

THE
UNIVERSITY
OF UTAH

DEPARTMENT OF GEOLOGY
AND GEOPHYSICS
COLLEGE OF MINES AND
MINERAL INDUSTRIES
717 W. C. BROWNING BLDG.
SALT LAKE CITY, UTAH 84112

May 23, 1983

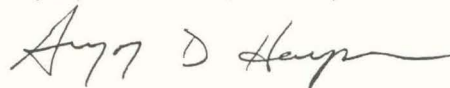
Michael Strickler
Litho-Logic Resources
207 S.W. "G" Street
Grants Pass, OR 97526

For professional services rendered (petrography of eight rocks):

15 hours at \$35 per hour = \$525.00

Payment within 7 to 10 days is requested. Thank you.

Respectively yours,



Gregory D. Harper
Dept. of Geology and Geophysics
University of Utah
Salt Lake City, UT 84112

May 23, 1983

Michael Strickler
Litho-Logic Resources
207 S.W. "G" Street
Grants Pass, OR

Dear Mike:

Enclosed are the petrographic reports for the first eight rocks you sent me. I have also enclosed a copy of the mineral zonation in the ophiolite that helps give an idea as to the depth in the ophiolite from which the samples came.

The first six samples (1-6) are all mafic igneous rocks that have been metamorphosed under the greenschist facies. The mineral assemblages in all the rocks suggest that they come from the lower to middle parts of the sheeted dike complex, well below the lower pillow lavas. This is particularly true for samples 1 and 2; they have good relict diabasic textures, typical of dikes from the lower part of the sheeted dikes and dikes that intrude the gabbros. Sample 5 also has a fine-grained--but poorly preserved--diabasic texture visible in hand specimen; however, it is extensively recrystallized.

I am less confident of the level of samples 3, 4, and 6. They are much finer grained than the other samples, and could possibly be part of the upper sheeted dikes or even pillow lavas. In particular, samples 3 and 4 have spherulitic groundmass textures that often are found in pillow lavas and dike margins. Samples 4 and 6 have abundant metamorphic magnetite, much of which has an unusual long and thin shape; the only sample in my thesis area that had this type of magnetite was in a red pillow lava near the base of the pillow lava sequence. Nevertheless, the abundance of actinolite in these samples combined with the lack of relict clinopyroxene (CPX) suggests that these samples are actually from the sheeted dikes (probably the lower part).

I would like to point out that massive sulfides can occur within the upper sheeted dikes, although all the ones discovered so far have been in the lower part of the pillow lavas. The reason they can occur in the upper sheeted dikes is that small amounts of pillow lavas and breccias occur as rare bits of country rock (i.e., screens or septa between dikes).

As for the last two samples, they are silicic rocks. It is

difficult to determine whether they were originally silicic volcanics or mafic igneous rocks (dikes or pillows) that have been silicified during hydrothermal metamorphism. I favor the latter interpretation because there is some relict lathwork texture preserved in sample 8. I have found what I think are similar cream-colored silicified pillow lavas associated with sulfide mineralization, although I never looked at them in thin section. These silicified pillows occur along U.S. 199, very near the highway maintenance station (Idlewild); it was at the first stop on my field trip.

I hope this information is useful to you. A bill for the petrography is attached. I am working presently on the next batch of rocks, and I hope to have them finished in a week or 10 days.

Best wishes,



Gregory D. Harper