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## STRATEGIC CENTER FOR NATURAL GAS WEBSITE

[www.netl.doe.gov/scng](http://www.netl.doe.gov/scng)



## FEASIBILITY OF MULTI-SEAM COMPLETIONS FOR CBM DEVELOPMENT IN THE POWDER RIVER BASIN

### Background

The Powder River Basin is the site of the fastest growing domestic natural gas play – the development of coalbed methane (CBM) from the Wyodak and Big George coal fairways. Currently, the basin produces 945 million cubic feet per day of natural gas and 1.67 million barrels per day of water from over 9,800 producing CBM wells.\* The vast majority of these wells are single zone completions, targeting thick coal sections.

The Potential Gas Committee and the United States Geological Survey have recently developed new estimates of the coalbed methane resource potential in the Powder River Basin. These estimates reflect a CBM resource that is significantly larger than previously thought. The application of multi-seam completion (MSC) technology may be required however, in order to economically develop much of the basin's CBM potential.

### Description

The efficient use of MSC technology faces numerous hurdles in the Powder River Basin. Currently, the dominantly used single zone, open-hole well completions are low cost and reliable. MSC technology would entail casing across the coals, accurately locating perforations, and possibly using some form of stimulation process. In addition, differences in coal reservoir properties, particularly in water storage and production, could impede the timing of gas recovery. All of these factors, plus the uncertainties of using untested MSC technology add to cost and risks. Until this technology is shown to be reliable and cost effective, operators will tend to continue to use today's simpler development strategies, which may not be the most efficient means of resource recovery.

MSC technology, however, when fully demonstrated and proven reliable, offers the potential for numerous benefits including reducing the number of development wells, recovering additional CBM resources, and lowering capital and O&M costs per Mcf.

\* August 2002, Wyoming only; WOGCC



(Courtesy D. Decker)

## RELEVANT INVOLVED PARTIES

Federal Agencies  
 State Governments  
 Operators and Producers  
 Service Industry  
 Environmental Groups  
 Royalty Owners

## RELATED LINKS

**Montana Board of Oil and Gas Conservation**  
<http://bogc.dnrc.state.mt.us/>

**Montana Bureau of Mines and Geology**  
<http://www.mbm.g.mtech.edu/>

**Wyoming Oil and Gas Conservation Commission**  
<http://wogcc.state.wy.us>

**Wyoming State Geological Survey**  
<http://www.wsgsweb.uwyo.edu/>

**Bureau of Land Management Buffalo Field Office**  
<http://www.wy.blm.gov/bfo/>

**Bureau of Land Management Miles City Field Office**  
<http://www.mt.blm.gov/mcfo/>

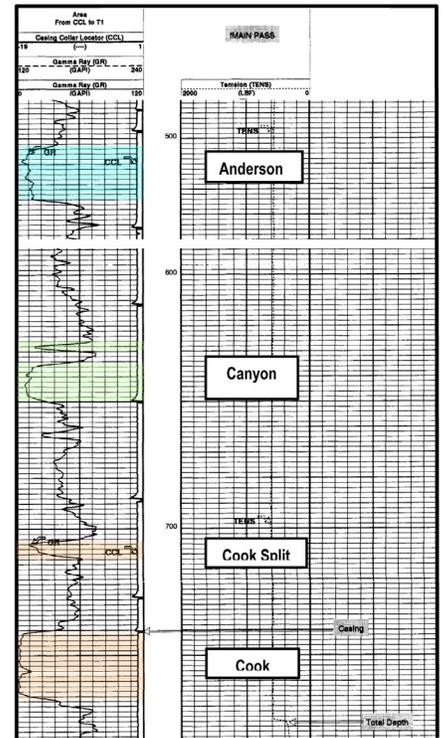
## CUSTOMER SERVICE

800-553-7681

## Study Purpose

The purpose of the MSC Study (for CBM development) in the Powder River Basin is to:

- Determine the technical and economic feasibility of MSC technology in the Powder River Basin CBM play,
- Estimate the extent of MSC applicability throughout the Powder River Basin,
- Estimate the value and benefits (dollars, number of wells, reduction in land disturbance, increase in gas production, etc.) of widely using MSC technology,
- Identify Research and Development (R&D) needs associated with MSC technology in the Powder River Basin.



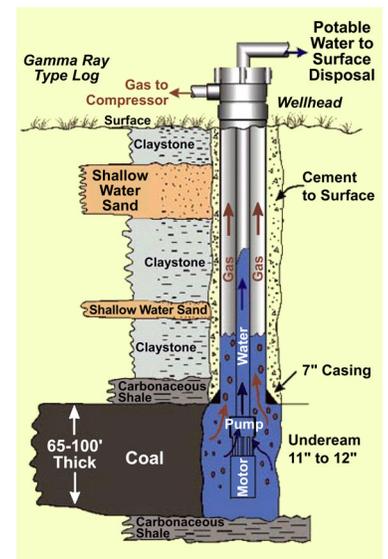
Sample Log – Upper Fort Union Coals

The results of the MSC feasibility assessment will benefit planning and overall strategy formulation for natural gas resource development. The analysis will also serve as a logical prelude to a R&D initiative – if warranted.

## Significant/Potential Impacts

The availability of reliable, low risk MSC technology may become essential if the high visibility CBM play in the Powder River Basin is to continue to develop and reach its full potential. Currently, this CBM play is maturing and extending to areas of relatively lower quality coal reservoirs, namely deeper areas with thinner coal seams, higher water production, and higher costs. As a result, basin operators could begin to experience lower net revenue margins from the combination of increased development costs, uncertainty over future regulatory requirements for water disposal, substantial basis differentials, and less certain reserves per well.

The examination of the feasibility of, and operator interest in MSC technology could help counter these otherwise negative trends by accelerating the cost-effective use of MSC technology for future CBM development. Results of the SCNG/Advanced Resources International study are expected in early 2003.



(Courtesy L. Cook)