O T T A W A   August 26, 1940.

R E P O R T

of the

ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 888

Table Concentration of Barite-Fluorspar Ore
from the Moira Fluorspar Syndicate, Madoc, Ontario.

OTTAWA   August 26, 1940.

REPORT

of the

ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 888

Table Concentration of Barite-Fluorspar Ore
from the Moira Fluorspar Syndicate, Madoc, Ontario.

Shipment:

Two samples of fluorspar ore were delivered
to the Ore Dressing Laboratories on August 13, 1940.
They consisted of approximately $1\frac{1}{2}$ tons of Moira ore,
and $\frac{1}{2}$ ton of ore from the Parry Property.

These samples consisted of a barite-fluorite-
calcite ore with colored gangue.

Purpose of Investigation:

The object of the investigation was to determine what separation of the minerals could be obtained by table concentration.

Procedure:

The Moira sample was first fed to a ball mill in closed circuit with a classifier. A light load of balls in the mill was found to produce too much fines. This flow sheet was abandoned.

The remainder of the sample was screened through an 8 x 2 mesh screen, and fed to an hydraulic classifier, which separated the feed into three portions. The fines were thickened in a Callow cone before table concentration. The two coarser products were tabled directly. Assay samples of the products were taken and forwarded to the Syndicate.

Screen Analyses of Feeds

Mesh		Classifier Feed	No. 1 Table	No. 2 Table	No. 3 Table
			Weight, per cent		
	+14	35.5	62.0		
-14	+35	27.2	30.0		
-35	+48	8.6	4.0	0.4	
-48	+65	6.9	1.9	2.2	
-65	+100	7.2	1.2	6.8	0.2
-100	+150	5.2	0.5	11.8	2.2
-150	+200	3.7	0.2	18.4	8.0
-200		5.7	0.2	60.4	89.6
		100.0	100.0	100.0	100.0

Results: Feed rate, 664 pounds per hour.

Table No. 1	Weight, per cent of table feed	Weight, per cent of original feed
Feed	100.0	87.2
Concentrate	12.4	10.8
Middling	77.2	67.3
Tailing	10.4	9.1
Table No. 2		
Feed	100.0	6.3
Concentrate	19.0	1.2
Middling	38.1	2.4
Tailing	42.9	2.7
Table No. 3		
Feed	100.0	6.5
Concentrate	46.5	3.0
Middling	39.5	2.6
Tailing	14.0	0.9

The operation of the hydraulic classifier was not satisfactory. Fine barite was discharged in the first spigot, together with coarser barite and fluorspar. The second spigot discharge did not discharge a suitable feed, owing to the heavier fines being caught in the first spigot.

Parry Property Ore:

This sample was crushed and screened through 10 mesh. The product was then screened on 24 and 40 mesh. The resulting three products then were tabled separately.

Screen Analyses

Mesh		-10 Mesh Sample	-10 ⊕24	-24 ⊕40	-40
-10	⊕14	6.4	31.1		
-14	⊕35	36.4	65.3	38.3	
-35	⊕48	10.6	0.9	42.3	11.9
-48	⊕65	9.0	0.2	9.0	24.4
-65	⊕100	9.6	0.2	2.7	20.6
-100	⊕150	6.9	0.1	1.1	10.9
-150	⊕200	3.9	0.1	0.9	8.2
-200		17.2	0.1	5.7	24.0
		100.0	100.0	100.0	100.0

Results: Table concentration.

-10 ⊕24	- Weight, per cent of table feed	Weight, per cent of original feed
Feed	100.0	37.9
Concentrate	10.8	4.1
Middling	70.9	26.9
Tailing	18.3	6.9
-24 ⊕40		
Feed	100.0	19.6
Concentrate	20.1	3.9
Middling	64.1	12.6
Tailing	15.8	3.1
-40		
Feed	100.0	42.5
Concentrate	22.0	9.4
Middling	38.8	16.5
Tailing	39.2	16.6

The concentrates in these products consisted chiefly of barite, the middling--fluorite, and the tailing--calcite, and gangue.

AKA:EPF