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New Zealand Geothermal Association (NZGA) News - 25 February 2014

Dear Members and friends, welcome to this issue of the NZGA Newsletter!

President's Report

Welcome to the February 2014 New Zealand Geothermal Association Newsletter.

Wow! WGC 2015 has attracted over 1700 abstracts. This bodes very well for a strong attendance in Melbourne in April 2015, and this being a terrific opportunity to show-case New Zealand's geothermal strengths.

If you know of people travelling to the conference encourage them to ticket their airfares to New Zealand **VIA** Melbourne. If they arrive in New Zealand on the 25th / 26th April and depart from New Zealand in early to mid May they will have been able to participate in the field trips in New Zealand and to tour around independently enjoying a pleasant 2015 New Zealand Autumn.

There are four fully organised field trips in New Zealand as part of the WGC conference through the period 26th April to 2nd May 2015.

- Powerful Landscapes.
- Glorious Geothermal Energy
- Northern Escape
- Lord of the Rings and Hobbits Middle Earth Adventure

The first two will be based out of Rotorua whilst the other two start in Auckland. As a thought, Central Otago will be stunning to visit after these field trips conclude.

Well done if you have had a WGC abstract accepted -- please now turn your attention to writing the manuscript or preparing the materials for your poster. Rotorua District held a great Direct Heat Workshop in February and there will be an above ground technologies workshop organised by the Heavy Engineering Research Association of New Zealand (HERA) and NZGA which will be advertised shortly. It is great to see the interest in direct geothermal use and geothermal technologies. Get involved.

Read on for contributions from fellow NZGA members.

Brian Carey

President New Zealand Geothermal Association.

February 2014

WHAT'S IN THIS ISSUE?

- *Welcome*
- *WGC 2015 Planning - UPDATE*
- *Lead Story - Obituaries*
- *Special Interest Groups*
- *Geothermal News*
- *EO and Board Update*
- *Events/Training; Industry Papers*
- *Membership*

World Geothermal Congress 2015 Planning - UPDATE

Good progress continues to be made across all fronts of the World Geothermal Congress 2015, including further work around New Zealand field trips and short courses. Opportunity to submit abstracts closed on 31 January 2014, by which time the organisers had received 1748 abstracts (about 500 more than the previous Bali record!). There is clearly strong interest in the Congress and so now Congress organisers will have the challenge of trying to accommodate this level of interest.

We point out the WGC2015 will be a great opportunity to showcase New Zealand developments, companies and skills. Opportunities exist to raise profile through sponsorship and at the exhibition space. If you would like to know more about this, contact Drew Whait (dwhait@arinex.com.au), or Andy Blair (ablair@gns.cri.nz) who will be helping to coordinate a New Zealand approach.



LEAD STORY: Obituaries

BASIL STILWELL 8 Nov 1921 – 14 Sep 2013



Basil Stilwell - Basil graduated BE from Canterbury University in 1945. After working in various civil engineering roles, including restoring infrastructure in Malaya after WWII and hydro investigations on the Whanganui River, he arrived at the Ministry of Works' Wairakei Geothermal Project in December 1963 and was initially a senior engineer in charge of drilling operations. He was promoted to Geothermal Projects Engineer in 1972, having moved into the role some years earlier, with the retirement of his predecessor, Lindsay Fooks (snr).

That period was a quiet time for geothermal development in New Zealand with stage 2 of Wairakei having been completed in 1963 and the power station in a stable operational phase. Further geothermal investigations were generally in abeyance, but with some wells being drilled at Kawerau and in investigation fields such as Orakei Korako, Rotokawa, Reporoa and Tauhara. Activity picked up after the first oil shock of 1973, which increased interest in New Zealand's geothermal development: further wells were then drilled in these investigation fields and at Kawerau. These were done under Basil's watch.

Although geothermal activity was quiet in New Zealand, the country has become known for its practical expertise in geothermal development. Overseas interest was increasing with many people visiting Wairakei. Basil was adept at hosting such people. Later the New Zealand government took this up by contributing geothermal expertise to the United Nations Development Programme in developing countries. One of these was El Salvador in Central America. Basil spent a year in El Salvador, from Dec 1969 to Dec 1970, as the drilling project manager. Basil's family went with him for much of that time.

Basil had developed a deep knowledge of geothermal development, a knowledge that he was happy to pass on, both to staff, to New Zealand consultants and to overseas countries. The stint in El Salvador was part of that. Basil put considerable effort into the Foreign Aid Programme in the late 1970s. In 1980, Basil went to Costa Rica to advise on geothermal development there. He had previously advised the Nicaraguan government.

He has had two papers published in international journals, on geothermal drilling and on subsidence in geothermal fields. Basil was also involved in the Geothermal Institute in Auckland from its inception in 1979. The Institute had been set up to train science and engineering graduates from developing countries, using New Zealand's expertise in geothermal development. Initially the lecturers were from the MWD and the DSIR, as they were known at the time. Basil was one of those lecturers. He held the liaison role between the MWD and the Institute until his retirement in 1982.

Basil was always very enthusiastic about things geothermal and promoted its development in a number of ways, including fronting an informational film in the early 1970s.

He was always a gentleman and one of geothermal's pioneers, the work of which we rely on today. He is survived by his wife Cath, son Gordon and daughter Shona.

[Thanks to Andy Bloomer for these words]

Post Script: Basil Stilwell was a Life Member of the NZGA, having been a pioneer of geothermal development and a supporter of our internationally acclaimed Geothermal Institute.

JOHN G WHEBLE 26 June 1946 – 2 February 2014



Graduating as a gas engineer in 1964, John worked for William Press in the UK, a job that took him around the UK, Europe, the USA and eventually Australia. It was his next move to New Zealand that eventually led him to geothermal. Working for Wilkins and Davies, a New Zealand engineering company, he was Team Leader for the bidding on the Ohaaki cooling tower, which they eventually won.

A little later John became more involved in the geothermal field, joining with DesignPower as General Manager International, including the geothermal engineering group working on projects in Indonesia, New Zealand and the Philippines. In this role he worked on DesignPower's proposals for the 640 MW Leyte Geothermal Project (the world's largest single development to date) and subsequently secured the Lenders' Engineer position for DesignPower in support of Magma Power Company's development of the Malitbog Power Plant, part of the Leyte Project.

John then moved to Magma Nusantara Limited (Wayang Windu) in Indonesia where he became President Director of the company. In this role he oversaw the development of what many consider one of the best geothermal power plants in

the world, doing it as the first fast track geothermal project, financially closing just 18 months after the commencement of drilling.

He then became Regional Director of AsiaPower Developments Ltd where he took the Kamojang 4 & 5 projects to the point of financial close before they were postponed in 1997. He also started what was to become a long relationship with the Seulawah Agam geothermal project, forming a JV to develop this project before it too was postponed in 1997.

After “retiring” for the first time, John continued to work on geothermal projects including Kamojang 4 & 5 and advising PERTAMINA and PLN.

With the 2004 Boxing Day Tsunami, John felt that he wanted to help as best he could. This led him to go to Aceh to help PLN look at how they would rebuild the electricity network in the devastated region. This was all done at his own cost and eventually led to his reintroduction to the Seulawah Agam geothermal project. He became the Project Director for Seulawah Agam and oversaw the development of the Pre-Feasibility Study, Preliminary Survey and Baseline Environmental Study on behalf of PLN.

John then “retired” a second time, working part time to advise on geothermal projects around the world.

In 2010 John became the team leader for a consortium comprising Origin Energy, Tata Power and Supraco that won the rights to develop the Sorik Marapi Geothermal Power project in Indonesia. This was to be his last geothermal project, with John retiring for the final time in 2012.

John’s long experience in developing geothermal projects led him to have a deep understanding of the complexities involved and the solutions needed to develop these projects. John is survived by his wife Patricia, sons Philip and Matthew and daughter Claire.

[Thanks to Philip Wheble for these words]

Post Script: John Wheble was a member of the NZGA, and last year was the leader of the Service Providers and Finance interest group.

| NZGA Special Interest Groups – Update until February 2014 | Selling NZ geothermal skills overseas |
|---|---|
| <p>Activity in the Special Interest Groups has been quiet in recent months but the Tourism Interest Group has been making good progress with the development of a New Zealand Geothermal Utilisation Map. The interactive web map shows the utilisation of New Zealand’s abundant geothermal resources by use type.</p> <p>The SGGG Group has reported back on the 2013 special sessions at the NZGW for structural geology and geomechanics. The highlight this year was the keynote by Colleen Barton, Senior Technical Advisor and co-Founder of GeoMechanics International Inc. For full details on the activities of the NZ Geothermal Interest Groups see here.</p> | <p>New Zealand geothermal expertise is renowned the world over. As part of Geothermal New Zealand, several organisations collaborate to strengthen this reputation. NZ Trade and Enterprise (NZTE) also promote these geothermal skills online and at international events. On the NZTE website, the following information is presented on the key players in the sector ranging from consulting engineers, financiers and research. See here for more details.</p> |

Geothermal Direct Heat for Commercial Applications - Workshop – report back

Earlier this month, Grow Rotorua hosted a Bay of Connections Energy Strategy workshop in Rotorua structured to provide a *how-to-guide on geothermal energy use for heat supply*. The workshop had a high turnout of land owners and business from within the Central North Island. The one day workshop was followed by a field trip to visit a range of direct heat applications such as Arataki Honey, PlentyFlora and Waikite Valley Thermal pools. The attendees concluded the workshop with a discussion to identify the barriers to greater installation of direct heat and possible ways of addressing those barriers.

Dr John Lund from Klamath Falls, Oregon – a sister city of Rotorua led the workshop supported by local practitioners covering all aspects that land owners or business must consider when investigating and progressing through consenting to construction of direct geothermal facilities.

Dr Lund was able to show the wide range of possible applications available to landowners and business. He also reinforced the benefits of Rotorua and Klamath Falls working together to explore the different ways of extracting the geothermal heat.

Attendees at the workshop gained a wide appreciation of the opportunities and many of them saw how they could use geothermal heat for new business ventures.

Presentations from the event are available here - www.bayofconnections.com/geothermal

Update from AGGAT – Dec 2013

Above Ground Geothermal & Allied Technologies (AGGAT) is a HERA-led co-operative research platform to support the development of Organic Rankine Cycle (ORC) plant manufactured for the low enthalpy, geothermal and waste heat market. Find the latest update (at Dec 2013) [here](#).

NZ: PhD scholarship in Geothermal Reservoir Engineering



The University of Auckland has published an advertisement for a full PhD scholarship in Geothermal Reservoir Engineering with the research topic “*Reinjection of Non Condensable Gases in Geothermal Reservoirs*”. More [here](#).

GEOHERMAL NEWS

New Zealand News

Geothermal makes TV Doco - Local geothermal experts Mike Dunstall, Contact Energy General Manager Geothermal Resources and Development and Greg Bignall, GNS Senior Scientist and Head of Department Geothermal Science, featured in Prime TV’s newest documentary, Keeping it Pure, on Sunday 26 January at 8.30pm. More [here](#).

Indonesia grows geothermal capacity with New Zealand education - Geothermal giant PT Pertamina Geothermal has been working with UniServices to up-skill their scientists and engineers as a part of a regional capacity building. More [here](#). In addition to this, AECOM is also working directly with PGE in a mentoring and support role. This PGE capacity building programme has been funded through NZ Aid money directed through the World Bank.

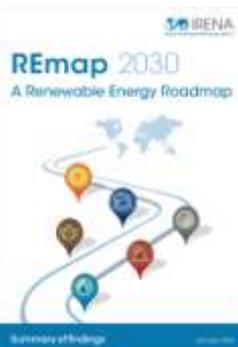
New Funding for Geothermal - GNS Science has won new government funding for two innovative geothermal energy projects that will help to make geothermal energy developments more efficient and more attractive to investors. More [here](#).

Iwi say more funding for geothermal - A Rotorua iwi group says the Bay of Plenty Regional Council should consider allowing more exploitation of geothermal energy, after signs of life in a geyser that has lain dormant for 34 years. More [here](#).

Updates on Key Projects:

- **Te Mihi** – After some initial delays, the Te Mihi station is now being commissioned. The station successfully ran at 159MW during a 40week reliability test in December, but tests found the hot well pumps in the two units were vibrating when in use. Contact Energy expects its Te Mihi geothermal power plant will be operating at full capacity before July. More details will follow in later newsletters.
- **Ngatamariki** - New Zealand Opens ‘World’s Largest’ Binary Geothermal Power Plant - Back in October 2013 Ngatamariki was successfully commissioned, Read more [here](#) M and [here](#). Ngatamariki also took out top honours at the World GeoPower Markets Awards 2013, held in Amsterdam, winning the international award for Best Power Project. Read more [here](#).
- **Te Ahi o Maui** - Eastland Group and its partners should know in the middle of next month whether resource consents will be granted for the Te Ahi o Maui geothermal project. Eastland are seeking a 35-year consent to take, and reinject, 15,000 tonnes of geothermal fluid a day from the Kawerau field.
- **Ngawha expansion planned by 2020** - Top Energy is planning to expand its Ngawha geothermal electricity production by up to 100 MW and expects the extra generation to start coming online from 2020. The company says it is likely to apply for its first resource consent this year, in order to expand the existing 25 MW station by a further 50 MW in two stages. The total 100 MW will likely be generated by four individual 25 MW Ormat binary power stations sourced from Israel, which were also used in the power station commissioned at Ngawha in 2008.

Report suggests geothermal energy can grow six-fold and produce 67 GW by 2030



The global renewable energy share can reach and exceed 30 per cent by 2030 at no extra cost, the **International Renewable Energy Agency (IRENA)** says in a report, “**REmap 2030 (PDF)**,” that was published in early January 2014.

The study maps out a pathway for doubling the share of renewable energy in the global energy mix based on the technologies that are available today. Energy efficiency and improved energy access can advance the share of renewables in the global energy mix up to 36 per cent, according to the new report.

The report measures the current capacity of geothermal energy as 11 GW and suggests that this should increase to 25 GW by 2020 and 67 GW by 2030.

2013 Geothermal Power: International Market Overview, Sept 2013

The 2013 Geothermal Power: International Market Overview is a follow-up on the reports by the Geothermal Energy Association (USA) released in 2012 & 2010. This report is largely based upon observations made in the press and other public media, along with personal communications with GEA staff. Given this, it is intended to give a view of the world geothermal market in 2013, and is not meant to replace more thorough analysis. Although geothermal energy production includes heat as well as power, this report primarily describes recent development in the power market. Access the [report](#). See also this [‘end of year’](#) wrap up article from the GEA.



GTO Releases Annual Recap of 2013 Key Activities and Milestones

The US Department of Energy's Geothermal Technology Office (GTO) has released its Annual Report, covering milestones and key achievements in the Office's portfolio in calendar year 2013. It's available [online](#). In 2013, the Office saw its first commercial, grid-connected EGS demonstration project, which opens the door to increased industry-wide adoption of in-field and near-field EGS activities. Additional achievements included developing new tools, sensors, and technologies, and strategic initiatives in exploration techniques, permitting processes, and a deliberate data collection and management system. For more details on the 2013 Report, see [here](#). See also [here](#) for details on the \$3 million funding package to identify new geothermal resources.

International News

Habanero Pilot Plant Trial Complete - Geodynamics's 1MW Habanero Pilot Plant Trial has been completed with the company saying results exceeded expectations. The 'hot rocks' operation near Innamincka in South Australia's Cooper Basin will now be shut-down and suspended while the results of the trial are analysed. The plant operated for 160 days following commissioning on April 30, and prior to closure was operating at 19kg/s and 215 degrees production well-head temperature. The test results indicate the potential for Habanero 4 to flow between 40-50 kg/s at full drawdown in open flow mode, the company said. Read more [here](#). See also this [EcoGeneration report \(Feb 2014\) presenting an Update on Australia's Geothermal Industry](#).

The Status of Global Geothermal Power Development - Analyst Alexander Richter looks at the project pipeline for global geothermal projects - According to a recent study, there are 806 geothermal power projects in development around the world with a combined capacity of 23,313 megawatts, with the majority located in Asia, North America and Africa. [Interestingly around 8,000 megawatts of these developments are in Indonesia]. More details [here](#).

International support for geothermal energy in developing countries took a leap forward - International support for geothermal energy in developing countries took a leap forward on October 28, 2013 when the Clean Technology Fund (CTF), a program of the Climate Investment Funds (CIF), approved \$115 million for the Utility Scale Renewable Energy Program. This program will initially focus on facilitating private sector engagement in geothermal resource validation through test drilling - the first, and riskiest, step in geothermal energy development. The proposal for the program was developed by the World Bank's Energy Sector Management Assistance Program (ESMAP) in collaboration with the African Development Bank (AfDB), the Asian Development Bank (ADB), the European Bank for Reconstruction and Development (EBRD), and the Inter-American Development Bank (IDB)-all implementing partners of the \$7.6 billion CIF, catalyzing clean technology and climate resilience investments in 48 developing and middle income countries worldwide. More details [here](#).

Raising Capital for Investment - Icelandic power developer Reykjavik Geothermal (RG) has raised a substantial portion of the equity stake for the first tranche of a \$4 billion geothermal project in Ethiopia. More details [here](#).

Japan to commission largest geothermal plant in 15 years - A 2 MW geothermal plant being commissioned by Chuo Electric Power in April will be Japan's largest steam field development project in 15 years. The development is the first of five similar sized projects planned by Tokyo-based Chuo Electric. Geothermal development is gathering pace in Japan as the government seeks to encourage more renewable developments following the Fukushima earthquake of 2011, which shut the power station there and toughened public attitudes to nuclear safety. Orix and Toshiba are also planning small-scale geothermal developments to take advantage of generous tariff supports available for renewable power projects under 15 MW in capacity. Idemitsu Kosan and Inpex are among a 10-member consortium planning a 270 MW geothermal project within the Bandai-Asahi National Park in Fukushima prefecture. Production is expected there post-2020.

Board and Executive Officer Update

- New Board members starting duties from the AGM (held 18 November 2013 in Rotorua) are Andrew Rae (GNS Science), Mark Green (Contact Energy), John Burnell (GNS Science) and Katherine Luketina (Waikato Regional Council – stepping from an Observer role).
- The following people stepped down from Board service at the AGM and are thanked for their work on behalf of the geothermal industry: Juliet Newson, Paul Bixley, Peter Barnett, Rick Smith and Warwick Kissling. Paul Bixley will continue as an Observer to help wrap up the NZS 2403 activities. Juliet Newson is retained as an Observer in a liaison role with the Board of the International Geothermal Association, but ceases all other NZGA Board activities. We congratulate Juliet on her election as President of the IGA.
- Jane Brotheridge (NZGA Secretary) has led a process of bylaw revision. Amended bylaws can be found here: <http://www.nzgeothermal.org.nz/Publications/About/NZGA-Bylaws-November2013.pdf>
- The NZGA website is updated regularly and receives around 100 visits per day (about 75% are international visitors).
- In October 2013, Brian Carey, Brian White and Andy Blair met with Hon Simon Bridges, Minister of Energy and Resources. This has led to closer cooperation with MBIE officials.
- The NZ Geothermal Workshop was held in conjunction with the International Applied Geochemistry Symposium in Rotorua 18-21 November 2013. NZGA arranged an industry update session for the last day of the Workshop.
- WGC 2015 continues to be a focus of the NZGA as a means of raising the profile of New Zealand companies on the international stage, with good progress across many fronts. The Executive Officer and some Board members will attend a combined Organising Committee/Steering Committee meeting in Melbourne in March to progress this further. It is now highly likely that some government support will come, especially with a view to effective marketing of New Zealand skills.
- Geothermal Regulations and NZS 2403: The industry committee under Paul Bixley is currently wrapping up a draft of a technically revised Code of Practice for Deep Geothermal Drilling NZS2403. This draft will then pass to a Standards New Zealand committee that will finalise this for public consultation mid-year. Separate meetings have been held with MBIE staff around general health and safety regulation of the geothermal industry. Binary cycle plant may get caught up with “major hazards” regulations, but significant amendment of the existing Geothermal Energy Regulations may still be delayed for several years. NZGA will continue to monitor this closely.

NZGA Membership Details

Welcome to the following new members:

- R Archer – Auckland University
- M Shanmugasundaram – Milltex Engineers
- S Livesay - Hawkins
- M Buckland – McConnell Dowell
- D Pattinson – McConnell Dowell
- D Anderson – MB Century
- T Stuart – GNS Science

- **See who our Corporate and Institutional Members are [here](#).**
- **More details on membership benefits, fees and application forms are available here on the NZGA [web-site](#).**
- **NZGA operates 8 Interest Groups – find out how you can get involved [here](#).**

NZGA relies on memberships fees in order to exist and to promote and provide services to the sector. The support of our members is much appreciated. Thank you. Note that NZGA has now invoiced for Individual and Corporate subs with about 2/3rds of payments already made. Thank you.

Event Report Back - 26th International Applied Geochemistry Symposium 2013 - Incorporating the 35th NZ Geothermal Workshop. Rotorua NZ

The 26th International Applied Geochemistry Symposium (IAGS) of the Association of Applied Geochemists (AAG) took place in Rotorua, New Zealand, from 18-21 November 2013. The meeting incorporated the 35th New Zealand Geothermal Workshop (NZGW) and focused on applied geochemistry, new ways of analysis, interpretation of data and geochemistry applied to environmentally sustainable mineral and geothermal exploration and development. A technical programme, special sessions, workshops, and pre- and post-symposium excursions provided a comprehensive programme.

The Symposium was jointly organised by the AAG, NZGW and GNS Science. Support also came from professionals in the universities, mineral and geothermal industries, and their service providers. NZGA ran a session on the last day of the Workshop in which several companies and institutions outlined work done over the last year and coming up. These industry updates can be found here http://www.nzgeothermal.org.nz/workshop_papers.html

NZGA ACTION PLAN

The NZGA Action Plan is a living document that sets out the workplan and activities for the year ahead.

As progress is made so the Plan reflects this.

Read the latest version of the ACTION PLAN [HERE](#) (last updated Nov 2013.)

NZGA RESOURCES (on the NZGA web-site)

[NZGA Workshop Papers](#)

(@ Dec 2013)

[NZGA Media Statements](#)

(@ Aug 2013)

[NZ Country Update 2012](#)

[NZGA Submissions](#)

(@ March 2013)

EVENTS – 2014 and beyond...

| | |
|------------------------|---|
| 31 Mar - 2 Apr | 5th European Geothermal PhD Day |
| Location | Institute of Applied Geosciences, Darmstadt, Germany |
| Details: | <i>The European Geothermal PhD Day (EGPD)</i> , is a student-organised conference for PhD students working in all fields of science related to geothermal research. |
| More: | Conference flyer ; EGPD website |
| Mid 2014 | NZGA / HERA Seminar – more details soon |
| 19-25 Apr 2015: | World Geothermal Congress 2015 : Australia - New Zealand |
| Venue | Melbourne Convention and Exhibition Centre |
| Theme: | <i>"Views from Down Under - Geothermal in Perspective"</i> |
| More: | WGC 2015 flyer ; WGC website |

EDUCATION/TRAINING - 2014



The Institute of Earth Science and Engineering of the University of Auckland is coordinating another series of geothermal short courses for 2014 as follows:

| | | |
|----------------------------------|---------------|--|
| Geothermal Reservoir Engineering | 3 – 7 March | Dr Sadiq Zarrouk, Geothermal Institute |
| Geothermal Geochemistry | 12 – 14 March | Dr Stuart Simmons |
| Geothermal Geosciences | 17 – 21 March | Dr Stuart Simmons |
| Geothermal Energy in Action | 24 – 26 March | Dr Bridget Lynne, IESE |

For course details and to register attendance please refer [here](#).

Enquiries may be directed to [Anna Booth](#).

NZGA produces this Newsletter primarily for the benefit of its members and also for the wider public. We are happy for the material in the newsletter to be used but ask that the NZGA Newsletter be acknowledged as the source. We are always keen to promote our members and their project activities – please contact us with your news, vacancies or useful materials.

KEEP IN TOUCH –

**If your contact details change –
let us know here - [Executive Officer](#)**