

REPORT ON THE KARA IRON ORE DEPOSITS

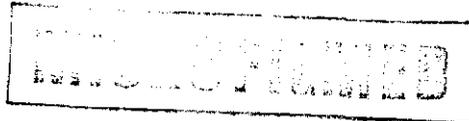
BLACK BLUFF MINING COMPANY

E.L. 17/68

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~~TASMANIA~~ Richards Hall
April 1969

REPORT ON THE KARA IRON ORE DEPOSITS

ABSTRACT

OPEN FILE

Approximately five million tons of high grade magnetite may be present in four separate deposits near Hampshire, Tasmania, 36 miles southeast of Port Latta. It is believed that magnetite from these deposits could be possibly either blended with Savage River magnetite, or handled separately through Port Latta. Present investigations are very limited. Recommendations for more detailed work are presented.

INTRODUCTION

The Kara magnetite deposits were visited on 22 February 1969. They are held under lease by the Black Bluff Mining Company; this company is interested in selling magnetite to Port Latta for production of pellets to the Japanese market. The deposits occur about six miles southeast of Hampshire and 20 miles south of Burnie. Access to the area is via the Burnie-Hampshire road to Hampshire, then east along the Hampshire-Natone road, then south along Rogetta road and old timber tracks. Vegetation consists of gum trees and light to heavy undergrowth on undulating topography.

GEOLOGY

Tertiary Basalt
Tertiary Gravels (waterworn?)
Devonian Granite with Magnetite lenses
Pre-Devonian Sediments (Cambrian-Silurian).

The Pre-Devonian Sediments occur to the east and west of the area inspected and consist of Cambrian to Silurian tuffs, sandstones,

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shales and limestones. These rocks have been metamorphosed by a granitic intrusion, with an associated period of mineralisation. Skarns have been noted along the western edge of the intrusion. The granite intrusion has been intruded by later aplite and quartz veins. Mineralisation in the granite consists of copper, silver, molybdenite and magnetite and tin.

A copper show at Laurel Creek, occurs several miles to the east and is associated with fractures in the granite. Workings on the Emu River have encountered silver and fluorite along joints in the granite. Molybdenite and cassiterite are found disseminated throughout the granite, though no economic deposits have been found except for alluvial deposits along several creeks. The magnetite deposits occur as isolated lenses in the granite and are orientated in a north-south direction, parallel to the granite-sediment contacts.

Overlying the granite are soft, unconsolidated gravels containing waterworn quartz pebbles and fine quartz sand. One such deposit occurs between the Southern and Eastern magnetite deposits.

To the west and south of the Southern Deposit, weathered basalt overlies and covers the underlying rocks.

ECONOMIC MINERAL DEPOSITS

Up to the present time the only economic deposits have been alluvial tin deposits. The tin has been derived from the granite. These deposits are small and have been only worked by small companies or syndicates.

The Black Bluff Mining Company is, at present, investigating the economic potential of the magnetite lenses in the granite. Their

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work on the magnetite deposits includes clearing scrub off the magnetite outcrops, drilling, using an Air Track Drill, and sampling the drill holes. This work has shown the ore to be of a high grade - over 64% Fe, with very minor impurities (nickel, sulphur, etc.). The exploration work in the area shows the existence of four ore lenses in an area one mile wide and two miles long. The lenses have been named - Pearson's, Old Mine, Southern and Eastern Deposits. (One other lense occurs several miles to the west near the Emu River. This deposit had been investigated by A. Munro when the area was held by Tasman Ventures.) Some air track drilling has been completed over the Old Mine lense - holes varied in angle from 68° to 90° with a maximum hole length of 85'. Most of the holes have been shallow (less than 40') and were drilled mainly to find the edges of the deposit. The Tasmanian Mines Department has conducted a magnetometer survey over much of the area, and has drilled several of the larger anomalies.

THE MAGNETITE LENSES

Parallel lenses of high grade magnetite occur in a Devonian granite mass and have a north-south orientation. The iron ore appears to occur as a contact metasomatic roof pendant deposits. Boundaries appear to be sharp and steeply dipping. The magnetite has been weathered to hematite and limonite to a shallow depth (less than 10'). Weathering along joints and fractures in the ore is expected to extend below a depth of 10'. Drilling by the Tasmanian Mines Department has shown oxidation to a shallow depth with limonite and hematite forming 10% of the iron content. This percentage decreases to 5% with depth.

Pearson's Deposit

Most northerly of the deposits; size 2000' (?) x 200', depth unknown; orientation north-south. Work in the area - bulldozing of tracks and trenches to expose the magnetite - no

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drilling. Ore - massive magnetite - no accessory minerals seen in the hand specimen, weathered to limonite and hematite at the surface.

Old Mine Deposit

Half-mile south of Pearson's Deposit - may be a continuation of Pearson's Deposit, size exposed 200' x 200'; with a minimum depth of 60'; orientation north-south; work in the area - bulldozing of tracks over the outcrop; drilling by air track drill - with holes up to 85' deep. Before the Second World War, a bulk sample was sent to Germany for testing - results unknown. This deposit is in weathered granite with another outcrop of magnetite 500' to the east. Ore - as for Pearson's Deposit.

Southern Deposit

One mile south of the Old Mine Deposit, size 2000' x 100' (maximum width), depth unknown, orientation north-south; work in the area - bulldozing of road along the outcrop and exposing the magnetite ore, no drilling. Ore - magnetite, as for Pearson's Deposit.

Eastern Deposit

500' to the east of the Southern Deposit; size: 2000' x up to 200' wide, with several possible parallel lenses, depth unknown, orientation north-south; work in the area - track along line of the outcrop with two cross lines; bulldozing of pits to expose the underlying rocks; no drilling. Ore - as for Pearson's Deposit.

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Western Deposit

Not visited on the inspection trip - similar type of deposit close to granite contact - dimensions unknown.

TONNAGE ESTIMATES

(Using 1 ton or iron ore - 10 cubic feet).

Estimates are based on the outcrop area of magnetite scree - actual outcrop area may be much smaller, to tonnages may be over-estimated.

Pearson's Deposit: 2000' (?) x 200'; outcrop area 400,000 sq.ft;
Depth taken as 50'; Volume 20,000,000 cubic
feet; Tonnage 2,000,000 tons.

Old Mine Deposit: 200' x 200'; outcrop area 40,000 sq. feet;
Depth known 70'; Volume 2,800,000 cubic
feet; Tonnage 280,000 tons.

Southern Deposit: 2000' x 100'; outcrop area 200,000 sq. feet;
Depth taken to 50'. Volume 10,000,000 cubic
feet; Tonnage 1,000,000 tons.

Eastern Deposit: 2000' x 200'; outcrop area 400,000 sq. feet;
Depth taken to 50'. Volume 20,000,000 cubic
feet. Tonnage 2,000,000 tons.

Total Tonnage to a depth of 50' - Approximately 5 Million tons.

The Mines Department - based on drilling results, estimate 200,000 tons of 45% Fe or 500,000 tons of 30%+ Fe, for the same area.

ANALYSES OF ORE

See following pages.

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TABLE I

ANALYSES OF ORE FROM THE KARA DEPOSITS

	Reid (1924)	Hughes (1952)		
	(Average of 5 Samples) %	%		
Fe ₂ O ₃	78.76	56.1	52.0	67.7
FeO	15.93	18.8	12.2	21.9
SiO ₂	1.62			
Al ₂ O ₃	2.40			
CaO	0.11			
MgO	0.312			
S	Trace			
P ₂ O ₅	Trace			
TiO ₂	Trace			
MnO ₂	0.96			
Insol	-	10.8	17.3	4.7

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TABLE II

ORE ANALYSIS FROM HAMPSHIRE
MAGNETIC CONCENTRATE - 86% BY WEIGHT

	<u>Sample (R452)</u>	<u>Magnetic Concentrate</u>
Iron	65.9	69.1
Sulphur	0.08	0.03
Silica	1.94	0.44
Phosphorous	0.02	0.01
Titanium	0.08	0.09
Manganese	0.94	0.87
Aluminium	0.91	0.54
Vanadium	Nil	Nil

TABLE III

RESULTS OF MINES DEPARTMENT DRILLING

Drill Hole	Depth From	Depth to	Type	Fe %	SiO ₂ %	Al ₂ O ₃ %	Ti %	Mn %	P %	S %	Cu %	V %	Combined Water
2	8'0"	30'0"	Core	37.2	18.5	3.30	0.06	1.26	0.07	0.02	0.003	Nil	3.0
	30'0"	81'9"	Core	51.8	8.9	2.75	0.07	0.92	0.03	Tr	0.004	Nil	2.0
3	16'0"	36'0"	Core	35.5	25.7	4.05	0.11	0.61	0.02	0.04	0.003	Nil	4.5
4	0'	32'0"	Core	55.5	8.6	2.94	0.07	0.60	0.02	0.03	0.004	Nil	2.3
	32'0"	62'0"	Core	40.0	19.6	3.90	0.06	0.58	0.02	0.02	0.003	Nil	1.6
5	7'6"	36'6"	Core	45.9	12.9	2.76	0.05	0.67	0.05	Trace	0.003	Nil	2.1
	36'6"	90'0"	Core	43.1	18.1	3.70	0.07	0.77	0.02	0.02	0.003	Nil	1.3
6.	10'0"	37'4"	Core	39.4	17.2	4.31	0.07	0.84	0.07	0.03	0.03	Nil	

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TABLE IV

GRAB SAMPLES ANALYSED BY SAVAGE RIVER MINES

	%	%
<u>Head</u>		
Fe	68.6	69.0
Davis Tube Recovery	95.2	93.2
<u>Concentrate</u>		
Fe	67.4	67.6
Fe ⁺⁺	21.6	22.1
S ₁ O ₂	0.39	0.46
Ni	0.001	0.001
TiO ₂	0.35	0.22
MgO	0.22	0.16
Al ₂ O ₃	1.03	0.81
S	0.005	0.009
P	0.008	0.012
Cu	0.001	0.001
V	0.01	0.01
Mn	1.07	0.73
CaO	0.0001	0.0001

TABLE V

WASHING & SCREENING TESTS

Ore Dressing Tests of Kara Iron Ore by Tasmanian Mines
Department - Samples Nos. R467, R468, R469

Size 50 mm +6 mm

Sample No.	Position	Head Grade %	Magnetic Concentrate		Magnetic Tailings		Total Lump Materials	
			% Fe	%	% Fe	%	%	%
1	South Trench	49.5	58.4	39.8	44.6	42.2	50.5	82.0
2	North Trench top 3' of soil	55.7	63.7	32.2	50.0	9.3	60.2	41.5
3	North Trench Bottom Section	60.2	62.2	67.6	35.9	6.9	58.3	74.4
4	Pearson's Workings	45.3	49.7	32.4	41.3	42.2	44.6	74.6

(Fe is HCl soluble Fe only)

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TABLE V (continued)

JIG TESTS

Size: 7 mesh (2411 microns)

Sample No.	Jig Concentrate Grade <u>% Fe</u>	Recovery <u>%</u>	Jig Tailings		Head Grade <u>% Fe</u>
			Grade <u>% Fe</u>	Recovery <u>%</u>	
1	57.5	52.7	43.5	47.3	49.9
2	63.5	59.6	47.4	40.4	55.8
3	65.0	54.6	52.1	45.4	58.5
4	65.5	45.3	37.4	54.7	46.4

(Fe is HCl soluble only).

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TABLE V (continued)

MAGNETIC TREATMENT OF FINE MATERIAL

Sample No.	Magnetic Concentrates		Magnetic Tailings		Slim Materials	
	Grade % Fe	Recovery %	Grade % Fe	Recovery %	Grade % Fe	Recovery %
1	61.4	54.0	41.9	27.6	38.8	18.4
2	63.9	61.0	45.7	18.9	46.3	20.1
3	66.9	78.5	27.0	8.7	42.1	12.8
4	60.1	71.5	37.4	17.0	29.7	11.4

(Fe is HCl soluble only).

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CONCLUSIONS

1. Small high grade magnetite lenses occur in a Devonian granite.
2. Size of the lenses 2,000' long, 200' wide with a maximum of 2-million tons per lense of ore to a depth of 50' (maximum estimate).
3. Sharp, steeply dipping contacts.
4. Depth unknown, but could be much greater than 50'.
5. Possibility of other lenses of magnetite being found in the vicinity.

RECOMMENDATIONS

The following is required to make accurate, detailed study of the magnetite deposits:

1. Establishment of grid systems.
2. Magnetometer surveys (ground).
3. Further drilling on the grid system to establish grade and size of ore body as well as depth of oxidation.
4. Better sampling of drill cuttings.
5. Possible airborne magnetometer survey (more detailed).
6. Establishment of market and transportation outlets for the ore.

MINING AND TRANSPORTATION OF THE ORE

The magnetite lenses are available to open cut mining methods - this will probably limit the depth of mining to 200'. Explosives will be needed to break up the ore for transportation. Separation from waste rock could be accomplished by crushing and magnetic separation.

Transportation would be by truck eight miles to the Hampshire Siding. The ore would be railed to Burnie by the Emu Bay Railway Company, and then to a siding near Port Latta by the Tasmanian Government Railways. Truck transport, or a rail branch line could convey the ore to the Pelletising Plant at Port Latta. Production would probably be in the order of 100,000-500,000 tons per year.

REFERENCES

- R. Jack 1963 Magnetometer Survey - Hampshire Iron Ore Deposit,
Tasmanian Mines Dept. Technical Report 8, 51-55.
- R. Jack 1964 Drilling Results Hampshire Iron Ore Deposit,
Tasmanian Mines Department Technical Report 9, 22-25.

R. Schellekens
P.M.I. - Brisbane Office
April, 1969.

LOCALITY MAP

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KARA IRON ORE DEPOSITS

N-W TASMANIA

SCALE: 1" = 8 miles

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AMG
341080ME
5477010MN

Smithton

Pt Latta

Wynyard

Burnie

Ulverstone

Hampshire

Kara Iron Ore Deposits
(Magnetite)

Savage River

Corinna

AMG
318080ME
5373050MN

Rosebery

Pipeline Route

