



## **Western Canadian Crude Oil Production – an Overview Presentation to the NPRA Q&A Session – Austin, TX – October 11, 2007**

### **GLOSSARY**

**Bitumen:** Petroleum that exists in the semisolid or solid phase in natural deposits – it is the molasses-like substance which can comprise anywhere from 1% to 18% of the oil sand. *(Glossary of Oil Sands Terms)*

**Coking:** A process used to break down heavy oil molecules into lighter ones by removing the carbon that remains as a coke residue. *(Glossary of Oil Sands Terms)*

**Conventional Production:** Production of petroleum from subterranean reserves where the petroleum migrates from the formation to the well bore by natural down hole pressure, induced hydraulic pressure, or induced gas pressure. The petroleum is either released or lifted to the surface.

**Cyclic Steam Stimulation (CSS):** The use of steam injection to recover heavy oil. In this method, the well is put through cycles of steam injection, soak, and oil production. *(Tar Sands)*

**Diluent (aka Pentanes, Pentanes Plus, natural gasoline, gas condensate):** A Hydrocarbon fluid that is used to dilute heavy oil and reduce its viscosity for easier transport. *(Oilfield Glossary)*

**Directional drilling:** The science of drilling non-vertical wells, which can often allow for increased pipe exposure when vertical access is difficult or impossible. *(Directional Drilling)*

**Heavy Oil:** Dense, viscous oil, with a high proportion of bitumen, which is difficult to extract with conventional techniques and is more costly to refine than lighter petroleum. *(Glossary of Oil Sands Terms)*

**Hydrotreating:** A catalytic chemical process used to remove sulphur from refined petroleum products. *(Hydrotreater)*

**Hydrocracking:** The 'breaking' of large hydrocarbon molecules into smaller ones through the addition of hydrogen gas in the presence of a catalyst (as well as specific pressure and temperature conditions). *(How Oil Refining Works: Chemical Processing)*

**Mud motor:** A positive displacement drilling motor that uses hydraulic horsepower of the drilling fluid to drive the drill bit. Mud motors are used extensively in directional drilling operations. *(Oilfield Glossary)*

**Naphtha:** Any of various, often flammable, liquid hydrocarbon mixtures, typically C10 and smaller, used chiefly as solvents and diluents. *(Glossary of Oil Sands Terms)*



**Non-Conventional Production:** Production of petroleum reserves where the petroleum is too viscous to migrate to a well bore at formation temperatures and pressures or is “locked” into the producing formation (CBM). Non-conventional production employs techniques such as cyclic steam stimulation, steam assisted gravity drainage, and mining.

**Oil Sand:** Sand containing bitumen. (*Glossary of Oil Sands Terms*)

**Permeability (formation):** The permeability is the ability of a material to let a fluid flow through it when a hydraulic pressure is applied, and can be defined on a sample of rock by the Darcy law.

**Porosity (formation):** The porosity is the ratio between the volumes of the pores and that of the rock in a producing formation.

**Positive displacement pumps:** A pump that causes a liquid to move by trapping a fixed amount of fluid and then forcing, or displacing, the trapped volume into the discharge pipe. (*Pump*)

**Recoverable reserves:** Reserves that are recoverable under current technology and present and anticipated economic conditions, as proven by drilling, testing or production plus a judgment portion based on geological or geophysical data. (*CAPP Releases 2003 Petroleum Reserves Estimate*)

**Steam Assisted Gravity Drainage (SAGD):** A recovery technique for extracting of heavy oil or bitumen that involves drilling a pair of horizontal wells one above the other; one well is used for steam injection and the other for production. (*Glossary of Oil Sands Terms*)

**Steam Methane Reforming:** The process by which natural gas, which is composed mainly of methane, is reacted with steam in the presence of a catalyst to form hydrogen gas and carbon dioxide. (*Steam Reforming*)

**Strip ratio (mining):** The number of units of waste material in a surface mine that must be removed in order to extract one unit of product. (*Mining*)

**Synthetic Crude Oil:** A mixture of hydrocarbons, similar to crude oil, derived by upgrading bitumen from oil sands. (*Glossary of Oil Sands Terms*)

**Tailings:** A combination of water, sand, silt and fine clay particles that are a byproduct of removing the bitumen from the oil sand. (*Glossary of Oil Sands Terms*)

**Toe to Heel Air Injection (THAI):** A method that combines a vertical air injection well with a horizontal production well. The process ignites oil in the reservoir and creates a vertical wall of fire moving from the ‘toe’ of the horizontal well toward the ‘heel’, which burns the heavier oil components and drives the lighter components into the production well, where it is pumped



out. (*Tar Sands*)

**Total reserves:** All resources that have been discovered. Thus, 'total reserves' do not include resources estimated to exist but yet to be discovered. (*CAPP Releases 2003 Petroleum Reserves Estimate*)

**Upgrading:** The process of converting heavy oil or bitumen into synthetic crude oil. (*Glossary of Oil Sands Terms*)

**Vane submersible pumps:** A submersible pump is a pump which has a hermetically sealed motor close-coupled to the pump body. The whole assembly is submerged in the fluid to be pumped. (*Submersible Pump*)

**Vapour Extraction (VapEx):** A process similar to SAGD, but instead of steam, hydrocarbon solvents are injected into the upper well to dilute the bitumen and allow it to flow into the lower well. (*Tar Sands*)

**Viscosity:** The resistance to flow or "stickiness" of a fluid. (*Glossary of Oil Sands Terms*)

**WCSB (Western Canadian Sedimentary Basin):** A vast sedimentary basin underlying over fifty thousand square miles of Western Canada including southwestern Manitoba, southern Saskatchewan, Alberta, northeastern British Columbia, and the southwest corner of the Northwest Territories. The WCSB contains one of the world's largest reserves of petroleum and natural gas, while also possessing a huge reserve of coal. (*Western Canadian Sedimentary Basin*)

### Useful Links

"CAPP Releases 2003 Petroleum Reserves Estimate." Canadian Association of Petroleum Production.

[http://www.capp.ca/default.asp?V\\_DOC\\_ID=1098](http://www.capp.ca/default.asp?V_DOC_ID=1098)

"Directional Drilling." Wikipedia.

[http://en.wikipedia.org/wiki/Slant\\_drilling](http://en.wikipedia.org/wiki/Slant_drilling)

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[http://www.oilsandsdiscovery.com/oil\\_sands\\_story/pdfs/glossary.pdf](http://www.oilsandsdiscovery.com/oil_sands_story/pdfs/glossary.pdf)

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Respectfully,

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