

Changing the World's Perspective on Heavy Oil

Garnet Turcotte

Petrobank Energy and Resources Ltd., Calgary, AB, Canada.

The world's resources of heavy oil and bitumen are estimated to be over 8 Vtillion barrels. The challenge of recovering these reserves with in situ combustion technology is discussed. Earlier attempts at in situ combustion have been unsuccessful until the THAITM method was proposed. This process has been successfully computer simulated and tested in the laboratory. These results indicate the robustness of the process which has lead to field testing at the Whitesands pilot in the Athabasca oil sands.

The process has many benefits over earlier thermal technologies. Recovery is greatly enhanced, partly since the combustion temperatures exceed 350°C. The product is upgraded in situ which yields a higher price at delivery or at the refinery. Costs are reduced when compared to thermal processes needing large steam generators and fuel to operate. This process eliminates a need for NG and water and can provide its own electrical power. The produced gas stream contains sufficient NG to operate air compressors and to generate electrical power. The reduced footprint allows this design to be placed remotely to access heavy oil that is presently economically stranded.

Projected gas purchased for in situ projects in Alberta is expected to be over 350 BCF per year by 2016. This may be better used to generate electricity and to heat our homes by using this process. Resource estimates for Alberta's oil sands are over 1.7 TBO. Currently a small portion is being mined, while the larger in situ portion is actively being produced using thermal steam technology. The effectiveness of the popular SAGD and CSS processes is limited to the very thick pay on the eastern limits. These processes are challenged by pay thickness of less than 20m, and by reservoirs with shale laminae. However these thinner reservoirs represent a very large part of the resource. The best technology will be needed to turn these resources into reserves.

New technology is the key to unlocking the world's enormous heavy oil resources. The THAITM technology is a step change in this direction.