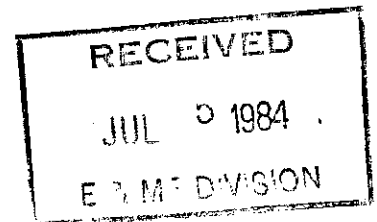


# GeothermEx, Inc.

SUITE 201  
5221 CENTRAL AVENUE  
RICHMOND, CALIFORNIA 94804

(415) 527-9876

CABLE ADDRESS: GEOTHERMEX  
TELEX: 709152 STEAM UD



Harry Olson  
Steam Reserve Corporation  
Denver West Office Park  
1707 Cole Blvd.  
Golden, CO 80401

July 2, 1984

Dear Harry:

Enclosed are lab analysis reports containing raw data, and some preliminary tabulations, pertaining to the June 2 and June 21 tests and sampling of SRC Fish Lake Valley #88-11.

The lab reports are:

- ANATEC Laboratories Log No. 5557A (1-15), Series No. 213/004
- ANATEC Laboratories Log No. 5485A (1-25), Series No. 213/003
- ANATEC Laboratories Log No. 5557 (1-15), Series No. 213/004, part 2 of 2 parts.

Tabulations are lists of all samples collected:

- Fluids Samples Collected at Rig Test of SRC #88-11, Fish Lake Valley, Nevada, June 2, 1984 - Part I - Water Samples
- Fluids Samples Collected at Rig Test of SRC #88-11, Fish Lake Valley, Nevada, June 2, 1984 - Part II - Steam Line Samples
- Fluids Samples Collected at Rig Test of SRC #88-11, Fish Lake Valley, Nevada, June 21, 1984 - Part I - Water Samples
- Fluids Samples Collected at Rig Test of SRC #88-11, Fish Lake Valley, Nevada, June 21, 1984 - Part II - Steam Line Samples.

The raw gas data from both tests are included, as well as brine data from the second test. Brine data from the first test will be forwarded as soon as received (expected tomorrow). Data from the second test reached us first, ironically, because priority analyses were requested of the lab.

Best wishes,

A handwritten signature in cursive script, appearing to read "Chris".

Chris Klein



ANATEC  
LABORATORIES  
INC.

435 Tesconi Circle

Santa Rosa, California 95401

707-526-7200

June 21, 1984

Mr. Chris W. Klein  
GeothermEX, Inc.  
5221 Central Ave., Ste 201  
Richmond, CA 94804

ANATEC Log No: 5485A (1-25)  
Series No: 213/003  
Client Ref: Letter 6/4/84

Subject: Twenty-five Samples Labeled GS-#, Where "#" Is a Number  
From 1 to 25, Submitted June 4, 1984--Part 1.

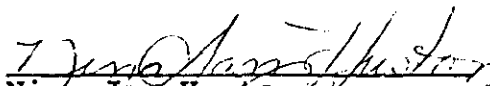
Dear Mr. Klein:


Tabulated on the following pages are data for three samples received  
in gas bombs on a Routine basis. This report is the first of two  
reports. The general chemistry and metals determinations will  
follow next week in Part 2.

Please feel welcome to contact us should you have questions.

Submitted by:

Approved by:

  
Nina Jan Huston  
Supervisor, Gas Analysis

  
Greg Anderson, Director  
Analytical Laboratories

/hs



ANATEC

GAS ANALYSIS

Descriptor: GS-#1  
 Lab No.: 5485-1  
 Sample gas/steam ratio (ft<sup>3</sup>/lb): 1.47 x 10<sup>-1</sup>  
 Sample gas/steam ratio (moles/1000 moles steam): 7.39  
 Sample gas/steam ratio (g/10<sup>6</sup> grams steam): 17,700  
 Total weight of condensate (grams): 246.2  
 Initial headspace pressure (psi): 14.2

Gas	Mole % (w/o H <sub>2</sub> O)	Moles per 1000 moles H <sub>2</sub> O	ppm (with H <sub>2</sub> O)
Water vapor	N/A	N/A	9.83 x 10 <sup>5</sup>
Carbon dioxide	9.51 x 10 <sup>1</sup>	7.02 x 10 <sup>0</sup>	1.69 x 10 <sup>4</sup>
Total Sulfur (as H <sub>2</sub> S)	5.90 x 10 <sup>-2</sup>	4.36 x 10 <sup>-3</sup>	8.10 x 10 <sup>0</sup>
Ammonia	5.27 x 10 <sup>-1</sup>	3.89 x 10 <sup>-2</sup>	3.62 x 10 <sup>1</sup>
Argon	5.59 x 10 <sup>-2</sup>	4.13 x 10 <sup>-3</sup>	8.99 x 10 <sup>0</sup>
Oxygen	2.24 x 10 <sup>-1</sup>	1.65 x 10 <sup>-2</sup>	2.89 x 10 <sup>1</sup>
Nitrogen	3.42 x 10 <sup>0</sup>	2.53 x 10 <sup>-1</sup>	3.87 x 10 <sup>2</sup>
Methane	5.87 x 10 <sup>-1</sup>	4.34 x 10 <sup>-2</sup>	3.79 x 10 <sup>1</sup>
Helium	4.38 x 10 <sup>-3</sup>	3.24 x 10 <sup>-4</sup>	7.06 x 10 <sup>-2</sup>
Hydrogen	6.33 x 10 <sup>-2</sup>	4.68 x 10 <sup>-3</sup>	5.15 x 10 <sup>-1</sup>

Descriptor: GS-#2  
 Lab No.: 5485-2  
 Sample gas/steam ratio (ft<sup>3</sup>/lb): 1.52 x 10<sup>-1</sup>  
 Sample gas/steam ratio (moles/1000 moles steam): 7.64  
 Sample gas/steam ratio (g/10<sup>6</sup> grams steam): 18,200  
 Total weight of condensate (grams): 282.9  
 Initial headspace pressure (psi): 7.58

Gas	Mole % (w/o H <sub>2</sub> O)	Moles per 1000 moles H <sub>2</sub> O	ppm (with H <sub>2</sub> O)
Water vapor	N/A	N/A	9.82 x 10 <sup>5</sup>
Carbon dioxide	9.41 x 10 <sup>1</sup>	7.19 x 10 <sup>0</sup>	1.73 x 10 <sup>4</sup>
Total Sulfur (as H <sub>2</sub> S)	3.01 x 10 <sup>-1</sup>	2.30 x 10 <sup>-2</sup>	4.28 x 10 <sup>1</sup>
Ammonia	1.63 x 10 <sup>-1</sup>	1.24 x 10 <sup>-2</sup>	1.15 x 10 <sup>1</sup>
Argon	7.85 x 10 <sup>-2</sup>	6.00 x 10 <sup>-3</sup>	1.31 x 10 <sup>1</sup>
Oxygen	3.52 x 10 <sup>-3</sup>	2.69 x 10 <sup>-4</sup>	4.70 x 10 <sup>-1</sup>
Nitrogen	4.29 x 10 <sup>0</sup>	3.28 x 10 <sup>-1</sup>	5.01 x 10 <sup>2</sup>
Methane	9.65 x 10 <sup>-1</sup>	7.37 x 10 <sup>-2</sup>	6.44 x 10 <sup>1</sup>
Helium	5.05 x 10 <sup>-3</sup>	3.86 x 10 <sup>-4</sup>	8.41 x 10 <sup>-2</sup>
Hydrogen	7.09 x 10 <sup>-2</sup>	5.42 x 10 <sup>-3</sup>	5.97 x 10 <sup>-1</sup>



Descriptor: GS-#3  
 Lab No.: 5485-3  
 Sample gas/steam ratio (ft<sup>3</sup>/lb): 1.41 x 10<sup>-1</sup>  
 Sample gas/steam ratio (moles/1000 moles steam): 7.07  
 Sample gas/steam ratio (g/10<sup>6</sup> grams steam): 16,900  
 Total weight of condensate (grams): 325.1  
 Initial headspace pressure (psi): 11.6

Gas	Mole % (w/o H <sub>2</sub> O)	Moles per 1000 moles H <sub>2</sub> O	ppm (with H <sub>2</sub> O)
Water vapor	N/A	N/A	9.83 x 10 <sup>5</sup>
Carbon dioxide	9.55 x 10 <sup>-1</sup>	6.75 x 10 <sup>0</sup>	1.62 x 10 <sup>4</sup>
Total Sulfur (as H <sub>2</sub> S)	2.88 x 10 <sup>-1</sup>	2.03 x 10 <sup>-2</sup>	3.78 x 10 <sup>1</sup>
Ammonia	1.86 x 10 <sup>-1</sup>	1.32 x 10 <sup>-2</sup>	1.22 x 10 <sup>1</sup>
Argon	5.62 x 10 <sup>-2</sup>	3.97 x 10 <sup>-3</sup>	8.66 x 10 <sup>0</sup>
Oxygen	1.64 x 10 <sup>-2</sup>	1.16 x 10 <sup>-3</sup>	2.02 x 10 <sup>0</sup>
Nitrogen	3.22 x 10 <sup>0</sup>	2.28 x 10 <sup>-1</sup>	3.48 x 10 <sup>2</sup>
Methane	6.68 x 10 <sup>-1</sup>	4.72 x 10 <sup>-2</sup>	4.13 x 10 <sup>1</sup>
Helium	5.04 x 10 <sup>-3</sup>	3.56 x 10 <sup>-4</sup>	7.77 x 10 <sup>-2</sup>
Hydrogen	7.31 x 10 <sup>-2</sup>	5.17 x 10 <sup>-3</sup>	5.70 x 10 <sup>-1</sup>

QUALITY CONTROL DATA

Analyte	Relative Standard Deviation	Matrix of Determination
Carbon Dioxide	1.0	Condensate/NaOH solution
Total Sulfur (as H <sub>2</sub> S)	3.6	Condensate/NaOH solution
Ammonia	7.0	Condensate/NaOH solution
Argon	2.0	Residual Gas Phase
Oxygen	7.2	Residual Gas Phase
Nitrogen	4.4	Residual Gas Phase
Methane	5.5	Residual Gas Phase
Helium	3.3	Residual Gas Phase
Hydrogen	1.0	Residual Gas Phase



ANATEC  
LABORATORIES  
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435 Tesconi Circle

Santa Rosa, California 95401

707-526-7200

Mr. Chris Klein  
GeoththermEX, Inc.  
5221 Central Ave., Ste 201  
Richmond, CA 94804

June 25, 1984  
ANATEC Log No: 5557A (1-15)  
Series No: 213/004  
Client Ref: Letter 6/22/84

Subject: Samples Received June 22, 1984 on an ASAP Turnaround  
With Gas Bombs Labeled, "GS -1,-2,-3,-4" and Condensate  
Samples Labeled "840621. -1115,-1245,-1345, -1417".  
(Part 1 of 2 parts).

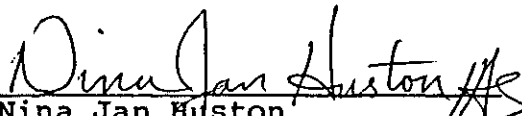
Dear Mr. Klein:


Tabulated on the following pages are data for the four gas samples  
referenced above. Analysis was begun shortly after the samples  
arrived at the laboratory June 22, 1984. Gas analysis was  
completed that night and your office was verbally notified on  
Saturday, June 23, 1984. The general chemistry and metals  
analyses will follow in part 2 of 2 parts.

Please feel welcome to contact us should you have questions.

Gas Analysis Submitted By:

Report Approved by:

  
Nina Jan Huston  
Gas Analysis Supervisor

  
Greg Anderson, Director  
Analytical Laboratories

/hs



## GAS ANALYSIS

Descriptor: GS-#1  
Lab No.: 5557-1

Sample gas/steam ratio (ft<sup>3</sup>/lb): 1.09 x 10<sup>-1</sup>  
 Sample gas/steam ratio (moles/1000 moles steam): 5.48  
 Sample gas/steam ratio (g/10<sup>6</sup> grams steam): 13,100  
 Total weight of condensate (grams): 148.9  
 Initial headspace pressure (psi): 2.18 *absolute*

Gas	Mole % (w/o H <sub>2</sub> O)	Moles per 1000 moles H <sub>2</sub> O	ppm <sup>wt</sup> (with H <sub>2</sub> O)
Water vapor	N/A	N/A	9.87 x 10 <sup>5</sup>
Carbon dioxide	9.45 x 10 <sup>-1</sup>	5.20 x 10 <sup>0</sup>	1.25 x 10 <sup>4</sup>
Total Sulfur (as H <sub>2</sub> S)	3.39 x 10 <sup>-1</sup>	1.86 x 10 <sup>-2</sup>	3.47 x 10 <sup>1</sup>
Ammonia	3.16 x 10 <sup>-1</sup>	1.73 x 10 <sup>-2</sup>	1.62 x 10 <sup>1</sup>
Argon	5.36 x 10 <sup>-2</sup>	2.94 x 10 <sup>-3</sup>	6.43 x 10 <sup>0</sup>
Oxygen	1.43 x 10 <sup>-1</sup>	7.84 x 10 <sup>-3</sup>	1.37 x 10 <sup>1</sup>
Nitrogen	3.52 x 10 <sup>0</sup>	1.93 x 10 <sup>-1</sup>	2.96 x 10 <sup>2</sup>
Methane	6.09 x 10 <sup>-1</sup>	3.34 x 10 <sup>-2</sup>	2.94 x 10 <sup>1</sup>
Hydrogen	<1.86 x 10 <sup>-1</sup>	<1.02 x 10 <sup>-2</sup>	<1.13 x 10 <sup>0</sup>

Descriptor: GS-#2  
Lab No.: 5557-2

Sample gas/steam ratio (ft<sup>3</sup>/lb): 1.03 x 10<sup>-1</sup>  
 Sample gas/steam ratio (moles/1000 moles steam): 5.17  
 Sample gas/steam ratio (g/10<sup>6</sup> grams steam): 12,400  
 Total weight of condensate (grams): 355.8  
 Initial headspace pressure (psi): 9

Gas	Mole % (w/o H <sub>2</sub> O)	Moles per 1000 moles H <sub>2</sub> O	ppm (with H <sub>2</sub> O)
Water vapor	N/A	N/A	9.88 x 10 <sup>5</sup>
Carbon dioxide	9.58 x 10 <sup>-1</sup>	4.95 x 10 <sup>0</sup>	1.19 x 10 <sup>4</sup>
Total Sulfur (as H <sub>2</sub> S)	3.08 x 10 <sup>-1</sup>	1.59 x 10 <sup>-2</sup>	2.98 x 10 <sup>1</sup>
Ammonia	3.87 x 10 <sup>-1</sup>	2.00 x 10 <sup>-2</sup>	1.87 x 10 <sup>1</sup>
Argon	4.90 x 10 <sup>-2</sup>	2.53 x 10 <sup>-3</sup>	5.54 x 10 <sup>0</sup>
Oxygen	<1.97 x 10 <sup>-3</sup>	<1.02 x 10 <sup>-4</sup>	<1.78 x 10 <sup>-1</sup>
Nitrogen	2.89 x 10 <sup>0</sup>	1.50 x 10 <sup>-1</sup>	2.30 x 10 <sup>2</sup>
Methane	5.35 x 10 <sup>-1</sup>	2.77 x 10 <sup>-2</sup>	2.43 x 10 <sup>1</sup>
Hydrogen	<3.73 x 10 <sup>-2</sup>	<1.93 x 10 <sup>-3</sup>	<2.14 x 10 <sup>-1</sup>



ANATEC

213/004 Log 5557A - 3 -

25 JUN 84

Descriptor: GS-#3  
 Lab No.: 5557-3

Sample gas/steam ratio (ft<sup>3</sup>/lb): 1.04 x 10<sup>-1</sup>  
 Sample gas/steam ratio (moles/1000 moles steam): 5.20  
 Sample gas/steam ratio (g/10<sup>6</sup> grams steam): 12,500  
 Total weight of condensate (grams): 358.5  
 Initial headspace pressure (psi): 11.0

Gas	Mole % (w/o H <sub>2</sub> O)	Moles per 1000 moles H <sub>2</sub> O	ppm (with H <sub>2</sub> O)
Water vapor	N/A	N/A	9.88 x 10 <sup>5</sup>
Carbon dioxide	9.55 x 10 <sup>1</sup>	4.97 x 10 <sup>0</sup>	1.20 x 10 <sup>4</sup>
Total Sulfur (as H <sub>2</sub> S)	3.03 x 10 <sup>-1</sup>	1.58 x 10 <sup>-2</sup>	2.94 x 10 <sup>1</sup>
Ammonia	3.90 x 10 <sup>-1</sup>	2.03 x 10 <sup>-2</sup>	1.89 x 10 <sup>1</sup>
Argon	5.21 x 10 <sup>-2</sup>	2.71 x 10 <sup>-3</sup>	5.94 x 10 <sup>0</sup>
Oxygen	<8.73 x 10 <sup>-4</sup>	<4.54 x 10 <sup>-5</sup>	<7.96 x 10 <sup>-2</sup>
Nitrogen	3.11 x 10 <sup>0</sup>	1.62 x 10 <sup>-1</sup>	2.49 x 10 <sup>2</sup>
Methane	5.81 x 10 <sup>-1</sup>	3.02 x 10 <sup>-2</sup>	2.66 x 10 <sup>1</sup>
Hydrogen	<3.31 x 10 <sup>-2</sup>	<1.72 x 10 <sup>-3</sup>	<1.91 x 10 <sup>-1</sup>

Descriptor: GS-#4  
 Lab No.: 5557-4

Sample gas/steam ratio (ft<sup>3</sup>/lb): 1.03 x 10<sup>-1</sup>  
 Sample gas/steam ratio (moles/1000 moles steam): 5.17  
 Sample gas/steam ratio (g/10<sup>6</sup> grams steam): 12,400  
 Total weight of condensate (grams): 373.7  
 Initial headspace pressure (psi): 11.78

Gas	Mole % (w/o H <sub>2</sub> O)	Moles per 1000 moles H <sub>2</sub> O	ppm (with H <sub>2</sub> O)
Water vapor	N/A	N/A	9.88 x 10 <sup>5</sup>
Carbon dioxide	9.59 x 10 <sup>1</sup>	4.96 x 10 <sup>0</sup>	1.20 x 10 <sup>4</sup>
Total Sulfur (as H <sub>2</sub> S)	2.82 x 10 <sup>-1</sup>	1.46 x 10 <sup>-2</sup>	2.72 x 10 <sup>1</sup>
Ammonia	3.92 x 10 <sup>-1</sup>	2.03 x 10 <sup>-2</sup>	1.89 x 10 <sup>1</sup>
Argon	4.70 x 10 <sup>-2</sup>	2.43 x 10 <sup>-3</sup>	5.32 x 10 <sup>0</sup>
Oxygen	1.54 x 10 <sup>-3</sup>	7.95 x 10 <sup>-5</sup>	1.39 x 10 <sup>-1</sup>
Nitrogen	2.80 x 10 <sup>0</sup>	1.45 x 10 <sup>-1</sup>	2.23 x 10 <sup>2</sup>
Methane	5.15 x 10 <sup>-1</sup>	2.66 x 10 <sup>-2</sup>	2.34 x 10 <sup>1</sup>
Hydrogen	<2.94 x 10 <sup>-2</sup>	<1.52 x 10 <sup>-3</sup>	<1.68 x 10 <sup>-1</sup>

Note: Two gas bombs returned with no sample.



ANATEC

213/004 Log 5557A - 4 -

25 JUN 84

QUALITY CONTROL DATA

<u>Analyte</u>	<u>Relative Standard Deviation</u>	<u>Matrix of Determination</u>
Carbon Dioxide	1.0	Condensate/NaOH solution
Total Sulfur (as H <sub>2</sub> S)	2.7	Condensate/NaOH solution
Ammonia	1.2	Condensate/NaOH solution
Argon	2.6	Residual Gas Phase
Oxygen	7.4	Residual Gas Phase
Nitrogen	1.0	Residual Gas Phase
Methane	1.0	Residual Gas Phase
Helium	N/A	Residual Gas Phase
Hydrogen	1.0	Residual Gas Phase





ANATEC  
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435 Tesconi Circle

Santa Rosa, California 95401

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GeothermEx, Inc.  
5221 Central Ave, Suite 201  
Richmond, CA 94804  
Attn: Chris Klein

June 28, 1984  
ANATEC Log No: 5557 (1-15)  
Series No: 213/004  
Part 2 of 2 Parts

Subject: Analytical Results for GeothermEx Project SRC-2 Samples  
Received June 22, 1984.

Dear Mr. Klein:

Chemical testing of the above referenced samples is complete. Various classical wet chemistry and atomic absorption measurements were made on the samples.

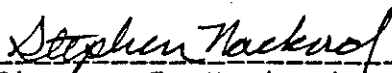
Details of the methods and references are available upon request. However, summarized methodologies are presented in Table 1. Analytical results are summarized in Table 2 for the chloride measurements on the gas bomb residuals. The balance of analytical results are summarized in Table 3.

Qualitative identification of the dark particulates in each gas bomb is pending.

If you have any questions, please call.

Submitted by:

Approved by:

  
Stephen F. Nackord  
Project Manager

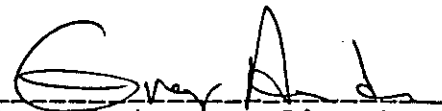
  
Greg Anderson, Director  
Analytical Laboratories

Table 1. Summarized Methodologies

<u>Analyte</u>	<u>Methodologies</u>
pH	Electrometric at 25°C (EPA <sup>a</sup> )
Conductivity	Wheatstone bridge conductivity at 25°C (EPA)
Calcium	Flame atomic absorption (EPA)
Magnesium	Flame atomic absorption (EPA)
Sodium	Flame atomic absorption (EPA)
Potassium	Flame atomic absorption (EPA)
Lithium	Flame atomic absorption (EPA)
Alkalinity	Potentiometric titration to pH 8.3 and 3.7 (EPA)
Sulfate	Turbidimetric measurement of barium sulfate (EPA)
Chloride	Argentometric titration (EPA) and by specific ion electrode
Boron	Azomethine colorimetry
Fluoride	Specific ion electrode (EPA)
Silica (AA)	Flame and/or heated graphite atomic spectroscopy
Silica (color)	Ammonium molybdate spectrophotometric (molybdate reactive) (EPA)
Iron	Flame and/or heated graphite atomic spectroscopy (EPA)
Sulfide	Methylene blue colorimetric (EPA)

<sup>a</sup>EPA - Denotes methods accepted for use by the U.S. Environmental Protection Agency.

Table 2. Chloride Content of Gas Bomb Residuals

<u>Descriptor</u>	<u>Lab No.</u>	<u>Chloride, mg/L</u>
GS # 1	1	<1
GS # 2	2	2
GS # 3	3	2
GS # 4	4	1

Table 3. Summarized Analytical Results

Parameter	Results (mg/L) <sup>a</sup>											
	Descriptor:	1115				1245 Brineline				1345	1417	DI
		Subsample:	Ru	Fu	Fa	Fd (1:10)	Ru	Fu	Fa	Fd (1:10)	Steam-Line Ru	Steam-Line Ru
ANATEC Lab No:	-5	-9	-11	-13	-6	-10	-12	-14	-7	-8	-15	
pH (units at 25°C)	9.2	--	--	--	9.1	--	--	--	4.3	4.6	--	
EC <sup>b</sup> (umhos/cm)	4,200	--	--	--	3,700	--	--	--	260	150	--	
EC <sup>c</sup> , dilute (umhos/cm)	4,500	--	--	--	3,900	--	--	--	--	--	--	
Calcium	--	0.56	1.2	--	--	0.39	0.95	--	0.02	--	--	
Magnesium	--	--	0.05	--	--	--	0.03	--	<0.01	--	--	
Sodium	--	--	890	--	--	--	720	--	0.36	--	--	
Potassium	--	--	50	--	--	--	42	--	<0.05	--	--	
Lithium	--	--	2.1	--	--	--	1.8	--	<0.02	--	--	
Alkalinity:												
Total (as CaCO <sub>3</sub> )	910	--	--	--	810	--	--	--	52	--	--	
Bicarbonate (HCO <sub>3</sub> <sup>-</sup> )	740	--	--	--	700	--	--	--	63	--	--	
Carbonate (CO <sub>3</sub> <sup>-2</sup> )	180	--	--	--	140	--	--	--	0	--	--	
Sulfate	--	210	--	--	--	180	--	--	4.5	--	--	
Chloride	--	460	--	--	--	390	--	--	4	--	--	
Boron	--	16	--	--	--	15	--	--	0.12	--	--	
Fluoride	--	17	--	--	--	14	--	--	<0.1	--	--	
Silica (AA <sup>d</sup> )	--	290	--	31	--	290	--	30	1.0	0.3	<0.1	
Silica (color <sup>d</sup> )	--	160	--	26	--	160	--	24	2.8	2.0	<0.6	
Iron	--	<0.05	--	--	--	<0.05	--	--	--	--	--	
Sulfide	--	--	--	--	--	--	--	--	--	--	--	

<sup>a</sup>Unless otherwise noted.

<sup>b</sup>EC - Specific Conductance at 25°C.

<sup>c</sup>Specific conductance obtained from sample diluted to give conductivity in 75-150 umhos/cm region.

<sup>d</sup>AA/color - refers to method of measurement; AA is atomic absorption and color is molybdate-reactive colorimetric.

5557

- 3 -

June 28, 1984

# GeothermEx, Inc.

SUITE 201  
5221 CENTRAL AVENUE  
RICHMOND, CALIFORNIA 94804

(415) 527-9876

CABLE ADDRESS: GEOTHERMEX  
TELEX: 709152 STEAM UD

Table : Fluids Samples Collected at Rig Test of SRC #88-11,  
Fish Lake Valley, Nevada, June 2, 1984 -  
Part I - Water Samples

Sample No.	Time (hrs)	Collection Point(1)	Sample Type(2)	Sample Volume (ml)	Comment
3	0206	T	Ru	500	Brownish water, gray sediment, EC = 2800 micromhos.
4	0253	T	Ru	500	Brownish water with suspended particulates and gray sediment.
			Fd(1:10)	100	
5	0354	T	Ru	500	Same appearance, EC = 3650 micromhos.
6	0430	T	Ru	500	Same appearance, EC = 3400 micromhos, pH = c.10.
7	0550	T	Ru	500	Brownish water, gray sediment, EC = 3500 micromhos.
8	0700	T	Ru	500	Same appearance.
9	0850	T	Ru	500	Same appearance, EC = 3600 micromhos. Filtrate slightly brown.
			Fu	125	
			Ra	125	
10	1156	BLA (41±2)	Ru	500	20 drops 1:1 HCl caused flocculation of brown colorant, supernatant clear, colorless. Brownish water, gray sediment.
11	1200	SLC (41±2)	Ru	250	Clear, colorless, EC = 155 - 200 micromhos.

# GeothermEx, Inc.

SUITE 201  
5221 CENTRAL AVENUE  
RICHMOND, CALIFORNIA 94804

(415) 527-9876

CABLE ADDRESS: GEOTHERMEX  
TELEX: 709152 STEAM UD

Table : (cont.)

Sample No.	Time (hrs)	Collection Point(1)	Sample Type(2)	Sample Volume (ml)	Comment
12	1237	BLC (41±2)	Ru	500	Brownish water, gray sediment, pH = 10, EC = 3200 micromhos.
			Fd(1:10)	100	
			Fa	125	
13	1300	BLC	Ru	250	Brownish water, grey sediment.
none	1308	BLC	Ru	1000	Same appearance; sample given to SRC.
none	1500	BLC (40±2)	Ru	250	Same appearance; in glass bottles; given to SRC.
none	1500	SLC	Ru	250	Clear, colorless; in glass bottles; given to SRC.
15	1533	BLC (40±2)	Ru	500	Brownish water, gray sediment, lighter and cleaner than above; pH = 10.
			Rd(1:10)	100	
			Fd(1:10)	100	
			Fa	125	
16	1740	BLC (40±2)	Ru	750	Brownish color, gray sediment; EC = 3000 micromhos. 20 drops 1:1 HCl.
			Fa	125	
			Fd(1:10)	100	
		SLC	Ru	250	Clear, colorless, EC = 200 micromhos.

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## Notes

### (1) Atmospheric Flash Sample:

T = 1½ inch tap located at 3:00 o'clock position on horizontal discharge line, 6½ ft downstream from center line of wellhead assembly. Sample collected directly from ½ inch discharge tube downstream from gate valve attached to tap. No cooling coil used, assume maximum steam separation at atmospheric pressure.

BLA = atmospheric flash sample collected from upper brine outlet of mini-separator connected at point T.

### Samples Separated Under Pressure:

(mini-separator attached to point T; number in parentheses is separator pressure in psig)

BLC = sample from upper brine outlet of separator, cooled through stainless steel coil to 15°- 20° C.. Flow control valve is at separator outlet, coil not under pressure.

SLC = sample from steam outlet of separator, cooled through stainless steel coil to 15° - 20° C.. Flow control valve is at separator outlet, coil not under pressure.

### (2)

R = raw, unfiltered

F = filtered through 0.45 micron membrane at collection time.

u = untreated

a = acidified to pH 1 to 2.

d = diluted with silica-free deionized water.

## General Comment

1. H S odor was found in acidified samples only.

2. The brownish coloration and fine gray sediment decreased regularly with time in Ru brine samples. Ru samples 3 through 13 were extremely difficult to impossible to filter due to complete clogging after less than 10 - 20 ml of filtrate was obtained. Sample 15 was cleaner. Sample 16 somewhat dirtier, but filtration of 125 ml was possible.

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Table : Fluids Samples Collected at Rig Test of SRC #88-11,  
Fish Lake Valley, Nevada, June 2, 1984 - Part II -  
Steam Line Samples.

Sample No.	Time(hrs)	Comment
GS#1	1152	Truesdell/Nehring gas flask with 250 ml 50% NaOH. Fine whitish precipitate formed during sample collection, recrystallized to fine, clear, colorless needles during 48 hrs storage.
GS#2	1217	Truesdell/Nehring gas flask with 100 ml 4N NaOH. Gray precipitate formed during storage.
GS#3	1230	Same as for GS#2.

General comment: All samples were collected from cooling coil connected to steam line of mini-separator. Sample GS#1 was collected at an average separator pressure of 41 psig, with rapid surging from 39 - 43 psig. GS#2 and GS#3 were collected at an average pressure of 42 psig, with rapid surging from 40 - 44 psig.

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Table : Fluids Samples Collected at Rig Test of SRC #88-11,  
Fish Lake Valleu, Nevada, June 21, 1984 -  
Part I - Water Samples

Sample No.	Time (hrs)	Collection Point(1)	Sample Type(2)	Sample Volume (ml)	Comment
1	1115	T	Ru	250	pH = 8.84 at 36°C EC = 4000 micromhos  20 drops 1:1 HCl
			Fu	250	
			Fa	125	
			Fd(1:10)	100	
2 and 2-duplicate set	1245	BLC (30)	Ru	250	pH = 8.81 at 20°C EC = 3350 micromhos  20 drops 1:1 HCl
			Fu	250	
			Fa	125	
			Fd(1:10)	100	
3	1345	SLC (30)	Ru	250	pH 4.70 at 8°C EC = 185 micromhos
4	1417	SLC	Ru	250	pH = 4.48 at 27°C EC = 180 micromhos

### Notes

(1) Atmospheric Flash Sample:

T = 1½ inch tap located at 1:30 o'clock position on horizontal discharge line, 6½ ft downstream from center line of wellhead assembly. Sample collected directly from ½ inch discharge tube downstream from gate valve attached to tap. No cooling coil used, assume maximum steam separation at atmospheric pressure.

Samples Separated Under Pressure:

(mini-separator attached to point T; number in parentheses is separator pressure in psig)

BLC = sample from upper brine outlet of separator, cooled through stainless steel coil to 10°- 20° C.. Flow control



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valve is at separator outlet, coil not under pressure.

SLC = sample from steam outlet of separator, cooled through stainless steel coil to 10° - 30° C.. Flow control valve is at separator outlet, coil not under pressure.

- (2)
- R = raw, unfiltered
  - F = filtered through 0.45 micron membrane at collection time.
  - u = untreated
  - a = acidified to pH 1 to 2.
  - d = diluted with silica-free deionized water.

## General Comment

The water produced by the well was clear, colorless and odorless, carrying scant traces of dark fine sand-sized particulates. Acidification of brine samples released a weak but distinct H S odor.

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Table : Fluids Samples Collected at Rig Test of SRC #88-11,  
Fish Lake Valley, Nevada, June 21, 1984 - Part II -  
Steam Line Samples.

Sample No.	Time(hrs)	Comment
GS#1	1355	Truesdell/Nehring gas flask with 100 ml 4N NaOH. A trace of dark gray fine precipitate (?) was visible in flask when sent to the laboratory.
GS#2	----	Same.
GS#3	----	Same.
GS#4	1415	Same.

General comment: All samples were collected from cooling coil connected to steam  
line of mini-separator operating at 30 psig.