Appalachian Region PTTC

Newsletter

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CONTENTS:

From the Director's Desk 1
Hydraulic Fracturing Workshop to Be Offered 3
2001: A Geospatial Odyssey 3
AAPG Releases Annual Convention Announcement 4
New Report: 2000 GRI Demand Insights 5
PAPG Plans Florida Field Trip 5
PTTC Moves Headquarters Office to Houston 6
AAPG Issues Policy Statement on the Regulation of Hydraulic Fracturing 7
Gas Systems Analysis Model May Be Applied to Appalachian Basin 8
"Nuts and Blots of Digital Geologic Analysis" Well Received 9
New Developments in Ordovician Deep Reservoirs In the Appalachian Basin 10
Public Announcement from the Ohio Department of Natural Resources 11

FROM THE DIRECTOR'S DESK...

The 3rd Millennium officially has begun, and we who are involved with implementing and maintaining the PTTC program in the Appalachian basin are confident that this program will grow and continue far into the future. We hope you share our view that this is a program that has been beneficial to the Appalachian producing community, and can offer much more in the future, as partnerships between the public and private sector continue to be created.

Our goal at PTTC is to complement and cooperate, not compete, with oil- and gas-related groups and professional societies. We are pleased that during the past several years we have been able to develop and co-host focused technology workshops with trade associations such as the Ohio Oil and Gas Association, the Kentucky Oil and Gas Association and IOGA-PA; with professional societies like the Pittsburgh Chapter of SPE; with local societies, like the Appalachian

Geological Society and the Pittsburgh Association of Petroleum Geologists; and with national groups, like the Potential Gas Committee. We were encouraged when Greg Wrightstone, President of the PAPG, recently expressed to his membership his desire and intent to continue these cooperative workshops on an annual basis.

We held three workshops during the final calendar quarter of 2000. One was held in Ohio in conjunction with the Ohio Oil and Gas Association meeting. This was a cooperative event with the Ohio Geological Society and the Ohio Division of Geologic Survey, the workshop developers and co-hosts. Cooperative workshops with these groups also has become a successful annual event.

We also continue to cooperate with DOE-funded contractors who develop technology that can offer assistance to the basin's producers. Our most recent example was the December workshop held at the National Energy Technology Lab in Morgantown, where Maurer Engineering presented a program on advanced exploitation technology for managers. The workshop was so well received that we have agreed to offer another full day workshop, probably in Columbus, Ohio in mid-September.. A possible title for the workshop will be **Keys to Optimized Exploitation in Marginal Settings.** Watch our website for details

The Department of Geology and Geography at WVU is organizing an update on the Trenton play. **New Developments in Ordovician Reservoirs in the Appalachian basin** will be the subject of a workshop to held May 1, 2001 in Morgantown at the National Research Center for Coal and Energy. Plans are being finalized to offer a half-day computer workshop the afternoon of April 30 for those who will arrive the day before and may want to come a few hours earlier. GeoGraphix will present the workshop.

If you have ideas for workshops, or technical problems for which you seek solutions, please let me know and we'll see what we can do.

Douglas Patchen
PTTC Director, Appalachian Region

HYDRAULIC FRACTURING WORKSHOP TO BE OFFERED

A hydraulic fracturing workshop that will address three key areas (complex fluids, propagation and coupling, mode of fracture) will be presented in the context of three areas of application: petroleum engineering and geology; mining and civil engineering; and hot dry rock and geothermal energy engineering. The workshop will be presented Saturday, July 7, 2001 in Washington, DC as part of the 38th annual U.S. Rock Mechanics Symposium. Current information for the workshop can be found on the symposium website at: http://www.armarocks.org/conferences/DC_Rocks/dc_rocks.html

The technical program will include over 250 papers arranged in 35 sessions. Workshops, field trips and short courses will complement the technical sessions. One of the field trips will allow participants to observe the structural geology of the Appalachian Valley and Ridge. The focus of this trip will be the role that Paleozoic stratigraphy played in the development of large-scale structures during the Alleghanian orogeny. A second field trip, "Mining and Underground Technology of the Appalachian Mountains," will include stops at a stone quarry near DC, an underground longwall coal mine near Pittsburgh, and an underground storage facility near Boyers, PA.

2001: A GEOSPATIAL ODYSSEY

The West Virginia Geological and Economic Survey, the West Virginia Office of GIS Coordinator, and the West Virginia GIS Steering Committee will host the "West Virginia GIS Form and Exhibition: March 26 - 29, 2001 at the Lakeview Scanticon Resort near Morgantown, WV. Forum discussions, short papers and posters will be presented at Lakeview; workshops will be presented in the West Virginia GIS Technical Center, located in White Hall on the downtown campus of West Virginia University. A **Call for Presentations** has been issued. Presentations should focus on one of four major topics. Abstracts are due February 23.

For further information go to: http://www.wvgs.wvnet.edu/www/gisforum2001/gisforum.htm

AAPG RELEASES ANNUAL CONVENTION ANNOUNCEMENT

AAPG has released the announcement for their annual convention in Denver, CO, June 3-6, 2001. The meeting theme is **"2001: An Energy Odyssey."** As usual, AAPG's local hosts will offer a broad technical program, with papers complemented by posters, pre-and post-meeting field trips, short courses and workshops, and an exhibit area in which more than 300 commercial and non-profit organizations have contracted for booth space. **PTTC** is co-sponsoring a workshop on "Office 2000 for the Geoscience Professional" with AAPG's Division of Professional Affairs, and a second workshop on "Practical Reservoir Characterization for the Independent Operator" with the Rocky Mountain Association of Geologists. In addition, PTTC is hosting a third workshop on "Structural and Stratigraphic Interpretation of Borehole-Imaging Logs."

The various offerings of the technical component of the convention have been organized into **eight major theme areas**: Business, Opportunity and Vision; Environment; Technology; Gas; Petroleum Systems; Depositional Systems and Sequence Stratigraphy; Reservoir Geology and Characterization; and Structure and Tectonics. Technologies that will be discussed include 3-D and 4-D seismic case studies, geologic process modeling; new developments in formation evaluation; case histories of new seismic technologies; horizontal and underbalanced drilling; and exploration applications of remote sensing and geographic information systems (GIS).

In addition to the broad technical component of the convention, the hosts will offer the traditional Sunday night reception in the exhibit area, the Monday night all-alumni cocktail party, an optional Tuesday evening reception in the Oceana Journey Aquarium, and 12 Spouse/Guest tours. For the baseball fan, the Rockies are in town, hosting the San Francisco Giants and Houston Astros, so head out to Coors Field, conveniently located in the downtown area, and enjoy a game and the sponsor's product.

NEW REPORT: 2000 GRI DEMAND INSIGHTS

The GRI Baseline Center has just released the 2000 Demand Insights (GRI-00/0004) that summarizes the 2000 edition of the GRI Baseline Projection, released earlier in 2000. The Demand Insights is a companion volume to GRI's 2000 Supply Insights, also released last year.

The Demand Insights is GRI's most complete summary of the Baseline Projection. The report includes over 190 pages and uses a highly graphical format to present energy demand, supply and price trends by region. Key trends are illustrated and complemented by year-to-year tables with key reference data. The report is organized into six major sections: U.S. Summary; Energy Demand; Energy Prices; Energy Supply; and Regional Energy Trends.

Eleven Demand Regions are presented and organized along these topics: Regional Energy Balance; and Residential, Commercial, Industrial, Electric Power Generation and Transportation Sectors. The Residential Sector includes projections of population, housing stock, new home starts, appliances, energy consumption and fuel price by region. The Commercial Sector includes projections of space heating and cooling, growth of commercial square footage and delivered fuel prices for each region. The Industrial Sector includes projections of industrial production, industrial power generation, energy consumption, energy intensity and delivered fuel price at the regional level. The Electric Generation Sector covers electricity sales, new capacity cost, generating capacity, mix by type of generator and delivered fuel prices for coal, natural gas and petroleum by region.

For further information, or to order a copy, contact Paul Holtberg, GRI Baseline Center, 1600 Wilson Blvd, Arlington, VA 22209; 703-526-7831; or e-mail pholtber@gri.org.

PAPG PLANS FLORIDA FIELD TRIP

Greg Wrightstone, President of the Pittsburgh Association of Petroleum Geologists, announced in his monthly newsletter column that PAPG is in the planning stages of a unique field trip to examine modern depositional environments in the Florida Keys. Chris Laughery, of the Pennsylvania Geologic Survey, has agreed to lead the trip in mid May, tentatively from the 16th to 20th. One day would be spent on the ground examining recent carbonates, including

shoreline deposits, and visiting an excellent geologic interpretation center. Two days would be spent in boats visiting various environments including reef, back-reef, lagoonal and oolitic bars and tying them to Appalachian basin carbonate reservoirs such as the Mississippian Greenbrier Limestone and the Cambrian-Ordovician Trenton, Black River and Beekmantown, among others. Snorkeling ability will be required for this portion of the field trip, but this can be taught and learned in a pool prior to the boat trip.

PAPG needs an expression of interest and commitment by March 1 to make a decision on whether or not they can offer the trip. If seriously interested, contact Greg Wrightstone at gwrightstone@texaskeystone.com. A deposit by March 1 will be required.

PTTC MOVES HEADQUARTERS OFFICE TO HOUSTON

PTTC, under the direction of Don Duttlinger, is adjusting to new office space in a totally different environ, in the heart of the nation's oil industry, rather than in the heart of Washington, DC. PTTC occupied new offices on December 18, 2000 in Houston , TX. Their new address is 2916 West T.C. Jester Blvd, Suite 103, Houston, TX 77018. Phone 713-688-0900 or 1-888-THE-PTTC. Fax is 713-688-0935.

The move to Houston will position PTTC to better meet the technology transfer needs of industry and make PTTC's leadership more accessible to industry. PTTC's Board of Directors met in San Antonio in October to discuss such a move, and later approved it, saying that it is an appropriate time to make such a move and that Houston is a favorable location. "Houston has become a hub for the oil and gas industry, which has led many independents as well as technology providers to locate there," explained Duttlinger.

Kathy Chapman, PTTC's Director of Business Affairs, will remain in the Washington, DC area, and Lance Cole, PTTC's National Project Manager, will continue to serve from his Tulsa, OK location where he has access to industry and professional societies in the nation's mid-section. Alma Smith will join the HQ staff in Houston as their new Communications Director. She will be responsible for PTTC's quarterly newsletter, press/web communications and administrative functions.

AAPG ISSUES POLICY STATEMENT ON THE REGULATION OF HYDRAULIC FRACTURING

The American Association of Petroleum Geologists has released a policy statement regarding regulation of hydraulic fracturing. In the opening paragraph of the statement, AAPG states that they support "scientifically designed, state regulation of hydraulic fracturing treatments for those coalbed methane and other hydrocarbon wells that may affect underground sources of drinking water (USDW)." However, AAPG's statement goes on to say that "such regulation must to based on the recognition that: to date, fracturing treatments have not been shown to have caused groundwater pollution; most hydraulic fracturing takes place in zones removed from drinking-water supplies; and although fracturing fluids vary widely, the commonly used ingredients are limited in toxicity and/or mobility in water."

The Association opposes "unnecessary new regulations on fracturing treatments," and treatments that are performed in isolation from zones of drinking water "should not have additional requirements than those currently promulgated by states under the Safe Drinking Water Act (SDWA)." AAPG suggests that streamlined permitting of fracturing treatments can be achieved at the State level, and that these permitting procedures must be designed on a site-specific basis. AAPG also suggests that any new regulation must consider the wide variety of possible designs of nonpolluting fracture treatments, and the geologic relationships of reservoir beds and underground sources of drinking water that are unique to each area.

The statement reviews the background of the issue, beginning with the 1997 verdict of the Eleventh Circuit Court of Appeals in the case of *Legal Environmental Assistance Foundation (LEAF) v. Environmental Protection Agency*, which stated that the EPA must regulate hydraulic fracturing as underground injection under the SDWA. Because fracturing has always been considered to be for the purpose of improving reservoir properties and enhancing production, rather than to inject fluid into formations, the EPA has not regulated fracturing as an injection activity, nor had any state prior to January 2000. The court decision did not distinguish between coalbed methane wells, which were the target of the suit in Alabama, and other oil and natural gas wells that are fractured for production or storage. Also, the decision was not restricted to one state, although it is limited to the three states in the 11th Circuit Court. Because of the decision,

Alabama revised their Class II Underground Injection Control program, and EPA approved the revision. AAPG states, that the "extent to which these rules will be extended to other states and other fracturing treatments is unknown at present."

AAPG's statement goes on to summarize the nature of hydraulic fracturing and the geologic controls on environmental hazards. The statement concludes that "very few cases of lost fracturing fluid showing up in other wells have been reported," and that the Alabama case rested on one "unsubstantiated claim of contamination in wells that have always yielded low-quality water." The statement claims that any application of fracturing treatments "more than a few hundred feet vertically separated from aquifers, does not pose a threat to potable water." Because of the extremely small risk of environmental degradation attributable to hydraulic fracturing, any regulation and permitting which may be required should be streamlined, according to the policy statement, and blanket regulations based on best current practices should be produced by State agencies.

The Summary section makes the case that hydraulic fracturing involves injection of small volumes of fluids and proppant which is immediately recovered, not left in the formation as in the case of injection wells. Furthermore, environmental damage has never been documented as a result of fracturing, even in coalbed methane wells. Because of this, AAPG suggests that the federal and state governments should consider revising only legislation and regulation related to underground sources of drinking water, and that any new regulations would preferably be at the state level.

GAS SYSTEMS ANALYSIS MODEL MAY BE APPLIED TO APPALACHIAN BASIN

The U.S. Department of Energy's (DOE) National Energy Technology Laboratory (NETL) announced that ICF Consulting of Fairfax, Virginia has completed a study to better characterize western gas reservoirs. This improved characterization is necessary to enable scientists to feed more complete data into the Gas System Analysis Model (G-SAM) to more accurately determine the volume and future production of gas in and from the reservoirs. Initially the study focused

on formations that contain "tight' gas resources. Reservoir properties such as porosity, permeability, water saturation and "pay" thickness were targeted for better and more complete data.

The refined data was input into the Gas System Analysis Model to more accurately assess the volume of gas in the reservoirs, and to estimate the amount available for sale to the energy consumer. DOE expects to complete the analysis of the new data in about two months, and plans to expand the characterization of undiscovered tight gas to other areas of the country, including the Appalachian basin.

"NUTS AND BLOTS OF DIGITAL GEOLOGIC ANALYSIS" WELL RECEIVED

Through the efforts of the Ohio Geological Society and the Ohio Division of Geological Survey, the oil and gas community was able to participate in a hands-on computer experience using publicly available data sources. This PTTC-sponsored event was held in conjunction with the Ohio Oil and Gas Association's Fall Technical meeting at the Hilton Akron/Fairlawn. The workshop addressed a number of topics identified by Ohio producers in earlier PTTC workshops, including Geographic Information Systems, importing public data into commercial mapping software, GeoGraphix and Prizm.

The goal of the workshop coordinators was to present a hands-on environment in which the instructors could walk the attendees through the use of a variety of data types using several common PC software applications. To accomplish this, the workshop sponsors teamed with the University of Akron to use one of their computer instruction labs. Twenty four computers were available, for a maximum attendance of 36 (one and a half per computer). Thirty attended, plus an additional seven speakers and workshop organizers.

The workshop began with a presentation covering what types of data are publicly available, and what types of software are necessary to effectively use these data. The presentation also introduced the utility of oil and gas operators starting to use real Geographic Information Systems to yield more analysis of their varied data types.

The basics of query building using Microsoft Access were covered in the second presentation, which also included

use of the Ohio well data (RBDMS) and production data (POGO) sets to build and execute custom queries. Participants were asked for examples of queries they would like to do with these data sets, and then were instructed on how to make these queries. The session ended with participants being shown how to create a data set ready to be imported into mapping software.

Importation of public data also was covered in another presentation, one that demonstrated how to format data from Ohio's well database - RBDMS - to be imported into GeoGraphix mapping software. Participants were taken through a series of steps, beginning with taking data into Excel, cleaning the data and creating macros. The resultant data set was then used to create examples of maps in both Surfer and GeoGraphix software systems.

The use of geophysical log analysis software was covered, and maps created from Prizm output underscored the utility of this analysis method.

The workshop ended with a presentation using Arcview GIS software. A number of maps and images were brought into the Arcview environment, and different aspects of the data were displayed. This demonstration was well suited to show how all the different types of data, maps and images discussed throughout the day could be brought together under one analysis tool.

NEW DEVELOPMENTS IN ORDOVICIAN DEEP RESERVOIRS IN THE APPALACHIAN BASIN

A new play in Ordovician, Black River-Trenton carbonate rocks has been developing in the Central Appalachian basin during this past decade. Trenton carbonates have produced around the periphery of the basin for many years, primarily in the Lima Peru area of central Ohio and to a far lesser extent in west-central New York. The current play, however, extends exploration into the deeper parts of the basin. Starting in south-central New York in the Finger Lakes area in the late 1980s, the play received impetus in 1998 with the discovery of deep, high-pressure gas in central West Virginia by Columbia Natural Resources - a NiSource Company. Columbia has drilled additional discoveries and has built a pipeline into this new field called the Cottontree field. These deep wells evidently are producing pipe-line quality gas that had initial open flows reported to be in the range of 30 to 50 million cubic

feet per day.

In the Fall of 1999, PTTC - Appalachian region held a workshop that presented a preliminary review of the geologic parameters associated with producing Trenton rocks at the margins of the Appalachian basin and in the adjacent Michigan basin. Emphasis was placed on those well-studied fields and probable look-a-likes for the developing play. That meeting was well attended by explorationists from across the country. This year the Appalachian Region PTTC workshop will revisit this ongoing play. It will present up-dates of Trenton play in the various Appalachian states; it will look more closely at the existing "Trenton" structure and stratigraphy of the deeper basin; and it will discuss the parameters that may affect production in the basin. The meeting is tentatively scheduled for May 1, 2001 to be held at regional headquarters in Morgantown West Virginia. Over 70 wells have been permitted to penetrate the Trenton-Black River in West Virginia this past year, and accelerated levels of drilling also are reported for New York, so the level of interest in the "Trenton" play is high, and it is anticipated that this meeting will be "sold out". Thus, we suggest that you make your reservations early. A preliminary flyer announcing specific speakers and subject matter will be sent out by the middle of March. For more information you can contact Dr. Kathy Bruner, Department of Geology and Geography, West Virginia University at 304-293-5603, ext. 4319.

PUBLIC ANNOUNCEMENT FROM THE OHIO DEPARTMENT OF NATURAL RESOURCES

API-Compliant Well Identifiers for Most Wells Now Available

The Division of Geological Survey's Petroleum Geology Group has completed Phase II of its oil-and gas-well data-conversion project by assigning API (American Petroleum Institute) standard well-permit numbers to every well in the state. Each well is now uniquely identified throughout the state, making data retrieval and data matching more operative for users of the data.

In Phase II, all existing "regular" permit numbers were assigned a 20,000 series number, and all "nonregular" permit numbers (or wells that did not have any type of permit number) were assigned a 60,000 series number. Along with assigning the numbers sequentially by county, all map-based records were

matched with the corresponding tabular well records (completion cards) in the Survey's Geologic Records Center. This labeling process now ties all records together via the API number¯digital data files, digital maps, and paper records.

After API well numbers were assigned, location coordinates for all well files were expanded to include Ohio State Plane Coordinate System-North American Datum of 1983 (NAD83) coordinates in addition to NAD27 coordinates. NAD27 and NAD83 coordinates are now both stored in the associated data files. More can be learned about the data files in the "00readme.txt" file in the FTP directory from which the database files can be downloaded.

The well-spot data files are stored by county and can be downloaded from the Division of Geological Survey's Web site at www.dnr.state.oh.us/odnr/geo_survey. All well-location records for the entire state are available on CD-ROM and may be purchased for $25.00 plus applicable tax and handling by contacting the Geologic Records Center at 4383 Fountain Square Drive, Columbus, OH 43224-1362, (614) 265-6576,. For more information, call Joe Wells at 614-265-1030 or email him at joseph.wells@dnr.state.oh.us.

Over the next few months, Phase II records will be merged with existing records in ODNR's version of the RBDMS well-record system, thereby making skeletal data on many historic wells and coordinates for all wells available to users of this system. The Division of Geological Survey has now started Phase III of this data-conversion project in which all the historic well cards are being digitally imaged and the well information entered into the RBDMS system. When completed, users will be able to access all located well information and view the images of the original well cards from within RBDMS. This phase of the project will be done a county at a time, and as counties are completed their records will become available. It is anticipated that the entire state will be completed by December 2002.