

CONFIDENTIALPRELIMINARY FELDSPAR TAILINGS EVALUATION
Feldspar Tailings Report #1, April 1968 Progress Report

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by
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Introduction

Samples of Feldspar Corporation, International Mineral Company and Lawson-United Feldspar Company's tailings were taken on different trips to Spruce Pine during 1967. The samples were taken to gain preliminary data for the U. S. Bureau of Mines' Tailings Project. The object of laboratory testwork was to find out if saleable feldspar and quartz, products now sold by the three companies, could be recovered from the tailings as produced in the dewatering plants of above companies.

Samples

The samples were taken and designated as follows:

Feldspar Corp.	Filter Cake	Approx.	285 TPD
	Rake Sand	"	15 TPD
I.M.C.C.:	#1 Sand	"	90 TPD
	#2 Fe-Waste	"	90 TPD
	#3 Filter Cake	"	90 TPD
Lawson-United Co.:	Scraper Pile or Dump	"	300 TPD

Procedure

The samples were treated by grinding of oversize, scrubbing, desliming, removal of mica and iron by flotation and standard feldspar-

quartz flotation separation methods. Usually only one test was run for rapid evaluation of the samples. Even better feldspar recovery and lower iron in the spar could be achieved by optimizing of reagents and test conditions as planned for the later project. The results of this preliminary work are tabulated for the three feldspar companies separately on tables 1, 2, and 3 and are summarized on table 4.

Table 4

Summary Of Preliminary Tailings Sampling in TPD

<u>Products</u>	<u>Companies</u>			<u>Total</u>	<u>% Of Total</u>
	<u>Feldspar Corp.</u>	<u>I.M.C.C.</u>	<u>Lawson-United</u>		
Feldspar	103	59	110	272	31.4
Quartz	48	119	82	249	28.8
Mica-Fe	28	13	21	62	7.2
Slimes	118	76	73	267	30.8
+28 Mesh	3	-	13	16	1.8
Total	300	267	299	866	100.0
% Of Total	35	30.5	34.5	100.0	-

Summary

The three feldspar companies in the Spruce Pine area dispose of approximately 870 tons of tailings per day. Out of these tailings about 270 tons per day of feldspar could be recovered for the pottery industry and approximately 250 tons of highgrade quartz could be recovered. About 60 tons per day of mica-iron float product and 270 tons per day of slimes of fairly uniform size and grade would still have to be disposed of. Because of uniformity of the last two materials, possible markets might be found.

The above data are based on a few samples taken at random whenever the writer was in the Spruce Pine area. A more detailed sampling program to obtain more exact material variation and tonnage data is in progress.

Table 1 Feldspar Corporation, 300 TPD Total Tailings (285 TPD Filter Cake, 15 TPD Sand)

<u>Sample</u>	<u>Date</u>	<u>Spar</u>					<u>Quartz</u>				
		<u>% Wt.</u>	<u>TPD</u>	<u>% K₂O</u>	<u>% Na₂O</u>	<u>% Fe₂O₃</u>	<u>% Wt.</u>	<u>TPD</u>	<u>% K₂O</u>	<u>% Na₂O</u>	<u>% Fe₂O₃</u>
Cake	7-21-67	35.2	100	4.31	6.46	0.064	18.9	54	-	-	-
Sand	7-21-67	58.2	9	3.66	6.77	0.065	17.8	3	-	-	-
Cake & Sand	7-27-67	33.8	101	5.74	5.95	0.05	13.0	39	0.16	0.15	0.014
Cake	9-6-67	29.6	84	4.58	6.38	0.07	18.5	53	0.08	0.08	0.012
Sand	9-6-67	56.3	8	4.08	6.33	0.07	29.8	4	0.09	0.11	0.020
Cake	10-25-67	35.5	98	4.57	6.53	0.11	13.3	38	0.11	0.14	0.012
Sand	10-25-67	73.2	11	3.67	6.73	0.08	15.7	2	0.05	0.11	0.014
Average			103					48			

Mica Fe		Slime		+28 Mesh	
<u>% Wt.</u>	<u>TPD</u>	<u>% Wt.</u>	<u>TPD</u>	<u>% Wt.</u>	<u>TPD</u>
13.0	37	31.3	89	1.6	5
12.0	2	8.8	1	2.4	0
9.2	28	43.6	131	0.4	1
7.4	21	43.3	123	1.2	3
8.5	1	4.7	1	0.7	0
6.3	18	43.9	125	1.0	3
25.4	4	4.8	1	0.9	0
	28		118		3

Table 2 I.M.C.C., 270 TPD Total Tailings (90 TPD #1, 90 TPD #2, 90 TPD #3)

Sample	Date	Spar					Quartz				
		% Wt.	TPD	% K ₂ O	% Na ₂ O	% Fe ₂ O ₃	% Wt.	TPD	% K ₂ O	% Na ₂ O	% Fe ₂ O ₃
#1+2+3	April '65	20.6	57	4.14	6.10	0.11	49.2	133	0.05	0.06	0.057
#1+2+3	7-27-67	22.3	60	3.79	6.26	0.10	39.8	107	0.06	0.61	0.020
#1	9-6-67	13.5	12	3.22	4.96	0.07	79.5	72	0.04	0.04	0.007
#2	9-6-67	31.5	28	4.27	6.30	0.09	54.8	49	0.05	0.06	0.018
#3	9-6-67	14.0	13	4.81	6.37	0.10	5.9	5	0.14	0.13	0.027
#1	10-25-67	10.0	9	3.78	5.27	0.15	84.5	76	0.05	0.08	0.045
#2	10-25-67	49.4	44	4.55	6.42	0.22	33.4	30	0.5	0.8	0.14
#3	10-25-67	14.2	13	4.23	6.73	0.11	6.1	5	0.07	0.11	0.012
Average			59					119			

<u>Mica Fe</u>		<u>Slime</u>		<u>+28 Mesh</u>	
<u>% Wt.</u>	<u>TPD</u>	<u>% Wt.</u>	<u>TPD</u>	<u>% Wt.</u>	<u>TPD</u>
6.5	17	23.5	63	0.2	0.5
6.2	17	31.5	85	0.2	0.5
3.2	3	3.5	3	0.3	-
6.9	6	6.6	6	0.2	-
7.1	6	73.8	66	0.2	-
2.1	2	3.4	3	-	-
8.1	7	8.5	8	0.6	-
4.4	4	75.2	68	0.1	-
	13		76		

Table 3 Lawson-United Feldspar Co., 300 TPD Total Tailings

<u>Sample</u>	<u>Date</u>	<u>Spar</u>					<u>Quartz</u>				
		<u>% Wt.</u>	<u>TPD</u>	<u>% K₂O</u>	<u>% Na₂O</u>	<u>% Fe₂O₃</u>	<u>% Wt.</u>	<u>TPD</u>	<u>% K₂O</u>	<u>% Na₂O</u>	<u>% Fe₂O₃</u>
Scraper	6-30-67	36.6	110	4.55	6.19	0.061	28.7	86	0.03	0.06	0.01
Scraper	7-12-67	30.0	90	4.09	6.28	0.14	24.5	74	0.08	0.11	0.08
Dump	7-12-67	30.7	92	4.29	6.45	0.08	21.0	63	0.06	0.10	0.018
Scraper	7-27-67	43.7	131	4.25	6.46	0.063	32.3	97	0.07	0.07	0.09
Scraper	9-6-67	40.3	120	4.05	6.33	0.07	30.5	92	0.06	0.08	0.018
Dump	10-25-67	39.6	119	4.91	6.58	0.19	26.7	80	0.18	0.19	0.014
Average			110					82			

Mica Fe % Wt.	TPD	Slime		+28 Mesh		Remarks	
		% Wt.	TPD	% Wt.	TPD	Spar % SiO ₂	Spar % Al ₂ O ₃
7.7	23	16.9	51	10.0	30	67.12	19.92
6.8	20	29.0	87	8.7	26		
6.6	20	35.9	108	5.8	17		
6.5	20	16.6	50	0.9	3		
7.6	23	21.1	63	0.5	2		
7.3	22	26.2	78	0.8	2		
	21		73				