Good to the last drop - Countess Upper Mannville 'D' Oil Pool, southern Alberta, Canada

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ABSTRACT

Countess UM (Glauconite Fm) 'D' oil pool (T.18, R.15w4) is the granddaddy of the prolific Countess-Alderson trend both in age (discovered 1967) and reserves (11 10e6m3 oil, 945 10e6m3 gas). This patriarch had an unusual problem for such a mature pool: uncharacteristically high recovery factors (65%) suggested more reserves than were mapped volumetrically. The purpose of this study was to determine the remaining 'prize' for D Pool, and to plan how to get it. Fortunately, D pool has lots of core control and production data, and it is blanketed by three 3D seismic surveys of varying vintages.

Core examination showed three important reservoir facies in D pool: a distributary channel, flanking crevasse splays, and tidal flats dissected by tidal creeks/channels. 3D seismic resolved the facies, and was essential to mapping. Seismic also contributed to our understanding of the pool by identifying an undrilled cross-cutting lithic channel, and a linear salt-solution feature.

Facies (flow-units), together with the irregular spatial distribution and performance of the injectors, control pool performance. 'Families' of communicating wells were identified by shared injector pressure pulse patterns. In hindsight, pool development could have been more effective if guided by knowledge of these flow units.

After simulation, recommendations were made for infills and re-completions combined with high capacity lifts. The anticipated incremental oil production was 220 10e3m3. And the missing reserves? The original oil/water contact for the main part of the pool had been underestimated. At least part of the 'extra' reserves were sitting right under our nose.