



COALBED METHANE EXTRA

A publication of the Coalbed Methane Outreach Program (CMOP)

www.epa.gov/coalbed



First Commercial Coalbed Methane Project in India

The development of India's energy resources to meet the nation's growing energy needs is the goal of a U.S. Trade and Development Agency (USTDA) grant awarded May 2006 to Reliance Industries Limited (RIL), a private Indian company and leader in the effort to develop India's coalbed methane (CBM) resources. The \$506,000 grant will partially fund technical assistance to RIL to develop a Sohagpur CBM project, which will be the first commercial CBM project in India.



Source: USTDA

The government of India has prioritized the development of CBM as a means to meet the country's growing energy demands utilizing domestic supply sources. In 2002, RIL was awarded exploration licenses by the government for the development of CBM resources in the Sohagpur East and Sohagpur West concession blocks in Madhya Pradesh state in central India.

see *RELIANCE*, page 5

Reliance Industries Limited CEO and President PMS Prasad (left) and USTDA Regional Director Carl B. Kress (right) shake hands and exchange documents following the award of the USTDA grant on the development of the first commercial CBM project in India.

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Methane to Markets Update

M2M Events Happening Now!

Methane to Markets Partnership Coal Mine Methane Technical Workshop sponsored by USA, Australia, and Japan
4-5 October 2006
Marriott Brisbane, Brisbane Australia
Information forthcoming at: <http://www.methanetomarkets.org/events/index.htm>

Methane to Markets Coal Subcommittee Working Meeting
6 October 2006
Marriott Brisbane, Brisbane Australia
Information forthcoming at: <http://www.methanetomarkets.org/events/index.htm>

VAMCAT to reduce methane emissions

A technology developed by Australia's Commonwealth Scientific and Industrial Research Organization (CSIRO), called VAMCAT (Ventilation Air Methane Catalytic Turbine) is poised to take a sizable bite out of methane emissions with a greenhouse effect equivalent to more than 237 million tonnes of carbon dioxide. These emissions are released to the atmosphere every year

see *M2M UPDATE*, page 4



Reflections on a Pioneering Career

Introduction

The Coalbed Methane Outreach Program (CMOP) recently met with Charles (Chuck) Dixon to discuss his long and pioneering career in the coal, coalbed methane (CBM) and coal mine methane (CMM) industries. Mr. Dixon was Vice President of Engineering at Jim Walter Resources, Inc. from 1974 through 2002, during which time he oversaw ground-breaking changes in the company's methane drainage operations.

Today, Jim Walter Resources is one of the leaders in CMM drainage in the United States and around the world. The company sells an average of 23 million cubic feet per day of pipeline quality gas from three mines, preventing 3.4 million metric tons of CO₂ equivalent (MMTCO₂e) from being emitted into the atmosphere each year. Only one other CMM drainage project in the United States uses more methane. Jim Walter Resources also manages an integrated gas upgrade plant to remove impurities from medium-quality gas and enhance it to pipeline-quality gas. A BCCK cryogenic unit, with a throughput capacity of about 12 million cubic feet per day, is used to remove nitrogen from the drained gas.

When you started at Jim Walter, how were coal industry practices and operations different than they are today?

Back when I started, most underground mining was conducted at shallow mines, and not much methane gas was being produced. The dominant method of mining was room and pillar. Surface mining was found mostly in the Eastern U.S. This has changed. Underground mines have gone deeper and have encountered more methane. The dominant method of mining is now longwall. Now, surface mines are predominantly located in the west instead of the east. Wyoming produces as much coal as the next five states put together [*Editor's Note: So far this year, Wyoming has produced 107.7 Million Short Tons of coal while the next five states have together produced 108.6 Million Short Tons (EIA, 2006)*].

When I started, most coal mines were captive rather than independent operations. Mines were owned by steel companies or utilities (for example: US Steel, Bethlehem, AEP, Southern Company, Duke Power) to supply coal for their own needs. Over the years this has changed. Steel companies and utilities got out of the coal mining industry and

now buy their coal through contracts of various lengths. Almost no utilities or steel companies in the U.S. own their own coal mines today. This has changed the way mines are operated. During captive operation, maintaining production was the primary focus, and the cost was somewhat secondary. Steel companies and utilities were able to pass through the cost of the coal to steel and electricity customers. Today, coal mine operators look at cost and productivity rather than total production. As is true for any other business, coal companies need to make a profit to stay in business, so the priority is to achieve the lowest cost but maintain efficient operation.

One way in which the industry has changed in Europe and the former Soviet Union is that it is transitioning away from fulfilling social roles or national interests. When coal mines were owned by the government, jobs were maintained to benefit society. For example, mines in England and Germany that were not cost effective stayed open to keep citizens employed. In addition, mines in Germany stayed open during World War II so that the government could make petroleum products out of coal. After the War, Germany and the Soviet Union supported the coal mining industry to maintain energy independence. Today, coal sectors around the world are becoming more market-oriented. As a result, mines are being shut down, and coal is being imported from countries that can produce it more cost-effectively.

How was methane drainage handled differently then than it is today?

When I started in the industry, there were no CMM or CBM efforts other than a handful of novelty projects. Methane was managed by mine ventilation fans, and drainage was not cost effective at all. In addition, there were no environmental incentives back then to influence methane drainage.

Another impediment to drainage up until 10 years ago was an oversupply of natural gas in the United States. It cost too much to transport it and capture it, so much so that most oil producers simply flared fugitive methane emissions. Neither electricity producers nor other market end-users were demanding natural gas. This has changed over the years. Utilities began demanding natural gas and

(Continued on next page)



tightening the market when it started becoming prohibitively expensive to develop other types of power plants. Coal-fired plants became more expensive to build and more difficult to site because of pressure from the environmental community. In addition, problems with nuclear energy were perceived. The construction of a natural gas fired power plant could get approval within two or three years, while it took 30 years to site a nuclear plant and 15 to site a coal-fired plant. When demand for gas started to grow, market prices increased. This change improved the economics for capturing CBM and CMM and catalyzed the industry.

How did Jim Walter make the decision to pursue methane recovery and utilization? Was it strictly a business decision, or did other factors influence the company?

The people at Jim Walter considered themselves business people that happened to be mining coal. Their goal was to improve profitability, whether by improving mining productivity or by other means. We didn't have tunnel vision, so we were able to branch out and incorporate CMM/CBM efforts into our operations. There was also a can-do attitude in the company and the feeling that just because nobody had done it before didn't mean it couldn't be done.

I came on board as the company was scrutinizing the costs of handling methane at the #3 Mine near Brookwood. We hired some consultants who had experience operating deep mines in Germany to do planning and feasibility studies. They concluded that the mines could not be operated productively without some form of degasification.

Jim Walter's initial motivation to handle the gas was taken from a coal productivity standpoint. There was no interest at the onset of making money on the drained gas. Drainage was intended to get the gas out in order to have a cost-productive mining operation. About the same time, an oil and gas group in Houston approached us with the idea of capturing the drained gas and developing it commercially. This was music to our ears because we could make some money selling a resource that we intended to drain anyway for coal productivity purposes.

Describe the accomplishment that you are most proud of during your career at Jim Walter?

First, I am very proud of being part of such a successful company. Initially, as a small coal producer with very ambitious plans, we faced insurmountable odds. Many coal mining experts said we had a snowball's chance in hell to be successful. To have been involved with developing this company into a very successful coal mining and degassing company has made me and others involved proud. One of the accomplishments I am most proud of was being involved in the development of the BCCK plant because there was a lot of opposition at the local level and the corporate office from people who didn't want to spend the money.

Initially, I saw the potential for producing and capturing low-quality gas, and I developed a way to get a feel for the amount of low-quality gas that might be available on an ongoing basis. We did tests to quantify what size operations this supply of methane could sustain. From this information, we proved to ourselves that it could be a sustainable operation. Then we went through the process of picking the best method of utilizing the low quality gas. My first thought was to generate electricity with either a turbine or internal combustion (IC) engine but concluded after some studies that this was not cost effective. Then I came across the idea of upgrading the gas to pipeline quality and contacted two companies selling two different processes: pressure-swing adsorption and cryogenic. Both technologies had pros and cons. After lengthily evaluations, the cryogenic process was selected although it was more complicated.

It took quite a bit of effort to get our request for funding approved by the corporate people because they saw it as a high risk investment. When it began operating in the late 1990's, it was the first successful commercial application of the cryogenic unit. Now that it has been built, it is extremely successful. It started turning a profit after only 3 or 4 months. We based the original cost estimate on \$3 [per million BTU] gas, and that price has gone up to \$11 [per MMBTU]. Today, people from all over the world tour our

see CHUCK DIXON, page 5

What do you want to know about?

If you have suggestions or requests for future CBM Extra content, please drop us a line.

www.epa.gov/coalbed



Methane to Markets

M2M Update *from page 1*

from the world's underground coal mines through exhaust ventilation air. CSIRO and the Australian Greenhouse Office, together with China's Shanghai Jiaotong University and Huainan Coal Mining Group, will construct the first pilot-scale demonstration unit at a coal mine in China.

The low-heating value gas turbine will be powered by about 1% methane in ventilation air. It will generate green power while also consuming the mine's fugitive methane. The project is being conducted under the Australian Government's Bilateral Climate Change Partnerships Program along with support from an Australia-China special fund grant under the Australian Government International Science Linkage Program. The initial investigation of catalytic combustion performance was supported by a grant from the Australian Coal Association Research Program (ACARP).

The project is being led by Dr. Shi Su from **CSIRO Exploration and Mining**. "China is responsible for about 45% of total ventilation air methane emissions," Dr. Su said. "Although gas drainage efficiency in China has increased from 15% in 1998 to 26% in 2004, much of the captured gas is poor in quality. It is estimated that 70 to 80% of the drainage gas has a methane concentration of less than 30%, which cannot be used by conventional technologies."

A prototype demonstration unit with a power output of 10 to 30 kilowatts will first be demonstrated in the Chinese mine. Operational performance data and experience gained from this small unit will be used for the design of a second-generation turbine of at least 1 megawatt output.

Approximately 70% of all coal mining related greenhouse gas emissions can be attributed to methane exhausted to the atmosphere. This is not only bad for the environment, but also a waste of an important energy source. VAMCAT has the potential to reduce these emissions while also providing a valuable source of clean, green energy.

More information on the international Methane to Markets effort is at <http://www.methanetomarkets.org> 

Asia-Pacific Partnership on Clean Development and Climate

The Asia-Pacific Partnership on Clean Development and Climate, also known as AP6, is an international agreement among Australia, India, Japan, the People's Republic of China, South Korea, and the United States. The AP6 was launched January 12, 2006 in Sydney, Australia, when Environment and Energy Ministers from partner countries agreed to co-operate on development and transfer of technology which enables reduction of greenhouse gas emissions. The partnership will promote the development and deployment of clean, efficient technologies and practices that will achieve practical results in areas such as methane capture and use, clean coal, and bio-energy. The Partnership builds on existing multilateral climate initiatives including the Methane to Markets Partnership.

The founding partners agreed to work together with private sector partners to meet goals for energy security, national air pollution reduction, and climate change in ways that promote sustainable economic growth and poverty reduction. The Partnership will focus on expanding investment and trade in cleaner energy technologies, goods and services in key market sectors. Eight public-private sector task forces focus on cleaner use of fossil energy, renewable energy and distributed generation, power generation and transmission, steel, aluminum, cement, coal mining and buildings and appliances.

Asia-Pacific Partners account for 50% of the world's greenhouse gas emissions, energy consumption, GDP and population. Collectively, they generate approximately 65% of world primary coal production. Coal is the dominant fuel source globally and among the Partners, and its use is expected to grow over the coming decades. According to the International Energy Agency (IEA), by 2030, coal-based power generation is projected to more than triple. Despite competition from natural gas, coal is likely to provide 33% of global electricity generation. Over 58% of the world's recoverable coal reserves are located in four Asia-Pacific Partner countries: the United States (27%), China (13%), India (10%) and Australia (8.7%).

Improving the efficiency of the mining and processing of coal and improving the monitoring and control of coal mine methane gas can make a significant contribution to emissions reductions and workplace safety. The Coal Mining Task Force (CMTF) will address the reclamation and reha-

bilitation of mined lands, runoff, abandoned mines and best safety practices. The CMTF will work collaboratively with the Cleaner Fossil Energy Task Force to ensure that synergies are captured in improving coal processing and developing new coal-based generation technologies.

The objectives of the Coal Mining Task Force are to do the following:

- Facilitate technologies and practices that can improve the economics and efficiencies of mining and processing and continue to improve safety and reduce environmental impacts.
- Establish, as appropriate, efficiency and emissions intensity and mine reclamation objectives based on each nation's circumstances.
- Identify current reclamation activities in each country, as appropriate, and exchange best practice information in reclamation of surface mined lands with a focus on enhanced surface reclamation practices that improve the opportunities for carbon sequestration.

CMOP staff participated in the Asia Pacific Partnership on Clean Development and Climate meetings in New Delhi, India August 8-10, 2006. Thirty-two delegates from the United States, India, Australia, China and Japan were in

attendance (see Figure 1). The purpose of the meeting was to finalize the Coal Mining Task Force Action Plan, as well as to discuss the role of the Task Force in future project implementation. The four areas of emphasis in the



Figure 1. APP Coal Mining Task Force meeting in Delhi, India August 8-10, 2006

Coal Mining Task Force Action Plan are Health and Safety, Environmental Impacts, Economic Resource Recovery and Workforce Planning and Skills Development. For more information on APP please go to www.asiapacificpartnership.org

Reliance from page 1

The USTDA grant reflects the agency's commitment to support India in the development of its energy resources. Specifically, the grant will assist RIL in assessing the market and gas infrastructure requirements for the commercial development of these concession blocks.

RIL has selected Advanced Resources International, Inc. (ARI), based in Arlington, Virginia, to perform the technical assistance. In addition to the USTDA grant, RIL will contribute additional resources towards the completion of the technical assistance.

Over the past decade, USTDA has actively supported the development

of the CBM sector in India through the agency's sponsorship of two orientation visits and several early investment analysis studies. The U.S. Environmental Protection Agency is also working with the Indian Ministries of Coal and of Petroleum and Natural Gas to support the establishment of a Coal Mine and Coal Bed Methane (CMM/CBM) Clearinghouse in India.

Chuck Dixon from page 3

facilities. Jim Walter opens its doors to tour groups because it is open and proud of its accomplishments. We think of it as a compliment that people want to see what we are doing.

How do you weigh in on the coal industry and the CBM/CMM industry today? How do you expect

them to evolve in the next decade?

I have mixed thoughts on what is going to happen. I think that we will see more commercial emphasis on mining and degassing. The coal industries in England, Germany, and Eastern Europe, will gradually exit the market because they will no longer be willing to subsidize the

cost. The U.S. and Australia will continue to be major, low cost producers. China and India will in time dominate the global coal mining market as their economies expand. They will become major players in both the coal and gas business. Coal mining companies with a lot of gas will move towards developing their CBM and CMM assets.

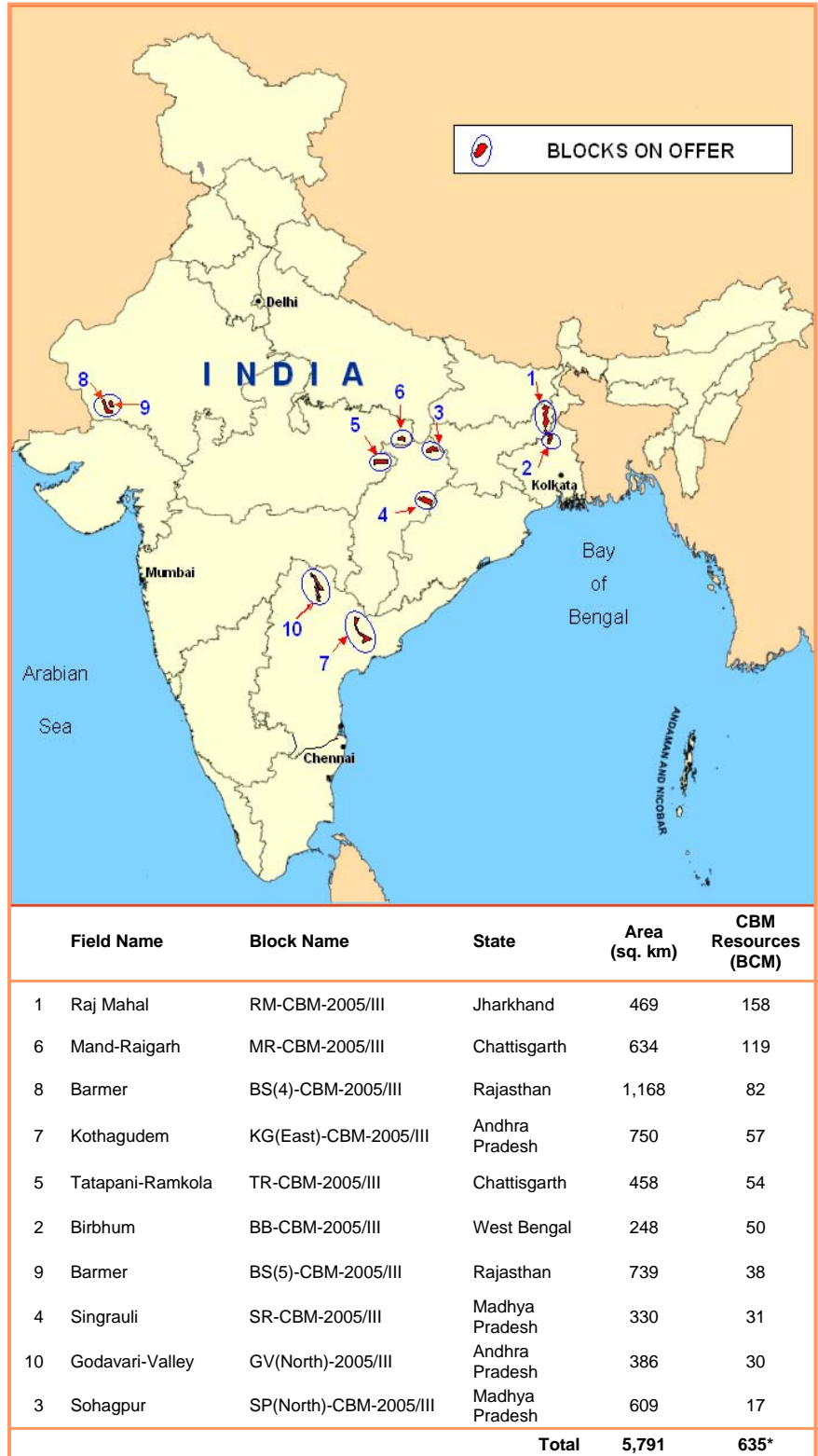
India CBM Activity Takes Off

India's tremendous economic growth in recent years has intensified the demand for domestic energy sources and has spurred interest and activity in coalbed methane (CBM) development. India's annual GDP has been growing by at least 6% per year since 1991.¹ India's middle class is expanding and there is a technology-driven boom in manufacturing, yet two-thirds of India's 1.1 billion people live in rural areas with nearly 260 million people living on less than \$1 a day. Agriculture supports 60% of the labor force, but provides only 19% of GDP. Despite India's rapid growth, its GDP per capita is roughly half that of China (\$3,300 versus \$6,800). As a result, the Indian government has initiated an economic reform plan designed to improve the life of the rural poor while boosting the overall economic performance of the country. India's success and future development will largely be a function of its investment in infrastructure and its access to affordable energy.

India increasingly is turning to unconventional sources of energy to fuel its growth. This is illustrated by the growing interest in Indian CBM. Methane is seen as alternative gas for meeting local gas needs. As gas demand rises sharply in India, CBM and coal-mine methane (CMM) will be able to compete favorably with imported coal, gas, or LNG on a fuel cost basis for power generation. From an environmental standpoint the use of CMM also makes sense. India's heavy reliance on coal, much of it low quality, is a major cause of the country's air pollution and relatively high carbon intensity level.²

The Indian government has offered blocks for exploration and production of CBM through an international bidding process, with the third and latest bidding round completed June 30th of this year. Eighteen Indian companies and eight foreign firms submitted 54 bids for 10 blocks during the most recent round. Figure 1 highlights the locations of these blocks. The third round attracted more

Figure 1. CBM Blocks on Offer Under Third Round of Bidding




* Totals may not sum due to independent rounding
Source: Government of India, Ministry of Petroleum and Natural Gas



bids than the previous two rounds combined. In 2001, the first round saw 16 bids for four blocks from six Indian firms while round two, held in 2003, received 14 bids for eight blocks from seven Indian firms and one foreign firm. The 10 blocks offered in the third round, summarized in Figure 1, cover an area of around 5,800 square kilometers and are estimated to contain 635 billion cubic meters (BCM) of CBM resources. The 16 blocks already awarded by the Ministry of Petroleum and Natural Gas cover 7,729 square kilometers with estimated CBM resources of 792 BCM. Over the last three years, more than 75 exploratory (test) wells have been drilled in the awarded blocks.²

So far, with three encouraging discoveries by Great Eastern Energy, Oil and Natural Gas Corporation, and Reliance Industries, India expects to see the first CBM production in 2007. (See text box on page 1) Between 1990 and 2005, India's methane emissions from operating mines more than doubled from 486 million cubic meters (MMCM) to 1,001 MMCM. While there is some drainage of CMM, there are currently no commercial projects for its recovery or use in India. A \$25 million dollar project of the United Nations Development Program (UNDP), the Global Environmental Facility (GEF), and the Indian Ministry of Coal seeks to demonstrate the commercial feasibility of utilizing methane gas recovered before, during, and after coal extraction. Recovered

CMM will be used for power generation and CNG fuel for mine vehicles. The Central Mine Planning and Design Institute (CMPDI) is India's lead implementing agency for this project. Drilling of the first well in Moonidih has already started. Future results could lead to expanded application of CMM technologies and approaches at commercial scale.²

All of the activity surrounding CMM and CBM in India not only fits into India's strategy to attract investment in infrastructure, but it also contributes to India's long-term strategy by providing rural areas with a reliable source of energy, ensuring those inhabiting the Indian countryside a larger piece of future economic growth. 

¹"Can I Fly?" *Economist*, June 1, 2006.

²Methane to Markets Partnership Coal Subcommittee, Coal Mine Methane Global Overview, http://www.methanetomarkets.org/resources/coalmines/docs/overview_ch14.pdf

Upcoming CBM/CMM Events

Coal 21 Workshop Coal Subcommittee Meeting

7-8 October 2006
Brisbane, Australia

2006 International Workshop on Coalbed Methane/Coal Mine Methane

17-18 October 2006
Landmark Hotel, Beijing, China
URL: <http://www.coalinfo.net.cn/english.htm> [Background and Registration](#) (PDF, 4 pp., 393 KB, [About PDF](#))

Energy Virginia Conference: "A Greener Pasture for Virginia's Economy"

17-19 October 2006
Virginia Military Institute
Lexington, VA, USA
Website: <http://www.energyvacon.org>

15th International Coal Preparation Congress

17-20 October 2006
Beijing International Convention Centre, Beijing, China
Contact: Kevin McMillan or Sun Jiaohua
Phone: 013 691 5291 or +86 10 6422 9939
Email: kmcmillan@anglocoal.co.za or sjiaohua@chinasafety.gov.cn

Second International Conference on JI Projects in Ukraine, "Climate Change and Business"

23-25 October 2006
Kyiv, Ukraine
Phone: +(38 044) 453-28-56
Fax: +(38 044) 456-94-62
Email: jiconference@biomass.kiev.ua
Website: <http://www.biomass.kiev.ua/JIconf2006/index.php?page=01&lang=en>

Carbon Expo Asia 2006

26-27 October 2006
Beijing, China

13th PhD Workshop on International Climate Policy

27-28 October 2006
University of Leeds, Leeds, UK
Contact: Karin Hufnagel
Phone: +44-113-343 7432
Fax: +44-113-343 6716
Email: karin@env.leeds.ac.uk

India Energy Summit: Strategies for Securing Oil and Gas Needs in Asia

7-8 November 2006
Hotel Le Meridien
New Delhi, India

8th Annual Unconventional Gas Conference

Hosted by the Canadian Society for Unconventional Gas
15-17 November 2006
Telus Convention Centre
Calgary, Alberta, Canada
Contact: Kerri Markle
Phone: (403) 233-9298
E-mail: kmarkle@csug.ca
Website: <http://www.csug.ca>

APP Coal Mine Safety Workshop

5-7 December 2006
Pittsburgh, Pennsylvania
Email: cmontesano@nma.org

Global Forum on Flaring Reduction

13-15 December 2006
Paris, France
Website: <https://flaringreductionforum.org>

Methane to Markets Steering Committee Meeting

14-15 December 2006
Rome, Italy



CBM/CMM News

— International —

Pacific Asia China Energy (PACE) Awarded CBM Concessions. Recently PACE, a Canadian company, was awarded a coalbed methane concession of 970 square kilometers in Guizhou. They are currently drilling to confirm the discovery of a large coalbed methane source of approximately 5.2 trillion cubic feet. Within about 500 miles of the Guizhou project, there are more than 240 million people, including many commercial and residential users in need of a secure supply of energy. China receives about 70% of its energy from coal and its 30,000 coal mines release methane gas that account for 40% of China's air pollution. Methane gas explosions also cause the deaths of more than 6,000 Chinese coal miners every year.

Petrochina Finds Coalbed Methane Reserve in Junggar Basin. Petrochina, China's largest oil producer by output, has discovered rich reserves of coalbed methane in the remote Junggar basin and is in the process of studying the best way to develop the find, says MarketWatch. The Junggar basin in the northwestern Xinjiang region has estimated coalbed methane reserves of 2.2 trillion cubic meters, equivalent to 151 million cubic meters per square kilometer. The Junggar district is a semi desert region, surrounded by mountains. PetroChina's Xinjiang-based unit has prioritized the basin as a key region for coalbed methane development. The China Petrochemical News reports that China has total proven coalbed methane reserves of 36.8 trillion cubic meters, and natural

gas reserves of 38 trillion cubic meters. The country plans to boost its annual production of coalbed methane to 10 billion cubic meters in 2010, from around 100 million cubic meters in 2005.

Chinese Press Reports on CMM and CBM industry. According to a September 2, 2006 article, about 90% of the 1,300 taxi cabs in Shanxi Province have been refit to burn compressed coalbed methane (CBM) and gasoline. The city is located about 50 km from the country's largest CBM exploitation base in Qinshui Basin. One cubic meter of CBM is equivalent to 1.13 liters of gasoline but retails at less than half the price of gasoline. Several policy initiatives to promote CBM have recently been carried out by the Chinese government. On June 19, the State Council, China's Cabinet, promulgated a 16-clause guideline offering a series of preferential policies on land use, taxation, loans and access of methane-generated electricity to local power grids. As a result, financial, taxation, and land resources authorities are currently preparing measures, under the direction of the National Development and Reform Commission (NRDC), to put the guidelines into practice. One of the goals of such legislation is to encourage greater foreign investment in the CBM industry. To date, China United Coalbed Methane Corporation (CUCBM) has 27 contracts for CBM exploitation with companies such as the United States' Chevron and other foreign companies in Britain, Canada, and Australia. On April 5, CUCBM signed a cooperative contract with Orion Energy International to join into a Product Sharing Agreement (PSA) for exploitation of CBM resources in Shanxi Province. For the entire article see http://www.chinadaily.com.cn/china/2006-09/02/content_679951.htm

New CBM and Coal Discoveries to Power Botswana. As reported in the African Echo News, large reserves of coalbed methane gas as well as coal itself have been discovered in Botswana. Both methane and coal are potential energy resources and could curb the constant power shortages being experienced in the region. Huge reserves of coalbed methane gas discovered in Kodibeleng (central Botswana) have raised prospects of electricity generation for both local use and export in the region now reeling under shortages. Explorations made by the Kalahari Gas Corporation, which has been producing gas in the region, indicate there is over 90 million tons of coalbed methane in an area of 50,000 sq/km. In terms of coal reserves, Morupule, a coal mining company has recently discovered over 200 billion tons of coal in Botswana. The company intends to be producing an average of 5 million tons annually until 2010 when it could expand production. Botswana Power Corporation (BPC) has set a target of 400 to 1,200 megawatts of electricity generated from coalbed methane and coal within a short period to offset the looming power shortages in the region.

Zimbabwe Explores Gas Plants. Exploration of coalbed methane natural gas reserves in Zimbabwe could soon become a reality, after highly-placed government sources said a global oil conglomerate was mulling prospects of recovering the resource and building gas-energy plants in the country. The venture, if successful, will not only see production of electricity at the proposed gas-energy plants; but will result in the production of synthetic fuels that will go a long way in alleviating the current fuel crisis that has threatened to cripple Zimbabwe's industries. The source, iden-

see INT'L NEWS, page 10



— Domestic —

Researchers Hope 'Bugs' Can Speed Up Coalbed Production.

Researchers at Argonne National Laboratory, with help from the Montana Bureau of Mines and Geology, are studying whether microbes can be manipulated by science to expand the life of coalbed methane wells in the Powder River Basin of Montana and Wyoming. As reported in the Billings Gazette, researchers have been studying whether microscopic bacteria that naturally break down organic materials to create methane can be encouraged to produce the natural gas faster and for an extended period. The life of a coalbed methane well can vary, but some estimates are 20 years for wells in the Powder River Basin. Based on the large volume of coal in the basin, enhancing microbes could extend methane production by several hundred years according to some estimates. Argonne is working on proving its concept and is planning to file for a patent this year. Additional research on anaerobic microbes in the basin by Luca Technologies, Inc., a privately held company in Denver, Colorado, suggests that methane production can be increased or decreased by altering the microbes' access to water or nutrients, or that production can be halted by exposing the organisms to oxygen or heat sterilization.

Shoal Creek Mine Returns to Operation. As reported in the Montgomery Advertiser, more than 600 coal miners returned to work in August at the Shoal Creek mine in Alabama, scene of a fire and roof collapse on February 24, 2006. No one was injured in the accident that closed the west Jefferson County mine. The fire was triggered by methane. State and federal officials have cleared the mine to start production,

but mining operations are expected to be limited because some water still needs to be pumped out. Daryl Dewberry, an international vice president with United Mine Workers of America, estimated the mine will be capable of producing roughly 4,500 tons of coal a week. Last year, it produced 3.1 million tons of coal, 57,000 tons a week.

Companies Sue Montana Over Coalbed Methane Regulations. As reported in Montana Forum, four oil and gas companies filed suit against the Montana Board of Environmental Review and the Montana Department of Environmental Quality to invalidate water-quality standards intended to protect rivers in the Powder River Basin from pollution from coalbed methane development. The companies - Marathon Oil Co., Marathon subsidiary Pennaco Energy Inc., Nance Petroleum Corp. and Yates Petroleum Corp. - say water-quality standards adopted in 2003 and earlier this year are excessively restrictive, are not based on science and violate state law. Marathon officials said more than 20,000 coalbed methane wells have been drilled in the basin and they have not degraded rivers. The plaintiffs say Montana is trying to control Wyoming water-quality standards in violation of Wyoming's sovereignty, the U.S. Constitution and federal law. The battle over water-quality standards is being fought because drilling for the natural gas found in coal seams requires pumping to the surface and disposing of huge volumes of groundwater. The groundwater in the northern portion of the basin runs high in sodium. Montana irrigators say discharges of the coalbed methane water into rivers and streams could pollute the water and damage their soils and crops.

DOE Announces Loan Guarantee Program for Clean Energy Projects. The Department of Energy has issued policy guidelines that will govern the first round of federal loan guarantees, totaling \$2 billion, for projects intended to bring new clean energy technologies into viable commercial use. DOE issued a solicitation announcement August 8 inviting interested parties to submit project proposals for the first round that meet the program's statutory requirements. The responses are due by November 6. The federal loan guarantee program was authorized by Congress in the Energy Policy Act of 2005. Title 17 of the Energy Policy Act, "Incentives for Innovative Technologies," provides federal loan guarantees for 10 categories of clean energy projects, not to exceed 80% of the project's total cost. DOE can make loan guarantees only for projects that "avoid, reduce, or sequester air pollutants or anthropogenic (man-made) emissions of greenhouse gases" and employ new or improved technologies. The loan guarantee program is targeted at early commercial use only and not for basic energy research, development, and demonstration programs.

In the guidelines, DOE said the first round will focus on technologies in specific areas: biomass; hydrogen; solar; wind and hydropower; advanced fossil energy (coal gasification); carbon sequestration practices and technologies; electricity delivery and energy reliability; alternative fuel vehicles; industry energy efficiency projects; and pollution control equipment. More information on the federal loan guarantee program is available at <http://www.LGProgram.energy.gov/>



Announcement:
Two New Publications!

Bill Wehrum, USEPA Assistant Administrator for Air and Radiation, wrote a guest commentary on EPA's methane reduction efforts in the August 2006 issue of World Coal. In addition, CMOP's own Pamela Franklin and Barbora Jemelkova wrote an article in the September 2006 issue for World Coal on "The Power of Methane." The article discusses the global potential of coal mine methane to save energy resources and money.

Int'l News *from page 8*

tified by The Southern Times (Namibia), said the company was currently evaluating cost-effective methods of recovering the natural gas before committing themselves to the project. Zimbabwe has an unknown quantity of CBM natural gas reserves, but estimates pit Zimbabwe's reserves as the largest in sub-Saharan Africa, and significantly larger than South African reserves

estimated at 825 billion tonnes. The gas-energy plants, when constructed, will be responsible for the production of electricity for Zesa Holdings, which is the sole provider of electricity in the country.

Riversdale Reports Successful Exploration at South African Colliery. Australia-listed Riversdale Mining said in a statement that its exploration at the Zululand Anthracite Col-

liery (ZAC) in South Africa indicated "new and substantial sources" of anthracite at two blocks being explored. Riversdale is the operator and owns 74% of ZAC, located in northern Kwazulu-Natal province of South Africa. ZAC is a former BHP Billiton operation. A number of gassy abandoned anthracite mines are located in this area. 🗑️

Domestic News *from page 9*

Sharpe Resources Acquires WV Coal-Gas Rights. As reported on MarketWire, Sharpe Resources Corporation has closed an option agreement to purchase a 100% interest in the coal and coal gas rights to approximately 17,000 acres in Preston County, West Virginia. The purchase option involves several payments including \$250,000 to exercise the option to purchase. A final payment of \$100,000 is to be paid within 180 days of the purchase option agreement date. The property involves approximately six (6) separate coal seams to include the Bakerstown, Upper Freeport, Lower Freeport, Upper Kittanning and Lower Kittanning followed by the deeper Clarion coal seam. Some of the Upper Freeport coal has been mined previously on this property. Sharpe has completed an evaluation of the coal resources on the property with the help of an independent coal resource consulting firm. This property offers an excellent opportunity for development of a large coalbed methane (CBM) program encompassing the ability to drill and complete a several hundred well drilling program. Additionally the coal resources are potentially mineable, as indicated some of these coal resources have been mined previously. The coal gas potential will involve the initial drill testing of test wells on the property over the next 6 months in an effort to establish methane production from the deeper coal seams to include the Upper and Lower Kittanning seams. The Company is evaluating the possibility of acquiring additional coal resource acreage in this area, property that adjoins Sharpe's current land position. 🗑️

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