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TONNAGE ESTIMATES
FOR
CON STOCK MAGNETITE
DEPOSITS
Zeehan - Tasmania

OPEN FILE

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REPRODUCED FROM ORIGINAL FILMED

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TONNAGE ESTIMATES FOR COMSTOCK MAGNETITE DEPOSITS
ZEEHAN DISTRICT - TASMANIA

INTRODUCTION:

Thirteen bore holes were put down on the Comstock Magnetite Deposits and it is on the information obtained from these bore holes, plus that from the Adits outlined by Blake (1940), that the tonnage estimates were calculated.

It was not possible to place bore holes in Deposits 2 and 3, therefore the tonnages as set out by Blake are used in assessing the total tonnage of the area.

Deposit 7 is not included in the tonnage estimates, as drilling proved this deposit to be insignificant.

A further three or four bores would have been desirable to more fully outline the deposits, but the onset of winter rains prevented this.

N.B. The drilling was carried out in February and March 1970.

PREVIOUS WORK

In 1939, when most of the underground workings were open for inspection, the deposits were examined by Mr. F. Blake and Mr. T. D. Hughes, both geologists of the Tasmanian Department of Mines, and in 1940 Mr. F. Blake submitted a report (unpublished) on the occurrence.

In 1958, diamond drilling was carried out under the supervision of Mr. T. D. Hughes (Chief Geologist, Tasmanian Department of Mines) and a report by him appeared in Technical Report No. 3, pp 42-54.

In December 1963 and again in January 1964, Mr. J. Ridgway carried out preliminary examinations on the deposits. None of the underground workings was inspected, but arrangements were made to have all the adits opened up for further investigation.

GEOLOGY

The iron deposits occur for the most part in Serpentine (Serpentinised Gabbro) dykes in metamorphosed calcareous sediments.

ORE DEPOSITS

The iron consists almost entirely of magnetite with minor amounts of hematite and limonite at the surface. Small amounts of pyrites are present.

There are eleven separate lodes over a length of about half a mile and within an area of 270 acres. (A plan of the deposits, as outlined by Blake, has been forwarded to Sydney, with the drilling sites indicated).

- Lode 1 - Approximately 1700 feet long with an average width of 110 feet. (Bores TL8, TL9, TL10)
- Lode 2 - Approximately 500 feet long with an average width of 35 feet.
- Lode 3 - Approximately 600 feet long with an average width of 140 feet.
- Lode 4 - Approximately 200 feet long with an average width of 125 feet.
- Lode 5 - Approximately 460 feet long with an average width of 73 feet.
- Lode 6 - Approximately 690 feet long, with an average width of 100 feet. Magnetite and limonite boulders are common.
- Lode 7 - Approximately 380 feet long and 65 feet wide, and consists of Magnetite and limonite boulders.

- Lode 8 - Approximately 370 feet long and 50 feet wide.
- Lode 9 - Approximately 240 feet long and 60 feet wide.
- Lode 10 - Approximately 680 feet long and 55 feet wide.
- Lode 11 - Approximately 590 feet long and with an average width of 60 feet.

ASSAY VALUES

Copies of assay values have been forwarded to Sydney and show a variation from 38.7 to 70.0 per cent HCl sol. Fe.

DRILLING

All drilling logs have been forwarded to Sydney.

TONNAGE ESTIMATES - based on drilling and adits.

	Av.HCl Sol.Fe	Density	Av.Depth	Min.Tonnage	Block Tonnage
Lode 1	56%	8.15cu.ft/ton	63 ft.	1,140,933	1,238,211
4	59.7%	7.9 " "	40 "	38,456	153,824
5	56.9%	8.05 " "	47½ "	112,151	191,925
6	53.3%	8.3 " "	45 "	94,067	376,268
8	54.1%	8.25 " "	20 "	10,000	40,000
9	64.1%	7.62 " "	45 "	20,550	82,200
10	55.6%	8.13 " "	82 "	157,349	263,620
11	65.2%	7.55 " "	95 "	140,376	561,504
TOTAL	58.12%	8.0 cu.ft/ton	54 ft.	2,913,882 <i>1,713,882</i>	2,907,552

Note that tonnages based mostly on widths cut intersections points & not on average widths & quoted above

Using the tonnages obtained by Blake for Deposits 2 (192,700 tons) and 3 (269,200 tons), the total tonnage obtained for deposits 1 to 11, to an average depth of 54 feet is as follows:

Minimum Tonnage = $\frac{3.3}{2.175,782}$ Tons / ?
 Possible Block Tonnage * 3,369,452 Tons /

This block tonnage figure of 3,369,452 tons compares favourably with calculations made by Mr. J. E. Ridgway in his report of January 1964. In his calculations, Mr. Ridgway used a S.G. of 4.6 (writer calculated a value of 4.5) and he calculated tonnages per vertical foot for each deposit.

Using Mr. Ridgway's figures, to a depth of 54 feet a block tonnage of 65,100 tons/vert. foot times 54 feet = 3,515,400 tons - is obtained.

OTHER TONNAGE ESTIMATES

F. BLAKE (1940) - Lodes 1, 2, 3, 5, 9, 10 & 11 indicated a tonnage of 2,719,730 long tons to depths of lowest adits.

T. HUGHES (1958) - No. 1 lode, based on drilling and adits, contains 3,000,000 tons of 50% Fe to a depth of 200 feet. - further state that to obtain 3,000,000 @ 50% would require mining 6,000,000 tons @ 25%.

CONCLUSION

This occurrence, of 11 separate lodes (excluding deposit 7) probably contains 3 million tons of high grade ore to a depth of 50 feet.

In Lode No. 1, over 1 million tons was indicated by drilling and adits to a depth of 63 feet. This tonnage was obtained for lens "C" of the three lenses of this deposit. Hughes (1958) made his calculations on the three lenses and obtained a figure of 3,000,000 tons to a depth of 200 feet. Therefore indications are that a tonnage figure nearer 4,000,000 tons may be present to a depth of 200 feet.

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From the figures at hand, if deposits 2 to 11 can be open cut to a depth of 100 feet, a tonnage of high grade ore in excess of 5 million tons, with a possibility of 6 million tons, would be available for open-cutting.

SUMMARY OF CALCULATIONS

Deposits 2, 3, 4, 5, 6, 8, 9, 10, 11	=	2,131,241 Tons
Deposit I (Hughes 1958)	=	3,000,000 Tons
Therefore <u>Probable</u> Tonnage	=	5,131,241 Tons
Possible Extra Tonnage for Deposit I	=	1,000,000 Tons
Therefore <u>Possible</u> Tonnage	=	6,131,241 Tons

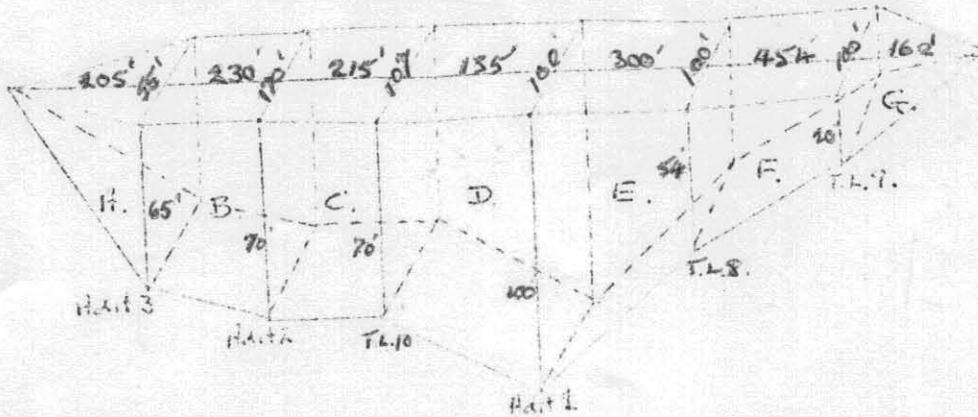
6,000 ft?
6200 ft
 ?
 ?
no decimals
of a ton?

M. EDYVEAN
Savage River
21/5/70

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A. TONNAGE CALCULATIONS FOR TENTH LEGION DEPOSIT I

- Based on Adits and Drilline Data.



Volume Calculations

A. $\frac{65 \times 55}{4} \times 205 = 183,220 \text{ cu. ft.}$

B. $\left(\frac{65 \times 55 + 170 \times 70}{2} \right) \times 230 = 1,179,740 \text{ " "}$

C. $\left(\frac{170 \times 70 + 107 \times 70}{2} \right) \times 215 = 2,084,425 \text{ " "}$

D. $\left(\frac{107 \times 70 + 100 \times 100}{2} \right) \times 135 = 1,180,575 \text{ " "}$

E. $\left(\frac{100 \times 100 + 100 \times 54}{2} \right) \times 300 = 2,310,000 \text{ " "}$

F. $\left(\frac{100 \times 54 + 100 \times 20}{2} \right) \times 454 = 1,679,800 \text{ " "}$

G. $\frac{100 \times 20}{4} \times 162 = 81,000 \text{ " "}$

Total Volume = 9,298,760 cu. ft.

An average of 56% HCl Sol Fe was obtained from drilling assays. This is equivalent to a density of 8.15 cu. ft/ton

Therefore Minimum Tonnage = $\frac{9298760}{8.15} = \underline{1,140,933 \text{ Tons}}$ *indicated/Probable*
Probable

Block Tonnage

The tonnage for sections A & G would be 4 times that of the minimum tonnage;

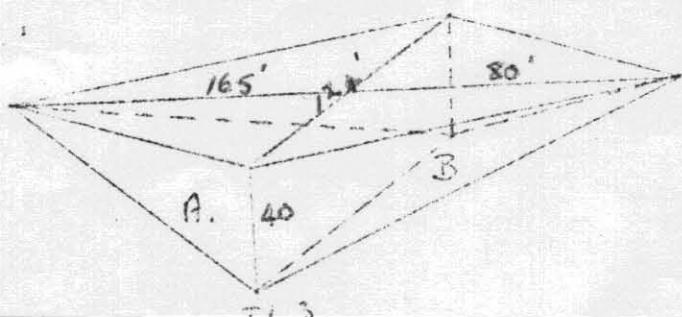
i.e. A = 732,880 cu. ft. } *Assuming "A" returns width of 55'*
 G = 324,000 cu. ft. } *"B" a width of 100'*

and Total Vol = 10,091,420 cu. ft.

Therefore Block Tonnage = $\frac{10,091,420}{8.15} = \underline{1,238,211 \text{ Tons}}$ *inferred/Probable*

B. TONNAGE CALCULATIONS FOR TENTH LEGION DEPOSIT 4

- Based on bore T.L.3



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Volume Calculations

$$\begin{aligned}
 \text{A. } & \frac{165 \times 124 \times 40}{4} = 204,600 \text{ cu. ft.} \\
 \text{B. } & \frac{124 \times 80 \times 40}{4} = 99,200 \text{ cu. ft.} \\
 \text{Total Volume} & = \underline{303,800 \text{ cu. ft.}}
 \end{aligned}$$

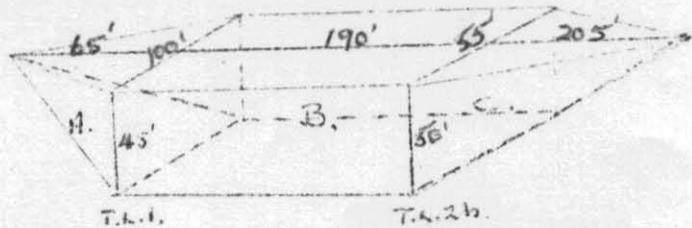
An average of 59.7% HCl Sol. Fe was obtained from drilling assays. This is equivalent to a density of 7.9 cu. ft/ton.

$$\text{Therefore Tonnage} = \frac{303,800}{7.9} = \underline{38,456 \text{ tons}} \quad (\text{Minimum}) - \text{indicated/probable}$$

Block Tonnage - would be 4 times the minimum tonnage, namely

$$\underline{153,824 \text{ Tons}} \quad - \text{inferred}$$

C. TONNAGE CALCULATIONS FOR TENTH LEGION DEPOSIT 5
 - Based on bores T.L.1 + T.L.2b plus Adit 3

Volume Calculations

$$\begin{aligned}
 \text{A. } & \frac{45 \times 100}{4} \times 65 = 73,125 \text{ cu. ft.} \\
 \text{B. } & \left(\frac{45 \times 100}{2} + \frac{50 \times 55}{2} \right) \times 190 = 688,750 \text{ " " } \\
 \text{C. } & \frac{50 \times 55}{4} \times 205 = \underline{140,938 \text{ " " }} \\
 \text{Total Volume} & = \underline{902,813 \text{ cu. ft.}}
 \end{aligned}$$

An average of 56.85% HCl Sol. Fe was obtained from drilling assays. This is equivalent to a density of 8.05 cu. ft/ton

$$\text{Therefore Minimum Tonnage} = \frac{902,813}{8.05} = \underline{112,151 \text{ Tons}} \quad \text{indicated/probable}$$

Block Tonnage

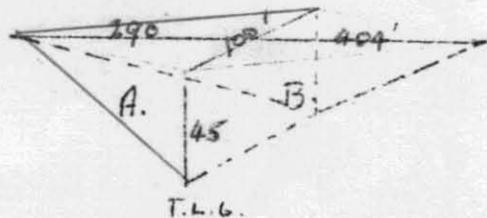
The tonnage for sections A & C would be 4 times that of the minimum tonnage.

$$\begin{aligned}
 \text{i.e. A} & = 292,500 \text{ cu ft.} \\
 \text{C} & = 563,750 \text{ cu ft.}
 \end{aligned}$$

Therefore Total Vol = 1,545,000 cu. ft.

$$\text{Therefore Tonnage} = \frac{1545000}{8.05} = \underline{191,925 \text{ Tons}} \quad \text{inferred/probable}$$

D. TONNAGE CALCULATIONS FOR TENTH LEGION DEPOSIT 6
 - Based on bore T.L.6

Volume Calculations

$$\begin{aligned}
 \text{A. } & \frac{100 \times 45 \times 290}{4} = 326,250 \text{ cu. ft.} \\
 \text{B. } & \frac{100 \times 45 \times 404}{4} = 454,500 \text{ cu. ft.} \\
 \text{Total Volume} & = \underline{780,750 \text{ cu. ft.}} \quad \dots/
 \end{aligned}$$

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An average of 53.3% HCl Sol Fe was obtained from drilling assays. This is equivalent to a density of 8.3 cu. ft/ton.

Therefore Minimum Tonnage = $\frac{780,750}{8.3} = 94,067$ Tons

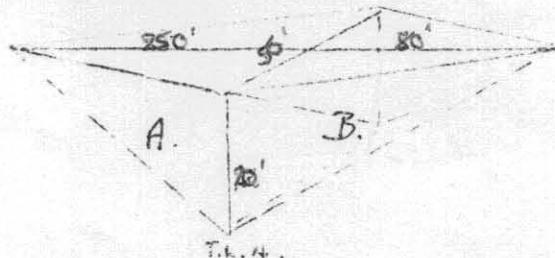
probable

Block Tonnage - would be 4 times the minimum tonnage, namely

376,268 Tons

inferred

E. TONNAGE CALCULATIONS FOR TENTH LEGION DEPOSIT 8
- Based on T.L.4



Volume Calculations

A = $\frac{250 \times 50 \times 20}{4} = 62,500$ cu. ft.

B = $\frac{80 \times 50 \times 20}{4} = 20,000$ cu. ft.

Total Volume = 82,500 cu. ft.

An average of 54.1% HCl Sol Fe was obtained from drilling assays, resulting in a density of 8.25 cu. ft/ton

Therefore Minimum Tonnage = $\frac{82,500}{8.25} = 10,000$ Tons

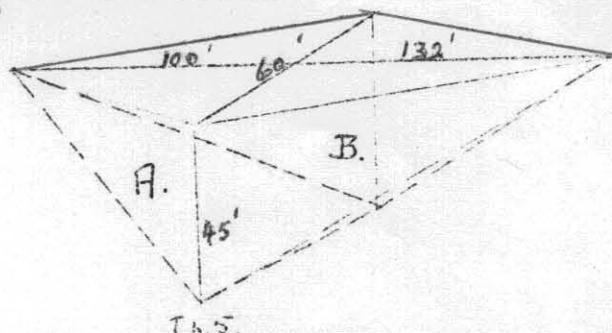
indicated/probable

Block Tonnage - would be 4 times the minimum tonnage, namely

40,000 Tons

probable/inferred

F. TONNAGE CALCULATIONS FOR TENTH LEGION DEPOSIT 9
- based on bore T.L.5



Volume Calculations

A = $\frac{60 \times 45}{4} \times 100 = 67,500$ cu. ft.

B = $\frac{60 \times 45}{4} \times 132 = 89,100$ cu. ft.

Total Volume = 156,600 cu. ft.

An average of 64.1% HCl Sol Fe was obtained from drill assays. This is equivalent to a density of 7.62 cu. ft./ton.

Therefore Minimum Tonnage = $\frac{156,600}{7.62} = 20,550$ Tons

indicated/probable

Block Tonnage - would be 4 times the minimum tonnage, namely,

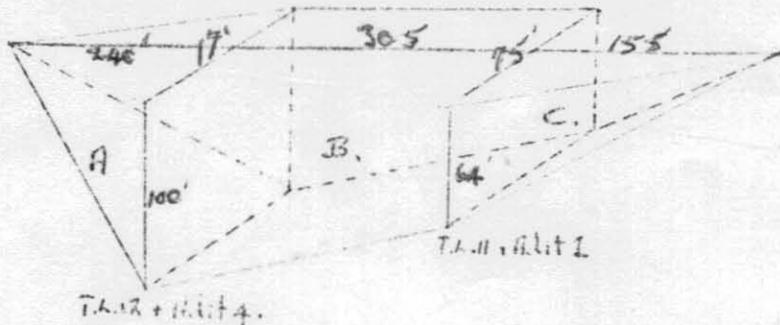
82,200 Tons

probable/inferred

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G. TONNAGE CALCULATIONS FOR TENTH LEGION DEPOSIT 10
- based on bores T.L.11, T.L.12 and Adits 1 & 4



Volume Calculations

$$A = \frac{100 \times 17}{4} \times 240 = 102,000 \text{ cu. ft.}$$

$$B = \left(\frac{100 \times 17}{2} \times 305 + \frac{64 \times 75}{2} \right) \times 305 = 991,250 \text{ cu. ft.}$$

$$C = \frac{64 \times 75}{4} \times 155 = 186,000 \text{ cu. ft.}$$

$$\text{Total Volume} = 1,279,250 \text{ cu. ft.}$$

An average of 55.6% HCl Sol Fe was obtained from drill assays. This is equivalent to a density of 8.13 cu. ft./ton

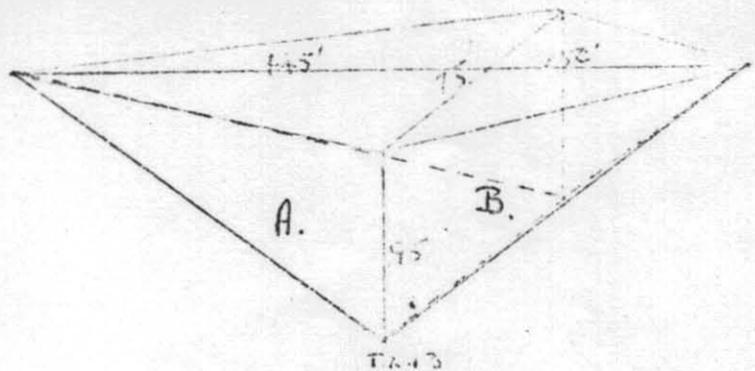
$$\text{Therefore Minimum Tonnage} = \frac{1279250}{8.13} = \underline{157,349 \text{ tons}} \text{ indicated / probable}$$

Block Tonnage - Sections A + C would be quadrupled.

$$\begin{array}{r} \text{Total volume would be } 408,000 \\ 991,250 \\ \hline 1,400,250 \\ 744,000 \\ \hline 2,143,250 \text{ cu. ft.} \end{array}$$

$$\text{Therefore Tonnage} = \frac{2143250}{8.13} = \underline{263,620 \text{ Tons}} \text{ probable / inferred}$$

H. TONNAGE CALCULATIONS FOR TENTH LEGION DEPOSIT 11
- Based on T.L.13



Volume Calculations

$$A = \frac{95 \times 75}{4} \times 150 = 267,188 \text{ cu. ft.}$$

$$B = \frac{95 \times 75}{4} \times 445 = 792,656 \text{ cu. ft.}$$

$$\text{Total Volume} = 1,059,844 \text{ cu. ft.}$$

An average of 65.2% HCl Sol Fe was obtained from drill assays. This is equivalent to a density of 7.55 cu. ft./ton.

$$\text{Minimum Tonnage} = \frac{1,059,844}{7.55} = \underline{140,376 \text{ Tons}} \text{ probable}$$

Block Tonnage - would be 4 times the minimum tonnage, namely,

$$\underline{561,504 \text{ Tons}} \text{ inferred}$$

Will it retain 75' width over further 445'?