Department of Energy Awards up to $38 Million to Advance Technology and Reduce Cost of Geothermal Energy

Brookhaven National Laboratory

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The U.S. Department of Energy (DOE) issued the following news release on September 8, 2011. Brookhaven Lab Chemist Toshifumi Sugama has been selected to receive up to $600,000 in DOE funding for two projects to accelerate geothermal energy technologies. One project involves the development of a cost-effective, multi-functional cement composite that can mitigate the corrosion of carbon steel casings at high hydrothermal temperatures. In another, Sugama and his team will optimize a self-degradable sealer that can prevent the loss of a substantial amount of circulated water-based drilling fluid. The sealer disintegrates, which is necessary for the hydraulic-stimulation process to access geothermal energy. DOE News Media Contact: (202) 586-4940.

Lawrence-Berkeley National Laboratory (Berkeley, CA): up to $540,000 This project will predict changes in fluid flow through fractures and improve current methods of estimating geothermal reservoir temperatures to enable subsurface imaging and reduce exploration costs.

Lawrence Livermore National Security, LLC (Livermore, CA): up to $890,000 This project will reduce resource exploration costs by developing a processing technique for a variety of geophysical and geological parameters.

Paulsson, Inc. (Woodland Hills, CA): up to $3.0 million This project will advance the collection of seismic data from stimulation zones to accurately characterize enhanced geothermal system reservoirs.

Potter Drilling, Inc. (Redwood City, CA): up to $1.5 million This project will adapt hydrothermal spallation drilling technology to increase the effective diameter of wells and increase their production capacity.

Stanford University (Stanford, CA): up to $680,000 This project will develop geophysical approaches to detect and evaluate fractures to better characterize geothermal reservoirs and optimize their performance.

Colorado School of Mines (Golden, CO): up to $1.1 million This project will link reservoir temperature estimates with mineral analysis to aid discovery of unknown geothermal resources.

Colorado School of Mines (Golden, CO): up to $630,000 This project will develop an

advanced processing framework for survey data to reduce the cost of geothermal exploration.

University of Hawaii (Honolulu, HI): up to $980,000 This project will develop a new geophysical inversion and analysis procedure to map the subsurface structure of a geothermal prospect and lower exploration costs.

Idaho National Laboratory (Idaho Falls, ID): up to $1.0 million This project will seek to achieve increased accuracy in predicting reservoir temperatures in order to lower exploration costs.

FastCAP Systems Corporation (Boston, MA): up to $2.2 million This project will enable controlled pressure and directional drilling in high-temperature geothermal exploration wells to facilitate more economical identification of geothermal resources.

Applied Technology Associates (Albuquerque, NM): up to $1.5 million This project will use an innovative sensor to facilitate simultaneous measurement of multiple wave velocities and directions to improve reservoir observation and monitoring.

Los Alamos National Laboratory (Los Alamos, NM): up to $1.0 million This project will allow for more accurate imaging of seismic data through the development of an advanced processing technique.

Los Alamos National Laboratory (Los Alamos, NM): up to $1.6 million This project will reduce the cost of geothermal energy by developing an innovative method that combines high pressure impulses and thermal gradients to drill through hard rock.

Sandia National Laboratories (Albuquerque, NM): up to $400,000 This project will develop an environmentally-friendly material that will temporarily isolate sections of the wellbore to control zones of injection and production at high temperatures and pressures, lowering completion costs.

Sandia National Laboratories (Albuquerque, NM): up to $340,000 This project will assess the feasibility of using state-of-the-art sensors and components to accurately determine the direction and orientation of a geothermal well in real-time in order to lower drilling costs.

University of Nevada (Reno, NV): up to $380,000 This project will use an advanced method to identify faults and characterize reservoirs resulting in lower exploration costs.

Brookhaven National Laboratory (Upton, NY): up to $300,000 This project will develop a multi-functional cement to protect geothermal wellbores against common geothermal failure risks such as thermal cycling, thermal expansion, and corrosion.

Brookhaven National Laboratory (Upton, NY): up to $300,000 This project will optimize a temporary sealer compound to address fluid loss encountered while drilling.

Clean Tech Innovations, LLC (Bartlesville, OK): up to $500,000 This project will modify a gel that can tolerate the high temperatures and high pressures encountered in geothermal wells to provide isolation of lost circulation zones and reduce drilling costs.

Impact Technologies (Tulsa, OK): up to $1.0 million This project will examine the feasibility of employing intense radiation technology to drill and seal off the walls of geothermal wells in order to reduce drilling costs.

National Energy Technology Laboratory (Albany, OR): up to $770,000 This project will enable efficient reservoir creation by monitoring enhanced geothermal system reservoirs before and after stimulation using recently developed advanced geophysical techniques combined with geologic and geochemical analyses.

Atlas Copco Secoroc LLC (Ft. Loudon, PA): up to $3.4 million This project will enable drilling at the high temperatures encountered in deep geothermal wells.

National Energy Technology Laboratory (Pittsburgh, PA): up to $1.0 million This project will reduce the cost of reservoir development using an integrated experimental and modeling program to anticipate geochemical reactions in enhanced geothermal system processes.

Temple University (Philadelphia, PA): up to $1.5 million This project will employ new techniques to better interpret the shape, volume and evolution of a stimulated reservoir and optimize its performance.

Baker Hughes Oilfield Operations, Inc. (Houston, TX): up to $5.0 million This project will develop downhole systems for continuous real-time data logging of high temperature wells to allow for more efficient drilling and reduced well costs.

Bell Geospace, Inc. (Houston, TX): up to $1.0 million This project will test two airborne geophysical survey technologies with the potential to lower geothermal exploration costs.

Geothermal Expandables, LLC (Houston, TX): up to $1.5 million This project will improve upon existing casing designs by increasing the effective diameter of production wells allowing for additional fluid flow and power production.

University of Texas (Austin, TX): up to $990,000 This project will develop seismic data processing technologies to locate fractures in a more cost effective manner and lower exploration costs.

University of Texas (Austin, TX): up to $700,000 This project will develop and test an innovative integrated exploration method to increase exploration drilling success rates.

University of Utah (Salt Lake City, UT): up to $990,000 This project will combine several geophysical techniques into an integrative method for identifying blind, high

temperature geothermal resources, thereby lowering exploration costs.

University of Utah (Salt Lake City, UT): up to $1.0 million This project will improve the prediction of permeability and temperature at depth and lower exploration costs.

DOE's Office of Energy Efficiency and Renewable Energy [3] invests in clean energy technologies that strengthen the economy, protect the environment, and reduce America's dependence on foreign oil. Learn more about DOE's effort to establish geothermal energy as an economically competitive contributor [4] to the U.S. energy supply.

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