

Geothermal Exploration – Risks, Myths And Facts

Abstract of inaugural Tasmanian PESA talk, given by Gareth Cooper.



Abstract

The burgeoning, and relatively young, geothermal industry in Australia has rapidly grown from a single listed company in 2001 to over 33 geothermal exploration companies (10 listed on the ASX) in 2008, with more listings to come. The Australian geothermal industry now has a combined work program commitment of about \$800 MM over the next five years and listed companies have a combined market capitalisation value of almost \$1 B.

However, unlike the petroleum industry, the geothermal industry does not have a history of data on which to easily build a probabilistic understanding of risk. Whilst other sectors, particularly the petroleum industry, have long-established and robust systems for determining prospectivity based on probabilistic risk methods, no such formalised approach exists within the geothermal industry.

The geothermal potential of a region can only be thoroughly understood by undertaking a holistic geothermal systems assessment (GSA),

in much the same way that petroleum systems (or basin) analysis is undertaken for hydrocarbon exploration. The probability of encountering an economic geothermal resource is largely controlled by four related geological factors—heat flow (conductive and advective), thermal resistance (insulation), reservoir characteristics (including prevailing stress regime) and working fluid (water or steam).

This presentation addresses some of the key risks involved in geothermal exploration, common myths and misunderstandings about these risks and improved ways in which to quantify these risks.

Biography

Dr Gareth Cooper is a Senior Consultant with Hot Dry Rocks Pty Ltd, based in their Hobart office and manages a number of geothermal projects for clients around Australia and internationally.

He is a structural/petroleum geologist with a background in basin analysis,

seismic, interpretation, tectonics and time-temperature histories. He has specialised in the interpretation of organic and inorganic geological temperature indicators (bore-hole and surface) and their integration into the reconstruction of the thermal and structural histories of sedimentary basins. He studied the structural geology and thermochronology of the Otway Basin and graduated with a PhD from Monash University in 1996.

Gareth has worked as a senior geologist with Santos Ltd on petroleum exploration programs in the North West Shelf of Australia and has lectured earth science at La Trobe University. He has also worked as a development engineer and business analyst for Riotinto (aluminium smelting) and has a detailed knowledge of large-scale industrial electrolytic processes. He also has a diverse interest and experience in data analysis, quality systems, project management and the use of statistical tools such as Six Sigma for continuous/business improvement. ■