

## **The Canadian Arctic Petroleum Potential: What does the Next Decade Hold for Canada's Northern Resources?**

John Hogg\*  
MGM Energy Corp, Calgary, AB  
john.hogg@mgmenergy.com

and

Michael Enachescu  
MGM Energy Corp, Calgary, AB, Canada

### **Summary**

Arctic Canada is blessed with an immense untapped energy resources consisting of oil, natural gas, condensate, oil sands, oil shales and gas hydrates located in both the Northwest Territories and Nunavut. Cyclic exploration, for more than four decades, has produced significant discoveries, the majority of which have been concentrated in the Beaufort Mackenzie and Sverdrup basins. With a few exceptions these discoveries, some of them of world class, are currently stranded resources or experimental.

To date, in excess of 3.6 billion barrels of oil and 25 trillion cubic feet of gas resources await pipeline and/or tanker solutions for the hydrocarbons to be brought to southern markets.

The Late-Paleozoic to Mesozoic Sverdrup Basin situated in the Queen Elizabeth Islands and more than 200 km north of the famed Northwest Passage, was last explored during the mid-1980's. The work of the now defunct Panarctic Group discovered more than 14 trillion cubic feet of gas-in-place and 1.8 billion barrels of oil-in-place. The undiscovered potential in Sverdrup Basin is within structural/stratigraphic and subsalt plays along the western margin of the basin and off the Arctic Coastal Plain and Slope, northwest of the Sverdrup and Franklinian basins. The next decade should see exploration drilling resume and development of an LNG solution for the Drake Pont and Hecla gas fields and the beginning of exploration on the northwestern Arctic Coastal Plain Basin.

In the Mackenzie Delta, delays of the Mackenzie Gas Pipeline project have slowed the exploration efforts onshore. Future exploration in the next decade will continue onshore for additional pools that can be tied into the Mackenzie Valley Gas Project. Deeper exploration, below 3000 metres for geopressured deltaic hydrocarbon systems will also be carried out and will probably require a solution to allow for year round drilling activity.

Offshore in the Beaufort Sea, 100 km north of the Mackenzie Delta shoreline, only a limited amount of drilling has taken place in the last 20years, with the Devon Paktoa discovery announced last year. An increased interest in exploration began in 2007 with Imperial and ExxonMobil teaming up to purchasing an exploration block for a staggering \$585 Million work commitment to explore on a

205,000 ha license in 100 to 500 m water depth. With three more deepwater licenses nominated for the June, 2008 landsale deepwater oil exploration will be important through the next decade along with engineering solutions for the development of the larger shallow water discoveries at Amauligak, Issugnak and Paktoa.

Finally, on the unconventional side future exploration ten to twenty years out will involve the ability to produce shallow onshore natural gas hydrates, currently being tested at the Mallik Project on the Mackenzie Delta and the potential of a number of Mesozoic oil sands and Paleozoic oil shale opportunities within the Sverdrup and Franklinian basins of the Queen Elizabeth Islands.

Besides economical and technological factors, development of the stranded Arctic resources will be decided by political considerations mitigated by socio-environmental concerns to be resolved by federal, territorial and first nations governments.