O T T A W A September 11th, 1941.

R E P O R T

of the

ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 1090.

Concentration of Channel Samples Representing the Ore Bodies of Chromite Limited at St. Cyr, Quebec.

BUREAU OF MINES
DIVISION OF METALLIC MINERALS
ORE DRESSING AND
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CANADA
DEPARTMENT
OF
MINES AND RESOURCES
MINES AND GEOLOGY BRANCH

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Shipment:

Channel samples representing the entire property of Chromite Limited, St. Cyr, Quebec, were received for concentration, via the Geological Survey Division of the Bureau of Geology and Topography, Ottawa, Ontario, on July 16th, 1941. The test work requested is intended to supplement Report of Investigation No. 1051, July 15th, 1941, and is chiefly to establish the chrome-to-iron ratio of the concentrates obtainable from a representative sample.

Investigative Work:

Some eighty samples, total weight approximately 1,162 pounds, constituted this shipment. One-half of each sample was taken and the eighty portions thus obtained were ground to pass 14 mesh, thoroughly mixed, and sampled.

This sample had the following analysis:

Cr_2O_3	=	29.23 per cent
Iron	=	8.40 "

The mixture then was screened on 35, 48 and 60 mesh, with the following results:

MESH	Weight, pounds	Weight, per cent	Cr_2O_3, per cent
-14 +35	319	54.9	29.67
-35 +48	85½	14.7	29.84
-48 +60	47	8.0	28.34
-60	130	22.4	26.88
	581½ pounds.	100.0	

Each lot was tabled to obtain a pure chromite concentrate. Middlings and tailings were produced from each size which were dried and sampled without further treatment.

Results:

Product	WEIGHT: Pounds	WEIGHT: Per cent	Cr_2O_3 assay, per cent	Cr_2O_3 content, pounds	Distribution, per cent
Feed	581½	100.0	29.15®	168.5®	100.0
			29.23	167.0	
-14+35 concentrate	76	13.1	47.06	35.8	21.2
" middling	140	24.1	31.78	44.5	26.4
" tailing	103	17.7	13.99	14.4	8.5
-35+48 concentrate	38	6.5	49.51	18.8	11.3
" middling	15	2.6	30.60	4.6	2.7
" tailing	32½	5.6	6.58	2.1	1.2
-48+60 concentrate	23½	4.0	48.88	11.5	6.8
" middling	6½	1.1	23.42	1.5	0.9
" tailing	17	2.9	1.85	0.3	0.2
-60 concentrate	51	8.8	50.02	25.5	15.2
" middling	19	3.3	26.82	5.1	3.0
" tailing	60	10.3	7.27	4.4	2.6

® Calculated.

(Continued on next page)

(Investigative Work, cont'd) -

32.4 per cent of the weight of feed was recovered as a combined concentrate having a calculated Cr_2O_3 content of 48.58 per cent.

The concentrates were mixed and sampled. The analysis is as follows:

		Per cent	
Chromium Oxide	(Cr_2O_3) =	48.54	
Iron -	(FeO) =	15.09	= 11.70 per cent Fe
Aluminium oxide	(Al_2O_3) =	15.06	
Silica -	(SiO_2) =	3.31	
Calcium oxide	(CaO) =	Trace.	
Magnesium oxide	(MgO) =	14.94	
Sulphur -	(S) =	0.03	
Phosphorus -	(P) =	Trace.	
Manganese oxide	(MnO) =	0.26	
Nickel oxide -	(NiO) =	0.20	
Water (H_2O) (total)	=	2.66	
		100.09	

Chrome-to-iron ratio = 2.84:1.

Conclusions:

In practice, the coarser sand table middlings and tailings would be reground, thus raising the recovery without lowering the grade of concentrate.

The above results indicate that a chromite concentrate of over 48 per cent Cr_2O_3, with a chrome-to-iron

(Conclusions, cont'd) -

ratio of 2.8:1, should be obtained from ore taken from all parts of the property and bedded to give a mixture similar to that represented by the sample on which this investigation was made.

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