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Thornhill, Ontario

MINERALOGY SECTION  
Report No. 325

TO: Mr. G. K. Polk  
FROM: R. Buchan  
DATE: April 23, 1964

RE: Supplement to Min. Report No. 317, Tasu area samples

Introduction

Upon receipt of Min. Report No. 317, dealing with rock sections in the vicinity of the Tasu orebody, Mr. G.K. Polk submitted several ideas (Memo of 5th April) of petrogenetic nature concerning the samples examined. The results of our report are herewith described in the light of the hypothesis put forward.

Basically, the hypothesis is that feldspar porphyries of the Tasu area were formed both by intrusive and by metasomatic means. A process of silicification and feldspathization of the host limestone series was proposed for the series of samples from (FZ2, 3) → (FZ6, 7) → (MP 2, 5, 9).

Observations

The proposal that samples FZ 2 and 3 represent silicified limestone is quite compatible with their thin section classification as carbonatized quartzites. Grain size of the quartz is exceptionally fine, indicating a low temperature of formation rather than high temperature (with accompanying coarse grain size).

The theory that silicification plus feldspathization, rather than a straight injection of feldspar porphyry, produced FZ 6 and 7 is not substantiated by petrographic examination. The main objection is that the formation of coarse subhedral to euhedral crystalloblasts of feldspar should be accompanied by other changes in the "quartzite". Under the conditions of feldspathization, recrystallization of the quartz to form coarser grains would be expected, yet the grain size of the groundmass is not significantly increased nor is there a gradation in size of the feldspar grains from groundmass to "crystalloblasts".

In the MP series, the grain size of the matrix is coarser but factors which have to be accounted for in a metasomatic theory include a) explanation of the obvious porphyritic texture; b) source of alumina for feldspar growth; c) mechanism of growth for a coarse subhedral quartz phenocryst observed in TS 1787, sample MP 5, (Fig. 1); d) lack of calc-silicate minerals such as calcium garnet, wollastonite etc., in an area of high calcium.

Hybridization of these particular samples is well exhibited in sample MP 5, where the composition of the groundmass feldspar is more calcic than that of the phenocrysts. This feature is more readily explained as carbonate assimilation by an intrusive porphyry than by feldspathization.

### Conclusion

Petrographic evidence indicates the hybrid nature of the samples described in Min. Report No. 317. Formation of feldspar porphyry through a process of silicification and feldspathization is not substantiated in the samples examined.



R. Buchan

RB:mt  
Attach. Fig. 1

c.c. F.R.A.  
A.S.D.  
C.R.E. (2)  
C.L.L.  
G.P.M.  
W.J.T. (4) ✓  
Min. File

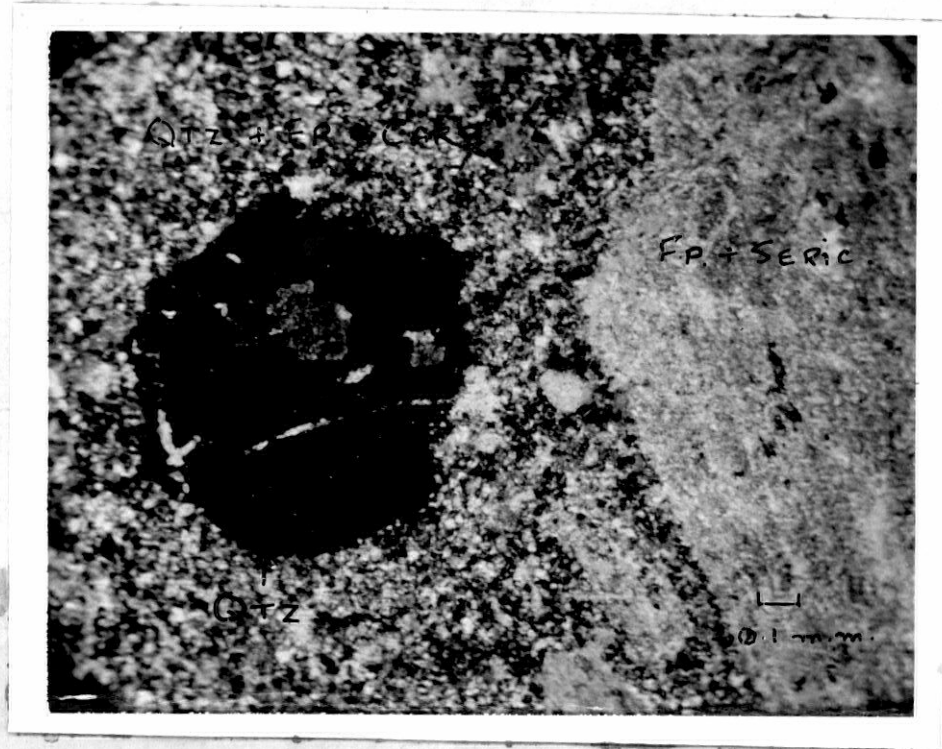


Fig. 1 Pol. Lnd. Print #432 TS 1787 x 52 X.N.

Subhedral quartz and feldspar phenocrysts are set in a fine grained quartz-feldspar matrix. Carbonate is prevalent through both phenocrysts and matrix areas.