

A High-Impact Gas Discovery in a Maturing Basin (Western Canada)

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ABSTRACT:

EnCana's 2001 gas discovery at Ferrier, Alberta in the lower Mississippian Banff Formation was a significant new pool discovery in a long-active, competitive part of a maturing basin. Subsequent development of the pool has produced > 50 Bcf equivalent gas + condensate, at gross production rates of up to 100 mmcfe/day. The gas has been produced from dolomitized crinoidal grainstone reservoir, with up to 30% porosity and several hundred mD to several Darcies permeability.

Most drilling east of the foothills in western Canada pursues stratigraphic plays. Earlier drilling in the Ferrier area focused on subcrop plays in younger Mississippian carbonates, and on overlying Mesozoic clastic plays. A few deepened wells encountered dolomite porosity in the Banff formation, significantly down-dip from its subcrop edge, culminating in local development of three 20-30 Bcf pools in the 1990s. Further exploration drilling encountered only wet porosity or tight limestone.

We used a regional, interdisciplinary exploration approach to high-grade the most prospective play fairways. EnCana's discovery, the largest pool in this new play, was significantly down-dip from known wet porous trends. Our strategy focused on defining regional stratigraphic, structural and diagenetic fairways, in order to locate 3-D seismic surveys to best image the Banff porosity. Conventional amplitude and AVO analysis, coupled with a regional sequence stratigraphic model, have been critical in distinguishing Banff Formation shales from reservoir, and thus dramatically reducing the initially high reservoir risk on this play. We adjusted our exploration approach and business strategy as our understanding of other play risks, reserve distribution and play fairway evolved.