GeothermEx
A Schlumberger Company

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JAMES R. MCNITT

PRESENT POSITION

Senior Exploration Advisor to GeothermEx, Inc.

EXPERTISE

Dr. McNitt has worked continuously in geothermal exploration and field development since 1959. He joined GeothermEx in 1980, and held the position of Vice President of Exploration until 1996. His specialties are:

- Management of exploration programs
- Synthesis of geologic, geochemical and geophysical exploration data
- Geologic evaluation of geothermal projects
- Supervision of drilling geothermal wells
- Development of hydrogeologic models of geothermal systems

EDUCATION

Ph.D. in Geology, University of California (Berkeley), 1961

M.A. in Geology, University of Illinois, 1954

B.S. in Geology, Notre Dame University, 1953

Speaks and reads French and Spanish

EXPERIENCE

Vice President of Exploration, GeothermEx, Inc., 1980-1996

Dr. McNitt managed all geothermal exploration and hydrogeologic modeling performed by GeothermEx, supervising GeothermEx's staff of geologists, geochemists and geophysicists, and directing all geoscientific report preparation. Examples of his work are presented below.

- Well site selection for five successful production wells and four successful injection wells at Bradys, Nevada. These locations were based on his structural interpretation of geophysical and stratigraphic data.
- Development of a geothermal exploration plan, including well site locations, for the Government of Uganda.

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- Interpretation of geologic, resistivity and magnetic and gravity data at Lake City (Surprise Valley), California, to develop an exploration drilling plan.
- Development of a detailed hydrogeologic model of the Mammoth geothermal system that provided the solution for the field cooling problem and successfully predicted the results of step-out drilling.
- Supervision of a team of geologists, geochemists and geophysicists in developing geologic reservoir models for 4 geothermal type-areas in Japan. These models were then used as a basis for initial state numerical modeling of magmatic heat transfer to the overlying hydrothermal systems.
- Management of a three-rig geothermal development-drilling program for Northern California Power Agency (NCPA) at The Geysers, California, including: selection of wellhead and drilling target locations based on a revised assessment of subsurface geology; supervision of site geologists and direction of the drilling superintendent; planning and maintenance of budget; scheduling of well testing; and analysis of results. Fifteen wells were drilled over a 9-month period, developing about 85 MW of power.
- Site visits to geothermal fields being developed in Tibet and Bolivia to review progress and advise on future exploration and development activities on behalf of the United Nations Development Program (UNDP).
- Review and interpretation of all subsurface information (geology, temperature, pressure and drilling records) from exploration wells in the Puna District, Hawaii.
- Interpretation of surface and subsurface geologic data for resource assessments at several properties within The Geysers steam field in northern California.
- Analysis of surface and subsurface geology, geochemistry and geophysical data to select locations for successful geothermal wells at Wendel, California, Steamboat Springs, Nevada and Casa Diablo, California (Long Valley).
- Geologic assessment of the Dixie Valley, Nevada geothermal field and recommendations for a successful development-drilling strategy.
- Integrated analysis of detailed subsurface geologic, hydrologic, geophysical and geochemical data for the assessment of major geothermal fields (Tiwi, Palimipinon, Marieta and Bulalo) in the Philippines.
- Advisor to the World Bank on geothermal exploration and development projects in Kenya, Ethiopia, Yemen, the Philippines and Thailand.
- Advisor to the United Nations Revolving Fund to assess the risk of investment in geothermal projects in the Philippines, Guatemala and Mexico.

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- Development of a comprehensive subsurface model for a large geothermal resource area in Kyushu, Japan, based on exploratory drilling of a dozen wells.
- Development of a geologic/hydrogeologic/heat-flow model for a direct-heat geothermal utilization project in Yugoslavia.

Senior Technical Advisor, United Nations, 1965 - 1980

- Dr. McNitt supervised exploration of the Ahuachapán, El Salvador, and Kizildere, Turkey, thermal fields, including program design, evaluation of exploration and drilling results, management of training programs, and budget control.
- As Resident Project Manager for the UN geothermal project in Kenya (1970-1974), Dr. McNitt: 1) planned, directed and interpreted work of technical specialists in geology, hydrogeology, geophysics, geochemistry, drilling engineering, well testing and reservoir engineering; 2) located and drilled the discovery well of the Olkaria geothermal field in 1973; 3) established the program for training Kenyan scientific and technical staff; and 4) established the technology transfer program for all UN geothermal projects.
- He directed reconnaissance and detailed exploration activities in Ethiopia, India, Madagascar, Jordan and Honduras. This led ultimately to the discovery of geothermal fields in Ethiopia and Honduras.

Geothermal Specialist, California Division of Mines and Geology, 1959 – 1965

- Dr. McNitt mapped the geology of The Geysers and vicinity in detail. This was the first comprehensive geologic mapping of a major thermal field in the United States.
- He participated in gravity and aeromagnetic surveys of The Geysers-Clear Lake Area. This led to the identification of the magmatic heat source underlying the Geysers.
- He compiled subsurface data for the Niland area of Imperial Valley. This resulted in the first technical publication on the Salton Sea Geothermal field.
- He performed reconnaissance of Long Valley and Surprise Valley thermal areas.

SELECTED PUBLICATIONS

Dr. McNitt is the author of more than 100 published and unpublished reports. Of these, only a few are cited, as most are proprietary to the United Nations, the World Bank, or to private geothermal developers.

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A new model of geothermal exploration of non-volcanic systems in extended terrains. Proceedings, World Geothermal Congress, Italy, 1995.

Stratigraphic and structural controls of the occurrence of thermal fluid at the Soda Lakes geothermal field, Nevada. Transactions, Geothermal Resources Council Annual Meeting, 1990.

Stratigraphic and structural controls of the occurrence of steam at The Geysers. Transactions, Geothermal Resources Council Annual Meeting, 1989.

The United Nations approach to geothermal resources assessment. Geothermics, Vol. 7, pp. 231-242, 1978.

Origin of steam in geothermal resources. Society of Petroleum Engineers of AIME, Paper No. 6764, 1977.

Geothermal energy in transition. Natural Resource Forum, Vol. 2, pp. 5 – 17, 1977.

Summary of United Nations geothermal exploration experience, 1965 – 1975. Proceedings, 2nd United Nations Symposium of the Development and Use of Geothermal Resources, San Francisco, California, pp. 1127 – 1134, 1975.

The role of geology and hydrogeology in geothermal exploration. In: Geothermal Energy (Earth Sciences 12), UNESCO, 1973.

Geology of the Kelseyville quadrangle, Sonoma, Lake and Mendocino Counties, California. California Division of Mines and Geology Map Sheet 9, 1968.

Review of geothermal resources. In: Terrestrial Heat Flow, W.H.K. Lee, editor, American Geophysical Union Monograph 8, pp. 240 - 266, 1965.

Exploration and development of geothermal energy in California. California Division of Mines and Geology Special Report 75, 45 pp., 1963.

Geology of The Geysers geothermal area, California. United Nations Conference on Sources of Energy, Rome, paper G31, 1961.

CITIZENSHIP

USA