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National Geothermal Academy
34th Annual Meeting Highlights: Part 2
Membership Benefits and Renewal Form

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National Geothermal Academy in Reno to Train Future Geothermal Workforce

The National Geothermal Academy (NGA)—a consortium of the University of Nevada at Reno (UNR), Stanford, MIT, Cornell, Oregon Institute for Technology, and the University of Utah, all focusing on the training of future workers—has been established at UNR’s Redfield Campus.

In May 2010, the US Department of Energy awarded \$1.2 million to UNR to develop the NGA. For many, the NGA represents a new opportunity for geothermal energy development.

For the past 20 years, the schools in the consortium have all been at the leading edge of geothermal research and education.

The NGA’s creation comes at a crucial time. Geothermal development was slow this past two decades, despite the renewed interest in developing our nation’s renewable energy resources. The \$400 million allocated toward geothermal energy in 2009 as part of the American Recovery and Reinvestment Act (ARRA or stimulus bill) was the spark that ignited unprecedented industry activity. Currently, there are 3,086 megawatts of installed capacity produced by 77 plants in nine states around the



University of Nevada at Reno, Redfield Campus.

National Geothermal Academy



Student sampling at Columbus Marsh.

US. It has been reported that 188 projects in 15 states (86 in Nevada) are in consideration or under development according to the Geothermal Energy Association.

The stimulus bill also set aside \$1.15 billion for green collar training. As the interest in geothermal energy expands and momentum gains, one of the challenges the geothermal industry has will be to attract and develop quality workers.

NGA is designed to meet this need and plans to be involved in setting a national standard for geothermal energy training, which can be modeled by regional programs around the country.

Reno was selected by the DOE, because the city has been successful in attracting many businesses to the region for both energy production and research. It was noted that Reno is also the only major city in the US producing enough geothermal energy to supply its entire residential load.

According to Jason Geddes at the City of Reno's Green Team, "with the right industry support, the NGA will keep geothermal energy moving forward to ensure a healthy and evolving future as one of the world's most reliable renewable energies."

The NGA will offer eight one-week intensive courses beginning in the summer of 2011. The program will be worth six credits. About 50 students are anticipated to participate in the first session.

The 2011 program website, <http://www.unr.edu/geothermal/NGA.htm>, lists the following:

The National Geothermal Academy will be an 8-week intensive summer course in all aspects of geothermal energy development and utilization. The course will be offered for either undergraduate or graduate credit and individual weeks will also be offered as professional development through Continuing Education. Funding from DOE will defray room and board costs, and possibly tuition costs, for up to 20 students to attend from across the nation. Local students not needing housing will be included at tuition cost. Additional non-local students will be accommodated with course fees to cover residency and meals in the dorms for the 8-week session.

Module 1: Introduction to Geothermal Energy Utilization, Jefferson Tester, Cornell University, June 20-24 — This introductory course presents the important fundamentals of geothermal resource exploitation. Attendees will gain a general understanding of the basic steps in the economic exploitation of geothermal resources, including financing, exploration, drilling, plant design and construction, plant operation and maintenance, and geothermal field management, as well as the importance of public outreach and acceptance to maximize returns from the resource.

Module 2: Public Policy, Permitting & Environmental Issues, Mark Demuth, WCRM, Inc., June 20-24 — This course provides an in-depth view of public policy matters that must be mastered in pursuing a geothermal resource, with a focus on the practical steps to be followed for



Collecting steam at Brady Hot Springs.

National Geothermal Academy

success. This course will be valuable to people in management and legal positions engaged in, or planning to engage in geothermal programs.

Module 3: Resource Assessment and Exploration, Dave Blackwell, Southern Methodist University, & Joe Moore, EGI/University of Utah, June 27-July 8 — Exploration is a topic of primary importance for the economic viability of geothermal energy enterprises, providing critical information on the location, size and exploitation potential of the resource. This module will present exploration methodologies and tools used to find and characterize geothermal resources, interpretation of their results and how they are applied to form a synthesis of potential reservoir characteristics. Due the breadth and nature of the detailed information, specialists in a wide array of topics will provide information on all aspects used in exploration and resource assessment.

Module 4: Drilling Engineering, Bill Livesay, Livesay Consultants, & Lou Capuano, Thermasource, Inc., July 11-15 — This module will cover the development and planning process that is done for each well, with the intent to expose students to the decisions that are made and how other geothermal resource decisions interact with the drilling design, planning and operations. This is particularly important where aerated drilling fluids, directional drilling and troublesome cementing problems are involved. The module will also cover the drilling aspects of the development of an engineered geothermal system power complex. The information presented should enable the participant to have a basic knowledge of how various aspects of the resource are affected by decisions made: resource, drilling, power plant and project economics. Non-drilling personnel, who are involved in other aspects of geothermal resource development, will gain an appreciation for the complexities of exploration and development drilling required to produce the resource.

Module 5: Reservoir Engineering, Roland Horne, Stanford University, July 18-22 — This week covers the basic principles of reservoir

engineering and management. Reservoir characterization methods are presented as well as the elements of managing the resource.

Module 6: Power Plant Design and Construction, Ronald DiPippo, University of Massachusetts Dartmouth, & Brian Anderson, West Virginia University, July 25-29 — This course covers the fundamentals of geothermal power plant design and construction.

Module 7: Direct Use and Heat Pumps, Tonya Boyd, Geo-Heat Center, Oregon Institute of Technology, & John Lund, National Renewable Energy Laboratory, August 1-5 [This module will be conducted on the OIT campus in Klamath Falls, Oregon in order to facilitate site visits to various plants using these technologies. Depart UNR on July 31 and return on August 6] — This course covers the basic principles relating to the direct use applications of geothermal energy, geothermal heat pumps and small-scale power generation.

Module 8: Geothermal Business Principles & Development, Instructor to be determined, August 8-12, The economic viability and speed of completion of geothermal programs are dependent on how they are organized and managed. Many geothermal projects take far longer because of significant environmental, financing, permitting, transmission, or property-acquisition issues that arise and must be resolved. Delay increases project expenses, impedes economic development and imposes social costs. The economics of a project are examined in detail in order to better predict profitability. This course describes the key components in planning, design, permitting, construction, transmission, and related activities that reduce project delays. Attendees will gain an understanding of how to improve the project's managerial, organizational, and operational effectiveness to facilitate timely project delivery. Project management, environmental and legal issues, government and electric utility interactions will be covered.

All courses, except Module 7 will be offered on the University of Nevada, Reno *Redfield Campus* in Reno, NV.

Applications for Admission and Financial Assistance will be available in January 2011. ■