PAUL BROPHY
President, EGS Inc.

SUMMARY

Paul formed EGS, Inc. in 1995 and has been the President and Principal Geologist since that time. Prior to forming EGS, Mr. Brophy was a Senior Associate with the engineering consultant firm of Dames & Moore from 1990 until 1995. Mr. Brophy spent nearly 10 years as District Geologist for California Energy Company in Santa Rosa, California providing services to the Coso Geothermal project and numerous other developments within the U.S. Paul earned an M.S. in Mining and Exploration from the University of N. Queensland, Australia, a M.S. degree in Geophysics from the University of Leeds, England, and a B.S. in Geology from the University of London, England. Mr. Brophy has served as President and Vice President of the Geothermal Resources Council, and sits on the Board of Directors of the International Geothermal Association and the Geysers Geothermal Association. Mr. Brophy has over 35 years of experience in geologic and resource assessment services.

WORK HISTORY AND WORK EXPERIENCE

EGS Inc.	1995 to Present	President
Dames & Moore	1990 to 1995	Senior Associate
Harding Lawson Associates	1988 to 1990	Associate
California Energy Co.	1981 to 1988	District Geologist, Coso
Northgate Minerals (Rep. of Ireland)	1979 to 1981	Senior Geologist
Ghana National Manganese Corp.(Ghana)	1977 to 1979	Senior Geologist
Consolidated GoldFields (Tasmania)	1970 to 1977	Senior Exploration Geologist

Selected Projects:

- Technical Expert – USTDA-funded project to provide training to Indonesian stakeholders for the development of national geothermal resources. Client: BCS, Inc./USTDA (Current)
- Project Manager – Exploration of the geothermal potential of Montserrat, Caribbean funded by the Department for International Development (UK). Client: Government of Montserrat. (2009)
- Consultant – Providing technical consulting services to the Government of St. Kitts and Nevis, Caribbean for geothermal development. Client: Nevis Island Administration/CARICOM (Current)
- Expert Witness – Legal representation related to an eminent domain lawsuit at a major geothermal site in New Mexico, U.S. Client: U.S. Department of Justice. (2008 – 2009)
- Exploration Manager - Geothermal evaluation of St. Vincent, Caribbean including management of structural and volcanology, geophysical and geochemical studies, access and drill site selection. Client: Growth Capital Holdings (1997).

- Consultant – Third-party review of research projects completed under the U.S. Geothermal Technologies Program, including ARRA funding for accelerated geothermal development. Client: U.S. Department of Energy. (various times 2000 – 2010)

- Project Manager – Responsible for all geothermal resource development for re-commissioning of the Bottle Rock Power Plant, The Geysers, California. Including re-opening of abandoned production wells, drilling of production and injection wells, generation of 3-D subsurface models and interaction with regulatory agencies: Client: US Renewable Group. (1999 – 2008)

- Project Manager - Third party review for ten geothermal sites in the Republic of Philippines for the Philippine National Oil Co. Volcanic and structural setting of hydrothermal systems, resource evaluation and establishment of development strategy options. Funded by the U.S. Trade and Development Program. Client: Philippine National Oil Company (1992- 1995)

- Consultant - Permitting 24 MT sites at USGS/Stanford Parkfield Drilling Project, Monterey County. Client: AOA Geophysics, Houston (2006)

- Consultant - Preparation of EIS Initial Study for the SAFOD Drilling Project, Parkfield Client: USGS

- Program Manager - World Bank-funded technology transfer program to assess the environmental impacts of accelerated geothermal energy development in the Philippines. Established guidelines for the Philippines Department of Energy for oversight and compliance of environmental regulations. Client: Philippine Department of Energy (1995)

- Task Manager - Geothermal resources, geology and hydrology impacts for the Alvord (Pueblo Valley), 23MWe geothermal project EIS. Issues include resource development impacts to endangered species and changes to geothermal surface features. Client: U.S. Bureau of Land Management

- Project Manager - Assessment of hydrologic and geochemical impacts for EIS to support federal funding of Kalina cycle demonstration power plant at Steamboat Hot Springs, Nevada. Assessment included analysis of impacts to hot springs and other surface manifestations and to reservoir depletion of adjacent leases. Client; U.S. DOE

- Project Manager for resource assessment and economic feasibility of a geothermal district heating system. Studies include geologic mapping, geochemical sampling, and resource characterization. Economic and technical feasibility study with detailed heat load analysis and identification of potential end-users. Final phase includes construction and testing of two 1500-foot exploration wells. Client: City of Loma Linda

- Project Manager for seismic reflection survey (Vibroseis) to locate hidden faults in alluvial sequences to identify potential geothermal fluid migration pathways. Total of three line miles in urban setting. Data acquisition and processing by subcontractors. Client; City of Loma Linda

- Litigation support associated with waste management practices for major geothermal developer (Imperial Valley, California). Client: Morrison & Foerster

- Technical Manager for evaluation of geothermal resources at Twentynine Palms, California, and detailed resource testing program including two to three production (>1000 feet) wells. Client: City of Twentynine Palms

- Technical Manager for siting, drilling and testing of a low temperature geothermal well for a Sonoma County destination resort. Client; Sonoma Mission Inn.

- Project Manager for the siting, design, permitting, construction and development of water supply wells for mineral water bottling facility. Client: Crystal Geyser

- Project Manager for resource exploration program including geologic studies, analyses of well and spring samples, interpretation of electrical, self-potential, and mercury soil surveys. Client: Plumas County Community Development.

- District Geologist responsible for management of geologic, geophysical and geochemical activities related to development of 240MW, high temperature geothermal resources at Coso Hot Springs form 1981 to 1988. California.

- Presentations to investor groups and senior management, US Navy personnel and regulatory agencies concerning all aspects of project development for the Coso Project, California.

- Investigation into non-condensable gas concentrations of springs and seeps as a guide to drill target selection in dry steam geothermal field. The Geysers, California

- Geothermal resource evaluation of projects in the Cascade Range, including Newberry Crater, Medicine Lake, Crater Lake, Three Sisters, Santiam Pass, Mt Baker and Mt. Shasta.

- Research into characterization of geothermal resources using magnetotelluric and controlled source audiomagnetotelluric systems. Research project with Geophysics Dept., University of Oregon.

- Litigation support and expert testimony for a number of hydrocarbon releases where cost recovery, environmental liability and identification of responsible parties are primary issues.

EDUCATION

M.S. (1976), Mining and Exploration Geology, University of Northern Queensland, Australia.
M.S. (1970), Geophysics, University of Leeds, England.
B.S. (1969), Geology, University of London, England.

PROFESSIONAL REGISTRATIONS AND AFFILIATIONS

Professional Geologist, California
Certified Hydrogeologist, California

Director and Past President, Geothermal Resources Council (GRC)
Director, Geysers Geothermal Association (GGA)
Director and Chairman of Finance Committee, International Geothermal Association (IGA)

TECHNICAL PUBLICATIONS

Brophy, P., M. Lippmann, P. Dobson, and B. Poux (Eds.), (2010), The Geysers Geothermal Field, Update 1990 – 2010, Geothermal Resources Council, Special Report No. 20 (237 pgs)

Brophy, P., Goff, S., & Goff, F. (2004). Environmental effects of geothermal power. In *Encyclopedia of Life support Systems (EOLSS)*. Web site: http://www.eolss.net

Brophy, P. (2003). Geothermal exploration of La Soufriere, St Vincent, West Indies. *Transactions of the Geothermal Resources Council.*

Brophy, P. (1997). Environmental advantages to the utilization of geothermal energy. *Renewable Energy,* 10(2/3), 367-377.

Brophy, P. (1995). Environmental advantages for the development of geothermal resources for electrical power generation. *Presented to the United Nations Seminar on the Role of New and Renewable Sources of Energy in the Sustainable Development of Latin America and the Caribbean: Santiago, Chile.*

Brophy, P. (1995). Environmental and institutional framework for development of geothermal energy. *Presented to the Conference on Renewable Energy: Lima, Peru.*

Brophy, P. (1993). Environmental and regulatory constraints to development of low temperature geothermal system in California, USA. *Presented at International Symposium on Problems of Geothermal Energy Development: St. Petersburg, Russia.*

Brophy, P. (1990). Prospecting for hot water in a sedimentary basin: Assessment of the low-temperature geothermal resource near Loma Linda, California. *Transactions of the Geothermal Resources Council, 14,* 1465-1477.

Brophy, P., & Waff, H. (1986). Self-potential gradients, Coso geothermal field, California. *Transactions of the Geothermal Resources Council, 10,* 211-216.

Brophy, P. (1985). Structure of the Coso geothermal field. *Presented to the Coso Magma Workshop: U.S. Naval Weapons Center, China Lake, California.*

Brophy, P. (1984). Structural analysis of pre-Cenozoic rocks, Coso Geothermal Area, California. *Transactions of the Geothermal Resources Council, 8,* 409-415.

PERSONAL INFORMATION

Citizenship – British (US Resident Alien)
Languages – English, French
Countries Worked In - Great Britain, Australia, New Guinea, Ghana, Ivory Coast, Republic of Eire, Republic of Philippines, Indonesia, Chile, Peru, Costa Rica, Honduras, St Vincent, St Kitts and Nevis, Montserrat, and the United States.