

Investigating the Productive Facies of the Turner Valley Formation

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On its 100th anniversary, Turner Valley continues to be an active oil and gas field, and hub of activity. Modern evaluation, drilling, completion and production techniques have pushed the Turner Valley field to its highest production rate in over 50 years.

Legacy Oil and Gas Inc. is drilling multi-lateral wells targeting three different reservoir zones within the Turner Valley Formation. The three distinct reservoir zones of the Upper Porous A, Upper Porous C, and Lower Porous present a combined 35-45m of reservoir within the 135m thick Turner Valley Formation/Rundle Group.

The Upper Porous reservoir at Turner Valley is a 30-33m thick dolostone package, which is divided informally into 3 units; the Upper Porous A, Upper Porous B and Upper Porous C. The Turner Valley Upper Porous is laterally extensive throughout the Turner Valley field and is bounded conformably by the overlying Mt Head limestone, and the tight Middle Dense dolostone/limestone below. The key reservoir targets are the 10-11m thick Upper Porous A, and the 10-12m thick Upper Porous C. They are comprised of a micro-crystalline and micro-sucrosic, dolomitic wackstone to packstone. The inter-crystalline and micro-vuggy porosity is typically in the 6-13% range, averaging ~9.5% with a permeability of 2-20 mD. In addition, fracture permeability can significantly increase permeability and greatly affect the productivity of the reservoir.

The Lower Porous has limited porosity developed across the northern half of township 19, but is prominent throughout the remainder of the Turner Valley field. Legacy's focus is in the southern half of the field where the Lower Porous reservoir is a 15-20m thick micro-crystalline dolomitic packstone to grainstone. Inter-crystalline and micro-vuggy porosity ranges from 6-15% and averages ~11.5% with a permeability of 2-20 mD. Intense fracturing also occurs and increases permeability of the Lower Porous reservoir. The reservoir zone is capped by a 40-45m thick tight limestone and chert beds of the Middle Dense and Middle Crystalline units. The Lower Porous overlies the tight limestone of the Shunda Formation (Black Lime) below.