

SHAW RESOURCES, INC.

IBLA 82-291

Decided July 29, 1982

Appeal from decision of California State Office, Bureau of Land Management, rejecting competitive bid for geothermal lease. CA 11709.

Affirmed.

1. Act of December 24, 1970--Geothermal Leases: Generally
--Geothermal Leases: Competitive Leases--Geothermal Leases:
Discretion to Lease

The Secretary of the Interior has authority under Geothermal Steam Act, 30 U.S.C. §§ 1002-1003 (1976), and Departmental regulation, 43 CFR 3220.6(c), to reject bids submitted at competitive geothermal lease sales where the record discloses a rational basis for the conclusion that the amount of the bid was inadequate.

2. Act of December 24, 1970--Geothermal Leases: Competitive Leases--Geothermal Leases: Discretion to Lease--Rules of Practice: Appeals: Burden of Proof

On appeal from a BLM decision rejecting an offeror's competitive bid for a geothermal lease on the basis of Geological Survey's valuation of the tract sought to be leased, the offeror has the burden of showing that the valuation was in error and that the bid should be considered acceptable. In the absence of such a showing, BLM is entitled to rely on the technical expertise of Geological Survey.

APPEARANCES: Collie D. Porterfield, Vice President, Shaw Resources, Inc., for appellant.

OPINION BY ADMINISTRATIVE JUDGE HARRIS

Shaw Resources, Inc., has appealed from a decision of the California State Office, Bureau of Land Management (BLM), dated November 16, 1981, rejecting its competitive bid for geothermal resources lease, CA 11709, "because the bid is lower than recommended by the U.S. Geological Survey [Survey]." Appellant was the sole bidder for parcel 10, offered at an October 29, 1981, competitive lease sale, with a bid of \$7.64 per acre. A presale evaluation of the parcel by Survey had set the per acre value at \$537.

By letter dated October 30, 1981, the Conservation Manager, Western Region, Survey, recommended rejection of appellant's bid. Enclosed with the letter was a Survey report, entitled "Report of the Geothermal Lease Sale Evaluation Committee" (Report), dated October 23, 1981, evaluating the lease sale. The report initially estimated the extent of the geothermal resources reservoir under the four parcels offered for sale, including parcel 10. All four parcels are situated within the East Brawley Known Geothermal Resources Area (KGRA). The East Brawley KGRA "lies within the Salton trough, a structural and depositional basin trending northwest from the Gulf of California" (Report at 4).

The extent of the geothermal resources reservoir was "extrapolated," on the basis of a number of factors:

A gravity map of the Salton trough * * * shows that a gravity high is present within the boundaries of the KGRA. A heat flow anomaly * * * coincides with the gravity maximum, strongly suggesting the presence of a hydrothermal convection system beneath the KGRA. Electrical resistivity of the rocks beneath the KGRA is interpreted as supporting gravity and heat flow data (Mase, et al., 1981). [1/] Well data (Mase, et al., 1981; unpublished proprietary data) indicate temperature gradients of 60 degrees - 95 degrees C, and bottom hole temperatures of 260 degrees C at about 4 km below the surface.

* * * * *

The reservoir rocks are low-grade metasediments which have relatively low porosity. Fracture permeability in the reservoir rock controls the location and movement of thermal fluids. The heat source for the system is hot intrusive rock or a magma body (or bodies) at considerable depth beneath the surface.

Water temperatures 150 degrees C are expected at a depth of about 1450 m; maximum reservoir temperature is 340 degrees C at 4.5 km, (500 m below probable maximum drilling depth). For the purpose of calculating the heat content of the reservoir, the minimum reservoir

1/ The 1981 study prepared by C. W. Mase and others is entitled "Shallow hydrothermal regime of the East Brawley and Glamis KGRA's, Salton trough, California" (Geological Survey Open-File Report 81-834).

temperature of 200 degrees C is used. This number is used because, with high temperature water available, geothermal production operations are not likely to utilize the resource below 200 degrees.

Each tract has the same minimum, maximum, and most likely values for reservoir temperature and thickness. Reservoir thickness is based on the difference between the top of the reservoir (the depth to the 200 degrees C isotherm) and a base depth of 4.5 km (500 m below the maximum drilling depth). The area of the reservoir beneath each tract is the same as the area of the tract.

(Report at 4-5).

The Survey report indicates that the geological and geophysical data available in compiling the report were given a "B" level reliability rating, which is defined as follows: "Geologic data coverage is basically complete, geophysics may be available; production and cost data fairly reliable although productivity may be in error; well information is available, although reliability or applicability of data may require some inference" (Report at 11). 2/

Survey then estimated "the electrical energy that could be produced from the available energy at the wellhead," using the "volumetric evaluation methodology discussed in USGS Circular 790 [the Monte Carlo Simulation Program for Probability Distribution Function of Stored Energy in a System]" (Report at 7). The available electrical energy was then converted to "presale resource values (in situ)," using the "value determination formula utilized in the GUESS [General Uncertainty Economic Simulations System] geothermal probabilistic analysis, Model C" (Report at 7).

On appeal, appellant states that its bid was determined "after careful investigation of the land involved and the current state of the resource development in the East Brawley KGRA." Appellant quotes from a "statement" it attributes to one Professor Wilfred A. Elders, its consulting geologist, which appellant states was prepared after the November 1981 BLM decision. Therein it is stated that there are "no surface indications of geothermal activity" within the East Brawley KGRA and that there appear to be "no detailed or comprehensive reports of the geothermal resource potential" of the East Brawley KGRA. It is concluded that the "data" 3/ offered by Survey

2/ In Getty Oil Co., 27 IBLA 269, 276 (1976) (Administrative Judge Henriques, dissenting), wherein we affirmed BLM's rejection of competitive bids for geothermal resources leases, the reliability of geothermal reservoir data was described as follows: "generalized geology, geophysics with data gaps or otherwise unreliable, well controlled data sparse or only vaguely applicable, cost data weak, and production data lacking entirely." Under the present scheme, this is "D" level reliability rating. The scale runs from A to E or from reliable to unavailable/very unreliable.

3/ The Survey "data" was summarized, as follows:

- "1. A local gravity maximum of about 5 mgals;
- "2. A local electrical resistivity minimum with resistivities of less than about 3 ohm-meters;
- "3. A heat flow maximum of more than 230 mWm⁻² (based upon unpublished data of the

USGS);

is "insufficient" to establish the existence of an "economic geothermal resource" within the East Brawley KGRA, "in the absence of detailed information on temperatures, flow rates and fluid chemistry from the wells so far drilled." A number of "[n]egative indications" as to the value of leases within the East Brawley KGRA are cited:

- a. The cost of drilling to 4,100m to attain a temperature of 260 degrees C is prohibitive. There are no commercial geothermal fields in the world which produce power from such low temperatures, at such high depths.
- b. There are considerable technical problems, yet to be overcome, in handling the hyperaline brines believed to exist at such depths within this KGRA.
- c. It is not known if permeability at that depth would be adequate to sustain the necessary flow rates.
- d. Commercial production of power from the Salton Sea KGRA, where the geophysical anomalies are much more distinct, and where temperatures as high as 365 degrees at 2,010m have been measured in boreholes drilled in 1965, has not yet been proved to be commercially viable.

A number of facts are also pointed to which allegedly indicate that parcel 10 contains the "least valuable acreage" of the East Brawley KGRA:

- a. Of all the parcels leased it lies furthest from the center of the gravity maximum;
- b. Electrical resistivity in the southeast corner of the KGRA is greater than 4 ohm-meters.
- c. Heat flow is shown to be less than 16 mWm⁻².
- d. It is the parcel furthest removed from previous exploratory drilling, which was done by experienced and knowledgeable operators.
- e. The acreage is fragmented and interspersed with non-federal or withdrawn lands.

Appellant also points to the fact that no other bids were received for this tract.

fn. 3 (continued)

"4. The existence of six geothermal test wells deeper than 3,200m, drilled by three different oil companies; [and]

"5. Information from an oil and gas well (the Wilson, No. 1) drilled in 1963, which had a reported bottom hole temperature of 260 degrees C at 4,100m depth."

[1] The Secretary of the Interior has discretionary authority under the Geothermal Steam Act of 1970, 30 U.S.C. §§ 1002-1003 (1976), and Departmental regulation, 43 CFR 3220.6(c), to reject a high bid for a competitive geothermal resources lease where the record discloses a rational basis for the conclusion that the amount of the bid was inadequate. California Energy Co., 63 IBLA 159 (1982); Union Oil Co., 38 IBLA 373 (1978).

[2] The burden is on the one challenging the determination of a minimum acceptable bid for a particular parcel of land for purposes of geothermal resources leasing to establish that the determination is in error and that its bid should be considered acceptable. See Union Oil Co., *supra*. This burden is particularly difficult in view of the great reliance which the Secretary is entitled to place on the reasoned analysis of Survey, his technical expert in matters concerning geologic evaluations. California Energy Co., *supra* at 163.

Based on the evidence submitted by appellant, we conclude that while appellant has raised some doubt whether the appropriate per acre value of parcel 10 for geothermal resources leasing is \$537, it has not established that its bid of \$7.64 per acre is acceptable. ^{4/} Accordingly, we conclude that BLM's rejection of appellant's bid is founded on a rational basis.

Appellant has presented no evidence as to the specific manner in which it arrived at its competitive bid for parcel 10. Therefore, we cannot gauge the accuracy of its valuation methods. Rather, for the most part, appellant has sought to cast doubt on Survey's valuation methods.

Appellant has challenged Survey's valuation methods on the basis that they do not rely on "detailed or comprehensive" reports of geothermal resource potential, specifically, detailed information from wells drilled in the area. Appellant, however, appears to overlook the 1981 study cited as "Mase, et al., 1981" in the geothermal lease sale evaluation report. While admittedly inferential in nature, the study utilizes geological, geophysical, and well data to assess the geothermal resource potential underlying the East Brawley KGRA. The study differentiates between areas closer to the center of the KGRA and those along the periphery, where parcel 10 is located, and we must presume that the value per acre of these areas, obtained after application of Survey's value equations, is reflective of that difference.

Appellant's most significant challenges to Survey's valuation methods are the statements attributed to Professor Elder to the effect that, even assuming the presence of geothermal resources, a "commercially viable" operation cannot be maintained, given "such low temperatures, at such high depths," uncertain "permeability" and anticipated problems "in handling hyperaline brines." No evidence, however, is presented in support of these statements. Survey, on the other hand, believes that a commercially viable

^{4/} We note that Survey stated in the Report, "industry may not value the tracts in a range as high as this analysis would indicate." However, it further stated that "we nevertheless believe that the presale values are realistic for these subject tracts due to the high quality of the data available for this analysis, in conjunction with the average reservoir temperatures (247 degrees C)" (Report at 7).

operation can be maintained. The tract value equation set forth in Table 3 of the Report includes an XRisk factor which is 87 percent. This factor represents the risk of failure, and, thus accounts for a 23 percent probability of success. Furthermore, the tract value equation includes an XPlor factor which is 1,600,000 or the cost of drilling to the "[m]ost likely well depth of 12,100 ft. (3.7 km)." Appellant has presented no evidence to dispute these figures.

In the absence of compelling evidence to the contrary, we must rely on the reasoned analysis provided by Survey on the value of parcel 10 for purposes of geothermal resources leasing. We reiterate, however, our conclusions in Union Oil Co., supra at 380, based on a similar challenge by Union Oil to Survey's valuation methods:

Pre-lease evaluation of geothermal resources is not a matter of engineering certainty. Indeed, as admitted by USGS, the information upon which the evaluations were made was not exhaustive, but did represent the best data available. We have no doubt that greater accuracy might have been obtained had the USGS embarked upon a more ambitious--and expensive--program of deep testing and engineering development before the Department solicited bids on the tracts in issue. This is not required and there has been no showing that it would be in the public interest. ^{4/}

^{4/} We note that Union has not introduced any geological evidence which it might have derived through its own program of drilling and other forms of testing on the tracts, and which might have generated data of greater accuracy than that employed by the USGS. Neither has Union alleged that it requested BLM permits to undertake such testing.

Accordingly, we hold that BLM's rejection of appellant's bid for parcel 10 in the October 1981 competitive lease sale was proper.

Therefore, pursuant to the authority delegated to the Board of Land Appeals by the Secretary of the Interior, 43 CFR 4.1, the decision appealed from is affirmed.

Bruce R. Harris
Administrative Judge

We concur:

Gail M. Frazier
Administrative Judge

Anne Poindexter Lewis
Administrative Judge

