Cultural and technical issues with development of unconventional reservoirs in Australia

Petroleum keynote paper

Dennis A. Cooke
Australian School of Petroleum
University of Adelaide
Level 2, Santos Petroleum Engineering Building via Gate 6, Frome Road
Adelaide, SA 5005
Australia
dennis.a.cooke@gmail.com

SUMMARY

Will development of unconventional reservoirs (tight gas, shale gas and CSG) in Australian proceed as in North America? What aspects of Australian development are more favorable? And what aspects will make development in Australia more difficult or expensive?

Australia currently has a more challenging cost structure than North America, but there are some distinct hidden advantages in Australia’s oil and gas permitting laws. Australia’s gas market appears to be much more attractive, at least for the short to mid-term. And the environmental issues are playing out in Australia in a very similar manner to North America.

Inside Australian companies developing unconventional resources, there is a debate over competing development philosophies that is largely hidden from public view; this is the debate between a low cost factory-like pattern drilling program versus an expensive up-front investment in geoscience data that will hopefully lead to a more economic drilling and completion solution.

Within the subsurface technical realm, a common mantra in North America now is “every shale gas play is different” – meaning that a technical solution for shale gas development in one basin may not work in another basin. With this view, shale gas development in Australia will not be any more or less challenging than trying to adapt Barnett shale gas solutions to the Eagle Ford shale (which is highly successful) or to the largely disappointing Woodford Shale. But there is one significant development challenge common to Australian basins that has not been experienced in North America: higher tectonic stress and higher differential stress. These higher stresses can lead to horizontal fracture stimulation treatments instead of the expected and more favorable vertical frac treatments.

While it is still too soon to pick the successful and unsuccessful unconventional plays in Australia, this talk will attempt to highlight the critical drivers in that success.