Countess West Case Study: Integrated Shallow and Deep Cretaceous Drilling

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Summary
In 1999, a pilot program was launched by PanCanadian to integrate the shallow and deep Cretaceous drilling programs on the fee lands, in an effort to make smaller pools (<0.5Bcf) more attractive economically. Through the integrated approach, coined as "Cheap & Deep", cost savings have been realized in the drilling, evaluation, and tie-in stages. Results from the Countess property team's year 2000 program will illustrate the effectiveness of this method.

Introduction
PanCanadian Petroleum has been exploring for and developing Cretaceous gas reserves on their fee lands in southern Alberta for about thirty years. The Palliser Business unit is responsible for these fee lands, commonly referred to as the Irrigation block. The traditional approach to exploiting the Cretaceous gas resources was to drill shallow gas development wells (Milk River, Medicine Hat and Second White Specks *~700m*) at four wells per section in large projects to increase efficiency and minimize costs. Deep Cretaceous gas (Viking to base Mannville *~1100m*) exploration was conducted independently from the shallow gas operations. The costs of traditional exploration for many deep gas plays were becoming economically prohibitive as pool sizes were decreasing. 3D seismic was hard to justify for such small pools using our conventional exploration drilling approach. A new approach was needed.

An Integrated Exploitation concept
In1999, a pilot drilling program was launched to integrate the shallow and deep Cretaceous gas drilling programs in an effort to address the cost issue as considerable reserves were remaining in smaller pools. The "Cheap & Deep" approach is a cost-driven exploitation strategy in which deep gas exploration is "piggy-backed" on shallow gas development drilling, by means of deepening one in four wells. The results of the pilot program showed that the 3D mega-bin seismic reduced risk by verifying the existence of small structures that would be missed with 2D seismic coverage, increased confidence in mapping narrow channel trends and increased confidence in the positioning of "deep" wells for multiple stacked targets.

Example
In the Countess 2000 "Cheap & Deep" program, two Townships were scoped for shallow gas potential, 3D mega-bin seismic surveys scheduled, and a project plan from surveying to facility tie-ins outlined. The land was split up into phases according to their state of readiness ie. seismic availability.

Results:
182 km^2 of seismic were shot and 260 wells were drilled with 55 deepened to the Mississippian. The success rate increased and the F&D cost dropped compared to previous years. Significant cost savings were realized in the drilling, evaluation and tie-in phases of the project. Additional cost savings and efficiencies were gained by implementing a shallow gas projectization model. Other teams in the Palliser Business Unit adopted the integrated shallow and deep approach and 1754 wells (up from 1303 in 1999) were drilled in 2000.