GEOTHERMAL HOT LINE

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"THE WORLD IS NEVER ANY WIDER THAN THE MIND OF MAN."

--GEOLOGICAL SOCIETY OF AMERICA

GEOTHERMAL RESOURCES COUNCIL (G.R.C.) EL CENTRO CONFERENCE

The G.R.C. will hold its first conference in El Centro, California, on February 16, 17, and 18, 1972. The first two days of the conference will be held at the Imperial Valley Country Club in the morning and at the Imperial Valley College in the afternoon. The third day will consist of a field trip to the Cerro Prieto steam field in Mexico. Lunch for that trip will be provided by the Comision Federal de Electricidad, Division Baja California, Mexico.

Attached to this issue is a program of events, a registration form, and other important data.

If your company would like to put an exhibit on display at the conference, contact: Sam Dermengian, Business Education Department, Citrus College, Azusa, California 91702, (213) 335-0521.

GEOTHERMAL COURSE, SACRAMENTO

"Introduction to the Study of Geothermal Resources"--by Dr. James Combs, University of California, Riverside--was given in Sacramento from December 13 through 16. A total of 67 people attended the course, 18 of them from outside of California including one from as far away as Pennsylvania. Guest lecturers included:

Stan Hutchison, Standard Oil Co. of California
"Drilling Media"

Jim Koenig, California Division of Mines and Geology
"United Nations Geothermal Projects"

Don White, U.S.G.S.
"Vapor Dominated Systems Compared with Hot Water Systems"

Bob Fournier, U.S.G.S.
"Geochemistry and Temperature Dependent Reactions"

Dave Anderson, California Division of Oil and Gas
"Geothermal Regulation and Related Problems"

The course was extremely well received and everyone enjoyed the two evening Happy Hours. Many new contacts were made and old friendships were renewed.

Judging by the response to the critique form that was passed out, almost everyone agreed that the course should be repeated in 6 months to 1 year. This matter is now under consideration.

Also, considerable interest was expressed in obtaining additional copies of the course notebook and all "handout" materials. If enough requests are received (100 or so), the notebook will be reproduced. Price per copy would be about $10.00.

We want to express our appreciation for the tremendous response to this project, our first effort. We are carefully evaluating the constructive criticism we have received and hope to improve the product the next time out. We will also gratefully consider all offers to contribute, on a guest speaker basis.

SACRAMENTO, CALIFORNIA

AB 2162, Seeley

This bill has been signed into law by the Governor and will become effective in early March, 1972. Some of the more significant changes to Chapter 4, Division 3, Public Resources Code (relating to geothermal resources) are:

1. A change in the geothermal districts which will allow for more efficient, coordinated and economical regulatory operations.

2. The approval of the Division of Oil and Gas must be received by an operator before the commencement of the drilling of a geothermal well. At present an operator need only file a notice to drill before commencing operations. This will provide added assurance that an operator will not unknowingly drill into a shallow high-pressure steam area without adequate casing and blowout prevention equipment.

3. An operator must file with the Division of Oil and Gas a complete outline, including geologic and engineering data, for shallow well exploration programs. Allied with this section is a change in the drilling fee requirements. This change will allow the division to adequately regulate the drilling of shallow exploratory wells in hazardous areas under a realistic fee structure which will not inhibit exploration. The new requirements will enable the division to require a drilling fee that will fit the cost of regulation. All exploratory information received from operators under this provision will be held as confidential by the division.

4. The term of the indemnity bond is extended to cover all wells until they are finally abandoned. At present, bonds are released when wells are completed leaving the state without coverage through the productive life and final abandonment of the well after production has ceased.

5. The filing of certain records, in addition to those now received by the division from the operator, will aid the division in its studies of geothermal areas and allow for more informed and effective regulation.

"California Laws for Conservation of Geothermal Resources"

The booklet, "California Laws for Conservation of Geothermal Resources," is now undergoing revision and will be available at all Division of Oil and Gas offices sometime in January.

Federal Draft Environmental Impact Statement

The Department of the Interior hearings on the Federal Draft Environmental Impact Statement for geothermal leasing were held during November in Reno, Nevada; Sacramento, California; and Portland, Oregon. Presentations, limited to ten minutes, were given by representatives of county and state governments, public utilities and operators, private citizens, and conservation organizations.

Many of the presentations were supported by written statements sent directly to the Department of the Interior in Washington, D. C. Some witnesses thought the statements were only a good start and that they should be expanded. Others considered the document to be highly pessimistic, seeing it as a deterrent to geothermal development. The Department is currently reviewing the comments and will publish the final Environmental Impact Statement sometime early next year.

"Grandfather" Leases

On December 2, 1971, the Bureau of Land Management held a meeting in Sacramento to evaluate an estimated 15 "grandfather" leases. All of the leases are in either the Clear Lake-Geysers, Mono Lake-Long Valley, or Imperial Valley Known Geothermal Resource Areas (K.G.R.A.'s). The purpose of the meeting was to identify specific environmental problems which may not have been discussed in sufficient detail in the September, 1971, Draft Environmental Impact Statement for the federal geothermal leasing program.

The meeting was attended by representatives of federal, state, and county governments and conservation groups. In general the environmental problems discussed were those presented by the Department of the Interior in their Impact Statement (see issue No. 7). However, some new problems arose. Briefly, these problems are: protection to rare plant life; compatibility of federal, state, and county regulations; and the inclusion of a provision for the possible production of fresh water.

THE GEYSERS GEOTHERMAL FIELD

The world's largest geothermal turbine-generators are now in operation at The Geysers Geothermal field in Sonoma County. Pacific Gas and Electric Company reports that Units 5 and 6, each with an installed capacity of 55,000 kilowatts, are now in production. The company had the two units built at a cost of $11.5 million. The power plants at The Geysers now have a combined capacity of 192,000 kilowatts and operate on steam purchased from Union Oil Co. of California.

LAKE COUNTY

Eureka Magma Explorers has been given permission by the State Division of Oil and Gas to suspend operations on their wildcat well, "Eureka-Magma" 1, located in Sec. 28, T. 13 N., R. 8 W., M.D.B.& M. for a period of six months (see issue No. 7). The well, which was spudded October 1, 1971, was drilled on the southeast flank of Mt. Konocti, an extinct volcano. A total depth of 3,828' was reached. The operator plans to run periodic tests on the well which will be used to determine the course of action at the end of the suspension period.

E. B. Towne, Operator, of San Francisco, has filed a notice with the State Division of Oil and Gas to drill a wildcat well, "Sullivan" 1, in Sec. 18, T. 12 N., R. 8 W., M.D.B.& M. The operator received a permit to drill from the Lake County Planning Commission on December 9, 1971, and plans to drill the well in the spring of 1972 as weather permits.

Signal Oil and Gas Company has completed its seventh well in the Lake County portion of The Geysers Geothermal field. The well, "MLM" 1, in Sec. 26, T. 11 N., R. 8 W., M.D.B.& M., was drilled to a total depth of 6,411' and is the company's best to date. It is capable of producing over 210,000 pounds of steam per hour and is also significant in that it extends the productive limits of the field one-half mile to the east.

NO COUNTY

Getty Oil Company spudded their exploratory well, "State PRC 4572.1" 23-1, Sec. 23, T. 2 N., R. 26 E., M.D.B.& M., on November 18. Weathered basement (granodiorite) was apparently encountered at 1,740', and cores were taken from 2,426' to 2,437'. Total depth of 2,437' was reached on November 28 and electric, density, and temperature logs were run. As was the case on the south shore of the lake (see issue No. 7), temperatures and gradient recorded were discouraging and the well was abandoned. In the name of science, Getty Oil Company also provided rig time for the U.S.G.S. to run an additional temperature survey.

--EDITORIAL COMMENT--

The total cooperation and openness displayed by Geothermal Resources International, Inc., and Getty Oil Company during their drilling programs at Mono Lake is greatly appreciated by the Geothermal Unit of the Division of Oil and Gas. If this attitude spreads and becomes the accepted operating procedure of all operators, it certainly would be a tremendous boost to the development of our geothermal resources.

IMPERIAL COUNTY

Magma Power Company of Los Angeles has filed with the State Division of Oil and Gas, a notice to drill a well in the Salton Sea Geothermal field. The well, "Magmamax" 1, Sec. 33, T. 11 S., R. 13 E., S.B.B.& M., will be partially financed by the San Diego Gas and Electric Company who has entered into an agreement with Magma to explore the possibility of generating power from geothermal brines using the "Magmamax Process."

The Imperial Valley Subsidence Detection Program is officially under way with the commencement of surveying on the first- and second-order nets during the second week of November. Robert Estes of the County of Imperial--phone (714) 352-2851--is the field coordinator.

Following is a list of the participants, the survey mileage they are responsible for, and the work completed:

1.	National Ocean Survey	130 miles	1/3 completed	first order
2.	County of Imperial	70 miles	1/3 completed	second order
3.	Imperial Irrigation District	70 miles	1/4 completed	second order
4.	Bureau of Reclamation	70 miles	1/2 completed	second order

DENVER, COLORADO

The Colorado Board of Land Commissioners issued the first lease for geothermal exploration on state lands, December 15, 1971.

The lease issued to Mr. Kirk Tracy of Boulder, Colorado, comprises approximately 7,000 acres surrounding the Mount Princeton Hot Springs area near Buena Vista in T. 14 and 15 S., R. 78 W., 6th P.M.

COLORADO SCHOOL OF MINES "MINERAL INDUSTRIES BULLETIN"

The November, 1971, issue (Vol. 14, No. 6) of the Colorado "Mineral Industries Bulletin" is devoted to Part 1 of "Geothermal Energy: Geology, Exploration and Developments" by Dr. L. owbridge Grose, Colorado School of Mines. Part 2 will be in the January, 1972, issue.

ABSTRACT

Geology, exploration, and initial developments of significant geothermal areas of the world are summarized in this report. Part 1 is a review of the geological and explorational aspects of geothermal energy development; the author also discusses areas of potential development in the Western United States. Part 2 is a review of significant developments of producing and potentially productive areas of the world, and includes an extensive and select bibliography covering Parts 1 and 2.

The most favorable geological environment for exploration and development of geothermal steam is characterized by Holocene normal faulting, volcanism, and high heat flow. Successful exploration for steam consists of coordinated multidisciplinary application of geological, geophysical, and geochemical knowledge and techniques. These are reviewed. Specific prospective areas in 11 Western States are described.

UNITED NATIONS

H. Tsvi Meidav, Technical Advisor to the Energy Section, Resources and Transport Division of the U.N., submitted the following status report on the five U.N. geothermal resources projects:

El Salvador

The geothermal project is nearing an end after the successful development of a steam field ear Ahuachapan. Engineering and power plant design work is under way, the latter by lectroconsult, an Italian power engineering firm.

Chile

A slim-hole drilling project discovered steam at El Tatio, Northern Chile, and preparations are now being made for larger diameter wells. It appears likely that the Chile project will ultimately result in a three-fold utilization of the geothermal resources: power production, mineral extraction, and desalinated water production.

Turkey

Engineering studies are being conducted in the Kizildere steam field to determine the optimum method of production. The high bicarbonate content of the water results in a high rate of calcium carbonate precipitation. Alternative energy extraction methods are being examined.

Ethiopia

The first phase of the geothermal project has been completed and was concerned with the establishment of a regional inventory of geothermal phenomena. As part of that phase, a large scale infra-red survey was conducted covering about 15,000 square kilometers. In all, more than 500 geothermal phenomena were discovered. Two outstanding geothermal provinces, the Danakil and Tendaho Grabens, have been studied in detail. It is estimated that, if fully developed, the exploitable geothermal potential of Ethiopia would be sufficient to supply all of Africa's present power needs.

Kenya

Detailed studies are in progress of the geothermal potential of areas near Lake Naivasha and Lake Hannington. An electrical resistivity survey is being conducted in the areas of greatest interest, soon to be followed by a micro-earthquake survey. Dr. McNitt, Project Manager, was successful in inducing short-term steam eruptions from a one kilometer deep, abandoned well in which a bottom-hole temperature of 235° C was measured.

HOT LINE SUBSCRIPTIONS

Because of the large circulation (now nearly 700) and increasing costs of preparation and mailing, it has become necessary to put a price tag on the "Hot Line." Subscriptions will be $3.00 per year (including postage) on an annual, calendar-year basis beginning in January, 1972. Anyone ordering a subscription will receive, in addition to all issues of the balance of the year, all back issues from January of that year. In order to be sure you receive the next issue of the "Hot Line" promptly, send $3.00 (cash, check, or money order made out to the Division of Oil and Gas) as soon as possible to:

1416 - 9th Street, Room 1316-35
Sacramento, California 95814

* *

Direct all correspondence to:

Geothermal Hot Line
Division of Oil and Gas
1416 - 9th Street, Room 1316-35
Sacramento, California 95814

If you wish to submit a newsworthy item, please make it as concise and complete as possible and include your name, address, and phone number.

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