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PTTC Appalachian Region

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FROM THE DIRECTOR'S DESK...

The annual plan is in and the results are back - we have received approval to conduct up to eight technology transfer workshops in the basin for the 2000-2001 fiscal year. We kicked off our new round of workshops with **New Methods for Acquiring Permeability Data from Appalachian Basin Reservoir Rocks** in Morgantown on October 11, and followed it with the **Nuts and Bolts of Digital Geologic Analysis** workshop in Akron on October 25. As I write this, we are making arrangements for an **Advanced Exploitation Technology for Managers** workshop to be held December 13 at the DOE conference center on Collins Ferry Road in Morgantown. For details, see the calendar section on this website.

We plan to host several workshops in the January to July time frame, including using free remote sensing information available on the internet for oil and gas exploration; an update on the Trenton play; and a session on gas storage. Be sure to check back for more information.

The PTTC effort in the basin is now six years old and we have a new national Executive Director. Don Duttlinger succeeded Deborah Rowell following her retirement on July 1, and has vigorously attacked the challenges associated with his new position. Don brings a solid background and an enthusiasm to the position that can lead to nothing but success. He has already visited the basin on three occasions, and may attend the December 13 workshop. In August, Don met with the 10 Regional Lead Organization Directors in Pittsburgh to introduce himself and get to know them. He returned for the Eastern Regional SPE meeting in Morgantown in October, and has since visited NETL to meet the key supporters of PTTC in the lab. Don is a very open person, so do not be afraid to contact him directly. Currently, he is concerned with the long term growth of PTTC, so he would appreciate being able to document expressions of support from the independent producing community.

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West Virginia University's National Research Center for Coal and Energy (NRCCE) houses the regional lead organization (RLO) for the Appalachian region of the Petroleum Technology Transfer Council (PTTC). The Appalachian region is composed of eastern Kentucky, New York, Ohio, Pennsylvania, Tennessee, Virginia, and West Virginia. The Appalachian Oil and Natural Gas Research Consortium (AONGRC) at WVU serves as RLO for the region.

DIRECTOR

Deborah Rowell, founding executive director of the Petroleum Technology Transfer Council, received two special awards from the U.S. Department of Energy at a farewell dinner in her honor in Washington, D.C. Dr. Arthur Hartstein, representing DOE's Washington headquarters office, presented Deborah with an appreciation plaque for her outstanding service as the first Executive Director of PTTC.

Dr. William Lawson and Michael Ray, representing the National Petroleum Technology Office (NPTO) in Tulsa, presented a special plaque that read: "We recognize and deeply appreciate your outstanding leadership and tireless, personal dedication in creating and managing the PTTC...You made a difference that will shape the future for oil technology transfer."

Ms. Rowell, who served from 1994 to 2000, is now president of Encore Consulting, LLC in Alexandria, VA.

PREFERRED UPSTREAM MANAGEMENT PRACTICES (PUMP)

DOE has initiated the Preferred Upstream Management Practices (PUMP) program as a near-term effort designed to reverse the decline in domestic oil production by encouraging implementation of the most effective upstream management practices that can be identified and transferred into a region. The program is aimed specifically at oil production.

The PUMP program employs four strategies for a rapid impact on oil production: a focus on identifying constraints to production in regions that present the biggest potential for additional oil production; identifying the preferred management practices to address the constraints on production; documentation of the validity of these preferred practices through targeted field demonstrations or documentation of successful applications; and using established technology transfer mechanisms to give producers access to the information.

DOE recently issued a call for proposals under this program. Proposals could be for either a field demonstration project, or to create a best practices council in a region. The goal of the best practices council is to establish a self-sustaining system to identify production constraints and solve them through region-specific preferred management practices. The up to date compilation of constraints and preferred practices would be available to all producers on the internet.

Updated information on the projects selected for funding will be available on the internet at www.npto.doe.gov. The Appalachian Oil and Natural Gas Consortium, the Regional Lead

Organization for the PTTC program in the Appalachian basin, submitted a proposal to create a best practices group and use the existing technology transfer mechanisms developed through the PTTC program in this new effort.

GRI RELEASES LATEST IN GAS RESOURCE MAP SERIES

The Gas Research Institute, now the Gas Technology Institute (GTI) recently released their A United States Fractured Shale Gas Resource Map, the third in a series that includes earlier releases of the ANorth American Gas Quality Resource Map @ (2000) and the ANorth American Coalbed Methane Resource Map@ (1999). The fractured shale resource map shows the locations of established gas and oil production, recent wells, exploratory tests and basin outlines across the United States. Blowups provide additional detail for the New Albany Shale and Antrim Shale productive areas in the east, and the Lewis Shale and Barnett Shale productive areas in the west. Data provided for the Appalachian, Illinois, Michigan, Fort Worth and San Juan basins include the major shale formation, basin area, total organic carbon, thermal maturity, shale gas in place estimates, and the estimated recoverable shale gas resource. For the Appalachian basin, the range in gas in place is from 225 to 248 Tcf, while the estimated recoverable gas resource ranges from 14.5 to 27.5 Tcf. A second table includes key reservoir properties for the five main productive shales, the Ohio, Antrim, New Albany, Lewis and Barnett. The twenty two data parameters include depth, thickness, TOC%, porosity, permeability, gas

content, reservoir pressure, production, recovery factor and well costs. Shale gas production (in Bcf) from these five shales for the period 1979 to 1999 is shown in a color-coded bar graph. Production from the Ohio Shale has been fairly consistent during that period (100-125 Bcf/yr), whereas production from the Antrim Shale has increased from nothing to approximately 200 Bcf/year.

The gas quality resource map indicates that the western margin of the Appalachian basin in Ohio, northwestern Pennsylvania and western New York is an area with greater than 4% nitrogen. A data table is included that lists the top 50 sub-quality formation categories ranked by undiscovered resource. In the Appalachian basin, the Clinton/Medina of Ohio has approximately 8,334 Bcf of high nitrogen gas, the Devonian shale of Ohio has another 5,196 Bcf, and the Clinton/Media of New York 1,245 Bcf of high nitrogen gas.

The coal bed methane resource map indicates that the Appalachian basin contains 61 Tcf in gas resources in southwestern Pennsylvania and northern West Virginia, and another 6 Tcf in southern West Virginia and

southwestern Virginia. A table of reservoir properties for the two areas gives the number of wells (in 1996), cumulative production (for 1981-1996), typical net coal thickness, typical gas content, average well production and estimated undiscovered gas resources (2.8 Tcf for the central area, 42.1 Tcf for the northern area). Graphs of coal bed methane production since 1984 show the dramatic increase nationwide in production from coals in both older basins and emerging basins. Production from the San Juan basin dwarfs production from the Warrior and Appalachian basins, but the increase in production in the four emerging basins is led by the Central Appalachian basin.

EASTERN STATES EXPLORATION WINNER OF IOGCC'S STEWARDSHIP AWARD

Eastern States Exploration Company (ESEC), a division of Statoil Energy Inc, is the 2000 winner of the Chairman's Stewardship Award in the Independent/Small Company category. ARCO Alaska,

Inc was the winner in the Major/Large Company category. These awards are given annually by the Interstate Oil and Gas Compact Commission. ESEC was honored for their continued, long-term cooperative effort with the Pennsylvania Game Commission and the Pennsylvania Bureau of Forestry to foster tree planting on the Sproul State Forest near Snow Shoe, Pennsylvania. Under this program, landowners who have recreational cabins near well locations or pipeline rights-of-way are given trees and shrubs to plant to improve the wildlife habitat in those areas. In 1998, 160 cabin owners were offered seedlings, and more than 15,000 trees and shrubs were planted by these cabin owners and ESEC employees.

ESEC, who has conducted this program for eight consecutive years, also was nominated for this award in 1999 when it was won by

Prima Energy Corporation for their project that eliminated the need for earthen reserve pits while drilling wells in the Julesburg Basin in Colorado.

Cabot Oil and Gas company also was nominated in the Independent/Small Producer category in both 1999 and 2000 in recognition of their drillsite reclamation efforts in Highland County, Virginia. Cabot's extra efforts during the construction, drilling and reclamation demonstrated their commitment to

a sound ethic and a respect for the people of Highland County. The practice of saving topsoil, eliminating highwalls and establishing excellent stands of vegetation have left a positive impression among the people and state agencies involved in the program.

HISTORY OF THE OIL INDUSTRY 2001 SYMPOSIUM AND FIELD TRIPS

The Drake Well Foundation has released their first announcement for their **June 20-23, 2001 symposium and field trips on the history of the oil industry in Oil City, PA.** The 3-day program will consist of a day and a half of invited lectures by 16 members of industry, academia and government, followed by a day and a half field trip. Symposium topics include all aspects of the history of the worldwide industry - early exploration, production, transportation and refining, as well as current historical preservation efforts. Posters also will be exhibited. The field trip through Oil Creek Valley will showcase historical sites, industrial artifacts and relics from America's first oil area.

The Holiday Inn in Oil City, PA will be the headquarters hotel for the symposium. More information is available on the web at www.oilhistory.com. The early registration deadline to save \$50 on the registration fee is March 31, 2001.

TEST SHOWS DOWNHOLE MIXING TECHNOLOGY CAN INCREASE PRODUCTION

DOE has announced that one of their funded projects in New Mexico has shown that mixing the fluids used to fracture a natural gas well at the bottom of the well rather than at the surface could lead to a better, safer and less expensive way to obtain additional gas from low-producing wells.

the surface allow the operators to know if the fracture is being created as planned. If necessary, operators can change the fluid mixture to ensure that a fracture is propagated in the desired direction.

RealTimeZone Inc., of Roswell, NM used the downhole mixing technique for the first time in a 12,300-foot gas well in Carlsbad, NM that had been

This downhole mixing method also uses lower treating pressures which makes the stimulation safer, as well

scheduled for plugging. The new technology increased the flow from the well by 300 Mcf per day, at a fracturing cost reduction of approximately 50 percent.

RealTimeZone's technique differs from conventional fracturing in that the fracture fluid is mixed downhole rather than on the surface. This allows the fluid to be changed right at the formation, giving operators more control over the fracturing process. Changes in stimulation pressures monitored at

as less expensive. DOE estimates that if this technology could be used on just 20 percent of the annual fracture stimulations in the U.S., it could save industry more than \$100 million per year. This saving could lower gas prices and allow companies to apply additional resources toward the exploration and production of more domestic natural gas.

For more information contact Robert C. Porter, DOE Office of Fossil Energy, 202/586-6053, e-mail robert.porter@hq.doe.gov, or Otis Mills, Jr., National Energy Technology Laboratory, 412/386-5890, e-mail mills@netl.doe.gov. For technical information, contact Gary L. Kovatch, NETL, 304/285-4589, e-mail covatch@netl.doe.gov.

GTI REPORT PROVIDES DETAILED OUTLOOK FOR GAS SUPPLY TRENDS

The Gas Technology Institute (GTI), which was created through the merger of GRI and the Institute of Gas Technology, has released its 2000 Gas Supply Insights report (GRI-00/0005), documenting the comprehensive gas supply analysis done as part of the 2000 Edition of the GRI Baseline Projection of U.S. Energy Supply and Demand.

The 104-page report outlines the sources of gas supply and projects what each region will contribute to the anticipated 30 Tcf gas market of the near future. The Gulf of Mexico and western Canada are projected to be the two largest incremental production regions, followed by the Rocky Mountain region.

The highly graphical format presents an overview of the key gas supply trends from the 2000 GRI Baseline Projection. It includes hard-to-get historical data, and extends projections forward in yearly increments to

the report is the presentation of energy supply information at a regional level. Natural gas, oil and gas liquids data are presented by producing area, covering ten lower-48 and four Canadian supply regions. The report includes particular detail on the Gulf of Mexico by water depth interval for both shelf and slope plays.

Examples of the type of detailed information at the regional level include: 1) Resource measures, i.e., undiscovered resource and economically recoverable resource by type of gas source; 2) Gas prices, i.e., wellhead prices for the lower-48 and four Canadian supply

2015. A unique feature of

regions and accompanying benchmark spot-market or city-gate prices; 3) Gas production and deliverability, including annual production, deliverability and utilization ratios; and 4) Activity measures, including total well activity covering oil, gas and dry holes, success rates for exploratory and development wells, and recoveries per gas well.

For further information contact John Cochener, GTI Baseline Center, Arlington, VA at 703/526-7834; fax 703-526-7805; e-mail baseline@gastechnology.org.

MATHER MEDAL PRESENTED TO DR. BENJAMIN H. RICHARDS

Benjamin H. Richards, Professor Emeritus of Geology at Wright State University in Dayton, Ohio, received the Ohio Division of Geological Survey's prestigious Mather Medal at a banquet at the Ohio State University, October 20, 2000. The medal, named for Ohio's first State Geologist, William W. Mather (1837-38), is given to an individual who has made an outstanding contribution to the advancement of knowledge of Ohio geology.

Dr. Richard's research as a geophysicist and environmental geologist has taken him from Ohio's Precambrian basement, through the Phanerozoic to the glacial sediments mantling the surface. Our congratulations to Dr. Richards, who was a frequent registrant and speaker at our annual Appalachian Petroleum Geology Symposium.

DOE'S TULSA OFFICE TO BECOME OIL TECHNOLOGY ARM OF NETL

The U.S. Department of Energy's primary field office for petroleum technology in Tulsa, OK will become part of the agency's national laboratory complex as an arm of the National Energy Technology Laboratory

The change in status should provide for a better technology exchange between the oil exploration and production efforts in Tulsa and the

(NETL) in Morgantown, WV. Energy Secretary Bill Richardson said he was taking this action to "elevate the status of the department's petroleum research program" and to "streamline the coordination throughout our research complex in developing advances that can benefit our domestic producers. "

natural gas research in NETL.

Previously, the Tulsa office, the National Petroleum Technology Office, operated as a separate part of the Energy Department's Fossil Energy organization. With this change, the office will report to the National Energy Technology Lab in Morgantown and Pittsburgh, DOE's primary fossil fuel research center. The office will be a separately identifiable group within NETL, comparable to the new Strategic Center for Natural Gas which oversees a wide range of natural gas related activities.

GEOLOGIC SEQUESTRATION OF CARBON DIOXIDE

The Kentucky Geological Survey received \$476,000 as part of a \$2.4 million grant from the U.S. Department of Energy for a 3-year, multi-state research project to investigate methods to reduce concentrations of carbon dioxide, a greenhouse gas. Throughout the past 100 years the combustion of fossil fuels has increased the emissions of carbon dioxide that may be contributing to global warming.

Geologic sequestration - the process of injecting carbon dioxide into underground geologic formations - may be one way to safely manage carbon dioxide emissions over long periods of time.

Potential sites in Kentucky for sequestering carbon dioxide include oil and gas fields, unmineable coal beds, abandoned underground coal mines and saline aquifers. This process may also have the potential to enhance the production of oil and natural gas and provide economic uses for wells and mines that otherwise would be uneconomic.

Geologists at KGS will cooperate with researchers in four other states to develop a database of regional information on carbon dioxide sources and potential sites for geologic remediation. For more information contact Jim Drahovzal at 859/257-5500 ext. 154, or drahovzal@kgs.mm.uky.edu.

TRANS ENERGY SIGNS AGREEMENT TO LEASE ACREAGE IN TRENTON PLAY

Trans Energy Corporation has entered into an agreement with International Oil & Gas Inc. of Dallas and Jayhawk Resources LLC of Arlington, TX to lease over 5,000 acres in West Virginia to test the Ordovician Trenton and Black River formations. A Trans Energy news release cited recent discoveries by Columbia Natural Resources as being very prolific, with the initial discovery well flowing in excess of 50,000 Mcf per day at a pressure in excess of 6,000 psi. Trans Energy also made reference to the 10 wells in various West Virginia counties drilled by CNR to date, in an area affected by the Rome trough, which extends from Kentucky to West Virginia, and continues through Pennsylvania to New York.

DOE MAKES THREE AWARDS TO CONVERT MINE EMISSIONS INTO ENERGY

Three projects selected for funding by DOE propose new ways to capture gas released from coal mines and convert it to useful energy, thereby reducing an environmental threat while adding to the nation's supply of clean natural gas and electric power.

Appalachian-Pacific Coal Mine Methane Power Co., LLC, Arlington, VA will work with Invitation Energy to convert coal mine methane from mines in Marion County, WV into liquified natural gas to fuel heavy trucks. The liquification process uses a refrigeration system known as a TASHER, that is to produce 10,000 gallons of LNG per day at the test site.

Northwest Fuel Development, Inc., Lake Oswego, OR will build and demonstrate an integrated gas-processing/power generation system at a West Virginia coal mine, where it will produce 500 million cubic feet of pipeline-quality gas and 1.2 megawatts of electricity.

Fuel Cell Energy, Inc., Danbury, CT will field test a fuel cell power plant designed to capture and use coal mine methane emissions from a mine in Cadiz, OH. Fuel Cell Energy plans to operate the plant for 8,000 hours, using 13.6 million cubic feet of methane in the 250-kilowatt plant.

Disclaimer: The PTTC takes reasonable steps to ensure the accuracy of information disseminated by the PTTC and its affiliates or agents. Nevertheless, individuals and institutions utilizing such information are solely responsible for the consequences of such use and the PTTC and its affiliates or agents take no responsibility for the commercialization and/or utilization of any technology or process described herein. This includes, but is not limited to, the manufacture, use, sale, or export of products, processes, or services derived from the transferred technology

