TR 10_55_64

11. CUPRONA IRON DEPOSIT

by A. J. Noldart

INTRODUCTION

The increased tempo of iron ore exploration throughout Australia has resulted in the re-examination and re-assessment of the majority of the Tasmanian deposits both by private enterprise and by the Department of Mines. As part of this activity further testing was considered warranted on the Blythe River-Cuprona iron deposits and a limited diamond drilling programme was commenced by the Department on 2/7/65.

Activities were restricted to testing the northern portion of the Cuprona deposit and three diamond drill holes were completed totalling approximately 679 feet of drilling. Summary core logs and assay data of the holes are incorporated in this report (see also Fig. 27).

GEOLOGY

SURFACE INVESTIGATIONS

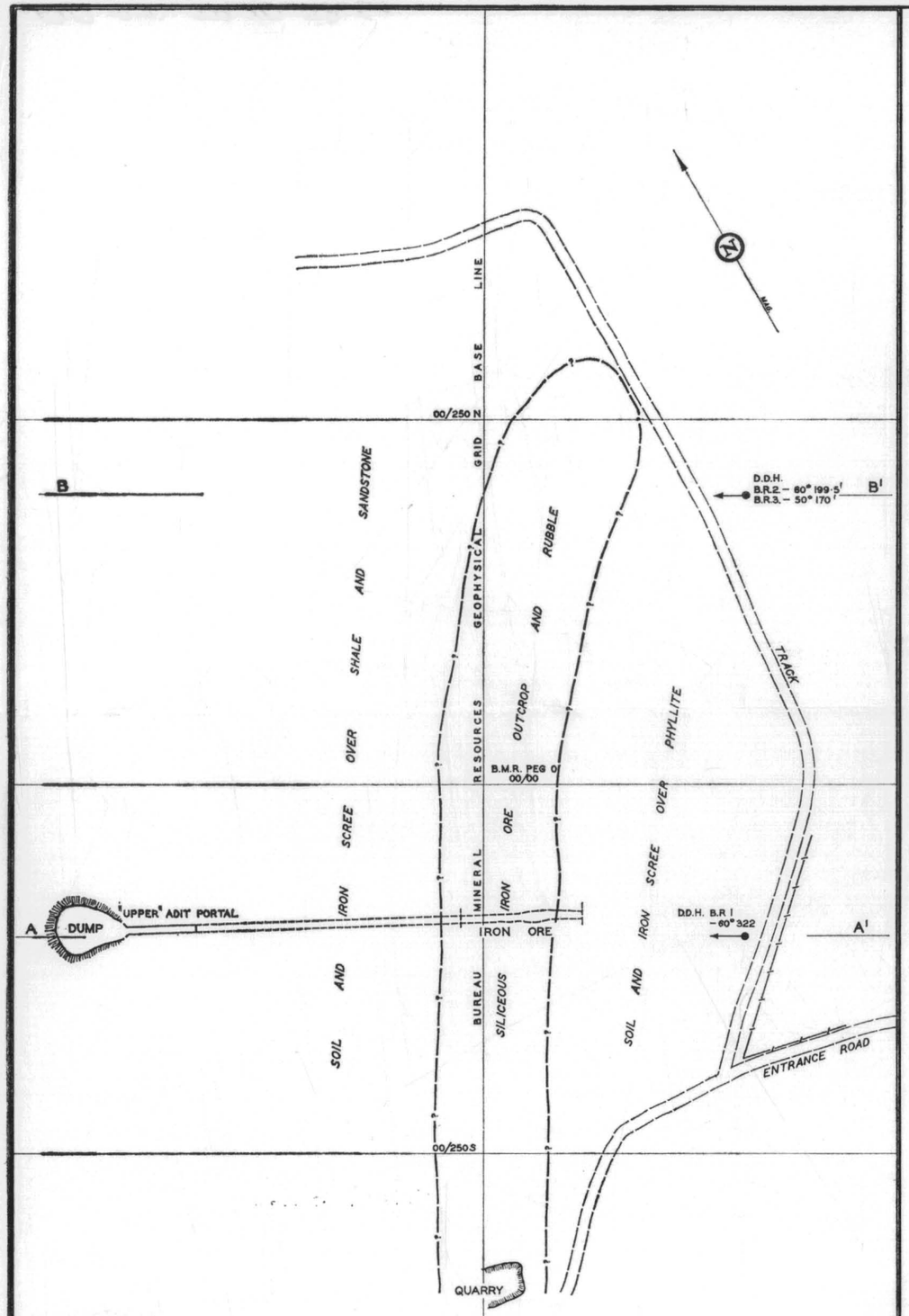
The surface geology of the area, as described in a number of miscellaneous reports by previous investigations, up to and including Blake (1958), is substantially correct and is not repeated in this report. However, more recent work by Geologist R. D. Gee of this Department, as part of a wider study of the geology of the district, and information obtained from examination of drill cores recovered in the course of drilling have altered some of the earlier concepts.

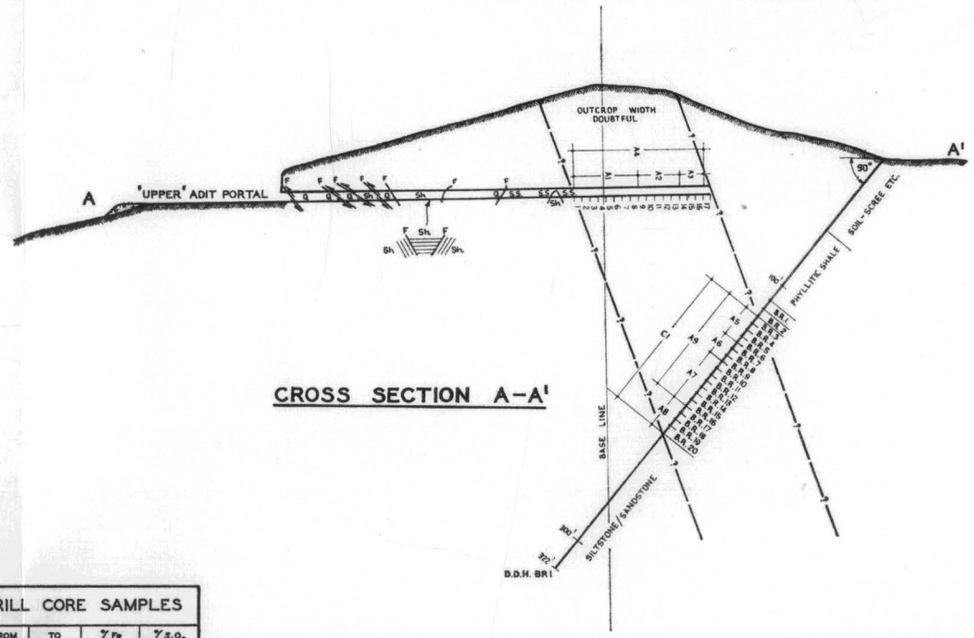
Blake (1958) considered that the ore bodies were contained in quartzite members of a Precambrian sequence which were overlain unconformably by a sequence of "breccia conglomerates with minor beds of thinly banded cherts and quartzites which are referred to the base of the Owen Conglomerate, of Ordovician age".

He further considered the iron ore to be "genetically related to the intrusive granites, outcrops of which occur at a distance of one and a half miles from the deposits", with selective replacement of quartzite beds with iron and silica, followed by "brecciation of the hematised bodies".

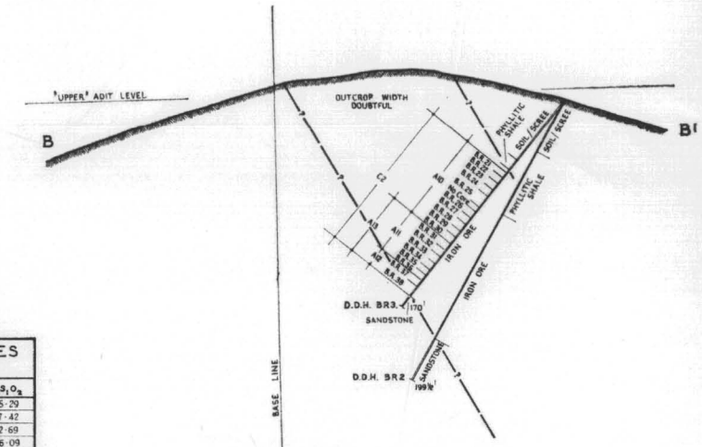
Gee (pers. comm.) however, considers the deposits to be localized in an interformational breccia located on the unconformity between the quartzite etc. of the Precambrian sequence and the lower members of the Palaeozoic sequences of Cambrian (or Ordovician) age and does not consider that any genetic relationship between the granite and the ore bodies exists.

Gee cites as evidence the presence of slate of Cambrian age and the absence of the "phyllite" beds of Blake (in an equivalent stratigraphic position in the Precambrian sequence) elsewhere in the district, coupled with the occurrence of iron-silica pebbles and





CROSS SECTION A–A'



CROSS SECTION B–B'

DIAMOND DRILL CORE SAMPLES

HOLE N°	SAMPLE N°	FROM	TO	% Fe	% SiO_2
D.D.H. B.R.1.	B.R. 1.	110'-10"	118'-0"	8·17	83·9
	B.R. 2.	118'-0"	124'-3"	9·58	85·8
	B.R. 3.	124'-3"	129'-3"	55·0	21·2
	B.R. 4.	129'-3"	134'-3"	58·2	12·2
	B.R. 5.	134'-3"	139'-3"	60·1	15·2
	B.R. 6.	139'-3"	144'-3"	64·0	6·7
	B.R. 7.	144'-3"	149'-3"	25·7	60·2
	B.R. 8.	149'-3"	154'-3"	21·7	68·7
	B.R. 9.	154'-3"	159'-3"	29·5	57·6
	B.R. 10.	159'-3"	164'-3"	45·7	32·8
	B.R. 11.	164'-3"	169'-3"	46·0	31·0
	B.R. 12.	169'-3"	174'-3"	47·8	29·5
	B.R. 13.	174'-3"	179'-3"	47·0	28·2
	B.R. 14.	179'-3"	184'-3"	43·1	35·2
	B.R. 15.	184'-3"	189'-3"	44·7	33·2
	B.R. 16.	189'-3"	194'-1"	51·8	24·5
	B.R. 17.	194'-3"	199'-3"	29·9	56·3
	B.R. 18.	199'-3"	204'-3"	16·8	75·0
	B.R. 19.	204'-3"	209'-3"	26·8	55·8
	B.R. 20.	209'-3"	216'-8"	47·8	23·78
D.D.H. B.R.3	B.R. 21.	57'-0"	61'-0"	17·9	72·4
	B.R. 22.	61'-0"	66'-0"	10·8	83·3
	B.R. 23.	66'-0"	71'-0"	29·8	57·0
	B.R. 24.	71'-0"	76'-0"	20·2	70·1
	B.R. 25.	76'-0"	87'-10"	10·2	82·1
	B.R. 26	87'-10"	93'-10"	18·2	72·1
	B.R. 27	93'-10"	98'-0"	25·4	61·8
	B.R. 28	98'-0"	103'-0"	16·6	70·7
	B.R. 29.	103'-0"	108'-0"	8·9	86·1
	B.R. 30.	108'-0"	113'-0"	17·1	73·9
	B.R. 31.	113'-0"	118'-0"	19·1	69·5
	B.R. 32.	118'-0"	123'-0"	36·0	48·0
	B.R. 33.	123'-0"	128'-0"	55·2	20·9
	B.R. 34.	128'-0"	133'-0"	54·9	21·1
	B.R. 35.	133'-0"	136'-10"	48·0	29·9
	B.R. 36.	136'-10"	141'-0"	45·6	34·1
	B.R. 37	141'-0"	146'-0"	30·6	55·4
	B.R. 38.	146'-0"	152'-10"	31·3	53·7

AVERAGE ASSAYS

D.D.H. B.R.1.	A.5.	124'-3"	144'-3"	59·9	14·3
	A.6.	144'-3"	159'-3"	25·6	62·2
	A.7	159'-3"	194'-3"	46·6	30·6
	A.8.	194'-3"	216'-8"	31·5	67·1
	A.9.	124'-3"	194'-3"	45·6	32·4
D.D.H. B.R.3	A.10.	57'-0"	118'-0"	17·0	69·2
	A.11.	118'-0"	141'-0"	48·2	30·7
	A.12.	141'-0"	152'-10"	31·1	54·4
	A.13.	118'-0"	152'-10"	42·4	38·8

UPPER TUNNEL SAMPLES
(BOYD, GIBSON & YOUNG)

SAMPLE N°	FROM	TO	% Fe	% SiO_2
1	WEST LIMIT OF ORE BODY	5'	51·33	25·29
2	5'	10'	55·78	17·42
3	10'	15'	45·67	32·69
4	15'	20'	50·63	26·09
5	20'	25'	49·06	28·55
6	25'	30'	47·76	28·58
7	30'	35'	49·59	27·35
8	35'	40'	49·40	28·58
9	40'	45'	59·16	15·33
10	45'	50'	58·80	14·70
11	50'	55'	60·33	11·17
12	55'	60'	59·42	13·72
13	60'	65'	58·91	13·62
14	65'	70'	50·92	25·74
15	70'	75'	53·20	24·00
16	75'	80'	48·83	29·60
17	80'	85'	25·47	62·40

AVERAGE ASSAYS

A1.	WEST LIMIT OF ORE BODY	40'	49·90	26·87
A2.	40'	65'	59·33	13·71
A3.	65'	80'	50·98	26·45
A4.	WEST LIMIT	80'	53·05	22·58

COMPOSITE ASSAYS

HOLE N°	SAMPLE N°	FROM	TO	% Fe	% SiO_2	% P	% Al.	% Mn	% S
D.D.H. B.R.1.	C1.	124'-3"	216'-8"	40·7	36·6	0·08	0·2	0·02	0·05
D.D.H. B.R.3	C2.	57'-0"	152'-10"	26·6	57·6	0·06	0·09	0·02	0·02

5 cm

TR10-55-64 FIG. 27

DEPARTMENT OF MINES — TASMANIA

DIAMOND DRILLING RESULTS CUPRONA IRON AREA BLYTHE RIVER

DATE:- FEBRUARY 1966	FEET SCALE 0 40 80 120
GEOLOGIST A.J. NOLDART	SURVEYOR
DRAUGHTSMAN P.B. NANKIVELL	MAP SHEET & N° BURNIE 28
REVISIONS	FILE N° 2822.

Diamond Drill Core Record

Hole No.: BR 1 *Map Sheet:* No. 28 *District:* Burnie
Location of Site: 370 feet. On bearing of 121° mag. from the portal of the upper tunnel, Blythe River/Cuprona iron deposits

Core Size: NX to 128 ft.
BX to End

Bearing of Hole: 304° mag. *Air Photo:* No. T 315-44 Run 3 *Commenced:* 2/7/65
Inclination of Hole: 50° *Drill:* F20 C *Completed:* 13/9/65
Co-Ords. of Site: 934000N/396000 E *Driller:* G. Burns—J. Perkins *Final Depth:* 322 ft. 4 ins.

Drilling Target: To test the ore body at about 200 feet depth.
Remarks: Iron ore intersected between 124 feet and 216 feet down the hole.

SURVEY DATA			ASSAY DATA							
DEPTH feet	Bearing mag.	Inclin. degs.	SAMPLE No.	FROM ft. ins.	TO ft. ins.	RECOVERY ft. ins.	RECOVERY %	ASSAY RESULTS Fe%	ASSAY RESULTS SiO_2%
150	..	48½	BR 1	110 10	118 0	6 0	84	8.17	83.9
300	304	48½	BR 2	118 0	124 3	2 10	45	9.58	85.8
			BR 3	124 3	129 3	3 10	77	55.0	21.2
			BR 4	129 3	134 3	4 2	83	58.2	12.2
			BR 5	134 3	139 3	2 4	47	60.1	13.2
			BR 6	139 3	144 3	4 0	80	64.0	6.7
			BR 7	144 3	149 3	4 4	87	25.7	60.2
			BR 8	149 3	154 3	5 0	100	21.7	68.7
			BR 9	154 3	159 3	4 7	92	29.5	57.6
			BR 10	159 3	164 3	5 0	100	45.7	32.6
			BR 11	164 3	169 3	4 8	93	46.0	31.0
			BR 12	169 3	174 3	4 10	97	47.8	29.5
			BR 13	174 3	179 3	5 0	100	47.1	28.2
			BR 14	179 3	184 3	4 5	88	43.1	35.2

Diamond Drill Core Record—cont.

SURVEY DATA			ASSAY DATA						
DEPTH feet	Bearing mag.	Inclin. degs.	SAMPLE No.	FROM ft. ins.	TO ft. ins.	RECOVERY ft. ins.	RECOVERY %	ASSAY RESULTS Fe%	ASSAY RESULTS SiO_2%
			BR 15	184 3	189 3	4 8	93	44.7	33.2
			BR 16	189 3	194 3	4 10	97	51.8	24.5
			BR 17	194 3	199 3	4 11	99	29.9	56.3
			BR 18	199 3	204 3	4 10	97	16.8	75.0
			BR 19	204 3	209 3	4 8	93	26.8	55.8
			BR 20	209 3	216 8	6 4	84	47.8	23.78

Composite Assay: BR 1 to BR 20 incl.: P, 0.08; Al, 0.2; Mn, 0.02; S, 0.05.

GEOLOGICAL LOG. Logged by: A. J. Noldart

FROM ft. in	TO ft. ins.	RECOVERY ft. ins.	RECOVERY %	DESCRIPTION
0 0	50 0	Nil	Nil	Clay and overburden
50 0	55 9	2 6	43	Iron scree boulders
55 9	75 4	15 9	43	Weathered pale grey phyllite ironstained on joint planes, contorted in part with numerous small fracture and breccia zones
75 4	91 4	15 2	87	Variable grey-pinkish ironstained phyllite
91 4	99 0	7 8	100	As above—minor staining only
99 0	107 3	8 3	100	As above—strongly ironstained and very limonitic on joint planes
107 3	112 2	3 0	75	Breccia zone—mainly brecciated phyllite
112 2	116 2	3 0	75	Very ferruginous sandstone
116 2	124 3	3 9	47	Ferruginous quartzite

GEOLOGICAL LOG—*cont.*

FROM ft.	FROM ins.	TO ft.	TO ins.	RECOVERY ft.	RECOVERY ins.	RECOVERY %	DESCRIPTION
124	3	136	0	8	0	68	Dark red/brown hematitic iron ore, schistose and limonitic in part, vuggy
136	0	148	10	8	9	69	Mid red/brown hematitic iron ore, some slickensiding of iron on minor fault planes
148	10	149	11	1	1	100	Shaly iron formation
149	11	164	11	14	11	100	Ferruginous quartzite—coarse mottling, some small sections grading to siliceous hematitic iron ore
164	11	165	11	0	6	50	Shaly iron formation
165	11	177	7	10	0	86	Hard greyish hematite—closely mottled with silica blebs—very vuggy
177	7	182	11	4	0	75	Coarsely mottled siliceous iron formation
182	11	191	3	8	3	100	Hard greyish hematite as above—some brecciation at 188 feet
191	3	192	4		6	46	Hard greyish hematite as above
192	4	197	6	2	0	65	Ferruginous quartzite
197	6	201	6	4	0	100	Siliceous iron ore
201	6	204	6	3	0	100	Ferruginous quartzite
204	6	208	5	3	11	100	Siliceous iron ore—shaly in part—with vuggy limonitic iron ore vein almost parallel to core
208	5	211	1	2	7	98	Dark grey hematite
211	1	216	8	5	0	98	Ferruginous quartzite partly altered to limonite
216	8	243	6	7	7	79	Weathered grey siltstone, brecciated, iron staining on joints, some sandy zones
243	6	258	6	12	4	82	Mainly whitish sandy siltstone with some zones of sandstone
258	6	279	4	18	2	87	Very leached and vuggy porous sandstone and sandy siltstone
279	4	322	4	4	7	10	Very broken shaly siltstone with some sandy zones
							END OF HOLE

Diamond Drill Core Record

Hole No.: BR 2 *Map Sheet No.:* 28 *District:* Burnie

Location of Site: 470 feet on a bearing of 81° mag. from the portal of the upper tunnel of Blythe River/ Cuprona iron deposits

Core Size: BX to 80 feet
AXT 80 feet to end

Bearing of Hole: 300° mag. *Air Photo No.:* T 315-44 Run 3 *Commenced:* 28/9/65

Inclination of Hole: —60° *Drill:* F20 C *Completed:* 22/10/65

Co-Ords. of Site: 934000N/396000E *Driller:* J. Perkins *Final Depth:* 195 feet 5 ins.

Drilling Target: To test the northern end of the orebody at about 200 feet depth.

Remarks: Iron ore intersected between 80 and 169 feet down hole. Ore body intersection held for reference no assays due low core recovery BR 3 to be drilled from same site at 50° depression.

GEOLOGICAL LOG. Logged by: A. J. Noldart

FROM ft.	FROM ins.	TO ft.	TO ins.	RECOVERY ft.	RECOVERY ins.	RECOVERY %	DESCRIPTION
0	0	36	0	4	5	12	Ironstone and grey phyllite rubble
36	0	66	0	5	2	17	Slightly ferruginous, ironstained brecciated pale grey phyllite
66	0	79	10	12	6	90	Contorted and brecciated heavily iron stained grey phyllite
79	10	90	8	6	3	58	Highly siliceous hematitic iron ore
90	8	104	8	6	10	49	Highly siliceous brecciated iron ore, quartzite in places
104	8	109	8	4	0	80	Dark brown hematitic iron ore
109	8	140	10	16	4	52	Highly siliceous hematitic iron ore, some brecciated zones
140	10	155	5	1	11	14	Limonitic iron ore—very broken and porous
155	5	158	4	1	6	51	Low grade shaly iron ore
158	4	167	2	6	7	75	Highly siliceous iron formation
167	2	169	6		9	32	Oxidized sandstone END OF ORE BODY
169	6	185	7	6	2	46	Ironstained light grey sandstone
185	7	195	5		7	6	Sandy siltstone and sandstone
							END OF HOLE

Diamond Drill Core Record

Hole No.: BR 3 *Map Sheet No.:* 28 *District:* Burnie

Location of Site: 470 feet on a bearing of 81° mag. from the portal of the upper tunnel of the Blythe River/Cuprona iron deposits.

Core Size: BX to 136 feet 10 ins.
AXT 136 feet 10 ins. to end

Bearing of Hole: 300° mag. *Air Photo No.:* T315-44 Run 3 *Commenced:* 25/10/65

Inclination of Hole: 50° *Drill:* F20 C *Completed:* 19/11/65

Co.Ords. of Site: 934000N/396000E *Driller:* J. Perkins *Final Depth:* 160 feet 11 ins.

Drilling Target: To resample above D.D.H. BR 2 due to poor core recovery.

Remarks: Iron formation intersected between 53 feet 8 inches and 148 feet down the hole.

SURVEY DATA			ASSAY DATA						
DEPTH feet	Bearing mag.	Inclin. degs.	SAMPLE No.	FROM ft. ins.	TO ft. ins.	RECOVERY ft. ins.	RECOVERY %	ASSAY RESULTS Fe%	ASSAY RESULTS SiO_2%
			BR 21	57 0	61 0	4 0	100	17.9	72.4
			BR 22	61 0	66 0	5 0	100	10.8	83.3
			BR 23	66 0	71 0	1 10	37	28.8	57.0
			BR 24	71 0	76 0	4 10	98	20.2	70.1
			BR 25	76 0	84 6	8 4	98	10.2	82.1
			BR 26	87 10	93 10	2 0	40	18.2	72.1
			BR 27	93 10	98 0	4 2	100	25.4	61.8
			BR 28	98 0	103 0	5 0	100	16.6	70.7
			BR 29	103 0	108 0	5 0	100	8.9	86.1
			BR 30	108 0	113 0	5 0	100	17.1	73.9
			BR 31	113 0	118 0	5 0	100	19.1	69.5
			BR 32	118 0	123 0	5 0	100	36.0	48.0
			BR 33	123 0	128 0	5 0	100	55.2	20.9
			BR 34	128 0	133 0	5 0	100	54.9	21.1

Diamond Drill Core Record—cont.

SURVEY DATA			ASSAY DATA						
DEPTH feet	Bearing mag.	Inclin. degs.	SAMPLE No.	FROM ft. ins.	TO ft. ins.	RECOVERY ft. ins.	RECOVERY %	ASSAY RESULTS Fe%	ASSAY RESULTS SiO_2%
			BR 35	133 0	136 10	3 10	100	49.0	29.9
			BR 36	136 10	141 0	4 0	95	45.6	34.1
			BR 37	141 0	146 0	4 9	95	30.6	55.4
			BR 38	146 0	152 10	6 4	95	31.3	53.7

Composite Assay: BR 21 to BR 38 incl. P, 0.06; Al, 0.09; Mn, 0.02; S, 0.02.

GEOLOGICAL LOG. Logged by: A. J. Noldart

FROM ft. ins.	TO ft. ins.	RECOVERY ft. ins.	RECOVERY %	DESCRIPTION
0 0	46 7	Nil	Nil	No core
46 7	48 8	2 1	100	Oxidized, contorted and partly brecciated pale grey phyllite
48 8	53 8	4 7	92	Heavily brecciated grey phyllite
53 8	57 0	0 2	5	Hematitic iron ore
57 0	66 4	9 4	100	Brecciated siliceous iron formation with variable low iron content
66 4	70 7	0 10	25	Hematitic iron ore
70 7	84 6	13 7	98	Brecciated siliceous iron formation with occasional limonitic zones becoming limonitic after 83ft.
84 6	87 10	Nil	Nil	No core—probable fault zone 82′ to 93′
87 10	92 10	1 3	25	Limonitic zone

GEOLOGICAL LOG—*cont.*

FROM ft.	FROM ins.	TO ft.	TO ins.	RECOVERY ft.	RECOVERY ins.	RECOVERY %	DESCRIPTION
92	10	103	0	10	2	100	Siliceous hematitic iron ore oxidized fault zones 98′ 6″ to 99′ 9″ and 100′ 9″ to 101′ 9″
103	0	120	4	17	4	100	Siliceous iron formation with minor Fe, fault zones at 108′, 112′ and 113′-114′
120	4	123	5	3	1	100	Siliceous, hematitic iron ore
123	5	136	10	13	5	100	Hematitic iron ore, contorted and siliceous in part, some faulting and oxidization in fault zones
136	10	144	2	7	0	95	Coarsely mottled siliceous iron ore with vugs
144	2	152	10	8	2	94	Very siliceous iron formation
152	10	154	4	0	9	33	Iron stained soft sandstone
154	4	160	11	3	10	58	Light grey sandstone with shaly partings
							END OF HOLE

boulders of the Blythe River-Cuprona ore type in the basal members of the (Ordovician) Owen Conglomerate. These pebbles are distinct from the vein-like occurrences of specular hematite found in both Precambrian and Palaeozoic rocks in the district.

DRILLING INTERSECTIONS

Examination of the drill cores shows marked lithological and structural differences in the rocks intersected above and below the ore body, in support of the concept of Gee.

The rocks underlying the ore body are composed of sandstone, quartzite, siltstone etc., strongly cleaved and foliated, and metamorphosed in part in a manner consistent with the Precambrian sequence in other parts of the district.

The sequence overlying the ore body is composed entirely of schistose pale grey phyllitic rocks, contorted and brecciated close to the ore body but comparatively unmetamorphosed.

Iron staining on joints and fracture planes is marked in the overlying phyllitic rocks but is absent or negligible in the underlying Precambrian sequence.

IRON DEPOSIT

The iron ore intersected in the drill holes is composed almost entirely of a silica-hematite admixture extremely variable in grade throughout. Several small sections of high grade ore were intersected but the general grade is medium to low with an average iron content of 40% or less and silica exceeding 35%.

The hematite generally is hard, compact, dark grey to reddish in colour with small vugs partly filled with crystalline hematite with occasional schistose and limonitic zones. Movement planes within the ore are faced with specular hematite.

The silica is mainly dense and very fine grained, usually grading into iron giving a coarse mottled effect to the ore in the poorer sections, or occurring as smaller blebs and apparent vug fillings in the higher grade zones, giving a finely mottled appearance.

Brecciation zones are common in all intersections with the brecciation present in both higher and lower grade zones but more prominent in the siliceous sections of the ore body. Brecciation generally appears to have occurred after deposition of the iron but some post brecciation specular iron is present.

RESULTS AND CONCLUSIONS

Iron ore of variable grade was intersected in D.D.H. BR1 at a depth of 124'3" to 216'8" down the hole representing a true width of approximately 80 feet; in D.D.H. BR2 at a depth of 79'10" to 167'2" for a true width of approximately 65 feet; and in D.D.H. BR3 at a depth of 57'0" to 152'10" for a true width of approximately 88 feet.

Assay results from D.D.H. BR1 gave a composite assay of 40.7% Fe and 36.6% SiO_2 over the length of the intersection, and from D.D.H. BR3 a composite assay of 26.6% Fe and 57.6% SiO_2 over the length of the intersection.

Core recoveries from the two intersections were of the order of 83% and 86% respectively. A core recovery of only 50% approximately was obtained from D.D.H. BR2 and the core was not assayed. This core is held at the Department of Mines for examination as required.

The ore body grade in the northern portion of the Cuprona iron deposit as indicated by diamond drill intersections does not improve with depth and further exploration on this section is not warranted at this stage. Should further exploration be undertaken it should be confined to the section to the south of D.D.H. BR1 up to and below the basalt cover. Any such programme should be limited to a maximum of two holes, with further exploration dependent on progressive results.

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