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Don’t presume to know the answer before you start

Global Shale Hunters Have Insights to Share

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Falcon Oil and Gas, a Canadian company based in Denver, is a prime example that you don’t have to be a super-size company to play the international scene.

In fact, being the first to an area can help a smaller independent capture some potentially big prizes awaiting the drillbit.

A large part of it is having the right staff that thinks big and scouts far-flung opportunities ahead of its competitors, which is the case with Falcon.

Toss in a big dose of moxie, the ability to move quickly and the usual requisite greenbacks, and it can happen.

Falcon has focused on the exploration for new resource, or unconventional, oil and gas plays throughout the world for the past five years. Already, it has drilled wells in Hungary’s Mako Trough and Australia’s Beetaloo Basin and has acquired a large acreage position in the Karoo Basin in South Africa.

The three unconventional plays host hydrocarbons within shale source rocks and low permeability sandstones. They range in age from Cenozoic (Hungary) to Paleozoic (South Africa) to Mesoproterozoic (Australia).

Outcrops of Bessie Creek and Abner Sandstones in Australia’s Beetaloo Basin. *Photo courtesy of Falcon Oil and Gas Ltd.*

AAPG member Rod Wallis will give the key note talk for a session on shale oil and gas case studies at the AAPG International Conference and Exhibition, set this month in Milan, Italy.

Wallis’ talk, “Unconventional Insights From International Exploration of Resource Plays” will be presented at 9 a.m. Wednesday, Oct. 26, at the Milano Convention Centre.

The company was formed in Denver in 2005 by individuals looking at resource plays in North America. With international exploration experience, it didn’t take long to determine the company’s future.

“There was no one doing unconventional in the international forum at that time,” said AAPG member Rod Wallis, chief operating officer at Falcon.

“Our view was to go out in the world, find potential basins and get good acreage positions on those before everyone else started catching up,” Wallis said.

“Someone in Boulder had access to the licenses on a particular play in Hungary,” he noted. “This was the first play we could get licenses for and start exploring the unconventional play.”

Wells from Falcon's 245,000-acre production license there in the central Pannonian Basin have tested hydrocarbons from each formation present. These resources are a mere five kilometers from gas processing facilities that are seeking new supplies.

Going Global

Meanwhile, the Falcon staff and others were studying various other locales and identified the Beetaloo Basin in Australia's Northern Territory as their next target area following the acquisition in Hungary.

As a result, company subsidiary Falcon Australia licensed the entire Beetaloo Basin of more than seven million acres. Ryder Scott estimates 18 billion barrels of oil and 64 Tcf of natural gas here from both unconventional shales and conventional structures.

"We saw early on that this area has enormous potential," said AAPG member Tom Ahlbrandt, Falcon Exploration's recently retired VP of exploration.

Ahlbrandt, a past chair of the AAPG House of Delegates, has conducted an extensive study of the Beetaloo's terrain, seismic and data from 11 wells drilled by a subsidiary of mining company Rio Tinto between 1985 and 1994. The wells encountered kilometers of organic rich shale and cored much of it.

"While this is a small number of wells considering the sheer size of the area, it's sufficient to identify that the Beetaloo Basin is hydrocarbon-charged across a massive area," he emphasized.

The Australian deal was enhanced when Hess jumped into a joint venture with Falcon, covering two full exploration permits and a majority of the third. Hess is a leading explorer in the Bakken shale play and will bring years of experience to the Beetaloo area, according to Wallis.

In August 2009, Falcon latched on to a competitive acreage position in South Africa's Karoo Basin when it acquired a technical cooperation permit covering an area of 7.5 million acres in what Wallis dubbed "the most geographically strategic and geologically advantageous part of the basin."

At the time, it appeared to the group that no one else was looking at the Karoo.

As it turned out, the acquisition apparently happened in the nick of time for Falcon.

Within months of the deal, Shell plus a joint venture between Statoil, Chesapeake and South African petrochemicals giant Sasol and others applied for similar permits in the Karoo. Each entity requested large permit areas neighboring or surrounding Falcon's permit area.

Lessons Learned

Wallis summarized some of the facts and insights gained from Falcon's three acquired areas:

- The unconventional plays in Hungary provided lessons on kerogen kinetics and extreme overpressuring.
- The South Africa natural gas resource play has source rocks of very high thermal maturity yet has significant natural gas shows and potential.
- The Australian play is in one of the oldest – perhaps the oldest – petroleum systems in the world, with rocks dating 1.4 billion years. The petroleum systems here are challenging both in terms of age, kinetics (they're pre-vitrinite) and different mineralogy compared to Phanerozoic systems.

“Each play has unique mineralogies, lithologies and source rock attributes that defy standard maturation tables,” Wallis said. “Insights from these three areas are each unique and challenge many of the concepts of what is a ‘conventional’ unconventional play and the parameters by which they are evaluated.

“We know the hydrocarbons are in these systems but face many hurdles in understanding analogs and commerciality to deliver the prize,” he emphasized.

Wallis noted that so far, some things have gone right, and some haven’t.

“The main thing is,” he commented wryly, “don’t presume to know what the answer is before you start.”