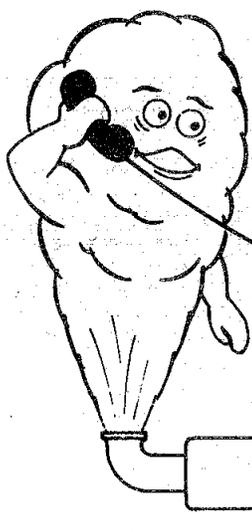
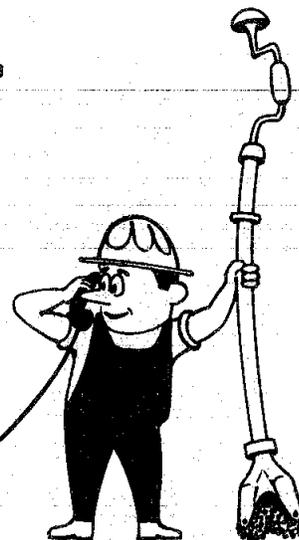


# GEOHERMAL



## Hot Line



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

Volume 2, Number 3

April 1972

*"The reasonable man adapts himself to the world. The unreasonable man persists in trying to adapt the world to himself. Therefore all progress depends upon the unreasonable man."*

—GEORGE BERNARD SHAW

### BUREAU OF RECLAMATION - OFFICE OF SALINE WATER IMPERIAL VALLEY DEEP TEST

The contract has not been awarded yet for the drilling of the B. of R. - O.S.W. deep test on the East Mesa heat anomaly in the Imperial Valley, California. Bids which were received from Big Chief Drilling Company for \$299,674 and Conway Drilling Company for \$310,351 are presently being evaluated in the B. of R. Denver office. The environmental impact statement for this project has been completed and submitted to the Environmental Protection Agency in Washington, D. C.

The drilling and testing of this well is the beginning of the first phase of a multimillion dollar project aimed at the desalination of water in the Imperial Valley. The water will be used to enhance the deteriorating water quality of the Colorado River.

### MENDOCINO COUNTY

On April 6, 1972, the Mendocino County Planning Commission issued a permit to the Cordero Mining Company (a subsidiary of Sun Oil Company) to drill a geothermal test well in Sec. 24, T. 12-N., R. 10 W., M.D.B.&M. Drilling operations are programmed to start about June 1, 1972.

### DEPARTMENT OF THE INTERIOR

The Department on May 3, 1972 issued a Supplement to the Draft Environmental Statement for Geothermal Leasing Program. The document also contains Proposed Unit Plan Regulations for Geothermal Development.

All interested parties are invited to comment during the next 45 days on the original draft impact statement, the supplemental draft, and all the geothermal leasing, operating and unit regulations. The last day for receiving comments is *June 19, 1972*. A revised set of impact statements and rules and operating regulations will not be published at this time.

The newly published supplement can be purchased at the U. S. Geological Survey Public Inquiries Office at the following locations for over-the-counter sale only beginning May 10, 1972.

508 Second Avenue  
Anchorage, Alaska

7638 Federal Building  
300 N. Los Angeles Street  
Los Angeles, California

504 Custom House  
555 Battery Street  
San Francisco, California

1012 Federal Building  
1961 Stout Street  
Denver, Colorado

Room 1C-45  
1100 Commerce Street  
Dallas, Texas

8102 Federal Building  
125 South State Street  
Salt Lake City, Utah

678 U. S. Court House  
West 920 Riverside Avenue  
Spokane, Washington

## HAWAII

The Center for Engineering Research, University of Hawaii, plans to submit a proposal to RANN (Research Applied to National Needs), a branch of the National Science Foundation, for a grant to study the geothermal potential of the Hawaiian Islands. The program, which is known as PELE (Power from Extraction of Lava Energy), will be headed by Dr. Howard Harrenstein. Dr. Harrenstein presented the Hawaii overview at the Geothermal Resources Council Conference in El Centro in February, 1972.

Following is an excerpt of a news clipping from the *Honolulu Advertiser* dated March 9, 1972:

"A \$5 million geothermal and aqua-culture research project for the Big Island got the blessings of the Hawaii County Council's legislative committee yesterday. (Geothermal means using the heat of the earth's interior.)"

"Support for the scientific study, which would need backing from State and Federal governments, came following a presentation by Lloyd Sadamoto, deputy director of the Department of Research and Development."

"A six-year project which initially would require \$100,000 apiece in 1972-73 from the State and County governments and \$200,000 in Federal funds was outlined."

"He said scientists are convinced that non-polluting power can be produced using the heat of volcanoes and the cold water of the ocean's depths."

"Some experts feel the potential is even great enough to generate enough electricity to transmit to other islands, he said."

"The program to be known as HERO (Hawaii Energy Research Operation) shows geothermal power being tapped via a steam dome fed by four-inch steel pipes to a power plant. It would be cooled by 40-degree Fahrenheit ocean water. The resulting hot water, rich with nitrates and phosphates, then would be transferred to aqua-culture ponds, producing a second economic benefit, in the form of fisheries."

## LAKE COUNTY, CALIFORNIA

Getty Oil Company has taken over operations of the Geothermal Resources International well "Eureka Magma" 1 in Sec. 28, T. 13 N., R. 8 W., M.D.B. & M. and changed the name to "Kettenhofen" 1. The well is presently being deepened to approximately 7,000 feet. The Lake County Planning Commission has granted permits to deepen this well and to drill two additional wells.

E. B. Towne, Operator plans to drill well No. "Sullivan" 1 in Sec. 18, T. 12 N., R. 8 W., M.D.B. & M. sometime this summer. The well will test an area of Lake County approximately six miles northwest of The Big Geysers for possible steam production. The operator has permits to drill from both the State of California and Lake County.

## IMPERIAL COUNTY, CALIFORNIA

The Magma Power Company is currently testing two newly completed wells in the Niland area, No. "Magmamax" 1 and "Woolsey" 1, Sec. 33, T. 11 S., R. 13 E., S.B.B. & M. The "Magmamax" well is being produced into a separator where a portion of the fluid is flashed to steam. The remaining brine will flow into portable tanks and be injected into the "Woolsey" well approximately one-fourth mile to the east. The test will provide information on flow rates, temperatures and corrosion rates on several types of metals which will be placed in the separator prior to the test. A Magma official stated that if all goes well, there is a possibility of having an 8,000 kw

pilot "Magmamax" plant (closed cycle, binary system) on the line in early 1973.

## NATIONAL SCIENCE FOUNDATION

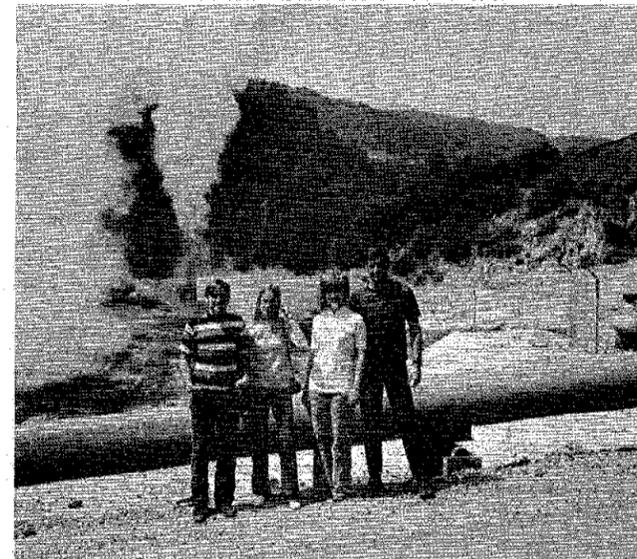
RANN (Research Applied to National Needs), which is a branch of NSF (National Science Foundation), will cosponsor with the University of Alaska a geothermal workshop in Anchorage, Alaska on May 8, 9, and 10, 1972. The chairman of the working sessions will be Walter J. Hickel. The agenda includes a review of the present geothermal development and the construction of a plan for the future. Topics will be defined and speakers will be selected for a full conference to be held in the fall, probably September 18-22, 1972.

A list of the topics is as follows:

1. Resource Evaluation
2. Resource Exploration
3. Reservoir Development
4. Reservoir Production Engineering
5. Utilization and Economics
6. Environmental Effects
7. Institutional Problems

## HIGH SCHOOL GEOLOGY COURSE

Davis Senior High School, located in Davis, California, is offering a course to its students entitled "North Central California Geology-Sierra to Sea". The course is made up of several seminars and five weekend field trips. The first pilot course is now underway on a voluntary basis by the instructor and students. In April a class went on a field trip to The Geysers Geothermal field under the direction of Dave Anderson, California Division of Oil and Gas. Requests for class outlines and other inquiries should be directed to the instructor, Frank Bowman, Davis High School, Davis, California 95616.



Four members of the Davis High School Geology class at The Geysers; L-R Les Willet, Anne Bradford, Geanne Needham, and Rich Stout; mufflers in the background are attached to well No. "Thermal" 4.

## GEOHERMAL RESOURCES COUNCIL

All of the publications from the Geothermal Resources Council El Centro Conference are now in print. Following is a list of the publications:

1. "Compendium of First Day Papers Presented at the First Conference of the Geothermal Resources Council, El Centro, California, February, 1972". This publication contains papers on worldwide occurrences of geothermal phenomena, Federal geothermal leasing and operating regulations, geothermal exploration techniques, geology of the Imperial Valley, geothermal legal problems, the Sierra Club views on geothermal development, and two papers on dry steam and flashed steam power plants. The cost is \$4.
2. "Geothermal Overviews of the Western United States" (including Hawaii). This publication contains articles from 12 western states and information on the geology, geothermal potential, future power needs, regulatory agencies, and references on published papers on each state. The cost is \$6.
3. "List of El Centro Conference Attendees". The list contains names, company affiliations, addresses, and phone numbers of all registered members. The cost is \$2.

To obtain the above publications, write:

Geothermal Resources Council  
P. O. Box 1033  
Davis, California 95616

All of the above prices include postage. Make check or money order payable to the "Geothermal Resources Council".

The Finance Committee has met and drawn up plans to obtain funds for the Geothermal Resources Council for the remainder of this year. The Council will show a small profit from the sales of the El Centro Conference publications; however, it will not be sufficient to carry the organization through this year. The 1973 membership dues, which will be collected at the end of 1972, should put the G.R.C. on a sound financial basis.

It is the intention of the Executive Committee to bring the members of the Council into active participation both on the subcommittees and by changing the membership of the Executive Committee. The Committee is well aware that the members have no means of participating in the Council's activities although they have a great deal of knowledge and experience in the various phases of geothermal exploration, development, and production. Subcommittee rosters are now being distributed to the various chairmen, and meetings should be held in the near future. The next issue of the "Hot Line" will feature a list of the subcommittees and the chairmen.

The Executive Committee will meet on June 5, 1972, in San Francisco to discuss and finalize work being done on the following: finance, by-laws, incorporation, and plans for a 1973 conference to be held somewhere in the San Francisco area in the spring or early summer.

If you would like to join the G.R.C. for the year 1972, send your name, address, company affiliation, phone number, and \$10 to:

Geothermal Resources Council  
P. O. Box 1033  
Davis, California 95616

## NEW STEAM PRODUCTION AT TRAVALE, NEAR LARDERELLO, ITALY

In February, 1972, an important success in geothermal exploration was achieved at Travale, 20 km southeast of Larderello, where superheated steam was discovered. Complete production data is not

yet available, but each of several wells is reported to produce in excess of 200,000 lbs./hr. of superheated steam.

This success is important because:

1. Well locations were based on information provided by an isotopic survey.
2. The old wells at Travale produced only saturated steam in limited quantities. At the 1970 Pisa Symposium, Cataldi, et al., stated, "In the Travale field, which covers a very small area, it has been impossible not only to increase fluid output, but even to maintain production at the 1960 level. The field has displayed increasingly unfavorable characteristics, rendering the endogenous fluid incapable of utilization for the economic production of electric power".
3. During the past 20 years, the Larderello geologists maintained that the field had reached its total steam capacity and additional production was not anticipated. The Travale discoveries have proved that this opinion was wrong.

More detailed information is, of course, needed. However, there is little doubt that the Travale success is a landmark in geothermal exploration.

GIANCARLO FACCA

## DIVISION OF OIL AND GAS, SACRAMENTO

The Division is continuing its policy of providing information on geothermics and aiding in preparation of regulations for those counties that have geothermal development prospects, but no development to date. In late April, a Division representative met with the Siskiyou County Board of Supervisors in Yreka, California, to outline the possible effects of geothermal development. In the latter part of August, at the request of the Modoc County Board of Supervisors, the Division will have an information booth at the Modoc County Fair in Alturas to provide facts about geothermal development to the local population.

The County Program is considered by the Division to be essential for the rapid and sound development of geothermal energy in California.

## ARTICLE OF INTEREST

"Geothermal Energy", by L. J. P. Muffler and D. E. White of the U.S.G.S. at Menlo Park, appeared in the March, 1972, issue of *The Science Teacher* magazine. This is an unusually concise article (4 pages) covering the entire spectrum of geothermal theory including quantity of heat in the earth, sources of geothermal fluids, plate tectonics and the relation between geothermal areas and zones of subduction and sea-floor spreading, uses of geothermal resources, types of geothermal systems, and an estimate of the production potential of geothermal resources.

National Science Teachers Association  
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**James G. Stearns, Director**  
Department of Conservation

**John F. Matthews Jr.**  
Supervisor of Oil and Gas

**David N. Anderson, Editor**  
**L. H. Axtell, Assistant Editor**

1416 Ninth Street, Room 1316-35  
Sacramento, CA 95814

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