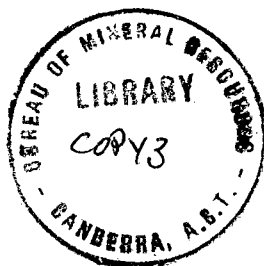


COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT
BUREAU OF MINERAL RESOURCES
GEOLOGY AND GEOPHYSICS

RECORDS:

1953/41



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MINISTRY OF NATIONAL DEVELOPMENT.
BUREAU OF MINERAL RESOURCES,
GEOLOGY AND GEOPHYSICS.

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PAMPHLET NON-ACCOUNTABLE

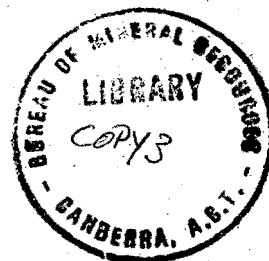
BUREAU OF
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BEACH SAND HEAVY MINERAL DEPOSITS AT LAURIELTON.

by

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Introduction.

The Laurieton area was visited on 29th-30th January by N.H. Fisher and D.W. Gardner, with R. McLeod, field assistant. Boring and sampling were carried out of a beach deposit south of Grants Head where North Coast Minerals Ltd., are erecting a treatment plant. A brief examination was also made of the area south of Pt. Perpendicular, where exploratory boring was in progress.

Laurieton is situated on Camden Haven Inlet, 2 miles from its entrance into the sea. It is five miles from the Pacific Highway at Kew and 6 miles from the North Coast Railway at Kendall, which is 259 miles from Sydney.

The deposit south of Grants Head is 2 miles north of the entrance to Camden Haven Inlet and about 4 miles by road from Laurieton (Grid reference is 911.886 on Camden Haven 1 inch Military Map H/56/14.354).

The area that was examined south of ^{Pt.}Perpendicular ~~to~~ Camden Head is 2 miles east of Laurieton (Grid reference 896.827 on same map).

Grants Head Beach Deposit.

The beach north of Camden Haven Inlet terminates at the north end at a rocky headland which rises to a height of 170 feet and is composed mainly of cemented conglomerate. Immediately south of the headland is a small dry creek. The beach deposit of heavy minerals extends from the northern end of the beach, 300 north of the creek, for at least 1400 feet south.

The maximum width of the deposit is about 120 feet, average about 60 feet, and greatest thickness found 3 feet. The beach is a typical open shelving sandy beach 200 to 300 feet wide, with a parallel dune on the landward side of the beach, rising to about 20 feet above near sea level, and a berm or shelf about 50 feet wide along the front of the foredune. Bores were put down at 60 foot intervals along lines 200 feet apart and at right angles to the beach. Results of the boring are set out below. Samples were washed and the percentage of heavy minerals measured volumetrically. This volume percentage was converted into weight percentage by means of wt/vol percentage curve. All concentrates obtained were bulked together for determination of average composition.

Line 00 at North end of Beach

	Depth	Description	H.m. Content % by wt.	Remarks.
Hole 00/00	0-1'6"	Sand and h.m.	16%	Hole 30 E of Solid Rock cliff.
	1'6-4'6"	Mostly quartz sand	-	Rock bottom
Hole 00/60E	0-2'0"	Mostly quartz	-	
	2'0-2'6"	Sand and h.m.	12.5	Water level at 2'6"

No heavy mineral was found at 120E or at 60' W.

Line 200' S.

Hole 200/00	0 - 4'	Sand	Trace	Hole 30'E of solid rock cliff.
	4'-6'3"	Sand and h.m.	12.5	-
	6'3"-6'8"	Yellow sand	-	Rock bottom.
Hole 200/60E	0 - 1'	Sand	Trace	-
	1'-2'9"	Sand and h.m.	12.5	Water level at 2'9"
Hole 200/120E	0 - 3'0"	Sand	Trace	Water at 3'0"

Line 400' S.

Hole 400/00	0 - 3"	Sand	-	Hole 20'E of berm
	3"-3'8"	Bands of sand and h.m. some highgrade.	25%	Water level at 3'8"
400/60E	0 - 1'	Sand	Trace	-
	1'-2'9"	Sand and h.m.	17%	Water level at 2'9"
400/120E	0 - 1'9"	Sand	Trace	Water at 1'9"
400/60W	0 - 5'3"	Sand	Trace	On berm
	5'3"-7'0"	Sand with band of h.m.	28%	Water level at 7'0"
400/120W	0 - 8'0"	Sand	Trace	Hole 3' from E wall of plant.
	8'-10'0"	Soil	-	-
	10 - 14'6"	Grey sand	Trace	-
350/110W	0 - 1'6"	Sand and h.m.	14%	Bore in gully
	1'6"-4'0"	Sand and decayed wood.	Trace	-
450/90W	0 - 14'6"	Sand	Trace	-
	14'6"-15'0"	Soil	-	-
	15'0"-16'6"	Sand and h.m.	12.5%	-
	16'6"-17'0"	Grey sand	-	Water at 17'

Line 600 S.

Hole 600/00	0 - 2'9"	Sand with small amt. h.m.	8%	Hole 20'E of berm
	2'9"-3'6"	Mostly h.m.	-	Water level at 3'6"
Hole 600/60E	0 - 2'	Sand	Trace	Water at 2'
Hole 600/60W	0 - 8'6"	Sand	Trace	Hole on berm 30'E of foot of foredune.
	8'6"-11'6"	Sand and bands of h.m.	28%	Water at 11'6"

Line 800 S.

Hole 800/00	0 - 4'6"	Sand	Trace	Hole on berm 15'E of foredune.
	4'6"-6'6"	Sand and small amts. h.m.	3%	-
	6'6"-7'8"	Mostly h.m.	40%	-
	7'8"-11'0"	Brown and grey sand.	-	Water at 11'0"
Hole 800/60E	0 - 1'9"	Sand	-	Hole 25'E of berm.
	1'9"-3'0"	Sand and poor h.m.	5%	-
	3'0"-3'6"	Sand	Trace	Water at 3'6"
Hole 800/120E	0 - 3'0"	Sand	-	Water at 3'0"

Line 1000 S.

Hole 1000/00	0 - 9'6"	Sand	Trace	Hole on berm 20'E of foot of foredune.
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9'6"-10'	Mostly h.m.	} 27%	Water at 12'
10'0"-11'6"	Sand with amt. h.m.		
11'6"-12'	Sand and h.m.		
Hole 1000/60E 0 -2'9"	Sand	-	
2'9"-4"	Sand with small amt. h.m.	3%	Water at 4'
Hole 1000/120E 0-3'6"	Sand	-	Water at 3'6"
<u>Line 1200 S.</u>			
Hole 1200/00 0 -6'6"	Sand	-	Hole on berm
6'6"-8'6"	Sand	Trace	
8'6"-10'0"	Sand	-	
10'0"-11'3"	Mostly h.m.	54%	
11'3"-14'6"	Brown Sand	-	Water at 14'6"
Hole 1200/60E 0 -4'6"	Sand	-	Hole 30'E of edge of berm
4'6"-5'3"	Sand and small amt. h.m.	5%	Water at 5'3"
<u>Line 1400 S.</u>			
Hole 1400/00 0 -7'9"	Sand	Traces	Hole 10'E of foredune.
7'9"-9'0"	Largely h.m.	40%	-
9'0"-11'0"	Sand	Trace	-
11'0"-13'	White and brown sand.	-	Water at 13'

Tonnage of concentrate in the area from 0 to 1400' south calculated from these boring results amounts to 4450 tons. In addition bores 00/60E, 200S/60E, 400S/00, 400S/60E, 400S/60W, 600S/00, 600S/60W and 1000S/00 were still in heavy mineral at water level, so that the bottom of the deposit was not reached, posthole digger being limited by water level, so that total tonnage present exceeds the above figure. Reliable local reports state that additional heavy mineral is thrown up on the beach after heavy storms; Adjacent to the plant is a sand dump containing 18% heavy mineral, representing about 50 - 60 tons of concentrate.

Composition of the bulk concentrate obtained from the boring is given below.

	per cent
Zircon	39.2
Rutile	37.9
Ilmenite	19.6
Monazite	1.4
Garnet	0.2
Tourmaline	1.3
Other Minerals	0.4
	<u>100.0</u>

Zircon grains are fairly well rounded, with comparatively few inclusions and unstained. Rutile grains are large and relatively transparent; Ilmenite grains free from leucoxene coating; other minerals consist of epidote, leucoxene and green spinel.

Deposit South of Camden Head.

A brief inspection was made of an area about 1 mile south of Camden Head and 100 yards behind the beach, where North Coast Minerals were carrying out prospecting work in a trough behind the foredune and immediately in front of the large main dune. One borehole put down during this inspection passed through a 1-foot seam at 11 to 12 feet depth, containing 55 per cent of heavy mineral and another about 60 feet east of the first passed through 4 feet 6 inches of heavy mineral from 9 feet to 13 feet 6 inches depth, of which the bottom 2 feet 6 inches contained 40% heavy mineral. The length of this deposit was not established.

Composition of a composit sample from the two boreholes is given below:-

Zircon	46.5
Rutile	34.2
Ilmenite	17.3
Monazite	0.4
Garnet	0.3
Tourmaline	1.0
Other Minerals	0.2
	<hr/>
	100.0

Deposits of heavy minerals are reported to exist at other places along this section of coast, notably at Diamond Head, 6 miles south of Laurieton, but these were not examined.