896653

HIGHMONT

MIE - 1

Gray medium grained Skeena granodiorite cut by quartz-chalcopyrite pyrite stringers that cut quartz pyrite veins with K feldspar alteration halos. Outside the pink alteration halo mafic minerals are chloritized; away from halos they are fresh. Sulphides are also disseminated in mafic minerals, especially altered ones. The weak yellow stain on plagioclase suggests sericitic alteration. Primary K feldspar is interstitial. Quartz is coarse grained and anhedral. Plagioclase shows complex zoning.

In thin section plagioclase and K feldspar are clouded by alteration products — mainly hydromica and clays. Quartz is cracked. K feldspar is microperthitic. Biotite is relatively fresh; locally it has a very thin overgrowth of secondary biotite (greenish type). Hornblende is pervasively altered to secondary biotite.

Alteration and veining minerals are quartz chlorite epidote sulphides: small amounts of carbonate

TAHMONT

M2E-1 - Good grade

Veined, altered Skeena granodiorite with pink and green feldspar alteration. Veining is quartz - bornite - chalcopyrite - molybdenite. Sulphides are in veins and disseminated through the altered rock. Staining shows intense Kfeldspar alteration. - except adjacent to ~~around~~ sulphides where there is none. Staining shows up ~~on~~ a wispy bordered quartz sericite sulphide alteration zone that is cut by the quartz sulphide vein. (I think, in thin section relationships are unclear).

In thin section there are quartz sericite sulphide zones and fracture fillings. The crosscutting quartz-sulphide vein has pockets of sericite. Plagioclase is totally destroyed ~~and~~ secondary ~~plag~~ Kfeldspar is microperthitic. Quartz sericite fractures cut the quartz vein. There are pockets of high relief carbonate in the quartz sericite zones.

HIGHMONT — Olive Green alteration —

M 2E-2 with pink alteration on fractures.

Altered Skeena granodiorite / Mafics are sericitized, feldspars are pale olive green or pink. Quartz is anhedral with open interstitial texture. On the stained slab, K feldspar is interstitial and also fracture controlled; it partially replaces plagioclase. Fractures carry chalcopyrite, bornite and sericite.

In thin section plagioclase is moderately dusted with alteration and primary K feldspar lightly altered. ~~K spar~~ K feldspar veinlets are not easily seen but plagioclase is cut by ~~sericite~~ carbonate veinlets and altered to sericite and clay (?) and some carbonate. ~~Cores and some of plagioclase grains are less altered.~~

HIGHMONT

M 3E 1 Moderate pink to green feldspar alteration and chloritized mafic minerals in Skeena granodiorite. Fractures carry pyrite and chlorite. Stain shows K feldspar alteration is fracture controlled; primary K feldspar has been destroyed. Fractures may carry tourmaline.

In thin section plagioclase is altered to hydromica and zoisite (?) There are pockets and veinlets of carbonate - quartz - ~~tourmaline~~ epidote (?) and epidote chlorite pyrite. Late carbonate fractures cut everything else. Plagioclase alteration would be caused saussurite, that is ~~is in the~~ it represents propylitic alteration. Mafics are altered to chlorite with some epidote.

ITACAMONT (Fluid Inclusion)

M3E-2 Quartz vein with ~~epidote~~ some internal carbonate and carbonate stringers and epidote sericite knots and zones at vein borders (Thin section) - minor sulphides.

HIGHMONT

M4E Gray, weakly altered Skeena granodiorite with bornite chalcopyrite sericite fractures and patchy pink alteration. Mafics are chloritized. Late carbonate fractures occur. Staining shows K feldspar alteration along and adjacent to quartz veinlets and mineralized fractures.

In thin section, mafics are partly to totally chloritized; they contain minor epidote and carbonate. Plagioclase is only 15% altered, generally in grain cores, to sericite and clay (?) with local epidote. Quartz carbonate zones (quartz in small, rounded grains) cut the rock. Complex oscillatory plagioclase zoning remains. Only remnants of Interstitial primary K feldspar is perthitic.

RICHMONT

M5E Skeena granodiorite. Mafics are chloritized ~~adjacent~~ in K feldspar ~~to~~ alteration halos of ~~qz~~ quartz, epidote, bornite veinlets and adjacent to K feldspar-filled fractures with potassic alteration halos. Altered mafics carry bornite and chalcopyrite. ~~Epidote on fractures with K feldspar alteration may be late stage~~. Calcite coats late fractures. Primary K feldspar is interstitial.

In thin section complex feldspar zoning is visible with a hand lens and plagioclase is altered to K feldspar and sericite with lesser carbonate and epidote. Biotite alters to chlorite, some epidote and opaque mineral; hornblende alters to chlorite, epidote, carbonate, actinolite and opaque mineral. Locally hornblende is only altered to actinolite carbonate and brown pleochroic, length slow but low birefringence mica (altered biotite?).

HIGHMONT

M6E - 1

Weakly altered syenogranodiorite with chlorite - chalcopyrite fractures and chlorite bornite fractures. Mafic minerals are chloritized adjacent to mineralized fractures.

In thin section, mafic minerals are biotite and hornblende - both are fresh. Biotite is red-brown to tan and has very minor overgrowths of secondary biotite. In a quartz 'knot', epidote is present. Adjacent to it, biotite is chloritized and hornblende is partially epidotized. Plagioclase crystals still show complex zoning; cores of grains are dusted with sericite (hydromica?). K feldspar is primary and forms open interstitial networks. Accessory minerals are apatite, sphene and magnetite.

HIGHMONT

M6E-2 A large specimen of weakly altered Skeena granodiorite that is cut by quartz - ~~pyrite~~ chalcopyrite - bornite - ~~chalcopyrite~~ veins and quartz - epidote - bornite veins with pink potassic alteration halos. The latter are cut in offset by ~~qua~~ chlorite - bornite fractures. Mafic minerals are variably fresh to chloritized.

6E-1 In this section hornblende is fresh or altered to actinolite plus epidote. Biotite is fresh with narrow hydrothermal biotite overgrowths or chloritized. Plagioclase zoning is preserved but weak alteration of cores is to sericite and clays(?). Accessory minerals are apatite, sphene and magnetite.

In thin section, veins of quartz - K feldspar - bornite - with minor chlorite - epidote and actinolite have K feldspar alteration halos. They have local ~~are clearly cut by~~ cataclastic zones at their borders. The potassic veins are cut by quartz - sericite - sulphide fractures with associated epidote alteration. Away from the veins, alteration is weak and sericitic in the plagioclase (like 6E-1).

HIGHMONT

MTE Dark olive green feldspar alteration and chloritized mafic minerals disguise normal rock textures. Pyrite and chalcopyrite are on fractures and disseminated throughout the rock in altered mafic minerals. There is no K feldspar left in the rock.

In this section plagioclase is 15 to 85% altered to sericite and carbonate ~~to sericite~~; most is fracture controlled. ~~and~~ Mafic minerals are totally altered to chlorite, epidote and opaque (leucoxene). Chlorite occurs as radiating sheafs.

HIGHMONT

M8E Gray weakly altered Skeena granodiorite ~~is veined~~ has by quartz-K feldspar, epidote chlorite veins with local sericite. Chalcopyrite and pyrite occurs in the veins and in hornblende. There are quartz ~~chalcopyrite~~ K feldspar chalcopyrite molybdenite fractures. Alteration halos on the veins are minimal - some bleaching.

In thin section biotite is red brown and fresh; hornblende has been altered to biotite ~~and~~ which is mainly chlorite now. Plagioclase is weakly to ~~very~~ pervasively altered to sericite ~~and~~ and clay (?).

HIGHMONT MGE-1

Skeena granodiorite with pink and green plagioclase alteration and chloritized mafic minerals. Tourmaline epidote veins that cut it have bleached alteration halos. Fractures are coated by quartz chalcopyrite molybdenite, bornite chlorite (?), or pink zeolite (laumontite ?). Staining shows that Kfeldspar in the bleached vein halos ~~are~~ is weakly altered to Kfeldspar. ~~and~~ Most of the primary Kfeldspar has been destroyed for 2 cm from the vein; that left is interstitial.

In thin section quartz is coarse, anhedral and crackled. Mafic minerals are now a mix of chlorite, epidote and sphene (inclusions?). Plagioclase twins are still visible but pervasive alteration is to sericite and carbonate (not Kfeldspar). Hornblende seems to be altered to chlorite and quartz (minor sericite). Carbonate filled fractures cut the host rock.

HIGHMONT M9E-2

A quartz MoS_2 vein with local sericite ~~x feldspar~~ and carbonate that is cut by later carbonate veins. There is evidence of multiple periods of veining and fracturing.

HIGHMONT M9E + 15

Epidote-carbonate veined and fractured ~~Skeena~~ granodiorite. Fracture faces have white argillic alteration; the rock is grayish white and weakly altered. Staining shows that primary K feldspar has been destroyed but there may be minor ~~as~~ fracture controlled K feldspar alteration. Mafics look fresh.

In thin section hornblende is partly altered to biotite which is partly chloritized. Primary biotite is altered to chlorite and epidote. Plagioclase is 10 to 60% (mostly 10 - 20%) altered to sericite.

HIGHMONT M10E-1 ORE

Skeena granodiorite altered to light to dark olive green color. Dark areas are rich in bornite - ~~chlorite~~ sericite (?) fractures; also there are quartz bornite veinlets. K feldspar is a minor constituent in quartz veins; primary K feldspar has been destroyed. One quartz MoS_2 veinlet.

In thin section, fine flakey sericite is with bornite and quartz - bornite fractures and veinlets. Plagioclase is pervasively altered to sericite and clays with local carbonate; remnant twins are visible.

Most of the bornite is associated with quartz and flakey sericite. Late quartz veins (barren) cut quartz - sericite zones.

HIGHMONT M10E-2

Quartz veined rock with chalcopyrite bornite and molybdenite mineralization. Carries flakey sericite and sericite altered plagioclase. Multiphase veining.

HIGHMONT M11E-1

Weakly altered gray Skeena granodiorite. Mafic minerals are chloritized. Cut by quartz sericite haloed quartz chalcopyrite bornite vein. There is kaolinitic alteration on fractures (argillic). Magnetite is common as inclusions in mafic minerals. K feldspar (10%) is open interstitial and primary (pink on fresh face).

In thin section there are chloritic areas (with local epidote) replacing biotite that apparently replaced hornblende. Plagioclase is altered 15 to 75% to sericite and carbonate. Primary biotite is altered to chlorite; it appears that there may have been secondary biotite overgrowths.

HIGHMONT M11E-2

Weakly altered Skeena granodiorite with pink and green alteration halos (not K feldspar) on epidote-chlorite-bornite fractures. Mafic minerals are chloritized. The pink zones are altered plagioclase, ~~but interstitial K feldspar survived~~ not K feldspar; elsewhere the plagioclase takes a slight potassium stain and is ~~plan~~ primary probably sericitized; primary K feldspar survived throughout.

In thin section plagioclase is 10 to 40% sericitized. Biotite is fresh or chloritized; it has narrow secondary biotite overgrowths. Hornblende is pervasively altered; whether it was biotite altered is uncertain — it is now mainly chlorite with some sericite and fibrous-looking so it may have been. Fractures carry chlorite and sericite and there are minor flakey sericite quartz zones.

HIGHMONT M12E

Pervasively sericite altered Skeena granodiorite. Plagioclase is emerald green and there is flakey sericite alteration. Molybdenite and chalcopyrite are ~~on~~ on fractures and in mafic minerals.

In thin section, plagioclase is ~~ser~~ altered to sericite and carbonate and there are flakey sericite-quartz zones. Mafic minerals are altered to sericite and chlorite.

HIGHMONT M13E

Moderately pink and green altered Skeena granodiorite with chloritized mafic minerals. Fractures are coated with chlorite - bornite (three sets). Primary K feldspar is interstitial; locally it is destroyed adjacent to chloritic fractures and there is some bleaching adjacent to fractures. There is also one zone of K feldspar - flakey sericite - bornite - molybdenite.

In this section there are then granular quartz veinlets, carbonate - quartz fractures and chlorite - bornite fractures. Plagioclase is partly altered to sericite and carbonate and cut by carbonate fractures. ~~Mafic minerals are~~ Biotite is altered to chlorite and chlorite - sericite; hornblende is incompletely ~~chlor~~ altered to chlorite, sericite and carbonate or actinolite. There is no suggestion of earlier secondary biotite alteration.