

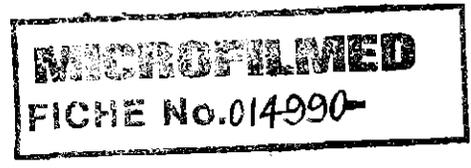
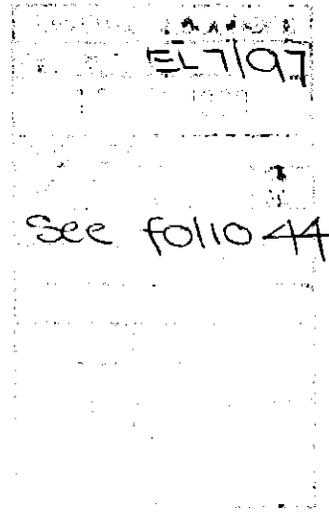
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ANNUAL REPORT-NINE MILE BCH-KING IS  
EL. 7/97 - MINERAL HOLDINGS AUST  
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EXPLORATION LICENCE 7/97  
NINE MILE BEACH  
KING ISLAND



ANNUAL REPORT ON EXPLORATION  
JULY 1998 TO JUNE 1999

ANNUAL REPORT-NINE MILE BCH-KING IS  
EL. 7/97 - MINERAL HOLDINGS AUST  
D UNCAN

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**Plan 1- Locality and Mineral Tenement Map, Nine Mile Beach, King Island**

**Plan 2- Tin and Combined Rutile and Zircon Values in Sediments, Nine Mile Beach**

**Plan 3- Previous Drill Holes and Sediment Thicknesses in offshore NE King Island**

**Appendix**

## EL 7/97- Nine Mile Beach, King Island- Annual Report

### 1.0 Introduction

EL 7/97 was granted to Mineral Holdings Australia Pty Ltd in July 1997 for 5 years to 20th June 2002 over an area of 49 sq km in State Waters off Nine Mile Beach in NE King Island.

The licence was applied for to cover the sediment accumulations of the present delta of the Sea Elephant River in the south and of a beach-parallel structure to the north representing a previous delta or palaeochannel of the river or an ancient strand line of Nine Mile Beach.

The exploration target is heavy minerals sands containing rutile, ilmenite and zircon (as well as possible credits of cassiterite, gold, rare earths and platinoids). Adjacent onshore deposits at Naracoopa and Cowper Point of 25 million tonnes of 5% zircon and rutile were planned to be developed by Australian Titanium Minerals Ltd but that company has recently put the project on the market.

### 2.0 Previous Exploration

A brief review of the Ocean Mining A. G. reports contained in the Mines Department, Hobart was carried out to establish if untested areas of possible heavy mineral sand deposits remained after that company's exploration effort from 1965 to 1969 in the offshore area of Sea Elephant Bay. The final report of exploration recorded that neither of the two major targets selected from survey results was adequately tested by drilling because of persistently heavy sea conditions during the cruises of the vessel Wando River. The two targets were - a major, deep, sediment- filled channel and an area described as Elephant Shoal.

The Ocean Mining exploration consisted of bathymetric and seismic surveys followed by OMAG jetlift sampling by MV Aardvark and drilling by MV Wando River. The sediment thickness contours with the 4-fathom line in red in Plan 3 outline the sediment-filled channel off Sea Elephant Beach with three feeder channels extending from the shore, an area of presumably delta sediments at the mouth of Sea Elephant River, and a channel of sediments some 2km off the Nine Mile Beach with a seaward extension of sediments thickening to the east.

Plan 3 also shows the position of 11 drill holes relative to the areas of sediment (marked in green) thicker than 4-fathoms (24 feet). These are described in turn-

Area A- up to 72 feet thickness of sediments interpreted, structure 4 by 1km  
- not tested by hole 7 on edge

Area B- up to 60 feet thickness of sediments interpreted, delta 3 by 3km  
- tested by holes 1, 2 and 3 (two on edge)

Area C- up to 84 feet thickness of sediments interpreted, main structure 10 by 2km  
- tested by holes 4, 5, 6, 8, 9, 10 and 11

Of the eleven holes drilled, only hole 9 showed elevated values of Ti and Zr (Table 2, Duncan & Rhodes, 1998). Overall, only about half of the core was recovered in the drilling. Ocean Mining concluded that, because of the sea conditions which had curtailed the planned drilling program, the potential of these areas remained largely untested for rutile, zircon and cassiterite.

The present licence was designed to cover only Areas A and B within the 3 nautical mile limit (Plan 1). Area C was omitted as it was not thought possible that the licence in Commonwealth Waters would be granted before the expected date of arrival of the dredge- the Volvox Delta. As it turned out, the dredge was not made available to the project as it was required elsewhere on work of greater priority.

While awaiting the availability of a suitable dredge to carry out a bulk sampling program, it was decided to investigate the seabed with abalone divers using 15 foot boats equipped with GPS for navigation. Mineral Holdings acknowledges the work carried out by the divers- Guy Barnes, King Island and Edward Shelmerdine, Melbourne.

Grab sampling of seabed sediments was carried out initially using a jar collecting about 0.4- 0.6 kg sand (samples 1-88 and A-F) and latterly using a 0.75m long bait pump for greater depth penetration of up to 0.60m (samples 101-191). Samples 101 to 158 were taken by bait pump and separated into top and bottom samples and analysed separately as a comparison. There are gaps in the sample number sequence with 89 to 100 not being used. No sample was taken for numbers 51, 192 and 193 as the bottom was reef.

Samples were collected on east-west lines 900m apart with samples every 500m in Area B closing to 250m over Area A where the target was narrower. At each sample site, GPS location was recorded along with water depth (Appendix) and intermittently the type of sediment sampled and the seabed conditions.

Samples (1-30) were passed through a 5mm screen to remove pebbles or shell fragments and the resulting fine fraction analysed for tin, titanium, zirconium and tungsten using XRF fused disc methods at Temco, Bell Bay. The metal concentrations reported (see Appendix) from the laboratory were then recalculated to give the head grades of the sediments as they lie on the sea floor. Later samples were analysed unscreened.

**Modifications are necessary to the results presented in the annual report of last year (Duncan & Rhodes, 1998). The zircon results are too high due to analytical error.**

Ten seabed samples of sand already analysed by Temco from Ringarooma Bay and King Island were sent to Amdel for comparison in Sn, TiO<sub>2</sub> and ZrO<sub>2</sub>. Whereas the Sn and Ti compared well, the Zr contents as reported by Amdel were consistently down, sometimes nearly by a factor of ten. This resulted in

Temco recalibrating their XRF and the reanalyses of sample splits to produce much more sensitive zircon numbers particularly at low concentrations have been delayed and are still awaited.

### 3.0 Current Exploration

Exploration in the current year has consisted of a continuation of the seabed sampling program for heavy minerals at or near the seabed surface. In total, an additional 33 samples (159-191) have been taken by bait pump to ensure further coverage of the target areas.

Also, during this year, mineralogical studies were conducted on a composite sample prepared by consolidating splits of 33 seabed samples (A, B, C, D, E, F, 31-50 and 52-58).

### 4.0 Results

The results are presented in Tables 1-14 in the Appendix and plotted on Plan 2 where they are colour-coded to reflect the various concentration classes of heavy minerals. The results of the previous year's sampling as already reported in last year's annual report (Duncan & Rhodes, 1998) are reproduced here without the faulty zircon values. The reanalysed zircon contents will be reported when available.

Tables 13 and 14 present the results for the 33 samples taken in the current year.

The TiO<sub>2</sub> plus ZrO<sub>2</sub> concentrations reach up to 1.29% with 3 samples (1%) over 0.6% and 30 samples in 237 (13%) over 0.3%. In the latter category, these values are more widespread in the northern area compared with the southern area (Plan 2). The highest value of 1.29% occurs just outside the EL boundary in the south and inshore.

In the north, the values show no clear correlation with the defined target, while in the south, the values are concentrated west of the target.

The reanalysed zircon contents when available will be added to the above figures. The zircon contents of the most recent (33) samples range from less than 0.01% to 0.17% with the average value being 0.053%.

Tin concentrations reach 100g/t Sn in 4 samples (3%) and over 50g/t in 23 (10%) of 237 samples. The values tend to be grouped towards the north of the northern target and on the south-western edge of the southern target (Plan 2). The highest tin samples are different from those with the highest combined TiO<sub>2</sub> and ZrO<sub>2</sub> values.

Sizing analyses for metal contents were carried out on 6 samples. The analysis shows that there is both coarse (+600µm) and very fine tin (minus 150µm) present. Zircon is mostly in the fine grained range (150-300µm) and is coarser than the titanium minerals (minus 150µm).

The composite sample of seabed sediment amounting to 7.9kg was subject to mineralogical analysis by Independent Diamond Laboratories Pty Ltd, Malaga WA

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247000E

# Plan 1 1:100,000

5 cm

5600300N

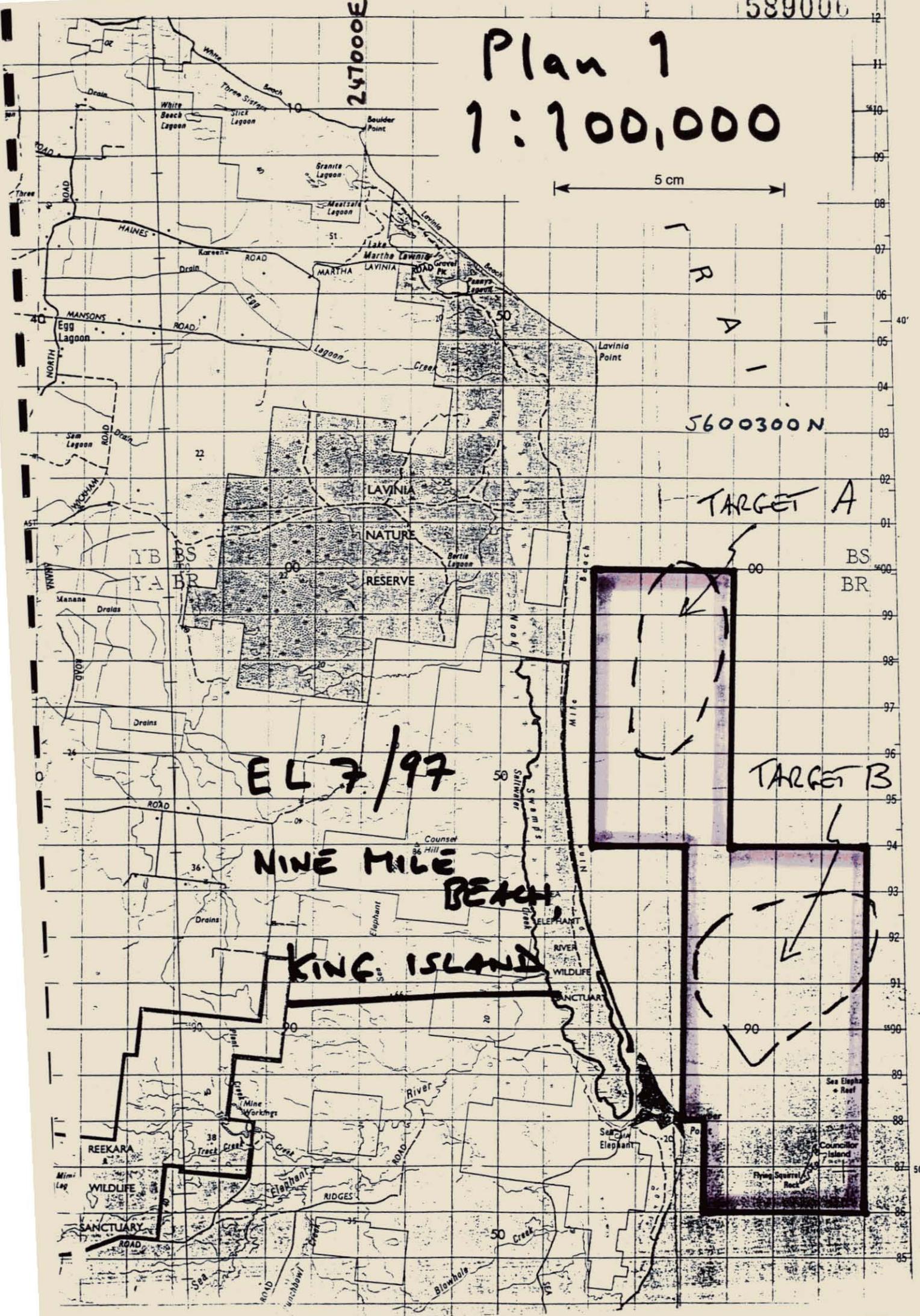
TARGET A

TARGET B

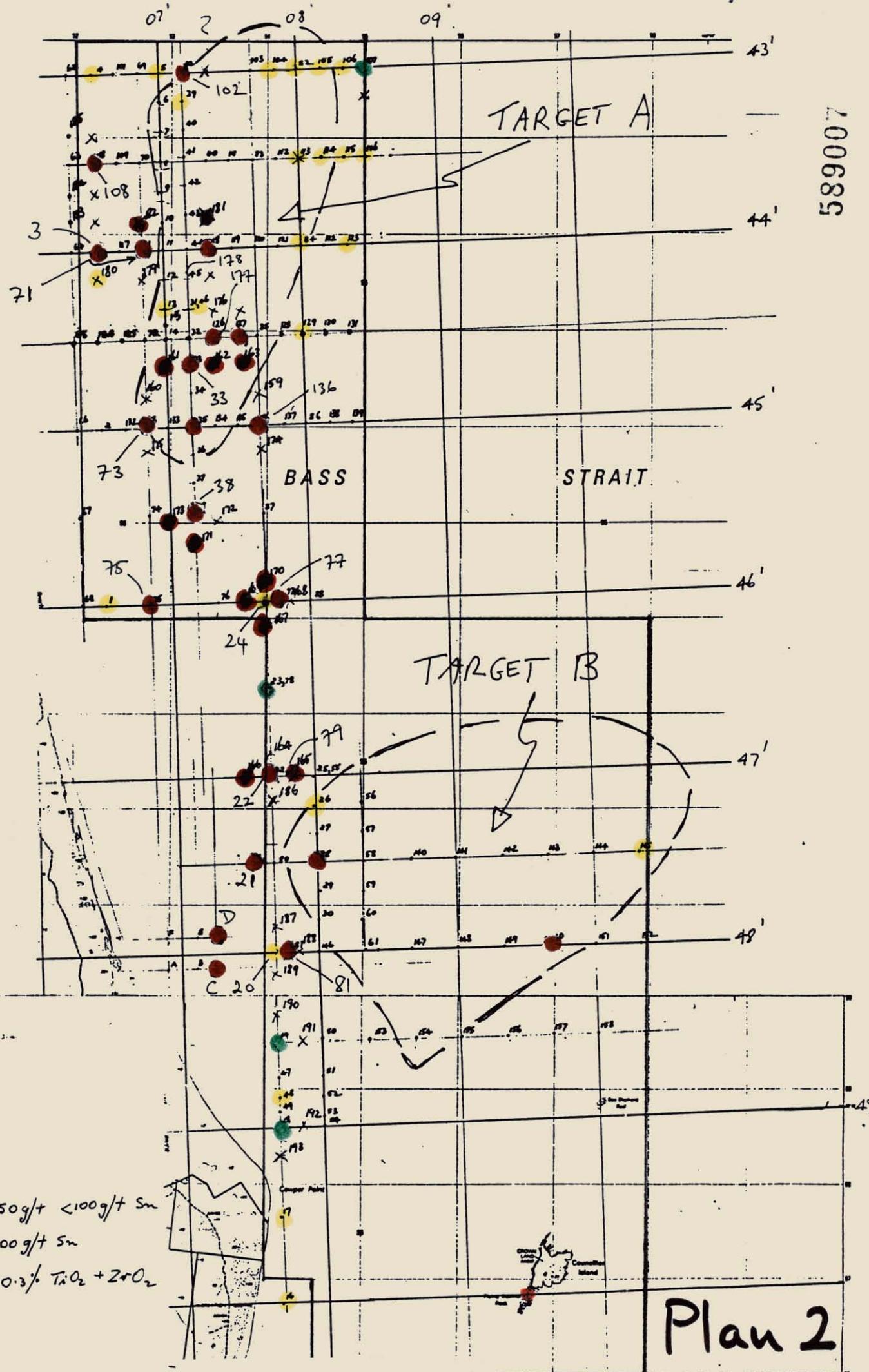
EL 7/97

NINE MILE BEACH

KING ISLAND



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- >50g/t <100g/t Sn
- >100g/t Sn
- >0.3% TiO<sub>2</sub> + ZrO<sub>2</sub>

5 cm

Plan 2

1:50,000



(Appendix). The sample was screened to minus 2mm, then tabled (to 0.909kg) and further reduced by heavy liquids (to 7g). Semi quantitative analysis by a mineralogist gave 0.09% heavies in the following categories A(20-50%) tourmaline, rock fragments; S(1-10%) almandine, O(20 grains -1%) staurolite, F(5-20 grains) zircon, spinel, amphibole, biotite, epidote, kyanite) and T(1-5 grains) rutile, corundum and phosphate. No diamonds or indicator minerals were seen.

## 5. Interpretation

Grab sampling by abalone divers of active seabed sediments has detected 13% of values of combined TiO<sub>2</sub> and ZrO<sub>2</sub> in the range 0.3- 0.6% particularly in the northern Area A. These values are encouraging as they are close to the cut off grades of Eastern Australian heavy mineral deposits at 0.5- 0.8%. Occasional values in the range 0.6- 1.5% are close to the average values of rutile and zircon defined for some of the heavy mineral deposits outlined in adjacent areas on onshore King Island (eg. East, Back Beach and Lanherne Deposits).

Tin values of plus 50g/t in some areas show the possibility of useful credits being available in any mineral concentrates produced.

Examination of the bottom values of the bait pump samples show that some heavy minerals persist at depth at least within the first metre. However, these results cannot be taken as proof of significant heavy mineral grades at depth in the sediments without further drilling or bulk sampling to basement in these areas.

From the limited information to date, there is no real pattern that the higher heavy mineral values are related to either the coarse- or the fine-grained sands.

## 6. Conclusions

Previous exploration by Ocean Mining (Mines Dept Reports TCR 81- 1617, 81-1618 and 81-1619) has shown that areas of potential for mineral sands- particularly rutile and zircon - have been defined offshore from Naracoopa, King Island. These areas have structures containing thicker sediments which have been incompletely tested by drilling with occasional elevated values in titanium and zirconium. Onshore, another company- Australian Titanium Resources- is setting up an operation to develop mineral sand deposits of 25 million tonnes of 5% zircon and rutile.

The current grab sampling program has outlined some values of heavy minerals- zircon and rutile- approaching the cut off concentrations found in established deposits in Eastern Australia. Because of the small sample size, these heavy mineral values are indications only of potential metal concentrations and require follow-up drilling or bulk sampling throughout the sediment column. The seabed sampling results provide hope that sources of heavy minerals and concentrating mechanisms were operating in the past to provide economic deposits in the target areas.

The program has provided additional information on sediments, structures, bedrock, vegetation and depth to the seabed. There is no preference at present for the higher metal values to be with the coarser sediments.

## 7. Future Program

Consideration will be given to completing the seabed sampling program and to follow up the higher metal values. Extensions of the EL by several sq. km. to cover the area of high metal values adjacent and inshore of the EL towards the present mouth of the Sea Elephant River are now impossible due to applications by another company.

While waiting for joint venture participation on the substantial drilling program necessary to test the target areas to basement, Mineral Holdings is considering a bulk sampling program.

Mineral Holdings is monitoring the movements of marine construction vessels currently being operated in Australia by the experienced Dutch company Van Oord ACZ and also the WEST HAM DREDGING Company and is hoping to use the window of opportunity this provides to avoid the costly location fees reflected in long steaming distances to Australia.

Four bulk samples will be taken from Ringarooma Bay and two from King Island. Final choice of sites will be determined following review of the current sea bed sampling program.

This is an exploration program to test for the presence of heavy mineral resources and is not a full scale mining project. The samples will be removed entirely for processing on land. Because the water depth is within storm-surge base, the seabed contours will be reformed by natural processes rapidly. It is therefore appears that water turbidity due to suspended fines in the excess water returned to the sea will be no more than transitory. It is envisaged that fish and crustacean mortality in the immediate vicinity of the sample points will be a tangible but minor possibility.

## REFERENCES

Anon. 1965. Prospectus for a Joint Offshore Mineral Exploration Program in Australia- Tasmania. Ocean Mining A.G., TCR 81-1617.

Anon. 1967. Tasmania Offshore Exploration Program. Operation Reports-March 1966 to December 1967. Ocean Mining A.G., TCR 81-1618

Anon. 1968. Tasmania Offshore Exploration Program. Operation Reports-January 1967 to December 1967. Ocean Mining A. G., TCR 81-1619

Duncan, D. McP. and Rhodes, L. 1998. Annual Report on Exploration. EL 7/97, Nine Mile Beach, King Island.

**APPENDIX**

- : Tables 1-14 —Locations, minus 5mm screen assays, calculated head assays of Sn, TiO<sub>2</sub> and ZrO<sub>2</sub> in sediments (modified zircon results to be reported when available)**
- : Analytical Results from BHP-TEMCO, Bell Bay**
- : Mineralogical Data Sheet (No 287) - King Island Composite  
Independent Diamond Laboratories Pty Ltd**

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Table KI-1Location of samples

Sample No.	Latitude	Longitude	Depth (m)
KI- 1	39.46.00S	144.06.30E ✓	7.3
KI- 2	39.45.00S	144.06.30E ✓	8.3
KI- 3	39.44.00S	144.06.30E ✓	11.1
KI- 4	39.43.00S	144.06.30E ✓	9.4
KI- 5	39.43.00S	144.07.00E ✓	18.6
KI- 6	39.43.10S	144.07.00E ✓	17.8
KI- 7	39.43.20S	144.07.00E ✓	17.7
KI- 8	39.43.30S	144.07.00E ✓	17.1
KI- 9	39.43.40S	144.07.00E ✓	16.7
KI-10	39.43.50S	144.07.00E ✓	16.7
KI-11	39.44.00S	144.07.00E ✓	16.8
KI-12	39.44.10S	144.07.00E ✓	17.0
KI-13	39.44.20S	144.07.00E ✓	18.1
KI-14	39.44.30S	144.07.00E ✓	17.3
KI-15	39.44.26.2S	144.07.00E ✓	17.2

Latitude and longitude readings are in degrees, minutes, seconds and decimal points of a second.

Table KI-2

Samples screened on 5mm screen and -5mm fraction assayed

Sample No.	Total mass of sample		Assays of -5mm fraction		
	g	% -5mm	Sn g/t	TiO <sub>2</sub> %	ZrO <sub>2</sub> %
KI- 1	1105.1	99.8	70	0.15	
KI- 2	1118.5	99.9	< 30	0.09	
KI- 3	1054.6	99.8	30	0.27	
KI- 4	1097.8	100.0	70	0.04	
KI- 5	1284.8	99.3	60	0.06	
KI- 6	1152.5	94.0	< 30	0.08	
KI- 7	1195.0	98.0	< 30	0.17	
KI- 8	1174.2	99.2	< 30	0.14	
KI- 9	1144.2	99.8	30	0.19	
KI-10	1113.2	97.0	50	0.09	
KI-11	1192.1	99.6	< 30	0.16	
KI-12	1282.6	99.6	< 30	0.13	
KI-13	1161.8	99.8	60	0.25	
KI-14	1256.0	99.4	30	0.21	
KI-15	1206.9	98.7	< 30	0.21	

Table KI-3  
Calculated head assays

Sample No.	Calculated Head Assays		
	Sn g/t	TiO <sub>2</sub> %	ZrO <sub>2</sub> %
KI- 1	70	0.15	
KI- 2	< 30	0.09	
KI- 3	30	0.27	
KI- 4	70	0.04	
KI- 5	60	0.06	
KI- 6	< 28	0.08	
KI- 7	< 29	0.17	
KI- 8	< 30	0.14	
KI- 9	30	0.19	
KI-10	49	0.09	
KI-11	< 30	0.16	
KI-12	< 30	0.13	
KI-13	60	0.25	
KI-14	30	0.21	
KI-15	< 30	0.21	

\* Actual head assays

# Calculated head assays the same as -5mm assays

Sample 2-15, AREA A.

Sn less than 100 g/t

TiO<sub>2</sub> ≤ 0.27

ZrO<sub>2</sub> ≤ 0.16

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Table KI-4Location of samples

Sample No.	Latitude	Longitude	Depth (m)
KI-16	39.50.01S	144.07.39.2E	4.0
KI-17	39.49.30S	144.07.47.9E	4.0
KI-18	39.49.00S	144.07.40E ✓	6.0
KI-19	39.48.30S	144.07.40E ✓	13.5
KI-20	39.47.59.2S	144.07.40.5E	15.8
KI-21	39.47.29.6S	144.07.29.3E ✓	15.8
KI-22	39.47.00S	144.07.40E ✓	17.4
KI-23	39.46.29.2S	144.07.40.3E ✓	17.8
KI-24	39.45.59.6S	144.07.40.3E ✓	19.3
KI-25	39.47.01.7S	144.07.59.6E ✓	18.2
KI-26	39.47.10.8S	144.07.59.5E ✓	17.6
KI-27	39.47.21.6S	144.08.00E ✓	16.6
KI-28	39.47. <sup>3</sup> <del>4</del> <sup>30.5</sup> 1.6S	144.07.58.4E ✓	17.0
KI-29	39.47.41.6S	144.08.01.3E ✓	16.7
KI-30	39.47.50.5S	144.08.00.1E ✓	15.5

Latitude and longitude readings are in degrees, minutes, seconds and decimal points of a second.

Table KI-5Samples screened on 5mm screen and -5mm fraction assayed

Sample No.	Total mass of sample		Assays of -5mm fraction		
	g	% -5mm	Sn g/t	TiO <sub>2</sub> %	ZrO <sub>2</sub> %
KI-16	1076.0	99.9	80	0.07	
KI-17	970.3	100.0	60	0.23	
KI-18	1226.8	100.0	100	0.11	
KI-19	1042.1	100.0	100	0.26	
KI-20	1088.8	100.0	90	0.26	
KI-21	1194.9	99.9	< 30	0.38	
KI-22	1108.0	98.4	50	0.71	
KI-23	1304.6	92.1	110	0.03	
KI-24	1099.6	98.9	60	0.28	
KI-25	1230.6	99.9	40	0.19	
KI-26	1202.0	93.2	60	0.13	
KI-27	1392.4	91.5	30	0.28	
KI-28	1191.3	97.8	50	0.44	
KI-29	1094.1	99.9	< 30	0.13	
KI-30	1458.4	97.0	< 30	0.09	

Table KI-6  
Calculated head assays

Sample No.	Calculated Head Assays		
	Sn g/t	TiO <sub>2</sub> %	ZrO <sub>2</sub> %
KI-16	80	0.07	
KI-17	60	0.23	
KI-18	100	0.11	
KI-19	100	0.26	
KI-20	90	0.26	
KI-21	< 30	0.38	
KI-22	49	0.70	
KI-23	101	0.03	
KI-24	59	0.28	
KI-25	40	0.19	
KI-26	56	0.12	
KI-27	27	0.26	
KI-28	49	0.43	
KI-29	< 30	0.13	
KI-30	< 29	0.09	

\* Actual head assays

# Calculated head assays the same as -5mm assays

17 - 30, AREA B

Sn some > 100 ppm.

TiO<sub>2</sub> < 0.43%

ZrO<sub>2</sub> < 0.21%

Table KI-7

Location of samples

Sample No.	Latitude	Longitude	Depth (m)
KI- 31	39.44.20S	144.07.10E	19.0
KI- 32	39.44.30S	144.07.10E	19.0
KI- 33	39.44.40S	144.07.10E	18.8
KI- 34	39.44.50S	144.07.10E	20.0
KI- 35	39.45.00S	144.07.10E	17.5
KI- 36	39.45.10S	144.07.10E	19.0
KI- 37	39.45.20S	144.07.10E	18.0
KI- 38	39.45.30S	144.07.10E	17.5
KI- 39	39.43.10S	144.07.10E	19.8
KI- 40	39.43.20S	144.07.10E	20.4
KI- 41	39.43.30S	144.07.10E	18.6
KI- 42	39.43.40S	144.07.10E	18.2
KI- 43	39.43.50S	144.07.10E	17.9
KI- 44	39.44.00S	144.07.10E	17.8
KI- 45	39.44.10S	144.07.10E	18.6
KI- 46	39.44.20S	144.07.10E	18.0
KI- 47	39.48.38S	144.07.40E	11.0
KI- 48	39.48.46S	144.07.40E	10.0
KI- 49	39.48.54S	144.07.40E	5.0
KI- 50	39.48.30S	144.08.00E	12.5
KI- 51	39.48.38S	144.08.00E	11.3
KI- 52	39.48.46S	144.08.00E	11.0
KI- 53	39.48.56S	144.08.00E	10.0
KI- 54	39.49.00S	144.08.00E	9.5
KI- 55	39.47.00S	144.08.00E	17.1
KI- 56	39.47.10S	144.08.20E	17.0
KI- 57	39.47.20S	144.08.20E	16.4
KI- 58	39.47.30S	144.08.20E	16.2
KI- 59	39.47.40S	144.08.20E	16.0
KI- 60	39.47.50S	144.08.20E	15.4
KI- 61	39.48.00S	144.08.20E	15.0
KI- 62	39.43.00S	144.06.21E	4.4
KI- 63	39.43.30S	144.06.20E	5.1
KI- 64	39.44.00S	144.06.20E	5.6
KI- 65	39.44.30S	144.06.20E	5.6
KI- 66	39.45.00S	144.06.20E	6.0
KI- 67	39.45.30S	144.06.20E	5.0
KI- 68	39.46.00S	144.06.20E	4.0
KI- 69	39.43.00S	144.06.50E	16.6
KI- 70	39.43.30S	144.06.50E	15.8
KI- 71	39.44.00S	144.06.50E	15.4
KI- 72	39.44.30S	144.06.50E	15.8
KI- 73	39.45.00S	144.06.50E	14.3
KI- 74	39.45.30S	144.06.50E	13.7
KI- 75	39.46.00S	144.06.50E	12.2
KI- 76	39.46.00S	144.07.20E	17.9
KI- 77	39.46.00S	144.07.40E	18.1

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Sample No.	Latitude	Longitude	Depth(m)
KI- 78	39.46.30S	144.07.40E	16.6
KI- 79	39.47.00S	144.07.40E	16.6
KI- 80	39.47.30S	144.07.40E	15.0
KI- 81	39.48.00S	144.07.40E	13.9
KI- 82	39.43.00S	144.08.00E	24.5
KI- 83	39.43.30S	144.07.40E	21.4
KI- 84	39.44.00S	144.08.00E	21.5
KI- 85	39.44.30S	144.07.40E	21.0
KI- 86	39.45.00S	144.08.00E	21.0
KI- 87	39.45.30S	144.07.40E	20.0
KI- 88	39.46.00S	144.08.00E	19.7
KI- A	39.48.05.2S	144.06.54.3E	4.0
KI- B	39.48.05.7S	144.07.05.2E	7.0
KI- C	39.48.05.5S	144.07.15E	10.0
KI- D	39.47.55S	144.07.15E	11.0
KI- E	39.47.55S	144.07.05E	6.3
KI- F	39.47.55S	144.06.55E	3.3

Latitude and longitude readings are in degrees, minutes, seconds and decimal points of a second.

Table KI-8Description of bottom

Sample No.	
KI- 31	Coarse gravel to 250mm then dark sand
KI- 32	Sand
KI- 33	Coarse gravel
KI- 34	Gravel and sand
KI- 35	Sand
KI- 36	Sand
KI- 37	300mm only - hit layer of shell
KI- 38	Ditto
KI- 39	Gravel and sand
KI- 40	Sand
KI- 41	Sand
KI- 42	Sand
KI- 43	Sand
KI- 44	Sand
KI- 45	Soft sand
KI- 46	Sand
KI- 47	Fine sand
KI- 48	Sand
KI- 49	Sand
KI- 50	Patches of reef
KI- 51	No sample - only reef
KI- 52	Sand
KI- 53	Sand
KI- 54	Sand
KI- 55	Sand
KI- 56	Sand
KI- 57	Sand
KI- 58	Sand
KI- 59	Sand
KI- 60	Sand
KI- 61	Sand
KI- 62	Sand
KI- 63	Sand
KI- 64	Sand
KI- 65	Sand
KI- 66	Sand
KI- 67	Sand
KI- 68	Sand
KI- 69	Sand
KI- 70	Sand
KI- 71	Sand
KI- 72	Sand
KI- 73	Sand
KI- 74	Sand
KI- 75	Sand
KI- 76	Gravel - hit shell at 350mm
KI- 77	Coarse sand

## Sample No.

KI- 78	Coarse sand
KI- 79	Coarse sand - bottom of core sample hard
KI- 80	Coarse sand
KI- 81	Coarse sand
KI- 82	Sand and gravel
KI- 83	Sand and gravel
KI- 84	Sand and gravel
KI- 85	Sand and gravel
KI- 86	Sand and gravel
KI- 87	Sand and gravel
KI- 88	Sand and gravel
KI- A	Fine sand
KI- B	Fine sand
KI- C	Fine sand
KI- D	Fine sand
KI- E	Fine sand
KI- F	Fine sand

Table KI-9

Sample No.	Sn g/t	Assays	
		TiO <sub>2</sub> %	ZrO <sub>2</sub> %
KI-31	< 30	0.06	
KI-32	< 30	0.23	
KI-33	< 30	0.35	
KI-34	< 30	0.19	
KI-35	< 30	0.43	
KI-36	< 30	0.16	
KI-37	< 30	0.25	
KI-38	< 30	0.31	
KI-39	60	0.09	
KI-40	< 30	0.09	
KI-41	< 30	0.10	
KI-42	< 30	0.12	
KI-43	< 30	0.22	
KI-44	< 30	0.24	
KI-45	< 30	0.17	
KI-46	50	0.21	
KI-47	< 30	0.18	
KI-48	50	0.21	
KI-49	< 30	0.09	
KI-50	30	0.26	
KI-51	No sample		
KI-52	< 30	0.16	
KI-53	< 30	0.17	
KI-54	< 30	0.15	
KI-55	< 30	0.13	
KI-56	< 30	0.12	
KI-57	< 30	0.09	
KI-58	< 30	0.11	
KI-59	< 30	0.13	
KI-60	< 30	0.09	
KI-61	< 30	0.09	
KI-62	< 30	0.03	
KI-63	< 30	0.03	
KI-64	< 30	0.06	
KI-65	< 30	0.12	
KI-66	< 30	0.12	
KI-67	< 30	0.12	
KI-68	< 30	0.07	
KI-69	< 30	0.12	
KI-70	< 30	0.16	
KI-71	< 30	0.30	
KI-72	< 30	0.15	
KI-73	< 30	0.67	
KI-74	< 30	0.20	
KI-75	< 30	0.33	
KI-76	< 30	0.20	
KI-77	< 30	0.56	

589023

Sample No.	Sn g/t	Assays	
		TiO <sub>2</sub> %	ZrO <sub>2</sub> %
KI-78	< 30	0.26	
KI-79	< 30	0.30	
KI-80	< 30	0.25	
KI-81	30	0.41	
KI-82	70	0.10	
KI-83	< 30	0.18	
KI-84	50	0.12	
KI-85	< 30	0.24	
KI-86	< 30	0.23	
KI-87	< 30	0.20	
KI-88	< 30	0.22	
KI- A	< 30	0.14	
KI- B	40	0.13	
KI- C	< 30	1.29	
KI- D	< 30	0.56	
KI- E	30	0.12	
KI- F	< 30	0.19	

Table KI-10Location of samples

Site No.	Latitude	Longitude
KI- 101	39.43.00S	144.06.40E
KI- 102	39.43.00S	144.07.10E
No samples	39.43.00S	144.07.20E
No samples	39.43.00S	144.07.30E
KI- 103	39.43.00S	144.07.40E
KI- 104	39.43.00S	144.07.50E
KI- 105	39.43.00S	144.08.10E
KI- 106	39.43.00S	144.08.20E
KI- 107	39.43.00S	144.08.30E
KI- 108	39.43.30S	144.06.30E
KI- 109	39.43.30S	144.06.40E
KI- 110	39.43.30S	144.07.20E
KI- 111	39.43.30S	144.07.30E
KI- 112	39.43.30S	144.07.50E
KI- 113	39.43.30S	144.08.00E
KI- 114	39.43.30S	144.08.10E
KI- 115	39.43.30S	144.08.20E
KI- 116	39.43.30S	144.08.30E
KI- 117	39.44.00S	144.06.40E
KI- 118	39.44.00S	144.07.20E
KI- 119	39.44.00S	144.07.30E
KI- 120	39.44.00S	144.07.40E
KI- 121	39.44.00S	144.07.50E
KI- 122	39.44.00S	144.08.10E
KI- 123	39.44.00S	144.08.20E
KI- 124	39.44.30S	144.06.30E
KI- 125	39.44.30S	144.06.40E
KI- 126	39.44.30S	144.07.20E
KI- 127	39.44.30S	144.07.30E
KI- 128	39.44.30S	144.07.50E
KI- 129	39.44.30S	144.08.00E
KI- 130	39.44.30S	144.08.10E
KI- 131	39.44.30S	144.08.20E
KI- 132	39.45.00S	144.06.40E
KI- 133	39.45.00S	144.07.00E
KI- 134	39.45.00S	144.07.20E
KI- 135	39.45.00S	144.07.30E
KI- 136	39.45.00S	144.07.40E
KI- 137	39.45.00S	144.07.50E
KI- 138	39.45.00S	144.08.10E
KI- 139	39.45.00S	144.08.20E
KI- 140	39.47.30S	144.08.40E
KI- 141	39.47.30S	144.09.00E
KI- 142	39.47.30S	144.09.20E
KI- 143	39.47.30S	144.09.40E
KI- 144	39.47.30S	144.10.00E
KI- 145	39.47.30S	144.10.20E

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Site No.	Latitude	Longitude
KI- 146	39.48.00S	144.08.00E
KI- 147	39.48.00S	144.08.40E
KI- 148	39.48.00S	144.09.00E
KI- 149	39.48.00S	144.09.20E
KI- 150	39.48.00S	144.09.40E
KI- 151	39.48.00S	144.10.00E
KI- 152	39.48.00S	144.10.20E
KI- 153	39.48.30S	144.08.20E
KI- 154	39.48.30S	144.08.40E
KI- 155	39.48.30S	144.09.00E
KI- 156	39.48.30S	144.09.20E
KI- 157	39.48.30S	144.09.40E
KI- 158	39.48.30S	144.10.00E

Latitude and longitude readings are in degrees, minutes,  
and seconds.

Table KI-12

Sample No.	Sn g/t	Assays	
		TiO <sub>2</sub> %	ZrO <sub>2</sub> %
KI-101 B	< 30	0.10	
KI-101 T	< 30	0.13	
KI-102 T	< 30	0.34	
KI-103 B	< 30	0.05	
KI-103 T	30	0.06	
KI-104 B	50	0.10	
KI-104 T	60	0.10	
KI-105 B	60	0.09	
KI-105 T	30	0.11	
KI-106 B	60	0.10	
KI-106 T	90	0.10	
KI-107 B	100	0.14	
KI-107 T	100	0.16	
KI-108 B	< 30	0.11	
KI-108 T	< 30	0.30	
KI-109 B	30	0.06	
KI-109 T	< 30	0.05	
KI-110 B	< 30	0.08	
KI-110 T	< 30	0.08	
KI-111 B	< 30	0.06	
KI-111 T	< 30	0.09	
KI-112 B	< 30	0.10	
KI-112 T	< 30	0.12	
KI-113 B	< 30	0.06	
KI-113 T	< 30	0.08	
KI-114 B	60	0.07	
KI-114 T	< 30	0.08	
KI-115 B	60	0.07	
KI-115 T	30	0.09	
KI-116 B	50	0.11	
KI-116 T	40	0.11	
KI-117 B	< 30	0.24	
KI-117 T	< 30	0.22	
KI-118 B	< 30	0.16	
KI-118 T	< 30	0.47 <sup>17</sup>	
KI-119 B	< 30	0.13	
KI-119 T	< 30	0.16	
KI-120 B	< 30	0.14	
KI-120 T	< 30	0.16	
KI-121 B	< 30	0.15	
KI-121 T	< 30	0.16	
KI-122 B	< 30	0.10	
KI-122 T	< 30	0.10	
KI-123 B	60	0.08	
KI-123 T	< 30	0.11	
KI-124 B	< 30	0.14	
KI-124 T	< 30	0.09	

589027

Sample No.	Sn g/t	Assays	
		TiO <sub>2</sub> %	ZrO <sub>2</sub> %
KI-125 B	< 30	0.06	
KI-125 T	< 30	0.15	
KI-126 B	< 30	0.26	
KI-126 T	< 30	0.31	
KI-127 B	< 30	0.31	
KI-127 T	< 30	0.38	
KI-128 B	< 30	0.20	
KI-128 T	< 30	0.22	
KI-129 B	< 30	0.05	
KI-129 T	50	0.06	
KI-130 B	< 30	0.21	
KI-130 T	< 30	0.25	
KI-131 B	30	0.11	
KI-131 T	< 30	0.11	
KI-132 B	< 30	0.07	
KI-132 T	< 30	0.10	
KI-133 B	< 30	0.21	
KI-133 T	< 30	0.23	
KI-134 B	< 30	0.06	
KI-134 T	< 30	0.08	
KI-135 B	< 30	0.05	
KI-135 T	< 30	0.21	
KI-136 B	< 30	0.27	
KI-136 T	< 30	0.46	
KI-137 T	< 30	0.14	
KI-138 B	< 30	0.11	
KI-138 T	< 30	0.10	
KI-139 B	< 30	0.24	
KI-139 T	< 30	0.26	
KI-140 B	< 30	0.07	
KI-140 T	< 30	0.07	
KI-141 B	< 30	0.13	
KI-141 T	< 30	0.13	
KI-142 B	< 30	0.10	
KI-142 T	< 30	0.08	
KI-143 B	< 30	0.03	
KI-143 T	< 30	0.05	
KI-144 T	< 30	0.02	
KI-145 T	60	0.05	
KI-146 B	< 30	0.14	
KI-146 T	< 30	0.13	
KI-147 B	< 30	0.23	
KI-147 T	< 30	0.18	
KI-148 B	< 30	0.22	
KI-148 T	< 30	0.11	
KI-149 B	< 30	0.15	
KI-149 T	< 30	0.12	
KI-150 B	< 30	0.27	
KI-150 T	< 30	0.15	

589028

Sample No.	Sn g/t	Assays	
		TiO <sub>2</sub> %	ZrO <sub>2</sub> %
KI-151 B	< 30	0.07	
KI-151 T	< 30	0.04	
KI-152 T	< 30	0.03	
KI-153 B	< 30	0.04	
KI-153 T	< 30	0.05	
KI-154 B	< 30	0.06	
KI-154 T	< 30	0.07	
KI-155 B	< 30	0.06	
KI-155 T	< 30	0.08	
KI-156 B	< 30	0.05	
KI-156 T	< 30	0.07	
KI-157 B	< 30	0.09	
KI-157 T	< 30	0.07	
KI-158 B	< 30	0.05	
KI-158 T	< 30	0.04	
Councillor Island	< 30	0.39	

Table KI-13

Location of samples

Site No.	Latitude	Longitude	Depth(m)	Bottom
KI- 159	39.44.50S	144.07.40E	20.0	Coarse sand
KI- 160	39.44.50S	144.06.50E	15.5	Scattered reef, coarse grit
KI- 161	39.44.40S	144.07.00E	16.0	Coarse grit
KI- 162	39.44.40S	144.07.20E	18.0	Coarse grit
KI- 163	39.44.40S	144.07.30E	18.7	Coarse grit
KI- 164	39.46.50S	144.07.40E	17.0	Coarse sand
KI- 165	39.47.00S	144.07.50E	17.4	Coarse sand
KI- 166	39.47.00S	144.07.30E	16.4	Coarse sand
KI- 167	39.46.10S	144.07.40E	18.0	Coarse sand
KI- 168	39.46.00S	144.07.50E	19.2	Coarse sand
KI- 169	39.46.00S	144.07.30E	17.8	Coarse sand
KI- 170	39.45.50S	144.07.40E	17.0	Coarse sand
KI- 171	39.45.40S	144.07.10E	16.6	Coarse sand
KI- 172	39.45.30S	144.07.20E	17.8	Coarse sand
KI- 173	39.45.30S	144.07.00E	15.5	Coarse sand
KI- 174	39.45.10S	144.07.40E	20.6	Coarse sand
KI- 175	39.45.10S	144.06.50E	15.3	Coarse sand
KI- 176	39.44.20S	144.07.20E	18.7	Coarse sand
KI- 177	39.44.30S	144.07.20E	19.3	Coarse sand
KI- 178	39.44.10S	144.07.10E	18.4	Coarse sand
KI- 179	39.44.10S	144.06.50E	15.3	Coarse sand
KI- 180	39.44.10S	144.06.30E	9.6	Fine sand
KI- 181	39.43.50S	144.07.20E	18.7	Coarse sand
KI- 182	39.43.50S	144.06.50E	14.8	Coarse sand
KI- 183	39.43.50S	144.06.20E	5.4	Fine sand
KI- 184	39.43.40S	144.06.20E	5.1	Fine sand
KI- 185	39.43.20S	144.06.20E	4.6	Fine sand
KI- 186	39.47.10S	144.07.40E	17.9	Coarse sand
KI- 187	39.47.50S	144.07.40E	15.5	Coarse sand
KI- 188	39.48.00S	144.07.50E	15.0	Coarse sand
KI- 189	39.48.10S	144.07.40E	14.8	Coarse sand
KI- 190	39.48.20S	144.07.40E	13.4	Coarse sand
KI- 191	39.48.30S	144.07.50E	12.6	Coarse sand
KI- 192	39.49.00S	144.07.50E	11.5	Reef
KI- 193	39.49.10S	144.07.40E	10.0	Reef

Latitude and longitude readings are in degrees, minutes, and seconds.

Table KI-14

Sample No.	Sn g/t	Assays		Core Recovery %	Depth m
		TiO <sub>2</sub> %	ZrO <sub>2</sub> %		
KI-159	< 30	0.24	0.048	83.3	0.58
KI-160	< 30	0.12	0.022	89.0	0.62
KI-161	< 30	0.34	0.098	95.2	0.66
KI-162	< 30	0.44	0.130	95.0	0.66
KI-163	< 30	0.31	0.059	32.4	0.57
KI-164	< 30	0.24	0.054	34.8	0.24
KI-165	< 30	0.24	0.055	88.9	0.62
KI-166	< 30	0.56	0.170	83.3	0.58
KI-167	< 30	0.28	0.098	74.8	0.52
KI-168	30	0.14	0.032	67.5	0.47
KI-169	< 30	0.31	0.031	89.1	0.62
KI-170	< 30	0.23	0.076	86.7	0.60
KI-171	< 30	0.40	0.140	63.1	0.44
KI-172	< 30	0.21	0.072	82.5	0.57
KI-173	< 30	0.25	0.093	98.6	0.69
KI-174	< 30	0.03	< 0.01	88.1	0.61
KI-175	< 30	0.16	0.052	93.7	0.65
KI-176	< 30	0.21	0.052	81.5	0.57
KI-177	< 30	0.09	0.055	71.1	0.50
KI-178	< 30	0.15	0.017	81.5	0.57
KI-179	< 30	0.15	0.033	65.6	0.46
KI-180	80	0.12	0.042	69.3	0.48
KI-181	< 30	0.09	0.024	95.8	0.67
KI-182	< 30	0.37	0.099	74.2	0.52
KI-183	< 30	0.13	< 0.01	77.9	0.54
KI-184	< 30	0.09	0.013	66.6	0.46
KI-185	< 30	0.10	0.018	79.5	0.55
KI-186	< 30	0.11	0.036	99.4	0.69
KI-187	< 30	0.13	0.028	84.0	0.59
KI-188	< 30	0.13	0.043	96.4	0.67
KI-189	< 30	0.09	0.023	102.8	0.70
KI-190	< 30	0.11	0.019	107.1	0.70
KI-191	< 30	0.09	0.013	105.1	0.70

CHEMICAL LABORATORY : INPLANT ANALYSIS REPORT

589031

DATE: 14.12.98

TEMCO

REFERENCE: Mineral Sands samples

TO: Neil Thomas

SAMPLE IDENT.	Sn(ppm)	TiO <sub>2</sub> (%)	ZrO <sub>2</sub> (%)	Dry Wt (g)
Q 973 (KI 159)	<30	0.24	0.048	1554
Q 974 (KI 160)	<30	0.12	0.022	1660
Q 975 (KI 161)	<30	0.34	0.098	1777
Q 976 (KI 162)	<30	0.44	0.130	1772
Q 977 (KI 163)	<30	0.31	0.059	1538
Q 978 (KI 164)	<30	0.24	0.054	850
Q 979 (KI 165)	<30	0.24	0.055	1659
Q 980 (KI 166)	<30	0.56	0.170	1555
Q 981 (KI 167)	430	0.28	0.098	1396
Q 982 (KI 168)	30	0.14	0.032	1259
Q 983 (KI 169)	<30	0.31	0.031	1663
Q 984 (KI 170)	<30	0.23	0.076	1617
Q 985 (KI 171)	<30	0.40	0.140	1177
Q 986 (KI 172)	<30	0.21	0.072	1539
Q 987 (KI 173)	<30	0.25	0.093	1939
Q 988 (KI 174)	<30	0.03	<0.01	1644
Q 989 (KI 175)	<30	0.16	0.052	1746
Q 990 (KI 176)	<30	0.21	0.052	1521
Q 991 (KI 177)	<30	0.09	0.056	1327
Q 992 (KI 178)	<30	0.15	0.017	1521
Q 993 (KI 179)	<30	0.15	0.033	1225
Q 994 (KI 180)	60	0.12	0.042	1293
Q 995 (KI 181)	<30	0.09	0.024	1787
Q 996 (KI 182)	<30	0.37	0.099	1384
Q 997 (KI 183)	<30	0.13	<0.01	1453
Q 998 (KI 184)	<30	0.09	0.013	1242
Q 999 (KI 185)	<30	0.10	0.018	1483
Q 1000 (KI 186)	<30	0.11	0.036	1854
Q 1001 (KI 187)	<30	0.13	0.028	1568
Q 1002 (KI 188)	<30	0.13	0.043	1798
Q 1003 (KI 189)	<30	0.09	0.023	1919
Q 1004 (KI 190)	<30	0.11	0.019	1898
Q 1005 (KI 191)	<30	0.09	0.013	1962

COMMENTS:

ANALYST: DG, AH, RM

CHEMIST:

**DIAMOND INDICATOR DATA**

Sample No: **ABCDEF 31-50 52-88**

Job No: **287**

(Composite)

589032

Date Started: 23/4/99  
 Processing Weights  
 Initial: 7.9 kg  
 +2mm: 0.186 kg  
 After Tabling: 0.909 kg  
 After IBE: 7 g

Negative

Positive (Other)

Ø/mm	>2	>1	>0.8	>0.5	>0.4	>0.3	<0.3	Fractions Analysed(%)	Observed only(o)	Scanned only(s)					
Crush								Ø/mm	>1	>0.8	>0.5	>0.4	>0.3	>0.2	>0.1
Table	x	x	x	x	x	x	x	NM	x	x	x	x	x		
HL	x	x	x	x	x	x		M4	x	x	x	x	x		
Max								M5	x	x	x	x	x		

**Kimberlite, Lamproite Indicators**

Sierra Size/mm	>2	>1	>0.8	>0.5	>0.4	>0.3	>0.2	>0.1	Weight/µm	Morphology
Diamond										
Chrome Diopside										
Chromite										
Phlogopite										
Picroilmenite										
Pyrope										

**Detailed Descriptions**

Mineral	Size mm	Description

**Other Minerals (Volume% after Heavy Liquid-HL)**

Almandine	S	Orthopyroxene	Spinel	F	Apatite	
Andradite		Clinopyroxene	Magnetite		Monazite	
Grossular		Amphibole	F	Leucosene	Phosphate	T
Spessartine		Biotite	F			
		Prehnite		Limonite	Rock Fragments	A
Andalusite		Corundum	T	Pyrite(psuedo)		
Kyanite	F	Hematite		Pyrite	Zircon	F
Sillimanite		Ilmenite		Barite	Titanite	
Staurolite	O	Rutile	T	Anhydrite		
Epidote	F	Anatase				
Tourmaline	A	Brookite		Magnesite		

P >50%    A 20-50%    C 10-20%    S 1-10%    O 20grains-1%    F 5-20grains    T 1-5grain

Mineralogist/Observer JT/MES

Date Completed: 28/4/99



Independent Diamond Laboratories Pty Ltd

ACN 005 948 185

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