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### **Coalbed Methane Producibility in the Alberta Basin**

Coalbed methane producibility is strongly affected by formation water characteristics and coal permeability. The flow of formation waters in the Cretaceous-Tertiary succession in the Alberta basin is driven by gravity and erosional rebound, and is controlled by permeability, gas generation and capillary pressure to gas. Coal permeability, controlled by the stress regime, decreases west-southwestward with increasing burial depth, from several darcies in the shallow zones to millidarcies and less in the deep zones. Fractures are generally vertical and propagate southwest-northeastward along the direction of the maximum horizontal stress. Relatively high salinity and low bicarbonate content of formation waters in the deeper parts of the basin indicate that the coalbed methane in deep coal seams is most likely of thermogenic origin. The gas content of these coals is expected to be low, as the underpressuring caused by erosional rebound probably has drawn the gas out of coals into the adjacent sands. In contrast, the coalbed methane in shallower coals is probably of thermogenic and biogenic origin, as a result of both burial and meteoric water influx. These coals, although of low rank, may contain significant amounts of late-stage biogenic methane, and generally have good permeability. The formation waters in the shallow strata have low salinity, to the point of being considered potable. Thus, the shallower coal zones in the Alberta basin have the better prospects for coalbed methane producibility when one considers potential, permeability and produced water.