

Section 4 — Petrology

TR 11-127-130

EXAMINATION OF SAMPLES FROM OCEAN MINING A.G.

by G. Everard

Some samples received from Ocean Mining have been examined under the microscope with results as follows:—

Friendly Beaches, 21 feet, Sluice Concentrate, Hole 4

The coarser material consists of dark angular quartz and organic carbonate fragments. The finer material is made up of rounded quartz grains with fine inclusions and organic fragments including sponge spicules with an occasional rounded grain of topaz or zircon.

Boulters Inlet, 12 feet, Hole 7

A pale brown, fine, even grained sand with many white carbonate fragments and some small flakes of white mica.

Under the microscope it consists mainly of sub-rounded grains of quartz, with much opaque and semi-opaque carbonate fragments and a few grains of zircon and spinel.

Hazards Point, 10 feet, Grab, Hole 5

A rather fine, even grained, grey, quartz sand with plentiful shells and shelly fragments.

Under the microscope the sand consists of angular to sub-rounded quartz grains, with carbonates, biotite and zircon, and a little ilmenite.

Hazards Point, 12 feet, Sluice

An even grained, medium to fine grained, grey, quartz sand similar to the above. The sand consists almost entirely of angular and sub-angular quartz grains and organic carbonate fragments, with rare fragments of zircon.

These concentrates are possibly from a granitic source, but the quartz grains have been rounded by long abrasion in the sea in the Friendly Beaches and Hazards Point instances. In all cases the feldspars would have been removed by weathering.

Eight samples of concentrates, divided into light and heavy fractions, i.e., above and below a Specific Gravity of 2.95, received from Ocean Mining A.G. and collected from the eastern half of Ringarooma Bay have been examined with the following results:—

Q1. Float:—Mainly quartz, with a little quartzite and traces of zircon, topaz, garnet and opaque grains.

Sink:—	%		%
ilmenite	50	garnet	5
zircon	32	topaz	4
rutile	7	cassiterite	2

Q2. Float:—Mainly quartz with small amounts of quartzite, topaz, zircon and tourmaline.

Sink:—	%		%
ilmenite	44	rutile	2
zircon	50	cassiterite	1
garnet	3		

Q3. Float:—Large fragments of quartz and feldspar and pieces of granite, finer rounded particles of tourmaline and zircon and rough particles of garnet, many opaques.

Sink:—	%		%
ilmenite	48	cassiterite	3
zircon	43	rutile	2
garnet	3	tourmaline	1

Q4. Float:—Coarse fragments of grey and white quartz and pink feldspar, fines mainly quartz, few opaques, a few grains of garnet and tourmaline.

Sink:—	%		%
ilmenite	65	rutile	3
garnet	17	cassiterite	1
zircon	14		

Q5. Float:—Coarser fragments of granite and grey schist, quartz and grey feldspar, minor amounts of tourmaline, garnet and zircon.

Sink:—	%		%
ilmenite	35	cassiterite	13
garnet	7	topaz	3.5
zircon	40	tourmaline	0.5
rutile	1		

Q6. Float:—Consists mainly of grey and white quartz and white feldspar with traces of heavier minerals, tourmaline, topaz, zircon, garnet and ilmenite.

Sink:—	%		%
ilmenite	46	cassiterite	5
zircon	41	rutile	2
garnet	6		

Q7. Float:—Coarse fragments of quartz and granite, with traces of tourmaline, topaz, garnet, zircon, &c., and minute cubes of magnetite.

Sink:—	%		%
ilmenite	31	rutile	3
zircon	47	cassiterite	2
garnet	16.5	topaz	0.5

Q8. Float:—Coarse particles of white quartz, pink and white feldspar, and particles of granite, with minor amounts of ilmenite, zircon, garnet and topaz.

Sink:—		%		%
ilmenite	.....	51	topaz	.....
zircon	.....	22	rutile	.....
garnet	.....	12	cassiterite	.....
				2

The following further results follow the examination of concentrates of dredged samples received from the Chief Chemist and Metallurgist Reg. Nos. 662716-662725, Ocean Mining A.G.

The light and heavy fractions were separated by flotation methods at the Launceston Laboratory.

In the main the concentrates represent detritus from granite with garnet and pyroxene from other environments.

Ilmenite and rutile may be difficult to distinguish from one another because the rutile is very dark in colour and almost opaque.

Picnic Island

Light fraction:—Quartz, feldspar, and microcrystalline quartz with traces of topaz and tourmaline.

Heavy fraction:—		%		%
Quartz and feldspar	.....	25	Topaz	.....
Ilmenite	.....	50	Rutile	.....
Zircon	.....	20		2

Schouten Waterfall

Light fraction:—Quartz, feldspar and mica with large grains of quartz and feldspar, topaz 1%, zircon 1%, traces of pyroxene.

Heavy fraction:—		%		%
Zircon	.....	45	Garnet	.....
Ilmenite	.....	35	Topaz	.....
Rutile	.....	6	Quartz	.....
				2

Cooks Bay

Light fraction:—Quartz and feldspar with traces of topaz and pyroxene.

Heavy fraction:—		%		%
Zircon	.....	35	Garnet	.....
Ilmenite	.....	30	Topaz	.....
Quartz	.....	17	Rutile	.....
				3

Nine Mile Beach

Light fraction:—Quartz and feldspar with traces of pyroxene and tourmaline.

Heavy fraction:—		%		%
Zircon	.....	40	Ilmenite and	
Garnet	.....	31	Rutile	.....
			Topaz	.....
				1

Isthmus, W. Beach

Light fraction:—Granitic sand with large fragments of quartz, feldspar and muscovite and a trace of tourmaline.

Heavy fraction:—	%		%
Ilmenite and Rutile	50	Tourmaline	2
Zircon	40	Topaz	2
Quartz	4	Garnet	2

W. Freycinet Peninsula

Light fraction:—Large grains of quartz and feldspar with 1% of ilmenite and traces of topaz and garnet.

Heavy fraction:—	%		%
Zircon	42	Topaz	20
Ilmenite and Rutile	32	Garnet	6

Sleepy Bay E

Light fraction:—Quartz sand with feldspar and traces of ilmenite.

Heavy fraction:—	%		%
Zircon	54	Garnet	9
Ilmenite	19	Rutile	5
Topaz	13		

Wineglass Bay

Light fraction:—Quartz and pink feldspar.

Heavy fraction:—	%		%
Ilmenite	30	Garnet	16
Zircon	24	Rutile	5
Topaz	22	Tourmaline	3

Friendly Beaches

Light fraction:—Quartz and feldspar with traces of zircon and cassiterite.

Heavy fraction:—	%		%
Garnet	41	Topaz	14
Zircon	25	Rutile	3
Ilmenite	17		

Butlers Inlet

Light fraction:—Fine even grained buff sand, mainly quartz, some feldspar, traces of zircon, topaz, garnet.

Heavy fraction:—	%		%
Zircon	35	Rutile	4
Ilmenite	27	Cassiterite	3
Garnet	24	Tourmaline	2
Quartz	5		