

GEO THERMAL HOT LINE

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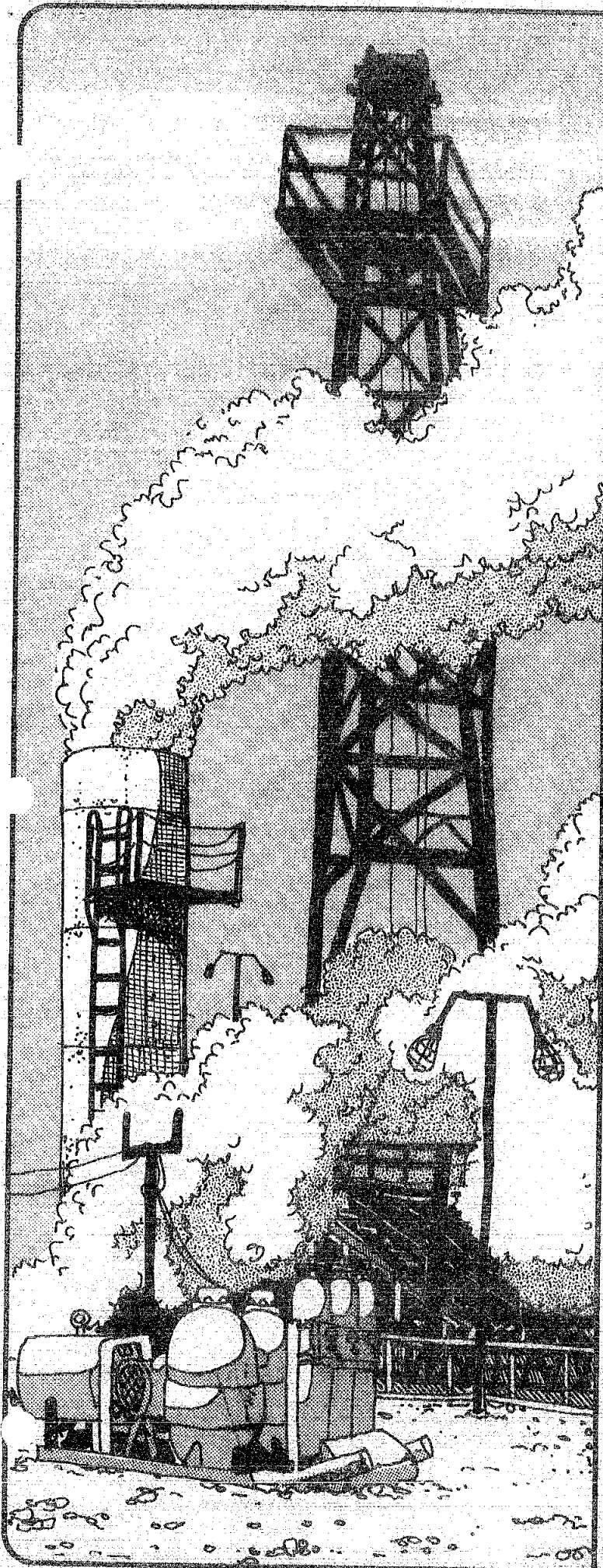


Governor Brown Tours The Geysers

On February 23, 1978, Governor Brown toured The Geysers Geothermal field. His commitment towards an expanding role for geothermal energy in California's future was emphasized by the visit.

At The Geysers, Governor Brown announced plans to sponsor legislation cutting the state government review time for applications to drill exploratory wells and construct power plants. He expressed confidence that environmental impacts can be minimized during geothermal operations.

Later, at a San Francisco press conference, the Governor pledged to do everything he could to assure development of geothermal resources in the Imperial Valley in Southern California. He said he would seek funds for planning studies in 19 counties that could be affected by geothermal development.



LEGAL (CALIFORNIA)

CDOG to Continue Geothermal Regulatory Functions

On March 16, at the request of State Senator John Stull, a member of the State Geothermal Task Force, an opinion from the Office of the Attorney General was issued. The opinion stated that the Energy Commission's jurisdiction does not extend to the regulation of geothermal wells drilled around geothermal power plants in California.

The Attorney General's opinion states, in part, that "The Energy Commission has no regulatory jurisdiction at any time over the drilling, operation, maintenance, and abandonment of geothermal wells. The authority of the Energy Commission to certify all sites and related facilities for certain thermal power plants...does not extend to geothermal wells supplying geothermal steam to a power plant because geothermal wells are not facilities appurtenant to a power plant."

The State Oil and Gas Supervisor of the California Division of Oil and Gas will continue to exercise regulatory authority over geothermal wells. The Supervisor has held this authority since 1965.

Notice to Geothermal Operators in California

The following notice was recently sent to

all geothermal operators in California:

"The U.S. Ninth Circuit Court of Appeals recently ruled that the geothermal resources underlying lands patented under the Stock-Raising Homestead Act of 1916 are minerals and are therefore reserved to the United States. The U.S. Supreme Court has denied a petition by private property owners in Sonoma County which sought review of this decision. A consequence of the decision is that the regulatory jurisdiction over geothermal well operations on Homestead Act lands will be shifting from the state of California to the federal government. Until the federal government has entered into valid leases covering the mineral interests held by the court to have been reserved to the United States, the California Division of Oil and Gas will continue to supervise the geothermal operations on Homestead Act lands. When valid leases have been issued by the federal government, the United States Geological Survey will become the primary regulatory authority.

"If you have any questions regarding this matter, feel free to contact me or our Geothermal Officer, Doug Stockton, in Sacramento."

M. G. Mefford

State Oil and Gas Supervisor

CALIFORNIA

UPDATE: Geothermal Task Force (Hotline, December 1977)

The Executive Summary of the Geothermal Task Force was presented by chairperson Priscilla Grew at a press conference on December 29, 1977 in Sacramento. The report contains Task Force recommendations for solving problems raised during 8 days of public hearings and 26 days of meetings in 1977. The present status of geothermal energy in California is described in the report as well as ways to overcome obstacles facing geothermal development.

Report recommendations would not radically change the role of governmental agencies now regulating the geothermal industry.

The recommendations include:

1. Legislation to establish statewide policy which encourages geothermal development in a manner consistent with environmental quality standards.
2. Establishment of statewide policy to encourage the use of nonelectric hot water resources.
3. Regulations to control air pollution from geothermal operations at the Geysers. (Adoption of the Air Resources Board proposal by Lake and Sonoma Air Pollution Control Districts).
4. Injection to prevent subsidence required

of all geothermal operators in the Imperial Valley area.

5. Noise standards adopted by each county.
6. Duplication of effort avoided between state and federal agencies preparing environmental reports. Both state and federal agencies would use the first EIR written by either of them or join together with a single environmental document that will meet the requirements of both state and federal law.
7. Adoption by local jurisdictions of zoning ordinances that designate areas for geothermal development.
8. Retention of land use approvals for geothermal wells, steam transmission lines, and related facilities by the appropriate local jurisdiction.
9. Retention of approvals for geothermal power plants (excluding wells, steam transmission lines, and related facilities) by the California Energy Resources Conservation and Development Commission.
10. Legislation sponsored by the California Division of Oil and Gas to eliminate bonding requirements extending for the "life of the well" for low-temperature geothermal wells that do not pose a threat to health, safety, or the environment.
11. Prices of geothermal resources determined between buyers and sellers in the marketplace.

UPDATE: Conservation Director (Hotline, December 1977)

With a last-minute change of mind, Dr. Priscilla C. Grew has decided to remain in Sacramento as Director of the Department of Conservation. The Resources Agency offered her an occasional leave of absence to visit her husband who is in Australia.

UPDATE: Coso Hot Springs Well (Hotline, December 1977)

Chemical analyses made by the U.S.G.S.

on water samples taken from the two wells drilled near Coso Hot Springs reveal the geothermal resource is a liquid-dominant system, not a vapor-dominant system. The presence of 3-to-4,000 ppm sodium chloride in the water samples led to a conclusion that the system is a hot water resource.

UPDATE: Greenhouses in Lassen County (Hotline, December 1977)

Thirty greenhouses to be heated by geothermal water from nearby hot springs are under construction in the "Hobo Wells" area near Wendel, California. Tomatoes, cucumbers, and lettuce are slated to be raised in the greenhouses. Fresh water from nearby wells will nourish the crops. The produce will be sold through a Los Angeles produce firm.

Eventually, the project will be expanded to a total of 205 greenhouses.

Imperial County

It was announced in December that the Imperial County Board of Supervisors adopted the Geothermal Element of the Imperial County General Plan. The Geothermal Element is the only one of its kind in the nation, spelling out policies which should enable rapid development of geothermal energy while preserving agriculture and other concerns. Imperial County now will develop regulations to implement the policies.

The document is available from the County of Imperial, Department of Planning, Courthouse, El Centro, CA 92243.

The completion of the document marks the end of an NSF-ERDA grant project started in 1975.

San Diego Gas and Electric Co. Plans Demonstration Plant

The San Diego Gas and Electric Company (SDG&E) has asked the Department of Energy to share in the cost of constructing a 45MW binary-cycle power plant near Heber in the Imperial Valley. The plant will demonstrate the feasibility of power generation using 360°F, 14,000 ppm brine.

The plant would be the first large-scale geothermal power plant in the U.S. to use a liquid-dominated resource and the binary energy conversion process. It is expected that information gained from operating the plant will be applicable to other geothermal projects operating in a wide range of moderate-temperature, low-salinity hydrothermal reservoirs. Most known U.S. geothermal reservoirs fall into this category.

Participating with SDG&E in the project will be the Los Angeles Department of Water and Power (10%), the Imperial Irrigation District (10%), and Southern California Edison (3%). In addition, contributions will come from other utilities, and government agencies.

Southern California Edison Plans First Geothermal Power Plant

In February, Southern California Edison Company announced the signing of a letter of intent to purchase geothermal brine from Chevron Resources Co.

The brine will be used in a 50 megawatt flash-steam geothermal electric generating plant to be located near Heber, Imperial County, California.

After completion in late 1982, the plant will be the site for the first commercial application of the "double-flash" system in the country, according to William Seaman, Edison vice president. The terms of the agreement were not disclosed.

Lake County: Geothermal Permit Appealed

A geothermal use permit for four wells in the Cobb Mountain Estates leasehold in Lake County was issued February 9 to Union Oil Co. Originally, the project was to include 48 wells and at least one power plant, but was later reduced to the 4 wells and no power plant.

The Sierra Club, the Energy Council of Lake County, and the Friends of Cobb have appealed the permit. The appeal was filed for the following reasons: The EIR was inadequate for the 48-well project; Cobb

Mountain is a sensitive area due to its residential and recreational uses; and land use planning had not considered geothermal development compatibility with other uses, nor are these issues addressed in the Lake County general plan.

The appeal was heard before the Lake County Board of Supervisors. Results were not available to the public at press time.

Napa County Waives EIR

Napa County supervisors voted to allow the first of three exploratory wells north of Calistoga to be drilled without an environmental impact report. However, a use permit will be needed before drilling may begin.

The 3-2 vote would allow Amax Exploration, Inc. of Denver to start exploratory drilling. John Tuteur, who voted against the measure, said he would appeal the permit to bring the issue before the public.

City of Ukiah to Generate Geothermal Power

Voters in Ukiah decided at the March 7 election that the city should join in a \$41 million geothermal power project at The Geysers. With a vote of 1,545 to 1,239, Proposition A was passed.

The contract between eight Northern California Power Agency (NCPA) cities and Shell Oil Company calls for the NCPA to build a power plant at The Geysers in Lake County and buy steam from Shell. Ukiah, a NCPA member, would provide about \$2.4 million and receive 5% of the produced energy, enough for about one-third of the city's needs.

The planned 110MW plant is scheduled for completion in 1981. The facility, requiring 2 million pounds of steam per hour, will cost \$30 to 35 million.

Senator Cranston Boosts Geothermal

U.S. Senator Alan Cranston (D-California) has spoken in favor of rapid development of geothermal energy. Cranston discussed the situation with geothermal experts in December.

The Senator feels the main push for geothermal development must come from the federal government rather than state agencies. He offered to seek a review to make sure the industry isn't being held back by failure to attract capital and by unfair tax laws. Cranston favors a "full depletion allowance" for geothermal developers and a 10 percent tax credit for investors. The Senator also feels that the federal government should assume some of the

development risks, such as lawsuits over subsidence and hydrogen sulfide air pollution.

Cranston wants to review federal lease procedures that have discouraged small geothermal prospectors and to simplify the EIR process. He will also push for a second federal demonstration plant near the one at Niland, California.

NEVADA

Dept. of Energy Wants Site Proposals

The Department of Energy (DOE) wishes to acquire surface geological data, geothermal reservoir data, and reservoir engineering data for the Battle Mountain heat flow high, northern Basin and Range Province, Nevada. The DOE desires previously reported or unreported data. Proposals for collecting and submitting data are due by May 30, 1978.

The DOE will publish data acquired as a geothermal reservoir assessment case study.

A pre-proposal conference will be held at 1:00 p.m., PST, April 25, 1978, at the DOE Nevada Operations Office, 2753 South Highland, Las Vegas, Nevada. For more information, contact Mr. Cleon Nedrow, U.S. Department of Energy, Nevada Operations Office, P. O. Box 14100, Las Vegas, Nevada, (702) 734-3166.

NEW MEXICO

Lease Sales

Geothermal lease sales will continue to be held periodically. Nominations for consideration for future lease sales should be sent to:

Commissioner of Public Lands
Attn: Jack J. Kennedy
Director Mineral Division
P. O. Box 1148
Santa Fe, NM 87501

TEXAS

Geopressured Test Well

General Crude Oil Co. has contracted with the Department of Energy to drill a test well in the Gulf Coast geopressure zone. The well is to be 5,030 meters (16,500 ft) deep and located in Brazoria County, 65 Km (40 mi.) south of Houston. The venture is an attempt to tap an estimated 200 to 700 trillion cubic feet of methane and geothermal fluids. The 1½- to 2-year program will cost about \$5.8 million. May 1 is the anticipated drilling date.

An anticipated 57,000 cubic meters (2 million cf) of gas per day from the 40,000 barrels of brine will be sold by General Crude. If the reservoir shows a 20-year life span, a power plant might be justified. The well is expected to have a bottom hole temperature in excess of 350°F.

The well site was selected after a University of Texas-Louisiana State University study of a 1,100-mile-long geopressure zone. The site is near three of General Crude's producing gas wells.

UTAH

UPDATE: Department of Energy Contracts (Hotline, December 1977)

In addition to the contracts to Union and Getty Oil Companies, the Department of Energy has awarded four contracts to gain geothermal reservoir data in Southwestern Utah. Thermal Power Co. (\$282,000) and the University of Denver (\$67,330) are contracted to secure additional data from existing wells in Roosevelt Hot Springs. Geothermal Power Company has contracted for \$710,468 to drill 20 wells from 90m (300 ft) to 2135m (7,000 ft) deep, and Seismic Exploration, Inc. has been awarded a \$11,740 contract to record and analyze seismic data, also in the Roosevelt Hot Springs area.

A Power Plant in Roosevelt Hot Springs

Utah Power and Light Company signed an agreement to negotiate a contract with Phillips Petroleum Company and Rogers

International to design and construct a 52MW geothermal power plant. The generating plant will be located in Beaver County near Milford, and is subject to approval by the Public Service Commission.

The resource at Roosevelt Hot Springs is liquid-dominated with a maximum recorded temperature of 260°C (500°F) and less than 8,000 ppm total dissolved solids. The noncondensable gases contain less than one ppm hydrogen sulfide. Produced water will be injected into the reservoir, minimizing the environmental impact of the project.

Phillips will supply the steam, and Rogers will finance and build the power plant at an estimated cost of \$35 million. Financing will be through bank loans and the Department of Energy Geothermal Loan Guaranty Program. The estimated completion date is 1982.

FEDERAL

East Coast Drilling Sought

The goal of a new Dept. of Energy (DOE) project is to find hot water in sedimentary rocks along the Atlantic Coastal Plain to use for space heating. Sixty 300m (1000 ft.) shallow holes will be drilled from New Jersey to Florida to measure heat flow. One deep hole, 2100m (7000 ft.), will be drilled to investigate the most promising area found through shallow

drilling. Four additional deep wells may be drilled.

Well sites will be selected by staff members from the Virginia Polytechnic Institute and State University.

The DOE accepted applications for a contractor to supervise and subcontract the drilling of these holes. Contractor selection will take place in April.

Competitive Lease Sale Action Schedule as of 3/13/78

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>
Wendel Amedee, CA	05/01/78	01/20/77
Marysville, MT	05/19/78	04/05/76
Socorro, Lt. Dock, Rad Sp NM	05/24/78	05/24/78
Alvord Desert, OR	06/15/78	02/09/78
Klamath, Burns Butte, OR	06/15/78	06/15/78
Crump Geysers, Summer L, OR	06/15/78	06/16/78
Randsburg, CA	07/11/78	05/06/78
Stillwater-Soda Lake, NV	07/18/78	03/22/78
Gerlach NE, Gerlach, NV	07/18/78	10/18/77
Fly Ranch, Trego, NV	07/18/78	12/13/77
Fly Ranch Northeast, NV	07/18/78	12/14/77
Breitenbush Hot Sp., OR	09/14/78	07/14/77
Vulcan, ID	10/12/78	07/15/76
Geysers, Knoxville, CA	10/31/78	10/31/78
Double H.S., Elko H.S., NV	12/12/78	08/10/78
Belknap-Foley H.S., OR	01/08/79	07/06/78
Mt. Hood, OR	01/15/79	07/07/78
Carey Hot Springs, OR	02/13/79	01/01/79
McCredie, OR	02/13/79	10/05/78
Indian Heaven, WA	03/13/79	03/19/79
East Mesa, CA	07/01/80	08/17/78

FOREIGN

Hot Brine Study at Cerro Prieto

Geologists from Mexico's Comision Federal de Electricidad and the U.S. Geological Survey are studying the Cerro Prieto area in Northern Mexico. Aims of the five-year study of brines and power generation are to improve methods of drill site selection, brine production, and water disposal. The power plant at Cerro Prieto now produces 75MW from flashed steam at

up to 330°C.

The scientists are working at Lawrence Berkeley Laboratory facilities under contract with the Department of Energy. The geologists will try to determine the origin of the hot brines and trace their movements through the rock using radioactive isotopes. An additional goal is to improve measurement of well productivity and to develop ways to recycle waste water.

CONFERENCES

April 19 - 20, 1978:

Hot Dry Rock Geothermal Information Conference, Santa Fe, New Mexico. Conference participants will receive a broad overview of the Hot Dry Rock Geothermal Energy Development Project conducted by the Los Alamos Scientific Laboratory for the Department of Energy. A scheduled tour and briefing will be held at the Fenton Hill hot dry rock site. Contact Public Relations Office, University of California, Los Alamos Scientific Laboratory, P.O. Box 1663, MS 286, Los Alamos, NM 87545.

April 20 - 21, 1978:

Hot Dry Rock Geothermal Technical Workshop, Los Alamos, New Mexico. Workshop objectives are to provide briefings and discussions of research on hot dry rock systems. A tour of the Fenton Hill site is available. Contact Public Relations Office, University of California, Los Alamos Scientific Laboratory, P.O. Box 1663, MS 286, Los Alamos, NM 87545.

May 9 - 11, 1978:

Geothermal Seminar - 78, Sacramento, California. The three-day seminar features speakers from industry, utility companies, and governmental agencies discussing geothermal development. Some topics will be: activity and status of governmental agencies and committees; economics; land use; air studies; hot dry rock resources; hot water vs. steam; noise; pollution abatement; H_2S ; and rough-terrain modeling.

Contact Geothermal Seminar 78, P.O. Box 145, Lakeport, CA 95453. Registration \$35 to \$45 plus meals and room.

May 17 - 18, 1978:

Geothermal Energy: A National Opportunity, Washington, D.C. This short course (No. 7) will present to members of the administration, Congress, federal agencies, and other interested persons, critical issues facing geothermal developers. It will provide a forum for participants to discuss geothermal development and for the Department of Energy to outline its overall geothermal program. Contact the Short Course Coordinator, Geothermal Resources Council, P.O. Box 1033, Davis, CA 95616. (916) 758-2360. Registration \$250 to \$315.

July 25 - 27, 1978:

Geothermal Resources Council annual meeting, Hilo, Hawaii. The meeting will feature papers presented on many aspects of geothermal energy, and exhibits by service companies and operators. Contact Beverly Hall, Geothermal Resources Council, P.O. Box 1033, Davis, CA 95616. (916) 758-2360.

September 11 - 15, 18 - 22, 1978:

Geothermal I and Geothermal II, San Francisco. These are training courses presented by Petroleum Training and Technical Services (PTTS). For information, contact PTTS at Box 2523, Norman, OK 73070. (405) 360-0880.

PUBLICATIONS

Analysis of Requirements for Accelerating the Development of Geothermal Energy Resources in California, by C. D. Fredrickson. This 1½-year project was undertaken by the Jet Propulsion Laboratory (JPL) for the California Energy Resources Conservation and Development Commission (ERCDC) and the Division of Geothermal

Energy of the U.S. Department of Energy (DOE).

The project report is an optimistic view of the geothermal energy resource in California and gives several recommendations for speeding development. Limited quantities of the publication are available from the

Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA. Later printings, in greater numbers, will be available from the DOE and the California Energy Commission.

An Appraisal Study of the Geothermal Resources of Arizona and Adjacent Areas in New Mexico and Utah and their Value for Desalination and Other Uses, by C. A. Swanberg, et al. (1977). This 76 page report contains temperatures, chemical analyses, and geotemperature data for most hot springs and wells in the study area. Also included are maps showing temperatures, chemical geotemperatures, and salinities of over 10,000 water wells from the USGS Watstore File. Other data included are seismicity, recent volcanics, sedimentary basins, and temperature gradient data. The publication is free from the New Mexico Energy Institute, P.O. Box 3EI, Las Cruces, NM 88003. Ask for NMEI Tech. Report #6.

Geothermal Energy Utilization, by Edward Wahl. (1977). The book deals with processing produced geothermal fluids. It is a compilation of current knowledge about process chemistry and thermodynamics of geothermal energy utilization. Published by

John Wiles, and Sons, New York 302 pages. \$22.

Hot Dry Rock Geothermal Energy: Status of Exploration and Assessment, (1977), Report No. 1 of the Hot Dry Rock Assessment Panel. This report summarizes the status of exploration for and evaluation of hot dry rock geothermal energy sources. The publication reviews existing exploration techniques and recommends promising drilling areas. Maps, tables, graphs. Available from National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161. 206 pages.

The Energy Source Book. An encyclopedia of information on all types of energy. Among the topics covered are: President Carter's energy proposals, world energy outlook, future production, energy source facts, and energy affect on industry. Most chapters are broken down into individual energy sources: oil, gas, coal, nuclear, geothermal, solar, etc. Available from The Center for Compliance Information, Aspen Systems Corporation, 20010 Century Boulevard, Germantown, MD 20767. 736 pages. \$49.50.

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