

019842

KERR ADDISON MINES LIMITED

(FOR INTER-OFFICE USE ONLY)

7-9
14

To: M. D. Rowswell From: E. J. Kirkpatrick

Subject: Grum Deposit Metallurgical Testing Date: February 12, 1976

A metallurgical study in the form of bench scale batch test work on 1,200 pounds of diamond drill core sample from the Grum Deposit was undertaken at the Noranda Mines laboratory, commencing in November, 1974. The purpose of the test work was to investigate the feasibility of producing saleable lead and zinc concentrates. Core samples had been segregated at the Grum Deposit site according to "low," "average," "medium," and "high" grade designations, with combined lead-zinc values varying from approximately 5% to 17%. It was decided that the method of approach adopted would be to attempt to develop and optimize ore dressing techniques on the "average" grade ore, and then to apply them to the other composite samples. Particular attention would then be focused upon the "high" grade composite and the disposition of middling products studied in a series of cyclic tests.

✓
I.V.D.
J.R.C.
D.M.H.
G.M.H.
E.C.J.
B.M.H.
G.R.
✓
G.M.H.

An additional core sample of 300 pounds of "high" grade composite was shipped to Noranda Mines in August, 1975 for the purpose of further test work. At the same time, an identical sample was sent to Lakefield Research, for independent bench scale and later cyclic test work. The most successful cyclic test results at Noranda and Lakefield are appended in Table I.

A programme combining the most effective features of both the Noranda and Lakefield procedures was then laid out for the Lakefield Research pilot plant. In this regard, two 50-ton bulk samples were mined and shipped to Lakefield. The pilot plant operation commenced on November 12, 1975, utilizing the "A" bulk sample, which contained approximately 8% lead and 7% zinc. It became evident, however, that results achieved during the bench scale test work were not being duplicated in the pilot plant. One major area of concern was the inability to produce a high-grade lead concentrate. While lead recoveries attained 90%, concentrate grades remained in the 50% range; thus, well below the 65% target. The principal reason for this failure was attributable to the zinc contamination evidenced in the lead concentrate, where, in fact, 20% to 25% of the zinc reported. This also had the obvious effect of lowering the overall zinc recovery to a disappointing 70%. Furthermore, the zinc concentrate after cleaning tended to grade only 45% to 50%. The problems encountered with the "A" bulk sample can therefore best be summarized by the lack of selectivity achieved between the lead and zinc minerals. Five tons of the 50-ton sample were kept for later test work.

The pilot plant run then continued on the "B" sample, grading 70% lead and 11% zinc. It was immediately evident that the "B" bulk sample reacted in such a way that the phenomenon of poor lead and zinc selectivity became even more pronounced. A decision was taken after one week's run on December 12, 1975 to suspend pilot plant operations and to return to further bench

KERR ADDISON MINES LIMITED

(FOR INTER-OFFICE USE ONLY)

To.....From.....

Subject.....Date.....

Page 2

scale testing at both Lakefield and Noranda. Additional bench scale testing commenced at Mattagami Lake Mines on February 1, 1976.

Total expenditures for the Grum Deposit metallurgical test work have been \$110,152.53 up to December 31, 1975. This is comprised of Noranda Mines laboratory charges of \$30,662.20, Lakefield Research laboratory fees of \$17,943.93, Lakefield pilot plant charges of \$33,636.94, and container and transportation costs of \$27,909.46.

E. J. Kirkpatrick

EJK:jas
Attachments

	Noranda (monthly charge)	Lakefield (bench)	Lakefield (pilot plant)				
Dec. 75		5333.60	6399.00	12,743.80	9035	100 drums Faro → Lkfld. (119,540#)	5713.74
Nov. 75	9012	2307.20		J.V. 732 20,893.14	8784	68 drums Faro → Lkfld. (80,100#)	3809.16
Oct. 75	9012	589.20	2730.27 (N)	commenced Nov. 12, 1975	8778	pails water Faro → Lkfld.	12.24
Sept. 75	8649	2908.90	3102.10 (K)		8257	price of 699 barrels	8597.70
Aug. 75		1830.80	2824.56	suspended Dec. 12, 1975.	8252	ship 699 bbls - Edm. → Faro.	7395.00
July 75	7856	3061.40	2888.00		8124	used barrels (200)	2184.00 net
June 75	7596	1383.60			7823	core samples → Lkfld. + Noranda (400 # each)	197.62
May 75	7281	1261.20					
April 75	6942	1670.80					TOTAL 27,909.46
Mar. 75	6735	1597.60					
Feb. 75	6547	2657.90					
Jan. 75	6337	2854.90					
Dec. 74	6131	1311.50					
Nov. 74	5892	1893.60					
TOTAL		30,662.20	17943.93	33636.94			110,152.53

Table I.

Metallurgical Results for the Grum Deposit						
	Product	Assays			Distribution	
		% Weight	Lead	Zinc	Lead	Zinc
<u>Noranda Mines-Laboratory Cycle Test</u>	Head	100.0	5.3	8.9	100.0	100.0
	Lead Concentrate	7.4	57.2	10.3	79.6	8.5
	Zinc Concentrate	12.3	2.3	58.7	5.2	80.9
	Tailing	80.3	1.0	1.2	15.2	10.6
<u>Lakefield Research-Laboratory Cycle Test</u>	Head	100.0	4.73	7.40	100.0	100.0
	Lead Concentrate	6.7	64.0	7.7	90.9	6.9
	Zinc Concentrate	10.8	.86	57.0	2.0	83.6
	Tailing	82.5	.46	.65	7.1	9.5
<u>Lakefield Research- Pilot Plant Test</u> <u>"A"- bulk sample</u>	Head	100.0	8.07	7.49	100.0	100.0
	Lead Concentrate	15.3	46.3	10.6	88.1	21.9
	Zinc Concentrate	11.0	2.94	48.8	4.0	72.1
	Tailing	73.7	.87	.61	7.9	6.0
<u>Lakefield Research- Pilot Plant Test</u> <u>"B"- bulk sample</u>	Head	100.0	7.01	11.0	100.0	100.0
	Lead Concentrate	14.1	37.6	18.6	75.9	24.1
	Zinc Concentrate	12.4	4.85	49.1	8.6	56.0
	Tailing	73.5	1.49	2.45	15.5	19.9

Table II.

Expenditures for the Grum Deposit Metallurgical Testing	
1. Noranda Mines - Laboratory Testing - 1974	3205.10
2. Noranda Mines - Laboratory Testing - 1975	27457.10
3. Lakefield Research - Laboratory Testing (August, 1975 to December, 1975)	17943.93
4. Lakefield Research - Pilot Plant Testing (November, 1975 to December, 1975)	33636.94
5. Kerr-Addison - Containers and Transportation Costs	<u>27909.46</u>
6. Total Expenditures - 1974 to 1975	<u>110,152.53</u>
7. Projected Expenditures - 1976	<u>127,000.00</u>

Projected Costs (1976) for the Grum Deposit

	Lakefield (bench)	Lakefield (pilot plant)	Noranda	Mattagami Lake	Kerr-Addison
January 1976	1500.00		1000.00	2000.00	
February 1976	1500.00		1000.00	2000.00	
March 1976	1500.00		1000.00	2000.00	
April 1976	1500.00		1000.00	2000.00	
May 1976	1500.00		1000.00	2000.00	
June 1976	1500.00		1000.00	2000.00	10,000.00
July 1976		30,000.00			
August 1976		30,000.00			
September 1976		30,000.00			
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
TOTAL	9000.00	90,000.00	6000.00	12,000.00	10,000.00
TOTAL 1976	127,000.00				