AUSTRALIA AND NEW ZEALAND EXPLORATION COMPANY

SUMMARY REPORT

ON

EXPLORATION LICENCE 8/72

TASMANIA

By

R.T. Brandt

12th December, 1973

INTRODUCTION

When Exploration Licence 8/72 was granted to this Company on 9th August 1972, grass-roots exploration for tungsten had been completed in the former E.L. 6/72. The results did not justify any further work in that area, but it was hoped that some potential for tungsten might exist in the adjoining area south of the Arthur River, covered by Exploration Licence 8/72. Accordingly, a programme of geological reconnaissance and stream-sediment sampling by one geologist and one field assistant was commenced in November 1972 and continued through December. During this period, a large part of the licence area was covered on a reconnaissance scale, but no significant tungsten anomalies were discovered and no evidence was found of any geological environments favourable for tungsten mineralization.

Attention was then paid to the Nelson River iron deposit because of its known ultrabasic affiliations and possible potential for vanadium. Samples were taken from the outcrop and from the core of a drillhole put down by Pickands Mather International in 1967, but none of the samples showed anomalous values in either vanadium or tungsten.

Finally, the Precambrian quartzites in the Nelson River vicinity were investigated with a view to their possible value as sources of high-grade silica. Numerous samples were taken for analysis and some were found to be of a purity sufficient for ferrosilicon production. Trenching across the outcrop, however, showed that the high-grade silica horizons were very thin and lacked the necessary tonnage to support an open-pit operation.

Since Exploration Licence 8/72 had no apparent potential for tungsten, vanadium or silica, it was considered to be of no further interest and was relinquished in August 1973.

GEOLOGICAL RECONNAISSANCE

Geological mapping was undertaken only in the immediate vicinity of the Nelson River iron prospect, in connection with the sampling of the Precambrian quartzites in that locality. During examination of the licence area as a whole, special attention was paid to the possibility of granitic intrusions and/or carbonate rocks being present but not previously recorded. No such rocks were found to exist, apart from the Smithton Dolomite which crosses the far north-east corner of the area. This formation had already been extensively sampled north of the Arthur River during investigations of E.L. 6/72, but no tungsten anomalies were found in association with it.

The geology shown on the attached geological and sampling maps is reproduced from the work of M.J. Longman and W.L. Matthews (Tasmania Department of Mines Technical Report No.6, 1961). Our geologist was able to identify the various formations in the field and considered that they had been accurately mapped. He found himself in substantial agreement with the stratigraphic interpretations of the Government geologists, but was inclined to attribute the

structures along the Arthur and Frankland Rivers to complex folding rather than the cross-faulting shown on the map.

It is considered that the geological work accomplished in the area is sufficient to confirm the absence of environments suitable for skarn-type tungsten mineralization.

GEOCHEMICAL SAMPLING

To ascertain whether tungsten was present anywhere in anomalous amounts, panned samples of stream sediment were taken from all accessible rivers and creeks. Owing to difficulties of travel in the thick, trackless forest which covers most of the country apart from the coastal strip, access to the interior was gained by boat up the Arthur and Frankland Rivers, as far as they were navigable, and all tributary streams entering from either side were sampled. A total of 49 stream-sediment samples were collected and panned, and the panned concentrates were sent for tungsten analysis. The results, which are shown in red on the attached map, indicate a low background value for tungsten, with the exception of one sample from a small tributary of the Arthur River, which contained 5 grains of scheelite and analysed 150 ppm W. It is probably significant that this result was obtained a relatively short distance from the old Salmon River copper mine. Specks of scheelite were seen in only one other sample, from Sundown Creek, which analysed 20 ppm W. This location, again, is not far from copper mineralization at the old Couta Rocks prospect. The heavy mineral most abundant in the panned concentrates was zircon. Rutile, ilmenite and hematite were also identified in some samples.

The presence of sporadic scheelite in trace amounts is not surprising in view of the proximity of vein-type mineralization at Salmon River and Couta Rocks. It would seem probable that other small undiscovered mineralized veins exist in the area and have shed small amounts of metallic minerals, including scheelite, into the stream sediments.

Since neither sampling nor geological reconnaissance had given any indication of the existence of skarn-type deposits, the search for tungsten in the area was abandoned.

THE NELSON RIVER IRON PROSPECT

This deposit of magnetite, oxidized at the surface to hematite and limonite, is a lenticular body some 1200 feet long, conformable in strike with Precambrian quartzite on one side and siltstone on the other. At the surface the iron ore is highly siliceous. One inclined drillhole put down by Pickands Mather International in 1967 reached a depth of 451 feet. The drillhole core was examined and sampled through the kind permission of the Director of Mines. The hole passed through laminated shales and siltstones

with numerous limonitic quartz veins, some containing pyrite, and intersected a number of narrow dykes of metamorphosed garnetiferous ultramafic rock with associated magnetite and sulphides.

Five samples were taken from the outcrop and seven samples of massive and disseminated magnetite were taken from the drill core. These were analysed for tungsten and vanadium. The highest values recorded were 10 ppm W and 45 ppm V_2O_5, values which are not considered significantly anomalous.

PRECAMBRIAN QUARTZITES

The quartzites in the vicinity of the Nelson River iron prospect attracted attention because of their clean appearance and possible value as sources of high-grade silica. The first samples analysed showed silica contents greater than 99% SiO_2, which gave encouragement to further investigations of these rocks. The local geology was mapped and a number of additional samples were collected. The sample locations and silica analyses are shown on the attached reconnaissance map of the Nelson River Area. Six samples, selected at random, were analysed for minor constituents, with results as shown in Table 1.

The local Precambrian succession here consists of fine-grained, greenish, banded siltstones and slates with narrow intercalations of pure white, medium-grained quartzite. The rocks have a north-westerly strike and a dip of 30°-35° to the north-east. The quartzites form subdued ridges capped by abundant float, but outcrops of quartzite in situ are very scarce, making it impossible to measure the true thickness of the beds at the surface. The initial estimates of thickness, shown on the tentative cross-sections on the attached map, proved to be quite erroneous.

Trenches were then cut by bulldozer across ridges A and B (see map) and the quartzite horizons were shown to be unexpectedly thin and discontinuous. Only 6 feet of quartzite was exposed on ridge A and widths of 12 feet and 18 feet were revealed at the widest parts of ridge B. On this basis, the tonnage available in the area mapped was estimated at approximately 75,000 tons, far too small to support an open-pit operation.

A search was made for other quartzite occurrences in the vicinity, but no discoveries of any consequence were made. Many of the supposed quartzite outcrops observed on aerial photographs turned out to be patches of sandy soil, white fungus or white flowers. In view of the poor chances of finding any substantial tonnage of quartzite suitable for open-pit mining, the search was abandoned and no further interest was taken in the project.

Maps Accompanying Report

Geological and Sampling Maps of E.L. 8/72 (2)

Reconnaissance Map of Nelson River Area, E.L. 8/72

004

653005

TCR 73-981

EL 8172 ANZ Exploration Co

R.T. Brandt 12.12.73

TABLE 1

ANALYTICAL RESULTS FOR SIX SAMPLES OF QUARTZITE

SiO_2%	Al_2O_3%	Fe_2O_3%	TiO_2%	CaO%	P_2O_5%
99.7	0.12	0.89	0.04	0.04	0.02
99.2	< 0.01	0.95	0.05	0.04	< 0.01
99.5	< 0.01	0.72	0.10	< 0.01	< 0.01
99.3	0.03	0.52	0.04	0.01	< 0.01
99.0	< 0.01	1.04	0.08	< 0.01	0.01
99.8	< 0.01	0.52	0.04	0.01	< 0.01
99.42	<0.03	0.77	0.06	<0.02	<0.01

653006

300

270 280 290 300

940 930

ARTHUR R. NELSON BAY COUTA ROCKS TEMMA SUNDOWN CK. NELSON RIVER IRON PROSPECT NELSON R. SALMON R. ARTHUR R. FRANKLAND R. REBECCA CK.

E.L. 8/72

Q2 Q1 P1 P2 P3 P4 P5 € Tb Cu Fe D

SCALE: 1 INCH TO 2 MILES

0 1 2 3 4 MILES

REFERENCE

- RIVER, CREEK
- BOUNDARY OF E.L. 8/72.
- GEOLOGICAL BOUNDARY
- FAULT
- D BASIC DYKE
- Fe IRON DEPOSIT
- Cu OLD COPPER MINE
- STREAM SEDIMENT SAMPLE
- TUNGSTEN VALUE, p.p.m.W.

GEOLOGY

QUATERNARY
- Q2 SAND DUNES.
- Q1 GRAVEL, SAND, CLAY.

TERTIARY
- Tb BASALT.

CAMBRIAN
- € SILTSTONE, GRAYWACKE.

YOUNGER PRECAMBRIAN
- P5 SMITHTON DOLOMITE.
- P4 BRYANT HILL QUARTZITE.
- P3 SILTSTONE, GRAYWACKE AND QUARTZITE.
- P2 BLACK SILTSTONE.
- P1 GREEN SILTSTONE AND QUARTZITE.

AUSTRALIA AND NEW ZEALAND EXPLORATION COMPANY

GEOLOGICAL AND SAMPLING MAP OF EXPLORATION LICENCE 8/72

N.W. TASMANIA

DATE : 29TH OCTOBER 1973.

73-981.

5 cm

005

653007

270 280 290 300

940 930

ARTHUR R. SALMON R. ARTHUR R. SUNDOWN CK. NELSON RIVER IRON PROSPECT NELSON R. FRANKLAND R. REBECCA CK. NELSON BAY COUTA ROCKS TEMMA

E.L. 8/72

Q2 Q1 P1 P2 P3 P4 P5 € Tb Cu Fe D

SCALE: 1 INCH TO 2 MILES

0 1 2 3 4 MILES

REFERENCE

- RIVER, CREEK
- BOUNDARY OF E.L. 8/72.
- GEOLOGICAL BOUNDARY
- FAULT
- D BASIC DYKE
- Fe IRON DEPOSIT
- Cu OLD COPPER MINE
- STREAM SEDIMENT SAMPLE
- 5 TUNGSTEN VALUE, p.p.m.W.

GEOLOGY

QUATERNARY

- Q2 SAND DUNES.
- Q1 GRAVEL, SAND, CLAY.

TERTIARY

- Tb BASALT.

CAMBRIAN

- € SILTSTONE, GRAYWACKE.

YOUNGER PRECAMBRIAN

- P5 SMITHTON DOLOMITE.
- P4 BRYANT HILL QUARTZITE.
- P3 SILTSTONE, GRAYWACKE AND QUARTZITE.
- P2 BLACK SILTSTONE.
- P1 GREEN SILTSTONE AND QUARTZITE.

AUSTRALIA AND NEW ZEALAND EXPLORATION COMPANY

GEOLOGICAL AND SAMPLING MAP OF EXPLORATION LICENCE 8/72

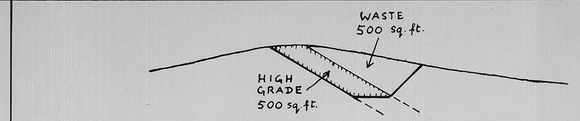
N.W. TASMANIA

DATE : 29TH. OCTOBER 1973.

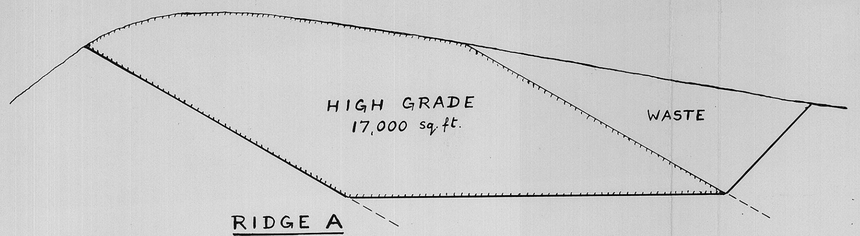
73-981

5 cm

653008



RIDGES B, C & D



RIDGE A

TENTATIVE ORE RESERVE CROSS SECTIONS

Scale 1 inch to 50 feet

50 0 50 100 150 feet

930,000 yds. N.

930,000 yds. N.

290,000 yds. E.

290,000 yds. E.

NELSON RIVER

SILTSTONE ZONE ?

QUARTZITE ZONE ?

RIDGE A

RIDGE B

RIDGE C

RIDGE D

FAULT ?

Laminated siltstones & impure quartzites

Nelson River Iron Deposit (Hematite & Limonite)

Diamond drillhole (Pickands Mather)

Baseline

VEHICLE TRACK

×97·9 ×84·7 ×99·8 ×98·4 ×99·6 ×99·7 ×99·7 ×99·5 ×99·8 ×99·0 ×98·5 ×95·1 ×99·6 ×99·5 ×99·7 ×99·8 ×98·3 ×98·5 ×99·3 ×99·2 ×99·3 ×98·6 ×99·1 ×98·5 ×99·6 ×94·8 ×75·0 ×99·6 ×99·5 ×99·5 ×99·3 ×99·2 ×99·8 ×94·9 ×97·4

SCALE 1 inch to 440 feet.

0 500 1000 2000 3000 feet.

(Pantograph enlargement from an enlarged aerial photograph)

AUST & N.Z. EXPLORATION CO.

NELSON RIVER AREA

E.L. 8/72

White areas of possible high grade quartzite, seen on aerial photograph — — — — — — — —

Inferred geological boundaries — — — — — — — — ?

Grab sample with assay in % SiO_2 — — — — — — × 99·5

5 cm

Drawn by: R.T. BRANDT

Date: 26th April 1973

007

73-981.