

TO THE DIRECTOR OF MINES:Iron Ore Deposits, Koppio Area.

Forwarded herewith is a report by Geologist, R.K. Johns, describing certain occurrences of low grade iron ore in this area. The occurrences are of interest only to the extent that they can be fitted into the regional geological pattern of hematite quartzites of Eyre Peninsula, but are themselves too limited in extent to warrant detailed attention.

L.W. Parkin

.....
(L.W. PARKIN)
CHIEF GEOLOGIST

LWP:AGK
29/9/55.

PLAN. No. 55-308

RECEIVED

DEPARTMENT OF MINESSOUTH AUSTRALIAIRON ORE DEPOSITS, KOPPIO AREA.INTRODUCTION

Haematite quartzite occurs as a thin bedded formation in the Archaean metasediments of eastern Eyre Peninsula and have been traced intermittently from the Middleback Ranges, near Mangalo, west of Tunby Bay, near Koppio southwards to west of Fort Lincoln. The attention of this Department has been drawn to outcrops of this formation in Hds. Koppio and Hatchicon, Co. Flinders by Mr. E. Pollett of Cleaford Bay; this report describes the general features of the iron ore deposits and the results of sampling a deposit situated in Section 35, Hd. Koppio. The accompanying plan shows the location of the deposit.

GEOLOGY

The haematite quartzites are typically well bedded and the proportions of iron and silica variable from place to place, being such as to constitute a low grade iron ore in some sections. Exposures of this horizon in the Koppio area are generally poor and discontinuous, being venerated by lateritic gravels and clay, which mantled a formerly extensive old peneplained surface, and by alluvial waste of the present erosion cycle. The formation varies from about 50 to 500 feet in width and is interbedded with decomposed schists and kaolinized gneisses, the true thickness of the various units is indeterminable. Enclosing beds consists of high grade schists, graphitic in parts, and gneisses, with lesser quartzites, amphibolites and marbles.

1. Koppio Deposit (Hd. Koppio)

A bed of haematite quartzite outcrops along Rock Valley Creek from its junction with the River Tod for a length of 3 miles. The ferruginous zone as indicated by chond material is about 200

feet wide but actual outcrops of ferruginous quartzite are little more than 50 feet in width. The beds dip easterly at steep angles varying from 60° to 90° .

The best exposures of quartzite which appear to have the highest iron content occur in a ridge, over a length of about 660 yards, immediately west of the Koppio graphite mine. Two adits have been driven from the eastern side of the ridge, presumably to test the deposit, both penetrated kaolinised gneiss to 50 feet from the portals but stopped short of the iron formation. The several pits on the top of the ridge are also too shallow and failed to expose fresh rock.

A bed 50 feet wide was selected as being representative of this deposit and was sampled over 10 feet lengths. Assays of these samples are as follow:

	0-10 ft.	10-20 ft.	20-30 ft.	30-40 ft.	40-50 ft.
Total H_2O	6.70%	4.32%	4.86%	4.72%	7.20%
SiO_2	35.2	27.0	55.1	28.8	26.7
Total Fe	38.5	44.9	26.1	43.3	42.8
FeO	0.22	0.20	0.68	0.81	0.44
S	0.04	0.02	0.05	0.15	0.03
Mn	0.05	0.09	0.01	0.01	0.03
P	0.20	0.26	0.16	0.20	0.37
TiO_2	0.01	0.01	0.02	0.07	0.04

A sample (K) which appeared to be more manganiferous assayed total Fe 37.7%, SiO_2 28.9% and Mn 0.30%.

These assays compare favourably with those quoted in Bull. Geol. Surv. S.A. No. 9 of samples taken from the Iron Mount Mine situated five miles north west from Tumby Bay and also with those of Middleback Range haematite quartzites (Bull. Geol. Surv. S.A. No. 33 p. 121)

(a) Reserves

Considering the width of the deposit to be as sampled

(50 feet), the average height of the hill as 50 ft., over a length of 660 yards there are present above creek level

$50 \times 50 \times 660 = 166,000$ cub. yards. of haematite quartzite of grade 39% Fe.

2. Pillauxarta Deposit (Md. Hutchinson, Sec. III)

A small isolated exposure of haematite quartzite which outcrops on the same horizon as the above over the flank of a high rise about $\frac{1}{2}$ mile east of Pillauxarta Homestead was also examined. Mr. Pollett has sunk a number of trenches over the hill top but these unfortunately have not fully penetrated the crust of nodular laterite so that an evaluation of the deposit cannot be made.

CONCLUSIONS

Assays of samples taken from a ferruginous quartzite bed in Md. Koppie indicate that this iron ore deposit is low grade and comparable to the haematite quartzites of the Middleback Range.

The formation is thin although the full width of the iron bearing beds cannot be determined because of the paucity of exposures.

It is estimated that a ridge near the Koppie graphite mine 660 yards in length contains 166,000 cub. yards of iron ore to creek level.

A full assessment of the low grade iron ore deposits of Lower Eyre Peninsula will be made when these are mapped and all exposures examined.



(R.K. JONES)
GEOLOGIST

