IR 1987

O T T A W A January 15, 1946.

R E P O R T

of the

ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 1987.

Concentration Tests on Samples of Lead-Zinc Ore from
Comara Mining and Milling Company, Limited,
at Ferguson, British Columbia.

9p

Note:
This report relates essentially to the samples as received. It shall not, nor any correspondence connected therewith, be used in part or in full as publicity or advertising matter for the sale of shares in any promotion.

(Copy No. 6.)

1700

O T T A W A January 15, 1946.

R E P O R T

of the

ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 1987.

Concentration Tests on Samples of Lead-Zinc Ore from
Comara Mining and Milling Company, Limited,
at Ferguson, British Columbia.

==========

Shipments:

Two shipments of ore were received from this property, on July 20 and September 19, 1945. The first shipment consisted of ten (10) bags containing 690 pounds of ore, while the second consisted of four (4) bags and contained 318 pounds of so-called "steel-galena" ore. The shipments were submitted by O. Tichauer, Mine Superintendent, Comara Mining and Milling Company Limited, Ferguson, B.C.

Location of Property:

The property from which these samples were taken is located at Ferguson, B.C. The property was formerly owned by the New True Fissure Mining and Milling Company, Limited, and is reached by the railway line running from Revelstoke to Arrowhead.

Sampling and Assaying:

The samples received were assayed and reported as follows:

	Sample No. 1, received on July 20/45	Sample No. 2, ("steel-galena"), received on Sept. 19/45
Gold, oz/ton	0.033	0.085
Silver "	5.15	11.42
Copper, per cent	0.14	0.31
Lead "	3.30	16.27
Zinc "	9.10	17.97
Iron "	14.56	13.33
Sulphur "	10.00	22.63
Arsenic "	None detected.	Not determined.
Antimony "	" "	" "
Insoluble "	40.47	22.17

Results of Test Work:

Flotation tests were conducted on both samples of this ore, but satisfactory results could not be obtained because the samples were oxidized as a result of having lain around on dumps or in ore bins for a number of years. The second sample, being of unusually high grade, in addition to its fine mineral associations, would require very fine grinding and retreatment in order to produce satisfactory tailings. Soluble sulphates formed by oxidation appear to have activated the sphalerite in both samples and made its separation from the galena just about impossible.

It is therefore suggested that new samples be submitted for testing, when "fresh" ore can be obtained from the mine.

Character of the Ore:

Six polished sections were prepared from each of the two shipments received. These sections were then examined under a reflecting microscope for the purpose of determining the character of the ore.

Sample No. 1, Received on July 20, 1945.

Gangue -

Gangue material predominates in the polished sections and consists of a mixture of white quartz, medium soft schistose dark grey rock, and light buff-coloured carbonate which, from qualitative microchemical tests, appears to be highly ferruginous.

Metallic Minerals -

Metallization is not really heavy in the six polished surfaces and is represented by pyrite, sphalerite, galena, chalcopyrite, grey copper (tetrahedrite-tennantite), "limonite", and gold. These minerals occur in very intimate admixture sporadically disseminated through gangue as coarse to very fine irregular grains which, in places, are aggregated into small masses. While the coarser sizes preponderate, fine grinding will be necessary to free a considerable proportion for recovery purposes, and it will be economically impossible to so release a small percentage.

Pyrite, the coarsest sulphide present in the sections, is extensively fractured in places and contains veinlets and irregular inclusions of gangue, galena, chalcopyrite and sphalerite.

Sphalerite and galena are usually associated as small grains and masses in gangue. Both minerals enclose inclusions of gangue and grains of the other sulphides.

Chalcopyrite is present as coarse to fine scattered grains in gangue and in the other sulphides. In a few places

(Character of the Ore, cont'd) -

in sphalerite it occurs as tiny dots which are dispersed at random and do not show the usual alignment thought to be the result of exsolution.

A small amount of grey copper is visible in one or two sections as occasional to rare small grains which are usually associated with galena. However, a few grains were observed which are apparently free in gangue. Qualitative microchemical tests indicate this mineral to be towards the antimony end of the series and it probably should be called tetrahedrite.

"Limonite" manifests its presence by a few, local, light-brown stains in gangue.

One small particle of native gold, about twenty microns (-560+800 mesh) in size, is visible along a fracture in pyrite and appears to have been deposited later than the iron sulphide. Hence it is not likely that the latter is auriferous. (See photomicrograph, Figure 1.)

No information as to how the silver occurs was revealed by the microscope. Accordingly, it is expected that this metal is carried by the galena and/or grey copper. Since the latter mineral is present in small quantity which is largely associated with the former, for recovery purposes the silver can be considered as occurring in the lead sulphide.

Sample No. 2, "Steel-Galena" Ore,
Received on September 19, 1945.

Gangue:

Gangue material forms the minor portion of the six polished sections and consists of milky white quartz carrying a small quantity of carbonate as tiny, unevenly scattered grains. Under crossed nicols it exhibits some small, local, reddish brown stains of iron oxides.

(Character of the Ore, cont'd) -

Metallic Minerals -

Metallic mineralization is similar to that in Sample No. 1. Listed in their approximate order of decreasing abundance, the metallic minerals present in the polished surfaces are: pyrite, sphalerite, galena, chalcopyrite, and grey copper (tetrahedrite-tennantite). As in the first sample, these minerals occur in gangue in very intimate admixtures, especially the first three named above (see Figure 2). Chalcopyrite is largely interstitial to pyrite grains in irregular streaks or bands which are probably best seen in hand specimens. Grey copper is visible in practically negligible amount as rare small particles in galena. No gold or silver is visible in the six polished surfaces. As already mentioned one grain of native gold was observed in the first sample and the silver is thought to be carried by the galena.

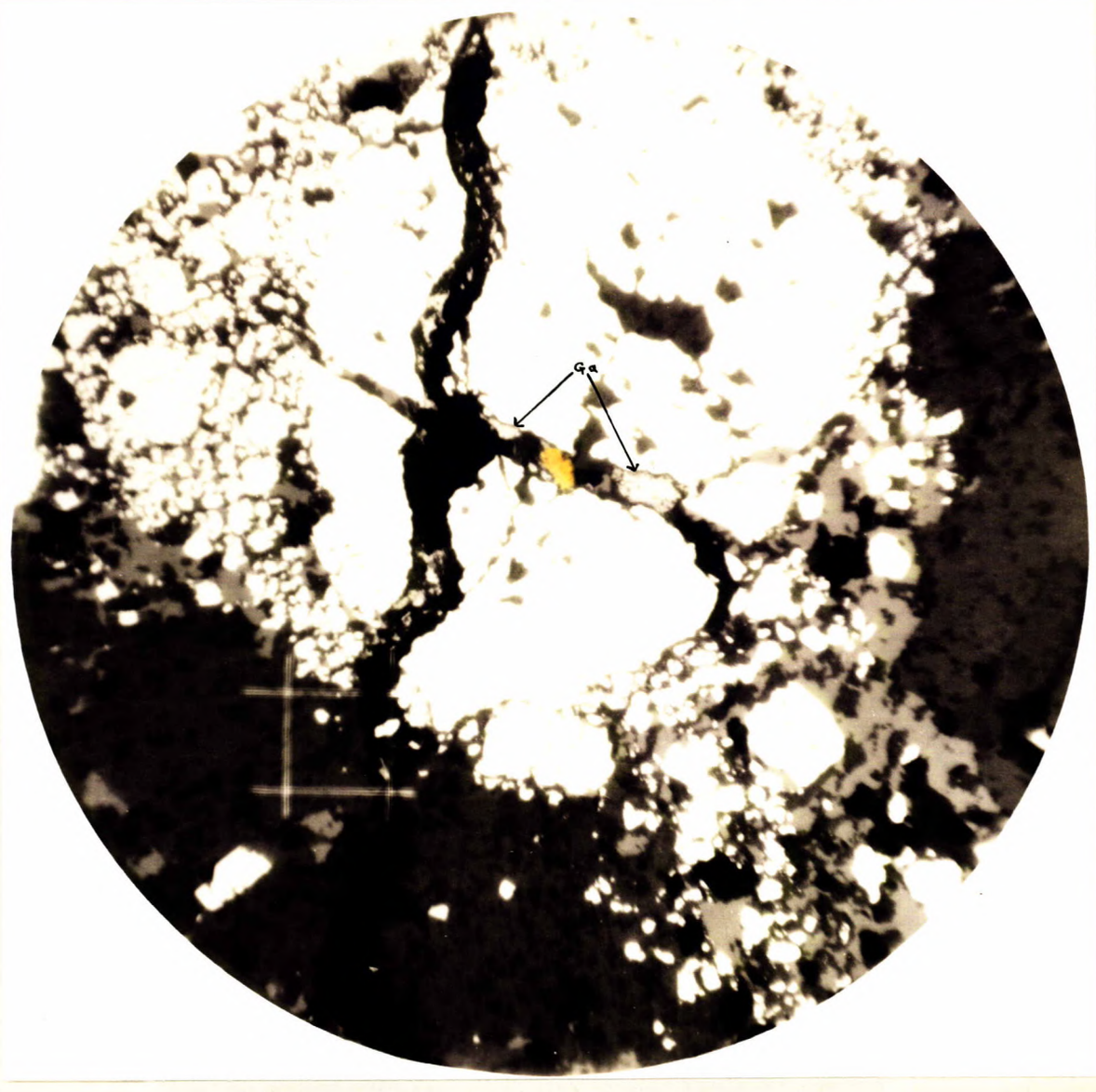
Conclusions from Microscopic Examination.

While the types of mineralization in the polished sections prepared from both ore samples are similar, some differences were noted. Briefly, these are: (1) metallic minerals are much more abundant in the second than in the first sample; (2) their average grain size is probably a little smaller. (See photomicrographs, Figures 1 and 2.)

(Figures 1 and 2 follow,)
(on Pages 6 and 7. Text)
(is resumed on Page 8.)

(Character of the Ore, cont'd) -

Figure 1.

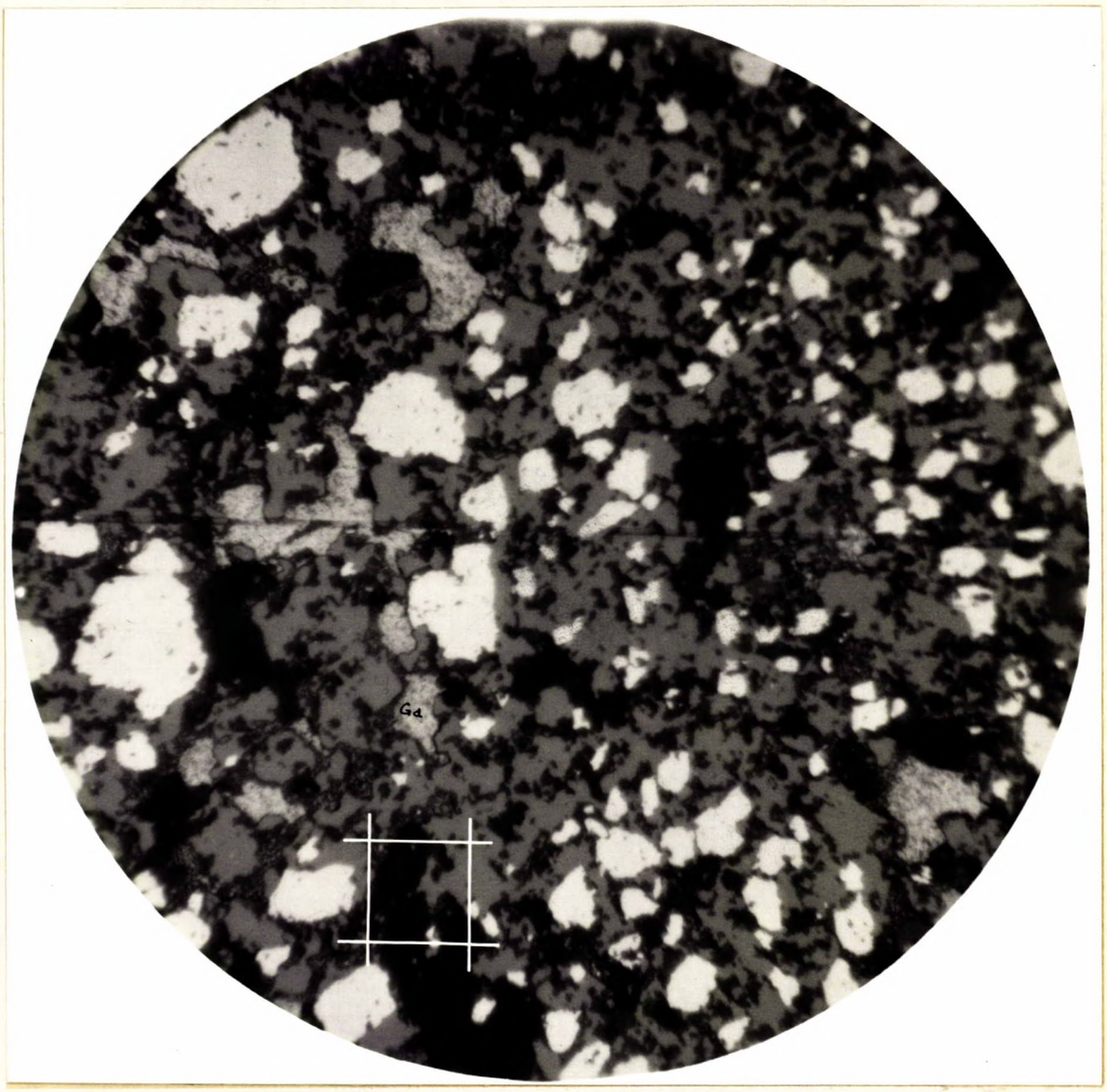


PHOTOMICROGRAPH OF POLISHED SURFACE, SHOWING A SMALL GRAIN OF GOLD (YELLOW) ALONG A FRACTURE IN PYRITE (WHITE) AND GENERAL CHARACTER OF THE MINERALIZATION IN SAMPLE NO. 1.

Galena (Ga) is light-grey, almost white; sphalerite is medium grey; gangue is dark grey; and pits and open fractures are black.
A 200-mesh Tyler screen opening is superimposed.
Magnification, X200.

(Character of the Ore, cont'd) -

Figure 2.



PHOTOMICROGRAPH OF AN AVERAGE FIELD IN THE POLISHED SECTIONS MADE FROM SAMPLE NO. 2 ("STEEL-GALENA" ORE), SHOWING GRAIN SIZES AND GENERAL CHARACTER OF THE MINERALIZATION. A 200-MESH TYLER SCREEN OPENING IS SUPERIMPOSED.

Pyrite - white, smooth surface.
Galena (Ga) - white, rough surface.
Sphalerite - medium grey.
Gangue - dark grey.
Pits - black.
Magnification, X200.

—

DETAILS OF INVESTIGATION:

Test No. 1. - Sample No. 1.

This test is typical of a number conducted on this sample of ore. Since the copper-lead concentrates were obviously low-grade in all tests, due to the amount of zinc that floated with the lead, it was not considered worth while to assay all of the test products.

A copper-lead concentrate and a zinc concentrate, both of which had been cleaned, were assayed and reported as follows:

	Au, oz/ton	Ag, oz/ton	Au, per cent	Pb, per cent	Zn, per cent
Copper-lead concentrate	0.21	46.42	1.28	29.93	18.84
Zinc concentrate	0.03	2.93	0.23	1.58	39.66

Further examination of the sample revealed the presence of a considerable quantity of soluble sulphates which are evidently activating the zinc minerals. As these sulphates may be the product of oxidation that has taken place since the ore was mined, it is recommended that fresh samples be submitted for testing.

Test No. 2 - Sample No. 2
("Steel-Galena").

A number of tests were likewise conducted on this sample of ore, but neither grade of product, nor satisfactory separation of the minerals from each other, could be obtained. A typical test gave the following results:

	Cu, per cent	Pb, per cent	Zn, per cent
Copper-lead conc.(cleaned)	1.10	46.58	14.76
Zinc conc.(cleaned)	0.20	11.49	32.21
Flotation tailing	0.09	4.80	13.82

(Details of Investigation, cont'd) -

This sample of ore presents two problems, the first being the fine grinding necessary and the second the presence of soluble sulphates that activate the minerals and prevent their separation. For this latter reason, it is recommended that a fresh sample be submitted when possible.

-

oooooooooooo
oooooooo
oo

JDJ:LB.