Log Rep on Heavy Mineral Deposits E.L. 21/69 S.W. Tas for Sub-Oceanic by M. Forsten April (?) 1970

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PROGRESS REPORT ON HEAVY MINERAL DEPOSITS E.L. 21/69 S.W. TAS

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PROGRESS REPORT ON HEAVY MINERAL DEPOSITS

EXPLORATION LICENCE 21/69, SOUTH WESTERN TASMANIA

INTRODUCTION

A brief aerial recpnnaissance was carried out over an area ~~extending~~ from Cox Bight on the south coast to Nye Bay on the west coast of Tasmania and including beaches at Port Davey, Payne Bay, Bond Bay and Kelly Basin during the period 9th November and 11th November, 1969. Scout drilling and reconnaissance sampling was undertaken over the period 5th March and 21st March, 1970 to determine the extent and possible grade of the known occurences of heavy minerals and also to briefly examine any other areas which could be commercially promising.

PORT DAVEY - NYE BAY

(a) Bond Bay

The north end of Bond Bay beach is 1,100 yards long and averages 35 feet in width. The average depth of sand as obtained from drill hole data was 8'6",

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giving an estimated quantity of beach sand (based on 25 cubic feet of beach sand equals 1 ton) in the vicinity of 24,000 tons. Scout drilling by hand auger, using a sludge pump and casing when below the water table, was undertaken at 400 foot intervals along the beach.

In addition to this, three traverses, 1,200 feet apart, were established on the beach so as to extend at approximate right angles to the stranded beach inland. Sampling along these traverses was undertaken, also using hand auger, at 50 foot intervals to delineate sand deposits inland. The auger drilling showed a coastal or wave cut platform was overlain by sand deposits extending from the present day sea cliffs, which average 4 feet in height, inland for an average distance of 225 feet and then rising steeply to a 50 foot height, older, probably wave cut cliffs. Auger drilling across the stranded beach showed that the deposit averages 7'4" in depth. The average depth of soil on the old sea cliff slopes was 1'7" with bedrock immediately beneath.

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Estimated quantity of sand on the wave cut platform from drill hole data is approximately 172,000 tons. No further sand deposits were discovered inland beyond the old sea cliff. Three further auger holes were drilled on the stranded beach between the three traverses.

RESULTS : The heavy mineral fractions obtained from the drill hole samples have been tabulated.

Between traverse A and B the average results are as follows :-

The present day beach - 3.10%
The estimated heavy mineral content - 372 tons.

The stranded beach - 2.87%
The estimated heavy mineral content is 2,169 tons.

Between B and C traverses plus the results of 2 holes placed at the south end of the beach.

The present day beach - 7.30%.

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The estimated heavy mineral content - 1,635 tons.

The stranded beach - 2.54%
The estimated heavy mineral content - 2,487 tons.

Total heavy mineral tonnage for Northern Bond Bay - 6,663 tons.

(b) Kelly Basin and southeast Bond Bay

Heavy mineral concentrations were sighted during an aerial survey. Reconnaissance sampling during a period of two days included surface sampling and also drill hole sampling using a hand auger.

Kelly Basin is a shallow tidal basin with an estimated 6 miles of beaches. To the eastern side the beaches average 880 yards long and a width of 150 yards. Quartzites and schists outcrop as headlands between the beaches. The northeastern side has coarse sand beaches which were found to extend eastwards inland as parallel dunes over an area of

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2,000 yards by 500 yards, with a frontal beach to the north averaging 7 yards in width. This beach would be considered as a south eastern portion of Bond Bay.

The southeastern side of Kelly Basin has only narrow pebbly beaches with quartzose schist rocky outcrop headlands. The beaches average 5 to 10 yards in width and 500 yards in length. Inland from the beaches are bedrock sea cliffs 10 feet in height. Similar topography is found on the south, west and northern beaches of Kelly Basin. Offshore subtidal sands and muds were found to extend over half Kelly Basin where the depth of water is only 2 feet. This considerable area of subsurface sands deepens towards the centre of the basin where it is considered to have a sediment depth of over 30 feet.

RESULTS : Surface samples from the beaches at four localities have an average heavy mineral percentage of 12.62%. A further 13 drill holes using hand auger equipment have been placed at approximate one mile intervals around Kelly Basin, and in the parallel

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dunes of southeast Bond Bay. Of these, three in Kelly Basin were positioned over 100 yards from the shore to determine depth and grade of the subsurface sands.

The average grade of the 13 drill holes is 8.22%. The significant heavy mineral fractions were found to come from the more pebbly beaches of the south and western beaches. The coarse sands of the eastern beaches and the similar sands of the parallel dunes contained lower heavy mineral fractions. Of the three offshore drill holes only one to the southeast of Kelly Basin contained over 5% heavy minerals.

The beach areas of Kelly Basin from a preliminary calculation, using limited data from the bore holes, contain 38,000 tons of beach sands and pebbles. An approximation on the subsurface deposits of Kelly Basin gave 3 million tons.

A further 1½ million tons of sand may be found in the beach and dune sands of southeast Bond Bay.

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Any inland deposits of sand to the southern and western parts of Kelly Basin are believed to be small - one auger hole placed inland penetrated 2 feet of soil and peat before intercepting bedrock.

(c) Nye Bay

Heavy mineral concentrations were sighted during an aerial survey and the ground inspected at a later date. The beach varies from 200 to 300 feet in width, comprises a spit about one mile long extending across the mouth of the Giblin River. Transverse dunes up to 50 feet high extend for one mile inland and trend southeast.

One day of field work using the hand auger was undertaken to scout drill any favourable heavy mineral concentrations.

A site with reported heavy mineral concentrations by the Mines Department of Tasmania was drilled to 15 feet at the southeast end of the transverse dunes two

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miles upstream and 200 yards northwest of the Giblin River. Samples from 0-5 feet and 10-15 feet were lacking in heavy minerals. The sample from 5-10 feet depth contained a heavy mineral fraction of 10%.

A second hole was positioned on the western side of the Giblin River mouth. This site contained no significant concentrations.

The remaining sections of beach and inland dunes were reconnoitred but no significant heavy mineral concentrations were seen.

(d) Wreck Bay

The beach is one mile long and averages 300 feet across rising to 40 feet high fore dunes. Behind the dunes the ground drops down to a lower undulating surface with a peaty topsoil. Quartzites and schists outcrop along most of the beach and quartzite hills occur 200 yards inland from the foredunes. Concentrations of heavy minerals appear at the front

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of the dunes and in blow out sections going inland, with slightly heavier concentrations in small streams bisecting the dunes. Surface sampling in the foredunes indicated heavy mineral concentrations down to 3 feet below the surface. The estimated thickness of the foredunes is 30 feet. Few concentrations were observed on the sea washed beaches. Five surface samples were taken - one sample from each end of the southern half of the beach, and three samples in a traverse through the foredunes on the north half of the beach. These three samples were taken at 50 yard intervals at the position of the highest inland portion of the foredunes, the highest seaward portion and at the foot of the foredunes.

Average grade for four samples analysed showed a very constant heavy mineral fraction of 4.89%.

(e) Transverse Dunes Near Hobbs Island

Aerial photographs show a wedge shaped belt of transverse dunes on the mainland extending southeast

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inland from a small bay north of Hobbs Island.

Foredunes behind the beach rise to 200 feet in height then grade into transverse dunes which are about 150 feet above sea level. The transverse dunes extend southeastwards for 1,000 yards with a probable extension for 2½ miles. Maximum width is about three quarters of a mile. Each transverse dune parallels the other with a distance from crest to crest of 100 feet and an average height of 20 - 30 feet.

Significant heavy mineral concentrations were not seen in the transverse dunes. The foredunes have some wind blown concentrations on the surface and in stream beds which cut through the foredunes. One surface sample from the crest of a transverse dune contained 1.35% heavy mineral fraction. Only small concentrations were observed on the sea washed beaches.