



Newsletter

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FROM THE DIRECTOR'S DESK...

When we began the PTTC program in 1994, one of the underlying assumptions was that many of the technical problems confronting independent operators in the 10 PTTC regions could be solved by applying existing technology from one of the other regions. It was just a matter of getting out to see how things are being done in other areas, matching their solutions to our problems and bringing news of the technology back closer to home.

With that in mind, I hit the road quite a bit during the last calendar quarter, which gave me a chance to see how technology is being applied in the Rockies, the southwest, Alaska and western Canada. The Alaskan trips in April and May were particularly timely, occurring when they did during debates over the National Energy Policy, ANWAR and a gas pipeline from the North Slope to the Lower 48. The technical meetings, when held in this

setting, were quite stimulating, offering a good combination of talks from industry and the public sector, from geologists and engineers, with a political and environmental overprint.

The first Alaskan meeting was hosted by the University of Alaska Fairbanks, and was organized as a forum to discuss the future energy research needs of Alaska. Many of the speakers were from either BP Alaska or Phillips, and I was surprised to hear one of them say that up to now most of the technology that they had been using on the North Slope had been imported from the Lower 48 and modified to fit the particular problem and climate. The two-day workshop concluded with a long list of technical problems to solve in the areas of coal, oil and natural gas exploration and production, and a much shorter list of solutions. But it was a good start, and a lot of technology was transferred to participants.

The second Alaskan meeting offered more in the way of solutions. Jointly hosted by the Society of Petroleum Engineers and the Pacific Section of the American Association of Petroleum Geologists, the meeting was more focused on the results of applied oil and gas research in Alaska. Slim-hole drilling technology, evaluating formations behind pipe, using a WAG system in horizontal wells, various resource evaluation techniques, and even relying on drill cuttings as a less expensive method to characterize

reservoirs were among the topics that were discussed.

In Ruidoso, NM one of the more interesting talks that I heard described using a horizontal well not as a producing well, but as an “oil delivery system” to a vertical producing well. See below for a better description of this novel concept.

Although the Canadian meeting was held in Calgary, more than a dozen posters in a single afternoon session dealt with oil and gas in the eastern end of Canada, and described reservoirs of interest in the northern end of the Appalachian basin. I’ll pass these along to Skip Hobbs, who is putting together a full-day session of oil and gas prospects in eastern Canada and the northern Appalachians for a meeting in Nova Scotia next April.

Back home, our planned workshop offerings for the fiscal year concluded with a flourish, with workshops in Kentucky, Ohio and West Virginia on such diverse topics as the Trenton-Black River, applying GIS and GPS technology to the oil and gas industry needs, and technology needs in the natural gas storage arena. However, in Calgary I negotiated a one-day seismic workshop that we may bring into the basin later this year, and in Ruidoso I lined up a one-day workshop on naturally fractured reservoirs that we may offer in the fall.

In July, we plan to cooperate with New Mexico Tech (something else that developed from my trip to Ruidoso) and the Gas Technology Institute (GTI) to

host a meeting on Unconventional Gas Reservoirs in Morgantown in late July. This will be an by-invitation-only workshop for those of you who are stakeholders in tight sand, Devonian shale and coal bed methane plays, and are willing to share your expertise with others. No talks will be presented. Instead, the idea is for individuals in the audience to help each other and let the

meeting organizers know what their problems are. I hope our invitation list includes all of you who are interested. But, in case you do not hear from me by early July and would like to attend, please contact me.

Doug Patchen
RLO Director

HORIZONTAL WELL OIL DELIVERY SYSTEM

During the recent AAPG Southwestern Section meeting in Ruidoso, Neil F. Hurley (Colorado School of Mines) presented a novel use for a horizontal well in a compartmentalized oil reservoir. His talk, "Incremental oil recovery using horizontal drilling in a compartmentalized oolitic reservoir, San Andreas Formation, West Texas," described how a horizontal well was designed, not to produce oil, but to deliver oil to an older, vertical, producing well that had been hydraulically fractured. The horizontal portion of the well was intentionally drilled on a downward slant through the reservoir to act as a drain hole prior to intersecting the induced fracture near the vertical well. Oil delivered to the induced fracture was then produced by the vertical well.

The speaker listed several screening criteria for those interested in trying this

approach. First, the reservoir should definitely be compartmentalized, like this one, which consisted of discrete, isolated oolitic mounds and bars. Second, the field should not have a strong water drive, because the presence of water would be detrimental to the horizontal well approach. Third, the field should be under gravity drainage, and fourth, the reservoir should have a strong directional permeability, which would orient the induced fracture in a predictable direction.

When the end of the horizontal section approached the vertical well, the driller lost circulation, which indicated to the engineers on site that they had intersected the induced fracture where they had interpreted it to be. Hurley noted that this loss of circulation did not please everyone involved, most notably

the driller.

During the question and answer interval that followed the talk, Hurley was asked if his company had drilled additional inclined wells designed to deliver oil to an induced fracture in an older production well. He answered that several additional horizontal wells had been drilled, but they were all oriented parallel to the assumed induced fracture direction, not perpendicular to those fractures, and all were failures. It was an example of a concept thought to have been proven by the research department not being applied by the field engineers in the same company.

Hurley's presentation was followed by a talk on "Horizontal lateral revitalization of a low permeable carbonate reservoir at the Bryant-G field, Midland, TX" by Dana Rowan. Rowan pointed out that horizontal wells were drilled

both perpendicular and parallel to the direction of natural fractures, which would control the direction of induced fractures, and there was no noticeable difference in the performance of wells. His explanation was that in a horizontal well, you can only expect to create one induced fracture, and this fracture will be better in wells drilled parallel to the natural fractures. So, the operator achieved a better stimulation in the wells drilled parallel to natural fractures, but achieved better communication between the induced fracture and natural fractures in wells drilled perpendicular to the direction of natural fractures.

TRENTON-BLACK RIVER TALKS CONTINUE TO DOMINATE MEETINGS AND WORKSHOPS

The consensus was that this was our best one yet - the best PTTC-developed-and-hosted Trenton-Black River workshop, that is. The Ohio Geological Society and the Ohio Geological Survey developed an excellent program that attracted 176 participants to Canton, OH on April 25 to listen to

operators who have actual experience in the play, with an intended emphasis on discussions of the seismic character of the play. The workshop began with overviews of Trenton-Black River activity in New York and West Virginia, and continued with a regional geologic overview by Dick Beardsley. The

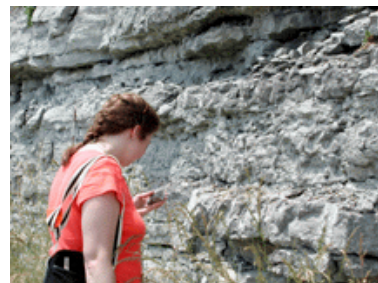
remainder of the day was devoted to field examples, discussions of the best drilling and logging practices, how to use gravity and magnetic data in an integrated exploration approach, considerations for seismic acquisition and processing, and examples of seismic signatures in the Trenton and Black River that had been proprietary prior to the workshop. If you missed the workshop, contact Larry Wickstrom at the Ohio Geological Survey to see if you can obtain a copy of the workshop notebook.

Two weeks later, John Guoynes made a presentation at the Tennessee Oil & Gas Association meeting in Knoxville on “Trenton/Black River reservoir evaluation solutions” that I found to be both interesting and informative. Again, the talk was from the perspective of a service company that has been active in the play, and information was released that formerly has not been widely available.

On June 4th in Lexington, the Kentucky Geological Survey hosted a very well-received core workshop and field trip to examine Trenton-Black River cores from eastern Kentucky and to visit an outcrop analog of the type of reservoir

that is believed to exist in the subsurface of New York, i.e., one that is formed by the fracturing and hydrothermal alteration of the host limestone to dolomite. And then, just this week, Jim Drahovzal discussed “Trenton-Black River and other deep gas potential of Kentucky” during the annual Kentucky Oil & Gas meeting in Lexington. Prior to the meeting the Kentucky Geological Survey presented a one-day workshop on “Kentucky public data resources for the oil and gas industry.” The workshop instructor described the basic digital oil and gas well location and production data available at the survey, as well as the wide variety of base maps that also are available, and then demonstrated geographic information systems software (ArcView and ArcExplorer).

Next month, in Clymer, NY during the 22nd Annual Summer Meeting of the Independent Oil and Gas Association of New York, Dave Harris (Kentucky Geological Survey) will present “Looking at Trenton-Black River reservoirs: outcrop analogs in Kentucky,” which will be based on the June 4th workshop and the current NYSERDA-funded research being conducted by the KGS.



NYSGA FIELD TRIPS INCLUDE TRENTON-BLACK RIVER OPTIONS

The New York State Geological Association will join with their sister organization in New England (NEIGC) to host a big field trip meeting in Lake George Village, NY, September 27-29. Twenty eight different field trips will be offered in eastern New York and adjacent New England, among which are several of interest to those of you are can't get enough information on the Trenton and Black River.

Edward Lansing will lead a trip ("Reconstructing Early Paleozoic sea levels and climates: new evidence from the east Laurentian shelf and slope") designed to present new work on the pre-Taconian orogeny sequence stratigraphy of the Lower Paleozoic carbonate platform in the Champlain Valley and time equivalent continental slope units in the Taconic overthrust belt.

James C. Dawson will lead another trip of interest, "Early Paleozoic continental shelf to basin transition rocks: selected classic localities in the Lake Champlain Valley of New York State," which will allow participants to examine continental clastic and carbonate shelf units from the Upper Cambrian Potsdam Sandstone up to the Middle Ordovician Black River Group, and foreland basin carbonates and calcareous shales of the overlying Middle Ordovician Trenton

Group.

The Middle Ordovician carbonate section at the historic Crown Point site will be the focus of a trip to be led by Charlotte Mehrrens and Bruce Selleck. Exceptional exposures of the Chazy, Black River and Trenton groups will be examined in detail, giving those of you who attend a thorough understanding of the relationships among organisms, carbonate sediments, depositional and diagenetic processes and tectonics.

Helen Mango will lead a half-day trip to another historic site, the Mount Independence State site in Orwell, VT. However, the Ordovician carbonates that will be observed on this trip may not extend up to the Black River equivalent interval. Gerry Friedman also will lead a trip during the meeting, to examine carbonate facies in the Hudson and Mohawk valleys. Again, I am not sure if any Trenton or Black River rocks will be examined, but Gerry's trips are always educational, entertaining and worthwhile.

For information on these and other trips for this meeting, contact Jim McLelland at Colgate University (jmcllelland@citlink.net) or go to www.nysgaonline.org or www.neigc.org.

AAPG PRESIDENT VISITS THE BASIN

A rare event occurred on May 9th when current AAPG President Robbie Gries was the luncheon speaker for a combined meeting of the Ohio Geological Society, the Appalachian Geological Society, the Pittsburgh Association of Petroleum Geologists, the Pittsburgh Geological Society and the Society of Professional Well Log Analysts in Cambridge, OH. President Gries gave a highly motivational talk on “Thinking out of the box – the geologist’s role in keeping up with future energy demand.” The focus of the talk was on four or five

individuals who combined creative thinking with the perseverance necessary to push their idea through to completion. In several of the cases cited, the eventual funding to complete the project did not come from the oil and gas industry. Instead, the individual went to other industries, like steel or real estate, to obtain the necessary funds. The examples cited resulted in drilling in synclines for oil production, producing gas from coal beds and developing the concept of sequence stratigraphy as an exploration tool.

AAPG ANNOUNCES ELECTION RESULTS, NEXT BALLOT

President Robbie Gries has announced the results of the recent AAPG elections. The successful candidates are: President-Elect - Steve Sonnenberg, Denver, CO; Vice President - Peter Lloyd, Kuala Lumpur, Malaysia; and Treasurer - Paul Weimer, Boulder, CO.

President Gries also has announced the slate of officer candidates for 2003,

which is as follows: President-elect, Patrick Gratton, Dallas, TX and Ronald Nelson, Houston, TX; Vice President, Douglas Patchen, Morgantown, WV and Erik Mason, New Orleans, LA; and Secretary, Katharine Lee Avary, Morgantown, WV and Robert Countryman, Bakersfield, CA.

NATURAL GAS FROM COAL SEAMS COMPILATION RELEASED BY IOGCC

The Interstate Oil and Gas Compact Commission has released a compilation of selected references to studies of coal bed methane. IOGCC recognizes that their compilation does not include all relevant documents on this issue, but offers the publication as an example of the quality and quantity of information on the topic that can help their member states better understand the many aspects of coal bed methane development. IOGCC plans to collect as many of the listed documents as possible, so that they will be available for inspection and perhaps reproduction.

The list includes 245 references,

alphabetically by author, with a brief annotation after each reference. This master list is then further subdivided by topic, with separate listings by Location (state or basin specific, or federal lands), Mining (works that address coal mining or coal bed methane issues), Reference Materials (listings of other bibliographies of coal bed methane information), Resource Evaluation and Development (address issues like hydraulic fracturing, chemical composition of coal, environmental impact and safety), and Water (including ground water, produced water and seawater).

NRC RELEASES RECOMMENDATIONS TO PRESERVE GEOSCIENCE DATA

The National Research Council has released a report of a study that was jointly sponsored by 12 other organizations, including the American Association of Petroleum Geologists, the Department of Energy, the U.S. Geological Survey and the American Geological Institute. The committee was charged with developing a strategy for determining which geoscience,

paleontological, petrophysical and engineering data to preserve; examining options for the long-term archiving of and providing access to these data; examining three to five access and repository case studies as examples of success and failure; and distinguishing the roles of the public and private sectors in data preservation.

The committee concentrated its

efforts on physical data (cores, cuttings, fossils, rocks, well logs, tapes) as opposed to digital data (already stored in computers). The committee addressed both geoscience collections and data (cores, cuttings, fossils, rocks; geophysical tapes, paper logs) and concluded that many geoscience collections and data are currently in peril. The committee recommended that the priority for rescuing geoscience collections and data be placed on those in danger of being lost, and further recommended that the highest priority for retention and preservation be directed toward those collections and data that are well documented and impossible or extremely difficult to replace.

The committee also concluded that the amount of geoscience collections and data currently at risk is equal to 20 times the amount of material currently preserved in the USGS Core Research Center in Lakewood, Colorado. The committee recommended that money be made available to catalog existing collections and data, on a competitive basis, and further recommended that this initial cataloging effort target 5 to 10 institutions each year until the nation's geoscience collections and data are adequately assessed.

The committee recommended the establishment of a distributed network of regional geoscience collections and data centers, each with an external science advisory board. They concluded that immediate action is needed to stop the loss of collections and data in areas containing the highest volumes of at-risk material. Therefore, the committee recommended that three regional centers be established in the Gulf Coast, Rocky Mountains and Pacific regions, and that additional centers, where merited, be established over the next 5 to 10 years, with preference being given to those proposed centers who meet three stated criteria. The committee recommended that these centers build on existing expertise and infrastructure (state geological surveys, universities, museums, private enterprises) and that access to establishment and improvement funds be on a competitive basis.

The committee went on to make specific recommendations regarding the strategy for managing federal geoscience collections and data, and on incentives that would be necessary to encourage preservation efforts by the public and private sectors.

STRIPPER WELL CONSORTIUM ANNOUNCES NEW PROJECTS

The DOE-funded Stripper Well Consortium, an industry-driven group managed by Penn State, has announced that 13 of the 22 proposals submitted this spring have been selected for full funding, and one additional proposal was selected for partial funding. Three of those projects selected for funding were continuations from among the 13 projects funded in 2001. More than \$1.3 million was committed to these new projects, several of which are located in the

Appalachian basin. The West Virginia Geological Survey received one of the awards to conduct a reservoir characterization study of the Wileyville oil field as a companion study to the engineering study conducted by Penn State in the same field under 2001 funding.

For details on these new projects, go to www.energy.psu.edu/swc/projectoverview.shtml.

NEW GIS ADDED TO REGIONAL WEBSITE

A new feature is being added to the Appalachian Region PTTC website: a GIS feature which will enable users to get a basin-wide overview of the Trenton-Black River play, coal bed methane activity, and all horizontal wells drilled to date. Wells in these three categories can be shown on individual layers or a combination of layers. Zooming in on any well will enable the user to click on the well and go to a table which contains individual well information.

This new addition to our website has been made possible through the cooperation of the state geological surveys in all of the states for which you will see well locations and information. I would like to express my gratitude to each of these surveys for their excellent cooperation in this effort.

Be sure to check back often to see when this GIS option is released for public use.