DEPARTMENT OF MINES.
SOUTH AUSTRALIA.

REPORT ON

RUTILE DEPOSIT

SECTION 328, HUNDRED OF JUTLAND,

COUNTY OF STURT.

(M.L. NORTON.)

by

L.G. NIXON,

GEOLOGIST.

MINERAL RESOURCES SECTION

GEOLOGICAL SURVEY.

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Map Reference	Title	Scales.
S - 1627	Rutile Deposit Section 328, Hundred of Jutland, County Sturt. Mineral Claims 2120, 2153. (M.L. Norton)	100 ' - 1" 20' - 1"

4th. December, 1957

D.M. 1815/57

G.S. No. 830

H.O. No. 45/117

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1. ABSTRACT.

Diopside gneiss, pegmatite and hornblende schist outcrop in section 328, Hundred of Jutland. Rutile occurs in the hornblende schist and pegmatite, but the values are too low for them to be mined. Alluvium to the east of the pegmatite was sampled using a hand auger, to a depth of eight feet. Values here were too low to warrant further work. Generally the deposits in Mineral Claims 2120 and 2153 are not rich enough in rutile to warrant further work.

2. INTRODUCTION.

On 25.10.57 I visited the above section with Mr. M.L. Norton. A tape and compass survey of the existing workings was carried out and tied in to the north west corner peg of Mineral Claim 2153 from whence a pace and compass traverse was made to the hand auger hole site, and a tape and compass traverse to the north east corner peg of Mineral Claim 2120.

One channel sample was cut from the floor of a pit in Mineral Claim 2120 (see accompanying plan S.1627) and eight samples taken from the hand auger hole in Mineral Claim 2153. All samples were submitted to the Research and Development Branch for quantitative analysis, the results of which are appended at the end of this report.

3. ACCESS.

A graded and metalled road runs past the northern boundary of the section and would be negotiable in any weather. Only

a rough track leads up to the deposit itself. Hills in the area are relatively low and rounded, with shallow wide valleys containing patches of bracken fern, but often devoid of timber. Within the two mineral claims on this section, apart from a few gums, no other timber was seen.

4. GEOLOGY.

Country rock in the area is a diopside gneiss within which pegmatite and hornblende schists occur.

Diopside Gneiss.

The general impression is of a light coloured medium to coarse grained gneissic rock with a marked lineation trending northerly, and a joint pattern parallel to the lineation.

Pegmatite.

A traverse across the pegmatite from the north east corner peg of Mineral Claim 2120 to the north west limit of the existing workings gave the impression of possible zoning. On the eastern edge the rock is mostly quartz, carrying titanium and uranium bearing minerals, with occasional feldspar crystals; a few feet to the west of the boundary, the crystals of rutile and feldspar are quite large, some of the rutile crystals being over six inches long. Towards the western side of the pegmatite there is an increase in the feldspar content.

Hornblende Schist.

This rock type has been described as "highly metamorphic and weathered amphibolites of the green schist facies which have been derived from basic or intermediate rocks." "Rutile is present as a trace only." The hornblende schist has been exposed in a number of pits and trenches,

over a length of approximately 80 feet, averaging about four feet in width, following a sinuous course along a bearing of 108 degrees, dips vary from 50 to 80 degrees northerly. This general strike direction is almost at right angles to the lineation direction and to the strike of the pegmatite.

Alluvium.

To the east of the workings and the pegmatite, a broad valley containing several feet of sandy alluvium covers bedrock. An auger hole sunk in the centre of the valley penetrated eight feet of sands before striking a coarse gravel conglomerate which prevented deeper boring. These sands are unconsolidated, and light brown-grey in colour carrying small amounts of titanium and uranium bearing minerals.

5. ECONOMIC GEOLOGY.

Diopside Gneiss.

This rock has been studied generally and petrologically examined by Dr. A.R.J. White (See A.R.J. White, Granites and Associated Metamorphic Rocks of Palmer, Ph.D. Thesis for University of London.) Since no comments are made on the adundance of rutile in this type of rock it is inferred that if present it only occurs as an accessory mineral and is of no economic importance.

Pegmatite.

Although large crystals of rutile are found in parts of the pegmatite it is estimated that the values are less than 0.5 per cent. However, as with most pegmatite deposits, only bulk sampling could give a reasonable figure of the probable values. On visual estimates the prospect is not an economical one.

Hornblende Schist.

A channel sample cut from this rock type (see location on accompanying plan S.1627. For results of quantitative analysis see appendix B. Sample L.G.N. 57) gave a tip concentrate of 11.0 per cent of the sample on the super panner, of this only one per cent was rutile, giving a value of 0.11 per cent rutile for the whole sample. With the current price of rutile at about £40 per ton, the value of the hornblende schist carrying 0.11 per cent rutile would be about 10.8 pence per ton. Other samples presumably taken from the same deposit (See appendix A) showed only traces of rutile except in one case where values were three per cent. Generally it appears that the hornblende schist is not very rich in rutile and the prospect is not worth opening up.

Alluvium.

Samples were obtained every foot for eight feet, from a hand auger hole sunk in approximately the centre of the alluvial deposit. An average value for all the samples is .210 per cent rutile. The average value of this material would be about 1.7 shilling per ton, obviously an uneconomic grade.

6. CONCLUSIONS AND RECOMMENDATIONS.

Rock types in Section 328 consist of Diopside gneiss, pegmatite, and Hornblende schist.

In Mineral Claim 2120, the rutile occurs in Hornblende schist and pegmatite, values are estimated to be under 0.5 per cent.

Nine samples were submitted for quantitative analysis to the Research and Development Branch, Parkside. Results from these analyses indicate that the values are too low to constitute an economic deposit,

In view of the low rutile values from the alluvium and the hornblende schist, it is considered that further prospecting on these claims would not be worthwhile.

LGN:IDP
4.12.57

GEOLOGIST.

APPENDIX A.

Deptl. Sample No. P 381/57

PETROLOGICAL REPORT

Description of Samples: Samples N. No. 2, 3, 8, 10 and 11 (2)

Marks or Nos.: From 40 feet trench

Locality etc.: Section 328, Hd. Jutland.

Submitted by M.L. Norton, Norton Summit.

P. 381/57

Samples N. No. 2, 3, 8 and 10 represent a group of highly metamorphic and weathered amphibolites of the green-schist facies which have been derived from basic or intermediate rocks. The main constituents of these are hornblende, biotite, quartz, felspar, a great deal of opaque minerals, limonite staining and some accessories. Rutile is present as a trace only. Sample No. 11 is greyish coloured apmhibolite rich in biotite. It contains about 3% rutile. The latter is present as two types. The first one, which predominates, is dark red coloured in good crystalline forms and the second is highly altered into leucoxene and occurs as shapeless fragments of greenish-brown colours.

Examination of a polished briquette from the first group showed that the main opaque material is ilmenite, with abundant exsolution bodies of haematite. The ilmenite is often partly decayed to leucoxene. There are minor amounts of rutile, limonite, and haematite.

Examined: N. Chebotarev

N. Bucknell.

A.W. Whittle
CHIEF MINERALOGIST AND
PETROLOGIST.

23/9/57

APPENDIX B

Deptl. Sample No. P 431/57

PETROLOGICAL REPORT 159/1

Description of Sample(s) L.G.N. / 57 - 65

Locality etc. Hundred of Jutland; Section No. 328.

Submitted by Mineral Resources Section.

These samples were screened through a 20 mesh sieve. A concentrate tip was obtained from the sieved samples on the super-panner. The tip was then quantitatively examined. The results are as follows:-

L.G.N. 57 - Channel Sample
tip = 11.0% of the sieved sample

Hornblende	65.0%
Ilmenite & exsolved hematite	23.0%
Rutile	1/0%
Apatite	1.0%
Quartz	10.0%
Zircon	trace

L.G.N./57 TiO_2 = 0.11%
Sample

L.G.N. 58 - 0' - 1'
tip = 1.04% of the sieved sample

Quartz-felspar	54.0%
Opaque minerals	17.0%
Rutile	14.0%
Zircon & Minor monazite	6.0%
Hornblende	6.0%
Epidote	2.0%
Tourmaline, sphene, andalusite, garnet	1.0%

L.G.N./58 0.1456 TiO_2

L.G.N. 59 - 1' - 2'
tip = 1.23% of the sieved sample.

Quartz-felspar	57.0%
Opaque material	13.0%
Rutile	12.5%
Hornblende	9.0%
Zircon	4.0%
Andalusite	3.0%
Epidote, biotite, monazite, tourmaline	1.5%

L.G.N. 59/ TiO_2 = 0.153%

L.G.N. 60 - 2' - 3'
tip = 1.65% of the sieved sample

Quartz-felspar	60.0%
Rutile	12.5%
Opaque minerals	12.5%
Hornblende	6.0%
Zircon	4.0%
Andalusite	3.0%
Epidote	1.0%
Tourmaline, biotite staurolite, monazite	1.0%

L.G.N. 60/ TiO_2 = 0.225%

L.G.N. 61 - 3' - 4'

tip = 1.93% of the sieved sample

Quartz, felspar	64.0%
Opaque minerals	12.0%
Rutile	11.0%
Hornblende	6.0%
Zircon	2.5%
Andalusite, epidote, monazite, staurolite tourmaline, biotite	4.5%

L.G.N. 61/ TiO_2 0.2122%

L.G.N. 62 - 4' - 5'

tip = 1.60% of the sieved sample

Quartz, felspar	65.5%
Rutile	11.0%
Opaque minerals	9.5%
Hornblende	5.0%
Zircon	4.0%
Andalusite, epidote, sphene, monazite, biotite, tourmaline, garnet	5.0%

L.G.N. 62/ TiO_2 = 0.176%

L.G.N. 63 - 5' - 6'

tip = 1.20% of the sieved sample

Quartz, felspar	49.0%
Rutile	22.0%
Opaque minerals	10.5%
Hornblende	7.0%
Andalusite	6.5%
Zircon	3.0%
Epidote, monazite, tourmaline, garnet, apatite, muscovite	2.0%

L.G.N. 63/ TiO_2 = 0.264%

L.G.N. 64 - 6' - 7'

tip = 1.30% of the sieved sample

Quartz-felspar	59.0%
Rutile	16.5%
Opaque minerals	10.5%
Hornblende	4.5%
Zircon	4.0%
Andalusite	4.0%
Epidote, tourmaline, staurolite, biotite	1.5%

L.G.N. 64/ TiO_2 = .2295%

L.G.N. 65 - 7' - 8'

tip = 1.21% of the sieved sample.

Quartz-felspar	51.0%
Rutile	17.0%
Opaque minerals	13.5%
Hornblende	7.5%
Zircon	6.0%
Andalusite	3.5%
Epidote, tourmaline, monazite, staurolite, biotite, apatite.	1.5%

L.G.N. 65/ TiO_2 = 0.259%

The nine samples contain only a trace of radioactivity.

Examined by: A.J. Marlow

Average of all hand auger samples = 0.2074 % TiO_2

A.W. Whittle,
CHIEF MINERALOGIST AND PETROLOGIST.

12.11.57

S.A. DEPARTMENT OF MINES

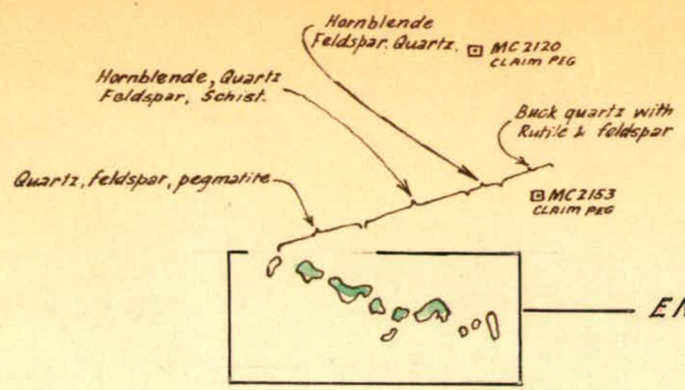
RUTILE DEPOSIT

SEC. 328 HD. JUTLAND.

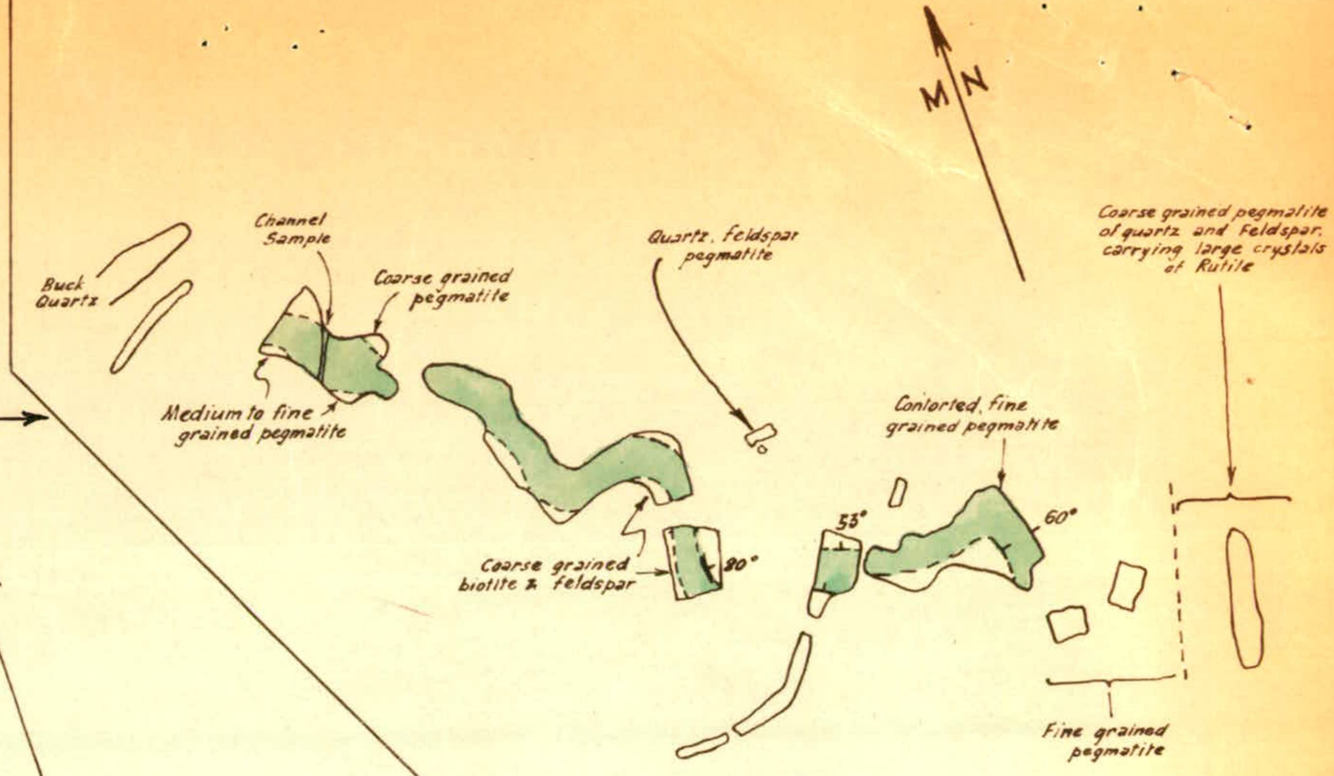
Co. STURT.

M.Cs 2120, 2153. (M.L. NORTON)

Approved	Passed	Drn. L.G.N	D.M.
Director		Tcd. M.J.T.	Req.
		Ckd. R.R.	
		Exd.	
Scale As shown	S 1627	Hb1.	Date 22.11.1957



Scale : 100 feet to 1 inch.



HORNBLENDE, SCHIST

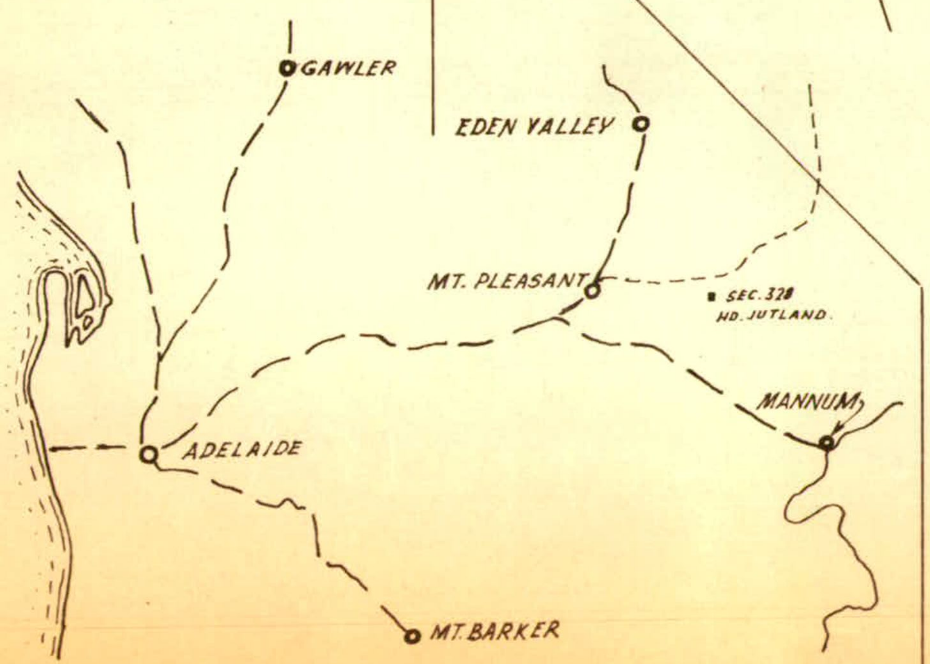
WORKINGS

HAND AUGER HOLE

Scale: 20 Feet to 1 inch.

Pace and compass survey by L.G. Nixon.

LOCALITY PLAN



Scale: 1 inch repres. 12 miles (approx)

Auger hole

To accompany report by L.G. Nixon, Geologist.