OTTAWA November 14th, 1940.

REPORT

of the

# ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 917.

Flotation of Cobalt and Nickel Assay Rejects from H. Davis, Cobalt, Ontario.

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BUREAU OF MINES .
DIVISION OF METALLIC MINERALS
ORE DRESSING AND
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### Shipment:

The shipment, consisting of a number of finely ground samples of ore, was received from H. Davis, Cobalt, Ontario, on November 1st, 1940. The net weight of the combined sample was  $17\frac{5}{4}$  pounds.

#### Purpose of the Investigation:

The shipment was submitted for the purpose of determining the recovery of values by flotation.

## Character of the Ore:

The ore in the various samples had been ground to approximately 100 mesh. The portions received were the assay rejects from previous sampling and assaying operations. The crushed ore varied in colour from dark grey to white.

# Sampling and Analysis:

After mixing the samples thoroughly a portion was cut out and was found to contain:

Gold	<b>L</b>	O.32	act/esc
Silver	423	0,97	<b>f7</b>
Cobalt	633	1.85	per cent
Nickol	E2	4.65	ĝ\$

# Investigative Procedure:

Two flotation tests were made using different reagents.

The products were a cleaner concentrate, a cleaner tailing and a flotation tailing from each test.

## Results:

The cleaner concentrate contained:

	A998	Races	Recovery per cent				
an,	1.06	oz./ton	8,89				
$Ag_p$	2.92	88	92.4				
Co,	5.82	per cent	91.6				
N1.	16.42	28	97.4				

## Details of the Investigative Tests:

## Test No. 1. - Flotation.

A sample of the assay rejects was charged into a flotation machine and agitated with 4.0 pounds soda ash per ton for 15 minutes.

Then 0.2 pound of emyl xanthate per ton was added and conditioned for 3 minutes. After adding 0.1 pound of pine oil per ton, a concentrate was removed. Two additions of amyl xanthate were made, consisting of 0.2 pound and 0.1 pound per ton with pine oil as required. The total additions of reagents were 0.5 pound of amyl xanthate and 0.25 pound of pine oil per ton.

The concentrate was cleaned by refloating it without the addition of reagents.

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Product	9	dight,	8 OZ a/	ton	per	cent :	per cent				concen-
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Feed <sup>©</sup>	ö	O,OOL	0.31	0.87	1.78	4.68	100°0	1.00.0	100.0	100.0	
conc.	00 00 00	27.6	1.06	2,92	5.82	16.42	93.8	92.4	91.6	97.4	3.62;1.
tailing	4	9.1	0.04	0.24	0.66	0.80	S.I	2,5	3,4	1.5	
Flot. talling	00	63.3	0.025	0.07	0.14	0.08	5.0	5.1	5.0	1.1	
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 $<sup>^{\</sup>odot}$  Calculated assays from the products of the test.

# Test No. 2. - Flotation.

A sample of the assay rejects was charged into a flotation machine and conditioned for 15 minutes with

(Test No. 2, cont'd) -

4.0 pounds of soda ash and 0.5 pound of Barrett's No. 4 reagent per ton.

After adding 0.4 pound of amyl xanthate per ton in stages with 0.15 pound of pine oil per ton, a concentrate was recovered which was cleaned.

Re	sults:									
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Feed <sup>©</sup>	:100.0	0.26	0.81	1.65	4.80	200.0	1.00.0	100.0	200.0	
Cleaner	0									
conc.	; 23.7	1.02	3,10	5.89	18.89	91.8	90 .2	84.7	93.3	4.22:1.
Cleaner	9									
tailing	5: 14.1	0.11	0.35	1.13	1.88	5.9	6.0	9.6	5,5	7.1:1.
Flot.	9									·
tailing	3.20:3	O.Ol	0.05	0.15	0.09	2.3	3.8	5.7	2.8	
Arau III-Chiana Flavor -	ò		a No 1 <b></b> \$5 75\$ 75 \$1\$ \$2 \$1\$							

 $<sup>^{\</sup>mathfrak{D}}$  Calculated assays from the products of the test.

The results indicate the recovery and grade of concentrate which may be expected from ore of simlar grade and character.

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