



Department of Energy, Mines and Resources  
 Ministère de l'Énergie, des Mines et des Ressources

Mineral Processing Division

673875  
 Sunrise  
 93m/6

Mines Branch  
 Division des Mines  
 File Number  
 No. de dossier

40 Lydia Street,  
 Ottawa 1, Ontario,  
 March 26, 1968.

Mr. O. Schneider,  
 President, Sunrise Silver Mines Ltd.,  
 Room 425 - 718 Granville St.,  
 Vancouver 2, B.C.

Dear Mr. Schneider:

We have your letter of March 18 requesting information on the progress of the investigation being carried out on your ore.

This investigation is progressing well but it must be pointed out that the samples received are very complex, quite high-grade and badly oxidized. This will necessitate a large number of investigative tests before we can be sure we have developed the best flowsheet for processing this ore. We would strongly recommend that, if possible, you send us a sample of freshly broken ore, representative of future mill feed. In the meantime we shall continue working on the samples we have on hand, but the results obtained may be of doubtful value.

A brief summary of the investigative tests conducted to date follows:

The two samples have been kept separate but a composite head sample representative of the two samples was prepared and assayed as follows:

Ag	-	65.31	oz/ton
Au	-	0.01	" "
Pb	-	29.20	per cent
Zn	-	16.40	" "
Cu	-	6.14	" "
Fe	-	11.09	" "
Insol	-	21.75	" "
Cd	-	0.19	" "
Si	-	0.066	" "
As	-	1.24	" "
Sb	-	0.30	" "
S	-	17.94	" "



Mineralogy

A preliminary examination of the sample shows the presence of galena and bismuthinite (Pb<sub>3</sub>SbS<sub>5</sub>), sphalerite, and pyrite. It is present in greater amounts than galena and bismuthinite, but associated with pyrite.

Zinc is present as sphalerite in the rougher concentrate. About half of it is free and the other half occurs in combination with pyrite concentrates.

Freibergite (Cu<sub>2</sub>Sgl<sub>2</sub>) is present in the sample, although it is present in very small amounts. The Freibergite occurs both as a free mineral and as a mineral material intimately associated with bismuthinite and galena.

Flotation

So far 16 flotation tests have been run on the coarse zinc portion. The three have been run at different pH values and are highly oxidized than the coarse portion.

The object of these tests has been to experimentally float lead and zinc concentrates from the ore. Some measure of success has been achieved in selectively separating the lead and zinc concentrates, but silver recovery in the lead concentrate has not been as high as desired. In the tests, for which assays have been received, the best results were obtained in test 5. In this test the pH was raised to 10.5 - 10.7 and low concentrations were obtained using soda ash as a pH regulator and cyanide and zinc sulphate as zinc depressants. The zinc was then activated with copper sulphate and floated. Amyl xanthate was used in both lead and zinc production.

Results of Tests

Product	Wt %	Assays			Distribution %		
		Pb	Zn	Ag	Pb	Zn	Ag
No. 1 Rougher conc	2.9	43.0	5.5	87.10	5.1	0.7	2.8
No. 2 " " "	6.0	52.5	12.3	87.03	13.7	2.0	9.3
No. 3 " " "	11.9	68.0	15.9	91.25	27.7	2.0	17.1
No. 4 " " "	23.0	80.0	20.0	93.03	44.7	10.4	34.6
Zn cl conc	9.3	3.5	82.0	34.70	1.3	21.7	5.1
Zn cl tail	10.8	4.2	45.6	70.34	0.2	23.9	11.9
Zn assay conc	7.0	21.2	4.4	109.50	7.9	1.9	12.1
Zn rougher tail	26.5	6.0	1.7	13.7	5.1	2.8	5.2
Feed (calcd)	100.0	33.0	13.4	11.51	100.0	100.0	100.0
Comb Pb rougher conc (calcd)	46.4	48.2	13.1	24.0	32.7	24.3	45.0
Pb rougher conc							
Pb tail conc	51.2	43.8	11.3	25.3	67.3	75.7	77.1

\*Assays are expressed in percent, except for silver in grams per ton.



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