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COALBED METHANE EXTRA

A publication of the Coalbed Methane Outreach Program (CMOP)

www.epa.gov/coalbed

U.S. EPA Gob Well Flare Design Evolves

The U.S. Environmental Protection Agency (US EPA) Coalbed Methane Outreach Program (CMOP) is evaluating the benefits that enclosed flares offer to mine operators interested in developing gob well flaring projects. The September 1999 issue of the *Coalbed Methane Extra* highlighted the potential safety, environmental, and economic benefits that flaring gob gas offers to underground coal mine operators. They include:

- Improving the current level of gob wellhead safety by minimizing the potential for an unconfined deflagration occurring on the surface at well discharge locations;
- Providing uninterrupted records of gob well performance through flare monitoring;
- Substantially reducing atmospheric greenhouse gas (GHG) emissions; and
- Possibly attracting the interest of companies seeking carbon reduction credits. (See *World Bank Launches Prototype Carbon Fund* and *Coal Mine Methane Project Nets Carbon Credits* articles on pages 1 and 7, respectively, of the March 2000 *Coalbed Methane Extra.)*

CMOP has been working with the coal industry and mine safety officials to design an open (utility) flare that can safely and reliably destroy methane emitted from gob wells*. An important aspect of that design is its numerous safeguards against the flare flame entering the gob well or the mine.

Even with such safety assurances, however, the sight of an open flame at the surface of a gassy mine may hinder the implementation of this technology in the field. Therefore, to further assist the mining industry in taking advantage of gob well flaring, CMOP also has investigated an alternative to the open flare for application at underground coal mines. That alternative is the enclosed (thermal oxidation) flare, which offers other benefits in addition to those of the open flare.

> *The enclosed flare offers a number of benefits in addition to those of the open flare.*

The enclosed flare consists of an easily accessed, vertical, refractory-lined combustion chamber. In the enclosed design the flame is NOT visible, thus mitigating any potential concern about the presence of an exposed flame at an active underground mine site. In fact, the enclosed flare installation simply looks like a vertical storage tank. The design adds further redundancy to flare system safety by incorporating multiple burner tips (rather than the single tip in the open flare). Furthermore, because the size of a flare is a function of the magnitude of gas flow, the enclosed design can accommodate larger gas flows (e.g., flows resulting from connecting a flare to multiple wells) by increasing the unit's diameter rather than by solely increasing its height. There is no lateral thermal radiation from the enclosed flare, thereby making it safe to work around, and the design also reduces noise associated with the flare.

These benefits come at a price, however, because the total cost for an enclosed flare installation can be approximately twice that of an open flare due to its greater capital and maintenance costs. Yet the greater cost may be tolerable at a site that requires gob gas destruction but where open flames at the surface would be unacceptable.

Why Flare?

Mine operators may be interested in methane flaring projects because, by safely destroying methane that otherwise would be vented to the atmosphere, they may qualify for

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Correction

In the article on coal mine methane development activities in Kazakhstan presented on page 3 of the March 2000 issue of the *Coalbed Methane Extra,* we incorrectly stated that Fossil Energy Developments, LLC. is a subsidiary of Materials Development Corp. Fossil Energy Developments, LLC *is not* a subsidiary of Materials Development Corp. It is a joint venture among Materials Development Corp., D'Amico Development Corp., and Panther (UK) LTD.

Flare Design

(continued from page 1)

carbon credits that have considerable monetary value in an emerging global carbon market. Preliminary economic analyses indicate that, with funding from carbon credit sales at the start of a project and the relatively low capital investment required for either the open or enclosed flare, many flare projects could generate a positive cash flow from their start. Thus, gob gas flaring may offer underground coal mine operators an opportunity to easily and safely convert what otherwise would be a waste product into a source of income.

> *Flaring projects could qualify for carbon credits that have considerable monetary value in an emerging global carbon market.*

Both the open and the enclosed flare designs provide coal mine operators with means of eliminating a significant source of GHG release, assuring worker safety, and potentially generating a new revenue source. The enclosed flare provides an additional level of confidence by removing the flame from view, and it expands the technological choices for safe, effective, and verifiable means of destroying gob gas emissions at underground mines.

**See* Conceptual Design for a Coal Mine Gob Well Flare*, August 1999, available in hard copy (call 1-888-STAR-YES) or electronically from the CMOP web site (www.epa.gov/coalbed).*

U.S. Congress Weighs Measures to Promote Greenhouse Gas Emission Reductions

A number of market-based approaches to achieving greenhouse gas (GHG) emission reductions are being considered in Congress. For example, sponsored by Senator Larry Craig (R-Idaho), the **Climate Change Tax Amendments of 1999 (S. 1777)** would amend the Internal Revenue Code (1) to provide incentives for voluntarily reducing GHG emissions and (2) to promote development of global climate science and technology. This bill would make the Energy Policy Act of 1992's research and development tax credits for GHG-reducing technologies permanent, and also would support investment tax credits for facilities that reduce GHG emissions.

The **Credit for Voluntary Reductions Act (S. 547)** introduced by the late Senator John H. Chafee (R-Rhode Island), also remains under consideration in Congress. That bill would provide regulatory credit for early actions taken to reduce greenhouse gas emissions.

CMOP will continue to monitor these and related bills and provide updates in future issues of the *Coalbed Methane Extra.* (See related articles in the December 1998, March 1999, and June 1999 issues of the *Extra.* Back copies of the Extra can be viewed and downloaded from the CMOP Web site at www.epa.gov/coalbed.)

New *Coalbed Methane Extra* Distribution System

As noted in our March 2000 issue, future issues of the *Coalbed Methane Extra* will be distributed via e-mail only. To facilitate transition to the electronic distribution system, we are providing this June 2000 issue both via fax and via e-mail so that all interested parties will have ample opportunity to supply their e-mail address to CMOP in time to receive future issues.

Your receipt of the *Extra* can only continue uninterrupted if we have your current e-mail address! If you have not already done so, please take a moment to e-mail CMOP at fernandez.roger@epa.gov to confirm or to supply your e-mail address. In the future, please submit changes to your e-mail address to CMOP so that you will not miss a single issue of the *Extra*.

Remember . . .
Future issues of the Coalbed Methane Extra
will be distributed by e-mail only!

Therefore, be sure that we have your current e-mail address!

Second International Methane Mitigation Conference Materials: On-line Accessibility

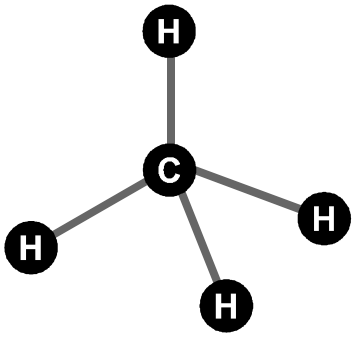
Siberia isn't on your list of destinations for Summer 2000? That is a shame, because with well over 200 registrants representing more than 30 countries, the Second International Methane Mitigation Conference (see notice on page 4) offers an unsurpassed opportunity to learn of emerging coal mine methane (CMM) project developments around the world. In addition to CMM-related topics, the conference also will include numerous presentations on natural gas systems, ruminant livestock, solid waste landfills, and other (natural and anthropogenic) methane release sources.

For each methane source category addressed, the conference will strive to answer the following questions:

- What steps are necessary to increase methane mitigation project realization?
- How can projects generate greenhouse gas emission reduction credits?
- What technical advances are expected to improve project attractiveness?
- What roles can industry, governments, multilateral institutions, and researchers play in promoting methane mitigation?

Even if you can't travel to Russia to attend the conference personally, you can still benefit from the wealth of information that will be presented there. Simply point your internet browser to the conference web site (www.ergweb.com/methane) where you will find relevant materials available for viewing and downloading, including the conference announcement and agenda and abstracts for the majority of planned technical presentations. Following the conference, instructions for obtaining the full proceedings, which will be made available on CD-ROM, also will be posted on the site.

Those who wish to register and attend the conference can still do so via the conference web site. But hurry because you will need a travel visa.



UK Opens Coal Mine Methane-Based Green Energy Park

Several projects in Britain are demonstrating the viability of profitable coal mine methane (CMM) development at active and abandoned underground coal mines. On April 6, 2000 Energy Minister Helen Liddell officially opened the Shirebrook Green Energy Park in Derbyshire. Developed by Coalgas (UK) Limited and Independent Energy (UK) Limited, the project captures CMM from miles of abandoned workings at the Shirebrook Colliery. The gas fuels engines that drive electric generators to supply 9 MW of power (adequate to meet the demand of 10,000 homes) to the local grid for at least the next 10 years. Coalgas also operates two other CMM projects, one at Markam in Derbyshire and another at Steetly in Nottinghamshire. (See related article beginning on page 5 of the March 2000 *Coalbed Methane Extra*.)

Coalgas' President, Dr. Cameron Davies, estimates that Britain's coal fields contain enough untapped CMM to supply such projects for 50 years, thereby both making efficient use of the nation's energy reserves and eliminating a source of environmental hazard. Recognizing this potential, Coalgas currently is evaluating a number of other potential project sites in the UK.

To obtain additional information on CMM development activities underway at Coalgas, contact Dr. Davies or David Oldham by phone at +01623-421642 or by e-mail at cgasman2@btinternet.com.

Upcoming Events

Real-Time Stimulation Solutions for the Appalachian Basin
Morgantown, West Virginia; USA
June 14–15, 2000

Fracture stimulation will be the focus of this 1½-day seminar which will be held at the National Research Center for Coal and Energy (NRCCE) on the Evansdale Campus of West Virginia University. Day one will provide a fracturing overview addressing fracturing theory, fracturing fluids, fracturing design, fracturing optimization, and economic analysis. Day two will focus on coalbed methane (CBM) topics, including an introduction to CBM, differences between CBM and conventional reservoirs, coal identification from electronic logs, CBM reservoir engineering, completion practices, and CBM project development. Additional program information is available by contacting Sam Ameri by phone at (304) 293-7682 x 3401, by fax at (304) 293-57008, or by e-mail at sameri@wvu.edu. Obtain registration information from Mark Hoffman by phone at (304) 293-2867 x 5446, by fax at (304) 293-7822, or by e-mail at MHoffma2@wvu.edu.

Second International Methane Mitigation Conference
Akademgorodok (Science City)
Novosibirsk, Russia
June 18–23, 2000

This conference, cosponsored by the Russian Academy of Sciences and the U.S. Environmental Protection Agency, aims to develop a stronger understanding of the specific measures that can lead to the most pragmatic and cost-effective methane emission reductions. Information exchanged will include science and policy implications of various industry-specific methane control measures, costs and benefits (economic and environmental) of adopting methane controls, national and regional emission reduction strategies, and other methane mitigation topics. More than 120 presentations from more than 30 countries will address the coal mining, natural gas, ruminant livestock, and solid waste landfill industries. Conference organizers will offer field trips to local industry sites. Please note that prospective registrants who require a travel visa must *register immediately*. For more information, visit the conference web site (www.ergweb.com/methane) or contact Karl Schultz at (202) 564-9468 or by e-mail at schultz.karl@epa.gov. (See related article in December 1999 issue of *Coalbed Methane Extra.)*

2000 RMAG Coalbed Methane Symposium
Denver, Colorado; USA
June 20–22, 2000

This interdisciplinary symposium will address geological, engineering, land, and environmental issues that can affect the success of coalbed methane (CBM) projects. Specific topics of interest will include, but not be limited to, regional coal geology and tectonics, geochemistry and coal petrology, field studies and case histories, exploitation and engineering practices, simulation and reserves, and legal/environmental issues. The meeting includes a 1½-day technical session and a 1½-day field trip to the Raton Basin. The conference sponsors have a call for papers. To submit an abstract, or for additional information, contact Bruce Kelso at (303) 925-9254 (e-mail: bruce_kelso@mwhx.com) or Sandi Pellissier at (303) 573-8621 (e-mail: RMAGdenver@aol.com).

(See other upcoming events on page 5.)

To obtain CMOP reports,
call **1-888-STAR-YES** to place your order,
or access documents electronically from the "Document Download" pages
on our World Wide Web site at **www.epa.gov/coalbed**.

Upcoming Events (cont.)

Fifth International Conference on Greenhouse Gas Control Technologies (GHGT-5)
Cairns, Australia
August 13–16, 2000

Continuing dialogue that began with the First International Conference on Carbon Dioxide Removal (ICCDR1), this conference will provide a forum for discussing the latest advances in greenhouse gas control. The conference will address carbon dioxide (and other greenhouse gases) capture, storage, and utilization, as well as renewable energy technology applications, energy efficiency increases, and greenhouse gas-related economic issues and policy/social effects. The conference will be held at the Cairns Convention Center. For more information, contact Colin Paulson, GHGT-5 Secretariat, CSIRO Energy Technology, P.O. Box 136, North Ryde, New South Wales, Australia 1670 (phone: +612-9490-8790; fax: +612-9490-8909).

New Technologies for Coalbed Methane Development
Beckley, West Virginia
September 13, 2000

The Petroleum Technology Transfer Council (PTTC) will host this workshop at the Glade Springs Resort. Although the agenda is still in development at this time, topics will include: a geologic overview of the Appalachian Basin; a review of reservoir properties; case studies on the application of new technologies for well drilling, logging and completion; and updates on current CBM development in the Basin. PTTC can still accept additional speakers, especially CBM developers who can present actual case studies. For more information, contact Doug Patchen by phone at (304) 293-2867 x 5443, by fax at (304) 293-7822, or by e-mail at dpatch@wvunrcce.nrcce.wvu.edu.

The 2001 International Coalbed Methane Symposium
Tuscaloosa, Alabama, USA
May 14–18, 2001

The University of Alabama has announced a call for papers for its 2001 Coalbed Methane Symposium. Topical categories to be addressed include international projects, resource assessment, reservoir characterization and modeling, drilling technology, and environmental and legal issues. Abstracts are due not later than June 15, 2000. For further information and to obtain a registration form, contact Ms. Gwendolyn Hood by e-mail at ghood@ccs.ua.edu.

Seventh International Mine Ventilation Congress
Krakow, Poland
June 17–22, 2001

This conference, sponsored by the Mining Committee of the Polish Academy of Sciences, will bring mining engineers, scientists, and researchers together to discuss current and emerging mine ventilation issues. In addition to technical presentations, equipment and product exhibitors will be present, and there will be site visit opportunities. For more information, contact Waclaw Trutwin, Strata Mechanics Research Institute, Polish Academy of Sciences, 30-059 Krakow, ul. Reymonta 27, Poland (e-mail: trutwin@img-pan.krakow.pl), or visit the conference web site at www.emag.katowice.pl/IMVC.

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