



GEOHERMAL HOT LINE

A Publication of the California Division of Oil & Gas

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New Geothermal Responsibilities for the CDOG

The California Division of Oil and Gas becomes lead agency, under the California Environmental Quality Act (CEQA), for all geothermal exploratory projects on state and private lands in California when California Assembly Bill 2644 goes into effect on January 1, 1979.

Under the new law, the entire CEQA process must be carried out within 135 days from receipt of a complete project application. The division may delegate lead agency responsibilities to counties that have geothermal elements in their

general plans; however, to date, Imperial County is the only county to adopt such an element.

Division staff members are developing procedures for reviewing and processing geothermal exploratory project applications to meet the short time frame required by the new law. This is an entirely new experience for the division, requiring an initial learning period and the close cooperation of other governmental agencies and the geothermal industry.

Western U.S.

Geothermal Ventures Planned for the Western U.S.

Many commercial geothermal projects in the Western United States are in the final stages of planning. Wells from most of these projects will harness energy in hot brines for an estimated output of over 300 MWe.

The projects include:

1. A 50 MWe power plant in the Jemez Mountains of north-central New Mexico to be built by Union Oil Company, Public Service Company of New Mexico, and the U.S. Government. Completion is scheduled for 1982. Project costs to be shared are estimated at \$100 million.
2. A 50 MWe power plant near Milford, Utah, to be constructed by Phillips Petroleum, Utah Power and Light Company, and Rogers International.
3. A 20 MWe power plant at Desert Peak, Nevada, to be built by Phillips Petroleum, Sierra Pacific Power Company, and Stone and Webster Engineering. In addition, Sierra Pacific has signed an agreement with General Inter-Tech of Sherman Oaks, California, for construction of a 5 MWe prototype power plant in Nevada. The plant will be designed to test a turbine system and to produce electricity.
4. A 10 MWe power plant, tentatively planned for construction at Raft River, Idaho. Several utility companies, including Idaho Power Company, are cooperating in the project. The project is supported by the Department of Energy for the DOE Idaho National Engineering Laboratory. (see separate article under IDAHO)
5. A 10 MWe power plant at Brawley, Imperial Valley, to be built by Union Oil Company and Southern California Edison Company, is scheduled for completion in 1980.
6. Four wells at Niland, Imperial Valley, to be drilled by Union Oil Company, Southern California Edison Company, and Southern Pacific Land Company. Edison will install a 10 MWe power plant, scheduled to begin producing in 1980.
7. A 50 MWe power plant to be built at Niland by Magma Power Company and San Diego Gas and Electric Company is scheduled for completion in 1980 at a projected cost of \$50 million.
8. A 50 MWe power plant for East Mesa, Imperial County, is planned by Republic Geothermal, Inc. and San Diego Gas and Electric Company. The project, scheduled for completion in the early 1980's, will cost \$50 million.
9. A 10 MWe power plant at East Mesa, to be constructed by Magma Power Company and the Imperial Irrigation District. Plans call for the plant to begin operation around 1980.
10. A 45 MWe power plant at Heber, in the Imperial Valley, to be built by Southern California Edison, Union Oil Company, and Chevron U.S.A. Inc.
11. A 3 MWe experimental power plant is planned for Hawaii. The DOE will help finance the project.

California

Subsidence Workshop

A geothermal subsidence workshop, sponsored by Lawrence Berkeley Laboratory (LBL), was held October 9-13 at Asilomar in Pacific Grove, California. Aims of the workshop were to review the progress of the ongoing, two-year-old, geothermal subsidence research program being conducted by LBL, and to recommend guidelines for updating the program.

About 80 representatives from industry, government, universities, LBL, and Lawrence Livermore Laboratory attended the conference.

Lake County Wells

The Lake County Planning Commission has granted a use permit to Aminoil to drill 19 geothermal wells in the Castle Rock Springs area of The Geysers Geothermal field. The wells will supply steam for Pacific Gas and Electric Company power plant No. 13 in Lake County.

New Power Plants Proposed for The Geysers

Pacific Gas and Electric Company has proposed the construction of a \$42.7 million, 110 MWe power plant (Unit 16) in The Geysers Geothermal field in Lake County. If the proposal is approved, plant construction would begin in 1980. Unit 16 would be powered by 15 steam wells owned by Aminoil USA, Inc.

The first power plant to be located on federal land in California has been proposed by the Northern California Power Agency, a group of Northern California cities. The plant, composed of two 55 MWe units, would receive steam from wells owned by Shell Oil Company and would begin operating in 1981 and 1982.

Sonoma State Students Study Cultural Resources Near The Geysers

The U.S. Army Corps of Engineers has awarded a contract to Sonoma State University to conduct cultural resource studies in and around The Geysers Geothermal field. Students will inventory archaeological sites in the area and recommend methods to protect them. The students will compile a list of Native American and historical sites in The Geysers area.

Drilling Activity Near Lassen Park

Phillips Petroleum Company has deepened an existing well near the southern border of Lassen National Park in Northern California. The new total depth is about 1220 m (4,000 feet), but tests are not complete and well potential has not been established.

The well was drilled on privately owned land within park boundaries. No additional drilling plans have been made.

Potential at Randsburg

Getty Oil Company and Mono Power Company (a subsidiary of Southern California Edison Company) have leased 5,478 acres southeast of Randsburg, California for geothermal exploration. The leases include portions of Secs. 13 and 24, T. 30S., R. 41E., and Secs. 9, 10, 15, 17, 18, 19, 20, and 21, T. 30S., R. 42E., S.B.B. and M. Positive results from drilling would be the first to occur in the Mojave Desert.

Geothermal Resources Board Workshops

The Geothermal Resources Board, under a grant from the Department of Energy, will sponsor four workshops between December 1978 and February 1979 on four aspects of geothermal development: local government planning; federal leasing;

transmission corridors; and low temperature applications. The workshops will provide a forum where representatives of local, state, and federal agencies; the general public; and industry can meet.

The workshop schedule is: Local Planning, December 7 and 8 in Sacramento; Federal Leasing, January 18 and 19 in Sacramento; Transmission Corridors,

early February in San Francisco; and Low Temperature Applications, late February in Sacramento.

Persons interested in attending the workshops or receiving further information should contact Suzanne Butterfield, Geothermal Resources Board Workshops Coordinator, at the California Department of Conservation, (916) 322-1080.

Idaho

Power Plant Project at Raft River

Construction has begun on a 5 MWe pilot power plant in the Raft River Valley. The plant will use 149°C (300°F), corrosive geothermal water to test the feasibility of a binary cycle plant using isobutane as the working fluid. The plant will begin operation in late 1980.

The project is supported by the Department of Energy (DOE), and managed by E.G. & G., Inc. for the DOE Idaho

National Engineering Laboratory. Several utility companies are cooperating in the study.

Three producing and three injection wells have been drilled to service the plant. One of the producing wells has three directional holes stemming from a single vertical hole. Plant effluent may be used for potato and manure processing, greenhouses, fish farms, cattle lots, and tree-growing.

Nevada

Northern Nevada to be Drilled

Eight companies are under contract with the DOE to drill 20 deep exploratory holes in Northern Nevada. The holes will be used for geophysical surveys. The companies include: AMAX Exploration, Inc.; Aminoil USA, Inc.; Chevron Resources Company; Earth Power Corp.; Getty Oil Company; Phillips Petroleum Company; Southland Royalty Company; and Union Oil Company. The \$18 million project costs will be shared by the DOE and the participating companies.

BLM Shares With Nevada

The U.S. Bureau of Land Management has awarded the state of Nevada \$240,000 as payment for a half share of bids received for geothermal drilling rights in Elko and Washoe Counties. Winning bids were submitted by Sunoco Energy Development Company and Occidental Geothermal Company for rights to acreage near Gerlach, and by Union Oil Company of California for rights to acreage near Ruby Valley. The leases include both public and private lands.

New Mexico

Los Alamos Scientific Laboratory (LASL) to Manage Hot Dry Rock Program

LASL and the U.S. Department of Energy will launch a program to determine the potential of hot dry geothermal energy as an economically significant energy source.

LASL and the National Hot Dry Rock Program Development Council will choose three 100-square mile areas to be studied

by private industry. One or more areas will be chosen for a deep drilling test and, possibly, a pilot plant.

LASL scientists believe there is an enormous potential for hot dry rock geothermal energy. They believe the energy from a 40-cubic mile block of hot granite equals that from about 12 billion barrels of oil or nearly the total energy used in the United States in 1977.

Utah

Roosevelt Hot Springs Well Available for Logging Tool Tests

The Los Alamos Scientific Laboratory has made a geothermal well drilled at Roosevelt Hot Springs KGRA available for logging tool tests. The 2098 m (6,883 ft.) hole is cased with 13.97 cm (5½ in.) casing to 1280 m (4,200 ft.) and has a bottom hole temperature of

225°C (437°F). Information is available from the site operations contractor engineer, Mr. K. L. Newman, WESTEC Services, 3211 Fifth Avenue, San Diego, California 92103; telephone (714) 294-9770 or Mr. M. A. Matthews, Los Alamos Scientific Laboratory, P.O. Box 1663, MS570, Los Alamos, New Mexico 87545; telephone (505) 667-6722.

Federal

BLM Ready for Wilderness Review

The Bureau of Land Management (BLM) has drafted its final procedures and will start to identify potential areas for inclusion in the National Wilderness Preservation System mandated by the Federal Land Policy and Management Act.

The BLM will inventory and evaluate roadless tracts of more than 5,000 acres and roadless islands having wilderness characteristics. Areas recommended for inclusion in the National Wilderness Preservation System will be submitted to Congress by the Secretary of the Interior. Land designated by Congress as wilderness areas cannot be used for activities such

as mineral and geothermal development, wildlife management, grazing, fire management, and off-road vehicle recreation.

U.S.G.S. To Study the California Cascades

A U.S.G.S. study of the California portion of the Cascade Range will focus on the area between Mt. Shasta and Medicine Lake and the area around Mt. Lassen. A geologic map, a heat flow study, an aeromagnetic map, a gravity survey, and active and passive seismic studies are planned. With information gained from these activities, the U.S.G.S. will develop models of geothermal systems in the California Cascades.

U.S.G.S. Continues Geothermal Research Grants

The U.S. Geological Survey will continue the extramural component of the Geothermal Research Program during fiscal year 1979. The program will emphasize hot dry rock and geothermal resources as well as resource characterization, regional assessment, and exploration technology for hydrothermal convective systems. The U.S.G.S. program does not include either site-specific studies intended to evaluate and confirm individual geothermal reservoirs or technological studies intended to improve geothermal energy-utilization methods.

Applicants should submit grant or contract proposals before December 22, 1978. Unsolicited proposals may be reviewed. Review will be based on scientific merit, applicability to the program, and

availability of funds. For further information, including grant and proposal guidelines, contact:

Geothermal Contracting Officer
Procurement and Contracts Section,
Eastern Region
U.S. Geological Survey
National Center, Mail Stop 291
12201 Sunrise Valley Drive
Reston, Virginia 22092

Federal Leases to Double in Size

Legislation has been introduced to more than double the amount of federal land a person or corporation may lease for geothermal exploration. The present 21,480 acre limit per state will be raised to 51,200 acres if the bill passes. By comparison, oil and gas leases obtained by an individual or corporation can include up to 250,000 acres per state.

Competitive Lease Sale Schedule as of 12/01/78

Lease sale dates are provided by the state directors of the U.S. Bureau of Land Management (BLM). Lease sale dates are tentative until public notice is issued 30 days prior to sale. Lease sale notices may be obtained by contacting the appropriate BLM state office.

<u>Location of KGRA</u>	<u>Latest Sale Date Scheduled</u>	<u>Original Sale Date</u>
Alvord Desert, OR	01/ /79	02/09/78
Mt. Hood, OR	01/15/79	07/07/78
Mono-Long Valley, CA	03/ /79	02/ /79
Nevada Reoffers, NV	06/ /79	06/ /79
Indian Heaven, St. Helen, WA	07/ /79	03/19/79
Belknap-Foley H.S., OR	07/ /79	07/06/78
Gillard H.S., Clifton, AZ	08/ /79	08/ /79
The Geysers (MRL), CA	10/ /79	05/ /79
Island Park (ID & MT), ID	10/ /79	10/ /79
Lassen, CA	03/ /80	03/ /80
Gerlach NE, Double H.S., NV	04/ /80	04/ /80
Fly Ranch NE, NV	04/ /80	04/ /80
Newberry Caldera, OR	05/01/80	05/01/80
McCredie, OR	10/23/80	10/05/80
Beckworth Peak, CA	11/ /80	06/ /79
Coso, CA	12/ /80	12/ /80
Corwin Springs, MT	12/ /80	12/ /80

Conferences

A Symposium on Direct Uses of Geothermal Energy in the Eastern United States

A symposium titled Direct Uses of Geothermal Energy in the Eastern United States will be held in Hot Springs, Virginia, April 4-6, 1979, and include discussions on the following topics: Geothermal Resources and Low-Temperature Reservoirs; Geology of the East Coast,

Arkansas, and Mississippi; Geothermal Exploration Methods and Results-- Atlantic Coastal Plain and Inland States; Aquifers of the Atlantic Coastal Plain; Low-Temperature Reservoir Engineering; and Fluid Heat Management. For further information, contact Geothermal Resources Council, P.O. Box 98, Davis, California 95616, (916) 758-2360.

Publications

Studies of a Geothermal System in Northwestern Nevada, Colorado School of Mines Quarterly, v. 73, no. 3 and 4, 1978. The following topics are covered by the two issues in 15 papers: geological studies; geophysical studies to deduce structural setting; and research and development of electrical exploration methods. Available from: Colorado School of Mines Press, Golden, Colorado 80401. \$7.50/issue or \$30.00/year.

Geothermal Energy, Research, Development, and Demonstration Program, Second Annual Report, April 1978, DOE/ET-0039/1 The Federal Geothermal Energy Program, program accomplishments in fiscal year 1977, and future plans are described. Available from National Technical Information Service, Springfield, Virginia 22161. The cost is \$8.00.

Environmental Analysis for Geothermal Energy Development in The Geysers Region

This report, funded and distributed by the California Energy Commission, may be purchased from the commission's publication office, 1111 Howe Avenue, Sacramento, California 95825. An executive summary of the report is free upon request.

The GRIPS Plan for environmentally acceptable development of geothermal resources in The Geysers Geothermal area was published by the Geothermal Resource Impact Projection Study Commission (Mendocino, Lake, Napa, and Sonoma Counties, California). The study was funded by the California Energy Commission and the U.S. Department of Energy. For information about the GRIPS Plan, contact David Hill at (916) 920-6031.

Hawaiian Geothermal Leasing and Drilling Regulations

Hawaii's geothermal leasing and drilling regulations became effective May 19, 1978. They are available from: Dan Tum, Department of Natural Resources, P.O. Box 372, Honolulu, Hawaii 96809 (808) 548-2211.

State of Washington Rules and Regulations

Preliminary rules and regulations for operators drilling geothermal wells in Washington have been published and are available from Mr. Donald Ford, Division of Geology and Earth Resources, Department of Natural Resources, Olympia, Washington 98504 (206) 753-6183.

Letting Off Steam

The editor and staff of the Geothermal HOT LINE encourage our readers to voice their opinions about the HOT LINE or make comments of interest to the geothermal community. Such contributions will be considered for publication as will any news items or articles that are submitted. If you have some steam to let off, here's your chance.

Send your comments and items for publication to:

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Map Price Change

Effective January 1, 1979, all California
Division of Oil and Gas maps, including
geothermal maps, will cost \$3.00 each.

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