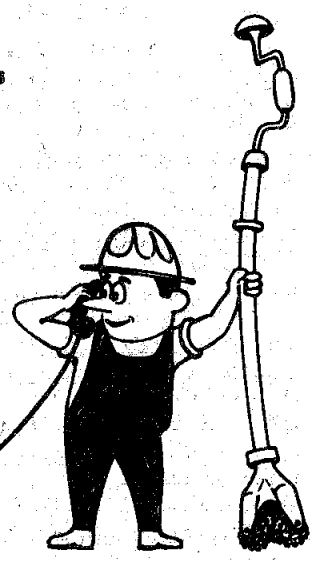
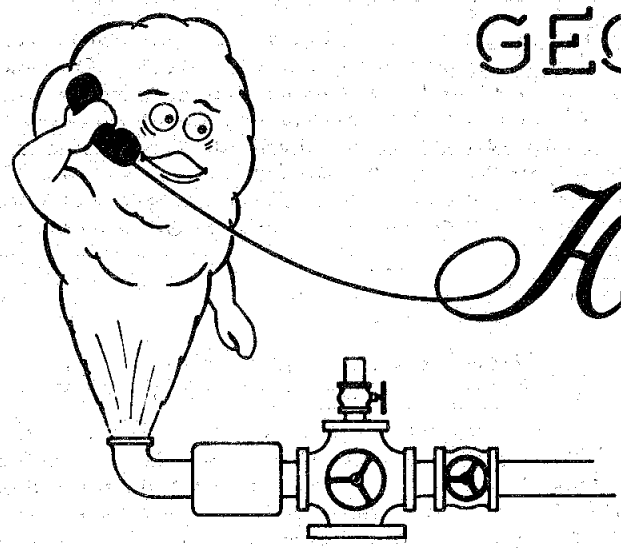


Bacon

# GEO THERMAL

# Hot Line



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

Volume 3, Number 1

February 1973

"Every noble activity makes room for itself."  
--Ralph Waldo Emerson

Council will meet Saturday, March 24, 1973, at 10:00 a.m. in the State Office Building, Room 441 at 1400 S.W. 5th Street, Portland, Oregon. The date is set to coincide with a Geological Society of America meeting in Portland scheduled for March 22-24. The G.S.A. meeting features a section on heat flow on March 23 (see G.S.A. meeting in this issue).

## 1973 SAN FRANCISCO CONFERENCE

At the United Nations geothermal meeting held in early January 1973 in New York, Dr. Barnea, Director of the Resources and Transportation Division, stated that the U.N. would be interested in holding a world geothermal meeting sometime in 1974 or 1975 in a city located in western North America. It was also stated that the Geothermal Resources Council could be a co-host to such an event. Plans are now in motion to fund this proposed meeting and the situation looks so promising that the council's Conference Committee has slacked off on its 1973 conference planning waiting for the outcome.

If the proposed U.N. conference becomes a reality say, for the spring of 1974, the council would cancel the technical program set for the 26th and 27th of September, 1973 and go only with a one-day business meeting to elect new members to the Board of Directors. The meeting could be preceded and followed by field trips to The Geysers and Lake County. Watch the "HOT LINE" for all the news on the coming conference, meeting, and field trips.

## FEDERAL LEASING AND OPERATING REGULATIONS AND IMPACT STATEMENTS

The recently solicited comments on the proposed regulations have been considered and some revisions have been made. Some additional revisions concerning the leasing of land are now underway, and it is hoped that a revised set of leasing and operating regulations can be issued with the final impact statements scheduled to come out in March. The regulations if issued at this time will not be in final form; however, it is hoped that no changes will be forthcoming and that a final set can be issued soon afterward.

## SAN FRANCISCO U. S. DISTRICT COURT GEOTHERMAL TEST CASE

The civil action suit "The United States of America versus Union, Magma, Thermal, and Others" covered in a "Hot Line" issue (v. 2, n. 7) has not been answered as of February 8, 1973. Watch the "Hot Line" for further information concerning this important court action.

## GEOTHERMAL RESOURCES COUNCIL

**Board Meeting**  
The Board of Directors of the Geothermal Resources

## COMING MEETINGS

### Geological Society of America, Portland, Oregon

The Geological Society of America, Cordilleran Section, will hold its meeting March 22-24, 1973 at the Portland State University in Portland, Oregon. A special Heat Flow and Geothermal Energy Symposium will be held on March 23 in Room 250 of Cramer Hall. Co-chairmen of the symposium are David D. Blackwell of Southern Methodist University and Richard G. Bowen of the Oregon State Department of Geology and Mineral Industries. Following is the program:

#### TERRESTRIAL HEAT FLOW MEASUREMENTS IN THE CANADIAN CORDILLERA

Alan S. Judge

#### HEAT FLOW AND CENOZOIC TECTONIC HISTORY OF THE NORTHWESTERN UNITED STATES

D. D. Blackwell, R. G. Bowen, and J. E. Schuster  
HYDROTHERMAL CONVECTION AT SEA-FLOOR SPREADING CENTERS: SOURCES OF POWER OR GEOPHYSICAL NIGHTMARE

C. R. B. Lister

#### HEAT FLOW AND RADIOACTIVITY IN THE SOUTHERN ROCKY MOUNTAIN REGION

E. R. Decker

#### TECTONIC SIGNIFICANCE OR GEOTHERMAL DATA FROM CENTRAL CALIFORNIA AND NEVADA

J. H. Sass, A. H. Lachenbruch, and C. M. Bunker  
HEAT FLOW MEASUREMENTS ON THE SOUTHERN CALIFORNIA BORDERLAND AND IN THE GULF OF CALIFORNIA

T. L. Henyey, T. C. Lee, and L. A. Lawyer

#### HEAT FLOW IN BAJA CALIFORNIA AND WESTERN MEXICO

R. F. Roy, D. Smith, J. Bruce,

C. Lomnitz, and Frederico Mooser

#### HEAT FLOW IN THE IMPERIAL VALLEY, CALIFORNIA

Jim Coombs

#### THE MECHANICS OF HYDROTHERMAL SYSTEMS: A REVIEW

John W. Elder

#### GEOTHERMAL RESOURCES AND THEIR UTILIZATION

L. J. P. Muffler

### American Association for the Advancement of Science (AAAS), CONACYT, Mexico City

The American Association for the Advancement of Science (AAAS) and the Consejo Nacional de Ciencia y Tecnologia (CONACYT) will co-host an ambitious inter-American conference in Mexico City from June 17 to July 7, 1973. The theme "Science and Man in the Americas" will be developed through nine major symposia and 40 additional technical symposia.

The major topics are: "The Sea and Its Resources"; "Ecology and Development"; "Deserts and Arid Lands"; "Nutrition and New Food Technology"; "Earthquakes and Earthquake Engineering"; "Science Technology and Social Change"; "The Problems of Population"; "Opportunities in Education"; and "Non-Nuclear Energy for Development."

Particular emphasis will be given to areas in which Latin Americans are making major contributions. Clearly, there are many opportunities for geologists to make an impact at these meetings.

## GEOTHERMAL SHORT COURSE

The Geothermal Short Course (as mentioned in issue No. 7 of Vol. 2), to be co-sponsored by the State Division of Oil and Gas and the Geothermal Resources Council, will be held May 7-10, 1973 in Sacramento, California. An extensive program has been outlined which includes ample time for group discussion. Attendance will be limited to 70 persons, and the cost will be about \$50 per person. A special notice will be mailed as soon as plans and a program are finalized.

### HYDROGEN SULFIDE REMOVAL

The Pacific Gas and Electric Company has been testing a chemical process for the removal of hydrogen sulfide ( $H_2S$ ) from geothermal steam at The Geysers. Emissions of  $H_2S$  in the past have caused complaints from several nearby property owners. This process explained both in the language of the layman and the chemist follows:

#### Layman

Ferric sulfate is added to the condenser cooling water which contains natural  $H_2S$  in solution. The ferric sulfate and hydrogen sulfide react to produce elemental sulfur and ferrous iron. Ferric iron can in turn be regenerated by injecting air into the cooling water system. When in operation, the process can be a closed cycle except for periodic additions of ferric sulfate.

#### Chemist

Addition of a soluble ferric salt to condenser cooling water releases ferric ions, and hydrogen sulfide dissociates in water to bisulfide and sulfide ions. A transfer of electrons occurs where bisulfide and sulfide ions lose electrons to form elemental sulfur and, simultaneously, ferric ions gain electrons to form ferrous ions. Ferric ions can be regenerated by adding air to the solution containing ferrous ions.

### A NEW JOURNAL

Geothermal energy is one of more than a score of traditional and potential energy resources to be discussed in *Energy Sources*. Dr. T. F. Yen will be the Editor-in-Chief of this "interdisciplinary, international journal of science and technology." For further information on this new quarterly journal contact:

Dr. T. F. Yen  
Department of Chemical Engineering  
University of Southern California  
University Park  
Los Angeles, California 90007

### CORRECTION

The boiling point versus depth curve printed in the last "Hot Line" (December 1972) is incorrect. The curve assumes a constant density of water with increasing heat, whereas the density in fact changes significantly. John L.

Haas of the U. S. Geological Survey has calculated the boiling point depth for various salinity waters ("Economic Geology," v. 66, n. 6, p. 940). The "Hot Line" will include a corrected set of curves in a later issue.

### LOS ANGELES, CALIFORNIA

In January 1973, the Oil Producers and Refiners, Inc. and Transcontinental Power Company merged to form the Transcontinental Energy Corporation. The new corporation owns 12.5 percent of Geothermal Energy and Mineral Corporation which will enable the firm to participate in the development of geothermal energy at the Sinclair Ranch in the Niland area of the Imperial Valley. In addition, the corporation has plans to do some exploration and/or development drilling in the Imperial Valley by the summer of 1973.

### \*WELL OPERATIONS\*

#### STATE OF ARIZONA

The Oil and Gas Conservation Commission has issued its first permit to drill a geothermal well in Arizona. It was issued to the Geothermal-Kinetics Corporation of Phoenix, Arizona, who have put together an exploration package with three major public utilities in the state: Arizona Public Service, Salt River Project, and Tucson Gas and Electric. The location is as follows: 1,980 feet N and 660 feet W from the SE corner of Sec. 1, T. 2 S., R. 6 E., G.&SR.B.&M., which is two miles SE of Higley. The well is scheduled for 6,000 feet. Geothermal-Kinetics Corporation has over 1,700 acres under lease in the area.

## STATE OF OREGON

The State of Oregon, Department of Geology and Mineral Industries, has issued the state's first permit for a geothermal well to Magma Energy Company, a subsidiary of Magma Power Company of Los Angeles. Magma hopes to find a source of hot water to operate a "Magmamax" (binary type) power plant. The well is scheduled for 6,000 feet and will be drilled one mile east of Vale in southeastern Oregon. Drilling will not begin until the spring of 1973.

### LAKE COUNTY, CALIFORNIA

#### Pacific Energy Corporation

Because of heavy rains in The Geysers-Clear Lake area (50+ inches since July 1972), the Pacific Energy Corporation has been unable to move a rig onto the "Kettenhoffen" 1 site. P.E.C. intends to deepen the hole to 10,000 feet as soon as weather permits. The well is on the southeast flank of Mt. Konociti, a Pleistocene volcano, in Sec. 28, T. 13 N., R. 8 W., M.D.B.&M. Eureka Magma Explorers originally drilled the well in September 1971. Getty Oil Company deepened it to 7,822 feet in March 1972, and Pacific Energy Corporation acquired the well in November 1972.

#### Signal Oil and Gas Company

Signal's wildcat well, "Bianchi" 1 (see "Hot Line", v. 2, n. 7), is now being redrilled from 3,427 feet. Down-hole temperatures in the original hole, which was drilled entirely in graywacke, were disappointing. The well is about one mile north of production in the Castle Rock Springs area of The Geysers geothermal field and is on the south flank of Cobb Mountain, a Pleistocene volcano. Currently, the redrill hole is being sidetracked around a fish at 6250 feet.

### NOTICE

Subscriptions must be renewed for 1973. This is the last issue of the "Hot Line" which will be sent to 1972 subscribers.

--Renew Now--

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## MODOC COUNTY, CALIFORNIA

### Magma Energy, Inc.

In late December 1972, Magma completed "Phipps" 2 (NE 1/4 of Sec. 23 T. 44 N., R. 15 E., M.D.B.&M. in the Surprise Valley of eastern Modoc County (see "Hot Line, v. 2, nos. 6 and 7). The well was drilled to a total depth of 4,515 feet and 8 5/8-inch casing was cemented at 2,687 feet. It is the deepest geothermal well in Modoc County.

In January 1973, a temperature survey was run, but unfortunately the probe stopped on a bridge before reaching total depth. However, the thermal trend, when projected to total depth, was very encouraging. The well will be cleaned out and a new temperature survey run as soon as weather permits.

## IMPERIAL COUNTY, CALIFORNIA

Magma Energy, Inc. has applied to the County Planning Commission for permits to drill four exploratory wells in the Imperial Valley. The well names and locations are as follows:

1. "Mary Casey" 1, Sec. 10, T. 13 S., R. 14 E., S.B.B.&M. This will be the first geothermal well drilled in the Brawley K.G.R.A. and will be about one mile northeast of the Amerada Hess "Veysey" 1, an oil exploratory well drilled to a total depth of 8,350 feet in 1945. The maximum reported temperature for "Veysey" 1 was 316° F.
2. "Bonanza Farms, Inc." 1, Sec. 21 or 22, T. 15 S., R. 14 E., S.B.B.&M. The well will be drilled about two miles east of the town of Imperial, and the area is not within a K.G.R.A.
3. "Fed-Rite-Bonanza" 1, Sec. 8, T. 17 S., R. 13 E., S.B.B.&M. The site is about eight miles southwest of the town of Heber near Signal Mountain.
4. "K. K. Sharp Farms Inc.", Sec. 34, T. 15 S., R. 16 E., S.B.B.&M. The site is just west of the East Mesa K.G.R.A. and about one mile northwest of Magma's "Sharp" 1 well which was drilled and abandoned in February 1972. "Sharp" 1 was drilled to a total depth of 6,070 feet.

STATE OF CALIFORNIA  
DIVISION OF OIL AND GAS  
1416 NINTH STREET, ROOM 1316-35  
SACRAMENTO, CALIFORNIA 95814

### Heber Area

On November 14, 1972, the Chevron Oil Company received a permit from the Imperial County Planning Commission to drill their second well, "Nowlin Partnership" 2. The well will be drilled about one-fourth mile west of Chevron's "Nowlin Partnership" 1 (SE 1/4, Sec. 33, T. 16 S., R. 14 E., S.B.B.&M.). This will be the fourth geothermal well drilled in the Heber area; Magma Energy, Inc. drilled the first in early 1972. No spud date has been given.

### East Mesa

The Bureau of Reclamation has been testing their "Mesa" 6-1 well to determine the optimum flow rate, temperature, and pressure prior to the installation of a pilot desalination plant sometime during the spring or summer of 1973. At present the well flows approximately 250 gallons per minute, which is believed to be adequate to run the plant. It is also believed that the flow rate can be augmented by perforating shallower sands. To date the perforation of shallow sands has not been scheduled.



### Geothermal Hot Line

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