**Arizona
Solar
Energy
Commission**

DOE/RA/50076--T20

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Governor

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Executive Director

ABOVE ALL...SOLAR ENERGY.

DOE/RA/50076--T20

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Title inside

Monthly Report #2

for

DE-FC03-80RA50076

Amendment M007

to

Department of Energy

San Francisco Operations Office

1333 Broadway

Oakland, California 94612

from

Arizona Solar Energy Commission

Capitol Tower, Room 502

1700 West Washington

Phoenix, Arizona 85007

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Under the direction of:

James F. Warnock
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ABOVE ALL...SOLAR ENERGY.

Title: An Improved Silica Geothermometer for
Low Temperature Geothermal Resource Assessment
Monthly Progress Report #2 for period February-March, 1983

Work on the above contract was reported to this office by the subcontractor, Stone & Witcher for February to March 16, 1983. Field work (collecting water samples) is behind schedule as discussed briefly in item #4.

1. Literature search: All of the references collected during this phase of the study have been reviewed. The final bibliography will contain about 50 references. If additional references are found during the remaining stages of this study they will be included in the bibliography.

2. Collection of available lithologic and drillers' logs: Careful review of the well logs by Stone & Witcher revealed that in the Cactus Flat-Artesia area only 33 records are complete and another 14 are incomplete but have some information that may be useful in reconstructing the subsurface. In the Buena Vista area, 16 logs are complete and four are incomplete. Ten additional well logs provide complete information on the subsurface region surrounding Cactus Flat-Artesia and Buena Vista.

3. Construction of geologic cross sections: Stone & Witcher have made five stratigraphic cross sections to date. Correlation

of subsurface units between well logs is difficult in these areas for two reasons. First, it is difficult to assign a rock type to certain colloquial terms used by drillers, such as "honeycomb formation," "soft break," and "hard pans." Second, because the valley-fill material is composed of both fluvial and lacustrine deposits, individual stratum are often short, thin and discontinuous. Careful interpretation of well logs and review of earlier work in other parts of the Safford basin are enabling Stone & Witcher to construct an accurate picture of the subsurface geology in this part of the basin.

4. Collection of water samples: Stone & Witcher ordered and took delivery on the necessary regents and laboratory accessories for field sampling. They also designed and constructed a portable magnetic stirrer for field titration of alkalinity. This operation was necessary because no portable battery-operated magnetic stirrer was commercially available. Standard non-portable types cost over \$100. The one Stone & Witcher made cost less than \$30.

Jim Witcher spent eight days in the field and collected 12 water samples. Work initially went slow due to experimenting with the best sampling and titrating field methods. Also the pH meter is very sensitive and, therefore, very slow to stabilize during titration.

The water samples collected to date are from the Cactus Flat-Artesia area.

5. Contractor meeting: Stone attended the contractor meeting in Sacramento, March 9 and 10.

Comments on Work to Date

Based on Stone & Witcher's reports, the data acquisition and field work appear to be progressing well.

No experimental evidence has yet been cited by Stone & Witcher to support their hypothesis that: non-temperature dependent reactions are occurring between geothermal brines and aluminosilicates that introduce significant errors in the geothermometer read-out.

No method for analysis of this data has yet been given the Commission that completely answers questions held by some of the Commission staff.

However, overall the subcontractors appear to be gathering all of the necessary data and by the third report scheduled for the middle of April, the Commission will have settled the question of data analysis with Stone & Witcher.