

March 19th

9

REPORT OF ORE DRESSING AND METALLURGICAL LABORATORIES.

Test No.

A shipment of six sacks containing 645 pounds of heat-treated Sullivan ore was received on January 8th, 1919 from the Consolidated Mining and Smelting Co. Ltd., of Trail, B.C. Previous shipments of this ore consisted of a 10 pound sample and also a sack containing about 100 pounds.

The object of the test work was to determine whether a satisfactory separation could be made of the zinc-lead values from the Iron by the use of the Grondal Wet Magnetic Separator.

For a preliminary test the 100-pound lot was taken and ground to the following :

On 200 - 45% ; through 200 - 55%.

A sample was cut out which gave the following analysis:-
Fe, - 30.20% ; Zn, - 20.00% ; Pb, - 13.35%

The Grondal Separator was adjusted so that the feed in passing over the bridge in the magnetic field would be as close to the magnets as possible. The strongest field possible for our installation was used, namely 6.5 amperes X - 110 volts.

95 pounds of the heat treated ore ground to the fineness given above was fed to the separator and the magnetic and non-magnetic products caught. Very little magnetic product was obtained, so little that the test was considered a failure.

The non-Magnetic product from the Cronal Separation was run through the Ullrich Magnetic Separator. A separation was here made so it was decided to make a test run on the heat treated ore, through this separator.

For this test the shipment of 645 pounds was taken and crushed to the fineness given in the Screen Test of the Table. It was then out in two, one lot held and the other sampled down for analysis and for the test run. The following is the analysis of the ore to the Separator :-

Fe - 30.80% ; Zn. - 21.18% ; Pb. - 12.17%

The rings on the Separator were adjusted as follows:-

Ring # 1.	-	$\frac{1}{2}$ "	from	^{feed} ring	plate.
" # 2.	-	$\frac{5}{8}$ "	"	"	"
" # 3.	-	$\frac{1}{2}$ "	"	"	"
" # 4.	-	$\frac{3}{8}$ "	"	"	"

The Magnetic Field obtained was from a current strength of 10 amperes x 110 volts.

Six products were made, a magnetic product from each ring, and two non-magnetic products namely, a middling and Zinc-Lead product. The results of this separation are given in the table.

The magnetic products were reground to the fineness given in the Screen tests of the table, and rerun through the Separator. The results of these runs are also given in the table, as well as a summary of the separation on this ore.

MAGNETIC SEPARATION of HEAT-TREATED SULLIVAN ORE - ULLRICH FOUR-POLE, FOUR-RING MAGNETIC SEPARATOR.

FIRST SEPARATION				on HEAT-TREATED ORE										
Screen Test.				Product.	Wt. Lbs.	Analysis			Content.			Percentages.		
Tyler Standard	Wt. Grams.	Per Cent.	Cumulative Per Cent.			% Fe.	% Zn.	% Pb.	Lbs. Fe.	Lbs. Zn.	Lbs. Pb.	Fe	Zn.	Pb.
+65	5	0.2	0.2	Ring No 1.	73.5	52.0	5.57	5.10	38.220	4.094	3.748	41.3	6.4	10.2
-65 +100	128	6.0	6.2	Ring No 2.	7.0	49.6	6.32	5.57	3.472	0.442	0.390	3.8	0.7	1.1
-100 +150	459	21.7	27.9	Ring No 3.	35.0	50.6	6.11	5.54	17.710	2.138	1.959	19.1	3.4	5.3
-150 +200	680	32.1	60.0	Ring No 4.	51.0	30.9	22.02	9.80	15.759	11.230	4.998	17.0	17.6	13.7
-200	847	40.0	40.0	Middlings	20.5	12.0	31.06	21.35	2.460	6.367	4.377	2.7	10.0	12.0
TOTALS	2119	100.0		Zinc-Lead	93.5	11.6	33.83	18.83	10.846	31.631	17.606	11.7	49.7	48.1
				Slime Loss	20.0	20.4	38.72	17.56	4.087	7.744	3.513	4.4	12.2	9.6
				TOTALS	300.5	30.8	21.18	12.17	92.554	63.646	36.571	100.0	100.0	100.0

SEPARATION of RING No 4. PRODUCT after REGRINDING.														
Screen Test.				Product.	Wt. Lbs.	Analysis			Content.			Percentages.		
Tyler Standard	Wt. Grams.	Per Cent.	Cumulative Per Cent.			% Fe.	% Zn.	% Pb.	Lbs. Fe.	Lbs. Zn.	Lbs. Pb.	Fe	Zn.	Pb.
+100	1	0.1	0.1	Ring No 1.	2.50	54.05	3.91	4.12	1.486	0.108	0.113	9.5	0.9	2.3
-100 +150	39	5.5	5.6	Ring No 2.	0.25	55.05	3.57	4.02	4.954	0.321	0.362	31.6	2.9	7.3
-150 +200	96	13.7	19.3	Ring No 3.	9.00	43.35	12.97	4.66	4.768	1.427	0.513	30.4	12.8	10.3
-200	567	80.7	80.7	Ring No 4.	11.00	16.60	34.45	11.51	3.403	7.062	2.360	21.7	63.2	47.4
TOTALS	703	100.0		Middlings	4.50	28.28	14.88	14.48	0.707	2.257	1.625	6.8	20.2	32.7
				Zinc-Lead	16.00	30.09	21.67	1.071	2.257	1.625	6.8	20.2	32.7	
				Slime Loss	7.50	14.28	30.09	21.67	1.071	2.257	1.625	6.8	20.2	32.7
				TOTALS	50.75	30.90	22.02	9.80	15.682	11.175	4.973	100.0	100.0	100.0

SEPARATION of RING No 3. PRODUCT after REGRINDING.														
Screen Test.				Product.	Wt. Lbs.	Analysis			Content.			Percentages.		
Tyler Standard	Wt. Grams.	Per Cent.	Cumulative Per Cent.			% Fe.	% Zn.	% Pb.	Lbs. Fe.	Lbs. Zn.	Lbs. Pb.	Fe	Zn.	Pb.
+100	0.5	0.1	0.1	Ring No 1.	16.0	56.60	2.25	3.44	9.622	0.382	0.585	55.1	18.1	30.6
-100 +150	17	3.6	3.7	Ring No 2.	1.0	57.15	2.05	2.70	4.286	0.154	0.202	24.5	7.3	10.6
-150 +200	49	10.4	14.1	Ring No 3.	7.5	53.95	5.04	2.97	1.888	0.176	0.104	10.8	8.4	5.4
-200	405	85.9	85.9	Ring No 4.	3.5	23.85	25.60	16.44	0.954	1.024	0.658	5.5	48.6	34.4
TOTALS	471.5	100.0		Middlings	1.0	26.05	23.19	15.49	2.344	2.087	1.394	5.7	46.4	33.9
				Zinc-Lead	3.0	31.74	24.52	23.42	1.587	1.226	1.171	3.8	27.2	28.5
				Slime Loss	2.5	28.28	14.88	14.48	0.707	0.372	0.362	4.1	17.6	19.0
				TOTALS	34.5	50.60	6.11	5.54	17.457	2.108	1.911	100.0	100.0	100.0

SEPARATION of RING No 1 & No 2 PRODUCTS after REGRINDING.														
Screen Test.				Product.	Wt. Lbs.	Analysis			Content.			Percentages.		
Tyler Standard	Wt. Grams.	Per Cent.	Cumulative Per Cent.			% Fe.	% Zn.	% Pb.	Lbs. Fe.	Lbs. Zn.	Lbs. Pb.	Fe	Zn.	Pb.
+100	0	0.0	0.0	Ring No 1.	42.0	57.15	1.53	2.34	24.574	0.658	1.006	59.3	14.6	24.4
-100 +150	18	3.3	3.3	Ring No 2.	1.0	56.80	1.70	2.14	9.372	0.280	0.353	22.6	6.2	8.6
-150 +200	52	9.7	13.0	Ring No 3.	16.5	54.70	3.89	2.90	3.555	0.253	0.188	8.6	5.6	4.6
-200	469	87.0	87.0	Ring No 4.	6.5	26.05	23.19	15.49	2.344	2.087	1.394	5.7	46.4	33.9
TOTALS	539	100.0		Middlings	3.5	31.74	24.52	23.42	1.587	1.226	1.171	3.8	27.2	28.5
				Zinc-Lead	5.5	31.74	24.52	23.42	1.587	1.226	1.171	3.8	27.2	28.5
				Slime Loss	5.0	28.28	14.88	14.48	0.707	0.372	0.362	4.1	17.6	19.0
				TOTALS	80.0	51.79	5.63	5.14	41.432	4.504	4.112	100.0	100.0	100.0

- SUMMARY -

- COMBINED IRON PRODUCTS -

IRON PRODUCTS REPRESENT 35% by WEIGHT of ORIGINAL ORE.	Rings No 1 & 2 Rerun of No 4.	2.75	54.05	3.91	4.12	1.486	0.108	0.113					
	Ring No 3 Rerun of No 4.	9.00	55.05	3.57	4.02	4.954	0.321	0.362					
	Rings No 1 & 2 Rerun of No 3.	17.00	56.60	2.25	3.44	9.622	0.382	0.585					
	Ring No 3 Rerun of No 3.	7.50	57.15	2.05	2.70	4.286	0.154	0.202					
	Ring No 4 Rerun of No 3.	3.50	53.95	5.04	2.97	1.888	0.176	0.104					
	Rings No 1 & 2 Rerun of No 1 & 2.	43.00	57.15	1.53	2.34	24.574	0.658	1.006					
	Ring No 3 Rerun of No 1 & 2.	16.50	56.80	1.70	2.14	9.372	0.280	0.353					
	Ring No 4 Rerun of No 1 & 2.	6.50	54.70	3.89	2.90	3.555	0.253	0.188					
	TOTALS	105.75	56.49	2.21	2.75	59.737	2.332	2.913	65.0	3.7	8.0		

- COMBINED ZINC-LEAD PRODUCTS -

ZINC PRODUCTS REPRESENT 49% by WEIGHT of ORIGINAL ORE.	Middlings First Separation.	20.50	12.00	31.06	21.35	2.460	6.367	4.377					
	Zinc-Lead First Separation.	93.50	11.60	33.83	18.83	10.846	31.631	17.606					
	Mid-Zinc-Lead Rerun of No 4.	20.50	16.60	34.45	11.51	3.403	7.062	2.360					
	Mid-Zinc-Lead Rerun of No 3.	4.00	23.85	25.60	16.44	0.954	1.024	0.658					
	Mid-Zinc-Lead Rerun of No 1 & 2.	9.00	26.05	23.19	15.49	2.344	2.087	1.394					
	TOTALS	147.50	13.56	32.66	17.89	20.007	48.171	26.395	21.7	75.8	72.3		

- MIDDLINGS PRODUCT -

4% by WEIGHT, approx.	Ring No 4 Rerun No 4.	11.00	43.35	12.97	4.66	4.768	1.427	0.513	5.2	2.2	1.4		
-----------------------	-----------------------	-------	-------	-------	------	-------	-------	-------	-----	-----	-----	--	--

- SLIME LOSS -

SLIME LOSS REPRESENT 12% by WEIGHT approx. of ORIGINAL ORE.	Slime Loss First Separation	20.00	20.40	38.72	17.56	4.087	7.744	3.513					
	Slime Loss Rerun of No 4	7.50	14.28	30.09	21.67	1.071	2.257	1.625					
	Slime Loss Rerun of No 3	2.50	28.28	14.88	14.48	0.707	0.372	0.362					
	Slime Loss Rerun of No 1 & 2	5.00	31.74	24.52	23.42	1.587	1.226	1.171					
	TOTALS	35.00	21.29	33.14	19.06	7.452	11.599	6.671	8.1	18.3	18.3		