

## **Sequence and Reservoir Architecture of the Senate Pool, Southwestern Saskatchewan**

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### **ABSTRACT**

The Senate Pool of southwestern Saskatchewan is one of the most prolific Belle Fourche gas pools in Saskatchewan. Initial daily gas production averaged about 1000 mcf/well, with individual wells initial production exceeding 1800 mcf/day. Gas is hosted in late Cenomanian-early Turonian sandstone of the upper Belle Fourche Formation (Second White Specks Sandstone and Mosby/Upper Phillips Sandstone equivalents).

Detailed core and well log correlations show the reservoir sandstones were deposited during the early part of the Greenhorn transgression. The Senate Pool reservoir sandstones overly a major regional unconformity, which to the north and east truncates progressively older Belle Fourche strata. Reservoir sandstones were likely derived from transgressive reworking of unconformity related lowstand deposits, as indicated by a high content of plant and coal debris. Senate reservoir sandstones are sealed by calcareous shales and marlstones of the overlying Second White Specks Formation. The Senate pool is orientated NWW-SEE parallel with the orientation of the overlying Second White Specks shoreline, but oblique to the shoreline of underlying Belle Fourche strata. This genetic relationship between the Senate reservoir sandstones and the Greenhorn transgression opens the opportunity for similar transgressive reservoir sandstones to the north and east overlying the upper Belle Fourche regional unconformity and sealed by tight calcareous Second White Specks Shale deposits.