South Midcontinent Region
PTTC
Petroleum Technology Transfer Council
Regional Update
First Publication, 2006

Coalbed Methane and Gas Shales Attract Record Crowd

By Jane Weber, OGS Staff

A record attendance at the Coalbed Methane and Gas Shales in the Southern Midcontinent Conference on March 21, 2006, indicates not only how important coalbed methane (CBM) and shale gas have become in the overall national energy picture but also how eagerly petroleum industry personnel are seeking to better understand the exploitation and development of unconventional resources. In the next 10–12 years, unconventional reservoirs are projected to supply 1/3 of the United States domestic natural gas demand.

A diverse group of 392 geologists, engineers, other geoscientists, and energy industry representatives packed the room at the Clarion Meridian Convention Center in Oklahoma City for the one-day meeting. Co-sponsored by the Oklahoma Geological Survey (OGS) and the U.S. Department of Energy's National Energy Technology Laboratory, the conference drew attendees from 13 states and Canada. (See breakdown by state in Figure 1.)

Following brief welcome remarks by Charles J. Mankin, Director of the OGS, and Lori Wrotenberry, Director of the Oil & Gas Conservation Division of the Oklahoma Corporation Commission (pictured below), Wrotenberry explained the role of the Corporation Commission in formulating existing regulatory issues so they encourage, rather than hinder, development of CBM resources.

Figure 1: Breakdown of "Coalbed Methane and Gas Shales in the Southern Midcontinent Conference" attendees.

Conference Attendance by State (and Country)	
UNITED STATES	
Arkansas	9
Colorado	8
Florida	1
Kansas	14
Louisiana	8
Minnesota	1
Mississippi	3
Missouri	1
New Mexico	1
Oklahoma	285
Pennsylvania	1
Texas	55
Wyoming	2
CANADA	3
TOTAL	392

Gas shales have not yet presented any special problems. The question is how to apply existing Oklahoma rules for conventional oil and gas wells to CBM wells, with regard to hydraulic fracturing (not viewed as environmentally significant under federal guidelines); commingled production; horizontal drilling; required pressure tests (non-sensical for CBM wells); and produced water. Commission staffers also spend time explaining natural events to the public, such as the recent situation in Tulsa where gas from

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nearby coal seams was seeping into residences. The first four of twelve technical presentations centered on coalbed methane. In Kansas, CBM wells are being drilled at the rate of almost 2/day, a level of activity driven largely by price. Dave Newell (pictured below) reported that southeast Kansas is the state's most productive region for CBM; but its gas is not yet sufficient there to offset decreased production in conventional gas from the Hugoton area. In eastern Kansas most CBM wells are vertical; water disposal is not a problem. A northward decrease in gas content is not a function of coal quality but probably is due to less maturation. Isotopic studies show shallow coalbed gases on the basin flanks have a microbial or mixed origin, whereas deeper conventional gas is thermogenic. A near-future investigation involves injecting a combination of land-fill gas and coalbed gas into a coal seam in an attempt to both sequester the CO2 and enhance the release of more methane.

CBM activity in Oklahoma is divided between the northeast Oklahoma shelf and the Arkoma Basin. According to data compiled through 2005 by Brian Cardott, cumulative production from 2292 wells in the shelf area was 70 Bcf while 1779 Arkoma Basin wells produced a cumulative 154 Bcf. Cardott (shown at left) stressed the growing importance of horizontal drilling in Oklahoma. In 2005, 96% of Arkoma Basin CBM wells were horizontal. Lateral lengths averaged about 2000 ft, but one lateral extended 5771 ft. He also reported the first occurrence of semi-anthracite coal in the State, in Cavanal Mountain in Le Flore County. Additional information on coal rank in the Arkoma Basin appeared on a poster by Cardott. His second poster dealt with thermal maturity of the Woodford Shale.

To illustrate the challenges of horizontal coal-seam drilling, Paul Bruce summarized the drilling plans, drilling results, and production for individual wells in three Osage County case studies. Successful completion techniques were either hydraulic fracture or horizontal lateral. The latter approach was used to counter surface limitations (e.g., housing developments, lakes) or low-permeability coal seams that could not withstand fracture stimulation. There were problems trying to stay within the thin (<3 ft) beds when drilling horizontally. Improved production rates from horizontal wells vs. vertical wells were best realized in low-permeability coal seams. Bruce's talk was followed by questions on well spacing, drilling costs, and how to decide which direction a horizontal well should go. (Answer: Updip.)

A more detailed view of horizontal drilling by David Tschopp (shown at left) focused on his experiences drilling in Arkoma Hartshorne coal. Although the technology is no longer considered unconventional, no cookbook method exists. Each company must perfect its own technique in a) drilling to the kickoff point, b) drilling the curve, c) drilling out of the casing shoe, and d) drilling the lateral.

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Control points may be ¼ mile away but you are aiming for a coal seam a couple of feet wide. To stay in the lateral, Tschopp believes in following the gamma-ray reading (e.g., up with a 15/20 reading, down with a 21/14 reading), even though the detector can be 20–30 ft back of the drill tools. Key considerations include orienting the well updip and perpendicular to face cleat and major fracture planes, handling small scale geologic features such as faults, and preparing a post drill summary for future reference.

The only paper specifically about Arkansas's Fayetteville Shale was presented by Ed Ratchford. Fayetteville Shale, an Upper Mississippian deposit, is exposed on the surface across Arkansas, from the edge of the Mississippi Embayment on the east to Oklahoma on the west. With approximately 2 million acres leased within the last 2 years and 80 producing wells, the Fayetteville Shale gas play is good for the economy of Arkansas. The central zone is where most activity has occurred. Forty-three wells in the pay zone of a multi-county study area were modeled using TOC (total organic carbon) and vitrinite reflectance. Ro values of 2.2–2.4% are consequences of fluids pushed out from the Ouachitas and migrated to the Arkoma Basin. Development challenges include a need for gas pipeline infrastructure proximal to the leased acreage, large volumes of fresh water for well completions, and wells to dispose of frac water. Ratchford, along with Scott Ausbrooks, offered further information on the Fayetteville shale gas play in a poster.

In a study of the Woodford Shale, Alischa Krystyniak used gamma-ray and lithofacies descriptions of 5 outcrop samples from south-central Oklahoma in an attempt to characterize this late-Devonian, organic-rich black shale in the subsurface. She concluded that outcrop-based gamma-ray profiles can be correlated with subsurface gamma-ray logs. Organic richness, as measured by TOC, tends to be higher in the fissile Woodford shales and lower in the non-fissile, phosphatic, siliceous shales. Thin-section analysis suggests that radiolarians are the main source of the silica and serve as nuclei for the development of phosphate nodules, a common occurrence in the Woodford.

The Caney Shale in southern Oklahoma is equivalent to the Fayetteville in Arkansas and Barnett of north Texas. With measured TOC in the 2–8% range, the Caney has 4–10 times the minimum amount of organic material required to qualify as a gas shale. In his presentation on the Caney, Rick Andrews discussed its stratigraphy and log character; contrasted Caney with Woodford in outcrop; and showed production decline curves for both oil and (conventional) gas wells. The Caney tends to produce oil in the Ardmore Basin and gas in the Arkoma Basin.

Looking at well logs in each township throughout a 132 x 54 mile study area in southeastern Oklahoma, Scott Schad (shown below) quantified the commercial hydrocarbon potential of the Mississippian Caney Shale. Detailed core photos documented an anoxic deposition for the shale. Organic content as high as 8% TOC and maturity levels producing a Tmax exceeding 500°C. and vitrinite reflectance in the 0.67–3.0% range indicate the Caney's high potential to source hydrocarbons. Correlation of gas desorption data with mud log gas shows suggests a fairly close estimate of GIP (gas-in-place) can be obtained from mud log data alone. Of six Caney Shale members, A–F, the D zone is the most organic and holds most of the gas, perhaps as much as 150 SCF/ton GIP, making it comparable to the best Barnett Shale. Operators should establish horizontal spacings and drill multiple laterals from a single surface location to efficiently develop the play. The D zone is poised to become another rich gas source in the midcontinent.

The purpose of Tyler Maughan's investigation was to determine where gas occurs in the Caney. He utilized log analysis, drill cutting observations, and thin-section analysis of samples from 8 townships in McIntosh County in the western Arkoma Basin. For his work, Maughan broke the Caney into 3 zones: upper (probably corresponding to Schad's A, B, and C), lower (probably including Schad's D), and basal (contains no gas). Thin sections revealed bands of calcite as well as separated regions of sorbed and *Cont. pg. 4*

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non-sorbed calcite. Acid is the recommended fracture treatment for the sorbed calcite.

Darwin Boardman examined the cyclic stratigraphy and conodont biostratigraphy of the Barnett Shale at its type locality in the Chappell Limestone. Other representative shale sections are hard to find, due to lack of exposure. The Barnett contains conodonts from bottom to top, with 3 faunal intervals recognizable. Some of the faunal types were found in both the lower and upper intervals. Those found in the top interval are early Morrowan, not Mississippian. As a result of exploring whether the Barnett, Caney, and Fayetteville conodonts are the same, Boardman reported on a preliminary correlation of the Barnett to the Caney. He discovered the Caney is a different age from the Barnett and that the Caney is not uniform along the outcrop belt. The question is: What happens when you go into the subsurface?

Dan Jarvie (shown below) outlined many aspects to consider in prospecting for and developing shale gas, stressing the need for both a geochemical and a geological reconnaissance approach. He gave few details but presented information on topics such as differences between exploring for conventional vs. unconventional gas; biogenic vs. thermogenic shale gas systems; organic richness and its relation to generation potential; the impact of kerogen type on hydrogen content, organic matter decomposition rate, and product generated; the role of thermal maturity and how to measure it; the relation between organic carbon volume and porosity; and how to fingerprint residual hydrocarbons in the rocks, to name just a few. Jarvie also showed shale gas appraisal results for several basins, with emphasis on the Barnett Shale in the Fort Worth Basin.

Productive shales, as source rock, reservoir rock, and trap, are thought to be relatively non-reactive to acid. But in the studies reviewed by Bill Grieser, reactive fluids appear to improve shale gas production. One conceptual model of gas shales suggests the "free gas" component is stored in and produced from micro-porosity in lamina and natural fractures and the "adsorbed gas" component is stored in and produced from the bulk shale matrix. XRD analysis and SEM images showed that surface reactive fluids can enhance gas diffusion into and through micro-porosity/fractures and increase surface area for flow of gas from the shale matrix. The fluids remove acid-soluble minerals in the bulk shale as well as the calcite-filled fractures to open up additional surface area, thereby providing microchannels. The amount of gas desorbed is related to the amount of surface area exposed. Examples of Woodford, Caney, and Barnett were used throughout the talk to illustrate the diverse make-up of midcontinent shales. Grieser also presented his material in poster format; co-authors were Matt Blouch and Ray Loghry.

In addition to the four posters already mentioned, the poster session included three more displays on topics not covered in the oral presentations: coal nomenclature in northeastern Oklahoma (Vance Hall and Glenn Cole), coalbed methane recoveries from U.S. basins (Troy Cook), and downhole critical gas content—without core (John Pope and Bob Lamarre). The meeting also featured seven commercial exhibitors plus the usual array of OGS publications for sale. A conference manual with printouts of the slides shown during the talks was given to each attendee; but no manuals have been made available for distribution since the conference. To obtain additional information about any of the conference topics, you are encouraged to contact the author(s) directly.

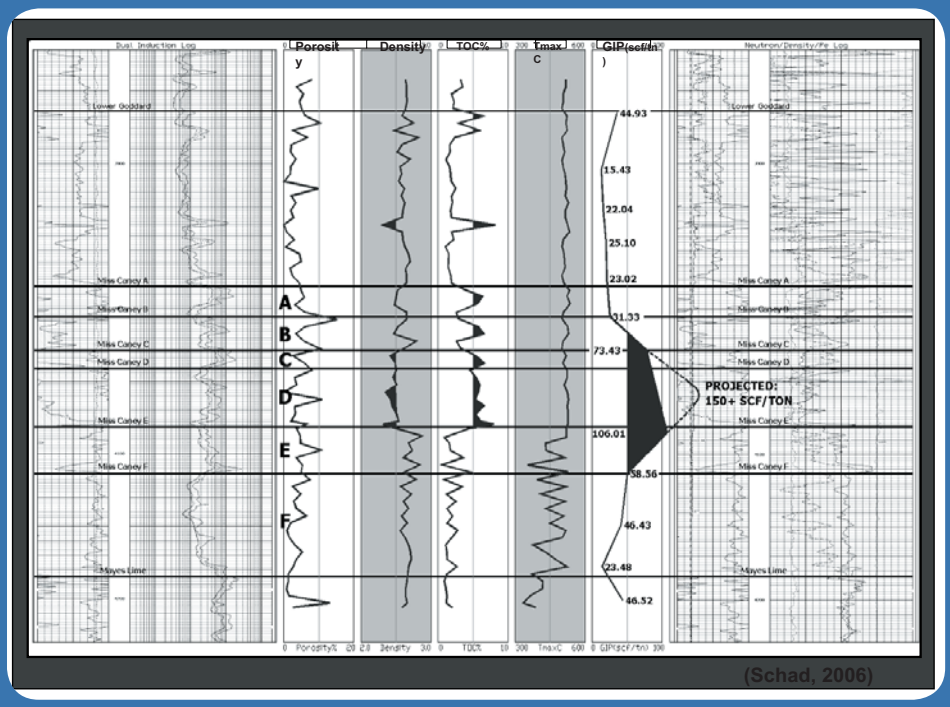
The symposium was the 19th in an annual series hosted by OGS that is devoted to the exploration and development of oil and gas resources in the southern midcontinent. The purpose of the symposia is to provide independent operators the means to benefit from the experience of others in identifying practical techniques and technologies for finding new resources and efficiently producing more hydrocarbons. Twenty years ago the types of gas resources highlighted at this meeting would not have been proposed as program topics.

OGS WORKSHOP ANNOUNCEMENT

CANEY SHALE GAS WORKSHOP

August 3, 2006

Oklahoma City, Oklahoma



(Schad, 2006)

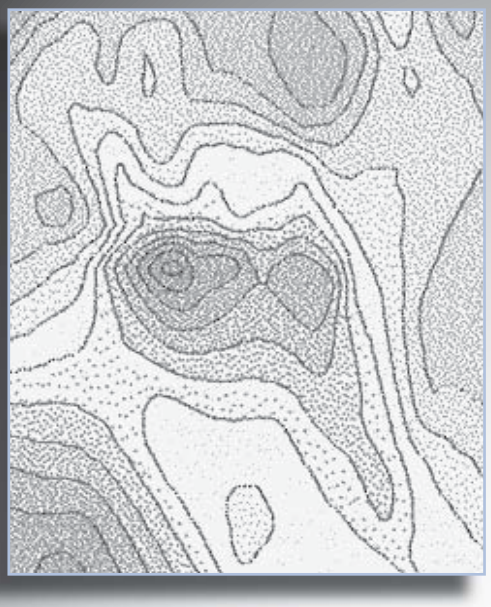
Recent advances in completion technologies and significantly higher gas prices have elevated the industry's activity in shale gas plays to a high level. Success in the Barnett Shale in the Fort Worth Basin has resulted in development of the largest gas field in Texas. This excitement has spread northward across the Red River into the Arkoma Basin, where the Caney Shale, considered by many to be an analog of the Barnett, is in the early stage of evaluation.

The purpose of this workshop is to present the following information on the Caney Shale in Oklahoma and the status of the play:

- **Regional geological setting**
- **Areal distribution and thickness of the Caney**
- **Lithology, minerology, geochemistry, logging programs, drilling and completion programs, production data, and status of the play.**

For additional information, please contact: Michelle Summers 800/330-3996 or 405/325-3031; fax: 405/325-7069; web site: www.ogs.ou.edu.

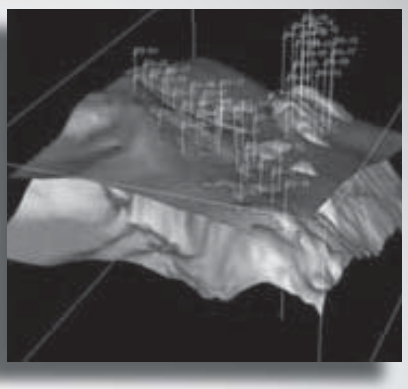
OGS WORKSHOP ANNOUNCEMENT



Midcontinent 3-D Seismic Interpretation Workshop

September 20, 2006

Norman, Oklahoma



Course Purpose:

- Understand the nuts and bolts of seismic data acquisition, processing and interpretation necessary to image exploration and exploitation reservoirs in the Mid-Continent.
- Understand both the horizontal and vertical resolution of the seismic data.
- Explain the terminology used in 3-D seismic.
- Suggest interpretation techniques for specific play types in the Midcontinent.

This course is designed for geologists, engineers, landmen and geophysicists who are not familiar with common 3-D seismic applications in the Midcontinent.

South Midcontinent Region PTTC

OKLAHOMA GEOLOGICAL SURVEY 1908

New OGS Publication

SP2006-1, Wells Drilled to Basement in Oklahoma

By Jane Weber, OGS Staff

A new Special Publication listing 1,232 wells drilled to basement in Oklahoma is now available on compact disc from the Oklahoma Geological Survey. These wells have penetrated the entire sedimentary rock section to reach basement. In some cases, the drill bit went through a thickness of basement and back into sedimentary rock, indicating the presence of a fault.

SP2006-1, Wells Drilled to Basement in Oklahoma, by Jock A. Campbell and Jane L. Weber, contains information compiled from 17 published and unpublished sources, 14 individual contributors, and personal examination of some electric logs by Campbell. Unlike previous studies of basement rocks which focused on a particular region of Oklahoma, this list covers the entire State.

The CD-ROM has an Excel spreadsheet list of the wells, including the depth at which basement was reported and the elevation of that depth relative to mean sea level. An ESRI® shapefile of the dataset and a map showing the wells in relation to geologic provinces of Oklahoma are also on the CD.

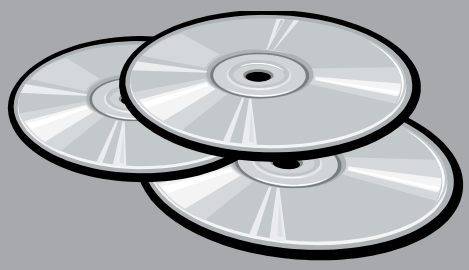
The cost of SP2006-1 is $3, with an additional $2 for postage if mailed. To obtain a copy, call the OGS sales office at (405) 360-2886, email them at ogssales@ou.edu, or stop by their office at 2020 Industrial Blvd., Norman.

OCGS Compiles Publications into Digital Format

By Jane Weber, OGS Staff

All of the publications of the Oklahoma City Geological Society (OCGS), including main articles from their journal, the *Shale Shaker*, are now available on a set of three compact discs. The digital collection is fully searchable by title, author, and keyword. The price of the set is $95.00 plus postage for non-OCGS members or $37.50 including postage for members.

To order a set of the CDs, contact Michelle Hone at 405-236-8086 or ocgs@sbcglobal.net.



Oklahoma Geological Survey Director Named Regents' Professor

Charles J. Mankin, believed to be the longest-serving director of any state geological survey in the country, was named a Regents' Professor by the University of Oklahoma Board of Regents during its March meeting.

"No one is more deserving of this honor than Charles Mankin," OU President David L. Boren said. ***"His scholarship, teaching and research have left a lasting mark on our state and its economy and energy industry."***

Mankin, director of the Oklahoma Geological Survey and professor of geology at OU, as well as former director of the Sarkeys Energy Center, is known as the **"dean of state geologists"** among his peers. He was hired in 1959 during the presidency of George Lynn Cross, OU's seventh and longest-serving president, and was asked to become the acting director of the university's School of Geology and Geophysics in 1963, while still an assistant professor. He became the school's director in 1964 and served in that capacity for 14 years. He was named director of the Oklahoma Geological Survey in 1967 and as director of the Sarkeys Energy Center in 2000. He served as executive director of the OU Energy Resources Institute from 1978 to 1987.

Mankin has served on numerous professional and scientific boards, committees and panels at state and national levels. Additionally, he is a member of numerous professional, scientific and technical organizations, including the Association of American State Geologists, the American Institute of Professional Geologists and the Geological Society of America, and has served as president of several national organizations.

L to r, University of Oklahoma Provost Nancy J. Mergler; OGS Director and PTTC SMR RLO Charles J. Mankin; and College of Earth and Energy Dean Larry R. Grillot. Photo by Margaret Vennochi.

He is a 50-year member of the American Association of Petroleum Geologists and a life member of the Oklahoma City Geological Society, receiving honorary membership in 1994. He also serves on the National Petroleum Council, with a two-year term beginning in 2004.

In recognition of his achievements, Mankin has received the Ian Campbell Memorial Medal from the American Geological Institute; the Public Service Award from the American Association of Petroleum Geologists, serving as secretary of that organization for two years; the Martin van Couvering Memorial Award and the Ben H. Parker Memorial Medal from the American Institute of Professional Geologists; and the Conservation Service Award from the U.S. Department of the Interior, among many others.

Born in Dallas in 1932, Mankin earned his bachelor's, master's and doctoral degrees in geology from the University of Texas at Austin and was a post-doctoral fellow at the California Institute of Technology.

Aside from his posts at OU, he has taught at the University of Texas, served as a special instructor in geology for Shell Oil Co. engineers and as a geologist for the New Mexico Bureau of Mines and Mineral Resources.

To qualify for a Regents' Professorship, a faculty member must have rendered outstanding service to the academic community or to an academic or professional discipline through extraordinary achievement in academic administration or professional service. Nominees for Regents' Professorships are presented to the OU Regents by the president after conferring with the chairman of the Board of Regents, the chair of the appropriate Faculty Senate, and the University Council on Faculty Awards and Honors. The term of a Regents' Professorship is continuous until retirement.

Noted Geophysics Leader Named Dean of OU's College of Earth and Energy

A geophysicist with 30 years of technical and managerial experience in the petroleum industry was named dean of the newly formed College of Earth and Energy at the University of Oklahoma. The appointment, which was effective April 1, was announced at the March meeting of the OU Board of Regents.

"Larry Grillot combines outstanding academic credentials with experience in leading America's energy industry at the highest level," said OU President David L. Boren. ***"He is ideally equipped to be the first dean of OU's new college, which has the potential to further enhance OU's reputation as a national leader in the energy field."***

Larry R. Grillot worked for Phillips Petroleum Co. for 30 years, almost half of which were spent in Bartlesville, in a variety of technical and managerial posts in exploration and production. His assignments took him to Canada, Europe, and Africa in successively more responsible roles, the last of which was as manager of E&P Technology and Services, Upstream Technology and Project Development. Before that, he was manager of International Exploration and Worldwide Exploration. Other positions he held at Phillips include president and region manager for Phillips Petroleum Canada Ltd., Calgary (a subsidiary of Phillips Petroleum Co.), and manager of E&P Planning.

He earned his bachelor of science degree in physics from Mississippi State University and his master's and doctoral degrees in geological sciences from Brown University.

The College of Earth and Energy, formally established in January 2006, grew out of talks between OU representatives and alumni in both the oil and gas and the weather industries, who determined that OU should restructure its assets in the areas of energy and meteorological education and research. OU historically has been at the forefront in educating petroleum engineers, who are consistently ranked by *U.S. News and World Report* as one of the top five programs in the nation. The restructuring was designed to educate students for fields of the future and to conduct research that will benefit industry and the nation at large.

The College of Earth and Energy places the Sarkeys Energy Center in a more integrated role. Also under its umbrella are the Oklahoma Geological Survey, Mewbourne School of Petroleum and Geological Engineering, and School of Geology and Geophysics.

In addition to continuing to support the exploration and extraction of hydrocarbons, the new college will be involved in interdisciplinary research and education on alternative sources of energy and in the economic and public policy aspects of all forms of energy. In partnership with the College of Engineering and the Michael F. Price College of Business, the new college, under Grillot's direction, will develop optional minors in business that will enhance the employability of OU's undergraduates and provide opportunities for more interdisciplinary master's degrees.

Looking for Information. . .?

The following publications are now available from our Open File list:

By Jane Weber, OGS Staff

☑ **OF 1-2006 Inventory of Mine Shafts and Collapse Features Associated With Abandoned Underground Mines in the Picher Field Northeastern Oklahoma**
Author: Kenneth V. Luza and W. Ed Keheley
Number of pages: 68
Cost: $6.00

☑ **OF 2-2006 Oklahoma Asphaltic Deposits — Field Sheets and Map ("The Goodrich File")** Prepared in 1943–1944.
Author: Compiled by Harold B. Goodrich
Map scale: 1:500,000
Number of pages: 133
Cost: $15.00

☑ **OF 3-2006 Asphalts, Asphaltites, and Asphaltic Pyrobitumens in Oklahoma (The Goodrich File").** Prepared in 1943–1944 and added to in 1963–1964.
Author: Harold B. Goodrich with additions by Louise Jordan
Number of pages: 330 (165 double-sided)
Cost: $21.00

☑ **OF 4-2006 Hydrogeology and Water Management of the Arbuckle-Simpson Aquifer, South-Central Oklahoma.** Material prepared for March 4, 2006, Field Trip No. 1, South-Central Section Geological Society of America 2006 Annual Meeting, Norman, Oklahoma.
Author: Noel Osborn, Scott Christenson, and Todd Halihan
Number of pages: 62
Cost: $5.00

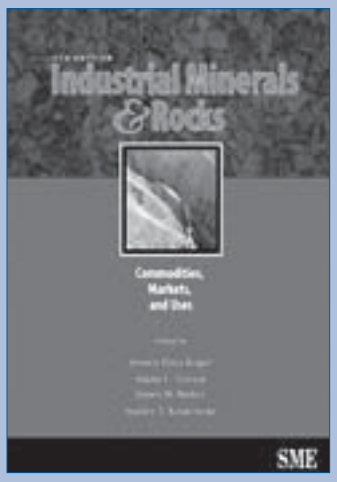
☑ **OF 5-2006 Interpreting Igneous Textures — A Field Trip to Outcrops in the Cambrian Wichita Mountains Igneous Suite.** Prepared for March 5, 2006, Field Trip No. 4, South-Central Section Geological Society of America 2006 Annual Meeting, Norman, Oklahoma.
Author: David London and M. C. Gilbert
Number of pages: 12
Cost: $1.00

☑ **OF 6-2006 Stratigraphy and Paleontology of the Upper Mississippian Barnett Shale of Texas and Caney Shale of Southern Oklahoma.**
Prepared for March 3–5, 2006, Field Trip No. 5, South-Central Section Geological Society of America 2006 Annual Meeting, Norman, Oklahoma.
Author: Darwin Boardman and Jim Puckette
Number of pages: 86
Cost: $7.00

To obtain any of these publications, call the OGS sales office at (405) 360-2886, email them at ogssales@ou.edu, or stop by their office at 2020 Industrial Blvd., Norman.

Kudos

Stan Krukowski, Assistant Director for OGS Publications and Industrial Minerals Geologist, served as Senior Editor as well as Associate Editor for the newly-released **Industrial Minerals & Rocks**, published by the Society for Mining, Metallurgy, and Exploration.



Krukowski was also sole or senior author on several chapters in the 1568-page book, including: Iodine (co-author was Kenneth S. Johnson, OGS retired geologist), Lime, Electronic and Optical Materials, Specialty Silica Materials, and Foundry Sands. He was junior author of the Potash chapter.

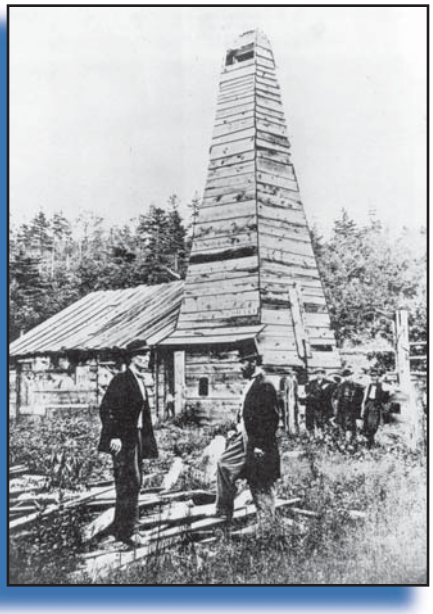
Ken Johnson also served as an Associate Editor on this book.

Newly revised and expanded, this long-awaited 7th edition of Industrial Minerals and Rocks builds on the strengths of the earlier editions but adds significant new content—ensuring the continued relevance of this classic text.

This widely read international reference tool is one of the most authoritative sources for timely information on industrial minerals and rocks, the markets they serve, and their multitude of uses.

Changes in the global economy have greatly impacted the mining, processing, and marketing of industrial minerals. Additionally, the development of new technologies and a globalization of the customer base have driven fast-paced innovation in processing, packaging, transporting, and end use. The new edition examines these important and diverse changes and their complex ramifications in the world of industrial minerals and rocks.

Historical Well Data, New Core Preparation Equipment, at the Oklahoma Petroleum Information Center



Over the course of almost a century (1908–2006), the Oklahoma Geological Survey is in possession of historical data that will be available to the public. As with museums, government agencies, and private companies, space to store and display data is critical. The OGS Oklahoma Petroleum Information Center (OPIC) has almost 200,000 sq ft of "space," but the space available for printed technical material was not originally configured for the stored data. Now that the dust has settled over OPIC after moving in, boxes are being unpacked that were in storage for many years; contents are now stored on shelves or in drawers. As time and funding permits, more of the technical material will be sorted and made accessible to the public.

Historical well data is the lifeblood of petroleum researchers. One treasure now on the shelves is the Vance Rowe Reports.

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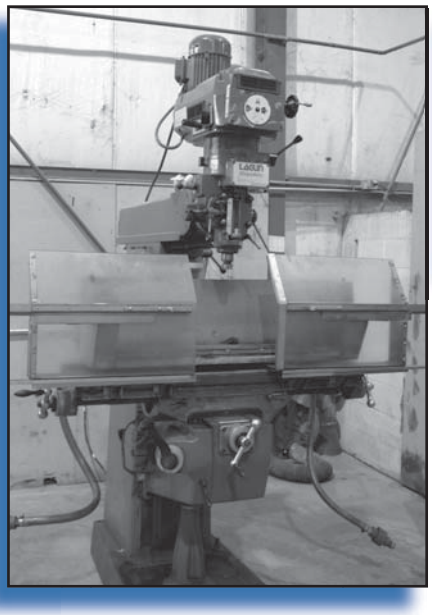
Historical Well Data, New Core Preparation Equipment..., *continued from page 11*

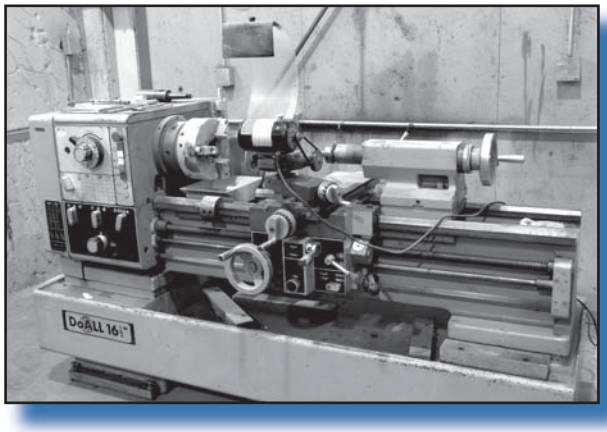
Historical well data is the lifeblood of petroleum researchers. One treasure now on the shelves is the Vance Rowe Reports. Through donations by various individuals, OGS has many of these volumes. ***The Vance Rowe Reports span the years of 1949 through 1995, and are based upon the State of Oklahoma being divided into 13 regions.*** This set may not be complete; however, the data may be just what is needed to "fill in the blanks" of a production research project.

Other upgrades in the OPIC facilities include four additional core layout tables for customer usage. The layout area consists of 11 30-ft tables large enough to lay out 900 ft of core. Installation of the core plugger and slabbing saws, and the surfacing mill for accurate milling of core, will now provide additional service options for the preparation of core for further testing.

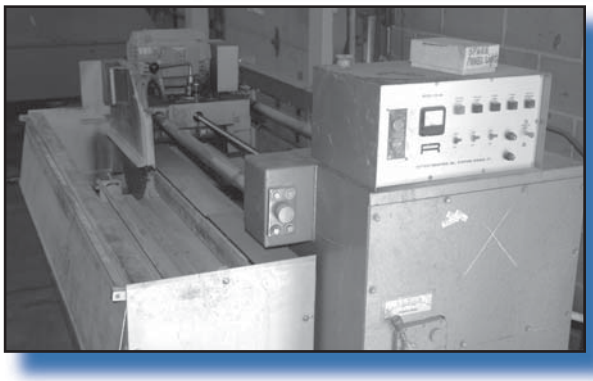
The core layout area and new equipment are shown here. The fee schedule can be found at the OGS website, www.ogs.ou.edu or by contacting OPIC at 405/360-2886.



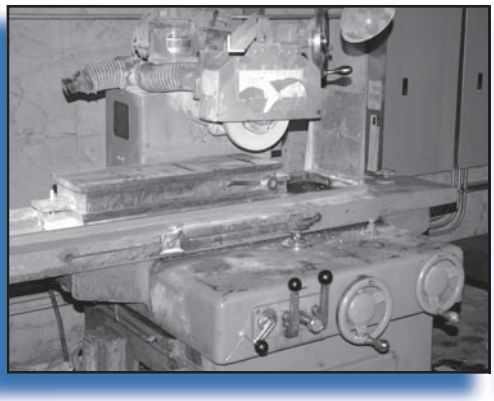
Plugging mill for extracting plugs from core or outcrop. Photo by Gene Kullman.



To assure extracted plugs are a true cylinder, the lathe is used to machine plug each end. Photo by Gene Kullman.



OPIC has two slabbing saws that allow the slabbing of core up to three feet in length. Photo by Gene Kullman.



If testing requires a slab of core, the surface mill ensures that true parallel slabs can be cut. Photo by Gene Kullman.

OGS coal geologist Brian Cardott examining core at OPIC's core layout viewing area. Photo by Gene Kullman.

The Petroleum Technology Transfer Council (PTTC) gratefully acknowledges that its primary funding comes through the U.S. Department of Energy's (DOE) Office of Fossil Energy through the National Energy Technology Lab (NETL).

WORKING TOGETHER TO PROVIDE MINERALS AND RESOURCES EDUCATION. . .

The need for trained professionals in Earth science and engineering is a major concern for resource providers. Inspiring the adventure of exploration and discovery along with the challenges of solving technical problems begins with educating the public, particularly the young.

Join us in Oklahoma City in June at the National Minerals Education Coalition's annual conference, hosted by the Oklahoma Geological Survey (http://www.ogs.ou.edu/), to address the issues!

U.S. colleges and universities are unable to provide enough geologists and Earth science engineers for producers of natural resources. Fewer higher-degree professionals will be available to teach such curricula in the future. How do we as Earth science educators solve these problems?

In Oklahoma City, the NMEC will provide some of the answers. Join your colleagues, who will share new ideas and innovative approaches to minerals and resources education.

The conference will be held at the Clarion Meridian Hotel and Convention Center and at the National Cowboy & Western Heritage Museum. Leaders from university geology, mining, and petroleum engineering departments will join minerals and energy educators in lectures, table talks, and workshops.

Nine field trips will visit minerals production facilities and manufacturing plants. Learn more about the products we demand and use every day. Guest and family trips also are planned!

Save the Week!!! June 25—28, 2006

Tuition is $150.00; teacher's tuition is $125.00. Hotel Costs are $66.00 per night plus tax.

Visit http://www.seeuthere.com/NMEC2006 to start your registration. . .and to keep up with the latest conference information.

Calendar of Upcoming Events

AUGUST 3, 2006

"CANEY SHALE GAS PLAY" WORKSHOP
Oklahoma City, Oklahoma
Oklahoma Geological Survey (OGS), Petroleum Technology Transfer Council (PTTC)

SEPTEMBER 20, 2006

"MIDCONTINENT 3-D SEISMIC INTERPRETATION" WORKSHOP
Norman, Oklahoma
OGS; PTTC

NOVEMBER 1, 2006

"BOOCH GAS PLAY" WORKSHOP
Norman, Oklahoma
OGS; PTTC

NOVEMBER 8–9, 2006

"BOOCH GAS PLAY" FIELDTRIP
McAlester, Oklahoma
OGS; PTTC

UPCOMING EVENTS CONTACT INFORMATION:

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