

COMINCO LTD.

830667

EXPLORATION

N.T.S.: 93N/2

WESTERN DISTRICT

16 FEBRUARY 1976

FILE NOTE

JEAN PROPERTY

N.B.C. SYNDICATE

PETROGRAPHIC STUDY OF HORNFELSES FROM JEAN PROPERTY

I.A. PATERSON



Spec. # a) G760049

b) 75-2-395

Rock Type a) biotite, quartz, amphibolitic  
hornfels

b) volcanoclastic sandstone or  
siltstone

Minerals: amphibole, plagioclase, quartz, biotite, sphene  
veins: pyrite, quartz, chlorite

Textures: note layering in hand specimen caused by biotite rich and biotite  
deficient zones.

History: layering and high quartz content suggests sedimentary origin.

Spec. # a) G760050

b) 75-3-214

Rock Type a) biotite, dolomite, plagioclase  
quartz hornfels

b) calcareous siltstone.

Minerals: The thin section is divided into three zones - a, b, and c. Zone a  
consists of bands of dolomite and quartz which seem to have formed  
along a late shear zone. Zone b is grey in colour and consists of  
microgranular biotite, dolomite, plagioclase and quartz. This zone  
is transected by oatmeal coloured bleached stringers and blebs con-  
sisting of quartz, plagioclase and albite. Biotite appears to have  
been completely altered in this zone.

History:

- a) original rock may have been a calcareous siltstone.
- b) crystallization of biotite, plagioclase, dolomite, quartz  
assemblage.
- c) formation of bleached zones and stringers composed of carbonate,  
plagioclase and quartz.
- d) formation of mylonite zones and crystallization of dolomite and  
quartz along these zones.

Spec. # a) G760051

b) 75-4-147

Rock Type: a) hornblende, plagioclase, quartz hornfels  
b) volcanoclastic sandstone or silt-  
stone.

Minerals: hornblende (29%) plagioclase + quartz (60%), sphene  
minor chalcopyrite, magnetite.

Textures: homogeneous texture except for clots and stringers of hornblende  
with no evidence of existence of fragments, phenocrysts, etc.

History: original rock type was possibly a volcanic siltstone or fine grained  
tuff. I don't think it was originally a basic volcanic because of  
high quartz and low mafic content.

Spec. # a) G760052

b) 75-4-253

Rock Type: a) biotite amphibolite hornfels  
b) basic lava

Minerals: biotite (20%), amphibole (40%), plagioclase (40%).

Texture: homogeneous, decussate.

April 9/94

I called Jim Manger at the ESC to see what he thought of the conclusion that because pyroxene kinks was absent and metamorphic grade broad is indicated in the direction of the intrusion then a fault is indicated. He says the block that is exotic could be called a HORSE (spelled?). A horse is a block within a fault - he says. He says DAN is (was) a very good metamorphic petrologist but he says Jim) that he does not know if he kept his skull up. He says he certainly has full confidence in the work done by DAN at the time of the report.

RRB

PETROGRAPHIC STUDY OF HORNFELSES FROM JEAN PROPERTY

The purpose of this study was to check contact metamorphic effects of Jean Pluton on Takla Group rocks. It was considered that if there was no appreciable increase in metamorphic grade towards the southern contact of the Jean pluton, the evidence for a fault along the contact would be substantiated.

Summary of Results

The specimens were obtained from drill core and outcrops of the Takla Group volcanics and sediments involved in contact metamorphism near the southern contact of the Jean diorite. Locations are given in Fig.

Most specimens yield assemblages characteristic of the hornblende-hornfels facies suggesting a temperature of  $500 \pm 100^{\circ}\text{C}$  for metamorphic recrystallization. The equilibrium assemblages are as follows:

- a) meta-impure limestone or metasomatized limestone: diopside + grossular + idocrase + plagioclase.
- b) meta-basic igneous (possibly augite porphyry): hornblende + plagioclase + biotite.
- c) meta-volcaniclastic: hornblende + plagioclase + quartz + biotite.

No obvious change in metamorphic grade was detected between 1500' and 200' from the southern contact. The pyroxene hornfels facies is not developed in the immediate vicinity of the intrusion. This fact substantiates the idea that the southern contact of the Jean pluton may be faulted.

The mineralization at the Jean property is fracture controlled and occurs mainly within the hornfelsed basic rocks. The opaque minerals chalcopyrite, pyrite and magnetite occur in veins and are associated with chlorite, carbonate, plagioclase, sphene and prehnite. This assemblage probably formed in the temperature range  $250-350^{\circ}\text{C}$ . The skarn rocks have also undergone a retrograde metamorphism associated with fracturing and chalcopyrite mineralization. Retrograde minerals include epidote, sphene, chlorite, tremolite, pyrite and magnetite.

In summary the sequence of events in the hornfelses seems to have been:

- a) contact metamorphism.
- b) formation of fault zone along contact, cooling, fracturing, mineralization and retrograde metamorphism of Takla Group hornfelses.

*I. A. Paterson*

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IAP/pm

16 February 1976



