

December 16, 1999

Vancouver Petrographics  
Attn: Jim Vinnell

**Sample List and Instructions**

**Samples:** 5 rocks (drill core)

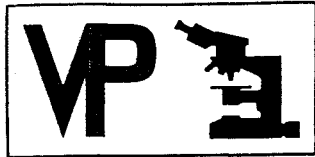
- 1) Kn88-1-165
- 2) K88-2-48
- 3) K88-4-57
- 4) K88-4-60
- 5) K88-6-106

**Instructions:** a) Please prepare thin sections of each sample.

Petrographic description of selected samples (3 in total) **NB: maximum bill, including taxes must not exceed \$350.** Geologic setting is believed to be Cretaceous Skeena Group clastic sedimentary rocks (sandstone, siltstone, mudstone) and a submarine rhyolite flow-dome and carapace breccia (latter not included with samples). Minfile reference is 93M 100.

- b) Choose between samples 1 and 2 to determine which sample best addresses the question:  
Are the siliceous beds rhyolitic tuff?  
These rocks were first described as entirely sedimentary but later re-interpreted as flow-banded rhyolite. I agree with the original drill log, but perhaps there is a volcanic component to the siliceous laminae. What does the thin section indicate.
- c) Choose between samples 3 and 4 to determine which sample best characterizes the primary composition of the rhyolite ie: phenocrysts?
- d) Characterize the alteration of the rhyolite in sample 5.

Any questions, please phone Paul Wojdak at 250-847-7391



# Vancouver Petrographics Ltd.

8080 GLOVER ROAD, LANGLEY, B.C. V1M 3S3  
PHONE (604) 888-1323 • FAX (604) 888-3642  
email: vanpetro@vancouver.net

Report for: Paul Wojdak,  
Ministry of Energy and Mines,  
Mines Branch,  
Bag 5000,  
SMITHERS, B.C.  
V0J 2N0

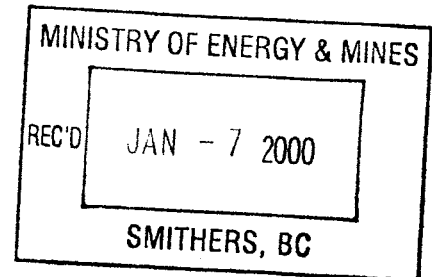
Job 990711

January 4, 2000

## SAMPLES:

5 samples of suspected rhyolitic rocks, numbered as below, were submitted for thin section preparation. Petrographic examination was requested for either of Samples 1 and 2, either of Samples 3 and 4, and for Sample 5.

Sample	Location
1	Kn88-1 165
2	K88-2 48
3	K88-4 57
4	K88-4 60
5	K88-6 106



## SUMMARY:

Sample 1 is a laminated porcellanite composed essentially of compact sericite and minutely felsitic material. Some laminae contain discrete grains of quartz/plagioclase, or pseudomorphs of carbonate or sericite thought to represent clasts. The rock appears to represent a bedded ash tuff of plagioclase-rich (keratophyric) composition.

Sample 2 is of similar character, but without the small-scale laminar variations seen in #1. One of the two beds making up the sectioned portion in Sample 2 is composed dominantly of micritic calcite.


Sample 4 is a rhyolite consisting essentially of a microlenticular intergrowth of quartz and K-feldspar with local diffuse concentrations and phenocrysts of sericitized plagioclase. Macroscopically it resembles an ignimbrite, but is most likely simply a prominently flow-banded extrusive.

Sample 3 is a more heterogenous, streaky-textured rock, consisting of a minutely felsitic matrix (probably mainly albite) with abundant streaky/sinuuous concentrations of sericite. It differs

from Sample 4 in the absence of K-feldspar and paucity of quartz, and in its heterogenous texture. It is possibly an auto-brecciated, flow-banded extrusive of keratophyric composition.

Sample 5 is a lapilli tuff made up of sericitized, more or less quartzose keratophyre fragments in a matrix of potassic felsite.

Individual petrographic descriptions of 3 samples (#s 1, 4 and 5), as requested, are attached.



J.F. Harris Ph.D.

(929-5867)

## Estimated mode

Sericite	55	
Felsite	30	(dominantly albite?)
Quartz)	5	
Plagioclase)		
Biotite)	2	
Chlorite)		
Pyrite	2	

The off-cut of this sample is of minutely fine-grained, porcellanitic character. The overall strong whitish etch indicates the prevalence of plagioclase.

The rock displays sharply defined, undeformed, laminar variations in mineralogy and grain size, on a scale of 1- 10 mm. These have the aspect of a primary depositional feature (bedding).

Thin section examination reveals that the rock is composed dominantly of two components: sericite and a minutely equigranular (felsitic) aggregate, of grain size 2 - 10 microns. The latter probably consists dominantly of albite - possibly with a minor proportion of intergrown quartz.

A central band (about 13 mm in thickness) of the sectioned area is composed essentially of homogenous, compact, minutely felted sericite, with a minor proportion of evenly intergrown, tiny grains of quartz/plagioclase

This unit is flanked on either side by alternations of thinner bands of two main types. One type consists of minutely fine-grained felsite more or less abundantly speckled with sub-parallel strings of small, elongate, sub-prismatic clumps of felted sericite and/or micritic carbonate. The latter range up to 20 microns or so in size and resemble altered phenocrysts or crystal clasts. The other type consists of felted, sub-oriented sericite which is host to somewhat sinuous strings of discrete, stumpy to elongate, prismatic crystals of quartz and/or plagioclase and brown carbonate, plus rounded bodies of felsite up to 100 or 200 microns in size. These have the distinct appearance of crystal and lithic clasts in a fine-grained tuff.

One thin band is of specialized composition, consisting dominantly of sub-oriented sheafs of pale brown biotite. Another contains abundant disseminated pyrite as subhedral grains 0.1 - 1.0 mm in size.

The rock is cut by a few discordant hairline veinlets of carbonate, up to 0.1 mm in thickness.

Sample Kn88-1 165 cont.

The textural features described above constitute a strong indication that this rock is a bedded ash tuff of keratophyric composition. The prevalent sericite is thought to be mainly derived from ~~alteration~~ <sup>negative</sup> alteration of original vitric detritus. The ~~positive~~ cobaltinitrite stain indicates the absence of K-feldspar; in addition the rock contains very little positively identifiable quartz. These compositional characteristics are contra-indicative of rhyolite.

## Estimated mode

Quartz	30
K-feldspar	55
Sericite	13
Carbonate	1
Pyrite	1
Sphalerite	trace

The off-cut of this sample differs markedly from that of Sample 1, in that it takes a strong positive cobaltinitrite stain (indicative of an abundance of K-feldspar) and lacks laminar differentiation. Instead, it shows a distinctive, sinuously foliated texture defined by paper-thin, platy/lenticular alternations of potassic (yellow-stained) and siliceous (unetched) composition. This fabric superficially resembles that of a welded tuff (ignimbrite).

Thin section examination confirms the macroscopic observations. The quartz occurs as more or less close-spaced, en-echelon strings and flattened lenticles, of grain size 30 - 200 microns, within a featureless matrix of K-feldspar. The latter shows a light, even dusting of reticulate flecks of sericite.

Sericite also occurs sporadically as streaky concentrations (probably representing more plagioclase-rich areas), and as a few discrete angular/prismatic masses, 0.5 - 1.5 mm in size, which are clearly pseudomorphs of original plagioclase phenocrysts.

The rock is cut by a few ramifying discordant veinlets of quartz.

Disseminated opaques, of grain size 10 - 50 microns, occur as a light dusting throughout the rock. These have cubic form and appear to be pyrite. Rarely the pyrite concentrates as sub-prismatic clumps and in discordant veniform structures. These concentrations are sometimes mantled by brown carbonate, and are locally accompanied by traces of probable sphalerite.

This rock is of rhyolitic composition. Its macroscopic texture suggests possible ignimbritic origin, but the absence of relict vitric or other pyroclastic features in thin section favours genetic interpretation as a flow-banded extrusive.

## Estimated mode

Quartz	45
K-feldspar	25
Sericite	30
Rutile	trace
Carbonate	trace
Pyrite	trace

The off-cut of this sample exhibits a heterogenous, streaky/blocky texture suggestive of probable fragmental character.

A sporadically distributed yellow cobaltinitrite stain indicates the presence of K-feldspar in accessory proportions.

Thin section examination shows that it is a leucocratic volcanic - devoid of mafics and consisting essentially of an intergrowth of quartz, sericite (after plagioclase or original glass) and K-feldspar.

Its fragmental character is clearly expressed in the form of sharply-defined, elongate/subparallel areas, 1 - 10 mm or more in size, consisting of intergrowths of quartz and sericite in varied proportions. These clasts are set in a minutely felsitic matrix of grain size 2 - 50 microns, which is free of sericite, and apparently consists largely of K-feldspar with varied proportions of diffusely intergrown quartz.

The majority of the clasts consist of granular quartz, of grain size 0.1 - 0.2 mm, with sericite as interstitial networks or as compact areas (original intergrown plagioclase) similar in size to the quartz. Others consist of discrete quartz grains scattered through a dominant matrix of compact sericite, or are composed of essentially quartz-free sericite (probably after original glass). A few clasts incorporate small phenocrysts of K-feldspar.

These relationships suggest that the rock is a coarse pyroclastic, made up of lapilli of intensely sericitized, more or less quartzose keratophyre in an unaltered, ashy matrix of rhyolitic composition.

Fine-grained pyrite is a sparsely disseminated trace accessory, locally with associated carbonate.