



January 22, 1992 ER-BE 81-65

To: Jaff Birdzell
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Santa Rosa

From: Jim Wood *JW*
Reservoir Quality

**CLAY MINERAL ANALYSIS OF GLASS
MOUNTAIN 87-13 CORE SAMPLE**

X-Ray diffraction (XRD) analysis was performed on the sample provided to us from the 87-13 core to determine its clay mineralogy. An initial bulk mineral XRD analysis on this sample using a random powder mount indicated the presence of a 14 and/or a 7 angstrom clay phase (chlorite and possibly talc). This random powder mount analytical technique is generally inconclusive for clay minerals, especially if there is an expandible clay mineral present. Therefore, we do not put much faith in the results of the initial mineral analysis performed on this sample. Our clay mineral analytical technique involves orienting the clay particles in a planar fashion on a glass slide and X-Raying the sample under various hydration states to identify the possible multiple clay minerals present.

Results of clay mineral analysis on this sample indicates that the predominant mineral present is *corrensite*. This corresponds to the white, somewhat waxy vesicle filling mineral in your sample. Corrensite is a mixed-layer clay mineral composed of 50% chlorite layers and 50% smectite layers (a swelling clay). Minor amounts of an amphibole and minor to moderate amounts of discrete chlorite and another chlorite/smectite mixed-layer phase are also present. The latter mineral contains about 20% smectite layers. These chlorite/smectite mixed-layer clay minerals have been noted in other geothermal prospect areas in volcanic terranes (eg. Awi Benigok) and are probably a common occurrence in hydrothermally altered volcanic rocks. When considering drilling programs it is important to keep in mind that these minerals contain smectite-like layers which swell when in contact with fresh water.

I hope this analysis and interpretation helps. If required, a more detailed quantitative estimation of the minerals present can be obtained by simulating the clay mixture in a computer program which we use. Please advise if additional work is necessary on this sample. Also, copies of the XRD patterns can be mailed to you if required.

cc: Leonard *Miller*, an-Brea
Jim *Miller*

WELL GMF 87-13
(CORES)

MINERALOGY, APPROX. WT.% (or) RELATIVE ABUNDANCE

SAMPLE NO.

QUARTZ
PLAGIOCL.
K-FELDSP.
CALCITE
ANHYDRITE
WAIKAKITE
ACTINOLITE
MAGNETITE
SPHEHNE
PYRITE
EPIDOTE
CHLORITE
MIXED
CHLOR/LAYER
SMECT
1/30/30 CH/5M

BULK:

3256'	11	39		8						7	3	2	26	4							
3774'	4	49	TR?	7	1				6	8			4	20	1						
3923'	18	50	3?			1?	1			9	3	8	6	1							
4367'	2	30	3?	1	4			1	3	5			11		25						
4993'	6	43		1	2				5	2	5	2	11		2						
5574'	5	30	2?						2	5			35	4	17						

ANHYDRITE POST-DATES
EPIDOTE IN AMYGDULES
← BEAUTIFUL PRIMARY ADIECIC
FLUID INCLUSIONS IN QZ -
Ⓢ BASED ON LIQ;
YAP. EST Th = 270-
300°C.

<50 FRACTION:

3256'													90	10							
3774'													95	5							
3923'													90	10							
4367'													55	45							
4993'													95	5							
5574'													25	75							

MM = PREDOMINANT M = MAJOR m = MINOR Tr = TRACE ? = TENTATIVE IDENTIFICATION



SUMMARY OF X-RAY DIFFRACTION ANALYSIS
UNIVERSITY OF UTAH RESEARCH INSTITUTE, EARTH SCIENCE LABORATORY