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Unconventional Gas Activities in the World

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COALBED METHANE & COAL SEAM GAS

EXPLORATION DISCOVERIES

AUSTRALIA : Comet Ridge receives exploration permit in Queensland. — UG39-1

Comet Ridge Limited announced recently that the Queensland Government has awarded ATP 744 to the company. Comet Ridge holds 100% equity in both permits which are located about 500 kilometers northwest of Gladstone and cover a combined total area of approximately 13,000 square kilometers. Technical work undertaken by MBA Petroleum Consultants indicates significant gas-in-place potential of 36 trillion cubic feet within the two

Galilee Basin blocks. Comet Ridge's Managing Director Tor McCaul said that an upcoming drilling programme, scheduled to get underway in November 2009, would obtain coal thickness and gas content values over a wide area of Comet Ridge's portion of the eastern Galilee Basin to update the gas-in-place estimate ahead of any pilot production scheme. (Energy Business Review, October 20, 2009)

AUSTRALIA : Blue Energy receives approval to start drilling program in Queensland. — UG39-2

Blue Energy Limited received recently board approval to conduct a 10 well coal seam gas core hole drilling program in its 100% owned ATP813P in the Galilee Basin of central Queensland. The program is expected to commence in November 2009. The Galilee corehole program is designed to systematically explore the large ATP813P permit and specifically investigate the Permian aged Betts Creek and Aramac Coal Measures. The aim of the initial 10 well coring program is to establish coal distribution across the permit, together with gas content and permeability data and then identify a suitable site or sites for the drilling of pilot production wells. (Energy Business Review, October 20, 2009)

AUSTRALIA : WestSide Corporation starts CSG drilling program in the Bowen Basin. — UG39-3

WestSide Corporation Limited started recently the second stage of its 2009 coal seam gas drilling program. The Tilbrook #9a well is the first well in the expanded drilling program which will include up to 16 new holes planned for the Company's two Bowen Basin tenements, ATP 688P (Tilbrook, Mount Saint Martin and Bald Hills) and ATP 769P (Paranui). The Tilbrook #9a exploration well will confirm the depth and thickness of the "P" coal seam as a precursor to the

drilling of WestSide's second dual-lateral CSG appraisal well at its Tilbrook pilot in ATP 688P, south of Collinsville. (ABN Newswire, October 16, 2009)

AUSTRALIA : Arrow Energy to expand its CSG projects in Surat Basin. — UG39-4

Arrow Energy Ltd. plans to expand its operations in Queensland's Surat Basin with a major coal seam gas exploration, development and production project. Areas covered by the project include Arrow Energy's existing gas production fields at Tipton West, Daandine, Stratheden and Kogan North near Dalby, and a broader area extending from Wandoan to Dalby and south to Millmerran and Goondiwindi, in which Arrow Energy holds petroleum

tenure and environmental approvals for exploration. Initially, the project will involve the staged development of approximately 1,500 production wells and associated infrastructure in an area with known gas reserves adjacent to Arrow Energy's existing Surat fields. The company's estimated gross resource in the Surat Basin is 12,400 PJ. (Energy Business Review, October 14, 2009)

CHINA : Petromin commenced CBM wells in Xinjiang. — UG39-5

Petromin announced recently that TerraWest Energy Corp had finalized its contractual arrangements with Xinjiang Geologic Engineering Co. Ltd. to commence drilling of two wide diameter wells (1500m and 800m) on TWE's land in Liuhuanggou area of Xinjiang province. The 1500m well offsets a coal coring drillhole and gas desorption location completed in 2006. (Petromin press release, October 20, 2009)

PRODUCTION

CHINA : Far East Energy increases CBM production in Shouyang. — UG39-6

Far East also announced that it has seen a rapid rise in gas production from its P2 parameter well some 7 kilometers distant from its 1H Pilot Area in Shouyang. Over the past 48 hours production from the P2 has more than tripled, rising from 16 to 17 Mcf per day to between 53 and 60 Mcf per day. The P2 Well began producing gas within 60 days of being put on production which seemed to indicate high gas saturation in the #15 coal seam in this area. Core analysis of the #9 coal seam in this well indicates that the #9 seam is almost completely saturated at this location with a gas content of approximately 450 standard cubic feet per ton (scf/ton). The #15 coal

seam has a gas content of approximately 490 scf/ton and is 75 to 80% gas saturated. A saturated coal seam, such as the #9 coal seam appears to be in this area, contains the maximum amount of gas that can exist in the coal based upon the reservoir temperature and pressure. In a saturated condition, the coal seam does not need to be dewatered to begin producing gas. This eliminates much of the delay in the start of gas production that is associated with dewatering. The significant increase in gas production seems to indicate that the #15 seam is also highly saturated in the area of the P2 Well. (PRNewswire, October 26, 2009)

UNITED KINGDOM : IGas provides operational update. — UG39-7

The board of IGas, coal bed methane developer in the UK, provided recently an update on the development of its acreage. IGas has now commenced workover operations at its well Doe Green well 1 (DG1). This well is on its pilot production site between Warrington and Widnes, where IGas is producing gas and generating electricity for export via National Grid and on-sold

to a major utility. DG₁ was IGas' first well on the site and was drilled in 2006. The well was cored and logged and down hole pressure gauges were set to identify if and when pressure connectivity was established with the DG₂ production well. DG₂ was drilled initially with one 1,000 ft lateral section in coal and now has over 12 months of successful production history.

The objective of the workover is to perforate the coals in nine seams representing 63 feet and then "frac" the seams using clean water. The de-watering and gas handling equipment is already installed at the site and any gas produced will be used to generate electricity from the on-site generation equipment and the electricity sold to the grid.

The production and generation equipment is now capable of 24-hour remote operation. In the event that this test of a "vertical" wellbore yields unsatisfactory results, in-seam laterals in the coal seams can be drilled from DG₁ in the future. At DG₂, the average production rate attained has been rate of approximately 45,000scf/day of methane with a constant very low level of water production after experiencing higher initial water production. (Oilvoice, October 24, 2009)

RESERVES

AUSTRALIA : Reserves tripled on Don Juan coal seam gas project. — UG39-8

Bow Energy Limited announced recently the near tripling of the certified 2P coal seam gas reserves on the Don Juan CSG project to 101 petajoules, achieving the company's reserves target for the project over a year ahead of schedule. MHA Petroleum Consultants, LLC (MHA) have certified an additional 66.7 PJ for the Taroom coal seams for the project near located about 40 kilometers north of Roma, Queensland, adding to the earlier 34.2 PJ certified for the Juandah coal seams. Drill stem testing indicated good to excellent permeability in both the Juandah and Taroom coal seams, including free gas from several wells with

one well free flowing gas at a stabilized rate of 370,000 cubic feet per day during a flow test period. Bow Energy's Chief Executive Officer Commercial, John De Stefani, said, "Bow Energy now has a net total of 55 PJ of 2P reserves, which is 10% more than Bow's year-end 2010 target for the project." He added,

"The Don Juan field is also only 15 kilometers from an open access pipeline offering the potential to supply both domestic and export gas markets". (Energy Business Review, October 20, 2009)

CHINA : CBM reserves of Liulin block evaluated. — UG39-9

Fortune Oil announced recently the results of an independent resource evaluation of the Liulin coal bed methane block in Shanxi Province by petroleum consultants Netherland, Sewell & Associates, Inc. NSAI has upgraded the gas resource estimate in the Liulin block, almost tripling the possible reserves to 84.8 bcf (compared with 29.7 bcf previously) and accrediting 1.4 bcf of probable reserves, using the field data to 30 June 2009. The estimates of reserves and resources were prepared in accordance with the most recent definitions and guidelines approved by the Society of Petroleum Engineers. CUCBM spudded the first of two lateral wells in September 2009 close to EP₅ well in the northern section of the block. CUCBM will also drill 15 vertical pilot production wells and 2 perimeter data wells in the south east corner of the block. (Fortune Oil press release, October 14, 2009)

NEW ZEALAND : First coalbed methane reserves certified. — UG39-10

L&M Group subsidiary Coal Seam Gas Ltd announced recently that it has New Zealand's "first ever independently verified" coal seam gas reserves at its Ohai coalfield - an estimated potential resource of 173 petajoules of energy. If proven to be higher by more tests, it could become New Zealand's third largest gas field, with applications across industrial, commercial or residential

use. Coal Seam chief executive Kent Anson said, when contacted, the resource estimate was undertaken by Colorado-based MHA Petroleum Consultants LLC, and would prompt further drill testing during the next 12 to 18 months to move the estimate from "possible" to "probable". (Otago Daily Times, October 19, 2009)

TRANSPORT – DISTRIBUTION

INDIA : GEECL completes CBM pipeline in West Bengal. — UG39-11

Indian company Great Eastern Energy Corp Ltd (GEECL) said recently it has completed laying the pipeline from Asansol to Durgapur in West Bengal that will transport the gas from coal seams. With this, the company now has a 77.62-km pipeline network, comprising its coal bed methane wells to Kulti, Asansol and

Durgapur in the state, the statement said. "The pipeline system, which is capable of carrying up to 35 million standard cubic feet per day, is part of a vertically integrated network consisting of drilling, production, compression, transportation and distribution services," it said. (Asia Pulse, October 15, 2009)

SUPPLIES – IMPORTS – EXPORTS

CHINA : Far East Energy signs a letter of intent for coalbed methane sales and purchase. — UG39-12

Far East Energy Corporation announced recently that a Letter of Intent has been signed for the sale of gas produced from its Shouyang Project. This agreement was signed by the Chinese partner of Far East, China United Coalbed Methane Co. Ltd. (CUCBM) and Shanxi International Energy Co. Ltd. Under the terms of the Production Sharing Contract covering the Shouyang Block, gas produced by Far East and its partner, CUCBM, is sold by CUCBM on behalf of Far East. Shanxi International Energy Co. Ltd intends to transport gas produced from the Far East Shouyang block through a pipeline that it will build directly to the area of Far East's current Shouyang gas production. It will then sell this gas to downstream users. (PRNewswire, October 26, 2009)

SHALE GAS

EXPLORATION - DISCOVERIES

POLAND : LNG Energy Ltd. joins shale gas exploration project. — UG39-13

LNG Energy Ltd. announced recently that it will exercise its option to participate for a 12% net interest in BNK Petroleum Inc.'s exploration project in Poland. LNG acquired its option through its 60% ownership of BWB Exploration, LLC which holds the option to participate for up to a 20% interest and has exercised the option to participate in full. The three concessions, Starogard, Slupsk and Slawno, are located in Northern Poland and total approximately 2,951 square km. License commitments will require the drilling and testing of one exploration well

per concession before the end of 2010. This opportunity is primarily targeting a Silurian aged resource play within the Baltic Basin. The resource presence is defined by wells that have been extensively cored (core intervals exceed 1000 m) for both scientific and exploration purposes by Polish research institutes over the last 50 years. Sampling of existing well cores has been completed, with testing having been initiated within laboratories familiar with characterizing US based gas resource plays. (Marketwire, October 13, 2009)

URUGUAY : Schuepbach Energy an Ancap to explore for shale gas. — UG39-14

Schuepbach Energy signed recently a two year contract with Uruguay's state oil company Ancap to search for shale gas in a 10,000km² area in northern Uruguay, company CEO Martin Schuepbach said. "We believe there are similar shales in Uruguay to the Barnett shales in Dallas Fort Worth," the CEO said. "We are starting with surface analysis and we will analyze those for the barometers which you need for shale gas, such as the content of organic material. We are also conducting feasibility studies for gravity measurements," he said. (BNamericas, October 27, 2009)

PRODUCTION

UNITED STATES : Chesapeake Energy reduces average drilling cost in the Barnett Shale. — UG39-15

Chesapeake Energy announced recently that, in the Barnett Shale, it has cut drilling times by two days or 10 percent, decreased average well drilling costs and completion costs each by 15 percent, increased its proved reserves by 17 percent and increased its average lateral drilling length by 500 feet, or 15 percent, to 3,500 feet. (In early 2005, the company's average Barnett Shale lateral length was about 2,300 feet.). "We're still finding ways to unlock the Barnett Shale in what you would call a mature or low-risk play but I think we'll find ways to continue to grow and unlock the potential there," said Allen Middleman, Geoscience manager for the Barnett Shale at Chesapeake Energy. Currently, however, area operators have sought to curb spending and activity in order to rein in costs and account for natural gas prices below the break-even

point. Middleman said the company's current break-even point is \$4.96 per thousand cubic feet, less than the \$5.14 per mcf break-even cost one year ago and moving closer toward its stated goal of \$4.79 per mcf. Chesapeake Energy operates in

each of the Big 4 — the Barnett, Marcellus, Haynesville and Fayetteville shales. The Marcellus Shale is expected to become one of the two largest plays in the U.S., the Haynesville Shale being the other. Chesapeake currently produces about 50 MMcfe per day and expected to produce 390 MMcfe per day by the end of 2011 in the Marcellus. Estimates put the Marcellus Shale as high as 489 trillion cubic feet of potentially recoverable gas, compared to the Haynesville's 250 Tcf, the Barnett's 44 Tcf and the Fayetteville's 42 Tcf. (Fort Worth Business Press, October 19, 2009)

GAS HYDRATE

EXPLORATION - DISCOVERIES

CHINA : Gas hydrate research vessel added to the scientific fleet. — UG39-16

China's first comprehensive natural gas hydrate research vessel "Haiyang-6" joined recently the country's marine geological research fleet. Not only is it the first comprehensive NGH research vessel that was independently designed and built by China, but it is also the world's first research vessel to integrate several different functions such as seismic measurement and geological survey. (People's Daily, October 19, 2009)

PRODUCTION

CHINA : Environmental concerns may slow hydrates exploitation in Qinghai Province. — UG39-17

China will put environmental concerns as top priority in tackling ways to exploit natural gas hydrate, in the permanent tundra in its northwest plateau region, said Wen Huaijun, chief engineer of project in Qinghai. "We do not need to drill very deep to get the flammable frozen compound from tundra here in Muli Prefecture in Qinghai Province. However, as the sample is taken out, methane gas is easily released into the atmosphere,» He said the project team under the China National Administration of Coal Geology is carrying out research to guarantee that the exploitation of the frozen natural gas does not cause environmental problems. The Ministry of Land Resources said recently that the prospective volume of the natural gas hydrate in the country's frozen earth regions is estimated to reach 35 billion tonnes of oil equivalent. Wen said the environmental threats from the use of the resource even in a land-based region are enormous, because it releases carbon dioxide or methane into the atmosphere. Wang Jianbin, deputy director of the Qinghai Bureau of Land Resources, said at the present stage, the project focus is still to ascertain locations of the deposit, and carry out a feasibility study on its exploitation. (Xinhua, October 3, 2009)

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