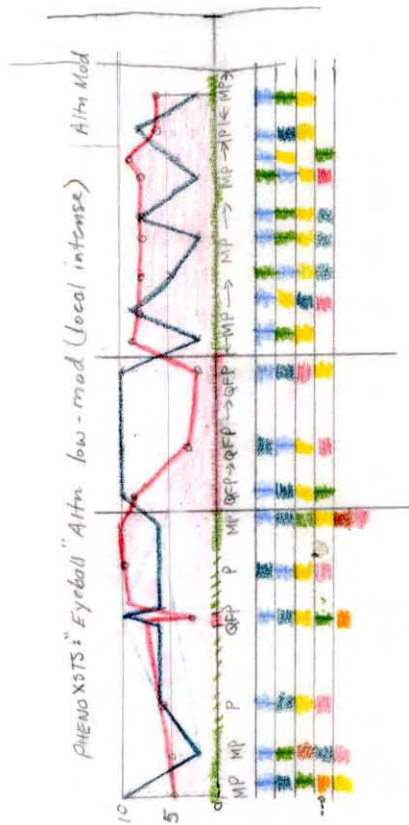


FISH LAKE

Q74-4

Feb/77

Q74-4



Alteration Indexes (Thin Section)

— PhenoXsts

— Matrix

0 → 10 : 10 is 100% altered

FLAG  
most  
AN95-45

- Mag Magnetite
- AP Apatite
- Hydromica
- Calcite
- Quartz
- Chlomite
- Serucite
- Biotite
- Kaolinite
- Pyrite

0133331

Q 74 - 4  
(SYNOPSIS of Thin Section Data)

Q 74 - 4 ① Rock Types - basically two - ± mafic plag ppy

and Qtz Plag Ppy. Matrix of QFP ~~much~~ <sup>much</sup> less altered  
and phenos <sup>plag</sup> uniformly intensely altered (except near contacts)

② Altn: dominated by assemblage as follows:  
mafic → chl ± ser ± mag ± apatite  
2/18 mafic → chl ± bio

③ Feldspar and Matrix → carbonate + sericite  
± quartz ± chl ± kaolinite (2/18: some biotite)

④ Mafic → chl ± ser ± quartz + carbonate ±  
mag ± pyrite ± apatite  
(2/18 partly biotitized)

⑤ Carbonate alteration universal.

⑥ Sericitic altn more abundant in and adjacent to QFP but mineral species developed not markedly influenced by rock type (other than that mafic-poor rocks have no chlorite). Sericite occurs throughout the hole replacing feldspar.

⑦ Quartz is an alteration mineral in almost all the rocks.

⑧ Kaolinite occurs sporadically, as does biotite.

⑨ Chlorite occurs in every rock described

as mafic plag ppy  
⑩ Pyrite developed sporadically.

74-4 Veins - synopsis

Carbonate

Gypsum + carbonate

quartz - sericite - pyrite ± (chl ± Apatite)

quartz - chlorite - pyrite ± apatite

quartz - chlorite - sericite

quartz - ~~carbonate~~ <sup>chlorite</sup> - pyrite - carbonate

Generalized Altu therefore is

PROPYLITIC

Minor occurrences of phyllic and argillic  
and potassic



Q 73-15

① Two Rock Types - Mafic Plag Ppy (locally mafics either absent or altered beyond recognition)

Here, the matrix of the only QFP thin section was pervasively altered (contrast with 74-4)

② Alteration

Half the six sections had chlorite alteration

Dominant assemblage - after feldspar -  
sericite-carbonate-quartz

lesser kaolinite, hydromica, pyrite

after mafics

chlorite  $\pm$  sericite  $\pm$  sulphide  $\pm$  magnetite

Fe-carbonate + hydromica

Secondary Biotite occurred in only one ~~thin~~ section.

③ Fairly ~~strong~~ <sup>complete</sup> pervasive alteration occurs pretty well throughout the hole. Average is 50%+ alteration for phenos + matrix. Mafics always completely altered.

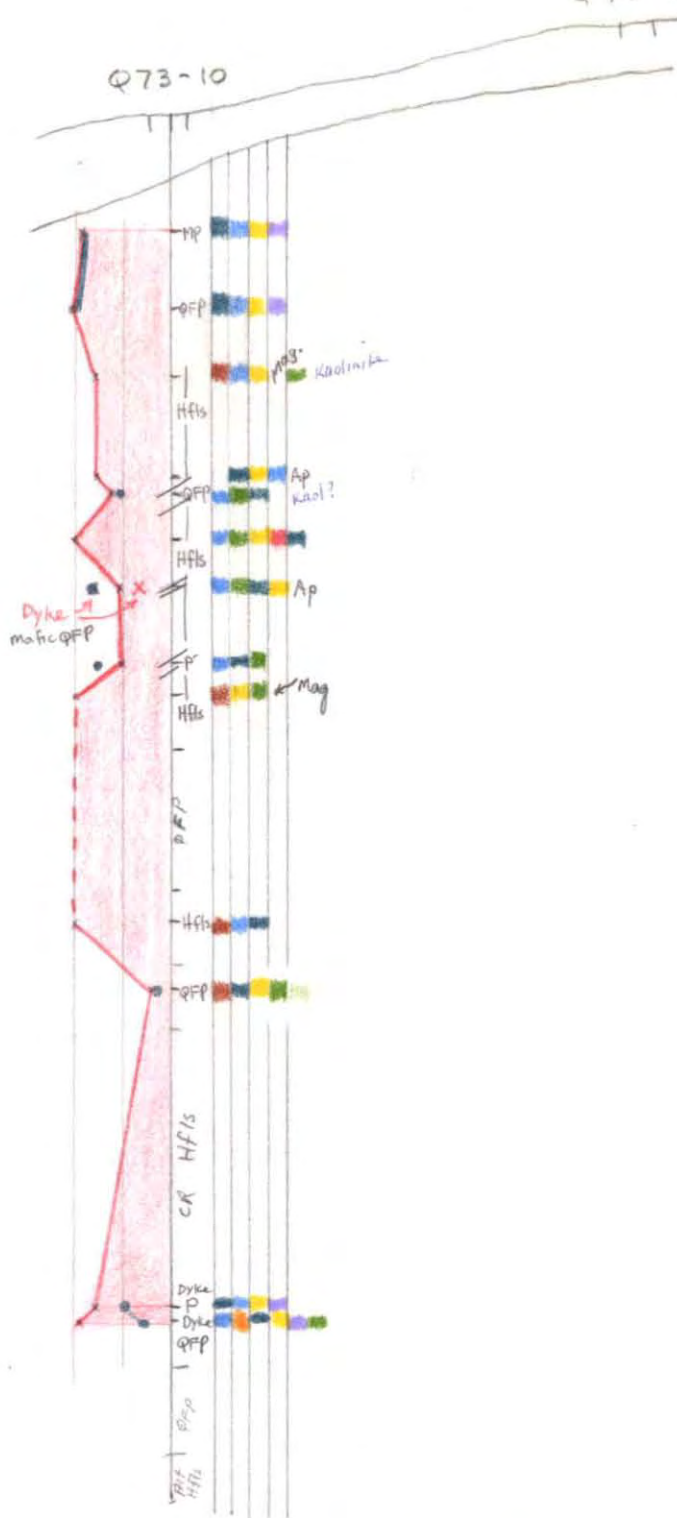
④ Veins - carbonate  $\pm$  kaolinite

Quartz carbonate  $\left\{ \begin{array}{l} \text{sericite} \pm \text{pyrite} \pm \text{cpy} \\ \text{chlorite} + \text{apatite} \pm \text{pyrite} \end{array} \right.$

overall propylitic, (local argillic zones)

FISH LAKE Q73-10  
 (see Q74-4 sheet for legend)

Q73-15



Q73-10

1. C.R. variably altered bio hornfels cut by QFP and mafic - Plag or Plog Ppy dykes
2. Alteration level generally indicated as high but this reflects the pervasive ~~to~~ hydrothermal biotite flooding of the hornfels. Dykes are variably intensely (90) to moderately (30 to 50) altered.
3. Alteration is marked by early biotite flooding followed by retrograde <sup>+ carbonate.</sup> chlorite. Feldspars variably altered to sericite, carbonate, kaolinite.  
matrix variably altered to carbonate + quartz + bio/chl + sericite  
Dykes are altered to sericite + carbonate + quartz and some hydromica. Mafics chloritized

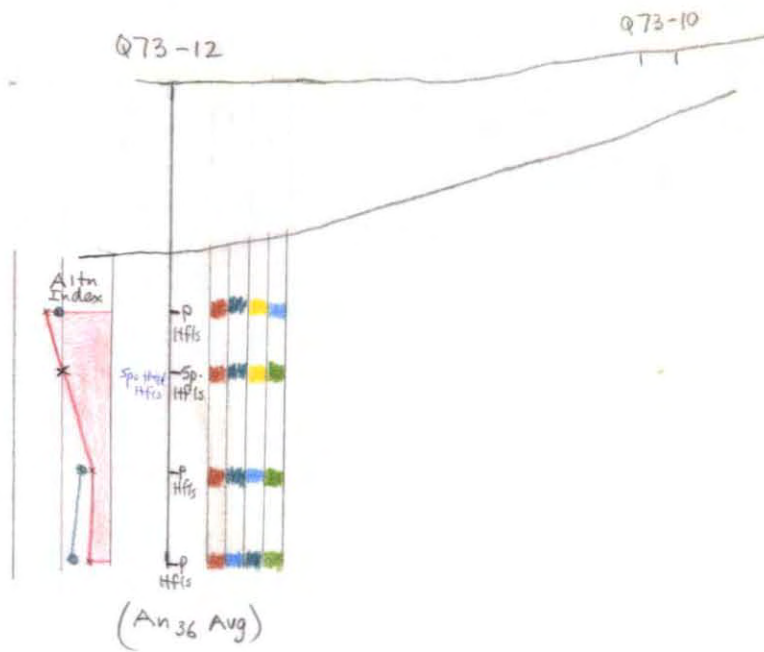
IE Early Biotite → later argillic / propylitic mixed assemblage.

Porphyry ser carb qtz HM chlorite ± Biotite  
some kaolinite

Hfcs Biotite carbonate chlorite qtz sericite

QFP after much of the biotite alteration I think but before propylitic.

FISH LAKE Q 73-12  
(Legend on Q 74-4 sheet)





Q73-12

1. C.R. Porphyritic to spotted Hf/s. An 36

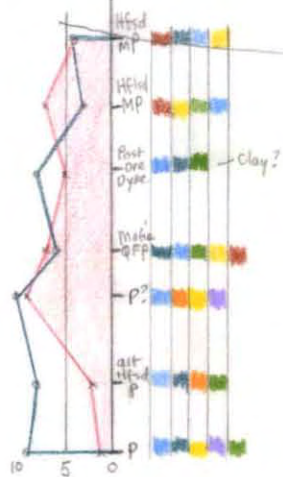
2. Altn **BIOTITE** sericite - carbonate - chlorite ± quartz  
  ↑  ↑  
  always  locally missing

**BIOTITE HFLE** → mixed argillic - propylitic assemblage

3. Altn intensity 50% and lower for matrix and phenocrsts - decreases  
down hole to 20 to 40%.

Q73-1

Q73-12



Avg An<sub>35</sub>

① 73-1

Comments

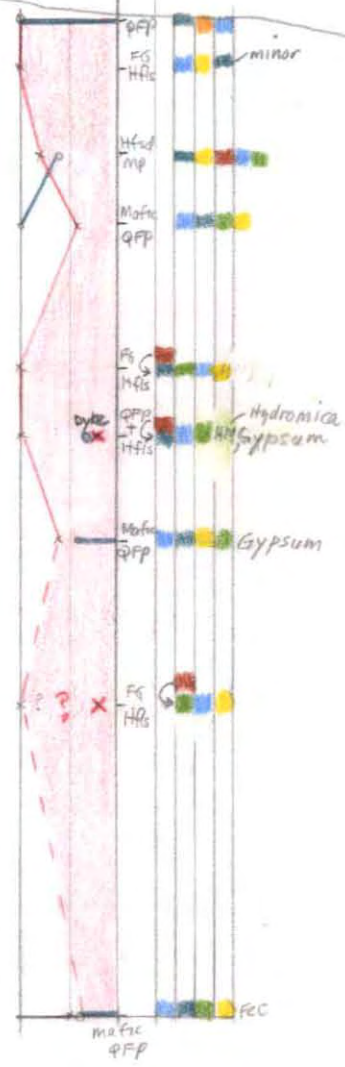
1. Biotite alteration confined to top of hole (hornfels)
2. Sericite moderate in all but one biotitized sample.
3. Post ore dyke has carbonate with lesser ser + chl + clay altn.  
Not remarkably different than adjacent samples
4. Carbonate altn in every sample; stronger toward base of hole.
5. Quartz altn recognized in most holes (mostly third-most level estimated)
6. Hydromica in two samples toward base of hole
7. Chlorite mod to weak, pretty well ubiquitous

→ Overall Biotite - ser - carbonate - qtz ± chl  
early BIOTITE → mixed argillic - propylitic  
gives way down hole to:  
carb - ser + chl ± qtz ± Hydromica ± bio  
IE ~~PHYLIC~~ → ~~PROPYLITIC~~ DOWN THE HOLE  
more pervasive arg-prop. overprinting on early biotite.  
stronger propylitic component.

8. Phenscrypt altn increases from ~50 to 100% going from PHYLIC to PROP. ZONES
9. Matrix altn is 60-80% to 500 feet then weakens to ~20%.  
mineral early, wash of arg-prop altn late?
10. C.R. Mafic/Plag Porphyry and Plag Prg - local QFP + post-ore  
\* POST ORE DYKE - carb-ser-chl clay altn same as rest of hole dykes.

Q73-11

Q73-1



Q 73 - 11

1. Matrix alteration 40 to 100% , mostly 60 to 100% .  
Phenoxsts not ~~always~~ always present. Phenos variably altered but seemingly less intensely lower in the hole.
2. ~~The middle 2/3 of the hole~~  
2. The hole varies from fairly fresh to bleached out (cal + ser + qtz altn) hornfels cut(?) by QFP dykes with variable mafic content.  
(and hornfelsed mafic plag porphyry)

3. Alteration mineralogy varies <sup>little</sup> from rock type to rock type:

Hornfels → carb ser qtz ± chl local H.M., gypsum  
EARLY BIOTITE in varying proportions

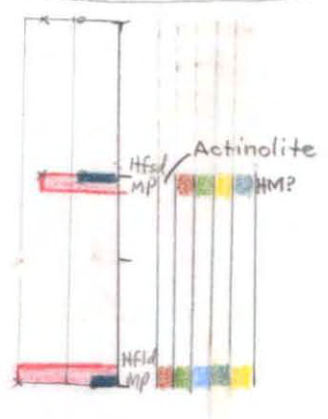
Hfslsd mafic Plag Ppy → same altn assemblage ~~but gypsum~~  
EARLY BIOTITE \* (only one sample)

\* Mafics → chl + Fe carbonate + opaque ~~mainly~~ mainly

QFP → ser ± kaolinite - carbonate ± chl (often mafics) ± qtz  
± gypsum

Overall early biotite ~~hfsing~~ → argillic - propylitic mixed assemblage

Q73-3



Q73-3

1. Biotite alteration throughout (accompanied by chl, quartz, sericite ± carbonate ± Hydroxymica), local actinolite.  
\* Early biotite later ~~propylitic~~ <sup>argillitic - propylitic</sup> mixed assemblage.
2. Phenscysts altered to 20-40% level, matrix 70 to 100% but difficult to know whether to consider starting material as biotite hornfels - if one does that, altn varies from 50 to 70%.
3. C.R. is hornfelsed orogenic plg ppy.