editor-in-chief – Michele L. Cooney, Pennsylvania Geological Survey, Pittsburgh.

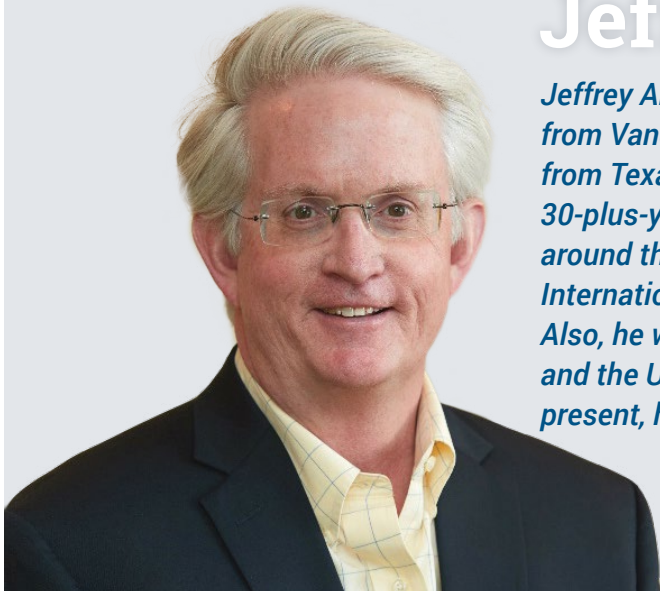
The next few issues of Spheres of Influence will acquaint you with our new officers. In this issue, we present the biography of our president, Jeffrey Aldrich.

DIVISION OF ENVIRONMENTAL GEOSCIENCES

Mission Statement and Purpose

- **EDUCATING** the membership of AAPG and the general public about important issues that affect petroleum energy minerals exploration and production.
- **COMMUNICATING** to the general public and government agencies the Association's commitment to protect the environment while developing the world's natural resources in a responsible manner.
- **APPLYING** the expertise developed in the petroleum/energy minerals industries and hydrogeology to resolve environmental problems.
- **PROMOTING** environmental self-regulation within the petroleum/energy minerals industries.
- **PROVIDING** relevant educational opportunities and services for professional development of the AAPG membership through seminars and conferences in environmental geosciences, hydrogeology and related fields.

MEET JEFFREY B. ALDRICH, DEG PRESIDENT



Jeffrey B. Aldrich

Jeffrey Aldrich received his Bachelor of Science degree in geology from Vanderbilt University in 1977 and Master of Science in geology from Texas A&M University in 1983. Throughout the course of his 30-plus-year career, Jeffrey has worked for several corporations around the globe, including Pennzoil, Maxus Energy, Forest Oil International, Energy Resource Advisors, PetroSA and Dart Energy. Also, he was based and lived in Indonesia, Singapore, South Africa and the United Kingdom, in addition to both Houston and Dallas. At present, he serves as vice president and partner of MHA Petroleum Consultants in Denver, conducting exploration, development and reserve estimation work for both conventional and unconventional opportunities.



PRESIDENT'S COLUMN

Jeffrey B. Aldrich

I am fortunate to have counted Bruno Hanson, one of AAPG's legends, as a mentor. When Bruno and others were forming the DEG, Bruno directly challenged me by asking: "Don't you care about the environment? Most geologists I know got into this profession by first having a love for the outdoors." He asked me to consider joining the DEG and supporting its objectives; I have been a member ever since. I confess that through most of my career I stayed removed from the profession of environmental geoscience until I became heavily involved in the operations of unconventional plays. Then I had to immerse myself in the environmental and societal impacts of unconventional development.

This year I am honored and humbled to take on the role of president of the DEG after immersing myself this past year as president-elect under the superb leadership of Jeff Paine, last year's president, and the entire Executive Committee. President Paine encouraged us to be more proactive and less reactive when it comes to environmental issues. The DEG hopes to continue that process this year with several new initiatives.

First, we have recharged the DEG Advisory Board and now have excellent representation from every Section and Region. This means that wherever you are, you have a direct contact and representative to the DEG leadership

team. Their names and contacts are on our new website so please contact them. The Advisory Board will tackle some of our larger issues from the depths of their global expertise and suggest courses of action for our Executive Committee to enact.

Second, the DEG website has been redesigned to make it more interactive and keep current information of use to our members on the site. Be sure to check it out.

There will be greater DEG content and participation at Section and Region meetings, and already we are well under way with the environmental programs for the Melbourne ICE and next year's Calgary ACE. Our flagship publication, *Environmental Geosciences*, has several great themed sessions coming out and is looking for additional content.

So as Bruno Hanson challenged me, let me challenge you: What do you care about? From Best Practices, to Near Surface Geophysics, from CO₂ Sequestration to Public Education, the DEG has committees, programs and publications that touch all of our work and communities. I encourage you to reach out and talk to me, or any member of the DEG Executive Committee, about being more involved.

METHANE EMISSIONS, MONITORING AND REDUCTION

Kristin M. Carter, Managing Editor

In late July, the U.S. Environmental Protection Agency (EPA) proposed a program to encourage all sectors of the natural gas industry to voluntarily reduce methane emissions (see <http://www.ogj.com/articles/2015/07/epa-proposes-voluntary-methane-reduction-program-for-gas-industry.html>). The EPA will be accepting comments regarding this proposed program through Sept. 1, 2015. Various trade groups have weighed in on the discussion already, with some more optimistic about the program's potential benefits than others.

Looking at this topic from a purely scientific standpoint, it seems to me that quantification and proper monitoring of methane emissions is first and foremost to making such a program work for industry. So, in true "good, bad and ugly" style, I found the following websites to explore this topic further:

EPA's homepage on methane emissions: <http://www.epa.gov/climatechange/ghgemissions/gases/ch4.html>

The U.S. Energy Information Administration's March 2011 report on the nation's greenhouse gas emissions: http://www.eia.gov/environment/emissions/ghg_report/ghg_methane.cfm

Global Methane Initiative's website: <https://www.globalmethane.org/about/methane.aspx>

The Environment Agency's 2012 report titled "Monitoring and control of fugitive methane from unconventional gas operations": https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/291523/scho0812buwk-e-e.pdf

Article on the World Resources Institute's paper on monitoring methane emissions: http://www.rigzone.com/news/oil_gas/a/139895/WRI_Study_Outlines_Solutions_for_States_in_Monitoring_Methane_Emissions

Breaking Energy's take on EPA's voluntary methane emission reduction program: <http://breakingenergy.com/2015/07/28/sizing-up-epas-new-voluntary-methane-reduction-program/>

Energy in Depth article regarding Ohio's regulatory approach to monitoring and reducing methane emissions related to oil and gas development: <http://energyindepth.org/ohio/ohio-ahead-curve-preventing-fugitive-methane-emissions/>

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One link in particular (<http://www.stfx.ca/news/view/17896/>) talks about mobile surface gas monitoring efforts undertaken by researchers at St. Francis Xavier University (StFX) in Antigonish, Nova Scotia. Dave Risk, associate professor of Earth Sciences, performs scientific and equipment-related research related to greenhouse gas emissions from soils (<http://www.fluxlab.ca>), so I contacted him and his colleagues for more information.

One of Dave's commercial developments relates to improved uses of cavity ring-down spectroscopy (CRDS), an optical technique capable of detecting very small surface emissions of gases (mole fractions down to parts per trillion) such as methane, carbon dioxide, hydrogen sulfide, isotopes and others. He has developed a mobile surface gas monitoring system, using commercially-available CRDS analyzers, a global positioning system (GPS) and specialized computer algorithms to help detect, attribute and quickly map large and small fugitive emission plume at oil and gas sites. The technique was developed in close collaboration with energy industry partners, based on the desire to conveniently enumerate (and source) small emissions at very large sites. The algorithms compensate for natural background variations in a suite of measured gases, and allow for extremely small plumes to be resolved (as much as 10 times smaller than other systems will see). The equipment is installed in a pick-up truck or car, and has been used in many varied applications and surveys. The vehicle can be driven around the emission site, acquiring data over an extensive area and interpreting that data continuously in real-time. Applications for this technology include landfills, coalbed methane, pipelines, oil and gas production, and CO₂ EOR.

Glowink in Montgomery, Vt., is working with StFX to

FROM THE EDITOR-IN-CHIEF'S DESK

Michele L. Cooney

Hello, readers! Our September issue of Environmental Geosciences features authors from the Bureau of Economic Geology (BEG) at The University of Texas at Austin. Ian Duncan provides a comprehensive review on literature concerning the negative influences of methane contamination in water wells and seeks to answer the question of whether methane poses a significant health and public safety hazard. The paper explores past claims of methane contamination in shale gas areas such as Pennsylvania and West Virginia, discusses hazards associated with methane and provides insight on mitigating "stray gas." Lucie Costard, also of the Institut für Geowissenschaften, Abteilung Geophysik, Christian-Albrechts-Universität zu Kiel and Jeffrey Paine of the BEG use electromagnetic (EM) methods to characterize a CO₂-enhanced oil recovery (EOR) site and assess potential environmental impacts at Cranfield field in western Mississippi. Their study focuses on Tertiary and younger strata and includes an airborne geophysical survey collecting frequency domain EM data, time domain surface EM measurements, and borehole logging EM induction, as well as natural gamma spectra and water level measurements to characterize near-surface stratigraphy and measure initial electrical conductivity distribution.

expand the number and types of applications for this technology. Two such examples are collaborations with Royal Holloway University in the United Kingdom and the U.S. Department of Energy (DOE) at West Virginia University's Marcellus Shale Energy and Environment Laboratory. For the latter, DOE has recently conducted a baseline surface gas survey for a Morgantown-area Marcellus shale well site, using DOE mobile equipment to follow StFX's planned outline of the survey route, with StFX providing data interpretation. This survey will be repeated at various times during the installation and completion of the shale gas well, from vertical and horizontal drilling activities to hydraulic fracturing and well production.

HONORS AND AWARDS

We recently acknowledged several individuals for their technical contributions, volunteerism and overall support of DEG's mission. Award winners announced are:

DEG Research Award – Dibyendu "Dibs" Sarkar

DEG Past President Award – Douglas E. Wyatt Jr.

DEG Public Outreach Award – Kristin M. Carter

Certificate of Merit

E. Charlotte Sullivan, 2014 ACE DEG vice chair

N. Anne Fix, Bill Ambrose and Don Van Nieuwenhuise, assistants to the vice chair in arrangements for the 2014 ACE

J.P. Nicot and Mike Jacobs, 2014 DEG session chairs

2014 ACE Paper and Poster Awards

Bernold M. "Bruno" Hanson DEG Excellence of Presentation Award

Alan S. Kornacki (co-author M. McCaffrey), "Monitoring the Active Migration and Biodegradation of Natural Gas in the Trinity Group Aquifer at the Silverado Development in Southern Parker County, Texas."

DEG Best Poster – Excellence of Poster Presentation Award

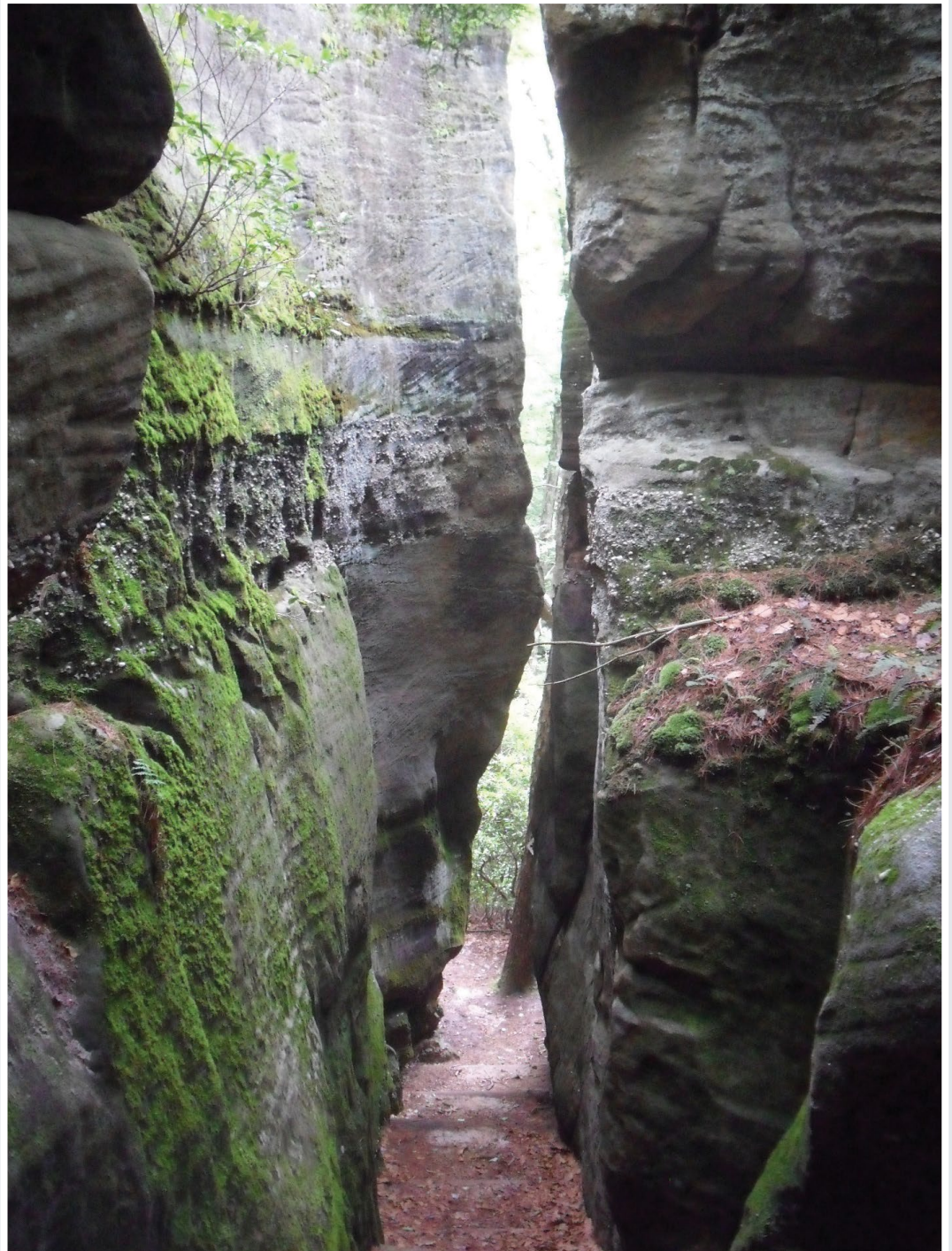
David E. Tabet (author) and Thomas C. Chidsey Jr. (co-author), "Basin-Scale Analysis, Management Tools, and Options for Produced Water from Tight-Gas Sand Reservoirs, Uinta Basin, Utah."



BEAUTY IN GEOLOGY – MINISTER CREEK TRAIL, WARREN COUNTY, PENNSYLVANIA

Minister Creek Trail cuts right through the Pottsville formation – an early to middle Pennsylvanian sequence of gray conglomerates and sandstones. The rocks in this photograph are roughly 20-feet high and are comprised of cross-bedded sandstones. In addition, a bed of quartz-rich conglomerate is visible approximately midway up the exposure.

Photo credit, Bruce Rockwell, Allegheny College student, spring 2014.



FEEDBACK?

We welcome your articles, comments and feedback for the quarterly newsletter publication.

Kristin Carter, Managing Editor

4th Quarter submissions deadline is Nov. 1, 2015

Please submit to kr Carter@pa.gov