



International  
Partnership for  
Geothermal  
Technology

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# The International Partnership for Geothermal Technology

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Presentation at GEORG annual meeting, Reykjavík, May 20<sup>th</sup> 2010

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# Charter



The IPGT Charter was signed August 28, 2008 in Keflavik, Iceland.

Original Signatories:

- The Government of Australia
- The Republic of Iceland
- The United States of America

Switzerland has applied and been accepted for membership in the IPGT and will sign the Charter in mid-2010.



From left to right:

Australian Ambassador to Denmark and Iceland Sharyn Minahan, Icelandic Minister of Industry, Energy and Tourism Ossur Skarphedinsson and US Department of Energy Acting Assistant Secretary Katharine Fredriksen

# Steering Committee



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## United States

**Jay Nathwani** Chairman

*Acting Program Manager*

US Department of Energy Geothermal  
Technologies Program

**Karl Gawell**

*Executive Director*

Geothermal Energy Association

## Iceland

**Gudni A Jóhannesson**

*Director General*

Orkustofnun National Energy Authority

**Ólafur G Flóvenz**

*General Director*

ISOR

## Australia

**Steve Ewings**

*Assistant Manager Energy Technology and  
Research, Department of Resources*

Energy and Tourism, Energy & Environment  
Division

**Adrian Williams**

*Consultant*

Geodynamics

The Secretariat is administered by the  
Department of Energy Geothermal  
Technologies Program (US)

**Alexandra Pressman**

**Ella Thodal**

# Goals



The IPGT is working to bring about widespread, international commercialization of advanced geothermal technologies, relying on the joint expertise of geothermal leaders throughout the world.

## IPGT Goals:

- Accelerate the development of advanced geothermal technologies
- Exchange of information on best practices and lessons learned
- Accelerate research, development and demonstration
- Identify and avoid blind alleys
- Maximize our efforts, limit duplication



# Original ideas on priority topic areas: One-page summaries

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An initial workshop was held in Reykjavik in September 2008 followed by another at Nesjavellir, Iceland in May 2009.

Ideas on topics were collected and discussed by large group of experts.

Following list of topics were defined and one page summary written for each topic.

1. Zonal Isolation.
2. Open Hole Packers.
3. HT Downhole Tools.
4. Stimulation.
5. Seismic Risk.
6. Downhole Pumps.
7. Surface Pumping Systems.
8. Rock-Fluid Interactions.
9. Supercritical CO<sub>2</sub> Geothermal Siphon.
10. Air Cooling.
11. Cut O&M costs, Benchmarks.
12. Database.
13. Lexicon.
14. Faster ROP.
15. Temporary Sealing.
16. Revolutionary Drilling.

# Working Groups



The IPGT selected six high-priority topic areas and established Working Groups for each of them . Each Working Group is led by a team of three Conveners, one from each country.

Priority Topic Areas (conveners in the parenthesis):

- Lower Cost Drilling ([Dean Hindle AU](#) Doug Blankenship US [Sverrir Þórhallsson](#))
- Zonal Isolation and Packers ([Sverrir Þórhallsson](#) & [Ed Wood US](#))
- High Temperature Tools (Randy Normann US, [Ragnar Ásmundsson](#), [Holger Lubotzki AU](#))
- Reservoir Modeling ([Jónas Ketilsson](#), Rob Podgorney US & [Peter Dowd AU](#))
- Stimulation Procedures ([Jean-Claude Roegiers US](#) Rob Jeffrey AU & [Guðni Axelsson](#))
- Exploration Technologies ([Joel Renner US](#), [Gylfi Páll Hersir](#) & [Mike Sandiford AU](#))

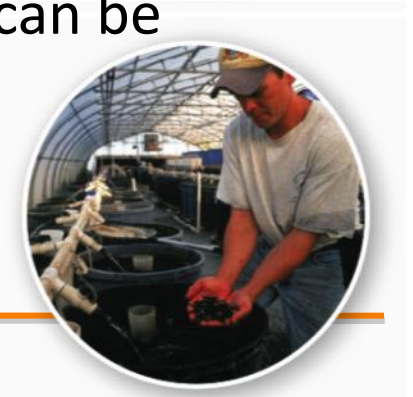
# Working Groups

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Responsibilities for the Working Group Conveners include:

- Selection of additional Working Group members. Now up to 15 experts have been selected for each group.
- Drafting of a white paper to identify the Working Group objectives and proposing a draft research plan to address barriers and identify areas where joint research can be undertaken



# Joint Activities



The IPGT promotes joint research and workshops as part of its objectives. Some of the work to date includes:

## Joint Workshops

- August 2008: Identified priorities for member countries, laid groundwork for IPGT collaboration (Reykjavik, Iceland)
- May 2009: Discussion of reservoir stimulation and exploration technology needs (Nesjavellir, Iceland)
- February 2010: Reservoir stimulation case study (Melbourne, Australia)

## Joint Research

A US-Iceland project *Advanced 3D Geophysical Imaging Technologies for Geothermal Resource Characterization*, by Lawrence Berkeley National Lab, MIT, ISOR and Reykjavik University will begin in mid-2010. **The Icelandic participation is supported by GEORG**





# Workshop on induced seismicity in Reykjavik in October 2010



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- A multipurpose geothermal event will be in Reykjavik in first week of October 2010:
    - The general meeting of the GEISER project
    - A joint European – US workshop on induced seismicity in geothermal systems
    - Meeting of the IEA-GIA committee
    - Meeting of IPGT steering committee

# US – Iceland bilateral agreement is in preparation

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The purpose of the Agreement is to

- establish a framework for mutually beneficial cooperation between the Parties in the development of advanced, cost-effective geothermal energy technologies;
  - to accelerate the availability of these technologies internationally;
  - to identify and address wider issues relating to geothermal energy, thereby advancing the common interests of the Parties and industries in their respective countries.
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# US – Iceland bilateral agreement: Areas of Cooperation



1. Exchange of scientific and technical information, documentation and research results as a means of enhancing and accelerating advanced geothermal development in both Parties' countries;
2. Promotion of appropriate technical, political, financial and regulatory environments for the development and deployment of geothermal technologies;
3. Joint projects on advanced geothermal technologies, including cooperative activities with members of the International Partnership for Geothermal Technology (IPGT);
4. Exchange of expert reviewers for the Parties' geothermal technology programs;
5. Development and use of international geothermal test sites and facilities;
6. Additional areas of scientific collaboration as the Parties may agree to

# US – Iceland bilateral agreement will cover:



1. Joint research projects through collaborative activities between technical personnel and research centers;
2. Exchange best practices on accelerated geothermal deployment;
3. Identify key obstacles to achieving improved technological capacity;
4. Identify and work toward international codes and standards;
5. Conduct, and/or jointly participate in, meetings, seminars and conferences;
6. Exchange instrumentation, equipment, and materials necessary for carrying out joint projects;
7. Exchange technical specialists , students and academics.
8. Conduct, and/or jointly participate in educational programs;

# White papers are now being prepared:

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## High Temperature Downhole Tools

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Recommendations for Enhanced and  
Supercritical Geothermal Systems

Ragnar Ásmundsson, ÍSOR  
Randy Normann, Perma Works  
Holger Lubotzki, LQC Group  
Bill Livesay, Livesay Consultants

4/22/2010

Revision 1 (Draft)



LQC Group



LIVESAY  
CONSULTANTS

# Membership



The IPGT strives to be as inclusive as possible. In order to join the IPGT, a country must demonstrate the following (at a minimum):

- Active government involvement and financial support for geothermal technology research and development
- Active geothermal companies in a position to further the development of geothermal technologies located in that country

To apply for membership, countries may submit a letter and documentation to the Secretariat from the appropriate government agency describing how the country meets the criteria above and how the country will contribute to the IPGT.





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# Thank You

For more information, please visit:

[www.internationalgeothermal.org](http://www.internationalgeothermal.org)

Or contact:

[Alexandra.Pressman@ee.doe.gov](mailto:Alexandra.Pressman@ee.doe.gov)

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