896655

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CLAY ANALYSIS

Jan 18/1

Mr Louis Tsang
Geologist
Highmont
Box 3000
Logan Lake B.C.
V0K1W0

Dear Louis:

Enclosed are several maps and reports as well as data from a study of clay alteration ~~analyses~~ that I made at Highmont.

Also enclosed are ten rock slices and comments on the sections that I had cut from them. These represent samples that I collected in the west pit area when you kindly showed Bob McArthur and I around.

Please accept my apologies that it has taken me so long to find time to do the thin section study and to assemble the reports. I hope they are helpful!

I very much enjoyed our visit and hope to get up to see you again next summer.

Yours sincerely

WSM

Enclosures
~~Reports~~ - Ppy Cu Paper
- Parlen Map 30 + Notes
- Clay Analysis Data
- Thin Section Report
- Rock Slices
- Xerox of Paper 77-9 GSC

Thin Section Report by WSMc Millan
~~Hwt~~ Feb. 22/81

HW1 Pink and green altered Skeena granodiorite with bornite in fractures.
Plagioclase is altered to sericite and carbonate. It is oligoclase.
Biotite is altered to chlorite and ferriferous carbonate. One large flake may have had a bit of secondary biotite.
Hornblende is altered to chlorite and calcite and a clear mineral (albite?) with local epidote and minor actinolite
Quartz is coarsely crystalline, interstitial and stressed.
Accessory minerals are apatite, sphene and magnetite

HW2 Olives green altered, chloritized Skeena granodiorite.
Plagioclase is altered to carbonate sericite and hydromica(?) with some epidote
Hornblende is altered to epidote, chlorite, carbonate and another mineral I wasn't able to identify.
Quartz is "crackled" - that is, it has been fractured then partially annealed.
Young carbonate veins and fractures occur.

HW3 A gray quartz, carbonate - chalcopyrite vein. The quartz is shot through with sericite. Quartz forms small and large crystals, probably two or more generations. Carbonate and chalcopyrite fill voids and are young relatively to the quartz.

HW4 Olive green altered Skeena granodiorite - biotite was not seen in the ~~hand specimen~~ thin section but is in the hand specimen. Plagioclase is half altered to sericite and carbonate. Chlorite, sericite, carbonate and leucoxene(?) are pseudomorphous after hornblende. Quartz and K feldspar are interstitial; K feldspar is less altered than plagioclase.

HW 5 olive green
Altered Skeena granodiorite with secondary biotite. In hand specimen biotite forms large glassy-looking books.

Plagioclase has core zones altered to sericite and hydromica; rims are clear. Remnants of complex zoning are visible.

Biotite is replaced by secondary biotite and carbonate or by sericite

Kfeldspar is dusted by alteration

The altered rock is cut by sericite ± opaque veinlets.

Magnetite (primary) has been oxidized to hematite

HW6 Quartz-carbonate-chalcopyrite vein consisting of several generations of vein of open-space filling quartz crystals separated by finer grained quartz. Some of the fine areas is probably silicified country rock and there are scattered sericitized country rock fragments. Sericite is also disseminated. Chalcopyrite is late and filled crystal-lined vugs.

HW7 Sugary dark gray to milky quartz cut by quartz veinlets. The fine, dark colored zones are silicified country rock. Vein quartz occurs as bladed crystals but vein borders are diffuse. Minor sericite patches may represent replaced phenocrysts.

HW8 Relatively fresh-looking gray-white Skeena granodiorite. In thin section, plagioclase (oligoclase) is variably complexly zoned and clear or pervasively sericitized. Kfeldspar is microperthitic and dusted with alteration.

Biotite is fresh in crystal cores but borders are chloritized or, uncommonly, altered to secondary biotite.

Hornblende has altered to actenolite and secondary biotite (green-brown pleochroism).

There are fractures and clots of quartz, chlorite, and epidote

and an opaque mineral (sulphide ?).

HW 9 Multistage, multifractured quartz veins with late stage blebs and fracture fillings of bornite, chalcopyrite and molybdenite. The main vein components are quartz, carbonate and sericite; sulphides occur with sericite, quartz, and carbonate

The vein texture looks cataclastic (hydrofracturing?).

HW10 Pale green altered Skeena granodiorite cut by molybdenite-rich ~~fractures~~ veinlets.

Near the MoS_2 bearing veinlets, plagioclase is completely altered, 1 centimetre away it is 60% altered to chlorite, epidote, zoisite, carbonate and sericite.

Biotite is replaced by sericite, chlorite and epidote.

MoS_2 occurs in quartz ~~veinlets consist of~~ epidote, zoisite, carbonate and some chlorite veinlets.