

## The AER Provides Useful Guidance in a New Pool Delineation Decision

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**Decision Commented On:** Proceeding 336 Application 1820596 Pool Delineation, Crossfield Basal Quartz C & V Pools, June 2, 2016, [2016 ABER 007](#)

Alberta's *Oil and Gas Conservation Act*, RSA 2000, c O-6 ([OGCA](#)) defines a pool as “(i) a natural underground reservoir containing or appearing to contain an accumulation of oil or gas, or both, separated or appearing to be separated from any other such accumulation”. Wells are identified as producing from particular pools and many provisions of the OGCA and the *Oil and Gas Conservation Rules*, Alta Reg 151/1971 ([OGCR](#)) turn on the question of whether or not a particular well is producing from a particular pool. For example, s 15(3) of the OGCA provides that “No person shall apply for a licence for a well for the purpose of obtaining production from the same pool as that from which another well is obtaining or capable of obtaining production in the same drilling spacing unit ...”.

In this particular case, the applicant, Bearspaw Petroleum Ltd wanted its well classified as producing from the Crossfield Basal Quartz C Pool (BQ C Pool) rather than the single well BQ V pool in order to be able to gain access to the gas processing plant operated by the C Pool working interest owners – if necessary by means of a common processor order under s 53 of the OGCA. Since it is usually necessary to establish drainage as a pre-condition to obtaining a common processor order (i.e. that H's well or wells are draining production from underneath B's leased lands) (see [Directive 065](#), Resources Applications for Oil and Gas Reservoirs, Unit 1, Equity) B first had to establish that its well was in the same pool as H's wells.

### The Factual Background

The applicant in this case, Bearspaw (B in the above), was the licensee of a well (102/11-24) in the single section, single well Crossfield Basal Quartz (BQ) V pool. Bearspaw applied under s 33 of the OGCA to have that well included in the multi section, multi well BQ C Pool. Section 33 provides as follows:

33(1) The Regulator may, by order,

...

(b) designate a pool by describing the surface area vertically above the pool and by naming the geological formation, member or zone in which the pool occurs or by some other method of identification that the Regulator in any case considers suitable;

The BQ C Pool working interest owners (Harvest Operations Corp., Nexen Crossfield Partnership, and Exxon Mobil Canada Energy – hereafter Harvest, and H in the above) objected to the reclassification on the basis that there was insufficient evidence of communication between the C pool and the reserves identified by Bearspaw's well.

## The AER's Decision

The Alberta Energy Regulator (AER) began its analysis by noting that as the applicant, Bearspaw had the burden of proof to establish, on the balance of probabilities, that its 102/11-24 well should be included in the BQ C Pool. It also recognized (at para 16) that:

There are no prescribed factors that the AER must take into account when considering an application made under section 33(1) of the *OGCA*. Previous pool delineation decisions made by the AER's predecessors have taken into account a variety of factors including geology, geochemistry, gas composition, pressure data, and other matters that may be broadly described as reservoir characteristics.

The Regulator used these factors to structure its decision.

Bearspaw and Harvest each offered an interpretation of the geology “that was broadly similar but different in detail” (at para 19). Both acknowledged that the region consisted of sands deposited in a complex fluvial system but while Harvest emphasised factors such as deeply incised fluvial channel systems that would contribute to the separation of pools in the reservoir, Bearspaw, while acknowledging the heterogeneity of the reservoir, preferred to interpret the reservoir as consisting of a braided fluvial system. The AER concluded that the evidence of the highly heterogeneous nature of the reservoir could not on its own support the application to redraw the boundaries of the BQ C Pool (at para 27). The AER reached a similar conclusion with respect to gas chemistry, noting (at para 29) that while there was a “marked similarity” with respect to most components of the gas produced from the BQ C wells and Bearspaw's well, there were also some differences.

In the end therefore the decision turned on the AER's assessment of the evidence with respect to observed pressures and reservoir characteristics. The challenge for Bearspaw here was that the pressure data did not track what would be expected in a homogeneous reservoir (i.e. – and this is my take on the technical issues – a clearly observed linear drop in pressure at the Bearspaw well resulting from production from the BQ C Pool wells). But that did not deter the AER since (at para 32) it was accepted that the reservoir was heterogeneous:

In a homogeneous pool or a pool that was more homogeneous than heterogeneous, we would expect the pressure in the 102/11-24 well to be much closer to that of the pressures in the C pool wells if the wells were in the same pool. However, we find that the BQ reservoir is more heterogeneous than homogeneous and so the fact that the initial static gradient pressure of the 102/11-24 well differs by more than we would expect in a homogeneous pool is not conclusive evidence of 102/11-24 being in the same or a separate pool.

While hardly a resounding endorsement of Bearspaw's position, the AER was further fortified in its conclusion that it should re-draw the boundaries by evidence from Harvest's own experts of the pressure performance of different wells already included in the BQ C Pool. This evidence tended to show that while some wells in the C Pool exhibited similar pressure/time characteristics, the 6-26 well (diagonally offsetting Bearspaw's well) did not exhibit the same performance but did show evidence of (at para 33) “limited communication”. This was further reinforced by evidence that demonstrated that the initial pressure in supposedly separate pools in the reservoir differed when one would have expected similar pressures in discrete pools in the same reservoir. This suggested communication (and therefore drainage) prior to “discovery” of a

“new” pool. Other evidence also suggested, on the balance of probabilities, gradual pressure decline at Bearspaw’s well consistent with depletion by wells in the BQ C pool (at para 45). In response Harvest contended that if the AER accepted this “ongoing measureable decline” as evidence of pressure communication, such communication was not “effective”. This appears to be an argument that drainage over a long period of time (*quaere* what is a long period of time) should be discounted.

In a very real sense therefore the issue for the AER boiled down to the question of how much communication was enough to conclude that the reserves should be treated as being in one and the same pool and therefore capable of being drained from any particular well in the pool. The AER emphasised that the test was not an economic test (at para 56) (“The monetary value of potential or lost production does not assist ...”) but a physical test (at para 57):

Neither party made arguments based on statutory interpretation, case law, or previous decisions of the regulator or its predecessors on this point. The *OGCA* does not require or establish thresholds of communication for the purposes of determining whether pools which are in fact physically connected can appear to be separate for the purposes of pool delineation. In light of the overall purposes of the *OGCA* set out in section 4, especially preventing waste and providing for efficient development of oil and gas resources of Alberta, the panel finds that for the purposes of determining whether an accumulation of oil or gas appears to be separate, communication is the ability of production from one or more wells in a reservoir to affect production by depleting reserves that might otherwise be produced from another well in the same reservoir.

Applying that test to the evidence before it the AER concluded as follows (at para 58):

... our interpretation of the BQ reservoir pressure evidence is that the 102/11-24 well is and has been experiencing drainage. [Whatever the scale of that drainage] ... the fact that pressures that reflect drainage are repeatedly measurable and ongoing is sufficient. The only producing wells in evidence before us that could affect production from the 102/11-24 well are the C pool wells. As a result, we conclude that on a balance of probabilities, the accumulation of gas in the BQ at the 102/11-24 well does not appear separate from that in the C pool.

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