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Characterization of the Horn River Basin Thermogenic Shale Gas Play in Northeastern BC

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The laterally equivalent shales of the Evie, Klua, Otter Park Member and Muskwa are collectively known as the Horn River Group (HRG). The Middle Devonian HRG consists of Givetian-Frasnian basinal shales stratigraphically equivalent to the reefal carbonates of the Elk Point and Beaverhill Lake groups. These shales form a 200m thick package of over-pressured, organic-rich, siliceous shales found at favorable depths between 2,400-2,700m. The HRG is deemed to be a prime shale gas reservoir based on the comprehensive data.

Areal extent of the play is vast. The Horn River Basin covers an area of approximately 1.28 million hectares (3.2 million acres) within the Fort Nelson/Northern Plains region. Total gas-in-place estimates range to as high as 500 trillion cubic feet.

Devon Canada has acquired over 234 sections in the play fairway and has drilled 4 vertical and 6 horizontal wells to date with encouraging results. Proposed development plans consist of an initial central project, which will be replicated throughout Devon's land holdings in the basin.

With the acquisition of Mitchell Energy in 2002, Devon Energy has been actively developing the huge Barnett Shale natural gas field using innovative technologies, including being the first to use horizontal wells to improve rate and recovery. As of 2008, Devon has drilled over 3,000 wells, of which over 1,000 wells are multi-frac horizontal wells increasing Devon's Barnett Shale production to more than 1 bcfe/d. Devon accounts for nearly a quarter of the field's overall daily production of more than 4 bcfe of natural gas equivalent.

Applying knowledge from the Barnett Shale experience, advanced multi-disciplinary evaluation techniques have been used to evaluate emerging shale gas plays since the conventional techniques are not adequate for these very tight shales. These techniques include specialized petrographic, petrophysical, geochemical, geomechanical and geophysical analyses, which allow better characterization of these complex and heterogeneous shales. Integration of these datasets is essential in mitigating structural and mineralogical heterogeneity which can influence drilling and completion efficiencies.