



Newsletter

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FROM THE DIRECTOR'S DESK...

Trenton, Trenton, Trenton. Everywhere you go, both within and outside the basin, this is what people want to know about, even as far away as Denver during the recent AAPG meeting. Put up a poster on a Devonian oil field in West Virginia, and people come by to ask questions about the Trenton Play. Closer to home, every technical program seems

to have at least one speaker on the Trenton, whether it's an evening meeting of a local society, an annual meeting of a trade association, or a PTTC workshop. We did our part, hosting a highly successful May 1 PTTC workshop called **Appalachian Update: Trenton - Black River Exploration and Production**. We were able to enroll only the first 165 who

attempted to register, and were forced to turn away what would have constituted an average number for a workshop during our 6-year history. Those who were able to attend got a solid overview of the geology of the basin and of the Trenton-Black River, including deposition, deformation and alteration of limestones into reservoirs. Three weeks later, IOGA-PA complemented our workshop with an excellent technical program of their own, one that focused on the engineering aspects of the play, including drilling, logging, completion and reserve estimation. On July 11, IOGA-NY and NYSERDA will get into the act with their annual summer meeting and barbecue at Peek 'n Peak Resort. Their program, entitled "Venturing Deep in New York," will feature seven talks on the Beekmantown, Trenton and Black River, plus a half-day core workshop on July 12.

And, we're pleased to announce that we're not done quite yet. On August 6 we will offer a half-day **Core Workshop on Trenton-Black River Reservoirs** to be followed on August 7 by a full-day workshop, **Appalachian Update: Trenton - Black River Exploration & Production Round 2**. Both events will be held at the NRCCE building in Morgantown. A reception will be held in the evening of August 6 at the nearby Alumni Center. Watch our calendar for details.

We also are announcing two other PTTC-affiliated workshops. The first will be a short course organized by GTI and WVU on **Coal Bed Methane Reservoir Engineering** which will be held August 13-15 in the COMER building on the Evansdale campus of WVU. The second will be a special workshop on **Optimized Horizontal Well Technology** that will be held at the Ohio Division of Geological Survey's Horace R. Collins Laboratory, north of Columbus, on September 17. This will be a one-day overview of Maurer Engineering's four-day short course, and will cover the application, capabilities and limitations of modern exploitation technologies, with special emphasis on horizontal drilling. PTTC has arranged to bring this workshop into the basin at a greatly reduced registration fee.

In August we will prepare our plan for FY2002, so if you have ideas for workshops, please contact me or PAG Chairman Kevin Smith at Oxford Oil Company in Zanesville. Kevin has a new PAG to work with, and would be pleased to hear from you. Remember, PTTC is a producer-driven, grass-roots organization, so we need your input.

Doug Patchen
Program Director, Appalachian Region

APPALACHIAN REGION ELECTS NEW PAG MEMBERS

Kevin Smith, Chairman of PTTC's Appalachian Region Producer Advisory Group (PAG), has announced the election of six new members to three-year terms. The newest PAG members are: Greg Mason, NGO Development Corporation, Newark, OH; Steve Nance, Nance and Associates, Pittsburgh, PA ; Brad Gill, Executive Director, IOGA-NY, Hamburg, NY; Joe Frantz, Schlumberger-Holditch, Pittsburgh, PA; Rick Goings, Dominion Oil and Gas, Jane Lew, WV; and Mike Herron, Executive Director, IOGA-WV, Charleston, WV. Terms of office will extend from 2001 through the end of 2003.

The six new members join 12 holdovers members, of which six will continue to serve until the end of this year and six fill terms set to expire at the end of 2002. Those in their third year of current service include: Chairman Kevin Smith, Oxford

Oil Company, Zanesville, OH; Roger Willis, Universal Well Services, Meadville, PA; Royal Watts, Consultant, Fairmont, WV; Art Van Tyne, Consultant, Wellsville, NY; Bernie Miller, Bretagne Corporation, Lexington, KY; and Tommy Cate, AmWes Resources Corporation, Somerset, KY. Those whose terms expire at the end of 2001 are: Vice-Chairman Dave Wosniak, Belden & Blake Corporation, North Canton, OH; Peter Frichmann, Meridian Oil Inc, Pittsburgh, PA; Alan Brannon, CNG Transmission, Clarksburg, WV; William Goodwin, President, TOGA, Franklin, TN; Bill Daugherty, Daugherty Petroleum Company, Lexington, KY; and Rivers Ford, Independent, Bowling Green, KY.

INTEREST REMAINS HIGH IN THE APPALACHIAN BASIN'S HOTTEST NEW PLAY: THE ORDOVICIAN TRENTON-BLACK RIVER FORMATIONS

The recent drilling of successful, high-

volume gas wells in the Ordovician of

West Virginia indicates the great potential these rocks have to form profitable reservoirs. Over 150 interested individuals from 14 states and Canada attended a one-day PTTC symposium titled "Appalachian Update: Trenton-Black River Exploration and Production". The symposium provided participants with a solid understanding of the geologic parameters that affect exploration and production, an update on current leasing and drilling activities, and a review of what is known about the current production from these highly prospective, carbonate reservoirs. The May 2 workshop was developed by the Department of Geology and Geography at West Virginia University, in cooperation with the PTTC Appalachian Region Resource Center and the Appalachian Oil and Natural Gas Research Consortium. It was held at the National Research Center for Coal and Energy, WVU, in Morgantown, WV.

Because the Trenton-Black River play has attracted the interest of producers from outside the Appalachian Basin, the program began with a summary of the depositional setting of the Middle to Late Ordovician limestones and an overview of deep structures of the central Appalachians. *Dr Richard Smosna* (Department of Geology and Geography, WVU) opened the program with a review Ordovician limestone deposition. During Cambro-Ordovician time, the passive eastern margin of North America was the site of carbonate sedimentation over a

large region known as the Great American Bank. With the onset of tectonic activity produced by the collision of the eastern margin of North America with an island arc system (the Taconic Orogeny), the stable continental shelf configuration developed into an eastward-sloping ramp which steepened into the subsiding foreland trough. Limestone deposition changed from the shallow-water carbonates of the Black River to the Trenton limestones which record shallow-ramp conditions in the west and progressively deeper, anaerobic conditions eastward with periodic influxes of shale. The Black River and Trenton carbonates form a wedge that thickens significantly eastward. The Trenton, in particular, increases from 90 m to 200 m eastward.

Robert Shumaker (Department of Geology and Geography, WVU) presented an excellent overview of basement structures in the central Appalachians. Basement deformation was produced during two plate-tectonic Wilson cycles. The Grenville orogeny, during the last part of the first Wilson deformational cycle (0.9-1.0 ga), formed the basement under all but the extreme western edge of Appalachian foreland. The second Wilson cycle was initiated by Iapetean rifting (~0.7 ga). The New York-Alabama lineament, which Shumaker suggested is a post-Grenville wrench fault, and the younger Rome Trough rift system formed during this second cycle. After rifting ended, Rome

trough faults remained active with periodic subsidence and reactivation. Although the western Appalachian basin did not suffer intense basement deformation during subsequent Paleozoic orogenies, small offsets formed by basement movements appear to be responsible for some of the broad, low-relief structures. Reactivation along these faults may have formed the structures in some of the Trenton producing fields. In addition, as observed in several Trenton fields on the margin of the basin and in the Michigan basin, strike-slip movement along basement faults has been shown to produce fracture porosity and provide pathways for dolomitizing fluids. Thus, underlying basement structures play an important role in the Trenton-Black River exploration and production. However, low-relief detached structures at the margin of the Allegheny allochthon, with associated fracture and dolomite porosity, should not be overlooked, as suggested by production from the Rose Hill field in Virginia and the Swan Run field in Tennessee.

The second part of the workshop concentrated on current production and drilling activity. *David Harris (Kentucky Geological Survey)* reported that significant commercial quantities of gas are being produced in the Homer field in the Rome Trough of Kentucky. The field coincides with a buried north-south trending basement fault, and it produces from the Rome, Conasauga, and St. Peter sandstones, and from Upper Ordovician

fractured carbonates. Production is along the upthrown side of the trapping fault. Drilling has also provided new information on the Rome Trough. Surface faults delineate the trough in Kentucky: the Kentucky River fault and the Irvine-Paint Creek fault form the northern boundary, and the Rockcastle River fault system forms the southern boundary. By Knox time, the graben was filled with up to 10,000 feet of shale, sandstone, and dolomite. Periodic reactivation influenced sedimentation throughout the Paleozoic and has occurred as recently as post-Pliocene time. It is interesting to note that the appearance of the condensate from each reservoir is distinctive; geochemical analyses will help characterize the composition of the gases and provide information on the source rock.

In New York, *Kathleen Sanford (NYSDEC Division of Mineral Resources)* reported that in the year 2000, 38 of the 45 permitted wells in the Trenton-Black River play were spudded. Much of the activity was centered around the southern Finger Lakes area, in Steuben, Schuyler, and Chemung counties, and the wells ranged from 7000 - 10,000 feet deep. The 1999 statistics for three fields were presented: Glodes Croners Road, Muck Farm and Wilson Hollow. Also covered in the presentation was important information concerning leasing, permitting, reporting, and spacing regulations that drillers and producers should be aware of when

operating in New York. In particular, field-specific spacing orders have been issued for field development because Trenton-Black River wells drain large areas.

Katharine Avary (WV Geological and Economic Survey) reviewed current and historic activity in West Virginia, where the discovery well by Columbia Natural Resources in the Cottontree field opened the eyes of industry to the potential of the Trenton-Black River. More than 100 wells have been permitted to the Trenton and deeper through March 2001.

Production is primarily from the Black River, and the reservoirs are highly fractured carbonates on the southeast margin of Rome Trough. The reservoirs appear to have substantial reserves.

Activity in Kentucky was presented in a second presentation by *David Harris (Kentucky Geological Survey)*. Although high-volume gas wells have not been discovered in Kentucky, the play may follow the southwest extension of the Rome Trough into this region. Here the equivalent of the Trenton Limestone is the Lexington Limestone, and the Black River Formation equivalent is the High Bridge Group. These rocks outcrop in central Kentucky and produce oil and gas from multiple zones. The reservoirs are fractured and partially dolomitized. Surface exposures of the limestones show isolated dolostone bodies spatially related to mapped faults. These outcrops may provide a glimpse of the process and products of hydrothermal fluids moving

along fractures and replacing the limestone with dolomite.

The third segment of the program dealt with exploration and production strategies. The speakers presented pertinent information dealing with dolomitization and structural controls, using examples from all over the world. *Graham R. Davies (Graham Davies Geological Consultants, Ltd.)* began by explaining the geochemistry of dolomitization and dolomite replacement. Using examples from Australia, Canada and the "Mississippi Valley-type" lead-zinc deposits, he showed that dolomitization preferentially occurs at bends subjected to tensional forces within wrench faults.

Ian Colquhoun (Rubicon Petroleum, Inc.) presented his research on cores from the fractured dolostone reservoirs in southwestern Ontario. The Trenton - Black River reservoirs in this region exhibit the same narrow, linear character of fields in Michigan and those in the Appalachian Basin. On seismic sections the reservoirs are shown by a sag or structurally low feature; they have been interpreted to be formed by wrench faulting with associated dolomitization. However, the cores show that fractures, solution porosity associated with fractures, dolomitization, and compaction also played a role in forming the reservoirs. The reservoirs are characterized by high matrix porosity in dolomitized grainstones surrounded by fractured and dolomitized limestones.

Porosity from core analyses ranges from 0 to 15 percent, permeabilities range from 0.01 millidarcies to 10 darcies.

Dolomitization in the Albion-Scipio field was addressed by *Neil Hurley (Colorado School of Mines)*. Albion-Scipio is a narrow region characterized by vuggy, fractured, cavernous dolomite within the dense Trenton - Black River limestones. Previous studies have suggested dolomitization and porosity formed as a result of karst processes associated with the regional unconformity at the top of the Trenton. However, because dolomitic porosity and caverns occur below laterally extensive shales, an alternate model suggests that hydrothermal fluids migrated up vertical fractures, dolomitized the limestones, and formed porosity. Hurley also asked the audience to calculate the width of a single fracture using data from Albion-Scipio.

Parker Gay (Applied Geophysics, Inc)

showed the value of aeromagnetic techniques in mapping basement faults. Magnetic mapping using the newly developed NewMag profile technique has indicated the presence of basement faults in areas where previous magnetic studies were used without success. These areas include Trenton-Black River Stony Point, Hanover, Deerfield, and Northville fields in Michigan, and Parker and Epling wells in Roane County, West Virginia.

The last speaker, *Dick Beardsley (Triana Energy, LLC)* continued to concentrate on basement structures. Using numerous seismic sections, he showed how basement structures have influenced the overlying strata and the development of reservoirs. Concerning the Trenton-Black River, he showed that the sequence on well logs can be divided into several correlatable stratigraphic units.

THE ROLE OF APPALACHIAN SUPPLY IN A 30 TCF MARKET

The New York State Energy Research Development Authority (NYSERDA), the Independent Oil and Gas Association of New York (IOGA-NY) and the Gas Technology Institute (GTI) hosted a research development meeting May 18 in Ellicottville, NY to address the direction of

future oil and gas-related research, under the assumption that we will soon be operating in a 30 Tcf world. Approximately 50 invited guests attended, and heard presentations on new potential in the northern and southern Appalachian basin; the

potential and challenges for Appalachian basin gas producers; research leadership in the Appalachian basin; and DOE's new Stripper Well Consortium. Due to the recent discoveries in New York and West Virginia in the Trenton and Black River formations, the group was optimistic about the future, and the role they will play in the expanded gas market. The oldest hydrocarbon-producing basin in the US still has a lot of untapped deep potential to exploit in the future. In a summary of the

meeting, John Martin stressed the need for industry to take a leadership role to guide and participate in research in the future, in cooperation with the State Geological Surveys, the US Geological Survey, DOE and GTI.

PTTC AFFILIATES RECEIVE TWO OF THE INITIAL PUMP AWARDS FROM DOE

The first six projects have been selected in DOE's new PUMP (Preferred Upstream Management Practices) program, and two of them will go to PTTC-affiliated research units. PUMP is a new, five-year effort designed to identify and disseminate through technology transfer, the "best practices" currently in use in the nation's oil fields. DOE will share the costs of industry-proposed or industry-driven projects that will identify technologies that can be rapidly and inexpensively deployed to endangered U.S. oil fields. Awards were made in two categories, one that did not involve field demonstrations, and one that requires field demonstrations. In the four field demonstration projects, as the technologies are implemented in the field,

results will be widely reported to other domestic producers.

The two non-field demonstration projects were awarded to the Petroleum Technology Transfer Council (PTTC), Houston, for *Mentor-Based Effort to Advance Implementation of Preferred Management Practices (PMPs) for Oil Producers*; and to the West Virginia University (WVU) Research Corporation, Morgantown, for *Enhancing Reservoir Management in the Appalachian Basin by Identifying Technical Barriers and Preferred Practices*. The WVU project has been assigned to the Appalachian Oil and Natural Gas Research Consortium, the Regional Lead Organization for PTTC in the Appalachian Region. Research team members from the West Virginia

Geological Survey and the Petroleum and Natural Gas Engineering Department at WVU will pursue three objectives: (1) preferred management practices currently in use in the region, or that can be transferred from other regions, will be identified through workshops, interviews with engineers and geologists, and a literature search; (2) an **Appalachian Region Preferred Management Practices Council** will be created to provide information on problems faced by industry in the region, with members coming from PTTC's Regional Producer Advisory Group, other oil industry representatives, and state geologists on the AONGRC Advisory Board; and (3) an interactive web site listing preferred management practices for the region, as well as supporting data and relevant information on the oil reservoirs in the region, will be an integral part of the PTTC website to ensure continued existence beyond the period of the project, and will be accessible from the sites of the principal geological surveys in the basin. The site also will include data from existing databases, such as DOE's Total Oil Recovery Information System.

Under the Appalachian basin project, the degree to which application of identified best practices has enhanced production or reduced costs in specific fields will be documented. These results

will be extrapolated to other fields in the basin, making it possible to estimate the degree to which applying new technology can effect important advancements toward achieving PUMP goals.

DOE's goal for PUMP is to show how an integrated set of solutions can improve oil field economics, prolong the productive life of many of our marginal reservoirs and slow the rate of well abandonments. The four field demonstration projects include: the Gas Technology Institute (GTI), Chicago, for *Development of a Virtual Intelligence Technique for the Upstream Oil Industry*; the Texas Engineering Experiment Station at Texas A&M for *Preferred Waterflood Management Practices for the Spraberry Trend Area* and for *Cavity-Like Completions in Weak Sands*; and the University of Kansas for *Field Demonstrations of Horizontal Infill Drilling Using Cost-Effective Integrated Reservoir Modeling - Mississippian Carbonates, Central Kansas*.

Researchers from the Petroleum and Natural Gas Engineering Department at West Virginia University will team with GTI to develop computer-assisted methods for identifying and optimizing preferred management practices in upstream oil production operations, based on "soft" computing technology, i.e., neural networks, genetic algorithms and fuzzy logic.

DOE ANNOUNCES PUMP II SOLICITATION SCHEDULE

Only two months after announcing the first six awards in their new PUMP program, DOE has issued a second call for proposals. Termed PUMP II, the new solicitation asks proposers to identify engineering and geologic practices that can be developed and deployed rapidly to domestic oil companies, especially smaller companies that have difficulty accessing information.

PUMP II has two technology areas: Area 1 comprises developing a portfolio

of production plays and requires suggestion of recovery technologies applicable to reservoirs in the various plays; and Area 2 requests proposals to develop and demonstrate new solutions and cooperative protocols for data and information sharing in a region, such as the Appalachian basin. DOE plans to fund 6-8 projects, each lasting 24 months or less. Cost share is required at the 50% level for a maximum award of \$500,000 per project.

STRIPPER WELL CONSORTIUM SELECTS INITIAL AWARDS

The Stripper Well Consortium (SWC) held its spring meeting on April 9 and reviewed 23 proposals for funding from their membership. The 23 projects requested \$1,970,570 in co-funding from the Consortium; however, the SWC could only commit \$921,000 for this round of funding, which was enough to fully fund 11 proposals and partially fund another two. A complete list of the 13 successful proposals can be found on the SWC web page at www.energy.psu.edu/swc/funded.shtml.

More than half of the funded proposals will be conducted in the Appalachian basin. Advanced Resources International (ARI), Inc will develop an Advanced Decline Curve Model for Stripper Well Production Analysis (METEROR). ARI will work with Belden & Blake and Equitable Production Company, who will provide a test well and reservoir data.

Penn State University (PSU) received several awards, two of them dealing with the Upper Devonian Gordon sandstone oil reservoir. PSU will analyze injectivity

problems in the Taylorstown field, Washington County, Pennsylvania, and analyze the waterflood design of the Wileyville field, Wetzel County, West Virginia. East Resources will be a company partner in both projects. PSU also will demonstrate a chamber lift system to reduce the cost and increase the efficiency of lifting fluids to the surface in stripper wells.

Schlumberger Holditch-Reservoirs Technologies, Inc and company partner Equitable Production received an award to develop methods to identify unstimulated and/or ineffectively stimulated reservoirs resulting from multi-stage hydraulic fracture treatments in the Appalachian basin using a dataset of wells in Kentucky and West Virginia. The research team estimates that about 75% of the 66,000 stripper wells in Pennsylvania, West Virginia and Kentucky were stimulated with multi-stage treatments, and that 50% of these may have restimulation potential. Only half of these candidate wells may be in sound mechanical condition for restimulation, but if the restimulation treatments result in a 10 to 20 Mcf/d

production increase per well, the annual increase in gas production in the three states from mechanically sound wells could be as much as 68 Bcf, a 20% increase in current stripper gas production.

James Engineering submitted a proposal to identify effective fluid removal technologies for stripper wells that called for results to be presented at PTTC workshops, or at Society of Petroleum Engineers Eastern Region meetings, or on the Internet. The project will build on previous DOE-funded studies conducted by James in Ohio.

Hart Resource Technologies (HRT) offered a unique technology to provide a comprehensive wastewater treatment system to meet the wastewater disposal demands of the Appalachian oil and gas industry. The proposed system should be more cost effective and efficient than current practices for the treatment of brine water. HRT has perfected a pretreatment process at its existing plant in Creakside, Pennsylvania. The goal is to develop a mobile process to evaporate the treated brine on site. Penn State is a participant with HR in this project.

POTENTIAL GAS COMMITTEE RELEASES NEW REPORT

The Potential Gas Committee (PGC) has released their most recent biennial report on the **Potential Supply of Natural Gas in the United States**. The 346 page, loose-leaf notebook continues the recent trend of the PGC to make their reports more interesting, as well as useful, by adding new sections to their traditional estimates of gas resources in the U.S., Canada and Mexico.

The new report contains these major chapters: Report of the Potential Gas Committee; Historical Production Trends in the Lower 48 States; Overview of natural Gas Resources in Canada; Overview of Natural Gas Resources in Mexico; *Frontier Gas Resources, I - Future Supply Potential of Natural Gas Hydrates, 2000 update*; *Frontier Gas Resources II - Liquefied Natural Gas*; Limitations on Access to Public Lands and Its Effect on the Potential Supply of Natural Gas in the U.S.; From Reservoir to Burner Tip *A Primer on Natural Gas*; Potential Gas Committee Natural Gas Resource Estimates; Methodology of the Potential Gas Committee; Policy Guidelines and Structure of the Potential Gas Committee; and an Appendices on Historical Production Trends. Appendix A-1 contains 13 graphs that illustrate historical production trends in the

Atlantic Region.

The Appalachian basin is one of 10 areas in PGC's Atlantic Area, although currently only the Appalachian and Black Warrior basins have any production among these ten. The report identifies the Trenton - Black River play in New York and West Virginia, the Rose Run play in Ohio, coal bed methane in Pennsylvania and Virginia, and the Swan Creek field in Tennessee as plays of special interest.

PGC Biennial Reports separate gas resources into these categories: Probable, Possible and Speculative, with minimum, maximum and most likely estimates in each category. The most likely estimates in each of the three categories are added in a final summary column. The Appalachian basin's most likely total, for reservoirs above 15,000 feet exclusive of coal bed methane, is 41,050 Bcf. Of this, 19,750 Bcf is Probable, 7,300 Bcf is Possible, and 14,000 Bcf is Speculative. Another 5,000 Bcf have been added as the most likely estimate of Speculative Resources below 15,000 feet.

The report separates coal bed methane resources for the Appalachian basin into the Central Appalachian basin in Virginia and West Virginia, and the Northern Appalachian basin in Pennsylvania. However, the report adds the Atlantic

Coast Coal Region to the Central area, and the Anthracite Region of eastern Pennsylvania to the Northern area. The total of the most likely estimates for all three resource categories for the Central area is 2,375 Bcf, with another 10,570 Bcf in the Northern area, and a grand total of 12,945 Bcf as our most likely coal bed methane resources.

All together then, above 15,000 feet,

below 15,000 feet and coal bed methane, our most likely estimate of gas resources for the basin is 58,995 Bcf, according to the PGC.

The PGC is continually looking for interested volunteers to join this effort. If you are interested, contact Chairman Mike Decker, or Executive Director John Curtis.

TRENTON - BLACK RIVER FIELD TRIP PLANNED

The Pittsburgh Association of Petroleum Geologists (PAPG) is planning a Trenton - Black River field trip in eastern West Virginia to look at depositional environments and structural settings. Drs. Richard Smosna and Kathy Bruner will lead the trip. The plan is to meet at the Hermitage Motel in Petersburg, WV on Friday, July 13 in the early evening for an informal discussion session, and look at outcrops in Germany

Valley, WV on Saturday. Another discussion session will be held Saturday evening, and Sunday the trip will go into Virginia to look at deep-water facies equivalents of the shallower-water facies observed the first day.

Participation will be limited to the first 25 who register. To reserve your place contact Greg Wrightstone at gwrightstone@texaskeystone.com soon.

DRAKE WELL FOUNDATION HOSTS HIGHLY SUCCESSFUL SYMPOSIUM

The Drake Well Foundation organized and hosted a highly successful symposium on the **History of the Oil Industry** in the heart of the birthplace of that industry - Oil City, Pennsylvania. The four-day meeting featured a day and a half of invited papers, plus five posters; separate half day and full day field trips; and a walking tour of Oil City for the early arrivals. Current American Association of Petroleum Geologists President Marlan Downey was the

featured speaker at the Awards Banquet, at which several highly deserving oil pioneers received awards: Robert Eberly and Charles Weiner each received the coveted Colonel Edwin L. Drake Legendary Oilman Award, and Ellsworth "Pete" Sparks received a Drake Well Foundation Meritorious Service Award. The 60 attendees came from 10 states, some as far away as Colorado, Oklahoma, Texas and Louisiana, and three foreign countries.

GTI RELEASES TIGHT GAS RESOURCE MAP OF THE UNITED STATES

GTI has released the latest in their series of poster-style resource maps, this one concerning tight gas resources in 13 historically productive areas with FERC designation. The Appalachian basin is shown to have three large areas where FERC has designated the Clinton-Medina, Berea, and both the Clinton-Medina and Berea as tight sands. A data table lists information for these units, including age, average estimated ultimate recovery per well, depth, porosity, permeability, net pay thickness, the depositional system, 1999 production and

producing wells, and the estimated recoverable gas in billions of cubic feet. The data are only for the areas designated as tight. In 1999, the 1655 Clinton-Medina wells produced 4.1 Bcf, and the 24,535 Berea wells in tight areas produced 74.3 Bcf.

Annualized graphs plot the number of tight gas completions for seven of the areas from 1970 to 1999, and the amount of tight gas production from six areas for the same time period. Pie graphs and bar graphs show this same information broken down by formations.

BASEMENT VS. NO-BASEMENT HYPOTHESES FOR APPALACHIAN PLATEAU FOLDS

Terry Engelder and Michael Scanlin have provided the PTTC Resource Center with an advance copy of a report they submitted to the American Association of Petroleum Geologists in May. In a cover letter the authors explain that their interpretation of seismic lines sheds new light on the long-standing debate about the tectonic causes of the structures of the

Appalachian plateau. Given the recent excitement over sub-salt exploration in the Appalachian basin, particularly in the Trenton-Black River play, the authors deemed it appropriate to share their manuscript prior to formal publication, with the hope that oil and gas producers will benefit from the ideas within it.

NATIONAL ENERGY POLICY DEVELOPED

The following article is reprinted from PTTC's Eastern Gulf Region newsletter volume 7, number 3 (June 2001)

According to the Secretary of Energy, Spencer Abraham, the new National Energy Policy marks an historic first step to address the long-neglected energy challenges for the nation. The Secretary believes that with our growing economy and rising standard of living the country is faced with an energy crisis. The Secretary states that the new National Energy Plan balances America's supply needs through technology, diversity of supply and conservation, and paves the way for our energy future.

The plan is a result of work of the National Energy Policy Development

Group established by President Bush to develop a national energy policy designed to promote dependable, affordable and environmentally sound production and distribution of energy for the future. The report concluded that America faces the most serious energy shortages since the oil embargoes of the 1970s. The problem is a fundamental imbalance between energy supply and demand. To resolve this problem, the report concludes that we must address several challenges. The first challenge is to continue to use our energy wisely through conservation and improving energy infrastructure, particularly our network of electric generators, electric transmission lines, gas and oil pipelines, EG and oil refineries.

The third challenge is to increase energy supplies while protecting the environment. Estimates by the EIA are that over the next 20 years, our oil consumption will increase by 33 percent and our natural gas consumption will increase by more than 50 percent.

The report provides recommendations on how to meet the challenge of increasing our domestic energy supplies. The U.S. is the third largest oil producing country in the world, and oil and natural gas are the prime fuels in our economy according to the report. The report states that independents account for 50 percent of the domestic gas production. Independents, therefore, will be called upon to address the Nation's increasing demand for oil and natural gas supplies. These companies are expected to meet this challenge through the use of new technologies, such as horizontal well drilling and 3-D seismic imaging, and

through the initiation of enhanced oil recovery projects. The report concludes that 60 billion barrels of oil could be recovered from existing fields through the development and application of new recovery technologies. The report estimates that 30 to 70 percent of the oil is not being recovered through current field development practices. To assist independents in meeting the challenge of increasing energy supplies while protecting the environment, the report recommends that the President direct the Secretaries of Energy and the Interior to promote enhanced oil and natural gas recovery from existing wells through new technology.

The report can be accessed and downloaded from the website of the Department of Energy at www.energy.gov/HQPress/releases01/maypr/energy_policy.htm.

AAPG HOST SUMMIT ON DEVELOPING A NATIONAL ENERGY POLICY

Lawmakers and federal policy holders apparently heard the call that resounded repeatedly from 21 invited speakers at the inaugural AAPG President's Conference on National Issues: "A Summit on U.S. Energy Policy" for them to move quickly on crafting an energy strategy. The Summit drew more than 100 people, including top aides of the U.S. Senate Energy and Natural Resources Committee, the Department of Energy, the Minerals Management Service, the U.S. Geological Survey and a representative from the U.S. Army Materials Command. Following the meeting, AAPG provided a summary of the Summit and a member response form on-line at

http://www.aapg.org/explorer/archives/06_01/sum_summit.html. This website also provides a link to AAPG's recommendations for an Energy Policy for the United States which can be found at

http://www.aapg.org/business/testimonies/010423_energysummit.html. AAPG's "scientific advice to the nation" includes

9 points essential to any Energy Policy: increasing the stability in price and regulations; opening federal non-parks and offshore lands to oil and gas development, with appropriate environmental safeguards; emplacement of new, incentive-driven conservation measures; enhanced funding for research and development for fossil fuels and all other energy sources, with a focus on universities and other public and private research groups; providing for the capital needs for energy development that are not being met in the current tax climate; support for reasonable environmental requirements; recognition that coal and nuclear are necessary in the intermediate-term energy supply; maintaining or increasing the R&D support needed to develop all new and exotic potential fuels and energy sources; and establishing aggressive public education programs about energy occurrence, extraction, use and efficiency.

A link to additional AAPG policy statements is provided at the end of their energy summit report.

GTI REPORT CONCLUSION: SECTION 29 EXTENSION WILL INCREASE PRODUCTION

The Gas Technology Institute has released the results of a study on the effects of extending the Section 29 Tax Credits for non-conventional natural gas (coal-bed methane, tight sands, Devonian shale). Their conclusion is that “extending the Section 29 tax credit will have a significant impact at a particularly critical time for U.S. gas consumers” through increased production that should lead to lower gas prices for consumers.

The GTI report states that if we are to realize the environmental, economic and energy security benefits of natural gas, both conventional and non-conventional gas resources must be exploited. Currently, these resources provide about 26 percent of the U.S. gas production. However, if the demand for natural gas reaches the predicted 30 Tcf annual volume, then non-conventional sources will be required to supply 8-10 Tcf per year in the year 2015. This can be accomplished if gas production from coal, shale and tight sands increases according to projection made in a 1999 National Petroleum Council study. However, that study was based on sustained technology improvement and improved well recovery, and research funded by GTI and DOE has declined greatly in those areas. Thus, it is uncertain, according to the report, how industry will be able to

counter the impact of moving into lower quality resources in many areas, because these non-conventional resources are technologically challenging and require support for economic development.

Section 29 tax credit formerly provided the needed support to develop non-conventional gas production. The credits were created in 1980 on the heels of the energy shortage to address the needs for increased gas production. The tax credit provided a \$0.50/Mcf incentive for gas produced from tight gas sands, coal-bed methane and Devonian shale.

And it worked. By 1991, Devonian shale production had doubled from historical levels, and by 1993 all non-conventional gas had doubled from historic levels. From 1986 to 1996, 70 percent of the increase in lower-48 gas production came from non-conventional sources. By the end of the 1990s, non-conventional gas production had more than doubled from 2.0 Tcf in 1990 to 4.8 Tcf in 1999. Coal-bed methane production, which was insignificant when the credits were created, had increased to more than 1 Tcf a year by 1997. Section 29 tax credits provided the incentive to experiment with new production technology to exploit resources locked in water-bearing coal beds.

The Section 29 tax credits are set to

expire in 2002. According to the report, this will disrupt the ongoing progress in developing non-conventional gas resources at a time when the gas consumer, United States economy and our environment need them the most. Major impacts of an extended tax credit include: increased non-conventional gas production of 15 Tcf from 2001 to 2015;

increased annual gas production of 2 Tcf/year in the year 2015; and providing gas consumers with over \$100 billion in benefits from reduced gas prices.

For additional information on the technical study summarized above, contact Kent F. Perry, GTI, at kent.perry@gastechnology.org or by phone at 847-768-0961.