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FIRST AND FINAL REPORT
EXPLORATION LICENCE 4/84
STRAHAN, TASMANIA

MICROFILMED
 by

T.G. SUMMONS & A.C. OFFENBERG

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1. Department of Mines, Hobart.
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July, 1985

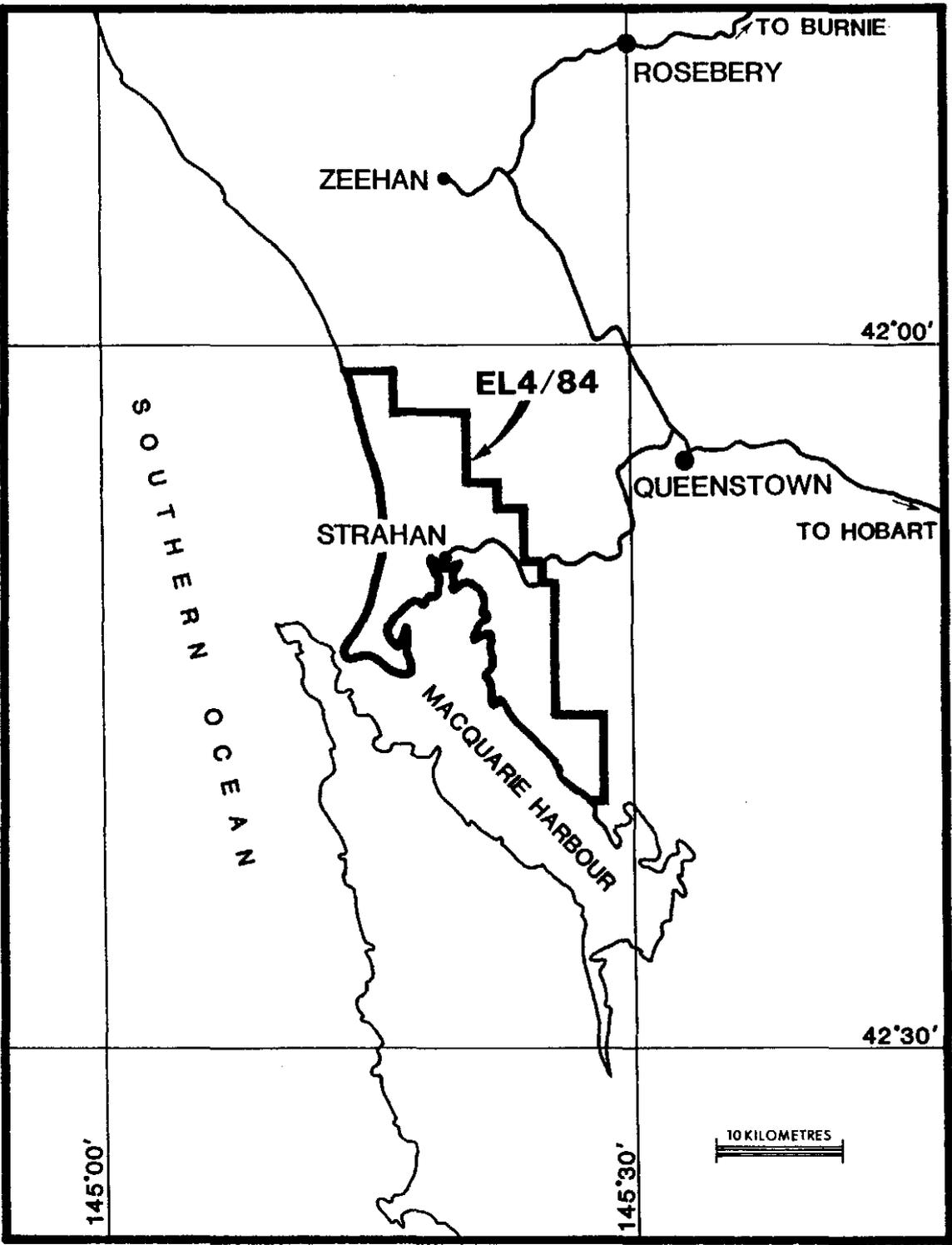
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APPENDIX 1

Report by T.G. Summons on
HEAVY MINERAL EXPLORATION, EL 4/84
(Newmont Holdings Pty. Ltd.)
WESTERN TASMANIA

PLANS

1. COASTAL GEOMORPHOLOGY, SAMPLE SITES AND ZONES OF HEAVY MINERAL DISTRIBUTION.
2. CROSS SECTION OF THE HENTY RIVER POINT BAR SEQUENCE.
3. OCEAN BEACH - UNCURRED VERTICAL PROJECTION OF DRILL HOLES.



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Location Map
Exploration Licence 4/84
Tasmania

1. INTRODUCTION

An application for a 246 km² Exploration Licence was lodged during March 1984, and was granted to Newmont Holdings Pty. Ltd., on July 26, 1984. The Exploration Licence is located on the west coast of Tasmania centered around the township of Strahan, situated approximately 200 km west north-west of Hobart. The objective of exploration work was the location of commercial quantities of heavy mineral beach sands including gold and cassiterite along the present strand line and elevated fossil shore lines previously mapped in the Strahan area, between Strahan and the high water mark of Ocean Beach.

2. PREVIOUS EXPLORATION

The most recent drilling in the district was by C.R.A. Exploration Limited, who undertook a programme aimed at locating coal in the Strahan area during August-September 1981. Prior to that, work had been undertaken along the beach by Electrolytic Zinc searching for heavy mineral concentrations. This work was conducted by E.H. MacDonald who completed drilling of the strand lines along Ocean Beach and concluded from the scout drilling programme, that a total of some 1.45 million tonnes of sand containing an average 9.8% heavy minerals was present in five zones along the beach front area. From the quantities and grades indicated by testing the following tonnages of valuable minerals were estimated:-

rutile	2,800 tonnes
zircon	6,700 tonnes
chromite	7,700 tonnes
leucoxene	4,000 tonnes
ilmenite	11,500 tonnes
cassiterite	430 tonnes

The estimates by MacDonald were based on both grain counts and chemical analyses completed by R.K. Newman and Company Pty. Ltd., of 17-23 Parker Street, Sydney.

These deposits were originally tested by Australian Titan Products Pty. Ltd., and Strahan Sands Pty. Ltd. They reported substantially higher tonnages of rutile zircon and chromite than estimated by MacDonald, and observed that the rutile and zircon grains were of reasonable quality but heavily ironstained and difficult to separate.

The most recent work prior to that of Newmont Holdings was completed by Consolidated Goldfields Australia, who made a photo-geological and geomorphological study of the area. They concluded that the geomorphological characteristics of the Ocean Beach area were dissimilar to those of the Enneaba area of Western Australia, and therefore it was unlikely that the Ocean Beach fossil shore lines would contain significant concentrations of heavy minerals.

3. OBJECTIVES OF NEWMONT'S WORK

Based on the previous assessments by EZ and Australia Titan Products Pty. Ltd., it was concluded by NHPL that if the total

reserve of rutile and zircon could be substantially increased, or alternately if additional credit minerals could be located to increase the value of the indicated resource, then the Ocean Beach area could be profitably mined. With this objective it was concluded that the perched elevated shore lines located between Zeehan^{Strahan} Airport and Ocean Beach should be tested for the presence of heavy minerals. In addition, some of the Tertiary terraces should also be tested to see if heavy minerals were present. Of particular interest to Newmont was the possibility of gold being present in any of the shore lines or in the Ocean Beach mineral zone, which would increase the value per tonne of the heavy minerals known to exist there.

Based on ~~these~~ objectives T.G. Summons Geoservices Pty. Ltd., completed preliminary sampling of the area during 1984, and a more detailed follow-up with some auger drilling during June 1985. This report is included as Appendix 1, and describes the work completed during this period.

4. GEOLOGY AND MINERALIZATION

The geology of the area is shown on the Strahan 1:50,000 geological sheet 7913N published by the Tasmanian Department of Mines. This shows that the majority of the area under EL 4/84 consists of Quarternary and Tertiary deposits. The Quaternary sediments comprise marsh and swamp deposits consisting mainly of alluvium together with mobile beach sands, dune sands and gravel and stabilised sand deposits including dune sand. These overlie a Tertiary sequence of sandstones, siltstones, clays and conglomerates with lignite horizons.

Between Strahan Airport and Ocean beach at least five shore lines in the range between 18 and 22 m above sea level have been mapped. A further three shore lines between a level of 8 and 12 m above sea level have also been mapped as detailed by Banks, Colhoun and Chuck, in their publication "A Reconnaissance of the Geomorphology of Central Western Tasmania". It was Newmont's intention to test these various shore lines, particularly as it was recorded by CRA Exploration that one of their drill holes searching for coal had intersected significant quantities of heavy minerals in a position just near Strahan Airport (Clementson, 1981).

5. CONCLUSIONS

Based on the data collected by T.G. Summons it has been concluded that there is insufficient gold present in the shore lines to constitute a significant credit element. Sampling of elevated shore lines has failed to indicate significant quantities of either gold rutile or zircon. Although the sampling on elevated shore lines was generally inconclusive, where samples were taken, particularly outcrop samples, no significant rutile was returned. As this is the major credit mineral which was being sought in the heavy minerals sands, it is concluded that economic concentrations of this material have not been located by the work completed along the strand lines and therefore the total tonnage potential of heavy minerals is not large enough to constitute a significant economic resource.

6. EXPENDITURE EL 4/84

Salaries, Wages and Overheads	7 762
Assaying	3 559
Drilling, non core	2 233
Consultants	8 625
Office and Housing, rentals	645
Vehicle Operating	680
Travel & Accomodation	815
Telephone, Postage & Air Express	860
General Expenses, Maps & Plans	425
Tenement Rentals	615
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	26 219

7. REFERENCES

Banks, M.R., Colhoun, E.A., Chick, N.K. 1981 "The Geology of Central Western Tasmania"

Clementson, T. 1981 "Report on the Drilling Programme, Strahan Coal, EL 47/80" Published by CRA.

Holyland, P. 1983 "Little Henty Beach Sands"
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APPENDIX 1

HEAVY MINERAL EXPLORATION

EL 4/84
(NEWMONT HOLDINGS PTY. LTD.)

WESTERN TASMANIA

T. G. SUMMONS
Summons Geoservices Pty. Ltd.
June, 1985.

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1. INTRODUCTION

During March 1985, a field program of drilling and sampling of beach sands/gravels was conducted in EL 4/84.

The work was intended as a broad reconnaissance of a large area (approx. 14km strike length of Ocean Beach), to assess its heavy mineral (including gold) potential; this objective was partly realised, but many aspects of the Cainozoic geology of the Strahan area remain unanswered.

Sampling of the Ocean Beach sands and the Henty River point bars was successfully completed, whereas sampling of the strand deposits east of Ocean Beach was not possible using the available equipment.

2. FIELD METHODS

2.1. GRAB SAMPLING

A total of seven samples were collected in a generally non-random manner; of these samples taken from the lower reaches of the Henty River, only two (STG-1, 5) were specific (and therefore possibly biased) samples.

Samples STG-3 and 4 were actually channel samples taken from a ?fluvial/marine sandbank at the mouth of the Henty River.

The Ocean Beach grab samples were specific samples of wave concentrated (STG-6) and wind concentrated (STG-7) heavy minerals. Full details are shown in Figure 1 and Table 1.

2.2. CHANNEL SAMPLING

A total of fourteen channel samples were collected randomly from the southern portion of the area (south of 5 336 000N, Fig.1). Samples SR - CH - 1 to 8 were from drainage channels cut into the eastern side of Strahan Airport, (and cut into part of the 22m strand deposits).

These samples were taken with a slight overlap, but in general represent bulk samples over widths shown in Table 2. (e.g a 3.2m sample from the southern drain).

Samples SR - CH - 4 and 6 represent specific channel samples of cobble gravel layers, within samples SR - CH - 3 and 6 respectively; total sampled thickness in this drain was 2.8m.

Sample SR - CH - 9 was from the upper part of a now water filled back hoe pit, and the Ocean Beach samples (SR - CH - 10 to 14) were from cliff exposures above the level of the sludge drill holes.

2.3. SAND AUGER DRILLING

A total of twenty one holes were put down with a Dormers sand auger, of which only the first nine (SR 1 - 9) were successfully completed in the Henty River point bars. The remainder had to be aborted upon striking pebble gravel layers in the strand deposits. Accordingly, most of these holes were not

TABLE 1

GRAB SAMPLE DETAILS

Sample No.	Locality	Co ordinates	H.M. %	Assays in g/tonne			Gold ppb
				Cass.	Rutile	Zircon	
STG-1	Eastbank, Henty R.	(354 740E 5 345 200N)	0.06	2.0	22	31.4	5
STG-2	Eastbank, Henty R.	(354 780E 5 344 500N)	0.07	1.6	21.2	18.5	2
STG-3	Henty River mouth	(354 680E 5 343 360N)	0.06	0.9	2.7	2.2	1
STG-4	Henty River mouth	(354 750E 5 343 320N)	0.07	0.6	1.5	1.4	1
STG-5	Eastbank, Henty R. (Peat sample)	(354 740E 5 344 920N)	N.A.	444.5	835	301.5	-
STG-6	Ocean Beach, adj. to SOB-4	(355 600E 5 327 920N)	33.4	3.2	3367	5162	7
STG-7	Ocean Beach, 300m east of SOB-20	(356 600E 5 355 600N)	0.54	0.5	298	101	2

CHANNEL SAMPLE DETAILS

TABLE 2

Sample No	Locality	Co ordinates	Sample Width (m)	H.M. (%)	Assays in g/tonne			Gold (ppb)
					Cass.	Rutile	Zircon	
SR-CH-1	Sthn end Strahan Airport	{ 358 600E 5 330 800N	1.6	0.67	7.5	758	992	0.3
SR-CH-2	Sth end Strahan	{ 358 650E 5 330 800N	1.6	1.25	5.7	827	1739	1
SR-CH-3	Drainage gutter located immediately east of the middle of Strahan Airport	{ 358 700E 5 331 400N	1.6	0.18	0.63	111	140	0.3
SR-CH-4		{ 358 720E 5 331 400N	0.9	0.16	7	205	284	3
SR-CH-5		{ 358 730E 5 331 400N	1.2	0.96	3.4	704	669	4
SR-CH-6		{ 358 750E 5 331 400N	0.4	0.81	3.4	479	929	18
SR-CH-7	Nthn end Strahan Airport	{ 358 800E 5 332 000N	1.3	1.07	3.6	621	732	2
SR-CH-8	Nthn end Strahan Airport	{ 358 820E 5 332 000N	0.8	0.59	2.5	553	1361	3

Cont.....

CHANNEL SAMPLE DETAILS (Cont.)TABLE 2 (Cont.)

Sample	Locality	Co ordinates	Sample Width (m)	H.M. (%)	Assays in g/tonne			Gold (ppb)
					Cass.	Rutile	Zircon	
SR-CH-9	North of Strahan Airport	{558 900E (5 332 000N	0.8	1.03	0.6	1066	50	1
SR-CH-10	30m east of SOB-6	{355 820E (5 328 480N	1.1	27.91	40.9	20788	50628	14
SR-CH-11	100m south SOB-13	{356 180E (5 330 560N	0.7	21.41	46.7	14540	34241	1
SR-CH-12	Adjacent to SOB-18	{356 500E (5 333 480N	1.3	8.52	11.9	5279	6000	4
SR-CH-13	Adjacent to SOB-19	{356 400E (5 334 360N	1.2	3.05	3.1	1633	1764	1
SR-CH-14	150mSE of SOB-20 (aeolian sample)	{356 400E (5 335 480N	1.3	0.43	0.25	96	49	1

3.

sampled, excepting SR - 19, 20 and 21, which although abandoned on either a pebble gravel layer, or shallow water table, were deeper than SR - 10 to 18.

Further details of these drill holes are shown in Figure 1 and in Table 3. Logs of the holes are in Appendix 1.

2.4. POWER AUGER DRILLING

Several attempts to penetrate the cobble gravels of the 22m strand line (between channel samples SR - CH 1 and 3) were made, however, the size and density of packing of the gravels were such that the machine (a Stihl, two stroke) was totally unsuccessful.

2.5 SLUDGE DRILLING

A total of twenty seven holes were sunk along Ocean Beach using a Dormers sludge drill, and accompanying steel casing. Collar co ordinates are given in the logs of the holes (Appendix 2), and shown in Figure 1.

As with the sand auger drilling, the sampled interval of sand etc. was initially emptied on to a sheet of plastic, following which it was thoroughly mixed, quartered, and bagged for later analysis.

SAND AUGER DRILL HOLE DATA

TABLE 3

Hole No	Locality	co ordinates	T.D. (m)	Sample Interval (m)	H.M. (%)	Assays in g/tonne			Gold (ppb)
						Cass.	Rutile	Zircon	
SR-1	500m sth. of Badger/Henty R. Jct	{ 355 330E 5 346 040N	6.1	6.1	0.05	-	10.5	5.2	0.2
SR-2	30m nth of SR-1	-	1.5	1.5	0.40	0.2	60.1	39.8	4
SR-3	40m nth of SR-2	-	4.1	4.1	0.27	0.2	8.0	2.8	1
SR-4	25m nth of SR-3	-	2.1	2.1	0.70	-	14.5	7.2	1
SR-5	15m nth of SR-4	-	2.7	2.7	0.45	0.1	8.8	3.8	1
SR-6	25m nth of SR-5	-	0.8	0.8	← Not sampled →				
SR-7	25m nth of SR-6	-	2.6	2.6	0.19	0.1	30.4	20.1	1
SR-8	20m nth of SR-7	-	0.6	0.6	← Not sampled →				
SR-9	40m nth of SR-8	{ 355 400E 5 346 300N	6.5	6.5	0.88	0.1	8.5	9.4	0.3
SR-10	South of Strahan Airport	{ 357 500E 5 329 100N	1.4	NA	-	-	-	-	-
SR-11	South of Strahan Airport	{ 357 300E 5 329 400N	0.5	NA	-	-	-	-	-
SR-12	100m W. of SR-11	↓	0.6	NA	-	-	-	-	-

Cont...

SAND AUGER DRILL HOLE DATA (Cont.)TABLE 3 (Cont.)

Hole No	Locality	Co ordinates	T.D. (m)	Sample Interval (m)	H.M. (%)	Assays in g/tonne			Gold (ppb)
						Cass.	Rutile	Zircon	
SR-13	SW of Strahan Airport	{ 357 460E (5 330 380N	1.2	NA	-	-	-	-	-
SR-14	20m NW of SR-13	-	0.3	NA	-	-	-	-	-
SR-15	70m SE of SR-13	-	0.5	NA	-	-	-	-	-
SR-16	20m E of SR-15	-	0.5	NA	-	-	-	-	-
SR-17	SW of Strahan	{ 357 500E (5 330 120N	0.1	NA	-	-	-	-	-
SR-18	100m W of SR-17	-	0.5	NA	-	-	-	-	-
SR-19	NW of Strahan Airport	{ 357 780E (5 332 550	1.1	1.1	2.23	3.6	1189	1640	1
SR-20	NW of Strahan Airport	{ 357 140E (5 333 340N	0.9	0.9	2.29	0.4	206	111	1
SR-21	80m NW of SR-20	-	1.5	1.5	0.70	0.2	171	99	1

3. LABORATORY METHODS

All samples were delivered to the Department of Mines Launceston Laboratory, where it was originally planned to process them by drying, screening, concentration on a Wilfey Table, magnetic separation, with the non magnetic fraction being panned, the concentrate to be fire assayed for Au, and the pan tailing to be analysed for Sn, Ti and Zr using XRF.

However, the masses of non magnetic table concentrates were generally too ^{small} to allow the use of the above flow sheet without destroying the heavy minerals other than gold. The actual flow sheet consisted of drying, screening (700 μ), table concentration of the screen undersize, magnetic separation of the table concentrate, and analysis of the non magnetic portion by XRF for Sn, Ti and Zr, and by aqua regia solution for Au.

A single sample of peat (STG -5) was ignited, and the calcined residue analysed for Sn, Ti, Zr and Au.

The results were reported in grams/tonne (g/t) of the various elements, and the following conversion factors were used;

Sn	→	cassiterite (Cs)	x	1.27
Ti	→	Rutile (Rt)	x	1.67
Zr	→	Zircon (Zr)	x	2.01

Note that the rutile value is actually total TiO₂ (or equivalent rutile), since leucosene is also known to be present.

Observations concerning the processing and analysis of the samples are as follows:

3.1. The magnetic portion of the table concentrate was not assayed and the amount of goethite coated grains of gold was not determined.

3.2. The possible incomplete solution of gold in the non magnetic fraction by the method used.

5.

3.3. The size of the screen - Harvey (1983) reported heavy mineral sizes up to 600 μ , and the 700 μ screen used may require some reviewing.

Full details of the processing etc. of the samples are in Appendix 3.

4. RESULTS

4.1. INTRODUCTION

Drill hole logs are contained in Appendices 1 and 2; the Henty River point bar sequence is depicted in Figure 2, and an uncurved vertical projection of the Ocean Beach drill holes is shown in Figure 3.

Raw analyses of the various grab, channel, and drill hole samples are included as Appendix 4, and variously re-expressed in Tables 1, 2, 3 and 5.

4.2. CORRECTION FACTORS

Because separation of the heavy mineral bearing intervals in the drill hole samples was not practicable at the time of drilling/sampling, it was necessary to indicate the likely (or equivalent) grades of these heavy mineral bands as follows:

4.2.1. For the observed heavy mineral (IM) interval(s)

4.2.2. For the observed pebble bearing interval(s).

The "IM interval equivalent" values were obtained by dividing the sampled interval width by the width of the logged IM bearing section.

Similarly, the "Pebble interval equivalent" values were estimated using the same numerator, but with the logged pebble bearing section as the denominator.

Details are shown in Table 4, and it should be noted that the IM equivalent factors were only applied to the reported Cs, Rt and Zr grades. Gold grades were expressed as both IM equivalent and pebble equivalent values.

4.3. HEAVY MINERAL ZONATION

Calculated IM interval equivalent grades of Cs, Rt, Zr and gold and pebble equivalent gold grades are shown in Table 5. Approximately four natural groupings of the heavy minerals are apparent, two of which are relatively gold enriched.

However, not surprisingly, the zones of peak gold content do not coincide with the zones of peak light heavy minerals, as exemplified by the southern

TABLE 4

Hole	Total Depth (m)	Sample Interval	H.M. Interval	Pebble Interval	Conversion Factors for	
					H.M. Interval (Col.3+4)	Pebble Interval (Col.3+5)
SOB27	2.9	0-2.9	?0-2.9	1.2-2.2	(?NA)	2.9
1	1.3	0-1.3	0-1.3	1.25-1.30	(NA)	(NA)
2	5.5	0-5.4	0-1.3	(1.1-1.3 5.3-5.4)	4.1	18.0
3	1.6	0-1.6	0-1.6	(NA)	(NA)	(NA)
4	3.0	0-3.0	0-1.2	0.9-1.2	2.5	10.0
5	3.0	0-3.0	0-1.1	0.8-1.1	2.7	10.0
6	3.0	0-3.0	0-2.1	(NA)	1.4	(NA)
7	3.0	0-3.0	0-1.3	0.8-1.3	2.3	6.0
8	3.0	0-3.0	0-1.3	1.0-1.3	2.3	10.0
9	3.0	0-3.0	0-2.0	1.0-2.0	1.5	3.0
10	3.0	0-3.0	0-1.1	0.8-1.1	2.7	10.0
11	3.0	0-3.0	0-1.4	1.0-1.4	2.1	7.5
12	3.0	0-3.0	0-1.0	0.5-1.0	3.0	6.0
13	3.0	0-3.0	0-1.2	0.7-1.2	2.5	6.0
14	3.0	0-3.0	1.0-2.5	{1.0-2.0 2.3-2.5}	2.0	2.5
15	2.7	0-2.7	{0-0.6 1.9-2.2}	{1.9-2.2}	3.0	9.0
16	2.5	0-2.5	{0-0.8 1.3-1.4 1.9-2.4}	{0.6-0.8 1.3-1.4 1.9-2.4}	1.8	3.1
17	2.9	0-2.9	0-2.1	1.9-2.1	1.4	14.5
06	2.6	0-1.9	0-1.9	1.2-1.9	(NA)	2.7
18	2.9	0-2.9	0-1.3	0.8-1.3	2.2	5.8
25	1.4	0-1.3	0-1.3	0.8-1.3	(NA)	2.6
19	2.4	0-1.8	0-1.8	1.3-1.8	(NA)	3.6
20	1.3	0-1.3	1.0-1.3	1.0-1.3	4.3	4.3
21	2.3	0-2.2	0.9-2.2	{total ± 0.4m}	1.7	5.5
22	2.9	0-2.9	0-1.9	{total ± 0.5m}	1.5	5.8
23	1.9	0-1.9	0-1.9	{1.0-1.4 1.7-1.9}	(NA)	3.2
24	2.9	0-2.9	0-1.6	{0.8-1.0 1.5-1.6}	1.8	9.7

end of zone), where SOB - 27 is gold rich, but noticeably poor in Cs, Rt and Zr.

Similar, thick, pebbly gravels (Figure 3) occur in the northern gold rich zone (SOB 17 - 20), and are associated with relatively low light heavy mineral grades.

Details of the four zones follow;

4.3.1 Southern (Gold Rich) Zone

4.3.1.1 Cs - Rt - Zr Deposit

This extends from 5 326 850N to 5 329 900N, and includes holes SOB - 2 to 10. The deposit crops out on the present beach, and has 25.2% HM, and overall grades of 0.012% Cs, 1.6% Rt and 3.9% Zr.

4.3.1.2. Gold Deposit

This extends south from 5 329 900N to at least as far as SOB - 27; it is assumed to occur in the pebbly gravels, with an estimated grade of 53 ppb Au.

4.3.2. Intermediate (Gold Poor) Zone

This extends from 5 329 900N to 5 331 950N, and includes holes SOB - 11 to 16. It also crops out on the present beach, consisting of 27.7% HM, with overall grades of 0.003% Cs, 1.5% Rt, 2.3% Zr, and 7 ppb Au (pebble equivalent).

4.3.3. Northern (Gold Rich) Zone

This extends from 5 331 950N to 5 336 100N, contains 10.2% HM, with overall grades of 0.001% Cs, 0.5% Rt, 0.5% Zr and 50 ppb Au (pebble equivalent).

4.3.4. Northern (?Barren) Zone

This zone is the least drilled and sampled, and extends north from 5 336 100N to approximately SOB - 24 at 5 339 650N. Average HM values are probably meaningless, (see Table 5), and a possible third gold rich zone may commence between holes SOB - 23 and 24.

Other, (non marine) heavy mineral Zonation may have taken place (and may still be) in the lower reaches of the Henty River, as suggested by the results in Tables 1 and 3.

TABLE 5

Hole	HEAVY MINERAL INTERVAL DATA					PEBBLE EQUIV. Gold (ppb)	Actual Gold Mass ($\times 10^{-6}$ g)
	Equiv. HM%	Equivalent Grades - ppm (ppb for Au)					
		Cass.	Rutile	Zircon	Gold		
<u>1. SOUTHERN (GOLD RICH) ZONE</u>							
SOB27	(0.5)	1.5	742	542	16	46	34.54
2	15.0	61	12184	20281	4	18	1.90
3	(20.7)	67	14527	27530	9	9	19.11
4	13.8	54	9732	21757	8	30	7.84
5	44.2	457	28078	94963	38	140	28.24
6	12.0	18	8165	13565	2	2	2.90
7	27.7	127	18115	56357	30	78	32.17
8	15.6	35	10312	16288	5	20	5.96
9	48.0	202	28741	66525	42	84	86.64
10	30.0	61	18040	34573	26	100	24.81
Ave:	22.75	108.3	14864	35238	19.1	52.7	
<u>2. INTERMEDIATE (GOLD POOR) ZONE</u>							
SOB11	26.1	25	12938	21734	2	8	2.86
12	31.4	30	19041	36273	3	6	2.05
13	28.6	53	15770	31010	5	12	7.18
14	15.2	10	9647	19233	2	3	3.02
15	41.4	28	21618	28458	3	9	3.04
16	23.4	11	12369	13597	2	3	2.09
Ave:	27.7	26.2	15230	23551	2.8	6.8	
<u>3. NORTHERN (GOLD RICH) ZONE</u>							
SOB17	14.2	6	6345	4815	1	15	2.14
26	(7.8)	9	3051	3259	7	19	16.22
18	13.2	17	5252	6135	5	12	4.91
25	(6.5)	1.5	1994	1280	81	211	169.65
19	(2.8)	35	7375	12071	1	4	1.99
20	16.9	8	5205	3174	39	39	15.09
Ave:	10.2	13.0	4870	5122	22.3	50.0	
<u>4. NORTHERN (BARREN) ZONE</u>							
SOB21	4.2	2	1183	968	2	5	1.99
22	0.7	-	42	27	0.2	1	0.45
23	0.6	0.4	176	133	1	3	1.96
24	3.9	10	961	1222	4	19	4.03
Ave:	2.3	3.1	590	588	1.8	7.0	

4.4. HEAVY MINERAL RESOURCES (OCEAN BEACH)

Although work was of a reconnaissance nature, previous studies of Ocean Beach, combined with the present work, allow estimation of the size of the inferred heavy mineral bearing placer deposits, using an SG of 1.6 tonnes/m³.

4.4.1. Southern (Gold Rich) Zone4.4.1.1. Cs - Rt - Zr Deposit

Strike = 3.3km, average thickness = 1.44m, width ≈ 100m, Volume = 475 200m³
mass = 760 000 tonnes.

4.4.1.2. Gold Deposit

Strike 4.1km, average thickness = 0.50m, width ≈ 100m, Volume = 205 000m³,
mass = 330 000 tonnes.

4.4.2. Intermediate (Gold Poor) Zone4.4.2.1. Cs - Rt - Zr Deposit

Strike = 2.1km, ave. thickness = 1.23m, width ≈ 100m. volume = 258 300m³,
mass = 413 000 tonnes.

4.4.2.2. Gold Deposit

Strike and width as above, average thickness = 0.46m, volume = 96 600m³,
mass = 155 000 tonnes.

4.4.3. Northern (Gold Rich) Zone4.4.3.1. Cs - Rt - Zr Deposit

Strike = 4.2km, average thickness = 1.45m, width ≈ 100m, volume = 609 000m³
mass = 974 000 tonnes.

4.4.3.2. Gold Deposit

Strike and width as above, average thickness = 0.45m, volume = 189 000m³
mass = 302 000 tonnes.

4.4.4. SUMMARY4.4.4.1. Cassiterite - Rutile - Zircon Resources

Southern Zone: 0.76×10^6 tonnes @ 0.01% Cs, 1.6% Rt, 3.9% Zr.

Intermediate Zone: 0.41×10^6 tonnes @ 0.003% Cs, 1.5% Rt, 2.3% Zr.

Northern Zone: 0.97×10^6 tonnes @ 0.001% Cs, 0.5% Rt, 0.5% Zr.

Total: 2.14×10^6 tonnes @ 0.005% Cs, 1.08% Rt, 2.05% Zr.

4.4.4.2. Gold Resources

Southern Zone: 0.33×10^6 tonnes @ $\gg 53$ ppb Au

Intermediate Zone: 0.15×10^6 tonnes @ 7ppb Au

Northern Zone: 0.30×10^6 tonnes @ $\gg 50$ ppb Au.

Total: 0.78×10^6 tonnes @ 43 ppb Au.

(N.B. The actual grades of cassiterite and gold are probable minimum values, as discussed in Section 5 ; the actual gold values may be $\gg 200$ ppb).

The diluted gold grade for the 2.14×10^6 tonnes is 16ppb.

4.4.4.3. Ilmenite and Chromite

Although not precisely determined during the current phase of work, ilmenite and chromite were identified in magnetic fractions of the table concentrates.

Using apparently reliable data quoted by McDonald (1970) regarding HM ratios, the proportion of ilmenite is estimated at 3.6%, and chromite 2.4%.

5. RELIABILITY OF SAMPLING

5.1. INTRODUCTION

The reliability, or degree of representation of the sampling, and consequently the analytical results, particularly for the heavy heavy minerals prone to nugget effects, sporadic distribution etc., has been estimated using the technique of Clifton et al (1969).

The method utilizes relative errors of 50% at the 95% confidence level; assumptions inherent in the method are that the gold grains are randomly distributed, are of uniform size/mass, and comprise < 0.1% of all other particles.

The minimum adequate sample size is regarded as one in which > 20 particles of gold are present.

Particle size variation is compensated for by adopting the concept of the effective number of particles (=x) in a sample.

This value (x) was estimated from the variation of the gold analyses, using coefficients of variation.

Effective gold particle masses and sizes were then estimated from various graphs, following which probable gold values at the 95% confidence level were calculated.

5.2. APPLICATION

The Ocean Beach drill sample results were then appraised, as detailed in Table 6. It is apparent that most of these samples were too small to contain statistically acceptable numbers of gold particles.

Although not entirely adequate, the samples from the gold poor zone (SCB 11 - 16), are probably satisfactory for preliminary appraisal.

The average mass of samples from the sludge drilling was \approx 2kg and precise values may be estimated using the conversion factors in Table 4, with the data in Appendix 4.

TABLE 6

ZONE/OR AREA	GOLD VALUES (ppb)			EFFECTIVE GOLD PARTICLES			SAMPLE size req. for X=20 (kg)	COMMENTS
	\bar{x}	σ	Range	No (=X)	Mass (10 ⁻⁶ g)	Size (10 ⁻⁶ m)		
<u>OCEAN BEACH(SOB2-27)</u>								
(a) Raw data	8.0	16.3	NA	< 1	NA	NA	?	
(b) EM equivalent	13.0	19.0	4-42	2	5	80	8	
(c) Pebble equivalent	37.0	51.7	11-118	2	15	120	10	
<u>SOUTHERN ZONE(SOB27-10)</u>								
(a) HM Equivalent	19.1	15.3	5-72	1.5	15	120	15	
(b) Pebble Equivalent	52.7	45.7	13-212	1.3	45	160	18	Excluding SOB-3,6
	64.5	43.1	20-192	2.2	30	140	10	
<u>INTERMEDIATE ZONE(SOB11-16)</u>								
(a) HM Equivalent	2.8	1.2	1.3-6.2	6	0.5	40	3	
(b) Pebble Equivalent	6.8	3.5	2.7-17	4	1.9	55	5	
<u>NORTHERN ZONE(SOB17-20)</u>								
(a) EM Equivalent	22.3	32.1	NA	< 1	NA	NA	?	Excluding SOB-25
	10.6	16.1	NA	< 1	NA	NA	?	
(b) Pebble Equivalent	50.0	79.7	NA	< 1	NA	NA	?	Excluding SOB-25
	17.8	13.1	5-57	2	7	90	10	

NB: \bar{x} = mean

σ = standard deviation

Range is the probable variation of true gold values for relative errors of 50%, at the 95% confidence level.

6. COMMENTS6.1. Resource Reconciliation

The earliest known study of Ocean Beach HM sands was that by Australian Titan Products Pty. Ltd., who, in the late 1960's outlined a resource (of unspecified mass) which graded 0.81% ilmenite, 0.81% chromite, 2.67% zircon and 0.85% (rutile and leucoxene).

The EZ Coy (McDonald 1970) estimated a HM resource of 1.45×10^6 tonnes, @ 0.81% ilmenite, 0.54% chromite, 0.47% zircon, 0.28% leucoxene, 0.20% rutile, and 0.03% cassiterite.

The present resource estimate of 2.14×10^6 tonnes is readily reconciled with the 1.45×10^6 tonnage, since McDonald (1970) used a deposit thickness which was approx. twice, and a dep. width approx. one third, the values used in this study.

A complete grade reconciliation is not possible at present, but converting the grades quoted by McDonald (1970) by a factor of 2, suggests the following values:

cassiterite	-	0.06%
rutile	-	$(0.28 + 0.20) \times 2 \approx 1.0\%$
zircon	-	$\approx 1.0\%$

Thus the rutile and zircon grades are comparable, and compatible with the previous investigations, but a major discrepancy occurs with the cassiterite grades.

This aspect is considered to be a function of the sample sizes, a feature discussed previously in Section 5.

6.2. MASS BALANCE6.2.1. Henty and King River Sediment Loads

Sampling of the Henty River point bars suggests an average of 0.42% HM, with overall gold grade of 1.2 ppb, (Table 3). Grab and channel sampling of the present fluvial sediments in the Lower Henty River (Table 1), indicates

very consistent IMF contents (0.06 to 0.07%), with overall grades of 2 g/tonne cassiterite, 20 g/tonne rutile, 20 g/tonne zircon, and 3 ppb Au. However, upon reaching the Southern Ocean, marine erosion has apparently removed 70% of the Cs, 90% of the Rt and the Zr, and 50% of the gold.

Combination of the data suggests transported grades of 1 g/tonne Cs, 20 g/tonne Rt, 15 g/tonne Zr and 0.5 ppb gold.

Assuming a similar flow rate to the King River, (which has been estimated to have deposited 30×10^6 tonnes of pyritic waste in its delta over the last 100 years), since the Pleistocene epoch (1 Ma), the following masses would have been transported:

Cassiterite	-	0.3×10^6	tonnes
Rutile	-	6×10^6	tonnes
Zircon	-	4.5×10^6	tonnes
Gold	-	150	tonnes.

However, since the sea level has varied over at least 140m (-120m to +20m relative to the present level), it is likely that a maximum of only 20/140 of the total fluvial sediment load is presently subaerial.

If it is also assumed that submarine currents have transported 50% of the gold, 70% of the cassiterite and 90% of the rutile and zircon out onto the continental shelf, then the possible maximum remnant (wave reworked etc.) masses are:

Cassiterite	-	13 000	tonnes
Rutile	-	85 000	tonnes
Zircon	-	65 000	tonnes
Gold	-	10	tonnes

However it is unlikely that concentrating mechanisms in the marine environment would have reworked more than half of these amounts in to placerdeposits.

Accordingly, the present discussion will assume that the combined tonnage of placer concentrated heavy minerals transported by the Henty and King Rivers since the Pleistocene, is the same as the last set of figures (ie. 13000 tonnes)

of cassiterite etc.).

Although no sampling of King River sediments was done, the presence of gold in the river was documented early in the history of the state by Gould (1862-1863), who reported "drift gold in the King River", approx. near 367 00E, 5 327 000N. Gould also discovered gold on the edge of Macquarie Harbour, south of Kelly Basin, where one pebble assayed 70 g/tonne Au. This indicates that the Gordon River has also contributed gold to the general area.

6.2.2. INSITU RESOURCES OF HEAVY MINERALS

Based on a minimum of five main strand lines east of Ocean Beach, the likely insitu resource of heavy minerals may be $5 \times 2.14 \times 10^6 \approx 10 \times 10^6$ tonnes.

Assuming an average grade of 0.005% Cs, 1.1% Rt, 2.1% Zr and 16 ppb Au, the masses of HM are:

- Cassiterite - 535 tonnes
- Rutile - 118 000 tonnes
- Zircon - 225 000 tonnes
- Gold - 171 000 grams.

6.2.3. COMPARISON

If it is assumed that the likely remnant masses of HM from both the Henty and King Rivers is approx. that shown in section 6.2.1., then the rutile mass balance is reasonable, and the zircon "imbalance" implies incorrect grade estimates.

However, of interest are the implied grades of Cs and Au, namely 0.13% cassiterite and 1 g/tonne Au.

6.3. HEAVY MINERAL POTENTIAL (EAST OF OCEAN BEACH)

Although in section 6.2.2. the potential resource was stated as $\approx 10 \times 10^6$ tonnes, it is emphasised that the strand deposits east of Ocean Beach have not been properly tested, (i.e. those strand deposits between the present sea level and +22m ASL). Limited channel sampling of part of the 22m strand deposit showed low values of HM.

This exposed part of the 22m strand (near the Strahan Airport) was seen to be cobble rich, and the +700 fraction averaged 45%, compared to $\approx 5\%$ in

in the SOB holes.

Removal of the "cobble effect" in the channel samples of the 22m strand has little effect on grades, except SR - CH - 6, which has an overall grade of 36 ppb Au.

Distribution of the raw grades of HM in to "HM equivalent" grades was prevented by two factors:

6.3.1. The ubiquitous humate staining.

6.3.2. The apparently low HM content of the sampled intervals .

Miscellaneous observations are as follows:

6.3.3. Ancient tracts of the King River (Figure 1) have been inferred from the hydrographic chart of Macquarie Harbour. Several of these tracts may explain the occurrence of gold in Ocean Beach sands (e.g. the Northern Zone may have been fed by route A).

6.3.4. North of SOB - 20, swales appear on the beach; this general area is of interest for two reasons, firstly it is the end of the "shadow" provided by Cape Sorell from the prevailing SW swell, and also it is 2.5km SW of "Point Ashwood". This promontory, (located at approx. 358 500E, 5 337 000N), probably existed in Pleistocene time and appears to have controlled the coastal morphology.

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7. CONCLUSIONS AND RECOMMENDATIONS

- 7.1. The work to date has not satisfactorily tested the heavy mineral potential of the strand deposits between Ocean Beach and Strahan Airport.
- 7.2. These strand deposits have a tonnage potential of at least 8×10^6 tonnes, but the grade of this potential resource is not known.
- 7.3. The inferred resource of heavy minerals in Ocean Beach is 2.14×10^6 tonnes, grading 0.005% cassiterite, 1.1% rutile, 2.1% zircon, 3.6% ilmenite, 2.4% chromite and 16 ppb gold.
- 7.4. Using prices of \$140/MTU for cassiterite, \$400/tonne for rutile, \$120/tonne for zircon, \$40/tonne for ilmenite, \$100/tonne for chromite and \$400/oz for gold, this inferred ore is worth \$7.00/tonne for 60% recoveries, or \$8.15/tonne for 70% recoveries. Substituting grades of 0.03% cassiterite and 0.2g/tonne Au changes the value of the ore to \$10.50/tonne (60% recoveries).
- 7.5. It is recommended that the coastal portion of EL 4/84 be further investigated; specific aspects of further work would be the collection of appropriately sized samples, and excavation of costeans, to assess cassiterite and gold grades with greater levels of confidence.

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APPENDIX - 1

LOGS OF SAND AUGER DRILL HOLESSR-10 - 6.1 m = quartz sand, $\leq 29 \mu\text{m}$ (chromite) 0 - 2.5 m.SR-20 - 1.5 m = quartz sand, $\leq 19 \mu\text{m}$.SR-30 - 4.1 m = quartz sand fr. μm .SR-40 - 2.1 m = quartz sand, $\approx 39 \mu\text{m}$ 0.9 - 2.1 m.SR-50 - 2.7 m = quartz sand, $\leq 39 \mu\text{m}$ 0 - 1 m.SR-6

0 - 0.8 m = pale brown clay.

SR-70 - 2.6 m = quartz sand, fr. μm .SR-8

0 - 0.6 m = pale brown (kaolinitic) clay.

SR-90 - 6.5 m = quartz sand, $\leq 39 \mu\text{m}$ 0 - 3 m.SR-100 - 1.4 m = quartz sand, fr μm , pebble (coarse layer) @ 1.4 m.SR-110 - 0.5 m = quartz sand, humate stained, $\leq 19 \mu\text{m}$
pebble (layer) @ 0.5 mSR-12

0 - 0.6 m = silty clay pebbles @ 0.6 m

SR-13

0 - 1.2 m = silty clay pebbles @ 1.2 m

SR-14

0 - 0.3 m = silty clay pebbles @ 0.3 m

SR-150 - 0.5 m = quartz sand, $\leq 19 \mu\text{m}$; pebble (layer) @ 0.5 m.SR-16

0 - 0.5 m = quartz sand, humate stained, pebbles @ 0.5 m.

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SR-17

0-0.15m = quartz sand, humate stained, $\leq 19 \mu m$, pebble (up to)

SR-18

0-0.5m = a/r

pebble ≈ 0.5

SR-19

0-1.1m = quartz sand, $\leq 19 \mu m$, pebble/cobble $\approx 1.1m$

SR-20

0-0.9m = quartz sand, $\leq 19 \mu m$, water table $\approx 0.9m$

SR-21

0-1.5m = quartz sand, $\leq 19 \mu m$, water table $\approx 1.5m$

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17 WENDIX - 2

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LOGS OF SLUDGE TO RILL HOLESS03-1 (355290 E, 5327320 N)

0 - 1.25 m: quartz sand, 5-10% Hum

1.25 - 1.30 m: ~ ~ ~ ~

S03-2 (355310 E 5327320 N)

0 - 1.1 m: quartz sand, < 20% Hum

1.1 - 1.3 m: pebble band ~ ~

1.3 - 3.5 m: quartz sand < 1% Hum

3.5 - 4.5 m: ~ ~ ~ ~ humate stained/indurated

4.5 - 5.2 m: ~ ~ ~ ~

5.2 - 5.4 m: pebble band ~ ~

5.4 - 5.5 m: clay, black to dark brown.

S03-3 (355430 E 5327600 N)

0 - 1.6 m: quartz sand, 25% Hum

1.6 - 1.65 m: clay, brown.

S03-4 (355600 E 5327920 N)

0 - 0.9 m: quartz sand, 15% Hum.

0.9 - 1.2 m: pebbly sand 20% Hum.

1.2 - 3.0 m: quartz sand, 1/2 1% Hum.

S03-5 (355700 E 5328190 N)

0 - 0.8 m: quartz sand, > 30% Hum

0.8 - 1.1 m: pebbly sand, ~ ~

1.1 - 3.0 m: quartz sand, < 1% Hum.

S03-6 (355790 E 5328480 N)

0 - 2.1 m: quartz sand 7-10% Hum

2.1 - 2.3 m: ~ ~ 5% Hum, humate stained

2.3 - 3.0 m: ~ ~ < 1% Hum.

S03-7 (355880 E 5328770 N)

0 - 0.8 m: quartz sand, 20% Hum

0.8 - 1.3 m: pebbly sand, 30% Hum

1.3 - 3.0 m: quartz sand, < 1% Hum.

503-8 (355950E 5329060N)

- 0-1.0m: quartz sand, 15% Hum
- 1.0-1.3m: pebbly - , >20% Hum
- 1.3-2.0m: quartz sand, <1% Hum, humate stained/indurated
- 2.0-3.0m: - - - -

503-9 (356030E 5329450N)

- 0-1.0m: quartz sand ~20% Hum
- 1.0-1.3m: pebbly - , >30% Hum
- 1.3-2.0m: quartz sand ± pebbles, 20% Hum.
- 2.0-3.0m: - - - , ~5% Hum (? contamination)

503-10 (356070E 5329750N)

- 0-0.8m: quartz sand, 30% Hum.
- 0.8-1.1m: pebbly - , >30% Hum
- 1.1-2.1m: quartz - , 5% Hum (? contamination), and humate stained.
- 2.1-3.0m: quartz sand, <1% Hum.

503-11 (356120E 5330050N)

- 0-1.0m: quartz sand, 20% Hum
- 1.0-1.4m: pebbly - , >30% Hum
- 1.4-1.9m: quartz sand, ~5% Hum (? contamination), humate stain
- 1.9-3.0m: - - - , <1% Hum.

503-12 (356170E 5330350N)

- 0-0.5m: quartz sand, 20% Hum
- 0.5-1.0m: pebbly - , >30% Hum
- 1.0-3.0m: quartz sand, <1% Hum.

503-13 (356180E 5330770N)

- 0-0.7m: quartz sand, 15% Hum
- 0.7-1.2m: pebbly - , >25% Hum
- 1.2-3.0m: quartz sand, <1% Hum, humate stained

503-14 (356220E 5331060N)

- 0-0.6m: quartz sand, <1% Hum
- 0.6-1.0m: - - - - , humate stained.
- 1.0-2.0m: pebbly - , ~15% Hum

SOB 14 (cont'd)

- 2.0 - 2.3 m: quartz sand, $\approx 10\% \text{ Mm}$
- 2.3 - 2.5 m: pebbly sand, $\approx 5\% \text{ Mm}$.
- 2.5 - 3.0 m: quartz sand, $\approx 1\% \text{ Mm}$.

SOB 15 (356 240 E 5331 370 N)

- 0 - 0.6 m: quartz sand, $> 30\% \text{ Mm}$
- 0.6 - 1.9 m: ~ ~ $\approx 1\% \text{ Mm}$, humate started
- 1.9 - 2.2 m: pebbly ~, $\approx 20\% \text{ Mm}$
- 2.2 - 2.7 m: quartz sand, \pm pebbles (? contamination), $< 1\% \text{ Mm}$

SOB 16 (356 260 E 5331 660 N)

- 0 - 0.6 m: quartz sand, $15\% \text{ Mm}$
- 0.6 - 0.8 m: pebbly ~, $> 25\% \text{ Mm}$
- 0.8 - 1.3 m: quartz sand. (? $2\% \text{ Mm}$... ? contamination)
- 1.3 - 1.4 m: pebble horizon, $> 20\% \text{ Mm}$
- 1.4 - 1.9 m: quartz sand, $< 1\% \text{ Mm}$, humate started.
- 1.9 - 2.4 m: quartz sand with pebble bands, $15-20\% \text{ Mm}$.
- 2.4 - 2.5 m: quartz sand \pm pebbles (? contamination), $< 1\% \text{ Mm}$

SOB 17 (356 320 E 5332 270 N)

- 0 - 1.9 m: quartz sand, $\approx 10\% \text{ Mm}$
- 1.9 - 2.1 m: pebbly sand, $\approx 15\% \text{ Mm}$
- 2.1 - 2.9 m: quartz sand, $< 1\% \text{ Mm}$.

SOB 18 (356 430 E 5353 520 N)

- 0 - 0.8 m: quartz sand, $\approx 10\% \text{ Mm}$
- 0.8 - 1.3 m: pebbly ~, $\approx 15\% \text{ Mm}$
- 1.3 - 2.1 m: quartz sand \pm pebbles, and $< 2\% \text{ Mm}$ (? contamination)
- 2.1 - 2.9 m: quartz sand, $< 1\% \text{ Mm}$.

S03-19 (356400E 5334240N)

- 0 - 1.0 m: quartz sand, $\approx 3\%$ Mn
 1.0 - 1.3 m: " " $\approx 5\%$ Mn
 1.3 - 1.8 m: pebbly " $\approx 10\%$ Mn
 1.8 - 2.4 m: quartz sand, $\approx 1\%$ Mn.

S03-20 (356300E 5335620N)

- 0 - 1.0 m: quartz sand, $\approx 1\%$ Mn
 1.0 - 1.3 m: pebble horizon, 15% Mn.

S03-21 (356220E 5336670N)

- 0 - 0.9 m: quartz sand, $< 1\%$ Mn
 0.9 - 2.2 m: quartz sand, with two 0.20 m pebble bands,
 overall average of 3% Mn.
 2.2 - 2.7 m: quartz sand and plant roots, dark brown (humic
 coloration).

S03-22 (356130E 5337580N)

- 0 - 0.9 m: quartz sand, ? $< 1\%$ Mn
 0.9 - 1.9 m: quartz sand with minor pebble bands, 1% Mn
 1.9 - 2.9 m: " " for Mn.

S03-23 (355960E 5338570N)

- 0 - 1.0 m: quartz sand, ? $< 1\%$ Mn
 1.0 - 1.4 m: pebbly " $< 1\%$ Mn
 1.4 - 1.7 m: quartz sand, ? $< 1\%$ Mn
 1.7 - 1.9 m: pebble band, $\approx 1\%$ Mn.

S03-24 (355760E 5339650N)

- 0 - 0.8 m: quartz sand, ? $< 1\%$ Mn
 0.8 - 1.0 m: pebbly " $\approx 3\%$ Mn
 1.0 - 1.5 m: quartz " $< 1\%$ Mn
 1.5 - 1.6 m: pebbly " $\approx 3\%$ Mn.
 1.6 - 2.9 m: quartz sand (- accreted - quicksand).

S013-25 (356400E 5333860N)

0 - 0.8 m: quartz sand, $\approx 5\%$ H₂O

0.8 - 1.3 m: pebbly " , $\approx 10\%$ H₂O

1.3 - 1.4 m: quartz sand, $\approx 1\%$ H₂O

S013-26 (356380E 5332960N)

0 - 1.2 m: quartz sand, $\approx 3\%$ H₂O

1.2 - 1.9 m: pebbly " , $\approx 10\%$ H₂O

1.9 - 2.6 m: quartz sand, $\approx 2\%$ H₂O (2 contamination)

S013-27 (354560E 5326230N)

0 - 1.2 m: quartz sand $< 1\%$ H₂O

1.2 - 2.2 m: pebbly " $\approx 1\%$ H₂O

2.2 - 2.9 m: quartz "



TELEPHONES:

Metallurgical Research	} 44 2431-2 (2 lines)
Laboratory	
Mines Inspection	
Explosives & Inflammable Liquids	

LAUNCESTON OFFICES
287 WELLINGTON STREET
SOUTH LAUNCESTON 7250

14th May 1985

Reg. Nos 850394-850451NEWMONT HOLDINGS PTY LTD (T. SUMMONS)Strahan Beach Sands.

Fifty-eight samples of sand were received from Mr. T. Summons on behalf of Newmont Holdings Pty Ltd, 616 Lutwyche Road, Lutwyche, Queensland 4030.

They were stated to have been obtained from E.L. 4/84, near Strahan, Tasmania.

Determination of gold, tin, rutile and zircon were required.

The samples were generally composed of relatively fine sand with varying amounts of quartz and quartzite pebbles and fibrous material of vegetable origin.

Treatment

All samples except one were treated in the following manner. The exception 850398, STG-5, was described as "peat" and its treatment will be detailed later.

1. The samples were dried and weighed.
2. The weighed samples were then repulped in water, dispersed by agitation with the portable mixer and wet and dry screened $\pm 699\mu\text{m}$.
3. The plus $699\mu\text{m}$ was weighed and stored. *Use can be made of the minus 699µm*
4. The minus $699\mu\text{m}$ was concentrated by tabling. Table tailings were allowed to run to waste with no further treatment, their mass being found by difference.
5. The heavy mineral table concentrate was dried and magnetically separated on the high intensity "Rapid" magnetic separator. The magnetics (1,2,3, and 4) were visually examined for identification of minerals, then combined, weighed and stored.
6. The non-magnetic fractions were assayed for gold, tin, titanium and zirconium.

041

Assaying

Gold was determined by aqua-regia solution of either the unground whole non magnetics, or where the mass of this was too large, on a pan concentrate from it. The aqua-regia residues were recovered, reconstituted where necessary, ground and assayed by XRF, for the other elements mentioned.

Mass loss by solution in the aqua-regia treatment was negligible,

The aqua-regia solution was diluted extracted with MIBK and gold determined on the MIBK extracted by A.A.S.—

Minerals present in the Concentrate.

Magnetic Portion

The minerals identified with reasonable certainty were, in order of abundance:—

garnet, ilmenite and magnetite.

A considerable amount of greyish-green material, possibly epidote, was present in the feebly magnetic fraction.

Not much monazite was observed and some chromite may be present.

Non Magnetic portion

In this product, the tin is present as cassiterite, titanium as rutile, and zirconium as zircon.

Significant amounts of Hafnium were detected, and yttrium and thorium were also present in measurable amounts. Some varieties of zircon can contain these elements.

Over the whole operations, three grains of gold were observed. These were seen (one in each sample) in SOB-5, SOB-9 and SOB-25 by panning the M/S N fractions and microscopic examinations of the pan concentrates. This exercise was undertaken to actually visually confirm the presence of gold. It is possible that some gold may be absorbed in carbonaceous material and hence not detected

Reporting of Results

The tabulation shows the levels of the elements of interest in the non-magnetic concentrates and, by calculation an overall value for the samples as received.

Gold values marked with an asterisk signify "equal to or less than" the indicated result. The result is however quite meaningful in that gold has definitely been detected at or near the limit of measurability.

042

"Peat" Sample

Mr. Summons requested that this sample be ignited to burn off humic material, and gold, tin, titanium and zirconium determined on the calcined residue.

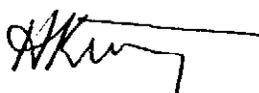
A sample was riffled out, ignited and the determinations carried out with the following result.

	"Ash"	86.3%
		<u>g/t</u>
<u>On Ash</u>	Au	Nil (fire assay)
	Sn	350
	Ti	500
	Zr	150

Note The sample consisted of white sand contaminated with earthy, fibrous vegetable matter.

Conversion Factors

Sn	to cassiterite	X	1.27
Zr	to zircon	X	2.011
Ti	to rutile	X	1.666


 (H. K. Wellington)
Chief Chemist & Metallurgist

Research Officer.....

P.L. JAMES

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Appendix 4.

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850394 STG-1	+700um O/S	200.0	2.18				
	TT	8953.6	97.76				
	TC M/A	4.4	0.05				
	TC N	1.0	0.01	14200.0	121000.0	143000.0	44.800
	Comp H	9159.0	100.00	1.6	13.2	15.6	0.005

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850395 STG-2	+700um O/S	1205.0	41.06				
	TT	1728.1	58.88				
	TC M/A	0.8	0.03				
	TC N	1.1	0.04	3530.0	34000.0	24200.0	4.430
	Comp H	2935.0	100.00	1.3	12.7	9.1	0.002

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850396 STG-3	+700um O/S	170.0	5.71				
	TT	2805.2	94.23				
	TC M/A	0.1	0.00				
	TC N	1.7	0.06	1170.0	2750.0	1860.0	2.320
	Comp H	2977.0	100.00	0.7	1.6	1.1	0.001

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850397 STG-4	+700um O/S	15.0	0.58				
	TT	2568.1	99.35				
	TC M/A	0.1	0.00				
	TC N	1.8	0.07	730.0	1300.0	1050.0	1.140
	Comp H	2585.0	100.00	0.5	0.9	0.7	0.001

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850398 STG-5	+700um O/S	0	0				
	TT	2295.0	100.00				
	TC M/A	0	0				
	TC N	0	0				
	Comp H	2295.0	100.00	350.0	500.0	150.0	NIL

No Concentration Treatment, Calcined Au by Fire Assay. All assays on calcined residue

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850399	+700um O/S	1.0	0.06				
STG-6	TT	1165.0	66.57				
	TC M/A	563.0	32.17				
	TC N	21.0	1.20	210.0	168000.0	214000.0	0.550
	Comp H	1750.0	100.00	2.5	2016.0	2568.0	0.007

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850400	+700um O/S	0	0				
STG-7	TT	2476.6	99.46				
	TC M/A	4.9	0.20				
	TC N	8.5	0.34	110.0	52200.0	14800.0	0.470*
	Comp H	2490.0	100.00	0.4	178.2	50.5	0.002

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850401	+700um O/S	4950.0	43.10				
SR-CH-1	TT	6457.3	56.22				
	TC M/A	29.0	0.25				
	TC N	48.7	0.42	1380.0	107000.0	117000.0	0.080*
	Comp H	11485.0	100.00	5.9	453.7	496.1	0.000

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850402	+700um O/S	6687.0	44.61				
SR-CH-2	TT	8115.4	54.14				
	TC M/A	88.6	0.59				
	TC N	99.0	0.66	680.0	75000.0	131000.0	0.100
	Comp H	14990.0	100.00	4.5	495.3	865.2	0.001

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850403	+700um O/S	3510.0	35.28				
SR-CH-3	TT	6421.2	64.53				
	TC M/A	7.4	0.07				
	TC N	11.4	0.11	470.0	58000.0	61000.0	0.260*
	Comp H	9950.0	100.00	0.5	66.5	69.9	0.000

045

Reg/Sam No.	Product	grams	Mass	Sn	Ti	Zr	Au
850404 SR-CH-4	+700um O/S	5759.0	63.11				
	TT	3342.0	36.62				
	TC M/A	13.7	0.15				
	TC N	10.3	0.11	4900.0	109000.0	125000.0	2.910
Comp H	9125.0	100.00	5.5	123.0	141.1	0.003	

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850405 SR-CH-5	+700um O/S	1372.0	26.90				
	TT	3678.7	72.13				
	TC M/A	21.0	0.41				
	TC N	28.3	0.55	480.0	76000.0	60000.0	0.640
Comp H	5100.0	100.00	2.7	421.7	332.9	0.004	

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850406 SR-CH-6	+700um O/S	2121.0	55.09				
	TT	1697.6	44.09				
	TC M/A	13.6	0.35				
	TC N	17.8	0.46	590.0	62000.0	100000.0	3.810
Comp H	3850.0	100.00	2.7	286.6	462.3	0.018	

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850407 SR-CH-7	+700um O/S	3716.0	41.87				
	TT	5063.8	57.06				
	TC M/A	27.9	0.31				
	TC N	67.3	0.76	370.0	49000.0	48000.0	0.300
Comp H	8875.0	100.00	2.8	371.6	364.0	0.002	

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850408 SR-CH-8	+700um O/S	2413.0	36.23				
	TT	4207.8	63.18				
	TC M/A	23.1	0.35				
	TC N	16.1	0.24	820.0	137000.0	280000.0	1.180
Comp H	6660.0	100.00	2.0	331.2	676.9	0.003	

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Reg/Sam No.	Product	grams	Mass	Sn	Ti	Zr	Au
850409	+700um O/S	4241.0	57.04				
SR-CH-9	TT	3117.5	41.93				
	TC M/A	31.3	0.42				
	TC N	45.2	0.61	80.0	105000.0	4100.0	0.130*
	Comp H	7435.0	100.00	0.5	638.3	24.9	0.001

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850410	+700um O/S	0	0				
SR-CH-10	TT	1723.0	72.09				
	TC M/A	492.0	20.59				
	TC N	175.0	7.32	440.0	170000.0	344000.0	0.190
	Comp H	2390.0	100.00	32.2	12447.7	25188.3	0.014

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850411	+700um O/S	300.0	9.60				
SR-CH-11	TT	2156.0	68.99				
	TC M/A	500.0	16.00				
	TC N	169.0	5.41	680.0	161000.0	315000.0	0.020*
	Comp H	3125.0	100.00	36.8	8706.9	17035.2	0.001

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850412	+700um O/S	0.2	0.01				
SR-CH-12	TT	2812.9	91.48				
	TC M/A	201.9	6.57				
	TC N	60.0	1.95	480.0	162000.0	153000.0	0.180
	Comp H	3075.0	100.00	9.4	3161.0	2985.4	0.004

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850413	+700um O/S	0.5	0.01				
SR-CH-13	TT	3247.5	96.94				
	TC M/A	81.0	2.42				
	TC N	21.0	0.63	390.0	156000.0	140000.0	0.090*
	Comp H	3350.0	100.00	2.4	977.9	877.6	0.001

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Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Tl	Tonne Zr	Au
850414	+700um O/S	1.5	0.08				
SR-CH-14	TT	1880.5	99.50				
	TC M/A	2.2	0.12				
	TC N	5.8	0.31	74.0	18800.0	7900.0	0.350*
	Comp H	1890.0	100.00	0.2	57.7	24.2	0.001

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Tl	Tonne Zr	Au
850415	+700um O/S	28.4	0.31				
SR-1	TT	9186.6	99.64				
	TC M/A	1.3	0.01				
	TC N	3.7	0.04	93.0	15600.0	6600.0	0.530*
	Comp H	9220.0	100.00	0.0	6.3	2.6	0.000

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Tl	Tonne Zr	Au
850416	+700um O/S	10.8	0.57				
SR-2	TT	1891.7	99.04				
	TC M/A	0.3	0.02				
	TC N	7.2	0.38	62.0	9560.0	5260.0	1.110
	Comp H	1910.0	100.00	0.2	36.0	19.8	0.004

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Tl	Tonne Zr	Au
850417	+700um O/S	27.0	0.46				
SR-3	TT	5796.9	99.26				
	TC M/A	2.0	0.03				
	TC N	14.1	0.24	65.0	2000.0	600.0	0.220*
	Comp H	5840.0	100.00	0.2	4.8	1.4	0.001

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Tl	Tonne Zr	Au
850418	+700um O/S	70.8	2.65				
SR-4	TT	2585.5	96.65				
	TC M/A	0.8	0.03				
	TC N	17.9	0.67	< 4.0	1300.0	540.0	0.170*
	Comp H	2675.0	100.00	0.0	8.7	3.6	0.001

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Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850419 SR-5	+700um O/S	47.9	1.10				
	TT	4302.4	98.45				
	TC M/A	1.8	0.04				*
	TC N	17.9	0.41	14.0	1300.0	470.0	0.170
Comp H		4370.0	100.00	0.1	5.3	1.9	0.001

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850420 SR-7	+700um O/S	0.9	0.03				
	TT	3552.2	99.78				
	TC M/A	2.1	0.06				*
	TC N	4.8	0.13	46.0	13500.0	7400.0	0.620
Comp H		3560.0	100.00	0.1	18.2	10.0	0.001

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850421 SR-9	+700um O/S	237.0	3.11				
	TT	7306.0	96.01				
	TC M/A	1.8	0.02				*
	TC N	65.2	0.86	9.0	600.0	550.0	0.030
Comp H		7610.0	100.00	0.1	5.1	4.7	0.000

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850422 SR-19	+700um O/S	60.0	2.56				
	TT	2227.7	95.20				
	TC M/A	17.6	0.75				*
	TC N	34.7	1.48	190.0	48000.0	55000.0	0.090
Comp H		2340.0	100.00	2.8	711.8	815.6	0.001

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850423 SR-20	+700um O/S	3.8	0.21				
	TT	1784.2	97.50				
	TC M/A	3.0	0.16				*
	TC N	39.0	2.13	12.0	5800.0	2600.0	0.050
Comp H		1830.0	100.00	0.3	123.6	55.4	0.001

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Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850424 SR-21	+700um O/S	6.6	0.30				
	TT	2143.3	99.00				
	TC M/A	2.8	0.13				*
	TC N	12.3	0.57	38.0	18000.0	8700.0	0.240
	Comp H	2165.0	100.00	0.2	102.3	49.4	0.001

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850425 SOB-1	+700um O/S	43.4	1.77				
	TT	2189.9	89.38				
	TC M/A	169.0	6.90				
	TC N	47.7	1.95	610.0	186000.0	185000.0	0.150
	Comp H	2450.0	100.00	11.9	3621.3	3601.8	0.003

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850426 SOB-2	+700um O/S	83.3	2.64				
	TT	2956.5	93.71				
	TC M/A	83.5	2.65				*
	TC N	31.7	1.00	1160.0	175000.0	242000.0	0.060
	Comp H	3155.0	100.00	11.7	1758.3	2431.5	0.001

0.13 to Ti

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850427 SOB-3	+700um O/S	0.4	0.02				
	TT	1637.0	79.27				
	TC M/A	300.2	14.54				
	TC N	127.4	6.17	850.0	141000.0	222000.0	0.150
	Comp H	2065.0	100.00	52.4	8699.0	13696.3	0.009

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850428 SOB-4	+700um O/S	206.0	8.75				
	TT	2017.1	85.72				
	TC M/A	83.8	3.56				
	TC N	46.1	1.96	880.0	119000.0	221000.0	0.170
	Comp H	2353.0	100.00	17.2	2331.4	4329.8	0.003

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850429	+700um O/S	148.0	7.20				
SOB-5	TT	1570.7	76.43				
	TC M/A	231.7	11.27				
	TC N	104.6	5.09	2590.0	121000.0	340000.0	0.270
	Comp H	2055.0	100.00	131.8	6158.9	17306.1	0.014

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850430	+700um O/S	3.5	0.17				
SOB-6	TT	1834.6	91.27				
	TC M/A	123.5	6.14				*
	TC N	48.4	2.41	410.0	142000.0	196000.0	0.060
	Comp H	2010.0	100.00	9.9	3419.3	4719.6	0.001

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850431	+700um O/S	91.0	3.71				
SOB-7	TT	2063.6	84.23				
	TC M/A	197.9	8.08				
	TC N	97.5	3.98	1090.0	118000.0	305000.0	0.330
	Comp H	2450.0	100.00	43.4	4695.9	12137.8	0.013

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850432	+700um O/S	87.0	2.92				
SOB-8	TT	2686.5	90.30				
	TC M/A	151.8	5.10				
	TC N	49.7	1.67	710.0	160000.0	210000.0	0.120
	Comp H	2975.0	100.00	11.9	2672.9	3508.2	0.002

0.267%

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850433	+700um O/S	16.7	0.54				
SOB-9	TT	2090.3	67.43				
	TC M/A	765.0	24.68				
	TC N	228.0	7.35	1440.0	156000.0	300000.0	0.380
	Comp H	3100.0	100.00	105.9	11473.5	22064.5	0.028

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Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850434	+700um O/S	152.0	5.82				
SOB-10	TT	2167.8	83.06				
	TC M/A	232.5	8.91				
	TC N	57.7	2.21	790.0	179000.0	285000.0	0.430
	Comp H	2610.0	100.00	17.5	3957.2	6300.6	0.010

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850435	+700um O/S	78.0	3.55				
SOB-11	TT	1848.3	84.01				
	TC M/A	216.4	9.84				
	TC N	57.3	2.60	360.0	139000.0	194000.0	0.050
	Comp H	2200.0	100.00	9.4	3620.3	5052.8	0.001

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850436	+700um O/S	131.0	4.48				
SOB-12	TT	2487.3	85.04				
	TC M/A	238.5	8.15				
	TC N	68.2	2.33	340.0	163000.0	258000.0	0.030
	Comp H	2925.0	100.00	7.9	3800.5	6015.6	0.001

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850437	+700um O/S	326.0	10.87				
SOB-13	TT	2330.2	77.67				
	TC M/A	264.0	8.80				
	TC N	79.8	2.66	630.0	142000.0	232000.0	0.090
	Comp H	3000.0	100.00	16.8	3777.2	6171.2	0.002

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850438	+700um O/S	152.0	5.33				
SOB-14	TT	2481.2	87.06				
	TC M/A	156.4	5.49				
	TC N	60.4	2.12	160.0	118000.0	104000.0	0.050
	Comp H	2850.0	100.00	3.4	2500.8	2204.1	0.001

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118053

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850439	+700um O/S	120.0	3.99				
SOB-15	TT	2469.9	82.19				
	TC M/A	313.8	10.44				*
	TC N	101.3	3.37	220.0	128000.0	140000.0	0.030
	Comp H	3005.0	100.00	7.4	4314.9	4719.5	0.001

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850440	+700um O/S	209.0	7.18				
SOB-16	TT	2322.8	79.82				
	TC M/A	308.6	10.60				*
	TC N	69.6	2.39	200.0	173000.0	158000.0	0.030
	Comp H	2910.0	100.00	4.8	4137.7	3779.0	0.001

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850441	+700um O/S	15.5	0.72				
SOB-17	TT	1912.5	89.16				
	TC M/A	174.2	8.12				*
	TC N	42.8	2.00	170.0	138000.0	87000.0	0.050
	Comp H	2145.0	100.00	3.4	2753.6	1735.9	0.001

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850442	+700um O/S	61.0	2.72				
SOB-18	TT	2044.6	91.28				
	TC M/A	111.0	4.96				
	TC N	23.4	1.04	580.0	135000.0	131000.0	0.210
	Comp H	2240.0	100.00	6.1	1410.3	1368.5	0.002

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850443	+700um O/S	38.0	1.89				
SOB-19	TT	1916.8	95.32				
	TC M/A	27.8	1.38				*
	TC N	28.4	1.41	880.0	139000.0	189000.0	0.070
	Comp H	2011.0	100.00	12.4	1963.0	2669.1	0.001

053

118054

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850444	+700um O/S	136.0	8.05				
S0B-20	TT	1487.8	88.04				
	TC M/A	50.8	3.01				
	TC N	15.4	0.91	150.0	79000.0	40000.0	0.980
	Comp H	1690.0	100.00	1.4	719.9	364.5	0.009

07870

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850445	+700um O/S	235.0	11.58				
S0B-21	TT	1745.3	85.98				
	TC M/A	31.6	1.56				*
	TC N	18.1	0.89	100.0	47000.0	32000.0	0.110
	Comp H	2030.0	100.00	0.9	419.1	285.3	0.001

100

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850446	+700um O/S	294.0	9.56				
S0B-22	TT	2766.6	89.97				
	TC M/A	12.6	0.41				*
	TC N	1.8	0.06	60.0	28000.0	15000.0	0.250
	Comp H	3075.0	100.00	0.0	16.4	8.8	0.000

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850447	+700um O/S	130.0	6.28				
S0B-23	TT	1927.4	93.11				
	TC M/A	8.9	0.43				*
	TC N	3.7	0.18	140.0	59000.0	37000.0	0.530
	Comp H	2070.0	100.00	0.3	105.5	66.1	0.001

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850448	+700um O/S	121.0	6.00				
S0B-24	TT	1850.2	91.82				
	TC M/A	25.5	1.27				
	TC N	18.3	0.91	510.0	35000.0	37000.0	0.220
	Comp H	2015.0	100.00	4.6	317.9	336.0	0.002

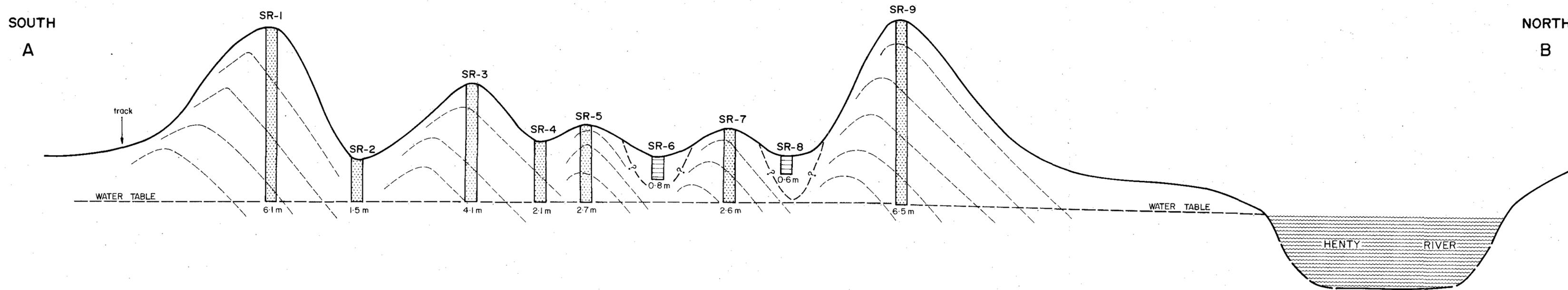
054

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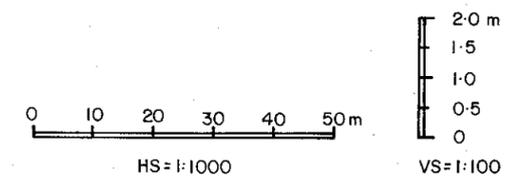
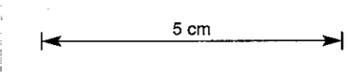
Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850449	+700um O/S	13.0	0.62				
SOB-25	TT	1935.7	92.84				
	TC M/A	103.1	4.94				
	TC N	33.2	1.59	75.0	75000.0	40000.0	5.110
	Comp H	2085.0	100.00	1.2	1194.2	636.9	0.081

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850450	+700um O/S	238.0	9.64				
SOB-26	TT	2040.5	82.61				
	TC M/A	140.8	5.70				
	TC N	50.7	2.05	330.0	89000.0	79000.0	0.320
	Comp H	2470.0	100.00	6.8	1826.8	1621.6	0.007

Reg/Sam No.	Product	Dry Mass grams	% Mass	Grams Sn	per Ti	Tonne Zr	Au
850451	+700um O/S	30.5	1.37				
SOB-27	TT	2184.1	98.16				
	TC M/A	8.2	0.37				
	TC N	2.2	0.10	420.0	155000.0	94000.0	15.700
	Comp H	2225.0	100.00	0.4	153.3	92.9	0.016

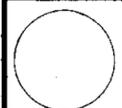


-  Clay
-  Sand
- SR-5 Sand Auger Drill Hole
-  Schematic Bedding

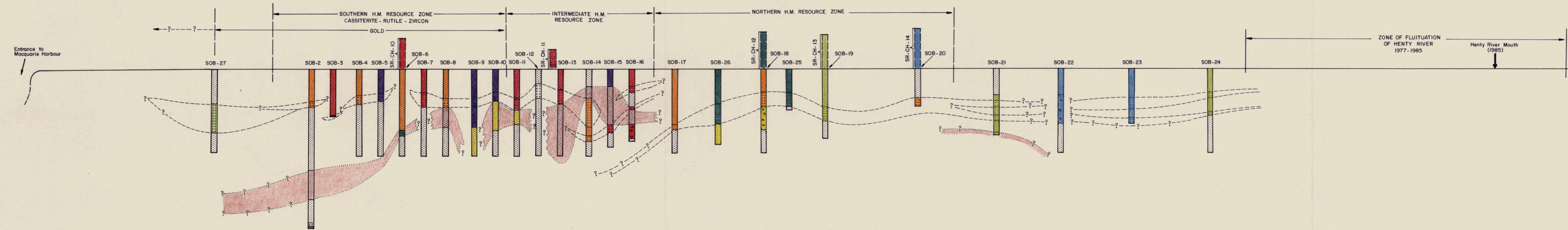


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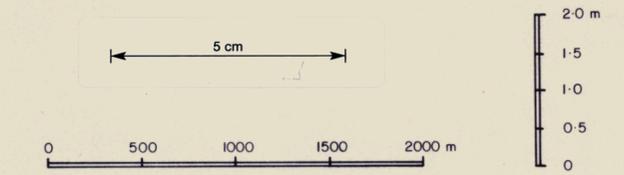
SECTION STRIKES 014° TRUE
HORIZONTAL SCALE - 1:1000
VERTICAL SCALE - 1:100
V/H - 10

 NORTH	NEWMONT HOLDINGS PTY. LTD.	
	COMPILED T. SUMMONS	SCALE 1:1000
	DRAWN MFC	DRAWING No
	DATE JUNE, 1985	FIGURE No

EL 4/84 - STRAHAN, TASMANIA
**Cross Section of the
Henty River Point Bar
Sequence** 365



- CLAY
 - SAND
 - SAND, MINOR PEBBLES
 - PEBBLE GRAVEL, or PEBBLY SAND
 - HUMATE STAINING/INDURATION
 - SR-CM-10 LOCATION OF CHANNEL SAMPLE
 - SOB-20 LOCATION OF SLUDGE DRILLHOLE
-
- HEAVY MINERALS**
- 0.5 - 1 %
 - 1 - 5 %
 - 5 - 10 %
 - 10 - 20 %
 - 20 - 30 %
 - > 30 %
 - ? CONTAMINATION IN DRILL HOLE



Horizontal Scale - 1:25,000
 Vertical Scale - 1:62.5
 Vertical Exaggeration = 400

NORTH	NEWMONT HOLDINGS PTY. LTD.		EL 4/84 - STRAHAN, Tasmania OCEAN BEACH - UNCURED VERTICAL PROJECTION 366 FACING SEAWARD (West)
	COMPILED T. SUMMONS	SCALE 1:25,000	
	DRAWN MFC	DRAWING No.	
	DATE JUNE, 1985	FIGURE No.	

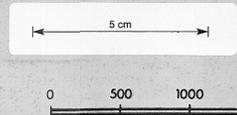
85-2454



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85-2454

NEWMONT HOLDINGS PTY. LTD.			
PROJECT	EL4/84 TASMANIA		
TITLE	COASTAL GEOMORPHOLOGY		
SURVEY	SCALE	PLAN No.	PLATE
T. Summons	1: 25 000		1
DRAWN	DATE	364	
D. Brame	July 1985		

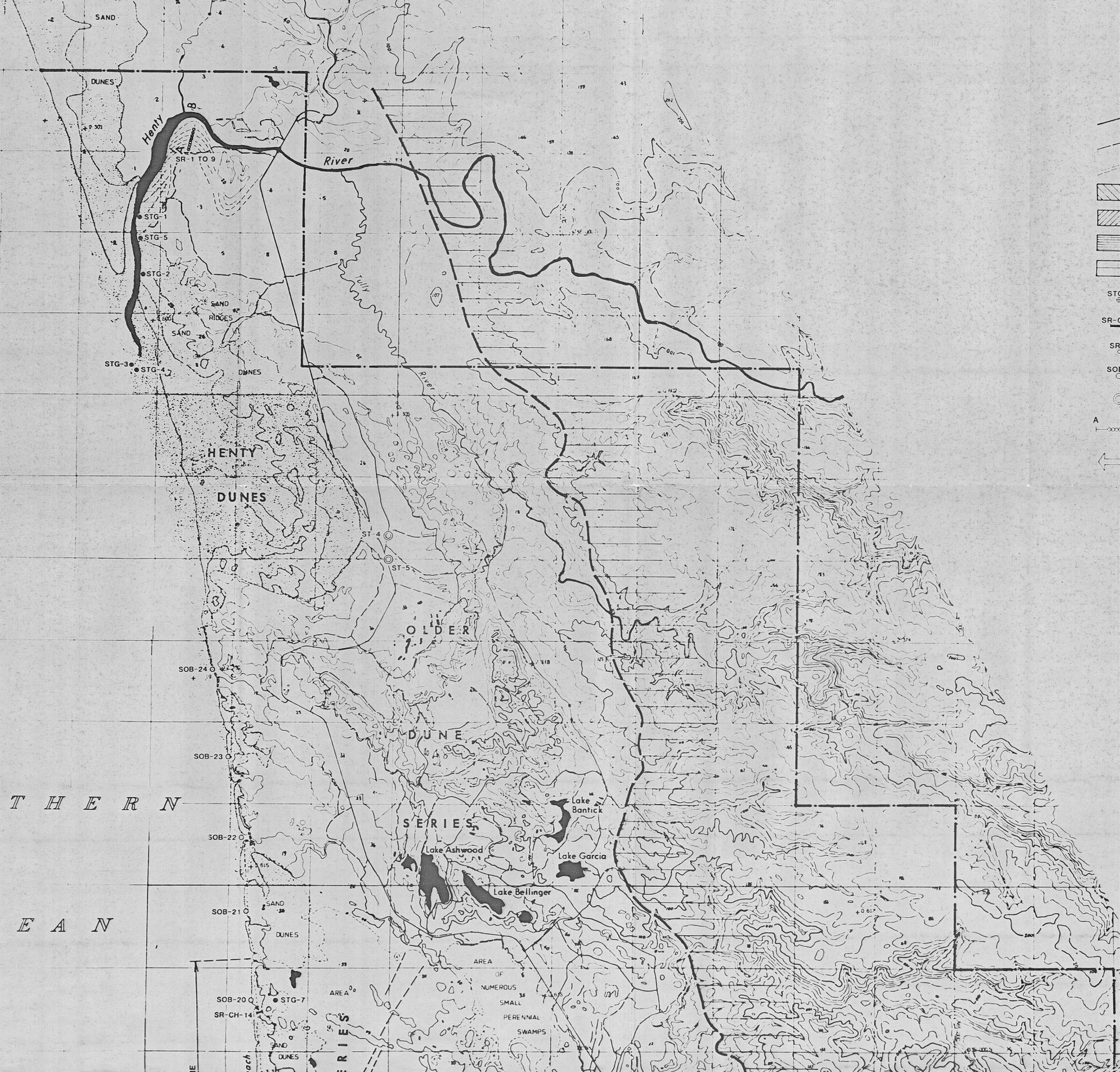
MICROFILMED
FICHE No. 2
BOTTOM LEFT



TOP LEFT

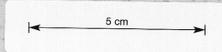
MICROFILMED
FICHE No. 2 -

346 000 N
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348 000 N
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400 000 N



- Quaternary strandline (c. 22 m ASL)
- Pseudolinear (? strandline 0-5 m ASL)
- Point bars (Henty River)
- Dead Horse Terrace (20 m ASL)
- Stream Terrace (40 m ASL)
- Davis Terrace (75 m ASL)
- Henty Surface (cut into Pre-Tertiary basement rocks)
- STG-1 Grab sample
- SR-CH-1 Channel sample
- SR-1 Sand auger drill hole
- SOB-1 Sludge drill hole (Ocean Beach)
- ST-1 CHAN open hole
- A B Sand auger drill holes (close spacing) (see Figure 2 for detail)
- ?Pre-Pleistocene tracts of the King River
- Spot heights in metres

Contour interval 20 metres



S O U T H E R N

O C E A N

DUNE

Beach

AREA OF NUMEROUS SMALL PERENNIAL SWAMPS