Davidson
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AMAX NORTHWEST MINING COMPANY LIMITED

A SUBSIDIARY OF AMAX INC.

PHONE (AREA CODE 604) 683-0474
TELEX 04-54387

#601 - 535 THURLOW STREET
VANCOUVER, BRITISH COLUMBIA
V6E 3L6

March 3, 1980

DEPT. OF MINES
AND PETROLEUM RESOURCES
Rec'd MAR 13 1980
SMITHERS, B. C.

Mr. Tom Schroeder
Department of Mines
Government Building,
Smithers, B.C.
VOJ 2NO

Dear Tom,

Enclosed is a copy of the letter sent to Nick Carter which included a brief geological description. All of which should be familiar to you. The only new data generated to date is the composition of the garnet (andradite) not much of a surprise and the variability of our stock, which is composite and compositionally ranges from a quartz monzonite to quartz diorite. Our assays are slowly arriving and look encouraging. Looking forward to seeing you in Vancouver in April.

Yours truly,

AMAX NORTHWEST MINING COMPANY
LIMITED

Dorothy Atkinson

Dorothy Atkinson

encl.
DA/keb

March 3, 1980

Dr. N.C. Carter
Ministry of Energy Mines & Petroleum Resources
Douglas Building,
Victoria, B.C.

Dear Nick,

Following conversations with you and Roger Steininger I am submitting samples from Yorke Hardy for radiometric age dating. Attached is a memo describing briefly the geology and time sequence at Yorke Hardy which I'm sure you're not unfamiliar with. Age dates by both you and Kirkham have established a late Cretaceous age for the quartz monzonite stock at Yorke Hardy but no age dates are available for the granodiorite sheet, lamprophyre sills or rhyolite plug. The latter and phases of the granodiorite sheet are not useful for K-Ar methods containing almost no biotite or hornblende however, I have included samples in the hope you can use an alternative radiometric method. Some of the rock samples contain veins and are variably altered. If you are interested in obtaining further or alternative samples of rock type, alteration or veins I should be able to supply them. I hope you will be able to help us. If you require any more information give me a call.

Yours truly,

AMAX NORTHWEST MINING
COMPANY LIMITED

Dorothy Atkinson

DA/keb

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March 3, 1980

TO: Files

FROM: Dorothy Atkinson

SUBJECT: Yorke Hardy (Glacier Gulch) Rock Samples Submitted for Radiometric Age Dating

Rock types at Yorke Hardy have been previously described by Bright and Jonson (1976). From youngest to oldest they are Skeena sedimentary rocks, Hazelton volcanic rocks, granodiorite sill, lamprophyre sills, rhyolite porphyry plug and quartz monzonite stock (Figure 1). Molybdenite veins in Hazelton volcanic rocks found on Hudson Bay Mountain originally stimulated exploration of the Yorke Hardy prospect. This year (1979-1980) a series of up holes were drilled from the 3500 foot (elevation) level adit below and east of Kathyln Glacier to confirm molybdenite grades.

Molybdenite veins at Yorke Hardy have been subdivided into:

1) Type I consisting of fine grained molybdenite and quartz in (a) stockwork veins and in (b) crosscutting wide banded vein.

2) Type II consisting of coarse grained molybdenite and quartz with rare calcite. These crosscut Type I veins.

The youngest intrusion (to date) the quartz monzonite stock has only been located in four deep exploratory holes:

1) DDH 28 drilled from surface intersected 69 ft. of previously dated (Table 1) quartz monzite porphyry.

2) DDH 67 intersected 296 ft. of alternating equigranular and porphyritic grey quartz diorite.

3) DDH 70 intersected 2028 ft. of pink and white porphyritic quartz monzonite.

4) DDH 72 intersected 294 ft. of pink and white porphyritic quartz monzonite.

The stock is composite and ranges in composition from quartz diorite to quartz monzonite. I am enclosing a sample from each drill hole (1x4) (Table 2). DDH 67 is particularly interesting as it differs texturally and compositionally from other intersections. The stock is interpreted as genetically related to quartz felspar porphyry dykes exposed on surface and observed in core. Surface examples have been previously dated (Table 1). I am enclosing 2 represntative samples from core (Table 2). Lack of alteration and veins, low MoS_2 content but rare cross cutting Type II veins indicate the quartz monzonite stock is late mineral.

The quartz monzonite stock truncates a small intermineral plug of pink to white rhyolite containing up to 20% 1-3 mm euhedral quartz and felspar phenocrysts in an aphanitic to fine grained groundmass. The rhyolite plug is characterized by a zone of crenulate quartz bands at its upper margin. The plug and intruded country rocks (Hazelton volcanic rocks and granodiorite sill) are brecciated, cut by breccias, barren quartz stockworks and partically destroyed by a high silica zone produced by coalescing of quartz stockworks. Five samples were selected for age dating from the plug (Table 2). Type I molybdneite veins have previously been interpreted to be geneticallly related to the rhyolite plug however, shape of the ore zones does not reflect the plug outline. Type I veins are rare within the rhyolite plug, have been obliterated within the high silica zone and breccias above and within the plug contain quartz and country rock fragments cut by Type I veins. At most molybdenite deposits the shell of the source rock is cut by its mineralization. Thus we may not have seen the source for Type I veins.

This rhyolite plug intrudes the granodiorite sill. Lamprophyre (diabase) sills observed underground and in core also cross cut the granodiorite sill. These lamprophyre are mineralized. Two samples of lamprophyre from core were chosen for age dating (Table 2).

The granodiorite sill ranges:

a) in colour from white to dark green.

b) in texture from equigranular to porphyritic and is characterized in part by spectacular graphic intergrowths of quartz and plagioclase.

c) in composition from granodiorite to tonalite.

The granodiorite sill contains numerous sloped volcanic blocks, a sample (Table 2) is included for reference. Six samples of the granodiorite sill were selected for age dating (Table 2). The sill is the principal host rock for ore grade molybdenite.

Alteration has resulted in mineralogical changes within the entire geologic section. Early alteration is characterized by fine grained andradite garnet and epidote with sericite, chlorite, magnetite and minor scheelite in veins and clots forming spotted rocks which within the aplitic granodiorite have been called Appaloosa texture. Extensive bleaching of metavolcanic rocks has produced quartz amphibole hornfels.

(cont'd)

Gangue vein fillings include quartz, magnetite, K-feldspar, chlorite, biotite, amphibole, calcite and pyrite. Ore minerals are molybdenite, scheelite with minor chalcopyrite. Alteration occurs as envelopes and as pervasive zones that have obliterated primary rock texture. Potassic (K-feldspar and biotite), phyllic (sericite, quartz and pyrite), and propylitic (chlorite, magnetite, calcite and albitic plagioclase) alteration assemblages are cross-cutting and repeated.

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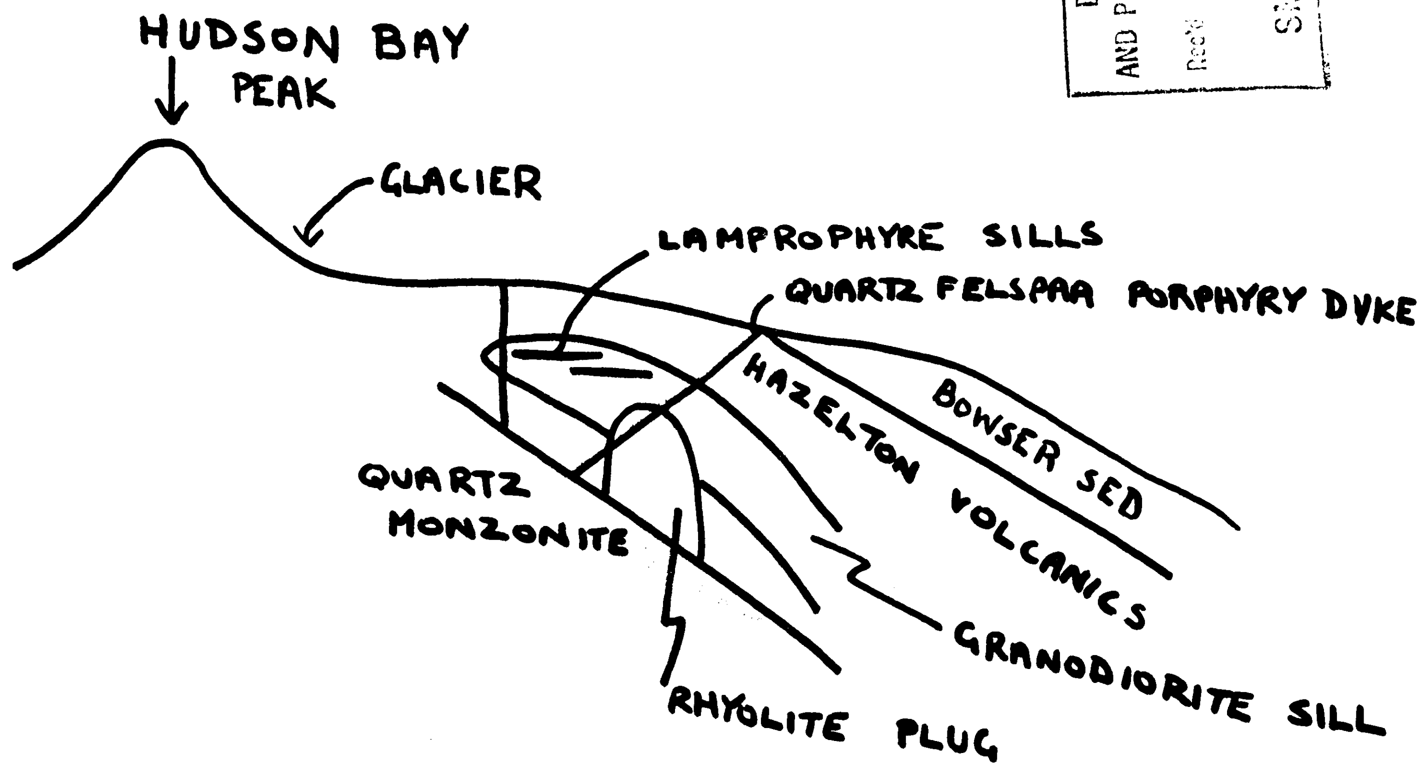

FIG. 1. GENERALISED, SIMPLIFIED GEOLOGICAL CROSS SECTION YORKE HARDY

TABLE I

RADIOMETRIC AGE DETERMINATIONS AT
YORKE-HARDY

Reference	Description	Age (m.y.)
Quartz Monzonite Stock		
Kirkham 1969	K/Ar on biotite from quartz monzonite porphyry, DDH 28 G.A.C. Lab	67±5
Carter 1974	Sample as above (NC 68.6) U.B.C. Lab	73.3±3.4
Quartz Feldspar Porphyry Dykes		
Kirkham 1969	K/Ar on biotite from surface	60±5
Veins		
Kirkham 1969	K/Ar on biotite from a quartz-biotite-molybdenite vein G.A.C. Lab	63±5
Carter 1974	Sample as above, average of two (NC 67.41)	69.5±2
Kirkham 1969	K/Ar on hornblende from a hornblende-quartz vein on surface G.A.C. Lab	65±6

TABLE II

SAMPLES SUBMITTED FOR RADIOMETRIC AGE DETERMINATIONS

Quartz Monzonite Stock (total 4 samples)

DDH 28	2790-2810 feet
67	2980-2990
70	2225-2235
72	2300-2320

Quartz Feldspar Porphyry Dykes (total 2 samples)

DDH 127	460-465 feet
129	575-580

Rhyolite Plug (total 5 samples)

DDH 29	3075-3100 feet
104	1620-1630
128	1090-1100
142	980-990
143	1270-1280

Lamprophyre Sills (total 2 samples)

DDH 127	465-470 feet
129	575-580 feet

Granodiorite Sill (*total 6 samples*)

Granodiorite

DDH 130	120-130 feet
149	155

Porphyritic Granodiorite

DDH 118	480-495 feet
161	205

Porphyritic-Graphic Granodiorite

DDH 64	200-210 feet
101	450-460

Stoped Volcanic Block within Granodiorite Sheet

DDH 91 55-65 feet (for reference)