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THE UNIVERSITY OF UTAH COLLEGE OF MINES AND MINERAL INDUSTRIES SALT LAKE CITY 84112

DEPARTMENT OF GEOLOGY
AND GEOPHYSICS

717 MINERAL SCIENCE BUILDING

November 4, 1977

Dr. Jack Salisbury ERDA Division of Geothermal Energy 3rd Floor 20 Massachusetts Avenue, N.W. Washington, DC 20545

Dear Jack,

Enclosed is my review of the unsolicited proposal submitted by American Geological Enterprises, Inc. The proposal has been referred to Howard Ross for a second review. By copy of this letter I am asking Howard to communicate his review to you with copy to me.

Kindest regards,

Stanley H. Ward

Chairman

CW

cc: Dr. Howard, Ross

encl.

| PROPOS | SAL NO | |
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| COPY_ | _/_OF_/ | |
| | #11 | |

UNSOLICITED PROPOSAL

Submitted to

Energy Research and Development Administration

| by |
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| |
| American Geological Enterprises, Inc. |
| Company Name |
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| |
| Suite 1102 Walker Bank Building, Salt Lake City, Utah, 84111 |
| Address |
| For |
| FOI |
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| Chulm of Cookhamal Debarbiol in the December 14 Web Control Anna |
| Study of Geothermal Potential in the Roosevelt Hot Springs Area Title of Proposal |
| 12020 01 12000001 |
| |
| David J. Atkinson 702/322-4173 |
| Project manager or principal investigator (phone no.) |
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| |
| 333 Flint Street, Reno, Nevada 89501 |
| Address of project manager if different from above |
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| |
| Dr. Paul Walton, 1102 Walker Bank Building, Salt Lake City, 801/363-3283 |
| Proposer's business or contracting official (phone no.) |
| or |
| |
| Milton Fisher, 295 Madison Avenue, New York City, 212/LE2-3678 |
| |
| |
| July 8, 1977 |
| Date |

PROPOSAL FOR STUDY OF GEOTHERMAL POTENTIAL IN THE ROOSEVELT HOT SPRINGS AREA

Abstract

The proposer, American Geological Enterprises, Inc. (AGE), 1102 Walker Bank Building, Salt Lake City, Utah, 84111, is the holder (lessee) of geothermal leases on approximately 29,681 acres of land in the Roosevelt Hot Springs area in Millard and Beaver Counties in the state of Utah. The basic purpose of the proposal study would be to appraise the geothermal potential of the AGE acreage as well as others in the area on which permission may be obtained to perform a study, to assess the relationship between that area and the known production zone, and to determine what final steps need to be taken in order to start a program of exploration test drilling of favorable targets. The work would be performed in three or four stages under the direction of qualified geologists. The expected result of the study would be to provide a better understanding of the structure and hydrogeology of the Escalante graben and would lead to a better perspective on the setting of the known geothermal field at Roosevelt, and would enable AGE (and others) to appraise the geothermal potential of the area studied.

NARRATIVE

1. Purpose and objective

A. Area selected

- 1) As indicated in the Abstract, the primary purpose of the proposal study is to evaluate the geothermal potential of certain acreage in the Roosevelt Hot Springs area. The legal description of the area proposed is given as lands lying with sections, townships and ranges set forth below:

 Acreage under lease by American Geological Enterprises, Inc.:
 - a) Legal description of area proposed 29.681.042 net acres under lease in Millard and Beaver Counties, Utah, Salt Lake Base and Meridian, lying within the following described sections:

| Township | Range | Sections |
|------------|---------|--|
| 25 South - | 10 West | 1,3,7,8,10,11,12,13,14,15,16,19,21,22,24, 25,26,28,32,33, and 36. |
| 26 South | 9 West | 5,6,7,17,18,19,20,29,30,31,32, and 34. |
| 26 South | 10 West | 5,6,7,8,9,15,17,18,19,20,21,22,23,24,26, 27,28,29,30,31,32,33,34, and 35. |
| 27 South | 9 West | 4,5, and 7. |
| 27 South | 10 West | 3,4,5,6,7,10,11,13,14,15,17,20,21,23,27, 28,29,32,33,34,35, and 36. |
| 28 South | 10 West | 3,5,8,9,10,11,25,26, and 27. |

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Acreage under lease by an individual:

b) Legal description - 5401.26 acres, all or part of following described sections, Beaver County, Utah:

| Township | Range | Sections . |
|----------|---------|----------------------|
| 26 South | 10 West | 11,12,13,14, and 25. |
| 27 South | 9 West | 30 and 31. |
| 27 South | 10 West | 1,12,13, and 24. |

2) Ownership of land - The ownership of lands described in la) is various but all of the land is accessable under the terms of leases.

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- 3) <u>Geology</u> The area involves the main portion of the Escalante graben of about 20 miles from north to south, lying immediately west of the known geothermal reservoir at Roosevelt Hot Springs.
- 4) Leased area The leased area was selected on the basis of its proximity to Roosevelt Hot Springs, the probable presence of favorable structural conditions, the existence of nearby heat sources, and the probability of favorable hydrogeologic conditions.
- Data offered The data offered is surface data, the results of geologic and geophysical investigations. The discovery of the Roosevelt field may have hinged on the fact that the crystalline rocks of the reservoir are relatively shallow there, and have leaked to surface in historic times.

 An understanding of the structure and hydrogeology of the Escalante graben would lead to a better perspective on the setting of the known geothermal field at Roosevelt, and would enable us to appraise the geothermal potential of the acreage studied.
- 6) Potential benefits and interest The potential benefits of such a study would be to provide data that would lead to the tapping of the geothermal energy potential in that area. Such energy would be sold to commercial and/or private users. There is currently a great deal of interest in the Milford-Roosevelt Hot Springs area. Phillips Petroleum, for example, has drilled several test wells and initiated the formation of a federal geothermal unit.

2. Nature of the Work

The work will be new. The type of work is geological and geophysical as discussed in other parts of the proposal.

3. Statement of work

The work would be in three stages, as outlined below. The first stage would last four months; the second, three months; and the third, four months, for a total of eleven months.

The data would be available for release within less than twelve months after completion.

The first stage of the study would emphasize structure and hydrogeology, and would include geologic work on air photos and on the ground, delineating fault systems in the valley and developing an understanding of zones within the valley where structural and hydrogeologic conditions present at Roosevelt could be repeated, or where similar favorable geothermal potential may exist.

The second stage of the work would emphasize geophysics and would consist of detailed gravity work in an area of about 200 square miles, designed to determine the shape of the floor of the graben and to solve structural problems posed by results in the first stage of the work; electrical work, mostly bipole-dipole surveying and dipole-dipole profiling, based on the geologic interpretations of the first stage; plus other techniques that are determined to be appropriate, probably including active seismic.

The third stage of the study would involve comparison of our newly developed data with existing information to establish the relationship between the Roosevelt productive zone and the rest of the graben in the area of AGE's leases. The final product of our work would be a report describing in detail what we had done, what we found, and what we concluded.

A fourth stage, which is not included here, would be the final program needed to define drilling targets for deep tests. The exact program would depend on the results of the work described above, but might include temperature gradient holes, microseismic or seismic emission studies, gas geochemistry, further electrical work, and sonon.

- Organization, facilities, and qualifications of American Geological Enterprises, Inc.
 - American Geological Enterprises, Inc. is a corporation organized and existing under the laws of the State of Utah, having its principal office and place of business in the city of Salt Lake City in the state of Utah. Corporate officers authorized to commit the company are Dr. Paul Walton, President and Milton Fisher, Chairman of Board of Directors.
 - It employes six persons on a part-time basis.
 - It is not categorized as a "minority business" enterprise.
 - It is categorized as a "small business" enterprise.
 - C. Work proposed will be performed at the American Geological Enterprises' acreage in Escalante Valley west of Roosevelt Hot Springs and other nearby acreage or which permission may be obtained to work has available qualified personnel for the performance of the work or services called for within the time specified.
 - It is currently engaged in work or services of the type required herein and is fully qualified for the performance of the work or services hereunder as the result of its experience in the field involved.
 - If a contract is awarded as a result of this proposal, it is the intention of the proposer to subcontract the following work or services:

Work, Services, or Major Equipment Purchases to: be Subcontracted

Cost

Prospective Subcontractor(s)

Field work studies outlined under schedule of work \$61,800 (Subcontractor selected on basis of competency in the field)

Hydro-Search, Inc.

- It has not employeed or retained a company or person (other than a full-time employee) to solicit or secure this contract, and agrees to furnish information relating thereto as requested by the contracting officer.
- It has not the necessary financial capacity, working capital, and other resources Η. to perform the contract without assistance from any outside source. Anticipated contract from ERDA in the amount of \$81,000.

5. Other information

- A. Names, titles and resumes of principal investigator and key technical personnel.
 - 1) David J. Atkinson, PhD., Director of Geothermal for Hydro-Search, Inc.

 (perspective subcontractor). Dr. Atkinson has had extensive training
 in geology, mathematics, chemistry and physics and has received several
 academic and research related awards, including the Wheeler Prize in
 Economic Geology and the Watkins Award of the Royal Geographic Society.

 He has performed field work in all parts of the world including the U.S.,
 Canada, Africa, Iceland, Spitsbergen, Scandinavia and Europe.

 Dr. Atkinson has been a consultant in geology, hydrology and soil environment work since 1971 and would direct and coordinate each phase of the
 project.
 - 2) Paul T. Walton, PhD., President of American Geological Enterprises, Inc.

 Dr. Walton has been President of AGE since 1973 and has been a director since 1966. He has been engaged, for over 25 years, as an independent geologist in connection with the exploration and development of oil and gas and other mineral properties. He is a member of a number of geological associations and has published numerous articles in this field. He holds a Bachelor of Science degree in Geological Engineering and a Master of Science degree in Geology from the University of Utah, and a Doctor of Philosophy degree in Geology from the Massachusetts Institute of Technology.

 Dr. Walton would be involved with site selection approval, field verification of air photo, progress review and consultation.
 - 3) Mr. Milton Fisher, Chairman of the Board of Directors of American Geological Enterprises, Inc.

Mr. Fisher, President of A.D. Gilhart & Co., Inc., investment bankers, since 1959, has been a director of the Company since 1969 and now serves as Chairman of the Board. He holds a Doctor of Laws and is a member of the

3) -Continued-

Bar of the State of New York and presently serves as a director of several public companies. He has written and lectured in the field of business and finance.

Mr. Fisher is familiar with government contracts and would be involved with legal work and negotiations.

6. Location

The work will be performed on the acreage outlined in the proposal. Equipment used will be provided by Hydro-Search, Inc., the prospective subcontractor.

| CONTRACT PRICING PROPOSAL | | | | APPENDIX B | | |
|--|----------------------|-------------------|-------------------|------------------------|-----------------|--|
| (RESEARCH AND DEVELOPMENT) | | | | | | |
| | | · · | PAGE NO. | NO. OF | 3 | |
| American Geological Enterprises, I | inc. | | | 1 | 2 | |
| | SUPPLIES AND/C | OR SERVICES TO BE | FURNISHED | | | |
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| Salt Lake City, Utah 84111 | | | | | | |
| DIVISIONISI AND LOCATIONISI WHERE WORK IS TO BE PERFORMED | TOTAL AMOUNT | | GOVT S | OUCITATION NO. | | |
| Escalante Valley, Utah | 81, | | | | | |
| DETAIL DESCRIPTIO | N OF COST | ELEMENTS | | | | |
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| o. SPECIAL EQUIPMENT (If direct charge) (Itemite on Exhibit A) | | | | | | |
| 7. TRAVEL (If direct charge) (Gire details on attached Schedule) | | | | 2000 | | |
| - ransportation and out-of-pocket expenses | | | 3,000 | | | |
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| TOTAL CONSULTANTS | | | 2,500 | | | |
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| 10. 11. CENERAL AND ADMINISTRATIVE EXPENSE Rule % of cost element. | | COST AND OVE | SANSAU | 1.100 | | |
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| 15. TOTAL E. | STIMATED COST | T AND FEE OR | PROFIT | 81,000 | | |
| This proposal is submitted for use in connection with and in response to (Describe RFP, etc.) and reflects our best estimates as of this date, in accordance with the Instructions to Offerers and the Footnotes which follow. TYPED Name and TILE | | | | | | |
| Paul T. Walton | | | | | | |
| President | No | Tou | · V | whenever the same were | | |
| American Geological Entery | onses | Inc. | 7 | 29/77 | | |

| EXHIBIT A-SUPPORTING SCHEDULE (Specify. If more space is needed, use reverse) | | | | |
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| | SS OF REVIEWING OFFICE AND INDIVIDUAL | TELEPHONE NUMBER/EXTENSION | | |
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| II. WILL YOU REQU | uire the use of any government property in the performance | OF THIS PROPOSED CONTRACT? | | |
| | NO (If yes, identify on reverse or separate page) | ····· | | |
| | IRE GOVERNMENT CONTRACT FINANCING TO PERFORM THIS PROPOS | _ , | | |
| _ | NO (1) yes, identify.); 🔼 AOVANCE PAYMENTS 🔲 PRO | | | |
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| INSTRUCTIONS TO OFFERORS | | | | |
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| offéror is exp | n to the specific information required by this form, the specific in good faith, to incorporate in and submit with a submitted states of substantiation states are supported for the conduct of an appropriate re- | sented in different format with the prior approval of the Contracting Officer if required for more effective and efficient presentation. In all other respects this form will be completed and submitted without change. 5. By submission of this proposal the offeror grants to the Contracting Officer, or his authorized representative, the right to examine, for the purpose of verifying the cost or pricing data submitted; those books records, documents and other supporting data, which will permit adequate evaluation of such cost or pricing data, along with the computations and projections used therein. This right may be exercised in connection with any negotiations prior to contract award. | | |
| view and anal | lysis in the light of the specific facts of this procurement, negotiations, it is essential that there he a clear under- | | | |
| b. The jud to the estimate | issing, verifiable data. Agmental factors applied in projecting from known data t, and tringencies used by the offeror in his proposed price. | | | |
| In short, the offeror's estimating process itself needs to be disclosed. | | | | |
| FOOTNOTES | | | | |
| judyment of the contracting of the contracting of the contraction of t | his column those necessary and reasonable costs which in the be offeror will properly be incurred in the efficient performance to. When any of the costs in this column have already been the letter contract or change orders, describe them on an oring schedule. Identify all sales and transfers between your ms, or organization, under a common control, which are in- terior than the lower of cost to the original transferror or current | 3 Indicate the rates used and provide an appropriate explanation. Where agreement but been reached with Covernment representative in the use of forward pricing rates, describe the nature of the agreement. Provide the method of computation and application of our overbead expense, including cost breakdown and ibouring trends and budgetury data as necessary to provide a basis for evaluation of the reasonableness of proposed rates. 4 If the total cost entered here is in excess of \$250, provide on a separate | | |

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 2 When space in addition to that usuilable in Exhibit A it required, utthack separate pages at necessary and identify in this "Reference" column
 the attachment in which the information importing the specific loss element
 may be found. No standard format in prescribed housever, the tost or pricting data mult be accurate, complete and current, and the judgment factors,
 used in projecting from the data in the estimates must be stated in sufficient
 detail to enable the Controlling Officer to evaluate the proposal. For exdetail to reside the basis used for pricing materials such as by resider quedations, this estimates or invoice prices; the reason for one of overhead rates;
 which depart significantly from experienced rates (reduced redume, a
 planned major re-arrangement, etc.); or justification for an increase in
 labor rates (anticipated wage and salary increase; etc.), Identify and explain any contingencies white are included in the proposed price, sich as
 anticipated costs of rejects and defective work, or anticipated sechnical
 difficulties.
- 4 If the total cast entered-here is in executs of \$250, provide on a separate, page the following information on each teparate item of royalty or licents fee: name and address of licentors date of licente agreement; patent numbers, patent application serial numbers, or other, basis on which the royalty is payable; brief description, including any part or model numbers of exchoacted teem or component on which the royalty is payable; percentage or dellar rate of royalty per unit; unit price of contract item; number of units; and total dollar amount of royalities. In addition, if specifically required by the contracting officer, a copy of the current license agreement and identification of applicable claims of specific patents shall be provided.
- 5 Provide a list of principal items within each category indicating known or nativipated source, quantity, and price competition obtained, and busis of establishing source and reasonableness of cost.