

Thermochem, Inc.  
Analytical Laboratory & Consulting Service  
6119 Old Redwood Hwy., Ste. A-2  
Santa Rosa, CA 95401  
(707) 575-1310

RECEIVED FEB 17 1987

4250 ( 1-6 ) 02-13-1987

Michael Stewart  
c/o Larry Green  
Geothermal Development Associates  
251 Palston St.  
Reno, NV. 89503

Report of Analysis

Sample Type: Water

Well: SEDF 43-21

Date: 01-11-1987

Flowrate: 2000 GPM

Enthalpy: 246.0 Btu/lbs.

Separator: No Flash, 277°F.

| <u>Species</u> | <u>mg/Kg</u> |
|----------------|--------------|
| Sodium         | 1 230        |
| Potassium      | 105          |
| Calcium        | 143          |
| Magnesium      | 0.90         |
| Iron           | <0.02        |
| Lithium        | 1.9          |
| Strontium      | 8.0          |
| Manganese      | <0.2         |
| Arsenic        | 0.014        |
| Mercury        | 0.0011       |
| Boron          | 4.2          |
| Silica         | 190          |

Report of Analysis Continued

Page 2

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| <u>Species</u>         | <u>mg/Kg</u> |          |
|------------------------|--------------|----------|
| Chloride               | 2 130        |          |
| Fluoride               | 4.2          |          |
| Bicarbonate            | 66           |          |
| Sulfate                | 192          |          |
| Total Dissolved Solids | 4 040        |          |
| pH                     | 6.68         |          |
| Conductivity           | 7 200        | umhos/cm |

RECEIVED 1-23-1987

Quality Control Data


Samples Received: 1/15/87

For: Michael Stewart  
Geothermal Development Associates

| <u>Analyte</u>     | <u>Percent Relative Standard Deviation</u> <sup>1</sup> |
|--------------------|---|
| Carbon Dioxide     | 2.3, 4.1  |
| Hydrogen Sulfide   | 1.5, 0.08, 0.03   |
| Ammonia            | 2.7, 2.0, 8.5   |
| Argon <sup>2</sup> | 6.6   |
| Nitrogen           | 0   |
| Methane            | 1.1   |
| Hydrogen           | 0.5   |

<sup>1</sup> %RSD of replicate analysis results calculated as ppm by weight. Ar, N<sub>2</sub>, CH<sub>4</sub>, and H<sub>2</sub> %RSD's are determined on actual samples and not standards.<sup>2</sup> The %RSD of each set of replicate measurements performed on this batch of samples is listed.

<sup>2</sup> Argon precision is affected by air correction procedure.

  
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Paul N. Hirtz,  
Director of Operations

# Thermochem, Inc.

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4280-1

01-23-1987

TO: MICHAEL STEWART

WELL NAME : SEDF 43-21

SAMPLING DATE : 1-11-87

SAMPLING TIME : 13:00

SEPARATION PRESSURE : 32.0 psia  
TOTAL ENTHALPY : 246.0 Btu/lbs  
SALT CONTENT : 0.100 Wt. %  
STEAM FRACTION : 2.6 %

### PARTS PER MILLION BY WEIGHT

|                  | <u>VAPOR PHASE</u> | <u>LIQUID PHASE</u> | <u>TOTAL FLUID</u> |
|------------------|--------------------|---------------------|--------------------|
| CARBON DIOXIDE   | 2.35E+03           | 4.71E+01            | 1.07E+02           |
| HYDROGEN SULFIDE | 5.22E+02           | 7.16E+00            | 2.06E+01           |
| AMMONIA          | 1.16E+01           | 1.43E+00            | 1.69E+00           |
| ARGON            | 1.73E+01           | N.D.                | 4.51E-01           |
| NITROGEN         | 3.47E+02           | N.D.                | 9.04E+00           |
| METHANE          | 7.22E+01           | N.D.                | 1.88E+00           |
| HYDROGEN         | 4.33E+00           | N.D.                | 1.13E-01           |

### VAPOR PRESSURE IN LIQUID AT 277 Deg. F.

|                |          |      |
|----------------|----------|------|
| CARBON DIOXIDE | 4.05E+00 | psia |
| ARGON          | 1.65E-01 | psia |
| NITROGEN       | 9.87E+00 | psia |
| METHANE        | 1.98E+00 | psia |
| HYDROGEN       | 8.07E-01 | psia |
| TOTAL          | 1.69E+01 | psia |

N.D. = NOT DETERMINED

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4280 (1-4) 01-22-1987

DESCRIPTOR : SEDF 43-21 1/11/87  
 STEAM 32 PSIA 254 DEG. F  
 LAB NUMBER : 4280-1

SAMPLE GAS/STEAM RATIO (ft<sup>3</sup>/lb) : .0320  
 SAMPLE GAS/STEAM RATIO (MOLES PER 10<sup>6</sup> MOLES H<sub>2</sub>O) : 1609.  
 SAMPLE GAS/STEAM RATIO (PPM by WEIGHT) : 3329.  
 PERCENT AIR IN SAMPLE : .153  
 STP MLs AIR IN SAMPLE : 2.150  
 TOTAL WEIGHT OF CONDENSATE (GRAMS): 702.02  
 INITIAL HEAD SPACE PRESSURE (PSI): 12.07

| GAS              | DRY GAS<br>% BY VOL | MOLES PER<br>10 <sup>6</sup> MOLES H <sub>2</sub> O | PPM<br>BY WEIGHT |
|------------------|---------------------|---|------------------|
| WATER VAPOR      | N/A                 | N/A   | 9.97E+05         |
| CARBON DIOXIDE   | 6.01E+01            | 9.67E+02  | 2.35E+03         |
| HYDROGEN SULFIDE | 1.72E+01            | 2.77E+02  | 5.22E+02         |
| AMMONIA          | 7.63E-01            | 1.23E+01  | 1.16E+01         |
| ARGON            | 4.86E-01            | 7.82E+00  | 1.73E+01         |
| NITROGEN         | 1.39E+01            | 2.24E+02  | 3.47E+02         |
| METHANE          | 5.06E+00            | 8.14E+01  | 7.22E+01         |
| HYDROGEN         | 2.41E+00            | 3.87E+01  | 4.33E+00         |

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4280-1 01-23-1987

WELL NAME : SEDF 43-21  
SAMPLING DATE : 1-11-87

SAMPLING TIME : 13:00

MASS FLOW RATES AT 1000.0 KPH

|                  |          |          |
|------------------|----------|----------|
| CARBON DIOXIDE   | 1.07E+02 | lbs./hr. |
| HYDROGEN SULFIDE | 2.06E+01 | lbs./hr. |
| AMMONIA          | 1.69E+00 | lbs./hr. |
| METHANE          | 1.88E+00 | lbs./hr. |