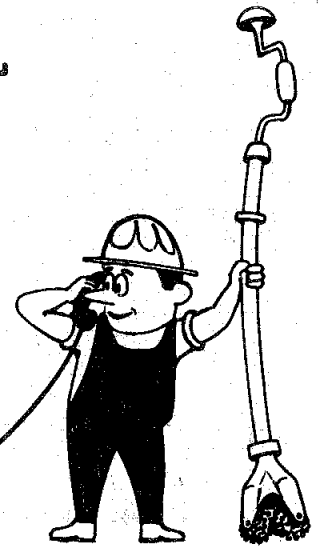




# GEO THERMAL

## Hot Line



A publication of the State of California - Division of Oil and Gas

Volume 2, Number 6

November 1972

"THE DEVELOPMENT OF GEOTHERMAL RESOURCES HAS ARRIVED AT THE UNFORTUNATE TIME IN HISTORY WHEN EVERYONE KNOWS EVERYTHING ABOUT EVERYTHING."

-anonymous

### SOCIETY OF PETROLEUM ENGINEERS OF AIME

The annual California Regional Meeting will be held in the Bakersfield Civic Auditorium, November 9 and 10, 1972. A session on Geothermal Energy will be given on Thursday morning, November 9.

Session Program  
Geothermal Energy  
November 9, 9:00 - 11:30 a.m.

#### Chairmen:

W. M. House  
Signal Oil & Gas Company  
Long Beach, California

W. R. Brigham  
Stanford University  
Stanford, California

#### Introduction to Geothermal Energy

Ben E. Bayliss, Lloyd Corp.,  
Beverly Hills, California

#### Development and Utilization of Geothermal Energy

James B. Koenig, California Division of  
Mines and Geology, Sacramento, California

#### Geothermal Development in California

David N. Anderson, Geothermal Operations,  
California Division of Oil and Gas,  
Sacramento, California

#### Drilling for Geothermal Steam

Donald G. Davis, Big Chief Drilling Company,  
Oklahoma City, Oklahoma; and  
John Cronling, Big Chief Drilling Company,  
Santa Rosa, California

#### Producing Geothermal Steam at The Geysers Field

C. F. Budd, Jr., Union Oil Company of  
California, Santa Rosa, California

### AMERICAN PHYSICS SOCIETY FLUID DYNAMICS DIVISION

As part of their annual meeting, this Division will conduct a special session on Geothermal Phenomena. This session will be held Tuesday afternoon, November 21, in the University Memorial Center at the University of Colorado, Boulder, Colorado. The fluid mechanics of geothermal basins will be emphasized. For information contact:

Professor D. R. Kassoy  
Mechanical Engineering Department  
University of Colorado  
Boulder, Colorado

### ADVERTISING IN GEOTHERMICS

Promotion Consultants, Inc. is the advertising representative for Geothermics - International Journal of Geothermal Research. For information contact:

Ms. Anita Buyers  
Promotion Consultants, Inc.  
395 Saw Mill River Road  
Elmsford, New York 10523

## SOCIETY OF EXPLORATION GEOPHYSICISTS

The annual international meeting of the Society will be held at the Anaheim Convention Center in Anaheim, California, from November 26 to 30, 1972. Two geothermal symposia will be held, one each in the morning and the afternoon of Thursday, November 30. The featured speaker at the Geothermal Luncheon on Thursday will be Joseph Barnea, director of the United Nations Division of Natural Resources and Transport. For information contact:

Norman Jokerst  
Standard Oil Company of California  
P. O. Box 3862  
San Francisco, California 94119

**Thursday Morning, November 30**  
**Garden Grove Room, 8:15 a.m.**

### Session Chairmen:

Mr. Robert Greider, Standard Oil Company  
of California, Western Operations  
Dr. Tsvi Meidav, United Nations,  
Resources and Transport Division

### Estimates of Geothermal Energy Potential

J. Banwell and T. Meidav\*, United Nations,  
Resources & Transport Division

### Geothermal Research in the U. S. Geological Survey

L. J. P. Muffler, U. S. Geological Survey

### Review of Geochemical Techniques in Geothermal Exploration

R. O. Fournier\* and D. E. White,  
U. S. Geological Survey

### Assessment of Electrical Resistivity in Geothermal Exploration

T. Meidav and J. Banwell, United Nations,  
Resources & Transport Division

### Dipole Mapping Surveys

G. Keller, Colorado School of Mines

### Geophysical Methods in Geothermal Exploration

N. Harthill, Group Seven, Golden, Colorado

**Thursday Afternoon, November 30**  
**Garden Grove Room, 2:00 p.m.**

### Session Chairmen:

Mr. John Banwell, United Nations,  
Resources and Transportation Division  
Prof. George Keller,  
Colorado School of Mines

### Surface Determination of Subsurface Porosity and Pore Fluid Resistivity: Geothermal Resources

R. M. Hamilton\* and P. L. Ward,  
U. S. Geological Survey

### Spectral Variability in Seismic Noise Measurements and Implications for Geothermal Exploration

R. S. Crosson\*, University of Washington  
I. R. Mayers, Geological Survey of Canada

### Seismic Noise in Geothermal Areas

H. M. Iyer, U. S. Geological Survey

### Exploration Significance of Recent Geophysical Surveys in the Mexicali-Cerro Prieto Geothermal Area

K. R. Evans\*, Humble Oil Company  
J. S. Sumner, University of Arizona  
L. Del Castillo, Institute de Geofisica, Mexico  
\*Speaker

## NATIONAL SCIENCE FOUNDATION CONFERENCE IN SEATTLE

The National Science Foundation sponsored through RANN (Research Applied to National Needs) a special conference on geothermal energy held at Battelle Northwest in Seattle, Washington, from October 18 to 20, 1972. The purpose of the conference was to bring geothermal experts together "to develop an assessment of the state of the art and to recommend a research program to provide the requisite knowledge for establishing the proper role of geothermal resources in providing: (1) additional energy to alleviate the Nation's impending shortage, (2) water to supplement present supplies, and (3) mineral resources." The attendees were divided into six panels as follows: (1) Resource Evaluation, (2) Resource Exploration, (3) Reservoir Development and Production, (4) Utilization-Technology and Economics, (5) Environmental Effects, and (6) Institutional Problems.

A final report on the findings and recommendations, including a dollar value on proposed research projects, is now being prepared. Watch the "Hot Line" for a notice on the report. Also see "Hot Line" issue V. 2, No. 3 for information on an organizational meeting held prior to the Seattle Conference.

## UNIVERSITY OF CALIFORNIA, RIVERSIDE GEOLOGICAL SCIENCES DEPARTMENT

The National Foundation has granted \$143,000 for "Geological-Geochemical-Geophysical Investigations of a Recognized Geothermal Area in the Imperial Valley of Southern California". Faculty members Wilfred Elders (coordinator), James Combs, and Tyler Coplen will apply this grant to the study of the Dunes anomaly. Extensive geochemical and geophysical information will be extracted from the cores of the 2,007 foot deep Department of Water Resources "Dunes" well (see "Hot Line" V. 2, No. 4). This grant, which is under the RANN program, will run from October 1, 1972 until March 31, 1974.

## COLORADO

A new publication: "Geothermal Resources of Colorado" by Richard H. Pearl, 1972, \$1.00. A copy can be obtained from:

Colorado Geological Survey  
1845 Sherman  
Denver, Colorado 80203

## FRENCH GOVERNMENT

The Service Geothermique, a branch of the French Bureau of Mines and Geology (BRGM), under the direction of Mr. J. Lavigne is active in many parts of the world. Temperature surveys and other geophysical methods are being used for geothermal exploration in the Afar and Issa Territories (formerly French Somaliland), Vate Island (New Hebrides), and the Reunion Islands.

The French Government is negotiating with several Australian and French mining companies to develop geothermal resources for the processing of the New Hebrides metal ores. The important nickel mining operation in New Caledonia operated by Kaiser Aluminum is expected to benefit from this geothermal development.

## MODOC COUNTY, CALIFORNIA

Magma Energy, Inc. has filed a notice to drill a geothermal well, approximately 2 miles north of Lake City in Surprise Valley. The well, "Phipps" 2, will be spudded in the NE 1/4 of the NE 1/4 of Sec. 23, T. 44N., R. 15E., M.D.B.&M. early in November, 1972 at a spot approximately 300 feet north of their "Phipps" 1 (drilled in September, 1962 to a total depth of 1,267 feet. The bottom-hole temperature in this well was above 200° F). This new location is less than a mile westerly from the famous Lake City mud pots and hot springs.

## SOCIETY OF ECONOMIC GEOPHYSICISTS

George Keller of the Geophysics Department, Colorado School of Mines, has been named Distinguished Lecturer for the society. Dr. Keller's talk "Geothermal Exploration" will be presented to groups primarily in the West Coast and Gulf Coast areas. The lectures are scheduled from October 5 until mid-November, 1972.

## RESEARCH INSTITUTE IN INDIA NEEDS GEOTHERMAL INFORMATION

The National Research Institute of India has initiated a program to develop geothermal resources. They would like to receive reprints of the papers published by geothermal scientists and technologists.

Please send reprints to:

National Geophysical Research Institute  
Hyderabad - 7 (A.P.)  
India

## LAKE COUNTY, CALIFORNIA

The Lake County Planning Commission has scheduled a hearing for the Pacific Energy Corporation's application to deepen Getty Oil Company's well No. "Kettenhofen" 1 in Sec. 28, T. 13N., R. 8W., M.D.B.&M. at 2:30 p.m. on November 9, 1972 at the Lake County Court House. The well was originally drilled by Eureka Magma Explorers in September, 1971 and was subsequently transferred in March,

1972 to Getty who deepened it to 7,822 feet. Pacific Energy Corporation plans to deepen the well to 10,000 feet.

## TULSA, OKLAHOMA

The Calvert Exploration Company announced on October 13, 1972 that in addition to its current oil and gas activities it will engage in the exploration for and development of geothermal energy for generation of electric power. The company also announced that it had purchased approximately 100,353 acres (157 square miles) of leases and exploration rights covering the Canon del San Diego grant, which is contiguous to the Valles Caldera in the Jemez area of New Mexico. The U.S.G.S. has designated the Caldera as a "Known Geothermal Resource Area". Approximately 2,000 acres of Calvert's leases lie within the K.G.R.A.

## DEL MAR, CALIFORNIA

The International Thermal Instrument Company has announced the availability of a new highly accurate instrument that directly measures the earth's local heat flux. The device is sold in two forms, either a flat plate to be used on the surface or a cylindrical model that can be lowered down a hole. For additional information contact:

Mr. N. D. Green, Manager  
International Thermal Instrument Company  
Del Mar, California 92014  
(714) 755-4436

## IMPERIAL VALLEY, CALIFORNIA

**Chevron Oil Company**  
Drilling on Chevron's well No. "Nowlin Partnership" 1, Sec. 33, T. 16S., R. 14E., S.B.B.&M. in the Heber area is almost completed. This is the third geothermal well drilled near Heber this year. The first two wells were drilled by Magma Energy Company in the spring and summer of 1972.

**Magma Power Company**  
The Magma Power Company has reached total depth (4,000 feet) on their "Magmamax" 3 which is located in the Salton Sea Geothermal field in the Niland area. The company is preparing to run pipe to evaluate potential geothermal zones from 2,600 to 3,000 feet. This is the third well of a six-well complex to be drilled by Magma for San Diego Gas and Electric, who plans to build a prototype 10 mw binary power plant at this location. The contract for the plant engineering and construction has been let to C. F. Braun Engineering of Anaheim, California. Construction is scheduled to start in January, and the completion is scheduled in six months.

## Department of Water Resources and University of California, Riverside

The 2,007-foot D.W.R.-U.C.R. research well on the Dunes anomaly in the East Mesa area, Imperial Valley, Sec. 33, T. 15S., R. 19E., S.B.B.&M., has been gun perforated in three zones. The bottom zone, 1,878 feet to 1,918 feet, flowed water at approximately 1 gal./min. The combined upper two zones, 850 feet to 905 feet and 340 feet to 380 feet, maintained the water level about 30 feet below the surface. The

maximum temperature recorded in this well was 270° F. The extensive collection of cores recovered from this well is now being studied at U.C.R.

The first report, "A Preliminary Investigation of a Geothermal Test Well at the Dunes Thermal Anomaly, Imperial Valley, California", will be available November 15. This report will contain information on water chemistry, permeability, porosity, thermal conductivity, X-ray clay mineralogy, petrography, and oxygen isotope data for calcite and water. For a copy of the report or for further information contact:

Dr. Tyler Coplen  
Institute of Geophysics  
University of California  
Riverside, California 92502

U. C. Riverside has received an N.S.F. grant to do further research in this area (see U. C. Riverside article in this issue).

#### **Bureau of Reclamation**

The U. S. Bureau of Reclamation's 8,030-foot test well in the East Mesa area, Imperial Valley, Sec. 6, T. 16S., R. 17E., S.B.B.&M., has a recorded bottom hole temperature of 392° F. and is producing 100 gal./min. at 245° F. A pilot desalination unit should be installed before the year ends (see Bureau of Reclamation article in V. 2, No. 5, September, 1972 issue of "Hot Line").

#### **Phillips Petroleum Company-Southern California Edison Company-Southern Pacific Land Company**

On October 25, 1972, Phillips Petroleum Company and Southern California Edison Company signed an agreement with Southern Pacific Land Company concerning geothermal development on 30,000 acres of the Buttes anomaly in the Niland area of the Imperial Valley. This area was actively drilled in the early 1960's and shows great potential. The Magma Power Company, in conjunction with the San Diego Gas and Electric Company, is presently involved in a geothermal development program near the south edge of the area and plans to have a binary 8,000 kw power plant in operation by mid-1973.

#### *Geothermal Hot Line*

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