



Tech Talk - A Second Look at Natural Gas in the Bakken

Posted by [Heading Out](#) on November 27, 2011 - 2:28am

Topic: [Supply/Production](#)

Tags: [bakken](#), [gas condensers](#), [gas generators](#), [natural gas ignition](#) [[list all tags](#)]

The comments on the recent post on [natural gas flaring](#) at [The Oil Drum](#) drew a few comments that I would like to discuss before moving on to start reviewing the situation in Russia.

Most particularly I want to discuss the change in the regulations that are now imposed in the Bakken, and then go on to review the alternate ways in which that stranded gas might be used. I would like to thank those who commented, particularly [benamery21](#), who pointed me to the set of presentations in a Webinar that covers the change. There was also a comment by [aws-classifieds](#) that led to a [Wood Mackenzie view](#) of the current situation.

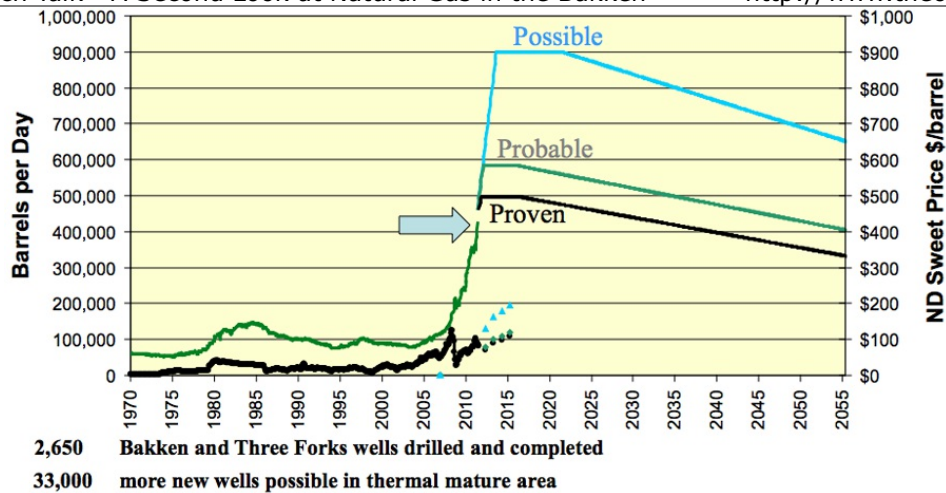
The Wood Mackenzie view mirrored to some extent what Sid Green and [Rockman](#) have both been noting about the current economics of the shale gas drilling bonanza. [Harry Flashman](#) also commented. The point is that much of the growth in drilling for the natural gas in shales such as the Marcellus is coming from Joint Ventures, and

the pool of potential shale gas investors has expanded beyond experienced onshore North American operators to include companies willing to commit up to several billion dollars to enter and develop plays. It can be argued that they have neither the skills nor experience to efficiently exploit the resource and evaluate selling gas into the most liquid, dynamic natural gas market, alien to their own typically regulated natural gas markets. □□

The continued waves of new investors have committed around US\$90 billion to exploiting the shale gas plays in North America, throwing a lifeline to the established players who have been able to continue to hold and exploit their lease holdings using their new investors' money.

The article goes on to note that the service companies have been making the most out of the current efforts, and as a result companies are beginning to move more of the well servicing in house (including hydraulic fracturing). The article notes, as has been highlighted particularly in comments on earlier posts on the topic, that the majority of shale gas plays are failing to break even at current prices. In consequence it anticipates a market correction, following which only the very best shale gas plays (and that will include those with high liquid content) will survive.

On that note, it is worth looking at the prediction by the [North Dakota Department of Mineral Resources](#) at that recent Webinar, which Ben pointed to.



Predicted future oil production from the Bakken shale in North Dakota ([ND DMR](#))

Note that this anticipates that production will only rise by perhaps 150 kbd over current levels. This is perhaps a cautionary tale for those who are looking to see sustained production from these fields of up to 1 mbd through the rest of the decade. DMR sees production declining around 2015, though only at around 1% per year, under a sustained drilling program.

The State, however, notes that 7.6% of the energy value coming from the wells, and 4.3% of the economic value is currently going up in smoke as over 30% of the gas coming from those wells continues to be flared. [Regulations](#) do, however, limit the amount of such gas that is flared, through a control on the amount of oil that can be pumped from the well before it is connected into a gas-gathering network.

Typically, wells are allowed to produce at a maximum efficient rate or MER for a period of time (generally 30-60 days) in order to evaluate the potential of the well and stabilize the production. After such time, the well production is then restricted to 200 bopd (barrels of oil per day) for another 30-60 days, then 150 bopd for an additional 30-60 days, and finally 100 bopd until the well is connected to a gas-gathering system. Further extensions may be granted provided certain conditions are met. But whatever the reason, until that connection is made, the only alternative is to burn the gas.

There is a small catch if the well continues to be flared. If the company applies for an exemption, it can be relieved of paying taxes and royalties on the natural gas flared for a year, but after that taxes and royalties can be imposed – even if the gas continues to be flared.

However one “out” is to use the natural gas to produce electric power – provided that the generator consumes at least 75% of the natural gas from the well. At the same time new gas plants are being constructed, so that, by the end of next year capacity should be up to around 1,000 MMcf/day. The use of on-site generators was also mentioned in the [Webinar](#), though all the presentations are sequenced so this appears lower down the site.

Two ways are proposed for effectively using the gas that is currently flared. The first is a modification to the requirement for electrical generators, with a project by [Blaise Energy](#). There is a [case study](#) of an existing operation available, where the company installed a 300-kw generator near one well, and a 340-kw generator by another, in North Dakota. The power is then sold to a local electrical co-operative and the company now claims agreements to generate 4 MW, with another 15 MW in view.



Generators at a well site, using the natural gas to generate electricity ([Blaise Energy](#)).

The alternate approach, which is being developed by [Bakken Express](#), is to capture and condense the natural gas at the well head and then transport it either to a pipeline or an end user. The [initial proposal](#) is looking at five wells, and will generate both Compressed Natural Gas (CNG) and Natural Gas Liquids (NGL) at the well, which can then be delivered.



Skid mounted compressors at a well, separating and compressing the gas. ([Bakken Express](#))

The company uses specialized tube containers to hold the CNG, and to move it to the customer.



Truck used to transport CNG (Bakken Express)

Should the fields be larger and further from a reliable pipeline (Yamal for some reason pops back into mind, and we'll get there) then it might be possible, as Sid Green has suggested, that the process might be carried one step further and the gas liquefied.

For the present, however, with the growth of CNG-powered vehicles, it is perhaps enough to envisage that before too long the carriers shown above might become a more familiar sight while pulling into the local filling station.

And with that thought, I wish you all a Happy Thanksgiving.



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