CONTENTS ENVELOPE 1527

TENEMENT: S.M.L. 512

TENEMENT HOLDER: R. Grasso Pty. Ltd.

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R. Grasso Pty. Ltd.
Special Mining Lease 512

Quarterly Report
19/11/70 - 19/2/71

By
D.W. Fox
MINOIL SERVICES PTY. LTD.
Adelaide

CONTENTS

INTRODUCTION

S.M.L. 512 covers an area of approximately 5 square miles in the Hundred of Haines, Kangaroo Island. It has an east-west length of approximately 8 miles and the northern boundary is the line parallel to and one half mile inland from the high water mark.

Minoil Services Pty. Ltd. has conducted a short auger drilling programme in the area.

PREVIOUS WORK

Previous exploration work has been carried out in this area by Geosurveys Australia Ltd., Geotechnics (Aust.) Pty. Ltd., S.A. Mines Department, and Minoil Services. This has shown an area of sand dunes which contains heavy mineral at a grade of around 0.3% H.M. but different writers disagree over the ore reserves.

CURRENT INVESTIGATIONS

Beach sand mining plants on the east coast of Australia have determined that mining of a deposit of 0.3% heavy mineral is uneconomic using currently accepted methods of up-grading. The aim of this investigation in the initial stages has therefore been to develop a method to economically up-grade this deposit.

It has been noted in previous investigations that there is a considerable difference in average grain size between the quartz sand and the heavy mineral sand, and preliminary work has been directed at determining the relationship between quartz and heavy mineral grain size.

The heavy mineral fraction from samples taken by Minoil Services in 1964 were grouped into nine areas and the composite samples sieved and weighed. Each of these areas were again auger sampled and a composite sample taken from each area, the samples sieved and weighed. The results of this are as shown in Appendices A and B.

These results would tend to indicate two possible cut-off points, Viz 72 mesh or 85 mesh.

At 72 mesh, 84.2% of the quartz sand is rejected and 55.63% of the heavy mineral retained. At 85 mesh, 89.79% of the quartz sand is rejected and 42.99% of the heavy mineral retained.

A size distribution analysis on the rutile contained in the beach deposit in this region is shown in Appendix C and it is reasonable to assume that the rutile size distribution throughout the sand dunes should be similar. This being the case, then screening at 72 mesh would result in the retention of approximately 85% of the rutile and screening at 85 mesh will result in the retention of 80.25% of the rutile.

This means an up-grading at 72 mesh of:

(1) Heavy Mineral - 3.57
(2) Rutile - 5.47

or at 85 mesh

(1) Heavy Mineral - 4.17
(2) Rutile - 7.77

SUMMARY

Preliminary investigations have shown that by screening the dune sands the heavy mineral may be up-graded by 3.57 at 72 mesh with 85% recovery of the rutile, or by 4.17 at 85 mesh with 80.25% recovery of the rutile.

RECOMMENDATIONS

It was noted during previous investigations by Minoil Services that the average heavy mineral grain size in the sand dunes appeared to be finer than the average beach deposit grain size . It is recommended that a sample be taken from the sand dunes, sufficiently large that a representative size distribution analysis may be done on the rutile contained in the sand. With the rutile content in the up-graded sand thus determined a feasibility study will be initiated on mining methods and screening methods.

APPENDIX A

Size distribution of heavy mineral fraction.

	MESH	%
Area (1)	+36	13.48
	-36+52	10.11
	-52+72	35.96
	-72+85	7.87
	-85+100	7.87
	-100	24.71
Area (2)	+36	23.65
	-36+52	8.11
	-52+72	22.97
	-72+85	6.76
	-85+100	3.38
	-100+120	14.86
	-120	20.27
Area (3)	+36	9.55
	-36+52	8.92
	-52+72	19.11
	-72+85	15.29
	-85+100	7.64
	-100	39.49
Area (4)	+36	8.10
	-36+52	10.48
	-52+72	22.38
	-72+85	14.29
	-85+100	10.48
	-100+120	5.71
	-120	28.56
Area (5)	+36	25.93
	-36+52	7.41
	-52+72	14.81
	-72+85	7.41
	-85+100	7.41
	-100	37.03

Area (6)	+52	12.27
	-52+72	26.99
	-72+85	12.27
	-85+100	4.29
	-100+120	13.50
	-120	30.68
Area (7)	+36	17.54
	-36+52	7.02
	-52+72	17.54
	-72+85	11.70
	-85+100	7.02
	-100+120	9.94
	-120	29.24
Area (8)	+36	13.55
	-36+52	15.66
	-52+72	21.69
	-72+85	15.06
	-85+100	6.02
	-100+120	9.64
	-120	18.38
Area (9)	+52	8.00
	-52+72	19.20
	-72+85	13.60
	-85+100	12.00
	-100+120	17.60
	-120	29.60

Average result over entire area

+36	11.32
-36+52	10.76
-52+72	22.29
-72+85	12.66
-85+100	7.17
-100	35.80

APPENDIX B

Percentage size distribution of sand.

Area	(1)	(2)	(3)	(4)	(5)
Mesh					
+36	11.07	11.09	39.95	17.85	41.89
-36+52	15.77	21.85	37.98	23.30	39.16
-52+72	32.26	49.32	17.13	41.92	15.88
-72+85	18.83	8.94	1.96	5.03	1.73
-85+100	5.32	5.26	1.59	6.99	0.36
-100+120	7.34	1.37	0.43	2.54	0.30
-120+150	2.50	0.54	0.29	0.94	0.26
-150	2.91	1.63	0.67	1.43	0.42

Area	(6)	(7)	(8)	(9)
Mesh				
+36	21.12	15.48	37.53	8.79
-36+52	29.77	18.42	22.82	41.70
-52+72	41.58	26.05	22.04	41.34
-72+85	0.71	8.25	6.36	5.21
-85+100	3.91	12.39	7.04	2.40
-100+120	1.38	12.41	2.34	0.33
-120+150	0.51	4.27	0.81	0.08
-150	1.02	2.73	1.06	0.15

Average result over entire area

Mesh	%
+36	23.61
-36+52	29.42
-52+72	31.59
-72+85	5.17
-85+100	4.92
-100+120	3.00
-120+150	1.08
-150	1.21

APPENDIX C

Size distribution of rutile in adjacent beach deposit.

Mesh	%
+60	0.53
-60+85	19.22
-85+100	58.73
-100	21.52

NEPEAN BAY

Area 9
Area 8
Area 7
Area 6
Area 3
Area 4
Area 5
Area 2
Area 1

291
209
146
139
350
351

5387 5388 5389 5390 5391 5392 5393 5394 5395 5396 5397 5398
5399 5400 5401 5402 5403 5404 5405 5406 5407 5408 5409 5410 5411

144 145 147 148 140 138 137 136 135 134
155 195 196 197 198 199 200

KINGSCOTE 11 MILES

Plan showing sample areas.

40 0 40 80 120
SCALE IN CHAINS

PROPOSED BEACH SANDS MINING AREA
KANGAROO ISLAND
SOUTH AUSTRALIA.

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MINOIL SERVICES PTY. LTD.

K.I.