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Guizhou CMM Initiative Accompanies Delegates to Methane to Markets Beijing Expo 2007

The Guizhou CMM Initiative Delegation has returned to Guizhou carrying knowledge and expanded networks obtained at the recently held Methane to Markets Beijing Expo, held October 30 to November 1st, 2007. Expo participants mingled with over 700 other attendants from 30 countries. The Expo featured several methane projects, including projects from the agriculture, coal mine, oil and gas, and landfill sectors. The Expo also included many presentations about the experiences of project developers in Methane to Market Partner Countries, including China.

Project Manager Boni Jiang accompanied the delegation and introduced the group to key Methane to Market participants. The Guizhou delegation included Mr. Bangguo Yan from the Guizhou Coal Mine Safety Bureau, General Manager Mr. Wanbai Shu and Senior Engineer Mr. Yong Liu from Guizhou CBM Development and Utilization Co. Ltd. Three members also came from the Panjiang Coal Mine and Power

Group, including CMM Utilization Team Leader Mr. Shiliang Yang and CMM Utilization Team members Mr. Zezhao Jiang and Mr. Shaoyun Yang. Participation in the Expo was an important step in the GZCMM Initiative in order to meet our goal of introducing Guizhou Coal Mines and representatives to the greater CMM International Community.

You can find more information about the projects on display at the Expo, conference proceedings, as well as the announcement of future funding opportunities at the Methane to Markets website: <http://www.methanetomarkets.org/expo/index.htm>. The Initiative would also like to share Expo materials in Chinese with Guizhou coal mines that were unable to attend. Please let us know if you would like to contribute materials to our website by contacting Katie Scott at kscott@gzcmm.org.

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EPA CMM Grant Opportunity

December 3, 2007: U.S. EPA has issued a major request for initial grant proposals in support of the Methane to Markets Partnership. The grants will fund projects and activities that advance methane recovery and use as a clean energy source.

The total estimated amount for this competitive funding opportunity is up to \$7,000,000. U.S. EPA expects to award up to forty cooperative agreements through this announcement, ranging in value from approximately \$100,000 to \$700,000. U.S. EPA will seek proposals from international governments, as well as not-for-profit organizations. The estimated project period for awards is September 2008 through September 2011. For more information on applying, see:

<http://www.epa.gov/methanetomarkets/grants.htm>.

Reader's Comments

We received several comments regarding the article "Inside Guizhou: What are the Prospects" in the last Insider issue (1st Issue, Autumn 2007). In particular, readers commented on the issues related to low concentration versus high concentration CMM and potential regulation changes that may allow for a lower-concentration CMM utilization standard, if adopted. See below for comments.

The extraction of low concentration (excessively diluted CMM) from coal mines is undesirable not only because of the underground hazards but because it promotes low standards of gas drainage practice that do not provide the necessary safeguards to miners, that are wasteful of energy and inherently limit methane capture and utilization potential. Low concentration drained methane is a problem that need not exist.

To accept these schemes under CDM would damage the reputation of the process.

The emphasis should be on improving gas drainage standards to yield higher flows and higher gas qualities, not on how to avoid solving the true problem. The 30% minimum utilisation concentration was set for a good safety reason and developed coal mining countries have set similar minimum concentration constraints.

--David Creedy

Production of High Concentration CMM: The Optimal Approach for Safety and Methane Use

The previous issue of The Insider highlighted the Chinese Coal Mine Safety Regulations that prohibit the use of low concentration (<30%) coal mine methane (CMM). Green Gas is committed to harnessing as much CMM as is possible for methane use: the results are clean energy production and significant reductions in greenhouse gas emissions. We appreciate all the hard work undertaken to find ways to use CMM. But it is our view that this safety regulation is important for the protection of worker safety, and that improved gas drainage is the best answer to create a supply of CMM at concentrations safe for transportation and end use.

Green Gas believes that it is nearly always possible to produce drained gas at concentrations of over 30% methane. The good news is that this higher concentration gas is intrinsically safe: if a stray igniting source intercepts this gas, there is no explosion and a flame cannot propagate in a pipeline.

The other good news is that, while secondary to safety benefits, the production of higher concentration gas has extra financial benefits. Gas pipelines can be smaller and less expensive, and cost of pumping higher concentration methane out of a mine is significantly lower. It is also possible to use higher concentration CMM in more ways and possibly at lower cost.

The safety authorities in China and in Guizhou appear very committed to protecting worker safety, and we believe that Guizhou can be a leader in the production of high concentration methane that will result in a blooming CMM industry.

--Green Gas

In China, existing low concentration gas (<30%) accounts for 60-70% of the total amount of gas extraction and drainage from coal mines. If we do not adopt new technology of extraction and drainage, it is nearly impossible to produce gas at concentrations of 30% via current conventional techniques. To make sure the

gas concentration in working areas less than 0.75%, ventilation is the only solution. But it will inevitably cause a large number of electric power consumption that even profits yielded by the enterprise cannot cover the cost of gas extraction and drainage. Therefore, the Chinese Coal Mine Safety Regulations highlight that through utilizing water ring vacuum pump the production of drained gas at concentrations of lower than 30% is attainable, which is determined by current national condition of coal mining industry in China.

In December 2005, low concentration gas generating technology invented by Shengdong Group has passed industrial appraisal by the State Administration of Work Safety (SAWS) of China. It currently has been put into use in over 60 Chinese coal mining corporations and has received good effect. This technology has brought about good economic benefits; meanwhile, it has made a significant contribution to containing frequent coal mine safety accidents and controlling troublesome greenhouse effect issues. It is estimated that new regulation on CMM at concentrations safe for transportation, co-framed and co-drafted by SAWS, China Coal Research Institute and Shengdong Group, will be promulgated at the end of this year, which will be a new milestone in CMM transportation and utilization.

-- Power Machinery Works of Shengli Petroleum Administration (aka Shengdong Group), translated from Chinese

Current CMM drainage situation in China is: 1) The perspective towards CMM is changing from a harmful gas co-generated from mining to a new, clean energy source. 2) Due to different conditions between coal mining and CMM drainage, low concentration CMM still consists of a large proportion of drained methane. It is very difficult to improve it thoroughly in the near future. The reason is that coal mining has some temporal and spatial conflicts with CMM drainage. And coal production is still the major revenue source for coalmine companies. CMM drainage technologies used widely are based on coal mining preventative safety measures. The negative pressure drainage pipes are too long, leakage is likely to happen and it is hard to locate the leakage. All these cause dilution of methane in main pipes, which produces large amounts of low concentration methane. 3) In terms of pre-mining drainage in large scale, there is still a lot of work to be done.

So, my opinions are:

1. Low concentration CMM drainage and utilization do have problems of using dangerous gas and high cost for drainage. However, China has made progress in low concentration CMM transfer and utilization technologies, and they have passed industrial tests with related government bodies. Based on experiences from many coalmines using these technologies, the results are good. Using low concentration CMM to generate electricity is feasible and benefits CMM utilization and greenhouse gas emission reduction. The drainage system installs special anti-backfire equipment that can separate the surface utilization systems from the underground coalmine tunnel. In this way, it does not endanger mining safety. In fact, there have not been safety issues reported due to this system.
 2. Now China highly emphasizes energy efficiency and emission reductions. CMM emissions may increase the cost of coalmine operation if environmental regulations are tight-
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Inside Guizhou: CMM Cooperation with Foreign Companies in Guizhou

Cooperation, currently only for CDM

According to safety regulations, all gassy coalmines in Guizhou have to install gas drainage systems. It seems natural to use the gas to generate electricity. Considering the benefits from power generation and potential CDM revenue, CMM utilization projects provide great incentives for coal mines, as proven by the emergence of more and more such projects. Since CDM revenue comes from CER sales (that is, the revenue can only come from foreign companies acting as CER buyers), it is necessary to cooperate with foreign companies. However, most Guizhou coalmine companies stop here: they sign the CDM contract and then wait for the foreign counterpart to pay for the intangible CO₂ emission reduction. Foreign companies have yet to participate in gas drainage, improving gas quality and quantity, and integrating utilization with drainage. CMM development in Guizhou is still in its early stages and is limited to utilizing existing drained gas and CDM project development. To treat CMM as a resource like coal and make the best use of it is far from a common practice among Guizhou coalmines.

I believe the following issues are the cause for this situation. Of course, not every coalmine has all issues, but any one of these barriers may prevent Guizhou coalmine companies and foreign companies to cooperate beyond a CDM project.

- Coal production takes precedence to gas drainage. It is most important to guarantee the coal production, which should not be affected by trying to drain higher quality gas. If drainage has to be done, it will be done as long as it meets current safety regulations. Based on this principle, the quantity of drained gas usually is small, and not good for utilization. It may even affect the qualification of a project for CDM.
- Coalmine companies are in the process of re-structuring. Some state-owned coalmine companies and a larger number of medium and small coalmines are in this consolidation stage. With such uncertainty for the future, the timing is just not right for cooperation with foreign companies. The consolidation should be completed by the middle of 2008.
- Coalmine companies are not confident about drainage technolo-

gies and financial input. The complicated geological conditions, like low permeability, among Guizhou coalmines are well known. Many engineers do not have confidence in recovering high concentration methane in large quantities.

- On the contrary, some coalmine companies believe they already have very good drainage techniques. As for gas utilization, they would rather raise money internally because it seems the project will have good returns. Why share the profit with outsiders and deal with the troublesome process of getting foreign investment?
- Language and distance make communication difficult and the cooperation progresses too slowly.

Cooperation beyond CDM

So, is it really necessary to have foreign cooperation with Guizhou coalmines for CMM drainage and utilization? Even with the barriers mentioned above, I believe for Guizhou coalmine companies it is not only necessary, but also very important. The goal of a coalmine is to safely produce as much coal as possible while the foreign company's goal is to drain and fully utilize a large amount of gas with high concentration. On the surface it looks like their goals contradict, and cooperative efforts are troublesome. However, with the involvement of a foreign company as a balancing power, the cooperative parties can reach a win-win situation.

Essentially, Guizhou coalmines and foreign companies share a common interest: pursuit of stable and sustainable economic

benefits. Under this framework, both parties can reach a point where the combined economic benefits or revenue from CMM recovery and utilization, coal production, and possibly CDM, will meet both parties' needs. In addition, if the coalmine can secure the expected revenue based on the original coalmine business plan, from revenue generated by gas drainage and utilization, then the coalmine company faces less pressure of producing more coal. To protect its own interest, the foreign company will request the coalmine to drain as much gas as possible and try to avoid any accidents caused by gas. Any accident will hurt the coalmine-foreign company economic body badly. With guaranteed, diversified revenue and involvement of a foreign partner as a balancing power, a coalmine can greatly improve mining safety and recover and utilize CMM more effectively. This revenue might not be attractive to coalmine companies who pursue a fortune in the short term, but it certainly is the safest and most sustainable revenue.

In theory, Guizhou coalmines and foreign companies can achieve win-win solutions in CMM recovery and utilization. However, in practice both parties need to overcome many difficulties to reach this goal. Here, I'd like to share some experiences and observations for initial cooperative contact between two parties:

Know what you want and be frank about it.

From the beginning, for both coalmines and foreign companies, state clearly what cooperative partner you are looking for and requirements, such as the size of the coalmine, expertise, and investment, etc. For example, for both foreign and Guizhou



Inside Guizhou: Continued

companies, a 2-3-page document can introduce the company background and intentions. In initial contact, such a document can screen companies and projects, avoiding useless meetings and negotiations in the process. This point is especially important to Guizhou coalmines where a lot may be settled via email or fax. Some coalmine companies are usually very polite and will receive a foreign company's visit, even though they already know that there will not be any cooperation opportunities. In fact, if the foreign company is not what the coalmine looks for, the coalmine should state that frankly, which saves time and energy for both parties. As long as the reply is polite, it will not damage the relationship. Foreign companies usually appreciate this frank style.

Patience and persistence

It is not easy to identify a fit project partner. Foreign companies usually face the following difficulties in identifying appropriate coalmines for cooperation: 1) Lack of basic information on Guizhou coalmines and their contacts. 2) Short visits make it hard to establish trust with Guizhou coalmine companies. Representatives of foreign companies normally plan a 2-3 day visit and expect to collect enough data in order for them to do a simple feasibility study. It is unusual, though, for the coalmine companies to gain trust in such a short time and share reliable data. 3) Negative impressions left among Guizhou coalmine companies due to previous failures in foreign cooperation. A senior engineer in Guizhou coal industry said, "Foreign companies have to show real stuff(technologies or investment capacity) in order to carry out business in Guizhou. Many foreign companies have come and had many meetings. But they are just talking, no substantial development. Now coalmine companies hear cooperation opportunities and show no interest."

To overcome these difficulties, patience and persistence are necessary. First of all, it is this Initiative's prerogative to improve contact information and other information resources. As for foreign companies, they may not want to set a tight schedule to visit

Guizhou. It is always good to have a flexible day, which can be used for business meetings or just to arrange a thank-you dinner with the coalmine contacts. In a relaxed atmosphere, coalmine people will naturally express their real thoughts and expectations for possible cooperation. At the same time, these informal interactions at the personal level will improve mutual understanding. Eventually, inter-personal understanding and trust are significant to getting all the information for a successful project.

At the same time, Guizhou coalmine companies are not very active in pursuing cooperation with foreign companies. They are simply waiting for windfalls. That may explain why they do not have appropriate partners. If Guizhou coalmine companies are serious about foreign cooperation, they also need to be patient and should not set their expectations too high in the beginning. Foreign companies usually approach several project opportunities across China. They surely will choose the fittest project site and partner. Like the foreign companies, Guizhou coalmine companies should reach out more persistently, which this Initiative will be happy to assist. In sum, it takes patience to find fit cooperation partners and it will take persistence to carry out the project.

Language and culture

The use of English as the primary working language from initial contact to serious business negotiation is just not practical. In fact, there is almost no chance for such cooperation to succeed. Foreign companies need to invest more in language, including having a company profile, brochure, and website in Chinese and hiring professional translators or bi-lingual professionals. After all, cooperation projects are located in China and Chinese is the preferred language of communication. It would be a good gesture to even have an agreement written in Chinese. Foreign companies must also be aware of the language barriers that could reduce working efficiency and increase costs. Likewise, for Guizhou coalmine companies, it is necessary to have a company profile document, as described

above, translated into English. This shows very basic sincerity for foreign cooperation.

In Chinese business culture, having dinner together is a very important activity. In fact, there is one more significant activity in Guizhou: drinking Maotai (one of the most famous strong liquor in China that is only produced in Guizhou). Coalmine companies usually treat foreign companies this traditional way: they reserve a VIP room in a fancy restaurant, order dishes packed on a big table, have a few toasts together, and finally have shots with each other around the table. Any foreign company that has worked with Chinese coalmines is not a stranger to this and they can actually handle it well. But this does not mean that foreign companies prefer this style of communication. A simple dinner and moderate drinking are not a bad idea. It is also good to allow foreign people to choose what they want to eat and drink. A teahouse might be a good place to go after dinner. In this way, people can be relaxed and stay sober for more conversations. In addition, if time allows, a foreign company's representatives can be invited to take a walk in a local park or in the open land. This can also be used for informal business conversation. Foreign companies usually accept a host's arrangements out of respect. Sometimes, though, it is perfectly fine for foreign companies to suggest some ideas about dinner and entertainment. Both parties might be very satisfied.

In sum, the CMM industry in Guizhou lacks cooperation with foreign companies in drainage and utilization projects that improve gas quality and quantity. As described above, this Initiative has recognized some barriers causing this situation. Improved communication will play a significant role for fruitful cooperation in Guizhou. We intend for this Initiative to improve the availability and quality of information so that companies can establish lasting and successful partnerships.

—Boni Jiang, Project Manager

Start Planning! Workshop on CMM development in Guizhou to be held in Guiyang July 2008!

The Guizhou CMM Initiative is accepting suggestions on important issues to discuss at this workshop. Please contact us with your suggestions and also if you are interested in attending. We will make a formal announcement with more details in the next newsletter. Send email to kscott@gzcomm.org.

Policy Trends...

Coalmine Consolidation

On November 29, 2007, National Development and Reform Commission (NDRC) of China formulated and released the "Coal Industry Policy". This policy encourages the formation of industrial organizational structures combining large coal enterprises, as the main body, with subsidiary small and medium-sized coal mines. The policy also calls for the establishment of 13 large-scale coal bases, of which Guizhou is part of the Yunnan-Guizhou coal base. During the "11th Five-Year Plan" period (2006-2010), new mine projects with annual productions lower than 300,000 tons will not be approved.

However, reflecting the reality of local and national differences, in Guizhou Province, the scale of new and expanded mines must not be less than 150,000 tons/year. According to this Initiative's information source, over 1,000 mines of Guizhou province are in a consolidation stage. After this stage, the smallest consolidated coalmine in Guizhou will be 90,000 tons/year.

Subsidies for CMM Utilization

The Ministry of Finance recently released the following key points in "Views of Implementation of Subsidies for Coal Bed Methane (including CMM) Development and Utilization" (MF, construction [2007] 114).

1. Qualification for these subsidies include:

- ❖ CBM gas exploited by an enterprise is sold or self-consumed as town gas, chemical feedstock, etc.;
- ❖ Metering equipment must be installed in order to accurately measure CBM extraction, sale, and private use;
- ❖ CBM used for electricity generation does not qualify for this subsidy.

2. The Central Government will subsidize CBM exploitation enterprises at 0.2 Yuan/cubic meter pure methane. On the basis of central subsidizing, the local finance department can determine its own policy on whether to increase subsidies and the amount of subsidizing. According to arrangements of the Central Finance Department, CBM subsidizing funds can be calculated via the following formula:

The amount of subsidies = (sales amount + self-consumption amount – amount used for power generating) × subsidy rate (0.2 Yuan/cubic meter)

CMM Power Generation for Power Grid

According to the "Views of Implementation on Utilization of CBM (CMM) to Power Generating" (NDRC, Energy [2007] 721), the extra electricity generated from CMM after a coalmine's own consumption must be purchased by the power grid and timely payment must be made according to related regulations. CBM (CMM) power plants will not participate in price bidding and will not be assigned peak-adjustment tasks from the power grid. Power grid enterprises should help CBM (CMM) plants get access to the system and offer all kinds of convenience. In principle, power grid enterprises are responsible for investing money in building related projects ranging from power grid to the point of common coupling (CPP), while power generation enterprises

should take charge of investing money in building relevant projects ranging from power plants to access systems of CPP. Onto-grid electricity pricing of CBM (CMM) plants should be based on biomass to electricity pricing. This pricing formula is a combination of the benchmark onto-grid electricity price of local desulfurization coal-fired units in the year 2005 with related subsidies, with 0.25 Yuan per kilowatt-hour as the standard. New power generation projects can enjoy subsidized prices, for 15 years, after which there would be no subsidization. In Guizhou, the benchmark onto-grid electricity price of local desulfurization coal-fired units in year 2005 was 0.252 Yuan/KWh. This pricing policy is revealed in "Pilot Scheme of Renewable Energy Electricity Generating Prices and Cost-sharing Management" (NDRC, pricing [2006] 7) formulated by NDRC.

News & Events in Guizhou

Guizhou Formed Company to Develop CBM Resources

Guizhou CBM Development and Utilization Company was established in October 2007. The goals of this new company are to increase CMM drainage, accelerate CBM development, secure mining safety, add new energy supplies, and reduce pollution. The shareholders include Guizhou Coal Field and Geology Bureau, Panjiang Coal and Power Group, Guizhou Town Gas Group, Liuzhi Mining Group, Shuicheng Mining Group, Lindong Mining Group, Guizhou Provincial Coal Mine Design Institute, Guizhou Coal Company. The registered capital for this company is 49 million Yuan. Mr. Yi Liu is Chairman of the Board of Directors and Mr. Wanbai Shu is General Manager.

The Company is still in the process of forming its strategies. However, it is expected that the Company will be active in both underground CMM drainage and surface drainage in order to fully explore the CBM resources in Guizhou.

Guizhou Tests Pre-mining Surface Drainage

Guizhou CMM Mitigation Leadership (a multi-government body) formed a team March 2007 to carry out pre-mining surface vertical drainage among several coal mines. Initially, these demonstration projects will be located in Zhongling, Yushe, Laowuji, Shanjiashu, and Xiangshui coal mines. The drilling designs have been completed and all projects are under construction. Through these projects the Guizhou government and coal mine companies expect to improve mining safety and promote CMM recovery and utilization. These demonstration projects will lay an important foundation for the rest of coal mines in Guizhou to adopt



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ened. CMM utilization meets the needs of national policies and contributes to the global endeavors of reducing greenhouse gas emissions. Under current conditions and technologies in China, it is positive, effective, and necessary to utilize CMM with various concentrations in a timely way.

3. With consideration of current conditions among coalmines in China, we should also carry out technology development and research in order to improve CMM drainage concentration while satisfying coal production and safety. For example, is it possible to develop a drainage system with negative pressure and a transfer system with normal pressure? The whole process would be automatic and under dynamic control, so gas is drained and concentration is guaranteed.

-- Shiliang Yang, former coalmine manger in Guizhou, translated from Chinese



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We'd like to hear from you.

The GZCMM Initiative relies on experts like you. If you would like to see specific content or even have a contribution to this newsletter, please let us know! We are particularly interested in knowing more about ongoing or developing projects, and opportunities and constraints to CMM recovery and utilization projects, whether from an international or local Guizhou perspective. We want to be informative, and most of all, to promote successful and effective projects.



Let us share YOUR information on our website:
<http://www.gzcmm.org/>

On our website, we can add:

- Your company/organization's website
- Materials describing your CMM experience/interest in China and Guizhou
- Announcements for CMM project development opportunities
- CMM project success stories

Contact us at kscott@gzcmm.org. Materials in Chinese are especially useful!

The Guizhou CMM Initiative is hosted by Guizhou International Cooperation Center for Environmental Protection (GZICCEP), which is affiliated with the Guizhou Environmental Protection Bureau. Find out more at <http://www.gziccep.com>.

The CMM Recovery and Utilization Initiative for Guizhou Province, China is funded in full under Assistance Agreement No. EPA-OAR-CCD-06-08 awarded by the U.S. Environmental Protection Agency. EPA support for this Initiative does not imply endorsement of any products or commercial services.

This grant supports the Methane to Markets Partnership which promotes clean energy projects together with a multitude of international partners while sustaining economic growth in the partner regions. Learn more at <http://www.methanetomarkets.org/>.

The views expressed in articles and comments in this newsletter do not represent the views of the US EPA or that of Methane to Markets.