GL00898

TABLE OF LOGS
DESERT PEAK B-23-1

DATE	COMPANY	TYPE OF LOG	INTERVAL LOGGED-FT
3-19 to 5-28-79	ENERG WELL LOGGING SERVICE	ENERGY LOG	48-9617
4-5-79 (1)	DRESSER ATLAS	INDUCTION ELECTROLOG	444-3068 (a)
4-5-79	DRESSER ATLAS	FRACLOG	444-3062
4-5-79	DRESSER ATLAS	CALIPER LOG	444-3071
4-5-79	DRESSER ATLAS	SPECTRA LOG	470-3070
4-5-79	DRESSER ATLAS	COMP. DENSILOG-COMP. NEUTRON	444-3071 (a)
4-5-79 (2)	DRESSER ATLAS	BHC ACOUSTILOG	444-3062 (a)
4-6-79	DRESSER ATLAS	DUAL DETECTOR NEUTRON LIFETIME LOG	440-3065 (a)
4-13-79	SCHLUMBERGER	DIRECTIONAL SURVEY-CALIPER	150-2900
5-18-79	PRUETT WIRELINE SERVICE	TEMPERATURE	0-8750
5-24-79 (3)	DRESSER ATLAS	TEMPERATURE	3000-9635
5-24-79 (1)	DRESSER ATLAS	INDUCTION ELECTROLOG	2980-9642 (a)
5-24-79 (2)	DRESSER ATLAS	BHC ACOUSTILOG	2990-9635 (a)
5-25-79 (3)	DRESSER ATLAS	TEMPERATURE	800-8400
5-25-79	DRESSER ATLAS	FRACLOG	2980-9637
5-28-79	PRUETT WIRELINE SERVICE	TEMPERATURE	0-9435
*6-27-79	DRESSER ATLAS	DENSILOG	2980-9641
7-6-79	PRUETT WIRLINE SERVICE	TEMPERATURE	0-9470

(1) Combined as a single log
(2) Combined as a single log
(3) Combined as a single log

(a) Individual logs were made for 2"=100' and 5"=100' scales.

* This is a computerized copy of a log originally run 5-25-79.

TABLE OF LOGS
DESERT PEAK B-23-1

DATE	COMPANY	TYPE OF LOG	INTERVAL LOGGED-FT
3-19 to 5-28-79	ENERG WELL LOGGING SERVICE	ENERGY LOG	48-9617
4-5-79 (1)	DRESSER ATLAS	INDUCTION ELECTROLOG	444-3068 (a)
4-5-79	DRESSER ATLAS	FRACLOG	444-3062
4-5-79	DRESSER ATLAS	CALIPER LOG	444-3071
4-5-79	DRESSER ATLAS	SPECTRA LOG	470-3070
4-5-79	DRESSER ATLAS	COMP. DENSILOG-COMP. NEUTRON	444-3071 (a)
4-5-79 (2)	DRESSER ATLAS	BHC ACOUSTILOG	444-3062 (a)
4-6-79	DRESSER ATLAS	DUAL DETECTOR NEUTRON LIFETIME LOG	440-3065 (a)
4-13-79	SCHLUMBERGER	DIRECTIONAL SURVEY-CALIPER	150-2900
5-18-79	PRUETT WIRELINE SERVICE	TEMPERATURE	0-8750
5-24-79 (3)	DRESSER ATLAS	TEMPERATURE	3000-9635
5-24-79 (1)	DRESSER ATLAS	INDUCTION ELECTROLOG	2980-9642 (a)
5-24-79 (2)	DRESSER ATLAS	BHC ACOUSTILOG	2990-9635 (a)
5-25-79 (3)	DRESSER ATLAS	TEMPERATURE	800-8400
5-25-79	DRESSER ATLAS	FRACLOG	2980-9637
5-28-79	PRUETT WIRELINE SERVICE	TEMPERATURE	0-9435
*6-27-79	DRESSER ATLAS	DENSILOG	2980-9641
7-6-79	PRUETT WIRLINE SERVICE	TEMPERATURE	0-9470

(1) Combined as a single log
(2) Combined as a single log
(3) Combined as a single log
(a) Individual logs were made for 2"=100' and 5"=100' scales.
* This is a computerized copy of a log originally run 5-25-79.

TABLE OF LOGS
CAMPBELL "E" NO. 2

DATE	COMPANY	TYPE OF LOG	INTERVAL LOGGED-FT
1-5 to 3-5-79	ENERGY WELL LOGGING SERVICE	with lithology ENERGY LOG	45-8061
1-19-79	GO WIRELINE SERVICES	B.H.C. SONIC	165 - 1919
1-19-79 (1)	GO WIRELINE SERVICES	DUAL INDUCTION-LATEROLOG	165 - 1927
1-19-79 (2)	GO WIRELINE SERVICES	DUAL INDUCTION-LATEROLOG WITH LINEAR CORRELATION LOG	165 - 1927
2-16-79	GO WIRELINE SERVICES	COMP. DENSITY NEUTRON	1559 - 5530 (a)
2-16-79 (1)	GO WIRELINE SERVICES	DUAL INDUCTION-LATEROLOG	1559 - 5530
2-16-79 (2)	GO WIRELINE SERVICES	DUAL INDUCTION-LATEROLOG WITH LINEAR CORRELATION LOG	1559 - 5530
2-17-79	GO WIRELINE SERVICES	B.H.C. SONIC	1414 - 5514 (a)
3-6-79 (1)	GO WIRELINE SERVICES	DUAL INDUCTION-LATEROLOG	5303 - 8060
3-6-79 (2)	GO WIRELINE SERVICES	DUAL INDUCTION-LATEROLOG WITH LINEAR CORRELATION LOG	5303 - 8060
3-7-79	AGNEW AND SWEET	TEMPERATURE	100 - 8061
4-30-79	AGNEW AND SWEET	TEMPERATURE	100 - 8055

(1) Combined as a single log

(2) Combined as a single log

(a) Individual logs were made for 2"=100' and 5"=100' scales.

to HPR

DESERT PEAK AND HUMBOLDT HOUSE FLOW TEST DATA

eld	Well	T.D.	Date	Flow rate in lbs/hr	Method of Calculation	Flowing Temperature	Bottomhole Temperature	Wellhead Pressure psig	Shut-in Pressure psig	Orifice-plate Diameter	Length of Test	Presence of Scale
sert eak	B21-1	4140'	11-76	478,000	James	324°F	406°F	103	0	[illegible]	1 hour	Not known (possible)
sert eak	B21-2	3192'	12-76	456,000	James	285°F	392°F	64	0	8"	21 hours	Probable
			3-77	288,000	James	320°F	392°F	84		6"	8 days	Probable
			9-77 to 11-77	278,000 to * 116,000	James	320°F to * 270°F	392°F	84 to * 33	0	6"	60 days	Yes at 900'
			11-77	313,000 to * 133,000 (8% steam)	Murdock	320°F to * 270°F	392°F	84 to * 33	0	6"	60 days	Yes at 900'
mboldt use	Campbell E-1	1835'	12-77	780,000	James	350°F	356°F	175 to 163	200	5"	17 hours	Yes, at end of flow line No $CaCO_3$ precip. downho

Decline in flow rate, pressure, and temperature is probably due to deposition of calcium carbonate at a depth of about 900 feet in the well.

WATER CHEMISTRY

Field	Well	Ca	Mg	Na	K	Cl	SO_4	HCO_3	Si	F	B	Li	TDS	ph
Desert Peak	B21-1	94	0	1950	220	3600	125	85	300		14	2.0	6600	8.0
Desert Peak	B21-2	90	1.0	2000	240	3600	90	43	440		14	1.6	6600	7.0
Humboldt House	Campbell E-1	52	4.7	1320	270	2330	29	190	360	5.4	8.1	3.1	4305	6.0
Roosevelt, Utah	54-3	10.1	.2	2000	410	3400	54	200	560	5.0	29	19	6442	6.5
Cerro Prieto, Mexico	Average Well	350	.5	5000	1150	10,000	20	35	550		12	12	17,000	5.4

cc: R & D Files
J. L. Whitmire
C. W. Berge
D. C. Smith
D. W. Rhett

August 23, 1978

INTER-OFFICE CORRESPONDENCE / SUBJECT:
BARTLESVILLE, OKLAHOMA

Petrographic Analysis of Chip Samples
Geothermal Well B-21-2,
Desert Peak, Nevada

DAM-154-78

R. C. Lenzer
Salt Lake City Office

Petrographic characterizations have been performed on core and cuttings samples from geothermal well B-21-2 in Desert Peak, Nevada. The samples were taken from depths of 2937-2938.5 ft. and 2943.5-2945 ft. Identification of some of the constituent minerals was aided by x-ray diffraction data and semi-quantitative analyses performed on the scanning electron microscope (S.E.M.)

As only very minor differences were observed between the samples from the two different depths, the two will be discussed together. The samples are vesicular porphyritic volcanic rocks that have undergone complete hydrothermal alteration. The most abundant phenocryst phase was plagioclase, accounting for approximately 40 volume percent of the rock. These phenocrysts have maximum dimensions of 0.5 cm. and occur as well formed laths. Relic albite twinning and compositional zoning were observed. The plagioclase phenocrysts have undergone complete hydrothermal alteration to sericite (very fine-grained muscovite), calcite and quartz. In the larger laths, calcite makes up the cores, indicating normal zoning (Ca-rich cores, Na-rich margins) in the original phenocrysts. It should be noted that although the mineralogic alteration is complete, the original morphology of the plagioclase phenocrysts has been retained.

Also present are the skeletal outlines of what were almost certainly euhedral olivine phenocrysts. These are approximately 0.3 mm. long and account for about 4 volume percent of the rock. These are now totally altered to chlorite that contains substantial Mg, which is consistent with an origin by alteration of olivine.

Small (0.6 mm), euhedral crystals of what has been tentatively identified as sanidine (a high temperature polymorph of orthoclase), were observed in the 2937-2938.5 ft. sample but were absent in the 2943.5-2945 ft. sample. These account for less than 1 volume percent of the sample.

Small (0.02-1.0 mm.), euhedral to anhedral, opaque minerals are distributed evenly throughout the rock. Reflected light work indicates that the larger, more euhedral opaque grains are pyrite. These are probably the result of a secondary pyritization process. Textural evidence (skeletal exsolution lamallae) indicates that the remainder of the opaque grains originally were Fe-Ti oxides. S.E.M. data suggests that Fe has been leached preferentially over Ti by the action of hydrothermal fluids.

The groundmass of these rocks is extremely fine-grained. X-ray diffractograms indicate that it consists primarily of quartz, with muscovite (sericite) and chlorite present in lesser amounts. An S.E.M. scan of the groundmass showed major Si and lesser amounts of Al, K, Mg, and Fe which is consistent with petrographic observations and x-ray diffraction data.

Throughout the rocks are numerous vesicles that now are completely filled with chalcedony and/or calcite. In those that contain both, calcite generally forms the core and is surrounded by concentric bands of chalcedony. In a few vesicles, however, the opposite is observed. These filled vesicles account for perhaps 15 volume percent of the rock.

Conclusions

The rocks from well B-21-2 (depths 2937-2938.5 and 2943.5-2945 ft.) are vesicular porphyritic volcanic rocks that have undergone complete and pervasive alteration due to the action of probable hydrothermal fluids. The extensive replacement of plagioclase by muscovite plus calcite and quartz, the chloritization of the mafic phenocrysts, and the pyritization of some of the opaque grains are the major alterations observed.

If the mafic phenocrysts were indeed olivine, it would be most unusual to have a groundmass as siliceous as that observed in these rocks. Rather, it is suggested that the rocks as they occur today may be more chemically representative of the hydrothermal fluids (high in Si, K, S, CO_2) responsible for the observed alteration than the original magma from which the rocks crystallized.

David A. Morris

DAM:ADJ:rsi

TABLE OF LOGS
CAMPBELL "E" NO. 2

DATE	COMPANY	TYPE OF LOG	INTERVAL LOGGED-FT
1-5 to 3-5-79	ENERGY WELL LOGGING SERVICE	ENERGY LOG	45-8061
1-19-79	GO WIRELINE SERVICES	B.H.C. SONIC	165 - 1919
1-19-79 (1)	GO WIRELINE SERVICES	DUAL INDUCTION-LATEROLOG	165 - 1927
1-19-79 (2)	GO WIRELINE SERVICES	DUAL INDUCTION-LATEROLOG WITH LINEAR CORRELATION LOG	165 - 1927
2-16-79	GO WIRELINE SERVICES	COMP. DENSITY NEUTRON	1559 - 5530 (a)
2-16-79 (1)	GO WIRELINE SERVICES	DUAL INDUCTION-LATEROLOG	1559 - 5530
2-16-79 (2)	GO WIRELINE SERVICES	DUAL INDUCTION-LATEROLOG WITH LINEAR CORRELATION LOG	1559 - 5530
2-17-79	GO WIRELINE SERVICES	B.H.C. SONIC	1414 - 5514 (a)
3-6-79 (1)	GO WIRELINE SERVICES	DUAL INDUCTION-LATEROLOG	5303 - 8060
3-6-79 (2)	GO WIRELINE SERVICES	DUAL INDUCTION-LATEROLOG WITH LINEAR CORRELATION LOG	5303 - 8060
3-7-79	AGNEW AND SWEET	TEMPERATURE	100 - 8061
4-30-79	AGNEW AND SWEET	TEMPERATURE	100 - 8055

(1) Combined as a single log

(2) Combined as a single log

(a) Individual logs were made for 2"=100' and 5"=100' scales.

TABLE OF LOGS

DESERT PEAK B-23-1

DATE	COMPANY	TYPE OF LOG	INTERVAL LOGGED-FT
3-19 to 5-28-79	ENERG WELL LOGGING SERVICE	ENERGY LOG	48-9617
4-5-79 (1)	DRESSER ATLAS	INDUCTION ELECTROLOG	444-3068 (a)
4-5-79	DRESSER ATLAS	FRACLOG	444-3062
4-5-79	DRESSER ATLAS	CALIPER LOG	444-3071
4-5-79	DRESSER ATLAS	SPECTRA LOG	470-3070
4-5-79	DRESSER ATLAS	COMP. DENSILOG-COMP. NEUTRON	444-3071 (a)
4-5-79 (2)	DRESSER ATLAS	BHC ACOUSTILOG	444-3062 (a)
4-6-79	DRESSER ATLAS	DUAL DETECTOR NEUTRON LIFETIME LOG	440-3065 (a)
4-13-79	SCHLUMBERGER	DIRECTIONAL SURVEY-CALIPER	150-2900
5-18-79	PRUETT WIRELINE SERVICE	TEMPERATURE	0-8750
5-24-79 (3)	DRESSER ATLAS	TEMPERATURE	3000-9635
5-24-79 (1)	DRESSER ATLAS	INDUCTION ELECTROLOG	2980-9642 (a)
5-24-79 (2)	DRESSER ATLAS	BHC ACOUSTILOG	2990-9635 (a)
5-25-79 (3)	DRESSER ATLAS	TEMPERATURE	800-8400
5-25-79	DRESSER ATLAS	FRACLOG	2980-9637
5-28-79	PRUETT WIRELINE SERVICE	TEMPERATURE	0-9435
*6-27-79	DRESSER ATLAS	DENSILOG	2980-9641
7-6-79	PRUETT WIRLINE SERVICE	TEMPERATURE	0-9470

(1) Combined as a single log

(2) Combined as a single log

(3) Combined as a single log

(a) Individual logs were made for 2"=100' and 5"=100' scales.

* This is a computerized copy of a log originally run 5-25-79.