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DEPARTMENT OF MINES

SOUTH AUSTRALIA

SURVEY OF IRONSTONE DEPOSIT NEAR YALPARA STATION, SECTIONS 45 & 46, HD. MINBURRA

by

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GEOLOGICAL SURVEY BRANCH

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Plan References	Title	Scale
55-202	Yalpara Ironstone Deposit	100 ft. to 1 inch
S 1108	Yalpara Ironstone Deposit - Proposed Diamond Drill Hole	50 ft. to 1 inch

Air Photos A 6001-2, LZ 154/5/720 Orroroo RN2 2.XII.45

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Date 7th September, 1955

DEPARTMENT OF MINES

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SURVEY OF IRONSTONE DEPOSIT NEAR YALPARA STATION SECTIONS 45 & 46, HD. MINBURRA

1. INTRODUCTION

In March 1955, Mr. C.T. Beaty of 60, Beatrice Street, Prospect, submitted a sample of high-grade specular iron ore from Section 46, Hundred of Minburra. The sample was taken from an occurrence extending over twenty acres. It was decided to survey the area, which had been visited by R.L. Jack (Deputy Government Geologist) in 1929, and briefly reported on in Mining Review No. 51, p. 63.

The writer and J.F. Saunders, Licensed Surveyor, visited the area on 5th and 6th July, 1955. Hospitality at Yalpara Station was kindly provided by Mr. & Mrs. L.D. Miell. A contoured map was prepared showing outcrops and a cross section drawn (Plan 55-202, attached). Samples were taken for assay (see appendix) and a diamond drill hole site was pegged (see plan S 1108, attached). A reconnaissance survey of the surrounding area was made.

2. LOCATION

The occurrence is approximately 26 miles north-east of Orroroo and 3 miles east of Yalpara Station, from which it is most easily approached. It is approximately 33 miles from Peterborough on the Meadow Downs Station road. From Yalpara the road is a station track. The central peak of the occurrence (see plan) lies about a quarter of a mile south of the track and forms a prominent feature locally known as The Devil's Chimney. As stated by R.L. Jack, "about half a mile south of the north-west corner of Section 46, Minburra, there is a rise of about 20 feet, culminating in a peak of iron ore about 20 feet higher." The surrounding country is gently undulating bush covered with scattered stunted mallee.

3. GEOLOGY

The deposit consists of one indefinite and three more definite outcrops of limonite and hematite trending E-W and rising from the typical red-brown sandy loam of the area. The northermost of these is the longest, approximately 1000 feet, and from 15 to 50 feet wide: it forms the top of a small scarp. This outcrop appears to strike east-west but no dip is evident. The rock is mainly limonite. A little hematite is present locally and just west of the middle the outcrop is thinly covered with travertine for about 60 feet.

Southwards from the middle of this outcrop the ground is sandy loam for about 150 feet to the outcrop of the central or peak body. This forms a prominent peak, as can be seen in the photographs, about 20 feet high, with a basal diameter of about 30 feet on a pediment-like outcrop about 70 feet long, which is partly obscured by sand. The peak is mainly massive hematite. On the east side this is mostly cavernous or irregularly lamellar, some parts schistose, with a few interbedded quartz veins giving alternate bands of quartz and hematite ¾" thick. A northerly dip of 60° can be seen. On the west side, the lower part shows much limonite with bands of hematite ½" to 1" thick. Ill-defined bedding shows a dip of 62°N. The upper part of the peak is all massive hematite with a thin coating of travertine.

An old shaft, which Mr. Miell said had been sunk during the industrial depression in the 1930's lies on the NE side of the peak. This has been filled or has fallen in.

The southern edge of the pediment of the central body forms a southward-facing scarp. This is apparently the "south body" of R.L. Jack as it exposes very massive specular hematite, as he records. It is no more than 6 feet wide and about 200 feet long; it shows no dip.

About 500 feet ENE of the peak is a group of small outcrops covering an area about 60 feet by 40 feet. These are limonite with some hematite, and may possibly be part of a continuation of the central body. There is a much smaller

outcrop about 150 feet NE of the peak.

To the south-west and mostly in Section 45 is an outcrop rather larger than that of the central body, but much less definite, forming a level, thinly sand-covered area with a few exposures of the rock surface. This shows less massive hematite and exposures are too small to reveal any dip.

Between and around these outcrops the sandy loam of the area is strewn with hematite and limonite fragments, with a distribution as shown on plan 55-202.

4. SAMPLING

From each of the three main ore bodies one sample bag of chippings representative of the whole exposed body was collected. Details of the assays are given in an appendix. They show that the iron content of the northern outcrop sample is 53.9%, the central 65.9% and the southern 63.3%. The silica content is 5.36% in the northern outcrop sample, 0.90% in the central and 2.06% in the southern. Manganese is low, from 0.05 to 0.35%. The northern outcrop, while lowest in iron, has the highest percentage of insolubles (6.36%) and rather more than the maximum at present tolerated by the Broken Hill Pty. Co. (6%).

5. RESERVES

On the evidence available the estimation of reserves is difficult. R.L. Jack estimated the northern body capable of providing only 1,500 tons per foot of depth and the central body (his southern) 400 tons per foot of depth. For his central body he made no estimate. From a surface examination assuming three separate ore-bodies it is hardly possible to improve on these figures and his statement that "this tonnage is quite inadequate for an iron ore deposit situated 25 miles from an existing railway" would, on such an assumption, be reasonable. If however the three bodies are in fact the surface manifestation of one large body, a more promising estimate can be made. In that case the

thickness of the combined body would be of the order of 370 feet. Assuming its length to be somewhat greater than that of the longest outcrop, say 1200 feet (this is roughly the length of the area strewn with fragments), the ore-body would have a cross-section of 440,000 sq. ft. and per 100 feet of depth would provide 6.2 m. tons.

6. SITE FOR POSSIBLE DIAMOND DRILLING

An estimate based on such an assumption could only be tested by sub-surface exploration. Should it be decided to investigate the deposit further, diamond drilling will be necessary. A site for one hole has been pegged. Because of the northerly dip an inclined hole directed due south would be most suitable. Accordingly, a site was chosen about 50 feet north of the northern body in line with the peak of the central body and pegged (see plan S. 1108 and photograph). From this point a 400 foot hole inclined at -30° would penetrate all three bodies assuming a steady dip of 60° in each.

7. RECONNAISSANCE SURVEY OF THE VICINITY

A rapid survey of the country within about two miles radius of the site revealed no comparable outcrops. Towards the west no trace could be found of the vein 4 feet wide in Section 45 collinear with the central body mentioned by R.L. Jack. Towards the south-west such exposures as exist are of quartzites with, further out in a creek bed about 1½ miles SW, tillite interbedded with grey slates dipping steeply north. Apart from similar strongly jointed grey slates dipping 45° at 340° in the main creek at the Diprotodon site 3 miles NW of the peak, elsewhere the only indication of rock type is a level spread of hematite fragments about 3 miles due east of the peak, about 2 acres in extent. No solid rock is exposed.

8. CONCLUSION

Survey of an ironstone deposit 3 miles east of Yalpara

H.S. in Sections 45 and 46, Hd. Minburra shows the existence of three small iron ore outcrops dipping steeply north under alluvium. Although these assay at 53.9 - 65.9% iron, surface indications are insufficient to show whether ore reserves are adequate to repay working . A diamond drill site has been pegged and a suggested 400-foot inclined hole would indicate whether the outcrops are of one large body or three much smaller ones. If the former, a possible 6.2 m. tons per 100 feet depth is likely to be available. Reconnaissance survey of the vicinity shows no comparable outcrops.

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ARC:AGK
7/9/55.

APPENDIX

ASSAY DETAILS

Samples marked as under, yielded on analysis:

Mark	A 530/55	A531/55	A532/55
Iron (Fe)	53.9%	65.9%	63.3%
Silica (SiO_2)	5.36	0.90	2.06
Calcium Oxide (CaO)	0.98	0.29	1.29
Magnesium Oxide (MgO)	0.08	0.06	0.19
Alumina (Al_2O_3)	1.00	0.18	0.27
Manganese (Mn)	0.35	0.03	0.05
Titanium Oxide (TiO_2)	0.06	0.03	0.09
Sulphur (S)	0.05	0.01	0.01
Phosphorus (P)	0.26	0.70	0.05

	Type of Material	Locality	Source
A530/55	A.C. 10 Yalpara ironstone Northern outcrop, occurrence 1000' x 30'	Section 46, Hd. Minburra	G.F. Whitten, Mines Dept.
A531/55	A.C. 11. Yalpara ironstone central outcrop, occurrence 70' x 40'	Section 46 Hd. Minburra	G.F. Whitten, Mines Dept.
A532/55	A.C. 12 Yalpara ironstone Southern outcrop, occurrence 350' x 30'	Sections 45 & 46, Hd. Minburra	G.F. Whitten, Mines Dept.

PHOTOGRAPHS.

1

Peak from north

2

Peak from east

3

Looking towards
peak from east

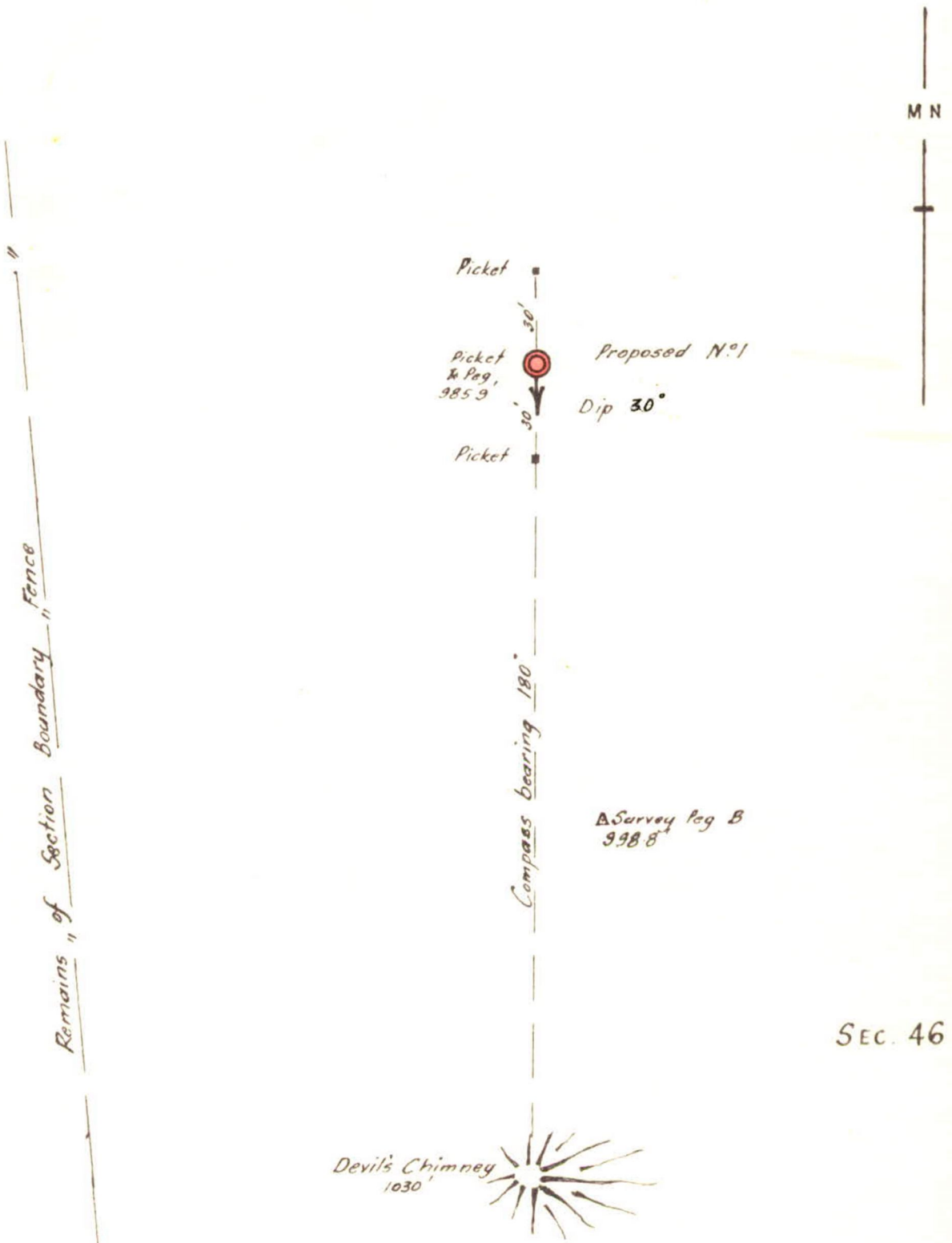
4

Looking towards
Peak from ENE

5

Diamond drill
hole site from
north

Access from E-W Road approx.
3 miles east of Yalpara H.S.
(¼ mile to north of Devil's Chimney)



Note: Level Datum is assumed

Vide report by A R Crawford
& plan 55-202

S.A. DEPARTMENT OF MINES

J.F.S

YALPARA IRONSTONE DEPOSIT

Sec. 45 & 46 Hd. Minburra

Proposed Diamond Drill Hole

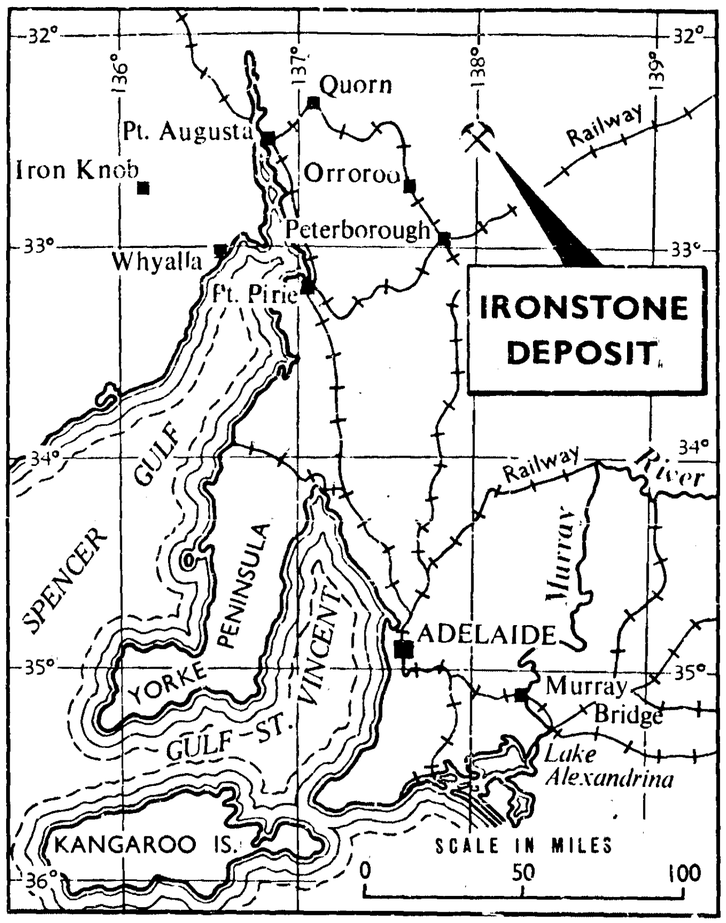
SCALE 50' = 1"

S 1108

Fk1

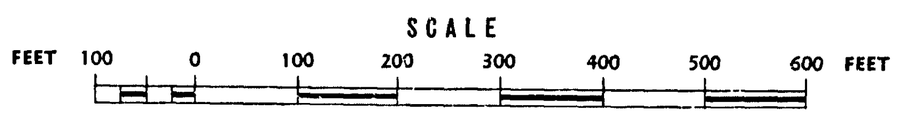
DATE 11-7-55

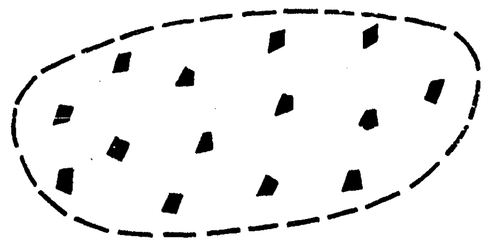
LOCALITY MAP

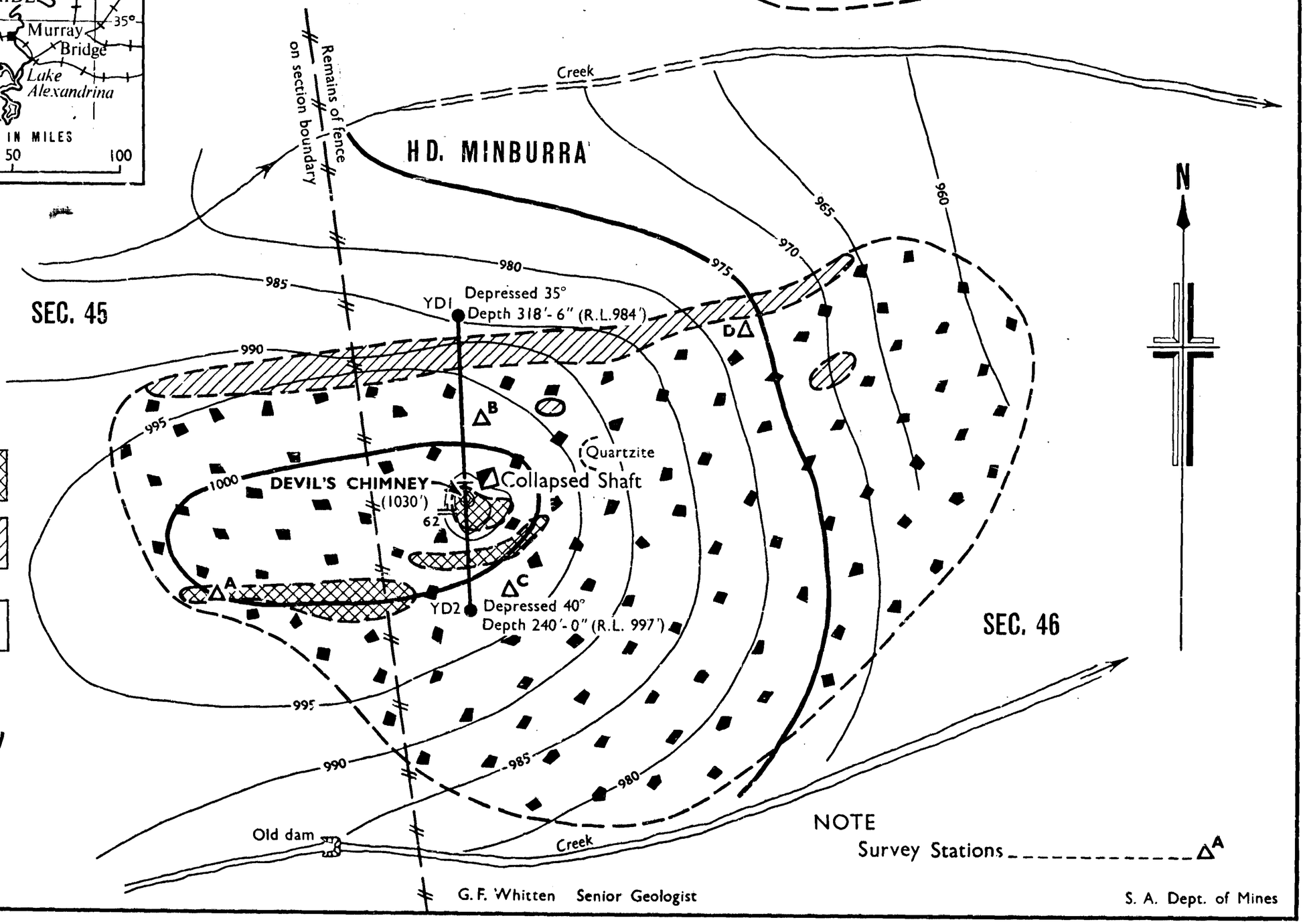


ASSAY RESULTS

	AC10 Northern Outcrop	AC11 Central Outcrop	AC12 Southern Outcrop
Iron	53.9%	65.9%	63.3%
Silica	5.36	0.90	0.26
Calcium oxide	0.98	0.29	1.29
Magnesium oxide	0.08	0.06	0.19
Alumina	1.00	0.18	0.27
Manganese	0.35	0.03	0.05
Titanium oxide	0.06	0.03	0.09
Sulphur	0.05	0.01	0.01
Phosphorus	0.26	0.70	0.05







LEGEND

Hematite outcrops

Limonite outcrops

Area strewn with Hematite fragments

Diamond Drill Holes YD1

Surface Contours 995 1000
(5 ft. Intervals) (Arbitrary Datum)

Strike and dip of bedding 62

NOTE

Survey Stations A

55-202

G. F. Whitten Senior Geologist

S. A. Dept. of Mines