

OTTAWA

May 3, 1946

IR 2044

**R E P O R T**  
of the

**ORE DRESSING AND METALLURGICAL LABORATORIES**

Investigation No. 2044

Interim Report

Gravity Concentration of Uranium  
Ore from Contact Lake, North  
West Territories.



4p

(Copy No. 5)

1696

May 3rd, 1946

O T T A W A

R E P O R T

of the

ORE DRESSING AND METALLURGICAL LABORATORIES

Investigation No. 2044

Gravity Concentration of Uranium Ore from Contact Lake,  
North West Territories.

\*\*\*\*\*

Shipment:

A shipment of 801 pounds of uranium ore was received November 22, 1945 from the International Uranium Mining Company, Ltd., Toronto, Ontario.

This material was stated to have been hand-cobbed under the direction of Mr. D. A. G. Smith from the adit and first levels of the property of the International Uranium Mining Company, Ltd., at Contact Lake, N. W. T.

Purpose of Investigation:

The company shipped these concentrates mainly to reduce the bulk of the sample in storage, and to produce a concentrate of from 20 to 25 per cent  $U_3O_8$  with as high a recovery of both  $U_3O_8$  and silver as possible.

Sampling and Analysis:

The shipment was crushed  $-1/4$  inch and sampled by standard methods. It was found to contain:

$U_3O_8$  4.8%

Silver (Ag) 636.41 oz/ton

Gravity Concentration of the  $U_3O_8$  and Silver

The  $-1/4$  inch ore was screened on 14, 28, 48, and 65 mesh screens.

The  $-1/4 + 14$  mesh fraction was again sized by screening on 6, 8, and 10 mesh screens. These fractions were jigged in a Hartz type, two-compartment jig.

The only concentrate from the jig of suitable grade was the portion passing the screen of the first compartment of the jig. This is known as a hutch concentrate. These concentrates were saved and the remaining jig products were crushed finer, and reconcentrated at the next finer sizes.

When all fractions had been jigged, down to  $-10+14$  mesh, the jig had recovered the  $+14$  mesh concentrate present in the ore. All the remaining jig product, consisting of the middlings and tailings were crushed  $-14$  mesh and screened on 28, 48, and 65 mesh screens. The  $-14$  mesh fractions were,  $-14+28$ ,  $-28+48$ ,  $-48+65$ ,  $-65$  mesh and included the reduced jig products and ore broken in the original crushing.

These fractions were then concentrated by means of a laboratory type Wilfley table. It was noticed that the free silver concentrated with the  $U_3O_8$ .

The middling and tailing from each fraction was dried, crushed finer and screened. These sized products were concentrated with the corresponding sizes of the original ore. This method was carried out until all fractions had been reduced to -65 mesh. There were table concentrates at various sizes from -14 +65 mesh.

The concentrates from the jig and the +65 mesh concentrates from the Wilfley table were combined, sampled and assayed for  $U_3O_8$  and silver.

The -65 mesh portion of the ore included the -65 mesh fraction from the original crushing and the various jig and Wilfley table products which accumulated as the ore was crushed finer after each concentration.

This material was concentrated on a 1/4 deck Wilfley table. The middlings and tailings were pumped to storage tanks. The overflow from the storage tanks was sampled. The -65 mesh concentrate was sampled and assayed.

The material recovered in the storage tanks was dried and held for possible further treatment to recover the contained silver and  $U_3O_8$ .

There are approximately 590 pounds of -65 mesh Wilfley Table tailings. This material contains 2.1%  $U_3O_8$  and 221.08 oz. of silver per ton, the actual mineral content of the tailing therefore is 12.39 pounds  $U_3O_8$  and 65 oz. of silver.

Due to repeated handling of the jig and table products, drying, crushing and screening, through succeeding finer screen sizes, considerable dust was encountered.

-----

Overall Results of Gravity Concentration

Product	Weights		Assays		Distribution %		Ratio of Concentration
	lb.	%	U <sub>3</sub> O <sub>8</sub>	Ag	U <sub>3</sub> O <sub>8</sub>	Ag	
Shipment	801.0	100.00	4.8	626.41	100.00	100.00	
Loss in Crushing & Screening	10.0	1.25	4.8	626.41	1.25	1.25	
Feed to Concentration	791.0	98.75	4.8	626.41	98.75	98.75	
+65 mesh Conc.	44.6	5.57	*22.5	3112.45	26.11	27.68	17.95:1
-65 mesh Conc.	58.0	7.24	*21.0	2959.89	31.68	34.21	13.8:1
Combined Concentrate **	102.6	12.81	21.6	3026.23	57.79	61.89	7.8:1
-65 Mesh Tailings	590.0	73.66	2.1	221.08	32.23	26.00	
Slimes O'Flow			2.6	143.50			
Loss in Slimes, Dust, etc.	98.4	12.28	3.4	554.32	8.73	10.86	

\* - U<sub>3</sub>O<sub>8</sub> was determined in the concentrates by chemical analysis to check the Geiger Counter. The remaining determinations were made by the Geiger Counter.

\*\* - The analysis of the combined concentrates was calculated.