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BRUNSWICK MINING AND SMELTING CORPORATION LIMITED
(NO PERSONAL LIABILITY)

MINE OFFICE

P. O. BOX 560

BATHURST, NEW BRUNSWICK

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August 27, 1970

Mr. R. L. Coleman,
General Superintendent of Mills,
Noranda Mines Ltd.,
1700 Bank of Nova Scotia Building,
44 King St. West,
Toronto, Ontario.

Dear Dick:

Attached is a copy of the metallurgical laboratory report covering the bulk flotation and selective flotation tests on three samples of Vangorda ore. Results of test Pl10 - 10/15 were reported on July 3rd and test 110 - 20/25 on July 27th. Details of these tests are repeated in the present report.

Also covered are the results of locked bulk and selective flotation tests on samples 10A and 50A. Results of the selective flotation tests were calculated from metal content and also from the assays using the three-product formula. The difference in the assay of zinc concentrate given in the two metallurgical balances is due to an accumulation of zinc in middlings.

The following table summarizes lead and zinc results on the three samples:

BRUNSWICK MINING AND SMELTING CORPORATION LIMITED

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<u>Sample</u> Bulk Flotation Test No.	<u>Composite</u>		<u>10A</u>		<u>50A</u>	
	<u>P110 - 10/15</u> Pb	<u>Zn</u>	<u>P110 - 28/33</u> Pb	<u>Zn</u>	<u>P110 - 41/46</u> Pb	<u>Zn</u>
Heading	3.82%	5.36%	3.58%	4.03%	5.50%	7.08%
Bulk Conc. Grade	22.41%	35.31%	22.54%	31.36%	25.39%	32.52%
Metal Recoveries	77.1%	86.7%	68.7%	85.0%	89.0%	88.6%

<u>Selective Flotation. Test No.</u>	<u>P110 - 20/25</u>		<u>P110 - 34/39</u>		<u>P110 - 47/52</u>	
	<u>Pb</u>	<u>Zn</u>	<u>Pb</u>	<u>Zn</u>	<u>Pb</u>	<u>Zn</u>
Heading	3.76%	4.90%	3.55%	4.07%	5.27%	6.60%
Lead Conc. Grade	<u>51.55%</u>	9.53%	<u>48.32%</u>	6.36%	<u>51.53%</u>	10.84%
Zinc Conc. Grade	1.36%	<u>56.25%</u>	1.18%	<u>55.65%</u>	2.95%	<u>53.23%</u>
% Distribution Pb Conc.	<u>86.5</u>	12.3	<u>85.5</u>	9.8	<u>84.4</u>	14.2
% Distribution Zn Conc.	2.3	<u>72.2</u>	1.8	<u>71.9</u>	4.9	<u>70.1</u>

The samples had been crushed in the jaw crusher and rolls before being shipped to Brunswick, and it is probable that some surface oxidation had taken place.

Samples 10A and 50A were limited in size and insufficient batches were available for preliminary batch tests to determine optimum reagent dosages.

Yours very truly,

G. W. Neumann

G. W. Neumann,
Mill Superintendent.

cc: Messrs. A. G. Kirkland
H. L. Ames
J. R. Schnarr

Zn Av Grade = 55.04
Recovery = 71.4

BRUNSWICK MINING AND SMELTING CORPORATION LIMITED

MEMORANDUM

DATE Aug. 25/1970

TO Paul Shibley FROM Bill Winsor

SUBJECT P110 - Locked Tests on Vangorda Ores

Samples

1. There were three samples. The largest sample which is called the Vangorda Sample and smaller samples designated 10A and 50A.
2. The samples had been jaw and rolled crushed before it was shipped to this laboratory.

Each sample was treated for bulk lead-zinc and selective lead and zinc in six cycle locked tests. This report gives the results of these locked tests with metallurgical balances and test summaries of procedures and reagent additions.

Vancouver Sample

Metallurgical Balance - P110 - 10/15 Bulk locked test. With the midd's from the last batch in the first batch.

Product	% Wt.	Assay				Distribution			
		% Pb.	% Zn.	% Cu.	Ag Oz/100	% Pb.	% Zn.	% Cu.	% Ag.
Head	100	3.82	5.36	0.16	1.54	100	100	100	100
Pb-Zn Conc	13.14	22.41	35.31	0.90	8.16	77.05	86.69	73.16	69.57
Tailing	86.86	1.01	.82	0.05	0.54	22.95	13.31	26.84	30.43

Test Summary - P110 - 10/15

Operation	Time	PH	Reagent Addition lbs/D.S.T.			
			Plant Xan	BF-250	CuSO ₄	Line
Grind	33	9.6	.03	-	-	2.0
Conditioner I	10	10.3	.03	-	0.45	+
Rougher	13	10.3	.03	-	-	-
Conditioner II	5	10.2	.02	-	0.15	+
Scavenger	11	10.2	.04	-	-	-
Cleaners 1, 2	13	10.4	.10	.001	-	+
Total	37	-	.30	.001	0.60	3.5**

* Flotation time only

** Estimated

Vangorda Sample

Metallurgical Balance - P110 - 20/25 Selective Locked Test. With the midd's from the last batch in the first batch.

<u>Product</u>	<u>% Wt.</u>	<u>Assay</u>				<u>Distribution</u>			
		<u>% Pb.</u>	<u>% Zn.</u>	<u>% Cu.</u>	<u>Ag Oz/Ton</u>	<u>% Pb.</u>	<u>% Zn.</u>	<u>% Cu.</u>	<u>% Ag.</u>
Head	100	3.76	4.90	0.15	1.46	100	100	100	100
Pb Conc	6.24	52.10	9.93	1.56	17.97	86.43	12.66	67.04	76.70
Zn Conc	5.94	1.37	58.65	0.13	1.08	2.17	71.14	5.30	4.37
Tailings	87.82	0.49	0.90	0.05	0.32	11.40	16.20	27.66	18.93

Metallurgical Balance - P110 - 20/25

Three product formula

<u>Product</u>	<u>% Wt.</u>	<u>Assay</u>				<u>Distribution</u>			
		<u>% Pb.</u>	<u>% Zn.</u>	<u>% Cu.</u>	<u>Ag Oz/Ton</u>	<u>% Pb.</u>	<u>% Zn.</u>	<u>% Cu.</u>	<u>% Ag.</u>
Head	100	3.76	4.90	0.15	1.46	100	100	100	100
Pb Conc	6.31	51.55	9.53	1.50	17.06	86.51	12.27	63.34	73.70
Zn Conc	6.29	1.36	56.25	0.32	1.02	2.29	72.20	5.33	4.38
Tailings	87.40	0.42	0.76	0.05	0.32	11.20	15.53	31.33	21.92

Vancouver Sample

Test Summary - P110 - 20/25

Operation	time	pH	Reagent Addition lb/D.S.T.						
			Zn	Pb	DP-250	CuSO ₄	Cyanide	Soda Ash	Lime
Grind	34	9.6	.03	--	--	--	.20	3.5	--
Pb Conditioner	5	9.6	.04	.02	--	--	--	--	--
Rougher	5	9.6	--	--	.002	--	--	--	--
Scavenger	5	9.6	.01	.005	--	--	--	--	--
Cleaners 1, 2	8	9.7	.05	--	.003	--	--	+	--
Zn Conditioner I	10	10.6	.01	--	--	.45	--	--	1.0
Rougher	10	10.6	.05	--	.002	--	--	--	--
Conditioner II	5	10.5	--	--	--	.15	--	--	+
Scavenger	10	10.5	.04	--	.002	--	--	--	--
Cleaners	9	10.7	.07	--	.004	--	--	--	+
Pb Total	18*	--	.10	.025	.005	--	.20	4.0**	--
Zn Total	29*	--	.17	--	.008	.60	--	--	2.0**

* Flotation time only

** Estimated

Model 2.2

Metallurgical Balance P110 - 28/33 Bulk locked tank. With the midd's from the last batch in the first batch.

Product	% Wt.	Assay				Distribution			
		% Pb.	% Zn.	% Cu.	lg Oz/ton	% Pb.	% Zn.	% Cu.	% lB.
Head	100	3.58	4.03	0.18	1.32	100	100	100	100
Pb-Zn Conc	10.93	22.54	31.36	0.85	7.29	68.72	85.01	52.58	60.12
Tailings	89.07	1.26	.68	0.09	0.59	31.28	14.99	47.42	39.88

Test Summary - P110 - 23/33

Operation	Time	Ill.	Reagent Addition on lb/D.S.F.			
			Plant Xan	18-250	6030	lime
Grind	34	10.3	.03	-	-	2.7
Conditioner I	10	10.2	.05	-	.45	+
Rougher	10	10.2	.05	-	-	-
Conditioner II	5	10.2	-	-	.15	+
Scavenger	10	10.2	.05	-	-	-
Clearers 1, 2	10	10.4	.10	.001	-	+
Total	30*	-	.28	.001	.60	4.2**

* Flotation time only

** Estimated

Sample 10A

Metallurgical Balance - P110 34/39 Selective locked test. With middle from the
 test batch in the first batch.

Product	% Wt.	Assay				Distribution				
		% Pb.	% Zn.	% Cu.	Ag Oz/ton	% Pb/ % Zn	% Pb.	% Zn.	% Cu.	% Ag.
Head	100	3.55	4.07	0.24	1.39		100	100	100	100
Pb Conc	6.27	48.50	6.65	2.41	18.79		85.66	10.24	64.10	24.80
Zn Conc	4.94	1.18	58.14	0.16	0.43		1.64	70.60	3.38	1.98
Tailings	88.79	0.51	0.88	0.09	0.21	.23/ .13	12.70	19.16	35.52	13.22

Metallurgical Balance - P110 - 34/39

Three product formula

Product	% Wt.	Assay				Distribution				
		% Pb.	% Zn.	% Cu.	Ag Oz/ton	% Pb/ % Zn	% Pb.	% Zn.	% Cu.	% Ag.
Head	100	3.55	4.07	0.24	1.39		100	100	100	100
Pb Conc	6.23	48.32	6.36	2.46	18.38		85.48	9.81	65.07	23.10
Zn Conc	5.26	1.18	55.65	0.16	0.55		1.75	71.83	3.59	2.03
Tailings	88.46	0.51	0.84	0.03	0.23	.23/ .13	12.77	18.39	31.34	14.82

Sample 10A

Test Summary - P110 - 34/39

Operation	Time	pH	Reagent Addition lb/D.S.T.						
			%-9	242	DF-250	CuSO ₄	Cyanide	Soda Ash	Lime
Grind	34	9.7	.03	-	-	-	.20	2.7	-
Pb Conditioner	8	9.7	.03	.01	-	-	-	-	-
Rougher	6	9.7	.01	-	-	-	-	-	-
Scavenger	5	9.6	.01	-	-	-	-	-	-
Cleaners 1, 2	10	9.8	.05	-	.002	-	-	+	-
Zn Conditioner I	9	10.6	-	-	-	.45	-	-	1.0
Rougher	10	10.6	.04	-	.002	-	-	-	-
Conditioner II	5	10.5	-	-	-	.15	-	-	+
Scavenger	10	10.5	.03	-	.001	-	-	-	-
Cleaners 1, 2	12	10.7	.07	-	.004	-	-	-	+
Pb Total	21*	-	.13	.01	.002	-	.20	3.2**	-
Zn Total	32*	-	.14	-	.007	.60	-	-	2.0**

* Flotation time only

** Retention

Sample 50 A

Metallurgical Balance - P110 - 41/46 Bulk Locked Test. With the midd's from the last batch in the first batch.

Product	% Wt.	Assay				Distribution			
		% Pb.	% Zn.	% Cu.	Oz/Ton	% Pb.	% Zn.	% Cu.	% Ag.
Heads	100	5.50	7.08	0.11	1.89	100	100	100	100
Pb-Zn Conc	19.28	25.39	32.52	0.40	7.83	88.97	88.56	70.57	79.69
Tailings	80.72	0.75	1.00	0.04	0.48	^{.33} / _{.19}	11.03	11.44	29.43

Test Summary - P110 - 41/46

Operation	Time	ML	Reagent Addition lb/D.S.T.			
			Pbent Zn	BF 250	CaSO ₄	lime
Grind	33	10.2	.03	-	-	2.5
Conditioner I	10	10.2	.11	-	.70	+
Rougher	9	10.2	.01	-	-	-
Conditioner II	3	10.1	.01	-	.30	+
Scavenger	7	10.1	.02	-	-	-
Cleaners 1, 2	18	10.3	.10	.005	-	+
Total	3h*	-	.28	.005	1.00	4.0**

* Flotation time only

** Estimated

Sample 50 A

Metallurgical Balance - P110 - 4/7/52 Selective Locked Test. With midds from the last batch in the first batch.

Product	% Wt.	Assays					Distribution			
		% Pb.	% Zn.	% Cu.	Ag Oz/ton	% PbO % ZnO	% Pb.	% Zn.	% Cu.	% Ag.
Head	100	5.27	6.60	0.16	2.10		100	100	100	100
Pb Conc	8.50	52.29	11.27	1.12	16.03		84.33	14.52	58.28	64.35
Zn Conc	8.21	2.99	55.35	0.13	1.30		4.66	68.88	6.73	5.03
Tailings	83.29	0.70	1.31	0.07	0.78	.29/.13	11.01	16.60	34.99	30.62

Metallurgical Balance - P110 - 4/7/52

Three product formula

Product	% Wt.	Assays					Distribution			
		% Pb.	% Zn.	% Cu.	Ag Oz/ton	% PbO % ZnO	% Pb.	% Zn.	% Cu.	% Ag.
Head	100	5.27	6.60	0.16	2.10		100	100	100	100
Pb Conc	8.63	51.55	10.84	1.02	15.64		84.38	14.18	57.19	63.75
Zn Conc	8.69	2.95	53.23	0.13	1.26		4.66	70.10	6.91	5.17
Tailings	82.68	0.69	1.25	0.07	0.80	.29/.13	10.76	15.72	35.90	31.03

Sample 50 A

Test Summary -- F110 -- 4/7/52

Operation	time	ml	Reagent Addition lb/D.S.T.						
			Zn	Pb	DF-250	CuSO ₄	Cyanide	Soda Ash	Lime
Grind	33	9.8	.03	-	-	-	.20	2.9	-
Pb Conditioner	5	9.8	.05	.01	-	-	-	-	-
Rougher	5	9.8	.03	.005	-	-	-	-	-
Scavenger	4	9.7	.01	.005	-	-	-	-	-
Cleaners 1, 2	8	9.7	.05	-	.001	-	-	+	-
Zn Conditioner I	10	10.6	.03	-	.001	.75	-	-	1.0
Rougher	9	10.7	.03	-	-	-	-	-	-
Conditioner II	5	10.5	.005	-	-	.25	-	-	+
Scavenger	6	10.6	.01	-	-	-	-	-	-
Cleaners 1, 2	10	10.7	.05	-	.001	-	-	-	+
Pb Total	21*	-	.21	.02	.001	-	.20	3.4**	-
Zn Total	25*	-	.155	-	.002	1.00	-	-	2.0**

* Flotation time only

** Estimated

Bill Hunter
Asst. Research Metallurgist