U.S. Department of Energy
Division of Geothermal Energy

User Coupled Confirmation Drilling Program

TODAY'S ENERGY PICTURE IN THE U.S.

The United States produces only about three-quarters of the energy that it consumes. Approximately 48% of our energy consumption is in the form of petroleum products. Petroleum products are also important in the manufacture of many consumer goods such as plastics. Approximately one-half of the total petroleum consumed in the U.S. comes from foreign countries. The $80 billion the U.S. spends yearly in foreign markets for petroleum has a highly detrimental effect on the U.S. economy. Energy use forecasts for the year 2000 and beyond indicate that *all* feasible alternative energy sources will be needed and that conservation measures will have to be practiced as well if our standard of living is to be maintained. The energy crisis is real!

HYDROTHERMAL ENERGY— A VIABLE ENERGY ALTERNATIVE

Hydrothermal energy is geothermal energy in the form of hot water and steam that occurs naturally at many locations beneath the earth's surface. Studies by the U.S. Geological Survey indicate that hydrothermal energy forms a very large energy reserve in the United States. The potential for development of hydrothermal energy in the U.S. is estimated to be 2400 Quads (2400×10^{15} BTU), compared to today's yearly total energy use of about 80 Quads. Little of this large resource has been developed in the past due to the availability of relatively inexpensive energy in other forms. But today, energy costs are increasing world-wide and hydrothermal energy is becoming cost competitive with more traditional sources. Unlike solar, nuclear fission and coal, hydrothermal energy is safe and environmentally clean. It is widespread throughout the United States, especially in the West. Hydrothermal energy will make a positive impact on our energy shortage long before solar, wind, ocean thermal or fusion energy. Hydrothermal energy is truly a viable energy alternative.

HYDROTHERMAL COMMERCIALIZATION

Geothermal steam can drive turbines to generate electricity. This is presently being done at The Geysers steam field north of San Francisco, CA., where enough electrical power is generated to supply the needs of more than 600,000 people. Geothermal steam also generates electricity in Mexico, Italy, New Zealand, Japan, El Salvador, the Philippines, and elsewhere. More importantly, there are direct heat uses for geothermal steam and hot water such as industrial processing, space heating, air conditioning, aquaculture, motor fuel grade alcohol production, and many other uses. The new User Coupled Confirmation Drilling Program is designed to accelerate commercial development of direct heat uses.

Commercial utilization for direct heat applications presently lags because of a number of problems, the principal one being lack of confirmed hydrothermal reservoirs. Although many hot springs and wells are known, especially in the western United States, few reservoirs have been explored and drilled sufficiently to create the high level of certainty needed by developers to make positive investment decisions. Developers and financial institutions need to know that an adequate supply of geothermal fluids at high enough temperature can be brought to the surface for an adequate time span. Drilling into hydrothermal resources at depth and flow testing the wells is the only way to confirm an adequate supply of fluids. At the present time, drill confirmation of reservoirs carries both high risk and high cost. Confirmation is risky because of the significant odds of drilling an unproductive well. It is costly because of the high cost of drilling. The User Coupled Confirmation Drilling Program will speed hydrothermal commercialization by absorbing some of the high risk and high cost while at the same time developing an experienced industry in the private sector that can carry on without federal aid in the future.

USER COUPLED CONFIRMATION DRILLING PROGRAM

Program Description

The U.S. Department of Energy, Division of Geothermal Energy is sponsoring a new program that absorbs a portion of the high risk and high cost of confirmation by providing cost-sharing for hydrothermal reservoir confirmation for direct heat applications. The User Coupled Confirmation Drilling Program will cost-share expenses for exploration to site drill holes, drilling, flow testing, reservoir engineering, and injection well drilling (if required). The federal percentage of cost-share will be determined by a negotiated formula based upon the degree of success of the confirmation project in terms of economic usability of the thermal fluids intersected by the drilling. For a completely successful project, the DOE cost-share will be about 10 percent whereas for a completely unsuccessful project, the DOE cost-share will be about 90 percent. The degree of success and the corresponding DOE cost-share are expected to range between these extremes for individual projects.

Implementation

The new program will be initiated by a DOE Solicitation for Cooperative Agreement (SCA), to be issued in May 1980. A 60-day period will be available thereafter for preparation and submission of proposals. It will be required that proposals detail, among other things, 1) the geologic evidence that a resource exists at the site of interest, 2) the direct heat use to be made of geothermal fluids if discovered and confirmed, 3) an adequate exploration, drilling, flow testing and data analysis program, and 4) an acceptable cost-share plan based on degree of success of the project. Proposals will be reviewed and awards made in accordance with applicable federal regulations. Successful proposers will negotiate a contract with DOE. The contractor's funds can be used to perform the project, or alternatively a loan can be obtained from a commercial financial institution, using the DOE contract as evidence that project risk has been substantially reduced. The project will then proceed under contractor management. After flow testing, the degree of success will be determined through analysis of flow testing results and by application of provisions for this purpose that have been negotiated in the contract. The DOE cost-share is then determined, and DOE pays this amount to the contractor, completing the agreement.

Who is Eligible

Private individuals or companies and state and local government agencies can offer proposals under this program. The proposer will be required to demonstrate that he has included adequate geological drilling and engineering expertise in the proposed project. Consultants and contractors can be used to provide this expertise as needed.

Schedule

The SCA will be issued in the last part of May, 1980. Response period will be 60 days. Successful proposers will be notified in August 1980 and then contract negotiations will begin. It is anticipated that projects can begin on 1 October 1980.

Management

The User Coupled Confirmation Drilling Program will be managed for DOE Headquarters by the Idaho Operations Office of DOE with assistance from the Earth Science Laboratory of the University of Utah Reserach Institute and from EG&G, Idaho, Inc.

To indicate your interest in attending one of the Public Information Meetings, please detach and return by April 21, 1980 to:

EARTH SCIENCE LABORATORY
UNIVERSITY OF UTAH
RESEARCH INSTITUTE
420 Chipeta Way, Suite 120
Salt Lake City, UT 84108
ATTENTION: Sue Moore

NAME _____

AFFILIATION _____

ADDRESS _____

_____

_____

Area(s) of Interest

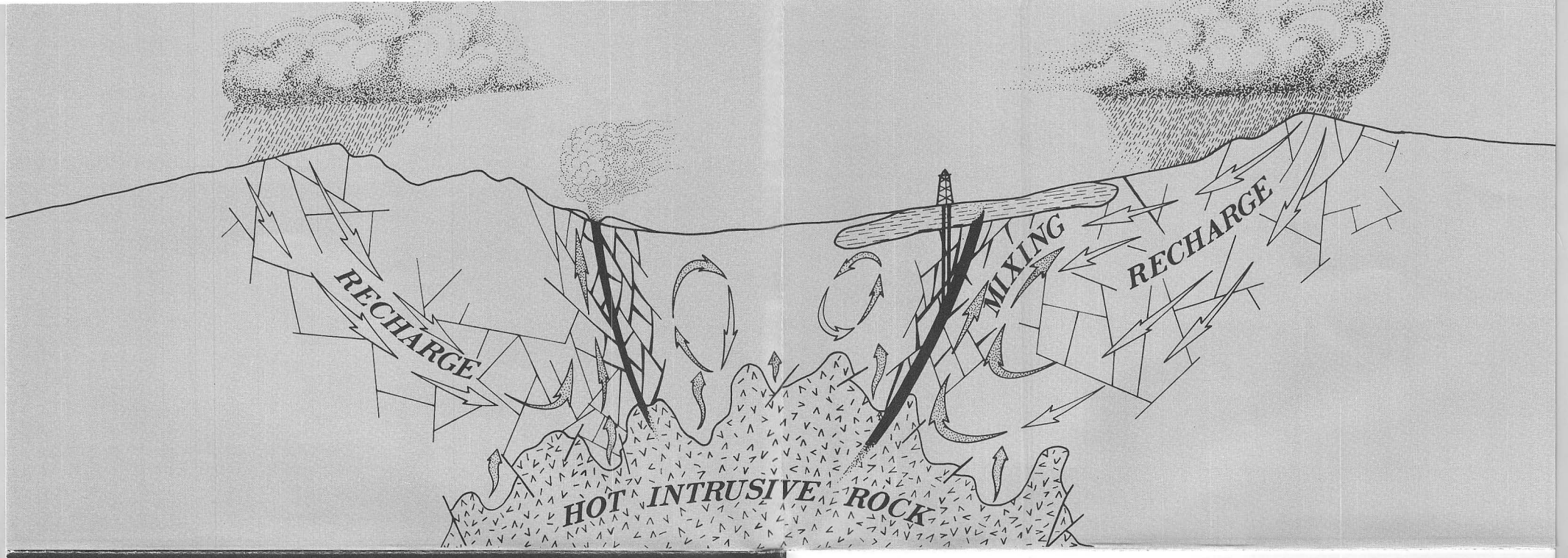
- ☐ Exploration
- ☐ Drilling
- ☐ Reservoir Testing
- ☐ Equipment Manufacturing
- ☐ Financing
- ☐ Institutional
- ☐ Environmental
- ☐ Other _____

I am a

- ☐ Prospective User
- ☐ Prospective Developer
- ☐ Prospective Financier
- ☐ Contractor/Consultant
- ☐ State or Local Government Employee
- ☐ Regulatory Agency Employee
- ☐ DOE Contractor
- ☐ Other _____

I will attend the meeting in:

- ☐ **Washington, D.C.**
- ☐ **Denver**
- ☐ **Oakland**
- ☐ **I will not attend, but please send written information.**



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Earth Science Laboratory
University of Utah Research Institute
420 Chipeta Way, Suite 120
Salt Lake City, UT 84108

DIRECT HEAT APPLICATIONS
for
HYDROTHERMAL RESERVOIRS
to confirm
EXPLORATION, DRILLING, AND TESTING
for
FEDERAL COST SHARING

a new program to provide

USER COUPLED CONFIRMATION DRILLING PROGRAM

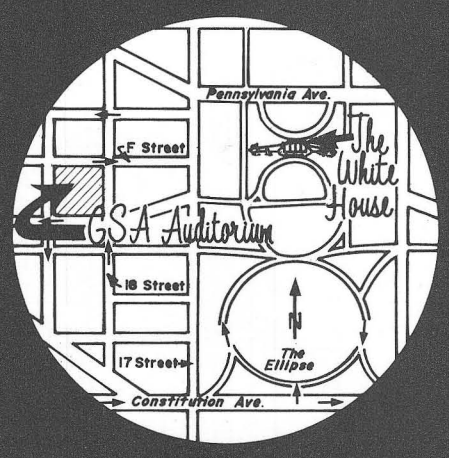
U. S. DEPARTMENT OF ENERGY
DIVISION OF GEOTHERMAL ENERGY

ANNOUNCEMENT

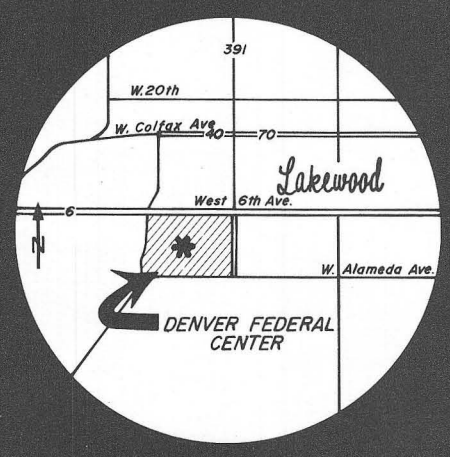
PUBLIC INFORMATION MEETINGS

Plan to attend one of the following meetings to obtain more information on the User Coupled Confirmation Drilling Program.

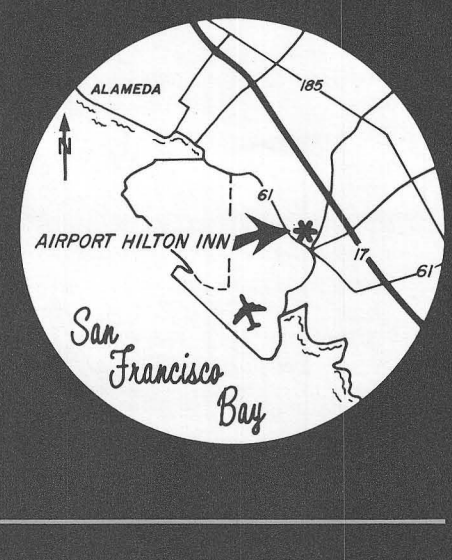
28 April 1980
9:00 AM to 12:00 Noon
General Services
Administration Auditorium
18th and F Streets N.W.
Washington, D.C.



30 April 1980
9:00 AM to 12:00 Noon
Federal Center
6th Avenue and Kipling
Building No. 56 (Auditorium)
—entrance
W1 on 6th Street
Lakewood, CO.



2 May 1980
9:00 AM to 12:00 Noon
Airport Hilton Inn
1 Hegenberger Road (adjacent to Oakland Airport)
Oakland, CA.



AGENDA

0900–0925	Present DOE Geothermal Programs
0925–0950	Overview of User Coupled Drilling
0950–1005	Exploration and Drill Site Selection
1005–1035	Drilling and Testing
1035–1100	– break –
1100–1125	Financial, Environmental, Institutional and Utilization Considerations
1125–1145	Program Management and Schedule
1145–	Questions