

## **New Geological-based Characterization of Plays for Oil Sand Deposits: Shift of Crude Bitumen Reserves in Alberta for a Future Play-Based, Risk-Weighted Resource and Probabilistic Reserves.**

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Crude bitumen from Alberta's oil sands comprises a significant contribution to the province's resources and reserves. The Alberta Energy Regulator annually publishes resource and reserve estimates for crude bitumen deposits in a reserves and supply/demand report (AER, 2014). Recovery of in-situ crude bitumen by primary and enhanced development (eg. cyclic steam stimulation and steam assisted gravity drainage) enable recovery of crude bitumen in an economical manner which has a dramatic impact on Alberta's current and future reserves. Recent recovery technologies lead to a regional resource and reserves reporting for all commodities, moving along a continuum from small, one-well conventional pools to regional geological-scale plays.

Re-evaluation of oil sands deposits with geological-scale play evaluation is considered for the Athabasca, Cold Lake and Peace River oil sands deposits. As this work is still in the preliminary stages, creation and evaluation of oil sands deposits to plays with a degree of geologic similarity for resource and reserves purposes is an ever dynamic process as more information and knowledge is gathered. A geological play can be defined as "a set of known or postulated oil and/or gas accumulations (pools and deposits) within a petroleum system sharing similar geological, geographic, and temporal properties, such as source rock, migration pathways, timing, trapping mechanism, and hydrocarbon type. The geographic limit of each play represents the limits of the geological elements that define a play" (AER, 2014).

For the Alberta's oil sands deposits, shifting to geological-scale play based understanding separates plays into reservoirs with distinct end-member types, which when combined with other socioeconomic factors, allow for site specific development of the different resources in a risk-weighted regulatory framework. The impact of assessing the deposits on a regional scale, with risk and probabilistic methods, improves the evaluation of broader scale issues such as surface infrastructure needs and impacts, well bore integrity, and environmental concerns regarding surface water, groundwater and air.

### **References**

Alberta Energy Regulator, 2014, Alberta's Energy Reserves 2013 and Supply/Demand Outlook 2014-2023, Alberta Energy Regulator, Statistical Series, ST98-2014, 289p. <http://www.aer.ca/data-and-publications/statistical-reports/st98>