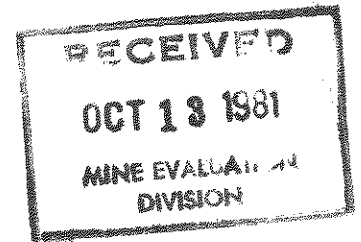**GeothermEx, Inc.** 901 MENDOCINO AVE.
BERKELEY, CA. 94707

JAMES B. KOENIG (415) ~~524-9242~~ 527-9876
PRESIDENT

October 5, 1981

Dr. W. Lodder
AMAX Exploration, Inc.
Denver West Office Park
1707 Cole Boulevard
Denver, CO 80401

Dear Wim:

Under separate cover, Dr. C. W. Klein's report 'An Analysis
of Hydrochemical Data from the Cove Fort, Utah, Geothermal Reservoir'
has been sent to Harry Olson. In it, Chris concludes that "...cation
and silica results together encourage the possibility of finding
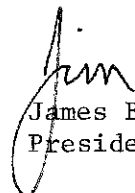temperatures above the maximum $180^{\circ}C$ in #42-7".

This completes the set of reports prepared on specific geo-
thermal prospects. Two items previously discussed remain to be done:
final modifications to AMAX's storage and retrieval programs for
chemical data; and a first-cut analysis of the geochemical exploration
data for 1980-81. The former is to ensure speedy and accurate access
to AMAX's geochemical file, which otherwise becomes almost inert. The
latter will enable the selection of better prospects for farmout, joint
venture or retention.

I suggest that Chris come to Denver at your convenience in
October to do the final program modifications; and that at that time
a schedule be set up for the first-cut geochemical analysis. I recog-
nize the need to control costs and limit scope of work. Thus the work
could be limited to either specific geographic areas, or to certain
chemical parameters at this time. If results were encouraging, the
work could be expanded as needed.

Please contact me at your convenience regarding any aspect of
this. In event of my absence, please talk directly to Chris Klein.

With best regards,

Sincerely,

James B. Koenig
President

JBK:aj

cc: William M. Dolan

WELL #	#42-7	#42-7	#31-33	#31-33	#14-29
pH	9.98	9.54	9.79	7.44	7.41
TDS	9405	4775	10,000	1320	4776
Alkalinity as CO_3	2380	470	1440	200	158
Na	3460	1310	4000	355	1220
K	225	585	443	56.2	41.5
Ca	26.4	32.0	14.4	74.4	332
Cl	2450	1820	3900	502	2060
SO_4	1280	560	760	187	900
F	4.7	2.3	3.6	1.03	2.5
SiO_2	180	170	79	64.5	92
Mg	12.0	4.8	3.36	19.2	115.2
Li	- -	- -	13.31	1.16	265
HCO_3	1322	265.9	658.8	244	192.8
CO_3	- -	252	540	0	0
B	0.8	0.30	0.5	0.2	6.4
As	6.08	2.88	5.71	2.99	0.75
Cu	0.324	0.271	0.166	0.914	0.010
Pb	- -	0.022	0.420	0.006	0.005
Ni	0.493	0.007	0.975	- -	0.085
Ag	0.015	0.011	0.037	- -	- -
Zn	0.075	1.811	0.041	0.104	0.350
$T_{sub}\ SiO_2 =$	173°C	170°C	124°C	114°C	133°C
$T_{sub}\ Na\text{-}K\text{-}Ca =$	211°C	333°C	333°C	209°C	137°C

GEOCHEMISTRY OF FORMATION WATERS ENCOUNTERED IN THE COVE FORT-SULPHURDALE

UNIT AREA

COVE FORT - SULPHERDALE 42-7

CONCENTRATION UNITS = PPM
CONC. OF ' CA ' =   26.400   CONC. OF ' NA ' =   3460.000
CONC. OF ' K ' =   225.000   CONC. OF 'SIO2' =   180.000

DENSITY = 1.00000   TOTAL DISSOLVED SOLIDS =   9405.000

LOG(NA/K) + 1/3LOG(SQRT(CA)/NA) = 1.161E+00
LOG(NA/K) + 4/3LOG(SQRT(CA)/NA) = 3.905E-01

SUBSURFACE TEMPERATURE (DEG. C) FROM CHEMICAL DATA
QTZ TEMP. (CONDUCTIVE) =   172.9
QTZ TEMP. (ADIABATIC) =   162.1
AM. SILICA TEMP. =   49.6
CHALCEDONT TEMP. =   150.7
CRISTOBALITE TEMP. =   122.9
LOG(NA/K) TEMP. =   138.5
LOG(NA/K) + 1/3LOG(SQRT(CA)/NA) TEMP. =   211.1
LOG(NA/K) + 4/3LOG(SQRT(CA)/NA) TEMP. =   332.9

COVE FORT - SULPHERDALE 42-7A

CONCENTRATION UNITS = PPM
CONC. OF ' CA ' =   32.000   CONC. OF ' NA ' =   1310.000
CONC. OF ' K ' =   585.000   CONC. OF 'SIO2' =   170.000

DENSITY = 1.00000   TOTAL DISSOLVED SOLIDS =   4775.000

LOG(NA/K) + 1/3LOG(SQRT(CA)/NA) = 4.789E-01
LOG(NA/K) + 4/3LOG(SQRT(CA)/NA) = 1.732E-01

SUBSURFACE TEMPERATURE (DEG. C) FROM CHEMICAL DATA
QTZ TEMP. (CONDUCTIVE) =   169.1
QTZ TEMP. (ADIABATIC) =   159.3
AM. SILICA TEMP. =   46.1
CHALCEDONT TEMP. =   146.4
CRISTOBALITE TEMP. =   119.1
LOG(NA/K) TEMP. =   466.3
LOG(NA/K) + 1/3LOG(SQRT(CA)/NA) TEMP. =   332.6
LOG(NA/K) + 4/3LOG(SQRT(CA)/NA) TEMP. =   409.3

COVE FORT - SULPHERDALE 31-33

CONCENTRATION UNITS = PPM
CONC. OF ' CA ' =   14.400   CONC. OF ' NA ' =   4000.000
CONC. OF ' K ' =   443.000   CONC. OF 'SIO2' =   79.000

DENSITY = 1.00000   TOTAL DISSOLVED SOLIDS =   10000.000

LOG(NA/K) + 1/3LOG(SQRT(CA)/NA) = 8.647E-01
LOG(NA/K) + 4/3LOG(SQRT(CA)/NA) = -1.003E-01

SUBSURFACE TEMPERATURE (DEG. C) FROM CHEMICAL DATA
QTZ TEMP. (CONDUCTIVE) =   124.4
QTZ TEMP. (ADIABATIC) =   121.9
AM. SILICA TEMP. =   5.6
CHALCEDONT TEMP. =   96.4
CRISTOBALITE TEMP. =   73.8
LOG(NA/K) TEMP. =   195.9
LOG(NA/K) + 1/3LOG(SQRT(CA)/NA) TEMP. =   332.6
LOG(NA/K) + 4/3LOG(SQRT(CA)/NA) TEMP. =   409.3

COVE FORT - SULPHERDALE 31-33

CONCENTRATION UNITS = PPM
CONC. OF ' CA ' =   74.400   CONC. OF ' NA ' =   355.000
CONC. OF ' K ' =   56.200   CONC. OF 'SIO2' =   64.500

DENSITY = 1.00000   TOTAL DISSOLVED SOLIDS =   1320.000

LOG(NA/K) + 1/3LOG(SQRT(CA)/NA) = 1.180E+00
LOG(NA/K) + 4/3LOG(SQRT(CA)/NA) = 1.625E+00

SUBSURFACE TEMPERATURE (DEG. C) FROM CHEMICAL DATA
QTZ TEMP. (CONDUCTIVE) =   114.1
QTZ TEMP. (ADIABATIC) =   113.1
AM. SILICA TEMP. =   -3.5
CHALCEDONT TEMP. =   85.1
CRISTOBALITE TEMP. =   63.5
LOG(NA/K) TEMP. =   244.4
LOG(NA/K) + 1/3LOG(SQRT(CA)/NA) TEMP. =   208.5
LOG(NA/K) + 4/3LOG(SQRT(CA)/NA) TEMP. =   153.0

COVE FORT - SULPHERDALE 14-29

CONCENTRATION UNITS = PPM
CONC. OF ' CA ' =   332.000   CONC. OF ' NA ' =   1220.000
CONC. OF ' K ' =   41.500   CONC. OF 'SIO2' =   92.000

DENSITY = 1.00000   TOTAL DISSOLVED SOLIDS =   4776.000

LOG(NA/K) + 1/3LOG(SQRT(CA)/NA) = 1.777E+00
LOG(NA/K) + 4/3LOG(SQRT(CA)/NA) = 2.010E+00

SUBSURFACE TEMPERATURE (DEG. C) FROM CHEMICAL DATA
QTZ TEMP. (CONDUCTIVE) =   132.8
QTZ TEMP. (ADIABATIC) =   128.0
AM. SILICA TEMP. =   12.8
CHALCEDONT TEMP. =   105.4
CRISTOBALITE TEMP. =   81.9
LOG(NA/K) TEMP. =   85.1
LOG(NA/K) + 1/3LOG(SQRT(CA)/NA) TEMP. =   136.9
LOG(NA/K) + 4/3LOG(SQRT(CA)/NA) TEMP. =   114.4