Schroeter
Dec. '85
Mt. Henry Clay
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FREEPORT RESOURCES INC./ STRYKER RESOURCES LTD.

Microscope Study - Three Ore Samples

Tsirku - Jarvis Mineral Claims,
British Columbia and Mount Henry Clay, Alaska -
British Columbia Boundary

Vancouver, B.C.
20 August, 1984

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I Conclusion and Recommendations

The following preliminary report gives an idea of the type of ore mineralization in the Mount Henry Clay area. Sample No. 1 represents massive sulphide deposition, and the assay results obtained by Jan Still are quite spectacular, especially in relation to the silver, zinc and copper content. Under the microscope the writer has identified sphalerite, chalcopyrite, neodiginite (Cu_9S_5), tetrahedrite, argentite (?), galena and tentatively matildite (Ag, Pb, Bi, S). The latter mineral, matildite, is the low-temperature end member of the mixed crystal of Ag, BiS_2 and PbS. Pyrite is also present.

Sample No. 2 contains sphalerite, chalcopyrite and tetrahedrite along with pyrite and pyrrhotite.

Sample No. 3 contains chalcopyrite which is associated with pyrrhotite and pyrite in a brecciated siliceous host-rock. The high magnetic properties of the sample are attributed to the presence of abundant pyrrhotite.

It is considered that further microscope studies are warranted in order to provide a guide to the paragenesis and ore mineralization. Any future work should be planned to include micro-probe analyses on selected samples to determine the exact nature of the gold, silver and cobalt mineralization revealed in the recent assays.

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II Introduction

Mr. W.G. Clark, President of Freeport Resources Inc./Stryker Resources Ltd. commissioned the writer to make a preliminary microscope study of three samples of ore from the Tsirku - Jarvis property and Mount Henry Clay adjoining the Canada - U.S.A. International Boundary.

The nature of the host-rock is not known except that quartz, calcite and barytes are known to be prominent gangue minerals. The writer examined the polished sections by incident or reflected light, and the following descriptions serve as a guide to the identity and paragenesis of the ore minerals and associated sulphides.

The study was made possible by the use of the Zeiss Photomicroscope II, courtesy of Placer Development Limited.

III General Notes on Samples

Sample No. 1 is part of a sample collected by Jan C. Still, Mining Engineer, Alaska Field Operations Centre, Bureau of Mines Juneau, Alaska. It is representative of a 6 foot chip sample across a large glacial erratic boulder and assayed 33% zinc, 2.5% copper, 5% barium, 65 ppm silver and a trace of gold. The location of Sample No. 1 may be described as the north-east flank of Mount Henry Clay, the boulders being found below the snout of the glacier at an elevation of about 3500 feet above sea level.

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Sample No. 2 is referred to as the "Valia" showing located near Mount Biggar, 300 metres vertically above the ice. It assayed 8% lead, 7% zinc, 104 ppm copper, 40 ppb gold, 0.1 ppm silver, and 0.06% cobalt.

Sample No. 3 was collected by D. Perkins from float on a moraine at location "B-5". Assays ran generally high in copper (up to 10,297 ppm), cobalt (up to 1,934 ppm) and 0.5 ounces silver per ton.

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IV Description of Samples Based on Microscope Study

Sample No.1

Macros:

Massive sulphides - fine grained chalcopyrite and sphalerite as grains and clusters. Also minor pyrite. Average grain size < 0.5 m.m. The sulphides present a banded structure.

The rock is only mildly magnetic. The sphalerite occurs as bands up to 7 m.m. thick studded with fine grains of chalcopyrite and pyrite < 0.5 m.m. ϕ. The host rock is siliceous with abundant quartz.

Micros: Sphalerite is the predominant sulphide mineral and occurs in massive bands, light grey colour. Some lenticular and interstitial forms. Studded with fine anhedral grains of chalcopyrite with average grain-size 5 μ. No ex-solution blebs of chalcopyrite observed.

Chalcopyrite fairly plentiful as anhedra and anastamosing veinlets. Also as fine inclusions (5 μ) in sphalerite.

Pyrite sub-hedral to an-hedral, generally rounded ranging from 100 u to 400 μ ϕ. Some of the larger grains are cracked and traversed by veinlets of quartz and chalcopyrite. Rare inclusions of sphalerite. Two generations of pyrite observed.

Tetrahedrite anhedral inclusions and blebs occur in sphalerite and chalcopyrite.

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Neodiginite rare interstitial, blue colour.

Argentite as anheral, interstitial masses 100 u x 350 u. Sometimes occurring as rims to sphalerite veins. Minor associated filiform native silver observed.

Galena as veinlets and interstitial forms enclosed in sphalerite. Matildite tentatively determined in association with the galena. The matildite shows lamellar structure. It is a silver, lead, bismuth sulphide.

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Sample No. 2

Macros:

Rusty boulder with abundant pyrite and chalcopyrite and probably pyrrhotite and sphalerite. Average grain size < 0.5 m.m. The mineralization is banded and the chalcopyrite occurs partly as anastamosing veinlets, often cutting the main banding at right-angles.

The ore is moderately magnetic.

Micros: Chalcopyrite common as veinlets and interstitial forms.

Sphalerite rare, interstitial with inclusions of pyrite.

Tetrahedrite very rare as blebs average 15 u associated closely with chalcopyrite.

Pyrite largely sub-hedral but often euhedral. Tends to occur in aggregates and occasionally as veinlets. Average grain size of individual crystals 30 u.

Two ages of pyrite identified.

Pyrrhotite common as irregular masses studded through with pyrite inclusions and veined by pyrite. The pyrrhotite also forms veinlets.

Arsenopyrite(?) as cataclastic aggregates, very rare.

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Sample No. 3

Macros:

Bands of pyrrhotite up to 15 m.m. and veinlets of chalcopyrite up to 4 m.m. occur in a brecciated host rock with fragments up to 8 m.m. ∅ mostly siliceous. Calcite fragments present.

The rock is strongly magnetic.

Macros:

Pyrrhotite as veinlets and bands. Slightly cracked. Traversed by rare veinlets of chalcopyrite up to 10 μ. The larger veinlets of pyrrhotite are "pock-marked" by inclusions of matrix quartz and pyrite.

One interesting feature is the presence of veinlets of late quartz up to 20 μ cutting through both chalcopyrite and pyrrhotite.

Pyrite as very fine grains in the matrix quartz « 0.3 m.m. and as inclusion in pyrrhotite. The latter inclusions are subhedral to euhedral and average 15 μ ∅. Two generations of pyrite are present.

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Chalcopyrite as anhedra and short discontinuous veinlets traversing the pyrrhotite and also cutting the siliceous matrix.

Respectfully submitted,

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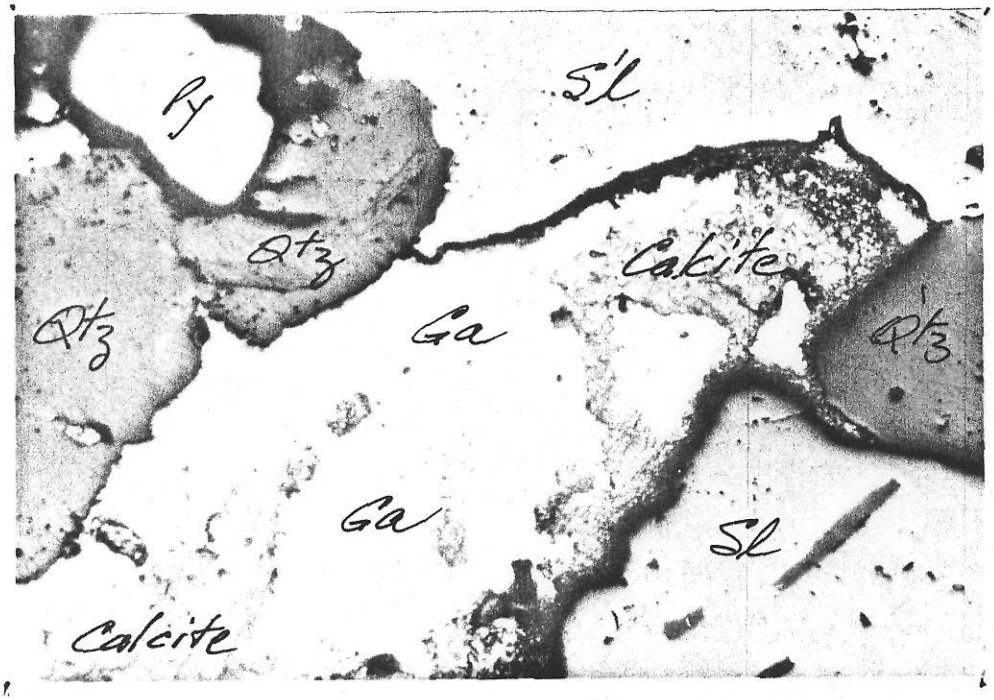
Abbreviations for Photomicrographs:

Ga	Galena
Sl	Sphalerite
Thd	Tetrahedrite
Cp	Chalcopyrite
Py	Pyrite
Qtz	Quartz

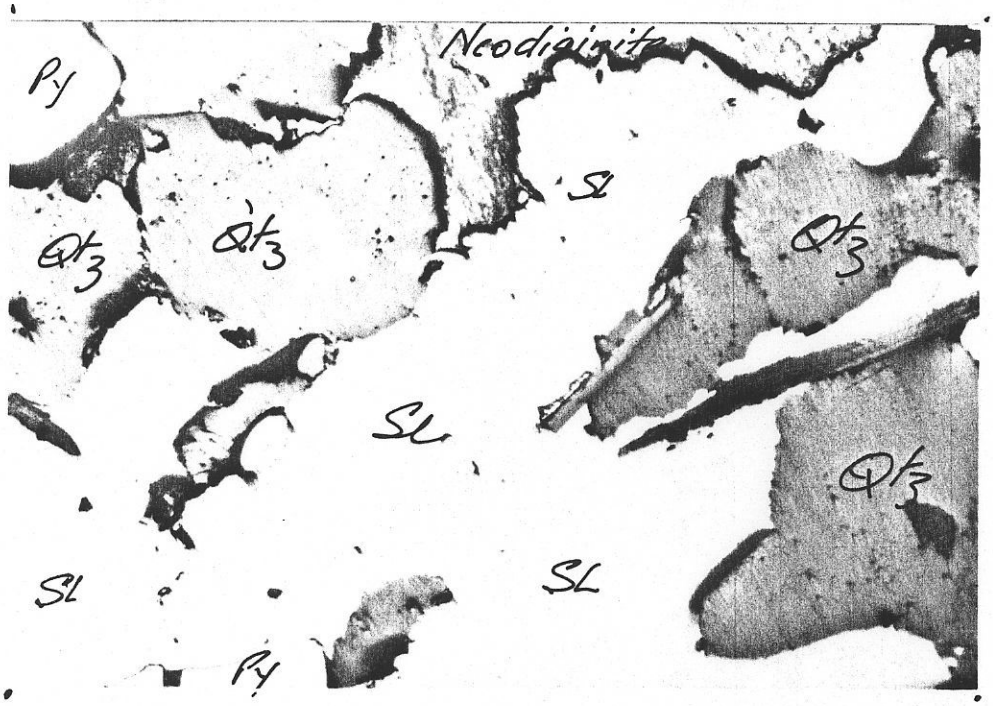
Sample No. 1



1000 μ

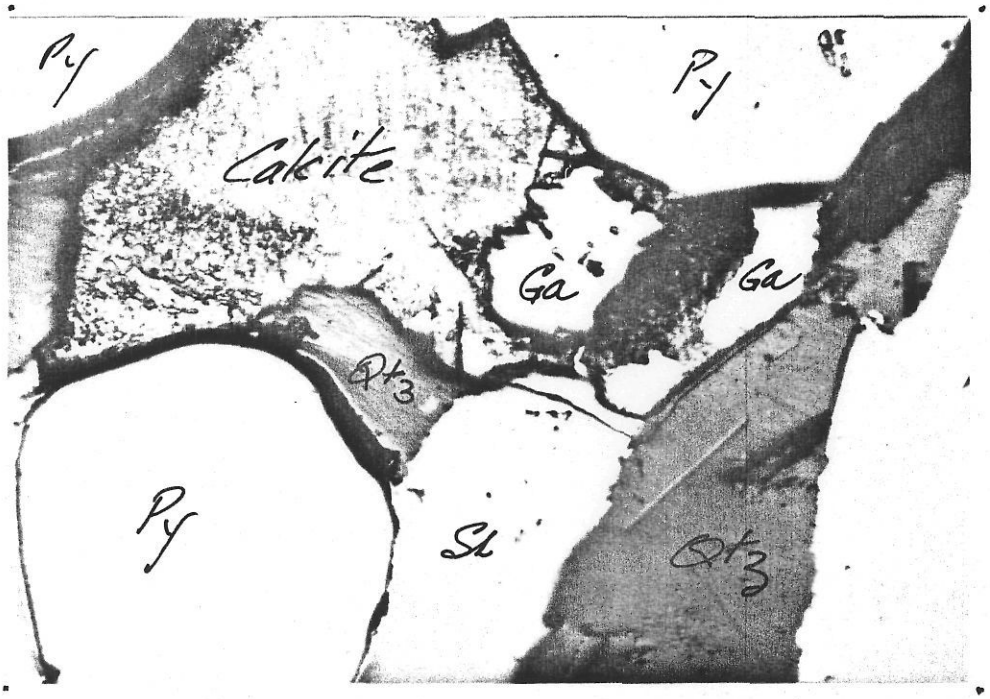
Galena and sphalerite with associated pyrite, quartz and calcite.

Sample No. 1



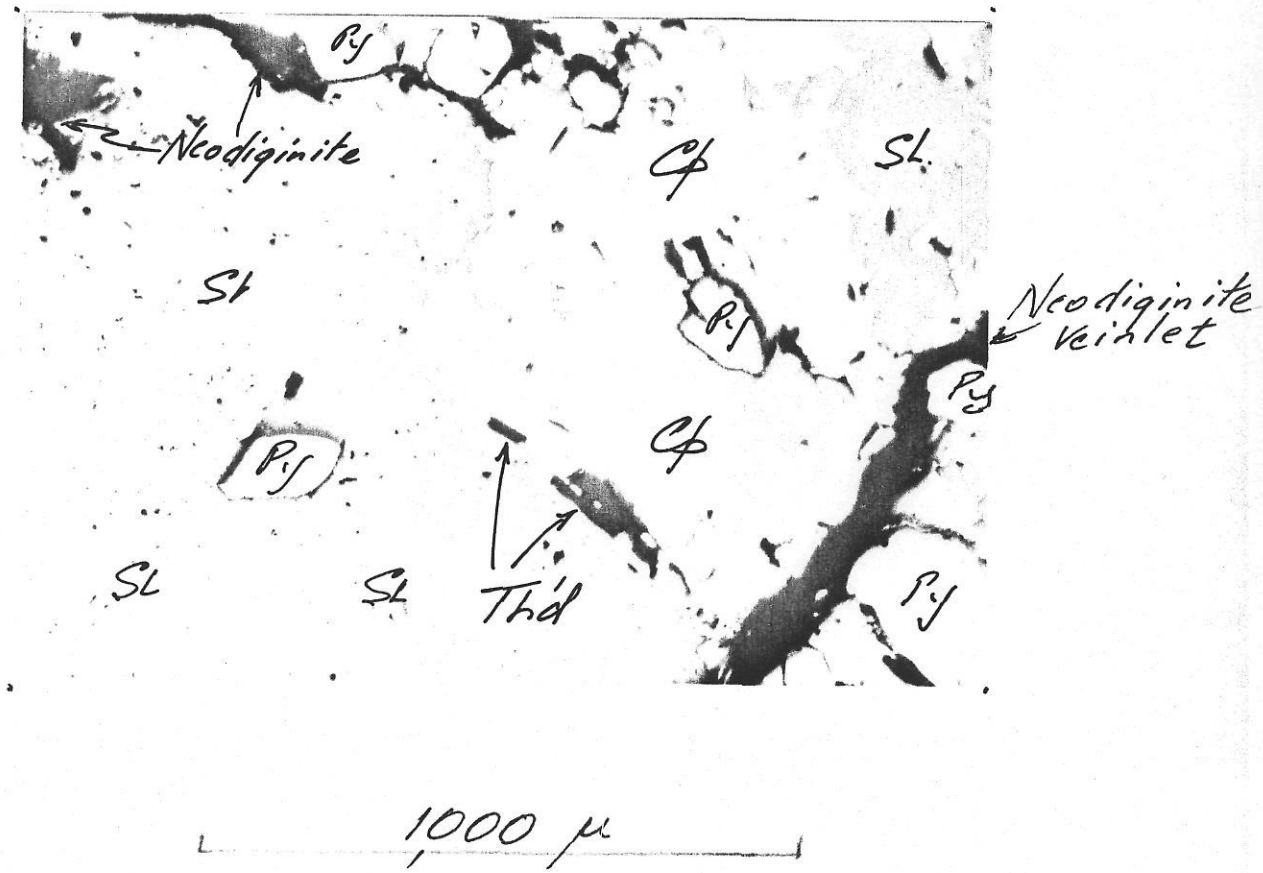
Sphalerite with veins of neodiginite and inclusions of pyrite.

Sample No. 1



Sphalerite and galena associated with quartz, pyrite and calcite.

Sample No. 1



Sphalerite with chalcopyrite and tetrahedrite. Anhedra of pyrite included in sphalerite and chalcopyrite.

Sample No. 1

1,000 μ

Sphalerite with veins of chalcopyrite and neodiginite.
Anhedral galena and inclusions of pyrite.