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## **Submission on the IPGT Exploration Paper**

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On behalf of the New Zealand Geothermal Association

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The New Zealand Geothermal Association (NZGA) would like to thank the International Partnership on Geothermal Technology (IPGT) for the opportunity to comment on the paper entitled "IPGT Exploration Whitepaper"<sup>1</sup>.

The NZGA is an independent, non-profit association that provides information on geothermal phenomena and utilisation for industry, government and educational organisations. In addition, the NZGA, as a member of the International Geothermal Association, contributes to the international exchange of information within the geothermal development industry. NZGA membership comprises participants, regulators, and interested parties within the geothermal community. It totals 314 members currently.

New Zealand has now announced its intention to join the IPGT. NZGA will work with industry and with Government to assist this process.

### **General comments**

With keen worldwide interest in obtaining geothermal energy in a wide range of locations and geological settings, which requires a variety of "new" sources, exploration is a key issue for the industry - particularly the need to progress robust exploration models for more than just the now well known and understood volcanic geothermal models. e.g. HSA, single fracture systems, as well as EGS etc.

Generally speaking this paper is well put together. A few specific comments are made below:

### **Specific Comments**

Although the term "resources" is used extensively, it is not defined. The question of what constitutes a resource needs to be defined. In particular, it needs to be related to the economics of development.

A related issue is resource quantification. Recently Australia and Canada have produced reporting codes for geothermal reserves and resources, which have been endorsed by the

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<sup>1</sup>

[http://internationalgeothermal.org/Working\\_Groups/Documents/IPGT%20Exploration%20White%20Paper%20DRAFT%20June,%202011.pdf](http://internationalgeothermal.org/Working_Groups/Documents/IPGT%20Exploration%20White%20Paper%20DRAFT%20June,%202011.pdf)

IGA, but unfortunately the USGS has recently put forward a different set of definitions which are being used for the national inventory. We regard this as an important topic that could perhaps fall under the IPGT umbrella.

In appendix 3, at the "exploration" stage probably too much weight is given to seismics for hydrothermal systems and not enough to well fluid chemistry in both types. Following on from that, materials research for EGS is a priority as the Geodynamics well failure example shows. This is relevant to exploration wells and production wells. In fact well design generally may be something where NZ can make a contribution based on our extensive geothermal drilling experience and maintenance of a defined Standard which is more specific than the approach in most other countries.

We are not sure why rock taxonomy is seen as a high priority topic for EGS. One would have thought that was all well established.

In Appendix 3, greater weight should be given to fluid-rock interaction and geochemical models in both types of system.

Linked geomechanical and numerical simulation reservoir modelling should be a research priority in both types. Some useful work has been done on this for the Tauhara geothermal field as an example.

There may need to be some discussion around risk mitigation strategies in an exploration programme to enable progressive learning through a project.

Once again, thank you for the opportunity to comment and we trust you will find these comments helpful.

Yours faithfully

A handwritten signature in black ink, appearing to read 'B R White', followed by a long horizontal line extending to the right.

Brian White  
Executive Officer  
New Zealand Geothermal Association

Note: I would like to thank Jim Lawless for assembling these comments, and Peter Barnett for his contribution.