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July 17th, 1942.

REPORT

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ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 1264.

Flotation Tests on Five Samples of Ore from the Toburn Gold Mines Limited, Kirkland Lake, Ontario.

Article (State County C

(Copy No. 13.)



BUREAU OF MINES
DIVISION OF METALLIC MINERALS

ORE DRESSING AND METALLURGICAL LABORATORIES

DEPARTMENT
OF
MINES AND RESOURCES
MINES AND GEOLOGY BRANCH

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Shipment:

The shipment consisted of five small samples, numbered 1091 to 1095. The total weight of the samples was approximately 10 pounds.

Location of Property:

The proporty is located in Gauthier township in the East Kirkland Lake district, Ontario.

Purpose of the Investigation:

The samples were submitted for the purpose of determining the presence of scheelite and the recovery and grade of a scheelite concentrate obtainable by flotation of the ore.

Analysis of the Samples:

| Sample No. | | Tungsten trioxide, | | | | |
|--|---|---|--|--|--|--|
| 1091 | , co | 1,86 | | | | |
| 1092 | c | 2,28 | | | | |
| 1093 | 43 | 0,25 | | | | |
| 1094 | do | 3.08 | | | | |
| 1095 | 113 | 0.70 | | | | |
| era, a same elementar order al elementar de l'elementar de l'eleme | i na nakan projeka popisty a karisty. A na nastronik si | e Sinkson beam den hang samma pasan hangsada behada manjuan Samu mu | | | | |
| Composite | sample, | 1.37 | | | | |
| Emiliary and make the principal process and a second | | | | | | |

Details of Test Work:

Test No. 1. - Plotation.

A portion of the composite sample was treated by flotation. The ore was ground in a ball mill, dilution 4:3. The pulp was transferred to a flotation machine and a sulphide concentrate was recovered.

The pulp was then conditioned and floated to remove a scheelite concentrate. A further addition of reagents resulted in a scavenger concentrate.

None of the concentrates was recleaned. In practice, the scavenger concentrate would be returned to the schoolite flotation feed.

Reagents -

| To the ball mill: | Ib./ton | | |
|-------------------|---------|-----|--|
| Soda ash | æ | 1.0 | |
| Amyl xanthete | 417 | 0,2 | |
| Gresyllo acid | co . | O.O | |

Grind, 85.6 per cent minus 200 mesh.

(Continued on next page)

(Test No. 1, cont'd) -

To sulphide flotation: Lb./ton

Cresylic acid - 0.04

A sulphide concentrate was recovered in 5 minutes.

pH, 8.6.

Then were added:

Soda ash - 1.0
Copper sulphate - 1.0
Amyl manthate - 0.2
Cresylic acid - 0.08

A further concentrate, black in appearance, was recovered in about 7 minutes.

To scheelite flotation: Lb./ton Water glass (sodium silicate) - 1.0 Emmlsol (X-1) - 0.10 Orso - 0.06

A schoolite concentrate was recovered in about 2 minutes.

To recover a scavenger concentrate:

Onso = 0.10 Onso = 0.30

No cresylic acid was required,

The scavenger concentrate was recovered in about 10 minutes. The Orso was added in stages as required and appears to produce a froth without the use of cresylic acid, except that added to produce the sulphide froth.

(Continued on next page)

(Test No. 1, contid) -

| Results: | | | | | | | transati e di VE | |
|--|---|-------------------------------|--------|--------------------------------|-------------|--|------------------|--|
| erani igana kanara tayan sakati di ada ayana ayan ya angaya. Bi padi di badanya saka aranda da s | 6 | Wolght | g is | WOS | 6 | noldindlesseld | 9 | Rection of |
| Products | 2 | hor. | 6 | assay, | 9 | of WOJ, | * | comcem- |
| • | ê | cent | * | per cent | å | per cant | B U | tration |
| THE CONTRACTOR OF THE PROPERTY OF THE ST | S S S S S S S S S S S S S S S S S S S | PREDICE TO PROPERTY OF STREET | 0 | GATTARIOTE SOUTHERN A SOUTH SE | 0 0 0 | ingerigge at 3 color of the first of the factor of extension and | Č. | The state of the s |
| Feed | 9 | 100.0 | 8 | 75.1 | S S | 100.0 | Ó | |
| Sulphide conc. | 0 | 1,5,2 | e o | 0.66 | 0 | 7.3 | 9 | 6.6:1. |
| WOs cone. | e a | 4,3 | 8 | 18.07 | 9 | 38,2 | ts G | 23.0.1. |
| Soavenger conc. | . ? | 8.1 | ě | 9.06 | e iè | 53.5 | 8 | 12,3:1. |
| Flot, tailing | e G | 72,4 | 20 | 0.02 | 0.0 | 1.0 | e G | |
| | 3 | | 3 | | 6 | | G A | en e |

The combined WO_3 and scavenger concentrates assayed 10.11 per cent WO_3 (by calculation).

Conclusion:

The test work indicates that a grade of concentrate acceptable for chemical treatment may be expected from ore similar to that of the shipment. The grade of combined scheelite and scavenger concentrates was about 10 per cent WO3, with a recovery of 91.7 per cent of the scheelite in the ore.

WSJ:GHB.