

## AMERICAN THERMAL RESOURCES, INC.

ATR is a public company whose area of expertise includes the finding and leasing of geothermal areas. We perform a complete survey, including geological, geophysical, geochemical and hydrological evaluations and economic studies on geothermal prospects. On the basis of such studies, we have acquired leases on lands which we believe offer excellent geothermal possibilities and commercial promise. Some of our lands are described herewith.

ATR's primary business is the discovery of geothermal energy. However, we feel that in some instances where hydrocarbon deposits are found as a consequence of geothermal exploration, we would deem such evidence meritorious of further exploratory evaluation in the search for oil and gas.

### COMPETITION IN MARKETING

A number of major oil companies such as Standard Oil of California, Gulf Oil Corp., Phillips Petroleum Company, Sun Oil Co., Union Oil of California, Dow Chemical Co., Getty Oil Co., Signal Oil and Gas and Shell Oil Co. are at the present time actively engaged in exploration for geothermal steam prospects. Our principal product, upon successfully developing a geothermal steam field, will be geothermal effluent at the wellhead. In the area of our leaseholds, we are assured of sale for our products from various utility companies.

### NATURE OF GEOTHERMAL ENERGY

In the United States, exploitation of geothermal resources for the generation of electric power has only occurred in the last few years. Development costs in geothermal fields will vary as geological and fluid factors are encountered in undeveloped prospects. With respect to prospects in areas where the company holds leases, we believe the drilling and evaluation of two or three exploratory wells in each prospect will provide a basis for evaluating commercial potential. Our estimated cost for the drilling of exploratory wells is approximately \$200,000 per well. The procedures for evaluating geothermal reserves are quite similar to methods and principles utilized in estimating petroleum reserves. These include considerations of the subsurface fluid pressure, temperatures, reservoir rock porosity and steam volumes produced. For an example, The Geysers geothermal field located in Sonoma County, California, has been producing steam in commercial quantities since 1960. At the present time, the wells are producing 412,500 kilowatts, and this same area is estimated by various sources to have a potential of over 1,000,000 kilowatts. The Larderello geothermal fields in Italy have been producing steam for electric power generation since 1904 and the Wairakei field in New Zealand has been producing steam for electric generation since 1952. There have been many new fields discovered and at the present time, some are going into production while others are already producing in various parts of the world.

### PROPERTIES

ATR presently has under lease 59,840 acres of privately owned land plus has applied and paid for an additional 27,925 acres of Federal land. We also have applied for a prospecting permit from the State of California in the Surprise Valley area for 5,540 acres. This will give us a total land inventory of 93,305 acres of excellent potential steam lands. These lands are located in the states of California and Nevada, and have, in our opinion, a better-than-average possibility of producing geothermal steam. Herewith is a brief description of some of the lands in the various areas of our geothermal holdings.

#### SURPRISE VALLEY, CALIFORNIA

Surprise Valley is approximately 50 miles long, running in a north-south direction in Modoc County, reaching into the north-east corner of Lassen County, California. It contains prospective geothermal areas on the valley floor approximately 19,734 acres plus 8,100 acres of State land plus a recent

application for 5,540 acres prospecting permit, making a total of 33,374 acres. Approximately five to ten miles north of the Company's leases, five exploratory wells were drilled between 1959 and 1963 to various shallow depths in search of geothermal steam. Only hot water flows and minor amounts of steam were encountered. In 1973, Gulf Oil Company drilled two wells, the deepest to a depth of 6,804 feet. No information is available. Also, a well was drilled by Magma Power Company to 4,502 feet with a bottom hole temperature of 362°F and Magma claims a commercial well. Gulf Oil Company adjoins our leasehold position to the north. We believe the direct evidence of heat combined with geologic features and thermal fluid discharges in the valley constitute a basis for deep exploratory drilling and a possibility of attaining geothermal production on three separate and distinctive areas on leaseholds.

The three power companies that have transmission lines or electrification systems nearby are Pacific Power and Light Company, Surprise Valley Electrification Corp. and the Sierra Pacific Power Company. All have indicated an interest in our operation and a need for power.

#### BEOWAVE AREA, NEVADA

Our Beowawe Geothermal Prospect is located in the Whirlwind Valley approximately 187 miles northeast of Reno, Nevada. A very short distance from our leasehold block is an area of thermal fluids, fumaroles and geysers, situated at the base of the Malpais fault scarp. Between 1959 and 1961, three significant wells were drilled in this area by another company to shallow depths (655-767 feet), which flowed subcommercial steam volumes in rates reported between 33,300 and 4,500 pounds of steam per well. The steam flows were attended by hot water flows of 1.5 million pounds per well in each of the three wells. Dependent on steam sales price, development costs and operating costs, a commercial steam well should flow in the range of 100,000 pounds per well. These wells had a bottom hole temperature of 410°F. In this area, ATR owns approximately 13,405 acres of private land. In January, 1974, we filed and paid for, with the Bureau of Land Management Department of Interior, non-competitive geothermal lease applications on 9,650 acres of land. Also in January, 1974, ATR and Chevron Oil Company, a wholly-owned subsidiary of Standard Oil Company of California, jointly filed with the Bureau of Land Management Department of Interior lease applications on an additional 11,047 acres of geothermal lands. In November of 1973, ATR entered into a joint venture agreement with Chevron Oil Company to explore for geothermal resources on a portion of the lands leased by the Company in the Beowawe area of Lander and Eureka Counties, Nevada. The terms of the agreement provide that Chevron will act as the operator, and we are, at the present time, drilling an initial exploratory well to be ultimately drilled to a depth of 10,000 feet. Present depth of the well is 9556 feet. This well was started in the latter part of January, 1974, and should be completed shortly. At the present time, it looks very promising; however, drilling was temporarily suspended due to a lengthy fishing job; plug was set at approximately 8,400 feet and drilling resumed on May 24, 1974. Favorable results anticipated.

#### BIG SMOKY VALLEY AND MONITOR VALLEY AREAS, NEVADA

ATR acquired 14,236 acres in the Big Smoky Valley and has filed with the Bureau of Land Management Department of Interior on non-competitive paid lease applications on 10,193 acres of land. This area is in Nye County, Nevada. The Big Smoky Valley area has three distinctive potential geothermal steam areas and would supply power to Sierra Pacific Power Company and Southern California Edison Company in California. This also is a highly prospective geothermal steam area.

Our geophysical, geological and hydrological studies, including geochemical studies, have been done on the above areas.

ATR also holds acreage in the Monitor Valley of Nye County, Nevada and at Indio Hills, California. There are plans for leasehold acquisitions in such other states as Oregon, Utah, Idaho and others.