Introduction

The Alberta oil, gas, and liquids resource evaluation project has expanded from organic-rich shale plays to include tight sandstones and carbonates. Our goal is to determine the extent of each play area and estimate recoverable resources in place. Our method of evaluating these resources incorporates the concept of unitaryity at every stage in order to quantify the wider range of play types. The method is geared towards early appraisal of unconventional resources.

We are currently focusing on oil-rich tight sandstones and carbonates, especially high-permeability areas with existing oil and gas fields. Formations such as the Cardium sandstones rich, Viking and Glauconite, and the Devonian Slave Point and Slave Hills carbonate have become the most highly drilled plays in Alberta. Drilling for oil or natural gas liquids in organic-rich shale is currently on the Horizon. Devonian Formations, Devonian to Mississippian, and Bakken formations, and the shale-alterate sandstone-dominated Peace River Formation.

The next phase of the project is to determine technically recoverable resources for all plays. The first phase focuses the liquid-rich Devonian and Bakken formations.

Resource Evaluation of Shale and Siltstone

Dowden Organic-rich Shale

Montney Siltstone

Resource Evaluation of Tight Sandstone and Carbonate

Cardium Formation Sandstone Halo

Slave Point/Swan Hills Formation Tight Carbonate

Viking Formation Halo (Sandstone, Silt, Shale)

A Sampling of Prospective Unconventional Hydrocarbon-Rich Areas

Conclusion

The Alberta Geological Survey is continuing work to quantify resources in unconventional plays. Future work will include determining technically recoverable resources and dividing large units into more refined plays based on common fluids, reservoir properties, production characteristics, or other geological and engineering criteria. All resources estimates, data, maps, and shopfiles can be found on the website of the Alberta Geological Survey: www.ags.gov.ab.ca.