TR11-167-168

R. 523 PART 2

OCEAN MINING A.G.: SEABED SAMPLES

Introduction

This report continues the preliminary investigation of the offshore areas and gives the results of tests using a cradle for the primary concentration stage.

Description and Location of the Samples

Reg. No.	*OMAG No.*	*OMAG Description*
662663	11	Hole No. 2, Lavina Point, King Island
662664	12	Hole No. 3, Sea Elephant Bay, King Island.

Results: Sizing Analyses and Assays

Sizing		*Per Cent*			*Assays Per Cent*		
Mesh B.S.S.	*Aperture (Microns)*	*Weight*	*Cum. Weight*		*Sn*	*Ti*	*Zr*
					Reg. No. 662663		
+ 7	2410	1.1	1.1				
14	1200	1.5	2.6				
25	600	1.2	3.8				
52	300	4.4	8.2	*			
100	150	77.6	85.8		0.0005	0.029	0.008
200	75	14.0	99.8				
−200	....	0.2	100.0		0.04	....	0.89
Head	....	100.0	....		0.005	....	<0.1

Sizing		*Per Cent*			*Assays Per Cent*		
Mesh B.S.S.	*Aperture (Microns)*	*Weight*	*Cum. Weight*		*Sn*	*Ti*	*Zr*
					Reg. No. 662664		
+ 7	2410	....	....				
14	1200	....	....				
25	600	0.4	0.4				
52	300	9.3	9.7	*			
100	150	88.5	98.2		0.0004	0.009	0.004
200	75	1.7	99.9				
−200	....	0.1	100.0		0.12	....	0.11
Head	....	100.0	....		<0.005	....	<0.1

* Assays for −52/+200 mesh fractions were determined by tabling and then magnetically separating the table concentrates to yield the non-magnetic products as under:—

	Weight (overall)	*Assay Per Cent*		
Reg. No.	*Per Cent*	*Sn*	*Ti*	*Zr*
662663	2.3	0.019	1.14	0.32
662664	1.2	0.028	0.69	0.33

Cradle Concentration

The cradle seemed a suitable means of making a primary concentrate because of its ability to handle the wide range of sizes found in these samples.

Accordingly four samples were thus treated, the cradle concentrate being tabled and the table concentrate being magnetically separated. The results were:—

Reg. No.	Non-Magnetic Product			
	Weight Per Cent	Assay Per Cent		
		Sn	Ti	Zr
662354	0.4	0.43	0.82	0.92
662356	0.7	0.43	4.2	3.3
662357	0.4	0.15	0.79	1.2
662358	0.1	0.15	12.6	0.85

The cradle tailings of 662354, 6 and 7 were combined and weighed. From this the metal content of the original sand samples can be calculated.

Combined Samples 662354, 662356 and 662357

Product	Weight Per Cent	Assay Per Cent		
		Sn	Ti	Zr
Non-magnetic	0.1	0.36	2.14	0.76
Magnetic	0.1			
Table Concentrate	0.2			
Table Tailing	22.8			
Cradle Concentrate	23			
Cradle Tailing	77			
Head	100	0.0004	0.0021	0.0008

From the previously obtained results for the minus 200 mesh fractions of these samples a composite head value can calculated, namely:—

Reg. No.	Weight Per Cent —200 mesh	Assay Per Cent Sn
662354	0.6	0.20
662356	0.3	0.05
662357	0.1	0.08
Composite	0.33	0.14

From this the head assay of the composite samples can be calculated at 0.00046 per cent tin say 5 p.p.m. (parts per millions is a more convenient unit here). Considering the assumptions necessary in making these calculations this is of the same order as the cradle figure of 4 p.p.m.

Discussion

Sizing and the assaying of the minus 200 mesh fraction presents a quick way of detecting tin in these samples.

The concentration of the minus 52, plus 200 mesh fractions of samples 662663 and 662664 shows that the tin concentration, viz. 4 to 5 p.p.m., in these fractions approximates that of the head samples whereas in the minus 200 mesh fractions the concentration of tin is many times greater.

The cradle, table and magnetic concentration produces a product containing reasonably large quantities of the metals for assay purposes. It would also collect cassiterite, etc., coarser than 200 mesh which the sizing method would not. However, it is considerably longer and therefore time consuming

The grades of the head samples received to date are too low for direct metal determination, hence some concentration is necessary before assaying.