

TR1-69-71

R. 298

URANIUM ORE—ROSSARDEN

Sample

A small sample of ore weighing 14 lbs. was received on the 27th of July and advised by Clerk, Walker & Stops, Solicitors, of Hobart, by letter of the 26th of July.

The sample contained 3.4 per cent of uranium oxide (U_3O_8). The ore was stated to be obtained from Chwalczyk's Prospect, which had previously been examined, and it is understood that through the Bureau of Mineral Resources the uranium mineral had been identified as pitchblende.

An earlier sample from this prospect was analysed by this department and the analysis is appended to this report for record purposes.

Mineragraphic examination shows that "the uranium mineral is amorphous and individual grains are generally very small, many being of the order of one micron. The pitchblende is closely associated with sericitic and clay minerals. These latter are disposed in masses of minute flakes in which regular masses and particles of the pitchblende are embedded".

Investigation

The sample was submitted for gravity concentration tests as arranged by telephone with Dr. Loftus Hills.

The objective was to make a moderate increase in grade of concentrate to favour maximum recovery.

No responsibility is accepted for the results shown in this report except in so far as they apply to the sample tested. Screen sizes shown refer to British Standard screens, and I.S. fractions 1 to 7 refer to Haultain Infrasizer fractions.

Summary

1. The ore contained 3.4 per cent of U_3O_8 .

2. The sample was crushed by jaw crusher and rolled to minus 10 mesh B.S. size (aperture 0.066 inch) and screened on a 30 mesh B.S. screen.

The plus 30 mesh ore was concentrated in a Denver diaphragm jig and the minus 30 mesh product was classified and concentrated on a Wilfley table. The total concentrate amounted to 21.8 per cent by weight and contained 6.19 per cent of U_3O_8 , and represented a recovery of 39.5 per cent (Test 1).

3. A second gravity concentration test similar to Test 1, but incorporating regrinding of the jig tallings to minus 30 mesh B.S. size (aperture 0.0197 inch) and sizing and concentration by tabling of all the minus 30 mesh products resulted in a total concentrate amounting to 35.7 per cent by weight and contained 5.46 per cent of U_3O_8 , and represented a recovery of 57 per cent (Test 2).

4. The sample shows limited application to gravity concentration. This is caused by the small grain size and amorphous nature of the uranium mineral.

TEST RESULTS

Test No. 1

Minus 10 mesh ore.

Minus 10 + 30 mesh jig concentration.

Minus 30 mesh classification and table concentration.

Product	Per cent		Per cent Distribution	
	Wght.	U ₃ O ₈	U ₃ O ₈	U ₃ O ₈
Jig Concentrate	9.3	6.4		17.4
Table Concentrate	12.5	6.03		22.1
Jig Tailing	52.1	2.6		39.7
Table Tailing	26.1	2.73		20.8
Composite Feed	100.0	3.42		100.0
Total Concentrate	21.8	6.19		39.5

The table concentration was conducted at two sizes and six products and these details are shown below.

Product	Per cent		Per cent Distribution	
	Wght.	U ₃ O ₈	U ₃ O ₈	U ₃ O ₈
Slime Concentrate 1 ..	0.7	20.1		4.1
Slime Concentrate 2 ..	2.7	4.4		3.5
Spigot Concentrate 1 ..	1.1	16.1		5.2
Spigot Concentrate 2 ..	3.1	5.0		4.5
Spigot Concentrate 3 ..	2.3	3.9		2.7
Spigot Concentrate 4 ..	2.6	2.8		2.1
Total Table Concs.	12.5	6.03		22.1

A composite of the jig and table concentrates without the last two low-grade concentrates shows a grade of 7.02 per cent of U₃O₈ and a recovery of 34.7 per cent.

Test No. 2—Minus 10 mesh ore.

Jig concentration of + 30 mesh fraction. Regrinding of jig tailings to minus 30 mesh and classification and table concentration of the total minus 30 mesh jig tailings and ore.

Product	Per cent		Per cent Distribution	
	Wght.	U ₃ O ₈	U ₃ O ₈	U ₃ O ₈
Jig Concentrates	9.3	6.4		17.4
Table Concentrates	26.4	5.13		39.6
Tailing	64.3	2.28		43.0
Composite Feed	100.0	3.42		100.0
Total Concentrate	35.7	5.46		57.0

Analysis of previous high-grade sample, Laboratory Registered
 No. 191, 22.2.56:—

	Per cent
U ₃ O ₈	13.6
P ₂ O ₅	0.2
K ₂ O	0.23
S	0.82
Pb	1.36
Fe	1.59
H ₂ SO ₄ Insoluble	69.7
Zn	0.19
Cu, Bi, Sb, V, Co and rare earths	Nil