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FREEPORT RESOURCES INC./STRYKER RESOURCES LTD.

Microscope Study - Ore Samples

Mount Henry Clay, Alaska

Vancouver, B.C.  
October 22nd, 1984

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## I Conclusion and Recommendations

The following preliminary report serves to define the nature of the massive sulphide mineralization observed in glacial erratic boulders on the northern flank of Mount Henry Clay, Alaska. In a previous report dated 20 August 1984, the writer set out to illustrate the main constituent ore minerals - sphalerite, galena, chalcopyrite, tetrahedrite and argentite(?).

The present report indicates the presence of a similar suite of ore minerals along with three generations of pyrite. The ore presents a banded structure with gangue minerals consisting of quartz, barytes and calcite. Whilst the average grain size of the ore minerals is about 1 mm, it appears that metallurgical treatment of the ore would pose no great problems.

Further work is justified with the inclusion of micro-probe analyses to determine the distribution of the silver minerals.

## II Introduction

The writer carried out a preliminary microscope study of three ore samples at the request of Mr. W.G. Clark, President of Freeport Resources/Stryker Resources Inc. The samples were taken by John Ball in September 1984 and represent massive sulphide mineralization in glacial erratic boulders. The latter are part of a boulder train on an east-facing talus slope on the northern flank of Mount Henry Clay, at an elevation of about 4,200 feet above sea-level. The occurrence is on the Alaska side of the International Boundary.

The writer wishes to acknowledge the courtesy of Placer Development Limited in allowing the use of the Company's Zeiss Photomicroscope II.

### III Description of Samples Based on Microscope Study

#### Sample No. 1

##### Macros:

Massive sulphide ore with prominent black sphalerite and threads or veinlets chalcopyrite. Pyrite sub-hedral, granular dissem. <0.3 mm.

Interstitial white barytes and quartz. The quartz is partly sub-hedral with terminated crystals. Average grain size of ore minerals 1 mm.

Rock is very feebly magnetic. The ore shows a banding structure.

##### Micros:

Sphalerite as large lenticular masses with inclusions sub-hedral pyrite up to 500 u. Also rare inclusions and veinlets of chalcopyrite.

Chalcopyrite as irregular veinlets with inclusions pyrite. The chalcopyrite veinlets cut across sphalerite and the matrix quartz.

Galena interstitial forms associated with chalcopyrite. Rare veinlets of sphalerite and rare inclusions of anhedral pyrite.

Argentite(?) anhedral forms and veinlets up to 100 u associated with chalcopyrite and sphalerite. Lighter coloured than the sphalerite and takes a slightly rougher polish.

Sample No. 2

Macros:

Massive sulphide, fine grained with abundant blackish brown sphalerite granular and veinlets and splashes of chalcopyrite rare as fine veinlets in sphalerite. Galena as fine veinlets in sphalerite. Barytes, white.

Pyrite fine well formed crystals, disseminated. The ore shows a crude foliation or banding.

Average grain size is less than 1 mm.

The ore is very feebly magnetic.

Micros:

Sphalerite is the predominant ore mineral and occurs as persistent bands, lenticular masses and interstitial forms. Inclusions consist of pyrite sub-hedral and rounded chalcopyrite anhedral and galena as veinlets and interstitial masses, 600 u x 100 u.

Chalcopyrite as anastomosing veinlets and inclusions in sphalerite. The veinlets tend to follow the banding of the ore.

Galena, anhedral and as veinlets closely associated with chalcopyrite.

Pyrite very plentiful, as subhedral to rounded grains occurring as inclusions in the sphalerite and gangue. Sub-hedral to rounded grains in sphalerite average 100 u , subhedral to rounded grains in sphalerite 200 u.

Rounded grains enclosed in quartz average 500 u.

Sample No. 3

Macros: Massive sulphide ore with abundant brownish black sphalerite and granular abundant chalcopryrite. The chalcopryrite as disseminated grains and fine veinlets. Average grain size <1 mm. Gangue composed principally of quartz clear, colourless and white barytes. The barytes occur as aggregates up to 12 mm x 3 mm and the quart averages about 1 mm .

The rock is very feebly magnetic.

Micros:

Sphalerite abundant as massive bands and lenticular pods. Inclusions of pyrite are common and range generally from 100 u to 300 u. In addition fine anhedral grains of pyrite average about 20 u.

Chalcopryrite as irregularly shaped veins traversing the sphalerite. Inclusions: Pyrite anhedral rounded grains 50 u to 100 u.

Galena anhedral, closely associated with chalcopryrite. Occassionally, veinlet of galena up to 80 u thick cut across the chalcopryrite.

Pyrite: At least three generations occur. The first generation consists of finely disseminated anhedral grains 20 u in the sphalerite.

The second generation of pyrite averages about 150 u to 200 u and is somewhat rounded.

Sample No. 3 (continued)

The third generation consists of rounded grains about 400 u across associated with the gangue.

Inclusions of pyrite (50 u to 100 u) observed in chalcopyrite may represent a fourth generation.

Respectfully submitted,

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22 October, 1984

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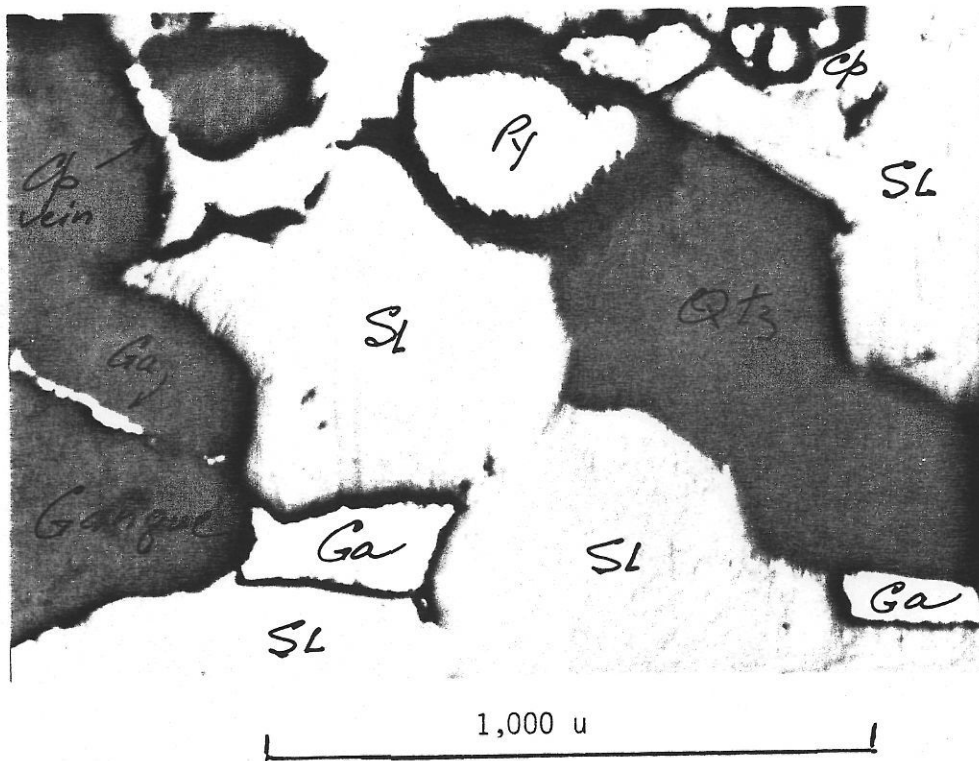
Samples from north-east flank of Mount Henry Clay, Alaska.

Abbreviations for Photomicrographs:

Ga	Galena
Sl	Sphalerite
Cp	Chalcopyrite
Py	Pyrite
Qtz	Quartz

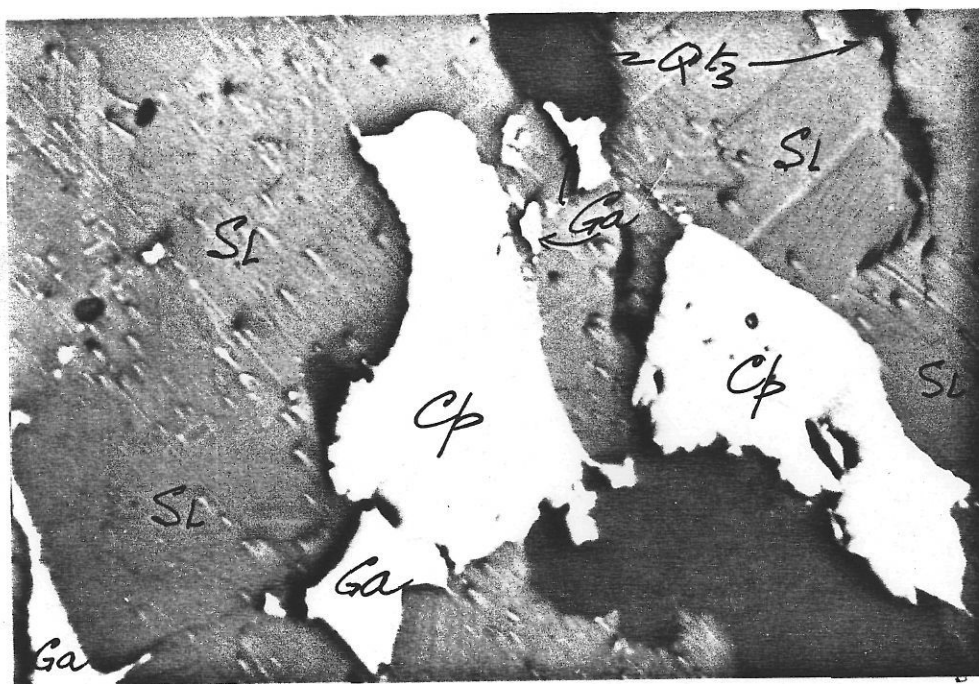


SAMPLE No. 1



Galena associated with sphalerite and as veinlets in the matrix (gangue). Chalcopyrite as fine veinlets observed in the gangue and rimming sphalerite.

SAMPLE No. 2



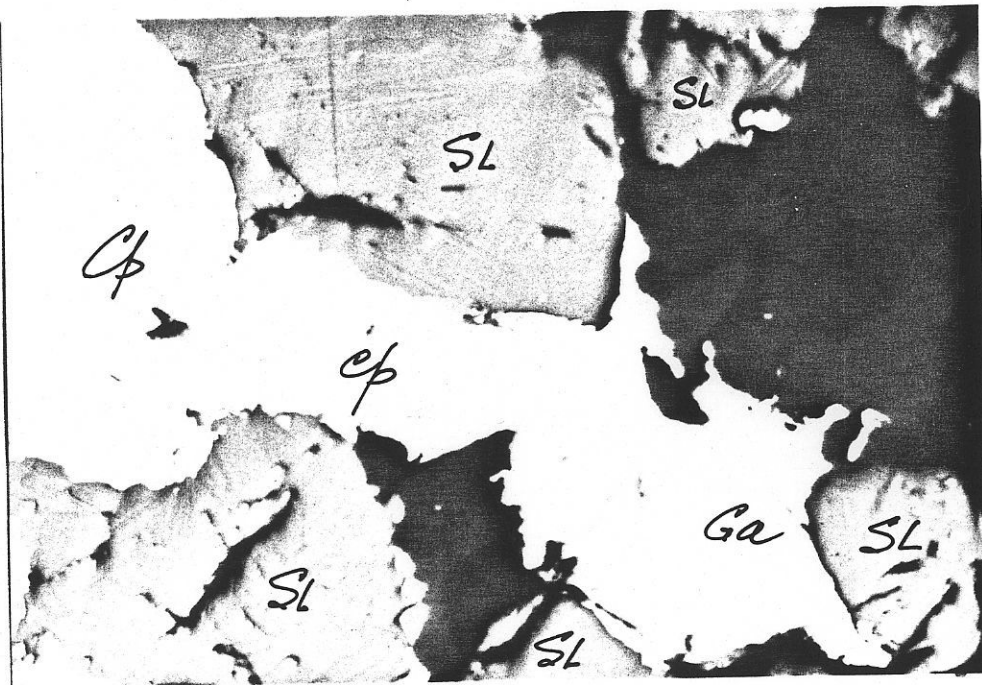
Galena associated with chalcopyrite in massive sphalerite. Note distinct veinlets of galena following fractures in the sphalerite.

SAMPLE No. 2



Galena as vein traversing sphalerite.

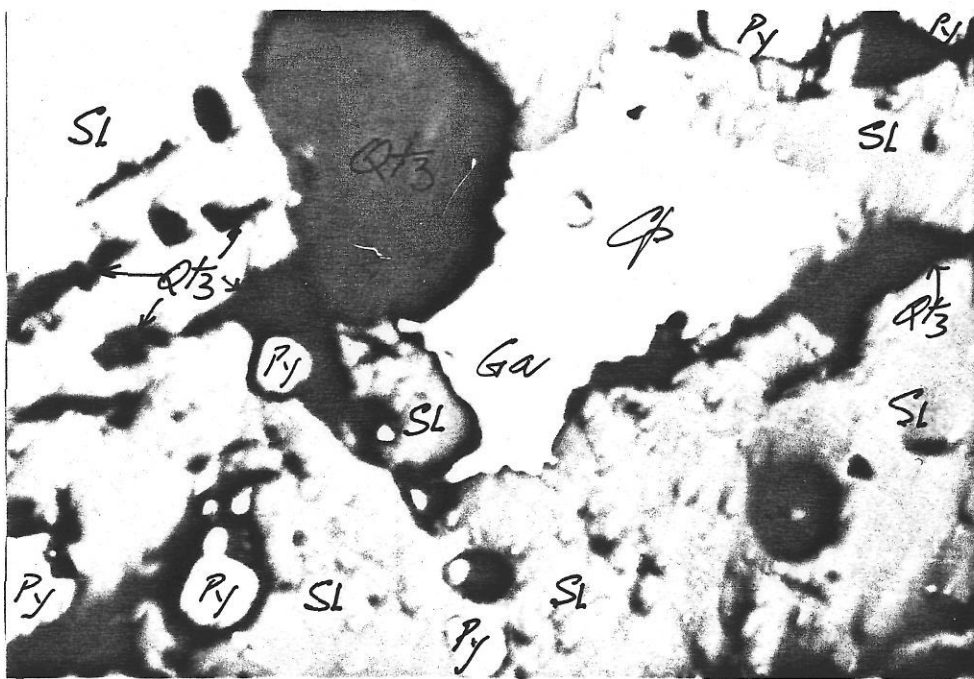
SAMPLE No. 3



1,000 u

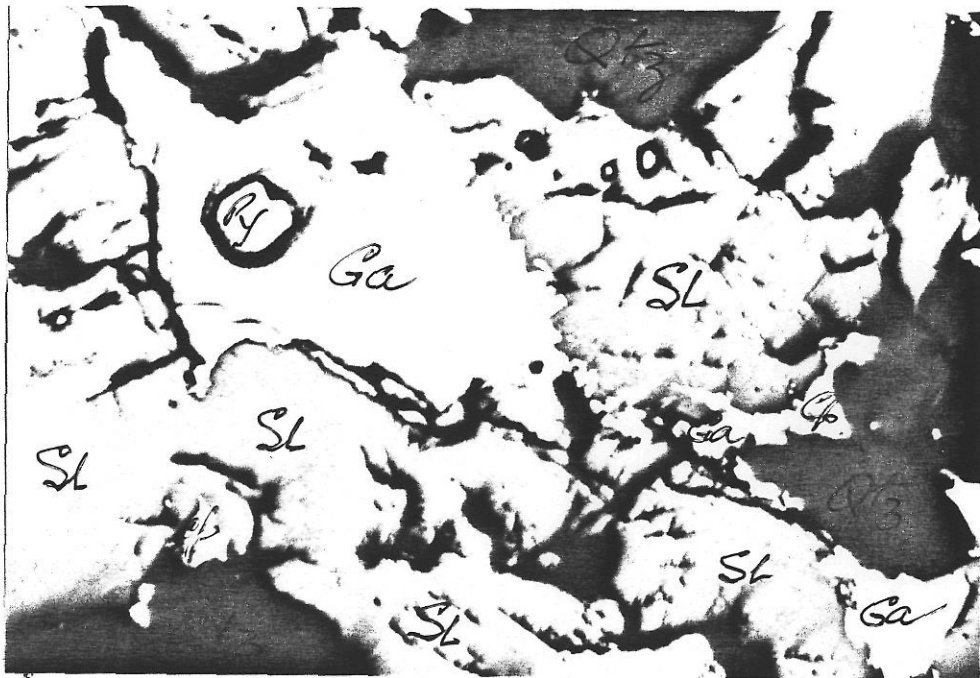
Veins of chalcopyrite and galena in  
sphalerite.

SAMPLE No. 3



Sphalerite, massive and lenticular chalcopyrite and galena. Note pyrite inclusions and veinlets of quartz in the sphalerite.

SAMPLE No. 3



1,000  $\mu$

Irregular lenses and veinlets of galena in sphalerite. Anhedral chalcopyrite occurs at contact of sphalerite and quartz.