



A new approach for coalbed methane production in Karaganda coal basin

Oleksandr Ivakhnenko, Kaiyrgeldi Shayakhmet, Djamilya Ismailova, and Gauhar Bisseken

Department of Petroleum Engineering, Kazakh-British Technical University, 59 Tolebi Str. Almaty, Kazakhstan
(a.ivakhnenko@kbtu.kz; energy.petroleum@gmail.com/Fax: +7 727 2720487)

The purpose of this study is development and implementation of commercial gas production project in the Karaganda coal basin in the Central Kazakhstan. Coal methane resources of the Karaganda basin are estimated more than 1 trillion cubic meters, and under appropriate technological development annual production may reach to 3-4 billion cubic meters. Production of coal methane and its utilization as an environment friendly energy resource for housing, communal services, power plants and transport will improve ecological conditions in the industrialized Central Kazakhstan regions.

In production of coal bed methane used vertical wells. These wells were drilled through coal seams and were cased to drain the methane prior to mining. The wells are normally placed in operation from 2 to 7 years ahead of mining and the coal seams are usually hydraulically fractured to remove as much as possible methane from the seams. In order to enhance the flow of gas from a vertical well, either hydraulic fracturing or open-hole cavity completions are generally used.

Proposed coalbed methane drainage systems can enhance coal productivity because of less frequent downtime or production slowdowns caused by gas. It will decrease fan operating costs because of reduced air requirements for methane ventilation and improve mine safety resulting in significant drop of methane contents in returns, gobbs and bleeders. It also reduces problems with water flooding and improve workers comfort through reduction of air velocities. In general greenhouse gas emissions will be decreased, so quotas for their emission can be sold to another countries and reduce the amount of emergency situations.

In the regional and global scale the development of coal methane production projects may provide the reduction of its emission to the atmosphere at 0.2-0.15 million ton, equivalent to 2-3 million ton of carbon dioxide, only in one Karaganda basin. Implementation of proposed model and project in Kazakhstan would provide significant mitigation of greenhouse gas emission and with introduction of the emission quota trading system coal-gas production may be seen as a source of carbon credits. Besides that proposed field development project will significantly increase amount of produced gas leading simultaneously to decreasing in the numbers of emergencies in the mining operations. In this study we propose innovative approach in producing gas using technologies that were not used before for commercial production of gas from coal beds in Kazakhstan.