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NUMBER 8528

EL 1747 WITCHELINA

PROGRESS, ANNUAL AND FINAL REPORTS FOR THE PERIOD 21/10/91 TO 20/10/95

Submitted by

MIM Ltd
1995

MINES AND ENERGY
SOUTH AUSTRALIA

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ENVELOPE 8528

TENEMENT: EL 1747 Witchelina

TENEMENT HOLDER: MIM Ltd

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REPORT:	**Binks, P.J., 1992.** EL 1747 "Witchelina". Annual report for the period October 21, 1991 to October 20, 1992 (Including quarterly report to October 20, 1992) [MIM Exploration Pty Ltd technical report no. 1771].			**8528 R 4** Pgs 47-60

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SEPARATELY HELD DATA

DATA TAPES (Held by Information Services Branch):

TEM data. D 00000029 (Refer to Appendix, 8528 R 6).

DRILLHOLE SAMPLES (Held by MESA Core Library):

For up to date information on available drillhole samples, contact the Supervisor, MESA Core Library and quote the Exploration Licence and drillhole number/s you wish to query.
MWD 1-3, MWRC 1-13.

EL 1747 "WITCHELINA"

REPORT FOR QUARTER ENDED JANUARY 20, 1992

1. TERMS AND CONDITIONS

Exploration Licence 1747 "Witchelina" was granted to Mount Isa Mines Limited on October 21, 1991 for a term of one year with an expenditure commitment of $155,000. The Licence covers most of the Willouran Ranges south-west of Marree and is 1958km^2 in area. Exploration is carried out by MIM Exploration Pty Ltd which is a wholly owned subsidiary of Mount Isa Mines Limited.

2. EXPLORATION

A review of all previous exploration in the district has been carried out. Also, geological mapping of approximately 25km^2 over the Boorloo Diapir area was undertaken around the time of the granting of the tenement. Mapping was carried out on 1:5000 coloured enlargements from Survey 3456 which was flown in 1986. Geology of the area is shown on Drawing Nos 36506 and 36591.

Approximately 70 rock chip samples of limonite from quartz/limonite veins in the Boorloo Mine area were collected and assayed for copper. Results of this work will be included with the next Quarterly Report.

Three diamond drill holes were completed in the Boorloo - Breaden Hill area in November/December 1991. Drilling was carried out by Rockdrill using a "Versatile" rig. Details of the holes are as follows:

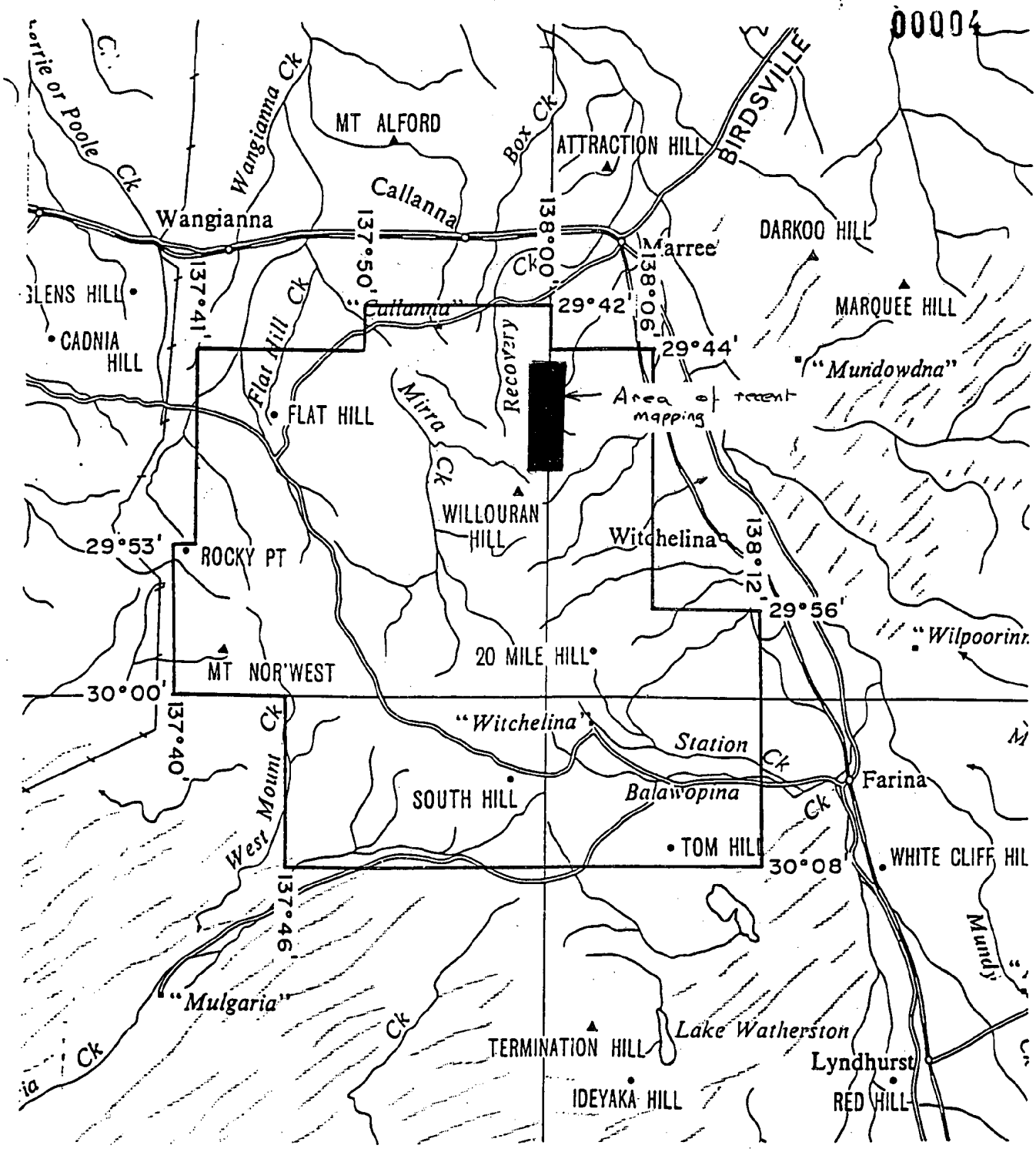
MWD 1, drilled to 339.1m	at 790110E, 6704720N AMG
MWD 2, drilled to 168.55m	at 789690E, 6705520N AMG
MWD 3, drilled to 262.8m	at 790610E, 6702800N AMG

Locations of the holes are shown on Drawing No 36506. Geological and assay logs of these holes will be supplied with the next Quarterly Report.

3. EXPENDITURE

A statement of expenditure incurred on the Licence during the last quarter is included with this report.

P BINKS



EL 1747 Mount Isa Mines Limited

SCALE 1:500.000

KILOMETRES 10 0 10 20 30 40 50 KILOMETRES

AREA: 1958 square kilometres (approx.)

1:250000 PLANS: CURDIMURKA, MARREE, ANDAMOOKA, COPLEY

LOCALITY: WITCHELINA AREA – approx. 50 km south of Marree

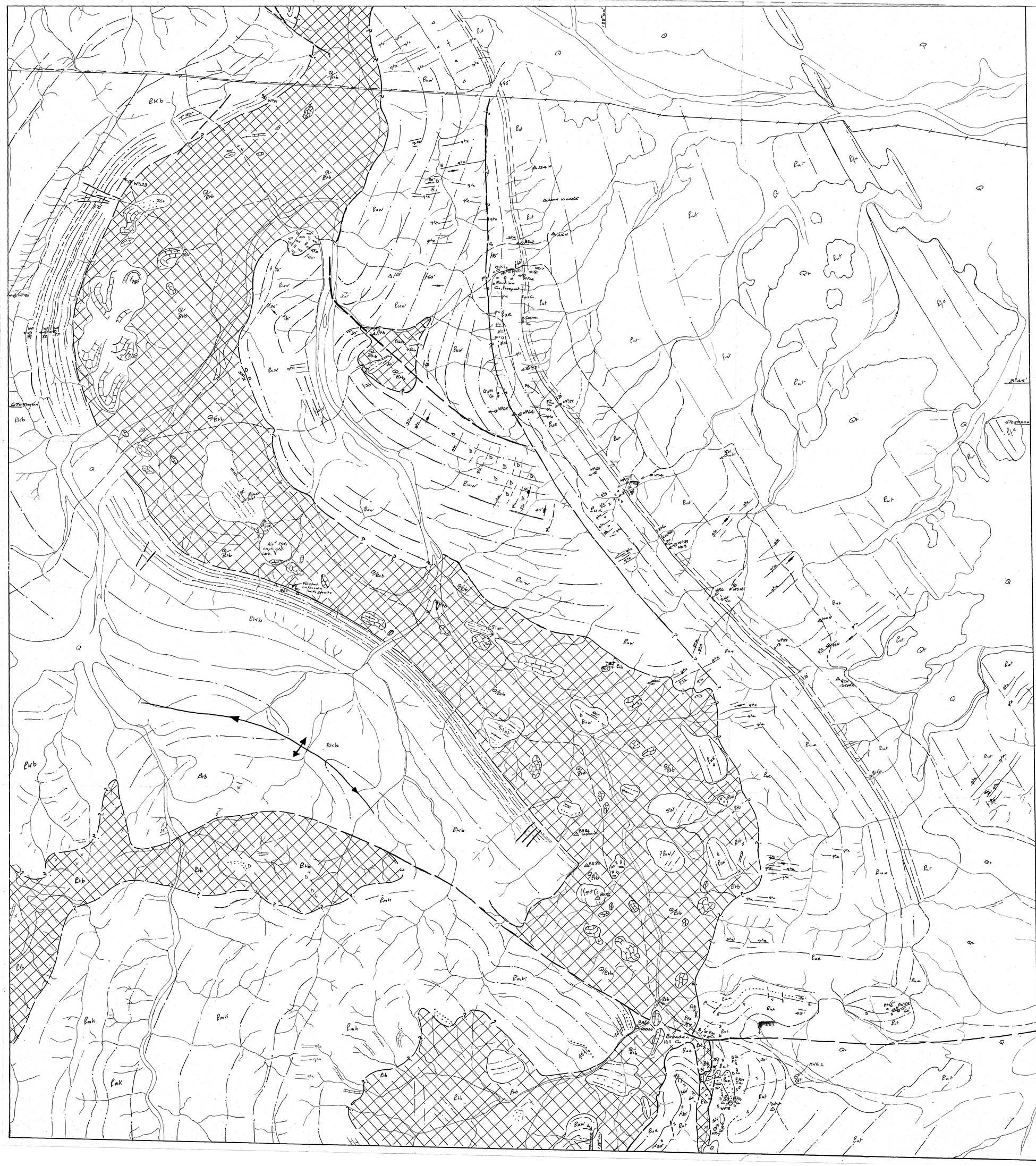
MIM EXPLORATION PTY LTD

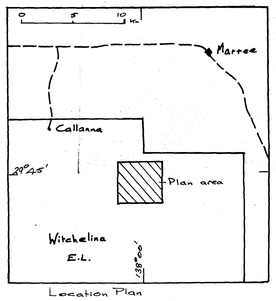
STATEMENT OF EXPENDITURE

EL 1747 - WITCHELINA

QUARTER ENDING 20 JANUARY 1992

Staff and Operating Labour	23,208
Materials	6,882
Assays	1,852
Consultant Fees	3,220
Freight	2,070
Travel and Vehicles	8,645
Drilling	110,000
Miscellaneous	2,795
Overhead and Administration	10,953
TOTAL - This Quarter	$169,625
Previously Reported	NIL
TOTAL TO DATE	$169,625





Location Plan

Legend

	Q	Alluvium, colluvium
	Qt	Talus slope deposits
Umberatana Group	Ef a	Ambeno Fm - green-grey siltstone, shale, limestone with slump breccias
	Ef t	Tapley Hill Formation - dark grey laminated siltstone with slump breccias.
		Tindelpina Shale M - black, finely laminated pyritic shale + dol. sh with slump breccias.
	Eue	? Serle Member - sandstones, siltstones, conglomerates
	Euw	Willyarpa Formation - pebbly sandstone, quartzite, siltstone, diamictite.
Burra Group	Pmk	Skillogalee Dolomite - dark grey dolomite, quartzite siltstone
Callanna Group	Ekb	Boorloo Siltstone - dark grey siltstone, dolomite and minor quartzite
	Ekb	tectonic breccia, occasionally showing intrusive features (piercement structures)

Geological Boundaries
- observed
- inferred

Faults
- observed
- inferred

Boundaries of tectonic breccias (piercement breccias)
- observed
- inferred

Bedding — 70° strike and dip; trend of bedding

Foliation — 30°

Jointing — 50°; vertical

Sedimentary Breccia

Tectonic Breccia

Sandstone, quartzite

Siltstone

Carbonate (usually dolomite)

Dolerite (altered)

Veins - usually quartz but frequently with dolomite and occasionally limonite. Wall rocks usually silicified and dolomitised. — qtz

Silicification — S

Dolomitisation — D

Australian Selection Trust Grid Pegs - coordinates in feet

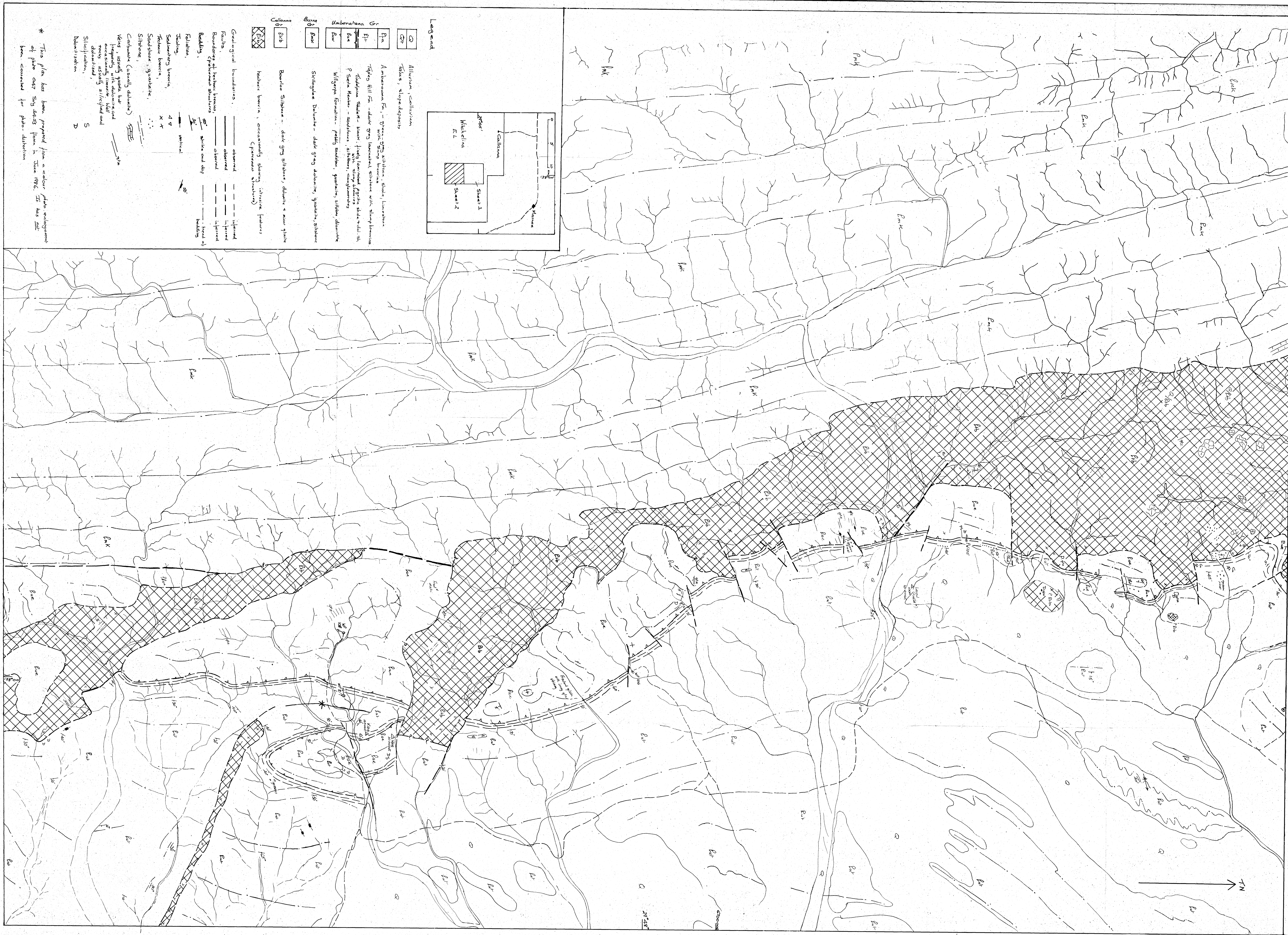
Scale

0 100 200 300 400 500 m approximate only *

* This plan has been prepared from a colour photo enlargement of photo 047 Svy 3453 flown in June 1986. It has not been corrected for distortion.

8528-1

REVISION			
		SCALE: Approx 1:5000	M.I.M. EXPLORATION PTY. LTD.
		GEO PB	
		DRAFT: PB	
		CHECKED: PB	"Witchelina"
		DATE: Aug 91	Geological Plan Boorloo - Breaden Hill district
		1:250 000 SH 53-8	Sheet 1
		1:100 000	
		MINING FIELD OR DISTRICT: Willouran Ranges, SA.	DRG No.: 36506



8528-2

0 500 m
SCALE

REVISION		SCALE : 1:5000	M.I.M. EXPLORATION PTY. LTD.
		GEO : PB	Witchelina
		DATE : Oct 91	Geological Plan Breaden Hill South District.
		DRAFT : PB	
		DATE : Oct 91	
		1:250,000 Marree	
		1:100,000	Sheet 2
		MINING FIELD OR DISTRICT : Willouran Ranges	DRG No. : 36591

MOUNT ISA MINES LIMITED

EL 1747 "WITCHELINA"

REPORT FOR QUARTER ENDED APRIL 20, 1992

1. TERMS AND CONDITIONS

Exploration Licence 1747 "Witchelina" was granted to Mount Isa Mines Limited on October 21, 1991 for a term of one year with an expenditure commitment of $155,000. The Licence covers most of the Willouran Ranges south-west of Marree and is 1958 km^2 in area. Exploration is carried out by MIM Exploration Pty Ltd which is a wholly owned subsidiary of Mount Isa Mines Limited.

2. EXPLORATION

During the last quarter further geological mapping and rock chip sampling has been carried out on this Licence. A further 25 km^2 area from the Rook's to Dunn's mine has been mapped at a scale of 1:5000 using enlarged colour photographs from Survey 3456 which was flown in 1986. Results of this mapping will be included with the next quarterly report when it has been drafted.

A total of 110 "selected" rock chip samples of limonite from quartz/limonite veins have been collected. This sampling completes the reconnaissance sampling of the contact zone of the Tapley Hill Formation along the eastern limb of the Breaden Hill Diapir. Results of this sampling and of that carried out last quarter will be included with the next report. Rock chip sampling along the Rook's - Callanna "tectonic belt" is currently underway.

Geological and assay logs of diamond holes MWD1 to MWD3 are presented on Drawing Nos 36637 a and b, 36638 and 36908. Cross Sections of the drill holes are shown on Drawing Nos 36887, 36897 and 36905.

3. Expenditure

A statement of expenditure incurred at this Licence over the last quarter accompanies this report.

P BINKS

MOUNT ISA MINES LIMITED

EL 1747 WITCHELINA

STATEMENT OF EXPENDITURE FOR THE QUARTER ENDED APRIL 20, 1992

Labour	21,657	
Materials	76	
Travel	5,346	
Freight	4,839	
Fuel & Oil	437	
Miscellaneous	1,410	
Drilling & Costeaning	115,164	
Assaying	4,072	
Technical Consultants	2,340	
Aerial Surveys	584	
Geological & Geophysical	254	
Equipment Hire	760	
Drafting	94	
Administration	12,146	
TOTAL – THIS PERIOD		169,179
PREVIOUSLY REPORTED CURRENT TERM		
Quarter ended 20/01/92	103,711	?? Doesn't agree with last rpt. This figure is correct change previous reported by P. Binks. phoned 14.8.92
ended		
ended		
		103,711
TOTAL – CURRENT TERM	add to above	272,890
PREVIOUSLY REPORTED		24,883 ??
TOTAL PROJECT EXPENDITURE TO DATE		**297,773**

A.E. Covacich
Manager Accounting –
Exploration and Gold Operations

12 MAY 1992

00008

WITCHELINA : EL 1747

REPORTING NO : 208BS

REQUESTED BY : KERRY GREGORY

REPORTING PD : 21/1/92 - 20/4/92 (P8-10/92)

EXPENDITURE SUMMARY

		P8-10/92	TOTAL
1.	LABOUR	21657	21657
2.	MATERIALS	76	76
3.	TRAVEL	5346	5346
4.	FREIGHT	4839	4839
5.	VEHICLE EXPENSES	0	0
6.	MAINTENANCE	0	0
7.	FUEL & OIL	437	437
8.	MISCELLANEOUS	1410	1410
9.	DRILLING & COSTEANING	115164	115164
10.	ASSAYING	4072	4072
11.	CONSULTANTS	2340	2340
12.	AERIAL & SURVEYS	584	584
13.	GEOLOGICAL & GEOPHYSICAL	254	254
14.	EQUIPMENT HIRE	760	760
15.	DRAFTING	94	94
16.	TENEMENT COSTS	0	0
17.	DEPRECIATION	0	0
18.	LEGAL	0	0
19.	INSURANCE	0	0
20.	ADMINISTRATION	12146	12146
	TOTAL	169179	169179

M.I.M. EXPLORATION PTY. LTD. 8528-3

LOG OF DIAMOND DRILL HOLE

HOLE No. MWD 1
Sh 1 of 2

MINE/PROSPECT : Witchelina
LOCATION : 14Km at 204°T from Marree
CO ORDINATES : 790110E 6704720N AMG
LEVEL :

ANGLE FROM HORIZONTAL : 55°
DIRECTION : 205°M
FINAL DEPTH : 339.1

R.L SURFACE : m
R.L. COLLAR : m
DATUM : m

0-36m drilled "open-hole"

DEPTH Core Recovery %	Length drilled, m	Core recov. m	RQD*	Rock strength
100	1.5	1.5	40	M
58	0.6	0.35	30	M
85	1.3	1.1	27	S
85	1.4	1.4	50	"
40	1.0	0.4	0	"
35	1.0	0.35	0	"
60	0.5	0.3	0	"
88	0.8	0.7	44	"
70	0.5	0.35	20	"
82	1.8	1.48	44	"
86	1.4	1.35	53	"
69	1.55	1.07	37	"
62	0.95	0.59	0	"
45	0.4	0.18	0	"
95	0.55	0.52	15	"
79	0.85	0.67	35	"
87	0.6	0.52	13	"
81	0.8	0.65	11	"
87	1.7	1.48	76	"
100	1.5	1.5	73	"
100	1.5	1.5	96	"
91	1.6	1.45	100	"
100	0.6	0.6	84	"
100	1.6	1.6	76	"
100	1.6	1.6	77	"
100	1.5	1.5	93	"
94	1.5	1.41	93	"
100	0.8	0.8	31	"
100	1.5	1.5	74	"
67	1.3	0.86	22	"
18	1.5	0.28	0	"
85	1.6	1.36	60	M-S
75	1.5	1.12	35	"
80	1.0	0.8	48	"
94	0.7	0.66	14	"
91	1.3	1.18	70	"
97	1.4	1.36	54	"
94	1.6	1.51	67	"
100	1.2	1.2	53	"
100	0.9	0.9	43	"
50	0.6	0.3	27	"
100	1.6	1.6	94	"
100	1.6	1.6	100	"
92	1.6	1.47	83	"
100	1.5	1.5	98	"
97	1.6	1.55	88	"
39	1.1	0.43	22	"
87	1.0	0.87	21	"
97	1.2	1.16	77	"
100	1.55	1.55	100	"
100	1.55	1.53	100	"
90	0.4	0.36	32	"
89	0.75	0.67	23	"
88	0.4	0.35	0	"
85	1.15	0.98	19	"
94	0.5	0.47	0	"
58	0.7	0.39	0	"
76	0.4	0.31	33	"
37	0.3	0.11	0	"
69	0.8	0.55	40	"
19	1.4	0.27	0	W
68	0.65	0.44	0	"
22	1.35	0.3	0	"
54	1.2	0.65	0	"
69	1.5	1.03	40	M
90	1.2	1.08	42	"
91	1.1	1.0	60	"
14	1.2	0.17	0	W
48	0.6	0.29	0	"
83	0.4	0.33	0	"
76	1.5	1.4	0	"
81	1.5	1.21	37	"
64	1.5	0.96	32	"
83	1.5	1.24	43	"
90	0.3	0.27	18	"
59	1.4	0.82	13	"
33	1.3	0.43	0	"
31	1.4	0.44	0	"
24	1.6	0.38	0	"
24	1.5	0.36	0	"
64	1.4	0.89	24	M
100	0.6	0.6	25	"
81	1.6	1.29	43	"
91	1.4	1.28	41	"
88	1.3	1.15	12	"
58	1.2	0.69	0	"
92	1.5	1.38	52	"
97	1.5	1.46	72	"
100	0.2	0.2	0	"
65	0.8	0.52	37	"
94	0.7	0.66	22	"
100	0.9	0.9	32	"
97	0.6	0.58	20	"
97	0.9	0.87	23	"
78	0.5	0.39	0	"
94	1.0	0.94	0	"
86	0.7	0.6	13	"
80	0.5	0.4	0	"
92	0.75	0.69	0	"
94	1.4	1.32	90	"
99	1.55	1.45	42	"
93	0.75	0.7	43	"
73	0.85	0.62	0	"
100	0.75	0.75	19	"
85	0.95	0.81	0	"
38	0.4	0.23	0	"
40	0.7	0.28	0	"
77	0.7	0.54	0	"
85	1.15	0.98	71	"
82	0.9	0.74	0	"
98	0.6	0.59	0	"
97	1.15	1.12	54	"
98	1.3	1.27		"
93	1.6	1.49	12	"
94	1.6	1.51	91	"
100	1.0	1.0	26	"
95	1.5	1.42	38	"
100	1.5	1.5	11	"
89	1.4	1.25	67	"
73	0.7	0.51	0	"
100	0.5	0.5	0	"
70	0.6	0.42	0	"
40	2.0	0.79	0	"
100	1.2	1.2	33	"
100	0.7	0.7	0	"
91	1.6	1.45	86	"
84	1.1	0.92	54	"
67	0.7	0.47	0	"
91	1.1	1.0	24	"
96	0.75	0.72	41	"
76	0.55	0.42	25	"
100	0.75	0.75	23	"
100	0.8	0.8	0	"
100	0.45	0.45	0	"
63	0.6	0.38	0	"
83	1.1	0.97	22	"
78	0.55	0.43	0	"
88	1.55	1.37	86	"
87	1.0	0.87	0	"
98	1.6	1.56	65	"
88	1.5	1.32	81	M/S "
96	1.2	1.15	44	"
66	1.0	0.66	0	"
69	0.8	0.55	0	"
81	1.4	1.13	0	"
42	0.8	0.33	0	"
61	0.8	0.49	0	"
47	1.0	0.47	0	"
50	0.8	0.4	0	"
31	0.8	0.25	0	"
77	0.7	0.54	0	"
91	1.0	0.91	0	"
36	0.9	0.32	0	"
100	0.7	0.7	33	"
86	1.6	1.38	?	"
91	1.3	1.18	47	"
83	1.2	0.99	48	"
89	1.0	0.89	11	"
98	1.05	1.03	33	"
60	0.25	0.15	0	"
90	1.05	0.95	19	"
83	1.15	0.96	0	"
87	1.15	1.0	0	"
67	1.05	0.7	14	"
97	1.15	1.12	36	"
81	1.4	1.14	75	"
98	1.15	1.13	60	"
98	0.6	0.59	0	"
88	0.65	0.57	32	"
100	0.1	0.1	0	"
99	1.55	1.53	13	"
100	1.0	1.0	30	"
97	1.5	1.45	82	"
100	1.1	1.1	80	"
100	1.4	1.4	12	"
87	1.0	0.87	17	"
76	0.7	0.53	0	"
85	1.0	0.85	11	"
97	1.5	1.45	12	"
100	1.6	1.6	12	"
95	1.0	0.95	73	"
94	1.6	1.5	86	"
100	1.5	1.5	15	"
100	1.6	1.6	52	"
100	1.4	1.4	76	"
87	1.7	1.49	11	"
89	1.6	1.43	13	"
82	1.7	1.39	14	"
99	1.6	1.59	14	"
100	1.55	1.55	10	"
51	1.5	0.76	16	"
67	1.15	0.77	0	"
100	1.1	1.1	25	"
83	1.6	1.33	32	"
100	1.5	1.5	10	"
98	1.3	1.27	24	"
95	1.0	0.95	0	"
85	1.15	0.98	37	"
11	1.35	0.15	0	"
55	0.4	0.22	15	"
91	1.9	1.85	80	"
98	2.2	2.15	15	"

SAMPLE No.	FROM m	TO m	Sample thickness m	ASSAYS ppm Cu	Co	As		Au
QS 19114	0	5	5	50	15			·001
15		7	2	120	10			·014
16		9	2	170	45			·021
17		11	2	210	20			·011
18		13	2	130	15			·011
19		15	2	190	20			<·005
20		17	2	245	15			"
21		19	2	380	10			"
22		21	2	290	10			"
23		23	2	470	15			"
24		25	2	465	15			·047
25		27	2	0·19%	35			·025
26		29	2	1·03%	15			·22
27		31	2	1·07%	10			·17
28		33	2	0·95%	30			0·17
29		35	2	0·26%	25			·05
30		36	1	0·32%	10	90		·07
QS 19204	36 -	37	1	670	45	60		<·02
5		38	1	0·6%	30	40		·08
6		39	1	685	15	10		·02
7		40	1	0·47%	10	<10		"
8		41	1	0·23%	10	20		"
9		42	1	0·31%	40	<10		·06
10		43	1	0·14%	20	10		<·02
11		44	1	844	15	20		"
12		45	1	0·31%	40	<10		·04
13		46	1	710	30	20		·02
14	46 -	47	1	600	30	10		<·02
QS 19215	67 -	68	1	20	20	10		<·02
16		69	1	5	10	10		"
17		70	1	15	15	10		"
18		71	1	370	65	20		"
19		72	1	0·19%	115	60		"
20		73	1	195	30	30		"
21		74	1	5	25	20		"
22		75	1	10	15	10		"
23		76	1	25	25	10		"
24		77	1	30	10	10		"
25		78	1	290	15	20		"
26		79	1	140	15	10		"
27		80	1	965	20	20		"
28		81	1	0·12%	5	30		"
29		82	1	500	15	10		"
30		83	1	550	5	10		"
31		84	1	0·13%	10	20		"
32		85	1	150	10	30		"
33		86	1	0·29%	5	10		"
34		87	1	150	15	30		"
35		88	1	130	10	10		"
36		89	1	170	10	20		"
37		90	1	100	10	20		"
38		91	1	215	20	40		"
39		92	1	320	5	10		"
40		93	1	40	15	10		"
41		94	1	200	35	20		·02
42		95	1	945	15	30		·03
43		96	1	150	5	10		<·02
44		97	1	550	15	20		·02
45		98	1	550	5	20		·02
46		99	1	150	15	10		<·02
47		100	1	60	20	10		"
48		101	1	170	10	10		"
49		102	1	330	15	10		·02
50		103	1	245	15	10		·03
51		104	1	170	30	60		<·02
52		105	1	335	20	10		"
53		106	1	53	30	10		"
54		107	1	260	10	10		"
55		108	1	400	15	20		"
56		109	1	195	10	<10		"
57		110	1	·16%	25	20		"
58		111	1	495	15	10		"
59		112	1	260	10	10		"
60		113	1	320	15	10		"
61		114	1	500	5	<10		"
62		115	1	490	10	"		"
63		116	1	360	10	10		"
64		117	1	950	10	10		"
65		118	1	·15%	10	"		"
66		119	1	·10%	20	"		"
67		120	1	915	25	"		"
68		121	1	860	15	20		"
69		122	1	180	15	10		"
70		123	1	0·19%	25	40		"
71		124	1	0·18%	25	20		"
72		125	1	860	15	10		"
73	125 -	128	3	596	20	20		"
QS 19274	189 -	190	1	10	10	20		<·02
75		191	1	15	25	20		"
76		192	1	10	30	30		"
77		193	1	20	10	10		"
78		194		10	15	20		"
QS 19279	204 -	205	1	60	15	10		<·02
80		206	1	0·12%	<5	"		"
81		207	1	0·17%	"	"		·03
82		208	1	0·11%	"	"		<·02
83		209	1	0·12%	"	"		·02
84		210	1	70	"	"		<·02

CORE SIZE DEPTH (m): NQ ↓ 37.7 — HQ ↓ — NQ ↓ — 101.85 — HQ3 — NQ ↓ — 204.2 — 226.0 — 232.5 — 245.0

DESCRIPTION

Shale - black, laminated with dol. bands, abundant qtz frags.

↓ hematite + limonite staining

-14→15m grey-br dol.

↓ less FeOx staining

23→25m more dol.

Dol^c Slst - grey to dk grey, with frags malachite + limonite

Dol^c Slst - blue grey, laminated, fissile, trace cpy + py
- 31 to 32 ~2% cpy

Silty Shale - blue grey, dol^c, poorly bedded, py // bedding 2cm py vein // bedding at 36.8m. Bedding 70° to CA

Sandy dolomite - pale grey, angular to sub-ang qtz grains - scattered py, cpy + acicular amphibole xals at 39.4 + 42.0m - 20cm qtz/dol vein with trace cpy, cc at 39.7m. Signif. core loss 40.8 to 41.8m, large frags cpy !!

Dolomite - grey, massive, trace diss^d py + cc, ½cm band py + cpy at 44.2, 70° to CA

Sandy dolomite - pale grey, massive, V. fract^d + broken with qtz veining.

Conglomerate - clasts of dol + sandy dol upto 15cm in diam. in matrix of sandy dol. - interbeds of dol. sst upto several metres thick - occasional band of dol + dol slst - generally V. fract^d + broken core.

B to CA 60°

B to CA 70°

- 67.0m onwards trace py + cpy

-77.2-77.6 - mass dol vein with trace py

- 83.0 to 92.0 - less fract^d zone

- 92.3m - 2cm vughy qtz vein 20° to CA

Dolom^c SSt with interbeds sed^y breccia - partially weathered, very vughy with cavities upto 2cm - 5% py over 10cm at 103.4 + 105.4m ?cc staining 115.4 to 119.1m

- 112.4 to 114.2 - only few frags qtzite + vein qtz - either cavity or loose 'rubble' - fault zone.

- 120.6 to 125.0 - gravelly sand with py + trace cpy (partially oxidised).

- 125.0 to 128.0m - significant core loss - trace cpy, py

Silty dolomite with bands of sst + conglomerate - generally fairly massive - acicular amphibole xals at 130.1 and 130.6m. Trace py. - minor qtz veining - partially weathered to 136m. Dol/qtz vein 135.1 to 135.2m

- 128.5 to 136.0m - fract^d + broken core, v. irreg. fractures

- 136.0 to 141.0 - diamictite - clasts mainly of qtzite upto 10cm in diam in sandy, dol matrix - amphibole xals partic^y around rims of clasts eg. 139.2m

- 141.5m - generally fractured + broken core - major fractures generally sub// to CA but many at 30° to 60° to CA

B to CA 45°

- 172.8 to 173.3m - fract^d qtz/dol vein

B to CA 60°

- 183.4 - 183.65 - qtz/dol vein

- py // to bedding

- B to CA 30°

- 193.3 to 200.8 - shear zone generally 50° to 80° to CA

- 198.6 to 199.1m - qtz/dol vein sub// CA
- 199.1 to 200.8m - v. fract^d + broken core

- B to CA 45°

Diamictite/tillite - clasts of qtzite + metaseds - generally only 0.5cm to 1cm but upto 6cm in diam. in sandy/silty dol^c matrix - massive - trace py + cpy

- fr 20° to CA

- frs 45° to CA

Orientated core 220-223 m
220.2m Vertical shear trending 245°M
220.7 shear dips 45° to 40°M
222.4 vertical shear trending 245°M
222.9 ½cm qtz vein + fracture zone - vertical trending 280°M

- frs 45° to CA

- frs 30° to CA

- 224 to 226 - fract^d + broken core

Sandy/silty dolomite - massive, creamy grey, occasional clasts

- frs 30° to 45° to CA

Spotted sandy/silty dolomite - massive, grey, occasional clasts - spotting from 1 to 4mm in diam, consists of small aggregates of chlorite/amphibole to larger "spots" of calcite rimmed with chl/amph - trace of fine gr. py.

Silty dolomite with few thin (upto 30cm) sst interbeds - grey to dk grey, massive, trace bedding 50° to CA at 250.1m.

- shear sub// to CA

Fractures/m: 1, >3, >3, >3, 4, >3, >3, 5, >3, >3, 4, 2, 3, 4, >3, >3, 3, >4, 1, 1, 4, 2, 3, 1, >3, 1, 0, 3, 2, 3, 1, 3, 5, 2, >4, ?, 2, 3, 4, 3, >4, 4, 2, 2, 1, 3, 4, 2, 1, 0, 1, 0, 0, 0, 0, 1, 4, >4, 3, 2, 2, 1, 2, 5, 3, 3, 4, 3, 2, 3, ?, ?, 2, 2, >3, 2, ?, ?, 3, 3, 3, 2, ?, ?, ?, ", ", ", ", ", ", ", 3, 1, 2, 3, >4, 3, 2, 1, 2, 3, 1, 2, 3, >3, 2, 3, 4, 2, 2, 2, 2, >3, 2, >3, >3, 2, >3, 3, 4, 1, 0, 2, 2, 1, 4, 3, 2, 2, >3, >3, 2, 2, 2, 2, 2, 2, 2, 2, 4, 3, 5, 5, 2, 4, 2, 2, 1, 2, 3, 2, 2, >3, 2, 2, 1, >3, >2, >3, >2, ?, ?, 1, 1, 3, 4, 3, 3, 3, 3, 3, 2, 4, 3, 3, >3, 2, 2, 2, 4, 5, 3, 1, 3, 0, 2, 1, 3, 1, 4, 2, 1, 1, 1, 0, 0, 1, 0, 1, 3, 2, ?, 0, 2, 2, 1, 3, >3, >3, ?, ?, 3, >3, 2, 2

Tapley Hill Formation

Partially Weathered Zone - Vughy (Core loss 102-128m = 42%)

NOTES

Hole drilled by Rockdrill using a "Versatile" rig in Nov/Dec 1991.

gamma - all core gave background readings.
Magnetic susceptibility - all core < 40 x 10⁻⁶ cgs.

All samples assayed for Pb, Zn, Ag + Bi in addition to above elements.
Pb - all samples < 25ppm
Zn - " except QS 19233 (1060ppm) < 160ppm - generally < 50ppm
Ag - " < 1ppm
Bi - " < 10ppm

DOWN-HOLE SURVEYS

DOWN-HOLE DEPTH METRES	DIP DEGREES	EASTMAN COMPASS READING DEGREES	GRID AZIMUTH DEGREES
170m	51°	340°N	obviously incorrect.
220m	52°	70°N	
338m	55°	205M	

SURVEY METHOD

EASTMAN UNIT No.
MAGNETIC NORTH

LEGEND

REVISION

SCALE : 1:250
GEO : PB
DATE : Jan '92
DRAFT : PB
DATE :
1:250,000
1:100,000

MINING FIELD OR DISTRICT : Willouran Ranges SA

M.I.M. EXPLORATION PTY. LTD.

Witchelina EL.
Geological and Assay Log DDH MWD 1
Sh. 1 of 2

8528-3

DRG No. : 36637a

MINE/PROSPECT : .....
LOCATION : .....
CO ORDINATES : .....
LEVEL : .....

M.I.M. EXPLORATION PTY. LTD.
LOG OF DIAMOND DRILL HOLE

8528 -4

ANGLE FROM HORIZONTAL : ..... DIRECTION : .....
FINAL DEPTH : .....

HOLE No. MWD 1

R.L SURFACE : Sh 2 of 2 m
R.L. COLLAR : ..... m
DATUM : ..... m

DEPTH % Core recov. m	Length drilled, m	Core recov. m	RQD*	Rock strength
93	2.6	2.43	48	M-S
98	0.6	0.59	13	"
~~90~~	~~0.5~~	~~0.45~~	~~11~~	~~"~~
100	2.1	2.1	1.35	"
83	1.2	1.0	45	"
95	1.0	0.95	0	"
100	1.2	1.2	58	"
80	1.7	1.36	57	"
100	0.8	0.8	44	"
100	1.4	1.4	86	"
90	2.6	2.34	90	"
100	0.7	0.7	52	"
73	1.2	0.88	0	"
90	1.0	0.9	32	"
65	1.4	0.91	89	"
89	1.8	1.6	84	"
100	2.0	2.0		"
90	2.4	2.16	21	"
100	0.5	0.5	29	"
82	1.3	1.06	61	"
69	1.5	1.04	53	"
100	0.9	0.9	63	"
62	1.1	0.68	0	"
96	2.0	1.91	11	"
	0.55		58	"
88	1.6	1.41	90	"
93	1.6	1.49	11	"
98	3.1	2.82	98	"
100	1.2	1.2	69	"
81	0.75	0.61	0	"
100	1.0	1.0	52	"
93	1.5	1.4	86	"
95	1.65	1.56	68	"
98	1.5	1.47	12	"
96	3.0	2.89	29	"
99	2.7	2.69	24	"
100	3.0	3.0	27	"
99	2.3	2.27	16	"
98	3.1	3.05	28	"
100	2.7	2.7	18	"
100	1.8	1.93?	15	"
94	1.4	1.31	76	"
76	1.1	0.84	40	"
100	2.0	2.0	14	"
100	2.2	2.2	19	"
87	1.1	0.96	70	"
94	0.8	0.75	0	"
97	1.1	1.07	26	"
91	0.9	0.87	64	"
~~47~~	~~0.3~~	~~0.14~~	~~0~~	~~"~~
~~65~~	~~0.6~~	~~0.39~~	~~0~~	~~"~~
79	0.9	0.71	15	"

SAMPLE No.	FROM m	TO m	Sample thickness m	Cu	Co	As		Au
QS19285	271	272	1	0.1%	5	20		<.02
86		273	1	0.15%	<5	10		"
87		274	1	40	5	20		"
88		275	1	20	5	"		"
89		276	1	25	10	"		"
90		277	1	25	15	30		"
91		278	1	40	25	"		"
92		279	1	10	5	20		"
93		280	1	55	10	20		"
94		281	1	115	10	10		"
95		282	1	510	5	10		"
96		283	1	10	10	20		"
97		284	1	15	10	10		"
98		285	1	20	10	<10		"
99		286	1	15	5	"		"
300		287	1	70	10	10		"
1		288	1	280	25	"		"
2		289	1	25	10	"		"
3		290	1	15	15	20		"
4		291	1	25	15	10		"
5		292	1	10	15	"		"
6		293	1	5	10	<10		"
7		294	1	5	5	10		"
308		295	1	10	30	10		"

CORE SIZE DEPTH (m): 263.1, 265.0, 270, 280, 290, 300, 310, 320, 330

LOG

DESCRIPTION

As for 245.0m

Diamictite / tillite - clasts with amphibole in sandy dol.

Silty dolomite with thin sandy interbeds (generally 1-3cm)
- pale grey, generally massive to poorly bedded
- trace py + cpy, partic^ly from 271 to 295m
- frs 45° to CA
- B to CA 45°
- B to CA 45°
- fr 20° to CA
- 288.0m - 5cm qtz/dol vein with py
- schlickensides 90° to CA across (normal) to shear
- fr 20° to CA
- frs 20° to CA

Diamictite / tillite - grey, massive, clasts of qtzite, metasedst dolomite - dol clasts have amph xals around margins - matrix consists of dol^c sand + siltst.

- fewer clasts

Orientated core 331 to 334m
329.8m shear dips 80° to MN.
331.6m shear dips 30° to 205°M
333.0m shear horizontal
333.2m shear dips 70° to 50°M

- 334.1 to 335.9m - fract^d + broken core
- 337.1 - 338.5m - " " "

EOH 339.1m

NOTES

See Sh. 1

DOWN-HOLE SURVEYS

DOWN-HOLE DEPTH METRES	DIP DEGREES	EASTMAN COMPASS READING DEGREES	GRID AZIMUTH DEGREES

SURVEY METHOD

EASTMAN UNIT No.
MAGNETIC NORTH

LEGEND

REVISION

SCALE : 1:250
GEO : PB
DATE : Jan '92
DRAFT : PB
DATE :
1:250,000
1:100,000

M.I.M. EXPLORATION PTY. LTD.

Wilkhelina EL.
Geological + Assay Log DDH
MWD 1
Sh 2 of 2

8528-4

MINING FIELD OR DISTRICT : Willouran Ranges SA.

DRG No. : 36637b

MINE/PROSPECT: Wilchelina EL
LOCATION: 12.7 Km at 210° TN from Marree
CO ORDINATES: 789690 E 6705500 N
LEVEL:

M.I.M. EXPLORATION PTY. LTD. 8528 -5

LOG OF DIAMOND DRILL HOLE

ANGLE FROM HORIZONTAL: 55° DIRECTION: 252° TN
FINAL DEPTH: 168.55

HOLE No. MWD 2

R.L. SURFACE: m
R.L. COLLAR: m
DATUM: m

DEPTH m	Length drilled m	Core recovery m	ROP m/hr	Bit type	Drill fluid	SAMPLE No.	FROM m	TO m	Sample thickness m	ASSAYS ppm Cu	Co					CORE SIZE	DEPTH m	LOG	DESCRIPTION	Fracture freq. m
		Core Recovery																	0-5m Open-hole. Sandstone-diamictite -pale brown -v. weathered	
	0.3	0.8	0.8	0.3	W											HQ				5
	1.0	1.9	1.9	4.7															Conglomerate/diamictite - v. weathered, pale grey to orange brown, clasts of qtzite + dolomite upto 15cm in diam. in dolomitic + sandy matrix. Occasional irregular fract^d qtz/limonite veins at 5.8, 8.5, 9.3, 15.4, 16.3m. Three malachite at 8.3, 13.9, 14.3m	4
	1.0	3.1	3.1	80																4
																	10			2
	1.0	3.1	3.1	73	W															3
																				2
																				3
	0.7	2.3	2.0	39	W												16.5		Sandy dolomite - pale grey, FeOx stained to 18.5m, sections of fine gr silty dol, well bedded with 8 to CA around 60°. Occasional large clasts (upto 5cm). V. broken + fract^d sections - substantial core loss.	3
	0.8	1.8	0.5	8	W															3
	0.5	1.3	0.85	8	W															3
																	20			
	0.7	3.7	1.2	11	W															
	1.0	1.0	1.0	0	W															
	0.7	1.7	0.8	6	"															3
	0.3	1.3	0.8	31	"															3
	1.0	1.0	1.0	20	"															
	0.5	0.5	0.5	21	"															
	1.35	1.35	1.35	37	"															
	1.35	1.35	0.9	19	"															3
	0.65	0.65	0.6	15	"															2
	0.6	0.6	0.75	9	"															
	0.35	0.35	0.1	9	"															
	0.35	0.35	0.1	9	"															
	0.9	0.9	0.6	0	"															
	1.6	1.6	0	0	"															
	1.35	1.35	0.7	7	"												37.35		Massive dol^n SST with clasts (upto 5cm) - pale grey, weathered, frag. fract^d filled with black, fine gr dol^n py + pass cc. - also concentrations of marcasite upto 2cm in diameter, 10cm fracture zones w/ 45° qtz with py, limonite + qtz frags.	3
	1.35	1.35	1.1	4	"	QS19150	37.35	39.0	1.65	1600	10									3.5
	0.7	0.7	0.6	36	"															3
	2.4	2.4	2.3	75	"	51		41.0	2	600	35						40			7.5
																				7.5
	2.45	2.45	2.0	25	"	52		43.0	2	365	15									8
																				2.5
	1.75	1.75	1.5	57	"	53		45.0	2	85	45									3
	0.6	0.6	0.3	5	"															3
	0.7	0.7	0.5	4	"	54		47.0	2	65	50									3
	0.6	0.6	0.3	0	"												47.45		Silty dolomite with bands of sandy dol - pale grey, weathered, occasional clasts, py + marcasite occur as above.	3
	1.0	1.0	1.0	20	"	55		49.0	2	20	20									2
	0.9	0.9	0.9	11	"															2
	1.0	1.0	0.9	28	"	56		51.0	2	20	15						50			3
	1.4	1.4	1.0	7	"															3
						57		53.0	2	30	20								8 to CA 60°	3
	2.0	2.0	2.0	35	"															2
	1.2	1.1	1.1	25	W	58		55.1	2.1	50	25									2.5
	0.3	0.3	0.1	10	W												55.1		Dolomite + silty dol with bands sandy dol - pale grey, fresh, occasional clasts (erratics) of qtzite -occasional grains of py in sandy bands, zones of intense fracturing give v. broken core.	3 box
	1.6	1.2	1.2	50	M															2
	1.95	1.95	1.95	67	M															1
	1.95	1.8	1.8	41	M												60			3
																				4
	1.95	1.95	1.95	56	M														8 to CA 60° 25cm vein of saline dolomite	2
	0.9	0.9	0.7	61	S															2
	1.25	1.25	1.25	56															64.5 - 5cm qtz/dol vein sub// to bedding.	3
	1.5	1.5	1.5	43																4
																				5
	2.4	2.4	2.4	54																4
																				2
	1.1	1.1	1.1	4	S														69.4 few green dust^d py.	4
	0.7	0.7	0.7	0	S												70		69.5 to 71.3 - v. broken core	2.5
	3.0	2.8	2.8	62	S														72.1 - 3cm vein dol/qtz/py sub// to bedding	3
																				4
	3.0	3.0	3.0	77	S														8 to CA 60°	5
																				2
	3.1	3.1	3.1	77	S														77.8 onwards - few scattered grains of epy associated with py - usually in sandier interbeds.	4
																				3
																				2
																	80			1
	2.9	2.9	2.9	66	S															3
																			8 to CA 60°	5
	1.3	1.3	1.3	69	S															4
	1.5	1.5	1.5	47	S														85.4 - 1cm qtz/dol/py vein with trace epy.	6
	1.1	1.1	0.8	9	S														85.8 to 86.3 - v. fract^d + broken core	7.5
	0.8	0.8	0.8	13	S															7.5
	0.6	0.6	0.4	0	S															7.5
	1.8	1.7	1.7	17	S												90			4
																				5
	1.2	1.2	1.2	50	S														92.0 - 92.45 - major shear zone sub// to CA	5
	0.85	0.85	0.85	5	S														92.0 to 102.0 - v. golden coloured py associated with trace epy.	20
	0.5	0.5	0.5	0	S															3
	3.0	3.0	3.0	63	S	QS19159	94.0	96.0	2	120	15									2
																			8 to CA 60°	0
	2.2	2.2	2.2	57	S	60		98.0	2	80	15									3
																				2
	2.5	2.5	2.5	72	S	61		100.0	2	165	10									4
																	100			3
	0.5	0.5	0.5	0	S	62		102.0	2	305	10								101.5 - 2cm qtz vein with trace epy	7
	0.7	0.7	0.6	4	S														102.0 to 106.0 - spalling (TiO2) around 1-2mm -emphasises bedding.	6
	0.48	0.48	0.48	8	S	63		104.0	2	330	5									2.5
	1.75	1.75	1.75	26	S															4
																			8 to CA 60°	4
	2.0	2.0	2.0	35	S	64		106.0	2	100	5									6
	0.95	0.95	0.95	16	S															7
	0.5	0.5	0.5	8	S	65		108.0	2	385	15									6
	0.2	0.2	0.2	8	S												107.8 V.MGT			6
	1.5	1.5	1.5	0	S	66		110.0	2	1225	10								109.0 to 111.0m - orientated core, 8 to CA 60° -strike of bedding 360°/dip 65° to E -qtz vein at 111.0 dipping 16° to 295°T.	6
	0.8	0.8	0.5	0	S												110			6
	1.2	1.2	1.2	39	S	67		112.0	2	290	15									4
	1.6	1.5	1.5	63	S															5
	1.9	1.9	1.9	50	S	68		114.0	2	360	15									5
																				6
	0.6	0.5	0.5	5	S	69		116.0	2	125	20								117 to 119 - v. broken core	5
	0.95	0.95	0.9	5	"															6
	0.35	0.35	0.35	29	"	70		118.0	2	165	20									5
	0.35	0.35	0.35	29	"															5
	0.95	0.95	0.9	16	"	71		120.0	2	555	20						120		- fr 45° to CA	5
	0.9	0.9	0.9		"															4
	0.8	0.8	0.8		"	72		122.0	2	275	15									4
	1.4	1.4	1.4		S														8 to CA 60°	10
	1.2	1.2	1.2		"	73		124.0	2	350	25									4
	0.8	0.8	0.75		"															5
	0.6	0.6	0.6		"	74		126.0	2	190	5								- fr 45° to CA	6
	1.1	1.1	1.1		"															8
	0.9	0.9	0.9		"	75		128.0	2	110	10									7
	1.7	1.7	1.7		S															3
	1.4	1.4	1.22		"	76		130.0	2	445	10						130			3
	1.5	1.47	1.5		"															8
						77		132.0	2	115	5						131.7		Sandy dolomite with clasts of metagabbro + meta igneous rocks upto 10cm in diameter - interbeds upto 5cm thick of laminated silty dol. Sparse disse^d py veins.	3
	1.5	1.5	1.5		"															4
	0.94	0.94	0.94		"	78		134.0	2	110	10									8
	1.3	1.29	1.3		"															2
	1.1	1.0	1.0		"	79		136.0	2	80	50								136.5 to 138.5 - fract^d + broken core	7
	0.8	0.72	0.72		"															9
	0.5	0.52	0.5		"	80		138.0	2	240	15									9
	1.2	1.2	1.2		"															5
	1.1	1.03	1.1		"	81		140.0	2	60	5						140			6
	1.5	1.5	1.5		"															3
	1.6	1.58	1.6		"	82		142.0	2	40	10									1
																				3
	1.6	1.53	1.6		"	83		143.0	1	5	20								143.0 - 143.5 - dol/qtz/epy vein sub// to CA 1-3cm thick.	1
						84		143.5	0.5	430	95									3
	1.2	1.03	1.1		"	85	142.5	145.0	1.5	160	5									10
	1.4	1.4	1.4		"															6
						86		147.0	2	145	10									3
	1.6	1.57	1.6		"															2
						87		148.0	1	220	10						148.4			1
	1.5	1.45	1.5		"												150		Dol^n SST with clasts of qtzite + meta-igneous rocks upto 15cm in diam. few interbeds (10-50cm thick) of laminated dol slst. Virtually no py or epy.	5
	0.7	0.67	0.67		"															4
	0.7	0.7	0.38		"															7
	0.7	0.66	0.7		"															9
	0.85	0.85	0.85		"															9
	1.5	1.5	1.5		"															5
	1.0	1.0	1.0		"															6
	1.53	1.53	1.5		"															5
	1.5	1.5	1.5		"															1
	0.9	0.9	0.9		"															2
	1.2	1.14	1.2		"															4
	1.1	1.08	1.1		"															3
	1.2	1.09	1.1		"															10
	0.75	0.62	0.6		"															6
	0.75	0.71	0.7		"															3
	1.25	1.21	1.2		"															3
	1.25	1.02	1.02		"															3
	0.15	0.15	0.15		"															3

EOH 168.55m

NOTES

Hole drilled by Rockdrill using a "Versatile" rig in Nov. 1991. HQ triple tube tube used to 107.8m then NQ.

gamma - all background

magnetic susc^y - all con $< 5 \times 10^{-6}$ cgs

Assays - all above samples assayed for Pb, Zn, Ag, Bi, Cd, in addition to Cu + Co.

All Pb assays < 10ppm except for one at 20 ppm

All Zn " < 30ppm

All Ag " < 0.5ppm

All Bi " < 10ppm

All Cd " < 1ppm

DOWN-HOLE SURVEYS

DOWN HOLE DEPTH METRES	DIP DEGREES	EASTMAN COMPASS READING DEGREES	GRID AZIMUTH DEGREES
110m	55°	242°W.	

SURVEY METHOD

EASTMAN UNIT No.

MAGNETIC NORTH

LEGEND

REVISION

SCALE: 1:250

GEO: JB

DATE: Nov. 91

DRAFT: JB

DATE: Nov 91

1:50,000 1:250,000 Marree

MINING FIELD OR DISTRICT: Willouran Ranges SA.

Wilchelina EL.

Geological and Assay Log DDH MWD 2.

M.I.M. EXPLORATION PTY. LTD.

8528-5

DRG No.: 3662-38

MINE/PROSPECT: Wilcherina EL
LOCATION: Breaden Hill Co. 40km w.SW from Hanson
CO-ORDINATES: Local 6702800m N
LEVEL:

M.I.M. EXPLORATION PTY. LTD.
LOG OF DIAMOND DRILL HOLE

8528-6

ANGLE FROM HORIZONTAL: 60° DIRECTION: 172°M
FINAL DEPTH: 262.8m

HOLE No. MWD 3
R.L. SURFACE: m
R.L. COLLAR: m
DATUM: m

DEPTH (Metres)	Core Recovery (Metres)	Core Loss (Metres)	Core Loss (%)	Core Recovery (%)	RQD (%)	Core Orientation	SAMPLE No.	FROM m	TO m	Sample Thickness	Cu	Co	Ni	Zn	Pb	Ag	Au	CORE SIZE DEPTH m	LOG	DESCRIPTION
							025188	0	6	6	155	10								Shale - hematite & limonite stained with abundant gypsum to 15m - few % limonite & qtz frags.
							89	6	8	2	485	25								
							90	10	12	2	90	15								- 10 to 13m - as above + fg
							91	12	14	2	45	15								
							92	14	16	2	55	5								- 15 to 33m - as above - gradually becoming less stained with hematite, few % limonite & qtz frags.
							93	16	18	2	80	20								
							94	18	20	2	55	55								
							95	20	22	2	55	15								
							96	22	24	2	65	5								
							97	24	26	2	45	5								
							98	26	28	2	50	10								
							99	28	30	2	60	10								
							200	30	32	2	55	5								
							1	32	34	2	40	15								
							2	34	36	2	80	25								
							025 19203	35.5	38	2	105	25								Shale - black carbonaceous with 2-5% fg - 5° angle
							025 19205	38	40	2	260	20								
0-38m drilled open hole							1		41	1	10	10								Shale - black, finely laminated with bedded fg, also veins of fg, calcite & qtz parallel to bedding + cross-cutting.
							2		43	1	80	5								
							3		45	1	30	25	30							
							4		47	1	45	15	180							
							5		49	1	30	45	30							
							6		51	1	40	5	30							
							7		53	1	40	10	30							
							8		55	1	40	5	30							
							9		57	1	40	5	30							
							10		59	1	40	5	30							
							11		61	1	40	5	30							
							12		63	1	40	5	30							
							13		65	1	40	5	30							
							14		67	1	40	5	30							
							15		69	1	40	5	30							
							16		71	1	40	5	30							
							17		73	1	40	5	30							
							18		75	1	40	5	30							
							19		77	1	40	5	30							
							20		79	1	40	5	30							
							21		81	1	40	5	30							
							22		83	1	40	5	30							
							23		85	1	40	5	30							
							24		87	1	40	5	30							
							25		89	1	40	5	30							
							26		91	1	40	5	30							
							27		93	1	40	5	30							
							28		95	1	40	5	30							
							29		97	1	40	5	30							
							30		99	1	40	5	30							
							31		101	1	40	5	30							
							32		103	1	40	5	30							
							33		105	1	40	5	30							
							34		107	1	40	5	30							
							35		109	1	40	5	30							
							36		111	1	40	5	30							
							37		113	1	40	5	30							
							38		115	1	40	5	30							
							39		117	1	40	5	30							
							40		119	1	40	5	30							
							41		121	1	40	5	30							
							42		123	1	40	5	30							
							43		125	1	40	5	30							
							44		127	1	40	5	30							
							45		129	1	40	5	30							
							46		131	1	40	5	30							
							47		133	1	40	5	30							
							48		135	1	40	5	30							
							49		137	1	40	5	30							
							50		139	1	40	5	30							
							51		141	1	40	5	30							
							52		143	1	40	5	30							
							53		145	1	40	5	30							
							54		147	1	40	5	30							
							55		149	1	40	5	30							
							56		151	1	40	5	30							
							57		153	1	40	5	30							
							58		155	1	40	5	30							
							59		157	1	40	5	30							
							60		159	1	40	5	30							
							61		161	1	40	5	30							
							62		163	1	40	5	30							
							63		165	1	40	5	30							
							64		167	1	40	5	30							
							65		169	1	40	5	30							
							66		171	1	40	5	30							
							67		173	1	40	5	30							
							68		175	1	40	5	30							
							69		177	1	40	5	30							
							70		179	1	40	5	30							
							71		181	1	40	5	30							
							72		183	1	40	5	30							
							73		185	1	40	5	30							
							74		187	1	40	5	30							
							75		189	1	40	5	30							
							76		191	1	40	5	30							
							77		193	1	40	5	30							
							78		195	1	40	5	30							
							79		197	1	40	5	30							
							80		199	1	40	5	30							
							81		201	1	40	5	30							
							82		203	1	40	5	30							
							83		205	1	40	5	30							
							84		207	1	40	5	30							
							85		209	1	40	5	30							
							86		211	1	40	5	30							
							87		213	1	40	5	30							
							88		215	1	40	5	30							
							89		217	1	40	5	30							
							90		219	1	40	5	30							
							91		221	1	40	5	30							
							92		223	1	40	5	30							
							93		225	1	40	5	30							
							94		227	1	40	5	30							
							95		229	1	40	5	30							
							96		231	1	40	5	30							
							97		233	1	40	5	30							
							98		235	1	40	5	30							
							99		237	1	40	5	30							
							100		239	1	40	5	30							
							101		241	1	40	5	30							
							102		243	1	40	5	30							
							103		245	1	40	5	30							
							104		247	1	40	5	30							
							105		249	1	40	5	30							
							106		251	1	40	5	30							
							107		253	1	40	5	30							
							108		255	1	40	5	30							
							109		257	1	40	5	30							
							110		259	1	40	5	30							
							111		261	1	40	5	30							
							025 19208		262		40	5	30							

Core Loss (Metres): 0.5m
Core Loss (%): 1.5%
Core Recovery (%): 98.5%

NOTES

Hole drilled by 'Rockdrill' using a "Versatile" rig in December 1991.

gamma - all core background
magnetic susceptibility - all core < 50 x 10⁻⁶ cgs.

All samples from 025188 onwards also assayed for Au, Pb, Zn, Ag and Bi.

All Au assays 0.02g/t unless

All Pb " " < 25ppm

All Zn " " < 55ppm

All Ag " " 1ppm or less

All Bi " " < 30ppm.

DOWN-HOLE SURVEYS

DOWN HOLE DEPTH METRES	DIP DEGREES	EASTMAN COMPASS READING DEGREES	GRID AZIMUTH DEGREES
100m	59°	175°	
150	62°	215°	
210	66°	310	
260	66°	248	

SURVEY METHOD

EASTMAN UNIT No.

MAGNETIC NORTH

LEGEND

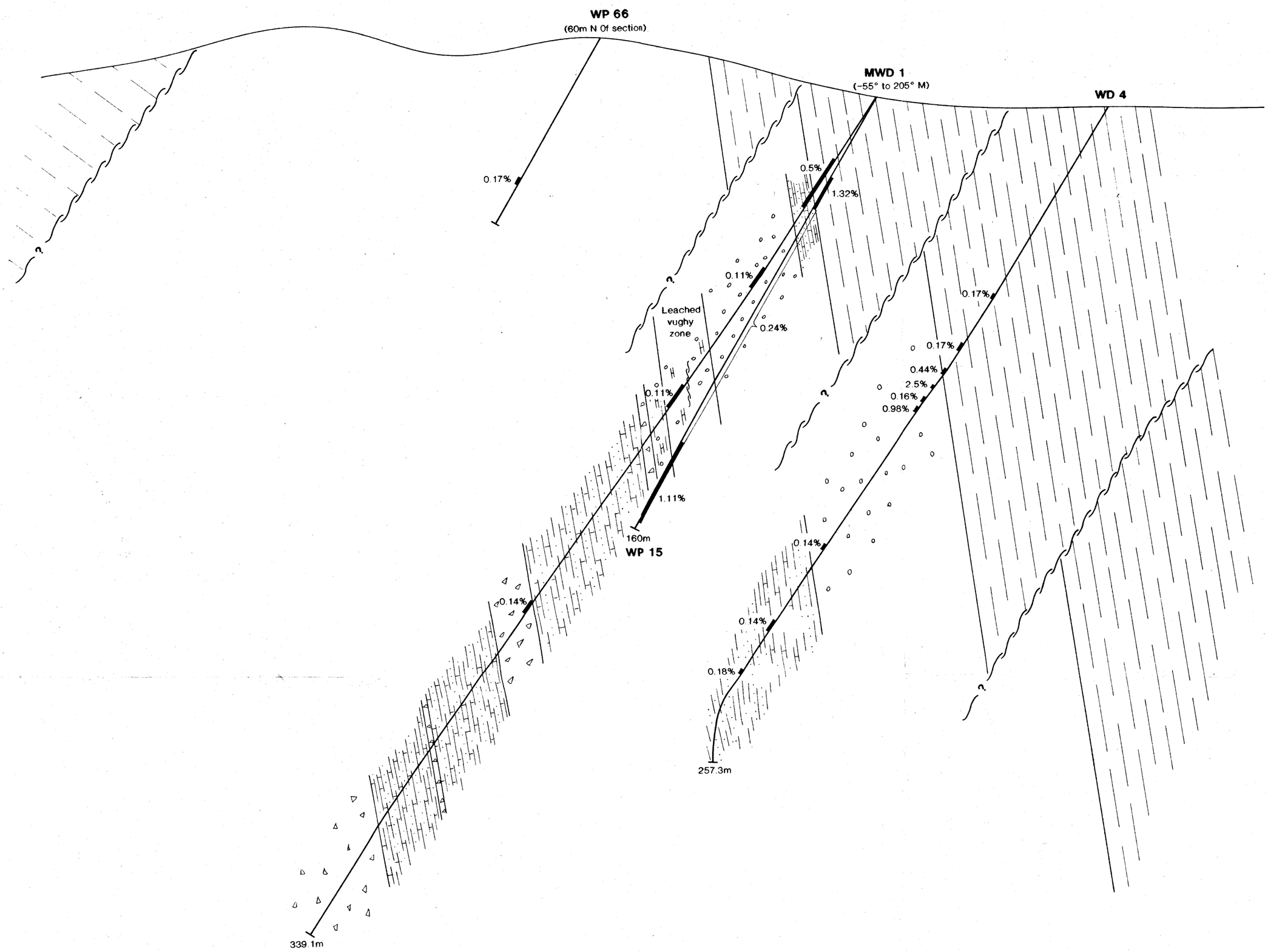
EOH 262.8m

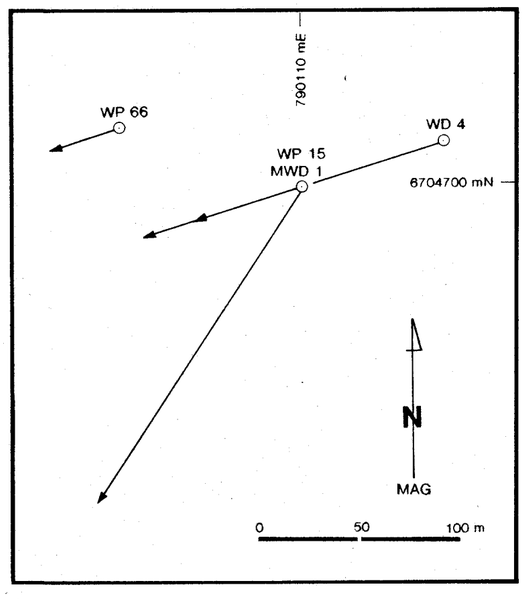
REVISION	
SCALE: 1:250	
LOG: 16	
DATE: Dec 1992	
1:100,000	
1:25,000	
MINING FIELD OR DISTRICT: Willunga Ranges S.A.	
HOLE No.: 8528-6	

M.I.M. EXPLORATION PTY. LTD.

Wilcherina EL
Breaden Hill
Geological and Assay Log
MWD 3

8528-6





* Note DDH MWD 1 is incorrectly projected as it was calculated on the basis that the hole had been drilled on a bearing 25° from WP15. It was actually drilled at 40° from WP15 and should be plotted at 62° from the horizontal (not 58°) and should be 294mm in length (not 326mm).

LEGEND

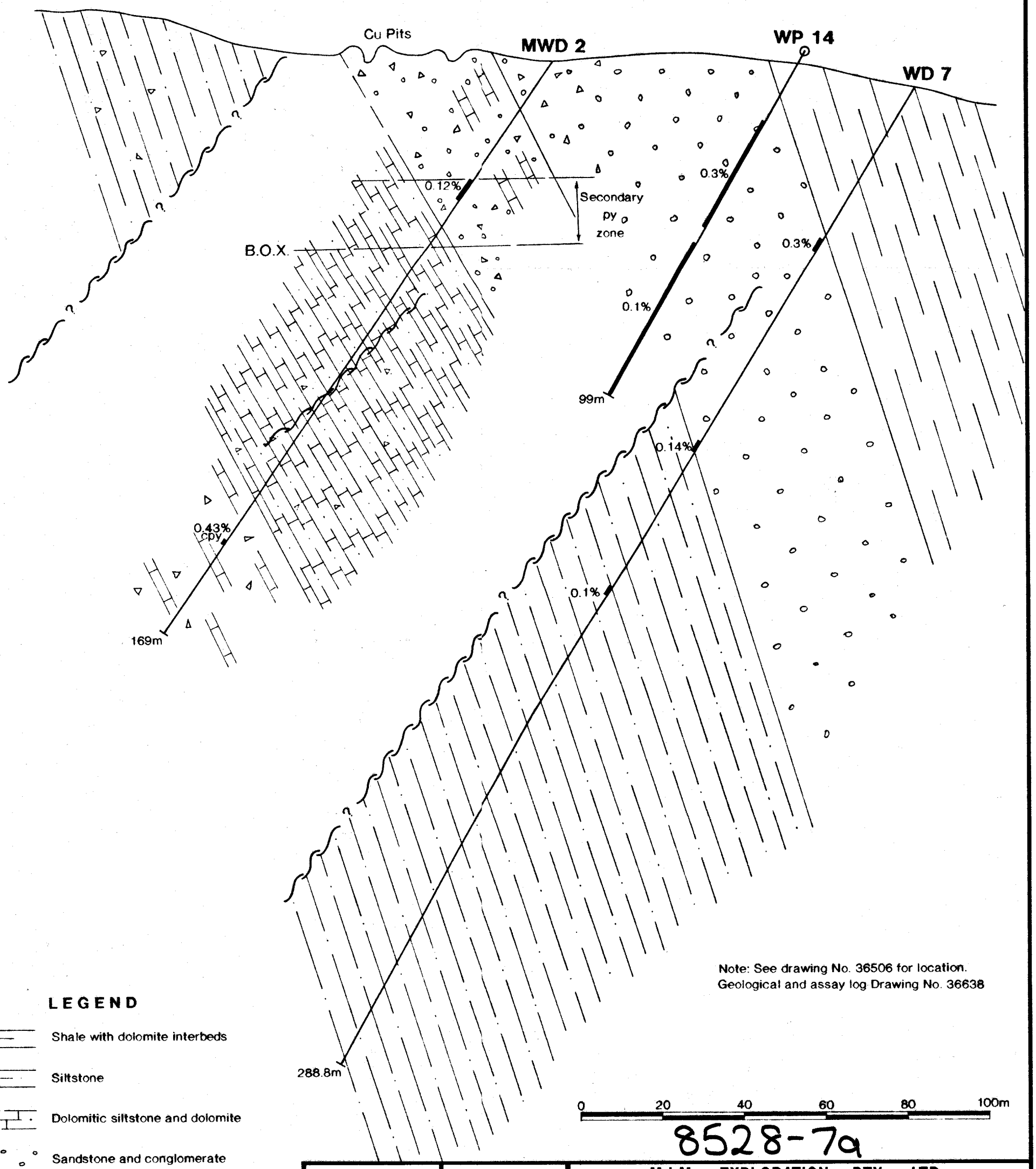
- Shale with dolomitic interbeds
- Siltstone
- Siltstone, silty and sandy dolomite
- Sandstone and conglomerate
- Diamictite (tillite)
- Faults
- 0.17% Cu in %

Note : See Drg. No. 36506 for location.
Geological and assay log Drg. No. 36637

8528-7

0 20 40 60 80 100 metres
SCALE

REVISION		SCALE : 1 : 1000	M.I.M. EXPLORATION PTY. LTD.
PB	Feb 90	GEO : P.B.	WITCHELINA EL
		DATE : Jan 1992	CROSS SECTION MWD 1, PROJECTED ONTO SECTION THROUGH WD 4, PW 15 TRENDING 245° M
		DRAFT : G.J.G.	
		DATE : Jan 1992	
		1:250,000	
		1:100,000	
		MINING FIELD OR DISTRICT : Willouran Ranges	DRG No. : 36887

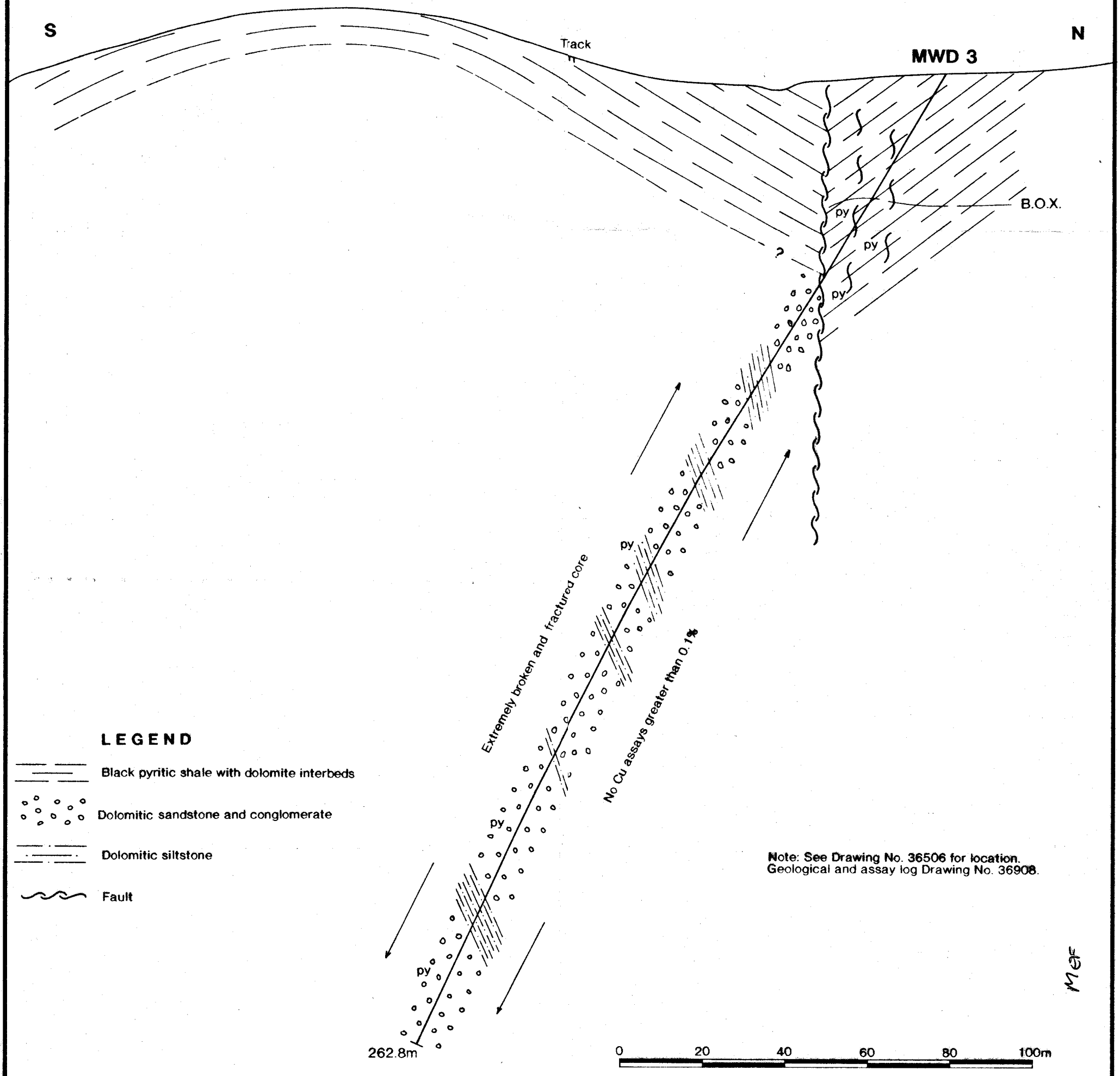


8528-7a

LEGEND

- Shale with dolomite interbeds
- Siltstone
- Dolomitic siltstone and dolomite
- Sandstone and conglomerate
- Diamictite clasts
- Fault
- 0.14% Cu in %

REVISION		SCALE: 1 : 1000	M.I.M. EXPLORATION PTY. LTD.
		GEO : P.B.	WITCHELINA EL BOORLOO COPPER PROSPECT
		DATE :	
		DRAFT: G.J.G.	CROSS-SECTION MWD 2, WD 7 AT 252° TN
		DATE : Jan.1992	
		1:250,000	
		1:100,000	
		MINING FIELD OR DISTRICT : Willouran Ranges	DRG No. : 36905



LEGEND

- Black pyritic shale with dolomite interbeds
- Dolomitic sandstone and conglomerate
- Dolomitic siltstone
- Fault

Note: See Drawing No. 36506 for location.
Geological and assay log Drawing No. 36908.

8528-8

REVISION		SCALE : 1 : 1000	M.I.M. EXPLORATION PTY. LTD.
		GEO : P.B.	WITCHELINA EL
		DATE :	
		DRAFT : G.J.G.	CROSS SECTION MWD 3
		DATE : Jan.1992	TRENDING 172°M
		1:250,000	
		1:100,000	
		MINING FIELD OR DISTRICT : Willouran Ranges	DRG No. : 36897

MOUNT ISA MINES LIMITED

EL 1747 "WITCHELINA"

REPORT FOR QUARTER ENDED JULY 20, 1992

1. TERMS AND CONDITIONS

Exploration Licence 1747 "Witchelina" was granted to Mount Isa Mines Limited on October 21, 1991 for a term of one year with an expenditure commitment of $155,000. The Licence covers most of the Willouran Ranges south-west of Marree and is 1958 km^2 in area. Exploration is carried out my MIM Exploration Pty Ltd which is a wholly owned subsidiary of Mount Isa Mines Limited.

2. EXPLORATION

During the last quarter further geological mapping and rock chip sampling has been carried out. Also, a start has been made on soil sampling of the base of the Tapley Hill Formation along the eastern margin of the Breaden Hill Diapir.

Geological mapping at a scale of 1:5000 using enlarged colour photographs has been completed over the area from the Dunns to Callanna copper mines and south of Rooks mine. Altogether an area of approximately 105 km^2 has been mapped at this scale since the Licence was taken up. This mapping is shown on Drawing Nos 37129, 37132, 37138, 37181 and 37189 which are included with this report. Two earlier drawings showing the geology of the Boorloo and Breaden Hill areas were included with the Quarterly Report for the period ended January 20, 1992 as Drawing Nos 36506 and 36591.

A total of 250 composite limonite samples from quartz/ dolomite veins or pyritic shales have been collected in the Boorloo, Breaden Hill, Marion, Rooks and Dunns areas. These samples have been assayed for Cu, Co, Pb, Zn and Ag by Analabs in Adelaide. Results are shown in Appendix 1 and notes on the samples and AMG locations are presented in Appendix 2. Locations of samples and copper results in the Marion, Mt Breaden and Boorloo areas are shown on Drawing Nos 37113 and 37137 which are overlays to geology plans shown on Drawing Nos 36506 and 36591.

Several anomalous zones have been shown in the basal Tapley Hill Formation which flanks the Breaden Hill Diapir. A soil geochemical survey is presently being carried out in an attempt to define these anomalous zones.

3. EXPENDITURE

A statement of expenditure accompanies this report.

P BINKS

14 AUG 1992

00011

MOUNT ISA MINES LIMITED

EL 1747 WITCHELINA

STATEMENT OF EXPENDITURE FOR THE QUARTER ENDED JULY 20, 1992

Labour	20,466	
Materials	153	
Travel	8,476	
Freight	897	
Vehicle Expenses	2,290	
Maintenance	7	
Fuel & Oil	1,860	
Miscellaneous	885	
Assaying	3,504	
Technical Consultants	5,241	
Drafting	30	
Tenement Costs	30	
Administration	9,698	
TOTAL – THIS PERIOD		53,537
PREVIOUSLY REPORTED CURRENT TERM		
Quarter ended 20/01/92	103,711	
Quarter ended 20/04/92	169,179	
ended		
		272,890
TOTAL – CURRENT TERM		326,427
PREVIOUSLY REPORTED		24,883
TOTAL PROJECT EXPENDITURE TO DATE		**351,310**

A.E. Covacich
Manager Accounting – Exploration

WITCHELINA : EL 1747

REPORTING NO : 208BS

GEOLOGIST :

REPORTING PD : 21/4/92-20/7/92 (P11-13/92-1/93)

EXPENDITURE SUMMARY		P11/91-P13/92	P1/93	TOTAL
1.	LABOUR	16110	4356	20466
2.	MATERIALS	139	14	153
3.	TRAVEL	5210	3266	8476
4.	FREIGHT	794	103	897
5.	VEHICLE EXPENSES	2878	-588	2290
6.	MAINTENANCE	7	0	7
7.	FUEL & OIL	1635	225	1860
8.	MISCELLANEOUS	563	322	885
9.	DRILLING & COSTEANING	0	0	0
10.	ASSAYING	3250	254	3504
11.	CONSULTANTS	5241	0	5241
12.	AERIAL & SURVEYS	0	0	0
13.	GEOLOGICAL & GEOPHYSICAL	0	0	0
14.	EQUIPMENT HIRE	0	0	0
15.	DRAFTING	30	0	30
16.	TENEMENT COSTS	0	30	30
17.	DEPRECIATION	0	0	0
18.	LEGAL	0	0	0
19.	INSURANCE	0	0	0
20.	ADMINISTRATION	7702	1996	9698
	TOTAL	43559	9978	53537

APPENDIX 1

ASSAYS

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.
A.C.N. 004 591 664

00014

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.07054	29/10/91	733001	1 OF 3

TUBE No.	SAMPLE No.	Co	Cu	Zn	Ag	Pb				
1	733001	SNR	SNR	SNR	SNR	SNR				
2	733002	65	450	55	0.5	15				
3	733003	55	720	85	1.0	15				
4	733004	60	810	75	0.5	20				
5	733005	70	1330	75	0.5	25				
	733006	30	2630	40	0.5	10				
7	733007	85	11000	145	0.5	20				
8	733008	50	4180	160	2.0	35				
9	733009	30	1630	40	<0.5	15				
10	733010	190	2415	85	0.5	20				
11	733011	40	6340	50	0.5	20				
12	733012	90	3670	65	<0.5	20				
13	733013	45	1520	85	0.5	25				
14	733014	35	475	10	1.0	20				
15	733015	145	1800	15	<0.5	5				
16	733016	230	1450	60	<0.5	15				
17	733017	120	540	40	<0.5	10				
18	733018	130	515	30	<0.5	10				
19	733019	145	460	35	<0.5	5				
20	733020	100	450	30	0.5	10				
21	733021	170	1175	45	<0.5	10				
22	733022	40	155	15	<0.5	5				
23	733023	160	485	45	<0.5	15				
24	733024	125	605	195	<0.5	15				
25	733025	150	535	35	<0.5	10				

Results in ppm unless otherwise specified
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X = element concentration is below detection limit
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AUTHORISED OFFICER D.K.Rowley

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A.C.N. 004 591 664

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.07054	29/10/91	733001	2 OF 3

TUBE No.	SAMPLE No.	Co	Cu	Zn	Ag	Pb				
1	733026	45	295	30	<0.5	10				
2	733027	105	920	55	<0.5	15				
3	733028	60	635	25	<0.5	15				
4	733029	75	2085	25	<0.5	15				
5	733030	155	1925	40	<0.5	10				
	733031	95	2840	55	<0.5	15				
7	733032	50	1055	60	<0.5	15				
8	733033	35	2345	85	<0.5	25				
9	733034	60	1240	75	<0.5	15				
10	733035	15	10	20	<0.5	10				
11	733036	25	5	15	<0.5	10				
12	733037	15	5	15	<0.5	10				
13	733038	10	70	15	<0.5	10				
14	733039	40	305	25	<0.5	20				
15	733040	20	115	25	0.5	20				
16	733041	75	110	20	0.5	10				
17	733042	55	65	25	0.5	15				
18	733043	15	475	20	0.5	20				
19	733044	30	805	25	0.5	25				
20	733045	15	10	25	<0.5	10				
21	733046	25	40	15	<0.5	10				
22	733047	65	<5	10	<0.5	10				
23	733048	30	4185	45	<0.5	10				
24	733049	35	8065	40	0.5	10				
25	733050	35	7340	90	0.5	20				

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.07054	29/10/91	733001	3 OF 3

TUBE No.	SAMPLE No.	Co	Cu	Zn	Ag	Pb				
1	QC733020	95	435	25	<0.5	10				
2	QC733040	15	110	20	0.5	20				
3										
4										
5										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	5	0.5	5				
24	UNITS	PPM	PPM	PPM	PPM	PPM				
25	METHOD	GA101	GA101	GA101	GA101	GA101				

Results in ppm unless otherwise specified
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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.07064	01/11/91	733051	1 OF 1

TUBE No.	SAMPLE No.	Co	Cu	Zn	Ag	Pb				
1	733051	80	14400	40	<0.5	10				
2	733052	65	3090	55	0.5	10				
3	733053	60	1190	65	0.5	15				
4	733054	65	450	90	<0.5	15				
5	733055	20	10100	40	1.0	5				
6	733056	45	10400	40	1.5	5				
7	733057	35	29400	95	2.0	15				
8	733058	25	1610	35	<0.5	5				
9	733059	15	220	10	<0.5	10				
10	733060	220	700	185	0.5	15				
11	733061	225	120	155	0.5	15				
12	733062	35	6170	85	1.5	10				
13	733063	55	5990	100	1.5	15				
14	733064	45	14700	55	1.0	10				
15	733065	55	6875	45	0.5	5				
16	733066	60	305	75	1.5	25				
17	733067	45	1190	50	0.5	10				
18	733068	15	2890	60	0.5	10				
19	733069	40	17200	95	5.0	20				
20	733070	155	18000	85	0.5	5				
21	QC733060	220	720	185	0.5	10				
22										
23	DETECTION	5	5	5	0.5	5				
24	UNITS	PPM	PPM	PPM	PPM	PPM				
25	METHOD	GA101	GA101	GA101	GA101	GA101				

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.07054	04/11/91	733001	1 OF 1

TUBE No.	SAMPLE No.	Co	Cu	Zn	Ag	Pb				
1	733001	95	2290	40	0.5	10				
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	5	0.5	5				
24	UNITS	PPM	PPM	PPM	PPM	PPM				
25	METHOD	GA101	GA101	GA101	GA101	GA101				

Results in ppm unless otherwise specified
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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.07498	17/03/92	733071	1 OF 3

TUBE No.	SAMPLE No.	Co	Cu	Zn	Ag	Pb				
1	733071	50	3525	40	<0.5	10				
2	733072	50	6465	45	0.5	15				
3	733073	175	4735	75	2.5	25				
4	733074	110	1900	80	0.5	20				
5	733075	95	10000	85	0.5	15				
6	733076	45	5340	80	<0.5	10				
7	733077	40	18500	30	<0.5	5				
8	733078	50	2070	45	0.5	10				
9	733079	60	2300	20	<0.5	5				
10	733080	20	650	25	<0.5	10				
11	733081	15	700	20	<0.5	5				
12	733082	40	445	20	<0.5	5				
13	733083	40	14200	35	<0.5	10				
14	733084	25	1165	70	<0.5	10				
	733085	30	610	15	<0.5	10				
16	733086	25	655	20	<0.5	15				
17	733087	60	1835	30	<0.5	5				
18	733088	50	460	15	<0.5	10				
19	733089	45	695	35	<0.5	10				
20	733090	170	1490	40	<0.5	15				
21	733091	50	215	35	<0.5	10				
22	733092	145	455	15	<0.5	<5				
23	733093	15	110	25	<0.5	5				
24	733094	100	710	55	<0.5	20				
25	733095	110	415	25	<0.5	10				

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AUTHORISED OFFICER R. T. Branson

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.07498	17/03/92	733071	2 OF 3

TUBE No.	SAMPLE No.	Co	Cu	Zn	Ag	Pb				
1	733096	395	655	25	<0.5	10				
2	733097	115	490	45	<0.5	5				
3	733098	120	765	60	<0.5	10				
4	733099	80	400	30	<0.5	15				
5	733100	60	545	30	<0.5	10				
6	733101	160	1100	45	<0.5	15				
7	733102	130	2060	35	<0.5	5				
8	733103	45	485	25	<0.5	5				
9	733104	165	1080	20	<0.5	15				
10	733105	100	1020	45	<0.5	10				
11	733106	35	190	25	<0.5	<5				
12	733107	45	1040	25	<0.5	15				
13	733108	55	290	25	<0.5	10				
14	733109	90	830	80	<0.5	15				
	733110	65	745	20	<0.5	15				
16	733111	30	1060	40	<0.5	10				
17	733112	50	41700	15	0.5	20				
18	733113	380	1370	70	<0.5	20				
19	733114	80	495	65	<0.5	15				
20	733115	115	225	30	<0.5	5				
21	733116	60	2405	100	<0.5	10				
22	733117	100	795	35	<0.5	5				
23	733118	40	200	20	<0.5	5				
24	733119	160	720	75	8.5	15				
25	733120	40	1000	65	<0.5	10				

Results in ppm unless otherwise specified
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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.07498	17/03/92	733071	3 OF 3

TUBE No.	SAMPLE No.	Co	Cu	Zn	Ag	Pb				
1	733121	185	500	70	1.0	10				
2	733122	55	145	50	<0.5	15				
3	733123	150	1135	70	<0.5	20				
4	733124	230	3165	70	<0.5	5				
	733125	310	425	30	<0.5	10				
6	733126	190	765	555	1.0	55				
7	733127	210	290	20	<0.5	10				
8	733128	50	220	90	<0.5	10				
9	733129	45	625	80	<0.5	10				
10	733130	85	585	110	0.5	50				
11	733131	65	17200	15	<0.5	20				
12	733132	45	680	30	<0.5	5				
13	733133	15	30	5	<0.5	<5				
14	733134	65	135	45	<0.5	5				
15	733135	155	690	180	<0.5	45				
16	QC733080	20	635	25	<0.5	10				
17	QC733100	60	535	30	<0.5	5				
18	QC733120	35	975	65	<0.5	15				
19										
20										
21										
22										
23	DETECTION	5	5	5	0.5	5				
24	UNITS	PPM	PPM	PPM	PPM	PPM				
25	METHOD	GA101	GA101	GA101	GA101	GA101				

Results in ppm unless otherwise specified.
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AUTHORISED OFFICER A.J. Branson

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.07609	06/04/92	733136	1 OF 3

TUBE No.	SAMPLE No.	Cu	Cu	Pb	Zn	Ag	Ag	Co		
1	733136	445	–	50	370	<0.5	–	75		
2	733137	95	–	10	35	<0.5	–	20		
3	733138	40	–	10	105	<0.5	–	65		
4	733139	210	–	10	85	<0.5	–	115		
5	733140	10	–	<5	10	2.5	–	15		
6	733141	5310	–	2940	5480	43.5	52	95		
7	733142	125	–	35	75	1.0	–	10		
8	733143	40	–	15	30	<0.5	–	5		
9	733144	57900	5.67	75	25	3.0	–	5		
10	733145	695	–	5	15	<0.5	–	65		
11	733146	1405	–	10	10	<0.5	–	5		
12	733147	25	–	20	50	<0.5	–	40		
13	733148	50	–	75	40	0.5	–	160		
14	733149	7805	–	10	55	<0.5	–	5		
15	733150	13000	1.28	30	70	1.0	–	25		
16	733151	45	–	10	25	<0.5	–	5		
17	733152	445	–	45	90	0.5	–	70		
18	733153	885	–	30	50	<0.5	–	110		
19	733154	1250	–	10	25	<0.5	–	965		
20	733155	705	–	25	80	<0.5	–	115		
21	733156	275	–	35	130	0.5	–	105		
22	733157	545	–	55	205	0.5	–	30		
23	733158	740	–	110	180	5.0	–	90		
24	733159	525	–	25	55	0.5	–	95		
25	733160	15	–	15	30	0.5	–	520		

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AUTHORISED OFFICER M. Hamersley

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A.C.N. 004 591 664

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.07609	06/04/92	733136	2 OF 3

UBE No.	SAMPLE No.	Cu	Cu	Pb	Zn	Ag	Ag	Co		
1	733161	635	–	15	55	<0.5	–	65		
2	733162	800	–	25	40	<0.5	–	25		
3	733163	890	–	50	120	1.0	–	80		
4	733164	1900	–	30	70	<0.5	–	90		
5	733165	410	–	15	55	<0.5	–	20		
6	733166	770	–	40	65	<0.5	–	45		
7	733167	30	–	<5	10	<0.5	–	10		
8	733168	310	–	20	25	<0.5	–	20		
9	733169	10	–	<5	5	<0.5	–	5		
10	733170	410	–	20	30	2.0	–	130		
11	733171	1910	–	35	130	<0.5	–	85		
12	733172	830	–	20	30	<0.5	–	270		
13	733173	40	–	<5	15	<0.5	–	15		
14	733174	1325	–	10	30	1.0	–	60		
15	733175	300	–	20	60	<0.5	–	150		
16	733176	340	–	60	35	<0.5	–	50		
17	733177	275	–	40	75	<0.5	–	100		
18	733178	630	–	15	35	<0.5	–	120		
19	733179	615	–	50	80	<0.5	–	180		
20	733180	30	–	10	115	0.5	–	10		
21	733181	85	–	5	15	<0.5	–	20		
22	733182	225300	22.9	10	40	48.0	53	170		
23	733183	600	–	55	35	<0.5	–	1000		
24	733184	810	–	20	65	0.5	–	70		
25	733185	560	–	20	50	<0.5	–	95		

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.07609	06/04/92	733136	3 OF 3

TUBE No.	SAMPLE No.	Cu	Cu	Pb	Zn	Ag	Ag	Co		
1	733186	330	–	25	50	<0.5	–	115		
2	733187	360	–	20	50	<0.5	–	70		
3	733188	90	–	25	30	<0.5	–	125		
4	733189	110	–	20	220	<0.5	–	25		
5	QC733140	15	–	<5	5	2.5	–	20		
6	QC733160	20	–	15	30	0.5	–	505		
7	QC733180	30	–	10	120	0.5	–	10		
8										
9										
10										
11										
12										
13										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	0.0025	5	5	0.5	10	5		
24	UNITS	PPM	%	PPM	PPM	PPM	PPM	PPM		
25	METHOD	GA101	GA104	GA101	GA101	GA101	GA104	GA101		

Results in ppm unless otherwise specified
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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.07795	07/05/92	733190	1 OF 3

TUBE No.	SAMPLE No.	Co	Cu	Zn	Ag	Pb				
1	733190	37	168	115	<2	7				
2	733191	106	476	46	<2	5				
3	733192	32	15	9	<2	7				
4	733193	<5	11	<4	<2	<5				
5	733194	34	8	5	<2	<5				
6	733195	5	9	<4	<2	<5				
7	733196	8	14	<4	<2	<5				
8	733197	11	34	8	<2	<5				
9	733198	5	19	<4	<2	<5				
10	733199	<5	10	<4	<2	<5				
11	733200	<5	8	<4	<2	<5				
12	733201	<5	6	<4	<2	5				
13	733202	<5	7	<4	<2	<5				
14	733203	26	10	19	<2	<5				
15	733204	290	1654	203	<2	6				
16	733205	150	27	13	<2	<5				
'	733206	24	14	16	<2	<5				
18	733207	8	15	16	<2	<5				
19	733208	14	20	17	<2	<5				
20	733209	12	10	8	<2	<5				
21	733210	21	44	12	<2	<5				
22	733211	31	8	13	<2	<5				
23	733212	64	136	320	<2	9				
24	733213	8	15	20	<2	5				
25	733214	27	31	28	<2	<5				

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.07795	07/05/92	733190	2 OF 3

TUBE No.	SAMPLE No.	Co	Cu	Zn	Ag	Pb				
1	733215	18	15	17	<2	<5				
2	733216	44	11	24	<2	<5				
3	733217	65	234	50	<2	<5				
4	733218	24	14	16	<2	<5				
5	733219	160	16	27	<2	<5				
6	733220	19	10	9	<2	<5				
7	733221	5	7	6	<2	<5				
8	733222	23	8	43	<2	<5				
9	733223	13	4	11	<2	<5				
10	733224	53	746	22	<2	10				
11	733225	6	34	10	<2	<5				
12	733226	78	16	18	<2	<5				
13	733227	44	504	102	<2	9				
14	733228	<5	13	7	<2	5				
15	733229	54	693	125	<2	8				
16	733230	47	11	17	<2	5				
17	733231	5	7	10	<2	<5				
18	733232	5	185	141	<2	5				
19	733233	5	11	30	<2	<5				
20	733234	21	13	15	<2	<5				
21	733235	13	15	40	<2	<5				
22	733236	22	20	70	<2	<5				
23	733237	95	1844	47	<2	17				
24	733238	55	306	121	<2	124				
25	733239	36	3584	22	2	14				

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AUTHORISED OFFICER A.J. Branson

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A.C.N. 004 591 664

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.07795	07/05/92	733190	3 OF 3

TUBE No.	SAMPLE No.	Co	Cu	Zn	Ag	Pb				
1	733240	18	671	64	<2	<5				
2	733241	31	38	13	<2	<5				
3	733242	28	38	10	<2	<5				
4	733243	26	20	16	<2	<5				
5	733244	70	12	15	<2	6				
6	733245	24	285	30	<2	7				
7	733246	74	978	313	<2	32				
8	733247	33	1230	65	<2	7				
9	733248	110	190	50	<2	<5				
10	733249	9	120	75	<2	15				
11	733250	15	815	55	<2	5				
12	QC733200	<5	8	4	<2	<5				
13	QC733220	18	8	10	<2	<5				
14	QC733240	18	682	67	<2	<5				
15										
16										
18										
19										
20										
21										
22										
23	DETECTION	5	4	4	2	5				
24	UNITS	PPM	PPM	PPM	PPM	PPM				
25	METHOD	GA101	GA101	GA101	GA101	GA101				

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER A.J.Branson

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.
A.C.N. 004 591 664

00028

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.07796	06/05/92	733192	1 OF 1

UBE No.	SAMPLE No.	Au								
1	733192	<0.02								
2	733193	<0.02								
3	733194	<0.02								
4	733195	<0.02								
5	733196	<0.02								
6	733197	<0.02								
7	733198	<0.02								
8	733199	<0.02								
9	733200	<0.02								
10	733201	<0.02								
11	733202	<0.02								
12	733223	<0.02								
13	733225	<0.02								
14	733228	<0.02								
15	733233	<0.02								
16	QC733200	<0.02								
17										
18										
19										
20										
21										
22										
23	DETECTION	0.02								
24	UNITS	PPM								
25	METHOD	GG329								

Results in ppm unless otherwise specified
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X = element concentration is below detection limit
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AUTHORISED OFFICER A. J. Branson

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00029

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.07986	09/06/92	733252	1 OF 1

TUBE No.	SAMPLE No.	Au								
1	733252	<0.02								
2	733253	<0.02								
3	733254	<0.02								
4	733255	<0.02								
5	733256	<0.02								
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	0.02								
24	UNITS	PPM								
25	METHOD	GG329								

Results in ppm unless otherwise specified
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AUTHORISED OFFICER A.J. Branson

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.
A.C.N. 004 591 664

00030

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.07985	09/06/92	733251	1 OF 2

TUBE No.	SAMPLE No.	Co	Cu	Zn	Ag	Pb				
1	733251	22	177	21	<2	<5				
2	733252	19	18	<4	<2	<5				
3	733253	14	19	<4	<2	<5				
4	733254	26	53	<4	<2	<5				
5	733255	8	14	<4	<2	<5				
6	733256	11	11	<4	<2	<5				
7	733257	73	2462	3528	18	915				
8	733258	75	955	217	<2	<5				
9	733259	61	258	53	<2	<5				
10	733260	55	155	90	<2	17				
11	733261	22	149	229	<2	23				
12	733262	33	47	132	<2	24				
13	733263	73	4167	172	<2	13				
14	733264	36	121	59	<2	<5				
15	733265	35	100	96	<2	<5				
16	733266	71	39	7	<2	6				
[illegible]	733267	41	20	44	<2	<5				
18	733268	32	249	83	<2	10				
19	733269	11	11	<4	<2	<5				
20	733270	14	7	<4	<2	<5				
21	733271	17	11	<4	<2	<5				
22	733272	80	24	111	<2	7				
23	733273	100	2588	30	<2	5				
24	733274	249	1298	10	<2	<5				
25	733275	234	158	170	<2	7				

Results in ppm unless otherwise specified
T = element present, but concentration too low to measure
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AUTHORISED OFFICER A. J. Branson

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.
A.C.N. 004 591 664

00031

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.07985	09/06/92	733251	2 OF 2

TUBE No.	SAMPLE No.	Co	Cu	Zn	Ag	Pb				
1	733276	44	10	4	<2	<5				
2	733277	54	123	13	<2	<5				
3	733278	58	242	241	<2	10				
4	733279	91	304	226	<2	7				
5	733280	154	282	183	<2	54				
6	QC733260	50	152	87	<2	19				
7	QC733280	152	274	181	<2	55				
8										
9										
10										
11										
12										
13										
14										
15										
16										
18										
19										
20										
21										
22										
23	DETECTION	5	4	4	2	5				
24	UNITS	PPM	PPM	PPM	PPM	PPM				
25	METHOD	GA101	GA101	GA101	GA101	GA101				

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER A. J. Branson

APPENDIX 2

FIELD NOTES ON ROCK CHIP SAMPLES

R- RADIUS, LAS LIMONITE AFTER SULPHIDE APPERANCE 00033
1 OF 10

Carpentaria Exploration Company Pty. Ltd.

SAMPLE LEDGER

SAMPLER'S INITIALS: D. K. DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS	STORE REF.
733001	ROCK CHIP	10m RADIUS, BRECHIA + Qz MINOR LIMONITE, V/MINOR STAINING. WITCHELINA S.A. 208BS. 6704700N 790085E	
2		10m R, Qz VEIN E-W TREND WITH LIMONITE. 6704665N 790075E	
3		10m R, Qz WITH LIMONITE, MINOR Cu STAINING, MALACHITE SCREE. 6704720N 790015E	
4		5m R, BRECHIA + Qz WITH LIMONITE 6704680N 790070E	
5		10m R, BRECHIA WITH Qz VEIN, LIMONITE V/MINOR STAINING 6704690N 790060E	
6		10m R SANDS, BRECHIA + Qz VEIN WITH LIMONITE, MALACHITE SCREE. 6704720N 790085E	
7		5m RADIUS TAPLEYS LAS, EXTENSIVE STAINING, OLD Cu PIT. 6704680N 790155E	*
8		5m R, LIMONITE RICH TAPLEYS, EXTENSIVE STAINING EVIDENT 6704690N 790155E	
9		5m R, BRECHIA SOME LAS, STAINING (DOLOMITIC?) TAPLEYS? 6704690N 790140E	
10		5m R, BRECHIA MINOR LIMONITE, MINOR STAINING 6704690N 790125E	
1		10m R " " " " " 6704705N 790110E	
2		" " " " " " 6704715N 790105E	
3		10m ALONG STRIKE N-S SILTSTONE?, LIMONITE OXIDIZED SULPHIDES 6704670N 790140E	
4		10m ALONG STRIKE N-S, WEATHERED WHITISH SULPHIDE + FRESH, As ODOUR. SILT/S. 6704665N 790125E	
5		5m R BRECHIA LIMONITE RICH, As ODOUR. 6704640N 790125E	
6		5m R, SILT/S? N-S, LIMONITE VEINS SOME WHITISH FRESH SULPHIDES 6704655N 790130E	
7		10m R, SANDSTONE + Qz VEIN WITH LIMONITE 6704620N 790115E	
8		10m R, Qz VEIN WITH LIMONITE THRU Qzite. 6704590N 790130E	
9		10m R, Qz VEIN + BRECHIA WITH LIMONITE. 6704570N 790100E	
733020		10m R, Qz VEIN + BRECHIA WITH LIMONITE. 6704600N 790115E	

SAMPLE TYPE CODE:
- DD = diamond drillcore
- PD = percussion/rotary cuttings
- RAB = rotary airblast cuttings
- = other drilling samples (specify)
- S = soil sample
- SS = stream sediment sample
- R = rock chip sample
- P = petrological sample
- = other (specify)

WHITE - REGIONAL BASE
YELLOW - BRISBANE
PINK - RETAIN

NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

Carpentaria Exploration Company Pty. Ltd. 00034

SAMPLE LEDGER

SAMPLER'S INITIALS: D. K. DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS WITCHELINA 2085	STORE REF.
733021	ROCK CHIP	10m K Qz VEINS Qz THRU BRECHIA, As ODOUR. 6704590N 790100E	
2		10m K Qz VEIN THRU SANDS WITH LIMONITE GOOD SAMPLE 6704615N 790095E	
3		10m K Qz VEINING WITH LAS BRECHIA/SANDS, GOOD SAMPLE 6704595N 790075E	
4		5m K BRECHIA Qz VEINING WITH LIMONITE SOME OXIDIZED Fe. 6704610N 790030E	
5		10m K BRECHIA WITH SOME LIMONITE 6704660N 790040E	
6		10m K Qz VEIN WITH LIMONITE THRU Qzite 6704680N 790045E	
7		" " " " " 6704695N 790030E	
8		10m K BRECHIA WITH SOME LIMONITE DOLOMITIC AREA? 6704655N 789990E	
9		10m K MINOR LIMONITE THRU FRACTURED Qzite/SANDSTONE 6704755N 789970E	
30		5m K GOSSAN M/E BRECHIA, MINOR LIMONITE AFTER DOLOMITE 6704765N 789980E	
1		10m K Qz WITH LAS THRU Qzite + BRECHIA 6704755N 790020E	
2		10m K Qz WITH LAS THRU Qzite + SANDSTONE 6704760N 790055E	
3		10m K Qzite + SILTSTONE WITH Qz + LAS 6704770N 790070E	
4		10m K, Qz + Qzite + BRECHIA, SOME LAS, MINOR Cu STAINING 6704755N 790070E	
5		5m ALONG STRIKE OF Qz VEIN V/MINOR LAS, DOLOMITIC? 6706355N 789275E	
6		" " " " " 6706335N 789285E	
7		5m K Qz VEIN MINOR LIMONITE DOLOMITIC? 6706380N 789350E	
8		" " " " " 6706400N 789335E	
9		5m K, Qz VEIN WITH LIMONITE, DOLOMITIC AREA. 6706420N 789410E	
733040		15m K Qz + LIMONITE THRU SANDSTONE EXCELLENT QUALITY. 6706470N 789375E	

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WHITE – REGIONAL BASE
YELLOW – BRISBANE
PINK – RETAIN

NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

Carpentaria Exploration Company Pty. Ltd.

00035

SAMPLE LEDGER

SAMPLER'S INITIALS: D. K. DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS WITCHELINA 208BS.	STORE REF.
733041	R.	10m ALONG STRIKE, Qz VEIN WITH LAS THRU Qzite/SANDSTONE 6706315N 789410E	
2		10m R, Qz VEIN WITH MINOR LIMONITE, FAIR QUALITY 6706350N 789425E	
3		10m R, Qz VEIN WITH LIMONITE THRU Qzite/SANDSTONE 6706325N 789475E	
4		10m ALONG STRIKE, Qz VEIN WITH L THRU SHEARED Qzite/SANDSTONE 6706290N 789495E	
5		5m ALONG STRIKE, Qz VEIN WITH MINOR LIMONITE THRU Qzite/SANDSTONE 6706360N 789300E	
6		10m ALONG STRIKE, Qz VEIN, MINOR LIMONITE, DOLOMITIC ?? 6706310N 789330E	
7		5m R LIMONITE THRU FRACTURED Qzite, DOLOMITIC ?? 6706010N 789335E	
8		10m R SILTSTONE, Qz + BRECHIA WITH LAS, EXTENSIVE Cu STAINING. 6705785N 789665E	
9		" " " " " " 6705760N 789665E	
50		10m R, Qz VEINS + BRECHIA WITH LAS, EXTENSIVE Cu STAINING ~~6705690N~~ 6705690N 789690E	
1		10m R N-S SHALE, EXTENSIVE LAS + Cu STAINING. ~~6705610N~~ 6705645N 789680E	
2		" " " " 6705610N 789630E	
3		10m R BRECHIA + Qz, SILTSTONE + Qz MINOR LIMONITE 6705815N 789660E	
4		10m R Qz VEIN WITH LIMONITE + BRECHIA WITH MINOR LIMONITE 6705630N 789585E	
5		10m R SILTSTONE WITH Qz VEINING MINOR LAS. 6705585N 789650E	
6		10m R BRECHIA + Qz WITH LIMONITE & Cu STAINING ABOVE OLD Cu PIT 6705530N 789675E	
7		10m R, LIMONITE RICH VEINS THRU PALE SILTSTONE & QUARTZ 6705555N 789630E	
8		" " " " " 6705600N 789600E	
9		10m R, Qzite WITH LAS SOME OXIDIZATION, STAINING AROUND MOULDS. 6705490N 789535E	
733060		DOLOMITIC Qz VEIN, SOME MINOR LIMONITE. 6705495N 789605E	

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- P = petrological sample
- = other (specify)

WHITE – REGIONAL BASE
YELLOW – BRISBANE
PINK – RETAIN

NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

Carpentaria Exploration Company Pty. Ltd. 00036

SAMPLE LEDGER

SAMPLER'S INITIALS: D.K. DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS WITCHELINA 208 BS	STORE REF.
733061	R.	5m RADIUS, MINOR Qz VEINS WITH LIMONITE, SOME DOLOMITIC MATERIAL 6705455N 789605E	
2		10m R Qz + MINOR LIMONITE THRU SILTSTONE, Cu STAIN IN PALE SILTSTONE 6705475N 789635E	
3		10m R LIMONITE THRU FRACTURED + SILICIFIED ROCK, EXTENSIVE STAINING 6705490N 789660E	
4		10m R NEAR OLD Cu PIT, EXTENSIVE LAS + STAINING 6705525N 789655E	
5		10m R LIMONITE RICH Qz VEIN WITH MODERATE STAINING. 6705485N 789690E	
6		10m R Qz VEIN THRU Qzite + SILT/S SHALE, SOME LIMONITE, DOLOMITIC 6705595N 789520E	
7		10m R, SILTSTONE? / Qz VEINS WITH LIMONITE, SOME THRU SILT/S. 6705550N 789585E	
8		10m R, LEACHED SILT/S?, LIMONITE RICH Qz VEIN SOME LAS, Cu STAINING 6705300N 789595E	
9		10m R, E-N Qz VEIN WITH LAS, SHARED SILT/S? WITH LIMONITE, Cu STAIN EXTENSIVE. 6705270N 789570E	
70		10m R MINOR LIMONITE IN CONGLOMERATE, EXTENSIVE Cu STAINING. 6705395N 789625E	
1		10m R Qzite SAND/S BRECHIA, Qz VEINING WITH LIMONITE V/MINOR Cu STAINING 6705470N 789720E	
2		10m R. MINOR Qz VEIN WITH LIMONITE THRU Qzite + SAND/S, MINOR STAINING. 6705430N 789690E	
3		10m R CONGLOMERATE, WITH LIMONITE RICH VEINS, MINOR STAINING. 6705405N 789685E	
4		15m R Qzite + SAND/S, MINOR Qz VEINS WITH LIMONITE, LAS, MINOR STAINING 6705375N 789685E	
5		10m R MINOR Qz VEINS WITH LIMONITE DOLOMITIC?, MINOR STAINING 6705255N 789705E	
6		5m R BRECHIA MINOR Qz VEINS SOME LIMONITE, V/MINOR Cu STAIN, DOLOMITIC? 6705105N 789665E	
7		" " " " " " " " 6705145N 789665E	
8		10m R LEACHED SILT/S?, SOME LAS, MINOR Qz WITH LIMONITE, V/MINOR Cu STAIN 6705175N 789610E	
9		10m R, N-S TREND SILT/S?, SOME LAS, VERY MINOR Cu STAINING 6705030N 789610E	
733080		10m RADIUS Qzite + BRECHIA, TILTED? MINOR LIMONITE 6704950N 789635E	

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NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

Carpentaria Exploration Company Pty. Ltd.

SAMPLE LEDGER

00037

SAMPLER'S INITIALS: D.K. DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS WITCHELINA 208 RS.	STORE REF.
733081	R.	15m RADIUS Qzite, BRECCIA, LAS. VERY FINE GRAINED 6704950N 789695E	
2		20m RADIUS LAS Qzite, BRECCIA, MINOR Qz WITH VEINING. 6705010N 689740E	
3		15m RADIUS Qzite, BRECCIA, LAS SOME Cu STAINING, MALACHITE SCREE 6705075N 689805E	
4		15m RADIUS Qz Qzite, BRECCIA + fine SILTSTONE, MINOR LAS 6705000N 689865E	
5		10m RADIUS. N/S ORIENTATED SILTSTONE LAS. 6704975N 689845E	
6		10m RADIUS, N-S Qzite + BRECCIA, E-W Qz VEINS, MINOR LAS DOLOMITE. 6704865N 689830E	
7		5m RADIUS SILTSTONE + BRECCIA LAS MINOR STAINING AZURITE, NEAR Cu PIT 6704905N 689920E	
8		15m R. Qzite + BRECCIA, MINOR LAS, SOME Qz VEINS WITH LIMONITE 6704870N 689960E	
9		MAJOR Qz VEINS WITH LIMONITE SOME BRECCIATED MATERIAL. 6704770N 689880E	
90		10m R Qzite SANDSTONE CONTACT WITH TAILINGS?, LAS, MALACHITE SCREE. 6704605N 790185E	
1		15m R Qzite + SANDSTONE, MINOR LIMONITE, SOME Qz (E-W) WITH LIMONITE. 6704535N 790175E	
2		15m R MAJORITY Qz WITH LIMONITE, E-W ORIENTATED. ~~6704480N~~ 6704480N 790130E	
3		15m RADIUS, Qzite / SILTSTONE, SOME LAS, OXIDIZED SULPHIDE APPEARANCE, DOLOMITIC SUSPECT. ~~6704445~~ 6704445N 790055E	
4		10m R. MOSTLY Qz E-W ORIENTATE, LIMONITE VEINING SOME LAS THRU QZITE SANDSTONE 6704405N 790230E	
5		10m RADIUS MOSTLY Qz E-W TREND THRU Qzite, SOME LAS. 6704505N 790220E	
6		10m R N-S TRENDING SILTSTONE (DOLOMITIC?) WITH LAS, EXCELLENT QUALITY. 6704420N 790285E	
7		15m R, BRECCIA / SANDSTONE V/minor LAS? + MANGANESE. 6704305N 790265E	
8		15m R, SAND-S + Qz THRU Qzite WITH LAS, EX QUALITY 6704325N 790405E	
9		10m R MOSTLY FROM N-S TREND SILT/S? WITH LAS DOLOMITIC. 6704310N 790335E	
733100		5m R DOLOMITIC CONGLOMERATE MINOR LIMONITE. 6704240N 790340E	

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- R = rock chip sample
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PINK – RETAIN

NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

Carpentaria Exploration Company Pty. Ltd.

SAMPLE LEDGER

00038

SAMPLER'S INITIALS: D.K DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS	STORE REF.
		WITCHELINA 208BS SHEET (1)	
733101	R.	5m R SANDSTONE/BRECHIA DOLOMITE WITH LIMONITE. 6704255N 790415E	
2		10m R BRECHIA/SAND-S WITH LIMONITE MINOR LAS, CU STAINING. 6704255N 790475E	
3		10m R MINOR E-W QZ VEINS WITH LIMONITE THRU QZITE, DOLOMITE 6704150N 790470E	
4		10m R QZITE, SANDSTONE WITH MANGANESE BLACK SPINEL TERTIARY 6704065N 790445E	
5		10m R E-W QZ VEINS WITH LIMONITE CLOSE TO TAPLEYS 6704175N 790565E	
6		10m R SANDSTONE QZITE WITH MINOR LAS 6704065N 790625E	
7		10m R N-S SHEARED SILTS + BRECHIA V/MINOR LAS 6703885N 790735E	
8		" " " 6704045N 790680E	
9		10m R MOSTLY E-W ORIENTATE QZ VEIN WITH LIMONITE DOLOMITE 6703985N 790730E	
10		10m R NUGGY TYPE OF CONGLOMERATE, MINOR LIMONITE 6703945N 790655E	
1		10m R E-W QZ VEIN WITH LAS THRU QZITE FORMATION. 6703615N 790675E	
2		10m R MOSTLY E-W QZ VEINS WITH SOME CU STAINING (MALACHITE) 6703540N 790825E	
3		10m R E-W QZ VEINS WITH LIMONITE THRU QZITE 6703795N 790865E	
4		" " " " " 6703650N ~~790865E~~ 790955E	
5		5m R QZ VEIN WITH LIMONITE SIDE OF CREEK 6703560N 791015E	
6		10m R LARGE E-W QZ VEIN WITH LAS MINOR CU STAIN. 6703370N 791055E	
7		10m R SANDSTONE/BRECHIA WITH MANGANESE?? 6703445N 790890E	
8		10m R QZITE + N-S SILTSTONE V/MINOR LAS 6703175N 791095E	
9		10m R GOSSAN FROM TAPLEYS?? 6703320N 791145E	
733120		10m R 10m R N-S SILTSTONE V/MINOR LAS OXIDIZED SULPHIDES. 6703220N 791000E	

SAMPLE TYPE CODE:

DD	=	diamond drillcore
PD	=	percussion/rotary cuttings
RAB	=	rotary airblast cuttings
	=	other drilling samples (specify)
S	=	soil sample
SS	=	stream sediment sample
R	=	rock chip sample
P	=	petrological sample
	=	other (specify)

WHITE – REGIONAL BASE
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PINK – RETAIN

NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

Carpentaria Exploration Company Pty. Ltd.

00039

SAMPLE LEDGER

SAMPLER'S INITIALS: D.K. DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS	STORE REF.
		WITCHELINA 208 BS SHEET (1)	
733121	R	5m R CONGLOMERATE/BRECHIA LIMONITE DOLOMITIC 6702960N 791160E	
2		10m R, Qzite CONGLOMERATE SILTS + Qz WITH LAS. 6703060N 791105E	
3		10m R E-W SILTSTONE (TAPLEYS) LAS OXIDIZED SULPHIDES. 6703050N 790990E	
4		5m R Qzite SAND-S WITH MINOR LIMONITE + C-STAINING 6702920N 791185E	NEAR OLD PIT.
5		5m R E-W TREND SAND-S WITH LAS. 6702895N 790960E	
6		5m R Qzite SAND-S WITH Qz MINOR LIMONITE DOLOMITIC. 6702925N 790810E	
7		Qz THRU Qzite + SAND-S WITH LAS 5m R 6702925N 790710E	
8		10m R, Qz WITH MINOR LIMONITE DOLOMITIC POOR QUALITY 6702960N 790575E	
9		10m R Qz WITH LIMONITE THRU SILICIFIED TAPLEYS 6702870N 790465E	
30		10m R GOSSAN FLOAT FROM BOTTOM OF BREADEN HILL. 6702655N 790725E	
1		10m R, SILICIFIED TAPLEYS WITH LAS Cu STAINING. 6702675N 790475E	
2		" " " DOLOMITIC. 6702640N 790325E	
3		10m R Qzite/SILTSTONE SILICIFIED, V/MINOR LAS. 6702700N 790315E	
4		10m R Qzite/SANDSTONE, V/MINOR LAS. 6702525N 790330E	
5		10m R GOSSAN FLOAT FROM BOTTOM OF BREADEN HILL. 6702490N 790650E	(DISPATCH 73307)
6		10m R, GOSSAN FROM TAPLEYS. 6702390N 790370E	
7		10m R, Qz + Qzite WITH MINOR LAS CONTACT WITH TAPLEYS 6702425N 790220E	
* SHEET (2) 8		10m R, MINOR Qz VEINING INTO TAPLEYS + LAS FRESH WHITISH SULPHIDE EVIDENT. 6702345N 790165E	
9		5m R Qz VEIN WITH MINOR LAS. DOLOMITIC. 6702320N 790070E	
733140		10m R SANDSTONE? LAS, WHITISH SULPHIDE EVIDEN (AS) 6702195N 790045E	

SAMPLE TYPE CODE:

DD	=	diamond drillcore
PD	=	percussion/rotary cuttings
RAB	=	rotary airblast cuttings
	=	other drilling samples (specify)
S	=	soil sample
SS	=	stream sediment sample
R	=	rock chip sample
P	=	petrological sample
	=	other (specify)

WHITE - REGIONAL BASE
YELLOW - BRISBANE
PINK - RETAIN

NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

Carpentaria Exploration Company Pty. Ltd.

SAMPLE LEDGER

SAMPLER'S INITIALS: D.K. DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS WITCHELLINA 208BS SHEET (2)	STORE REF.
733141	R.	10mR. GOSSAN FLOAT. 6702090N 790120E	
2		10mR. Qz VEIN WITH MINOR LIMONITE DOLOMITIC 6702025N 790185E	
3		5mR, Qz/Qzite/SANDS, MINOR LAS NEAR OLD Cu PIT. 6701980N 790065E	
4		5mR, DOLOMITIC SANDS, V/MINOR LAS, EXTENSIVE Cu STAIN & CARBONATE. 6701790N 790135E	
5		5mR, FRACTURED Qzite WITH Qz THRU, MINOR LAS. 6701785N 790200E	
6		5mR, DOLOMITIZED SHALE & SANDS WITH LAS, V/MINOR Cu STAIN 6701525N 789965E	
7		5mR, Qzite WITH IRREGULAR Qz VEINING, MINOR LAS. 6701540N 790065E	
8		" " " " " 6701430N 790075E	
9		" " + Cu STAIN + FRESH SULPHIDES. 6701265N 790020E	
50		5mR, Qzite/SANDS WITH Qz VEINING, PYRITIC LIMONITE + Cu STAINING. 6701230N 789920E	
1		5mR, BRECHIA, Qzite WITH IRREGULAR Qz VEINING + LAS. 6701060N 789930E	
2		5mR, GOSSAN FROM TAPLEYS, DOLOMITIC??. 6700910N 790010E	
3		10mR, GOSSAN FLOAT. 6700540N 789995E	
4		10mR, E-W Qz VEINS, DOLOMITIC, MINOR LAS, V/MINOR Cu STAINING 6700435N 789980E	
5		10mR, SMALL PIECES OF GOSSAN FLOAT FROM TAPLEYS. 6700350N 790075E	
6		10mR, GOSSAN FLOAT FROM T's 6701490N 790135E	
7		" " " " " 6701595N 790190E	
8		" " " " DOLOMITIC? 6701690N 790240E	
9		10mR, GOSSAN FROM TAPLEYS. 6700460N 790045E	
733160		10mR, DOLOMITIC Qz VEIN WITH LAS THRU TAPLEYS? 6699965N 790140E	

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- P = petrological sample
- = other (specify)

WHITE – REGIONAL BASE
YELLOW – BRISBANE
PINK – RETAIN

NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

Carpentaria Exploration Company Pty. Ltd. 00041

SAMPLE LEDGER

SAMPLER'S INITIALS: D. K. DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS WITCHELINA 208BS SHEET (2)	STORE REF.
733161	R	10m R GOSSAN TYPE MATERIAL FROM T'S, DOLOMITIC. 6699940N 790190E	
2		" " " " " 6699865N 790235E	
3		10m R, GOSSAN FLOAT 6699995N 790230E	
4		" " " 6699860N 790355E	
5		10m R, LAS THRU TAPLEYS, LIMONITE THRU BRECHIA 6699715N 790320E	
6		10m R, GOSSAN FLOAT ~~6699815N~~ 6699750N 790450E	
7		10m R, Qzite, MAYBE + OXIDIZED SULPHIDE APPARENT, MINOR LIMONITE. 6699590N 790465E	
8		5m R, GOSSAN TYPE MATERIAL FROM T'S 6699615N 790520E	
9		5m R, FRACTURED Qzite WITH Qz SHOT THRU, V/MINOR LAS. 6699335N 790545E	
70		10m R, GOSSAN FLOAT FROM TAPLEYS? 6699030N 790800E	
1		" " " " 6699125N ~~790785E~~ 790795E	
2		" " " " 6699215N ~~790785E~~ 790770E	
3		5m R, DOLOMITIC BRECHIA, MINOR Qz VEINING WITH V/MINOR LAS. 6698345N 791005E	
4		5m R, GOSSAN FROM TAPLEYS. 6698245N 791035E	
5		10m R. " " " 6698150N 791010E	
6		" " " " DOLOMITIC 6698205N 790820E	
7		10m R, GOSSAN FLOAT FROM T'S ?? 6698300N 790765E	
8		5m R, DOLOMITIC BRECHIA, Qz VEINING MINOR LAS + FRESH GRANO?? W Qzite 6698425N 790800E	
9		10m R GOSSAN FLOAT 6698590N 790815E	
733180		* WITCHELINA SAMPLE FROM P.B. GOSSAN *.	

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- R = rock chip sample
- P = petrological sample
- = other (specify)

WHITE – REGIONAL BASE
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PINK – RETAIN

NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

Carpentaria Exploration Company Pty. Ltd.

SAMPLE LEDGER

00042

SAMPLER'S INITIALS: D.K DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS	STORE REF.
		WITCHZLINA 208BS SHEET (2)	
733181	R	5mR DOLOMITIC CONGLOMERATE WITH MINOR LAS, NEAR MINOR Cu PIT. 6698250N, 790980E,	
2		10mR, Ozite WITH BOX WORK LIMONITE + PEACOCK ORE APPEARANCE FRESH CHALCO EVIDENT. 6698210N, 790930E,	
3		10mR, GOSSAN FLOAT. 6698430N, 790930E	
4		10mR, GOSSAN FROM TAPLEYS 6698350N, 790610E,	
5		10mR, GOSSAN TYPE MATERIAL FROM TAPLEYS. 6698290N, 790650E,	
6		10mR, GOSSAN FLOAT 6698180N, 790630E,	
7		" " " 6698065N 790620E,	
8		10mR, GOSSAN TYPE MATERIAL FROM TAPLEYS. 6697810N, 790600E,	
733189		10mR GOSSAN FROM TAPLEYS. 6697555N 790620E	DISPAC (733178)
~~0~~			
1			
2			
3			
4			
5			
6			
7			
8			
9			
0			

SAMPLE TYPE CODE:
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WHITE - REGIONAL BASE
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PINK - RETAIN

NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

Carpentaria Exploration Company Pty. Ltd.

SAMPLE LEDGER

SAMPLER'S INITIALS: D.K DATE: APRIL 92

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS WITCHELINA 208 BS	STORE REF.
1			
2			
3			
4			
5			
6			
7			
8			
9			
733190	R	10 METERS KADIAYS, GOSSAN FLOAT, SOME Qz + LIMONITE	SHELF =
1		" " " " " " " 6702365N, 787110E	SHELF ↓
Au ASSAYS ↓ 2		Qz VEIN BRNG 352°M SAMPLED 40m → ALONG STRIKE 6701165N, 786185E	
3		Qz VEIN BRNG 326°M SOME LIMONITE AFTER Py, SAMPLED 45m ALONG 6701240N, 786170E	STRIKE
4		Qz VEIN AT 326°M 75m ALONG STRIKE, CROSS CUTTING VEINS AT ≈ 300°M. 6701300N, 786135E	
5		PARRALLEL Qz VEINS STRIKE ≈ 080°M, SAMPLED ACROSS STRIKE. 6701435N 786070E	
6		MAJOR Qz VEIN AT 274°M, AS Py? WHITISH FRESH SULPHIDES. 6701510N, 786040E	
7		Qz VEIN SAMPLED 25m ALONG STRIKE AT 274°M, FRESH Py + SOME MAGNETITE. 6701580N, 786035E	
8		TAKEN ACROSS STRIKE OF 3 MAJOR Qz VEINS, SOME LIMS + FRESH WHITISH SULPHIDES 6701690N, 785990E	
9		30m KADIAYS CROSS CUTTING Qz VEINS AT 270° + 004°M, MINOR LIMS, Py SOME MAGNETITE. 6701845N, 785915E	
733200		2 MAJOR Qz VEINS @ 350°M, MINOR CROSS CUT VEINS, MINOR LIMS + Py, MINOR FRESH Py 6701970N, 785870E	

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- R = rock chip sample
- P = petrological sample
- = other (specify)

WHITE – REGIONAL BASE
YELLOW – BRISBANE
PINK – RETAIN

NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

Carpentaria Exploration Company Pty. Ltd.

00044

SAMPLE LEDGER

SAMPLER'S INITIALS: D.K DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS	STORE REF.
		WITCHELINA 208BS	
733201	R	ACROSS STRIKE of SERIES of ~~QZ~~ VEINS, MINOR FRESH Py + LAS 6702055N, 785810E	
2		MAJOR Qz VEINS BRNG 346°M, MINOR CROSS CUTTING, V/MINOR SULPHIDES + LIMONITE. 6702225N, 785675E	
3		10m RADIUS, Qz WITH LIMONITE WITH V/MINOR BOX WORK TEXTURE 6701905N, 787040E	
4		FRACTURED SILICIFIED SHALE CROSS CUTTING Qz VEINS, MINOR LAS, BOX WORK + STAINING. 6702270N, 787200E	
5		10m RADIUS MINOR Qz VEIN WITH LAS Py? THRU SILICIFIED CARBONATE FMTN 6702110N, 786905E	
6		15m RADIUS, MINOR Qz VEINS WITH LIMONITE + CARB THRU FORMATION, SOME BOX WORK. 6701810N, ~~786905E~~, 786905E	
7		10m R, Qz VEINS WITH LIMONITE, THRU Qzite FORMATION, MINOR BOX WORK 6701780N, 786850E	
8		10m R MINOR FRESH SULPHIDES + SOME LAS 6701740N, 786790E	
9		10m R, " " " " " " 6701635N, 786765E	
10		Qz + FRACTURED Qzite WITH LIMONITE MINOR LAS + SOME FRESH Py + DOLOMITIC 6701515N, 786705E	
1		10m R MAJOR Qz VEIN, MINOR LAS + BOX WORK THRU Qzite, SOME CARBONATE. 6701435N, 786640E	
2		10m R Py GOSSAN TYPE MATERIAL FROM SHALE, SOME STRONGLY HARD TEXTURED AMPHIBOLS. ~~6701~~ 6701695N, 786575E	
3		10m R, GOSSAN TYPE MATERIAL FLOAT, SOME MAGNETITE. 6701390N, 786305E	
4		5m RADIUS, E-W MINOR Qz VEIN WITH LIMONITE V/MINOR BOX WORK 6701375N, 786625E	
5		10m R, Qz WITH LIMONITE VERY MINOR LAS THRU Qzite FORMATION 6701340N, 786620E	
6		10m R Qz WITH LIMONITE, V/MINOR LAS BOX WORK CARB + MANGANESE. 6701250N, 786605E	
7		10m R, 2 MINOR Qz VEINS WITH LIMONITE + SOME MANGANESE. 6700945N, 786545E	
8		10m RADIUS, LARGE Qz OUTCROP WITH VERY MINOR LIMONITE 6700890N, 786355E	
9		10m R, Qz WITH LIMONITE THRU FRACTURED + SILICIFIED GREYISH SHALE 6700710N, 786380E	
733220		10m R Qz WITH LIMONITE + CARBONATE, V/MINOR LAS. 6700575N, 786405E	

SAMPLE TYPE CODE:

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	=	other drilling samples (specify)
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P	=	petrological sample
	=	other (specify)

WHITE – REGIONAL BASE
YELLOW – BRISBANE
PINK – RETAIN

NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

Carpentaria Exploration Company Pty. Ltd.

SAMPLE LEDGER

00045

SAMPLER'S INITIALS: D.K DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS	STORE REF.
		WITCHELINA 208BS	
733221	R.	5m R, Qz + PALE FRACTURED SILICIFIED SHALE, FRESH Py, V/minor LAS, 6700680N, 786610E	
2		10m R, E-W Qz VEIN WITH LIMONITE V/minor BOX WORK, SOME CARB. 6700730N, 786695E	
3		5m R, FROM MAGNATITE VEIN ALONG STRIKE OF FORMATION 6701095N, 786515E	*Au
4		10m R, CROSS CUTTING MINOR Qz VEINS WITH LIMONITE + SOME CARB, MINOR BOX WORK 6700565N, 786160E	
5		10m R, FRACTURED Qzite, SHOT THRU WITH Qz + MODERATE AMOUNT OF MAGNATITE. 6700210N, 785830E	*Au
6		5m R, SHALE + SANDSTONE BRECHIA WITH LIMONITE, MINOR LAS SOME MANGANESE. 6709100N, 785855E	
7		10m R, Qz WITH LIMONITE + CARB CROSS CUTTING THRU SILTSTONE UNIT. 6700460N, 786170E	
8		10m R, Qzite SHOT THRU WITH Qz + MAGNATITE, V/minor LIMONITE. 6700035N, 785830E	Au ONLY
9		10m R, GOSSAN MATERIAL FROM SANDSTONE/SILTSTONE UNIT. ~~6700425~~ 6700415N, 786150E	
30		10m R, Qz VEIN WITH LIMONITE + MINOR LAS, SOME CARBONATE 6709480N, 786090E	
1		5m R, Qz + DOL WITH LIMONITE, MINOR CROSS CUTTING VEINS WITH LIMONITE 6700295N, 786060E	
2		" " " ~~786150E~~ " " 6700235N, 786130E	
3		10m R, Qz WITH MAGNATITE AND SPEC HEMATITE, THRU Qzite. 6669780N, 785895E	Au*
4		10m R, MINOR Qz VEIN WITH LIMONITE + CARB, V/minor BOX WORK. 6669765N, 785795E	
5		" " " " " " 6669730N, 785925E	
6		10m R, Qz WITH LIMONITE AND SOME CARBONATE 6669615N, 785975E	
7		10m R, Qz + LIMONITE, SOME V/minor BOX WORK, SOME SOOTY MANGANESE 6669500N, 785965E	
8		10m R, GOSSAN MATERIAL FROM BRECHIA, SOME BOX WORK TEXTURE 6669565N, 785945E	
9		10m R, Qz WITH LIMONITE, DOLOMITIZED AREA??, Cu STAIN, LAS SOME FRESH Py CHALCOCITE?? 6669605N, 785815E	
733210		10m ALONG STRIKE, Qz WITH LIMONITE ALONG STRIKE OF DOLOMITIZED FORMATION 6669545N, 785765E	

SAMPLE TYPE CODE:

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RAB	=	rotary airblast cuttings
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SS	=	stream sediment sample
R	=	rock chip sample
P	=	petrological sample
	=	other (specify)

WHITE – REGIONAL BASE
YELLOW – BRISBANE
PINK – RETAIN

NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

Carpentaria Exploration Company Pty. Ltd.

00046

SAMPLE LEDGER

SAMPLER'S INITIALS: DK DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS	STORE REF.
		WITCHELINA 208 BS.	
733241	R.	10m R, Qz with L, Silicified + Frac Formation with Limonite Vz with L. ~~6699[illegible]~~ 6699640N 785735E	
2		10m R Qz + Limonite some Carbonate, minor Las + Box Work 6699890N 785785E	
3		10m R Breccia with Qz + L some Box Wor + Las 6700150N 785755E	
4		10m R, Qz with Limonite some Carbonate, minor Las 6700510N 785785E	
5		10m Along Strike, Qz Vein with Limonite, Dolomitized Minor Las Area. 6700100N 786275E	
6		10m R, cross cut Qz Veins + Silicified Sstone with Limonite, some Box 6699895N 786380E	
7		10m R, Series of Qz Veins, Limonite, Las + B/work, minor Chalco Py, V/ minor Sty. 6699960N 786145E	
8		10m R, Series + Cut Qz Veins with Limonite some Soot, Manganese. 6699875N 786155E	
9		5m R, Qz Vein with Limonite + Carbonate. 6699730N 786250E	
733250		10m R cross Cut Qz Veins with Limonite, minor Carbonate 6699530N 786205E	
733251			
2		Ref Despatch No 733190.	
3			
4			
5			
6			
7			
8			
9			
~~733260~~			

SAMPLE TYPE CODE:
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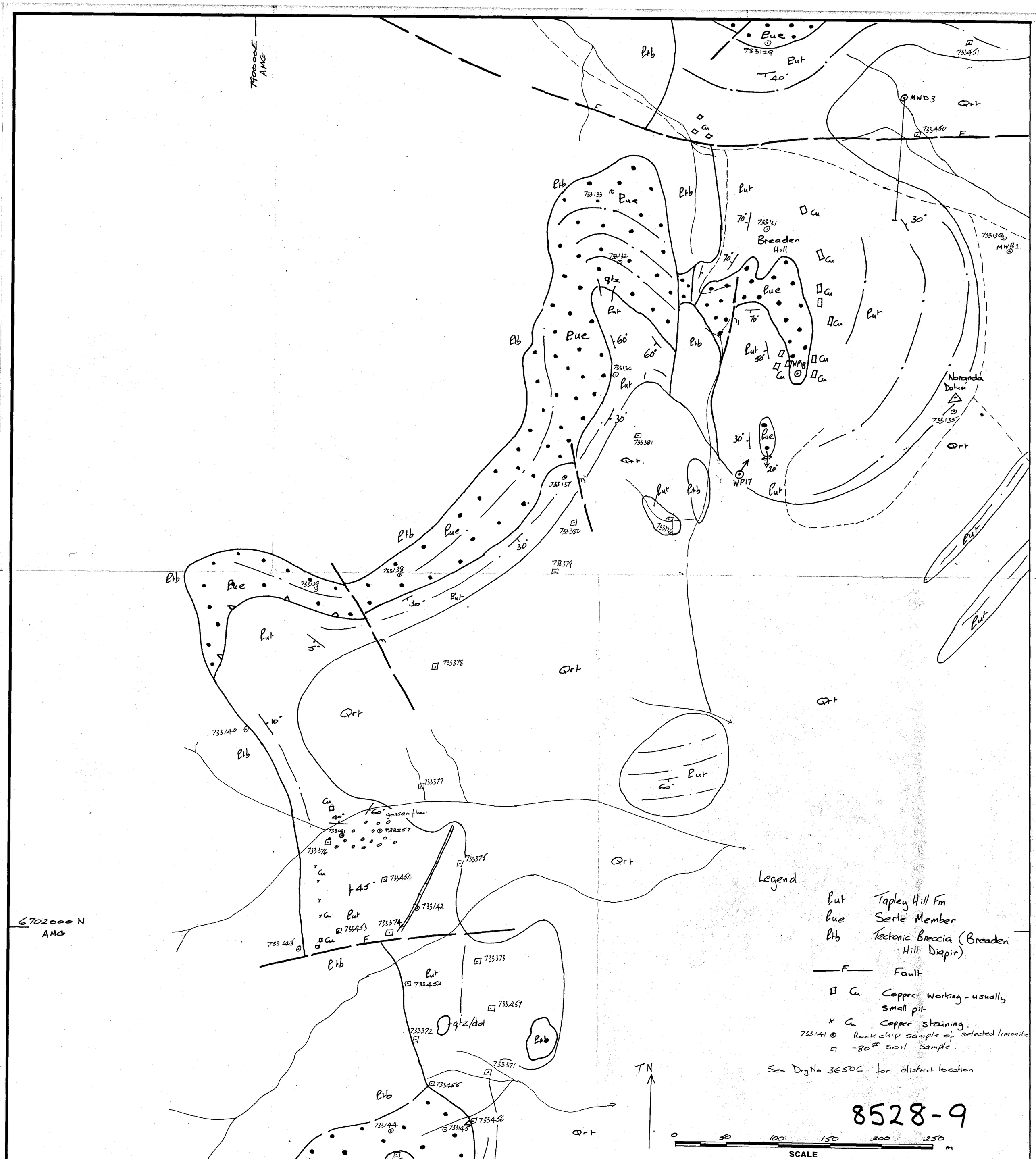
- P = petrological sample
- = other (specify)

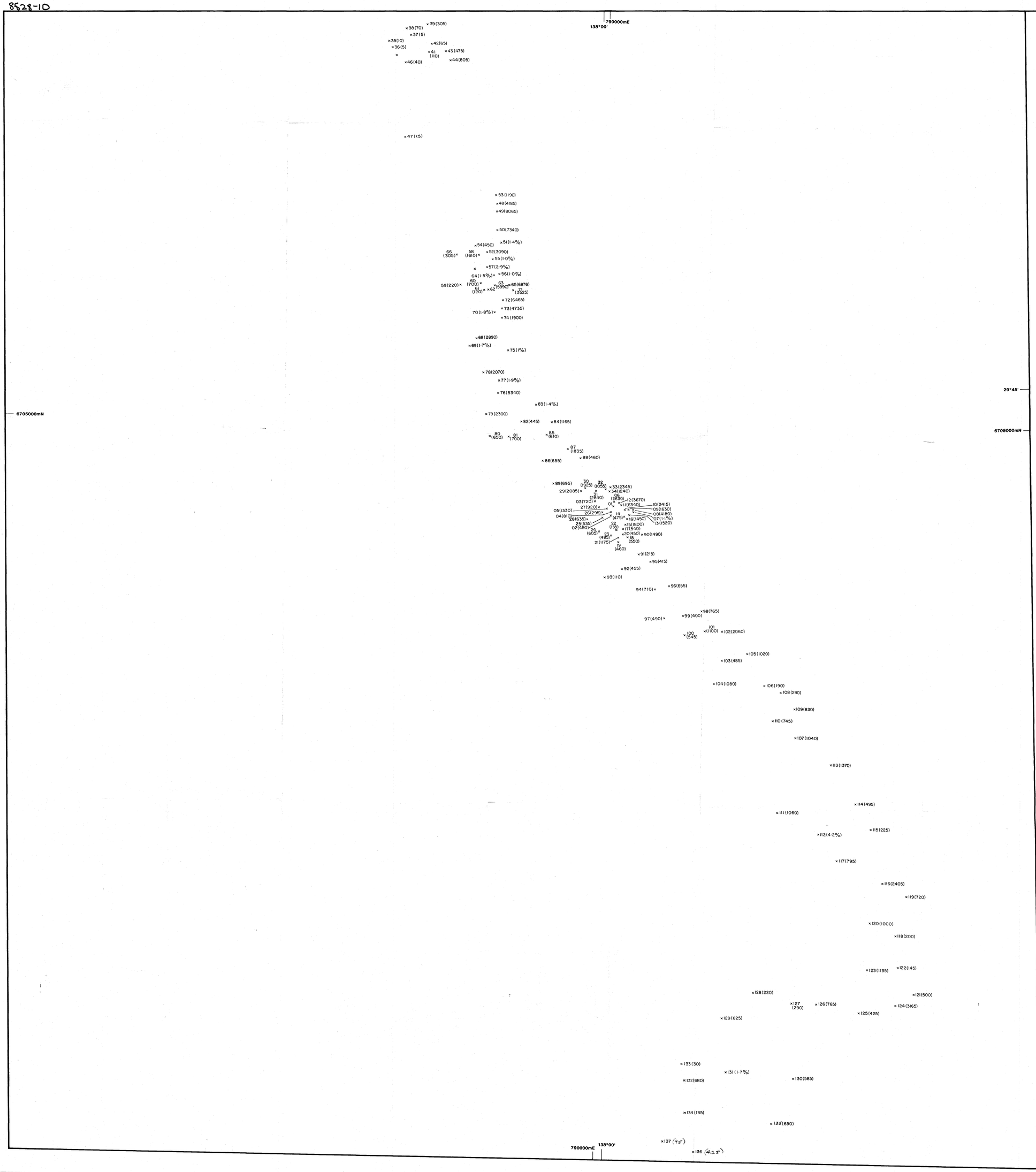
LG 670pcs

WHITE – REGIONAL BASE
YELLOW – BRISBANE
PINK – RETAIN

NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY


790000E AMG
6702000 N AMG
Breaden Hill
Noranda Datum
MWD3
MWB1
WP18
WP17
gossan float
qtz/dol
Legend
Put Tapley Hill Fm
Pue Serle Member
Ptb Tectonic Breccia (Breaden Hill Diapir)
F Fault
Cu Copper working - usually small pit
× Cu Copper staining.
733141 Rock chip sample of selected limonite
-80# soil sample.
See Drg No 36506 for district location
TN
0 50 100 150 200 250 m
SCALE
8528-9
REVISION
Aug. 92 MB
SCALE: 1:2500
GEO: PB
DATE: Sept 91
DRAFT: PB
DATE: July 92
1:250,000
1:100,000
M.I.M. EXPLORATION PTY. LTD.
Witchelina EL 1747
Geology Breaden Hill Area
MINING FIELD OR DISTRICT: Willouran Ranges SA.
DRG No.: 37278

8528-10



LEGEND

× 119 (720) Location of rock chip sample with sample number
Cu content in ppm unless shown as %.

Note: All samples are prefixed 733.... i.e. (733117)
All samples assayed for Co,Zn,Ag and Pb in addition to Cu.

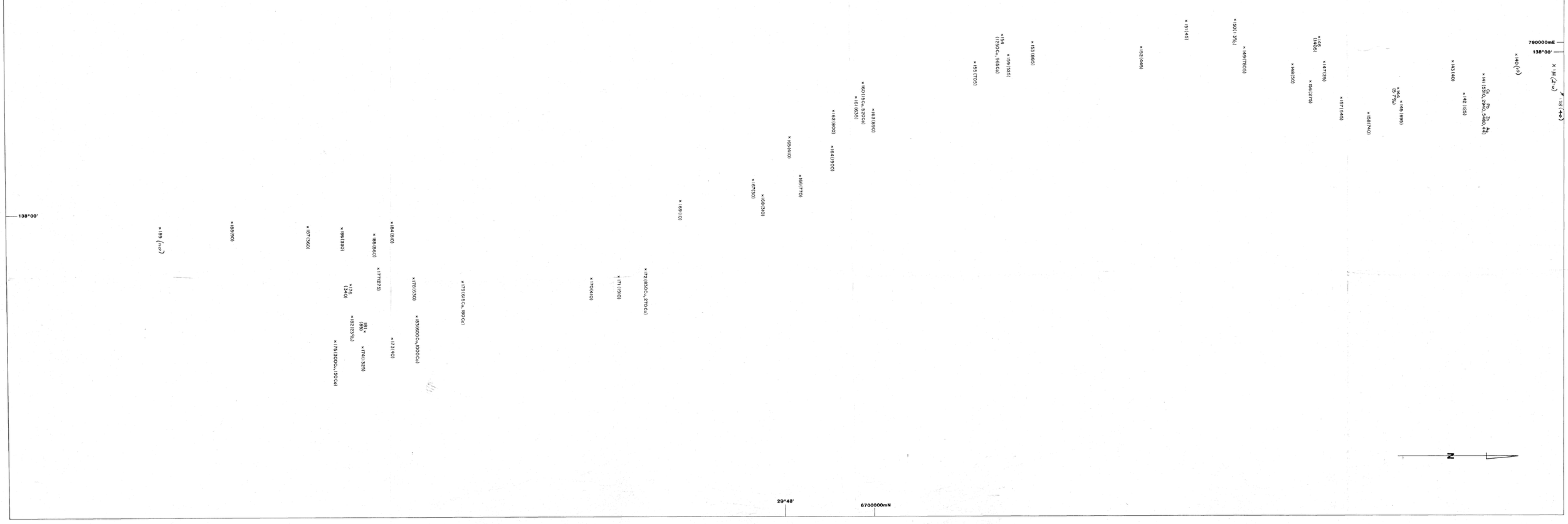
8528-10

0 100 200 300 400 500m
SCALE

Overlay to Drg. No. 36506

REVISION		SCALE: 1:5,000 (APPROX.)	M.I.M. EXPLORATION PTY. LTD.
		GEO: I.D.K.	WITCHELINA E.L.
		DATE: Mar.1992	LOCATION OF ROCK CHIP SAMPLES
		DRAFT: G.J.G.	AND COPPER RESULTS
		DATE: Mar.1992	SHEET 1
		1:250,000 / 1:100,000	
		MINING FIELD OR DISTRICT:	DRG No.: 37113

8528-11



LEGEND

× 149 (7605) — Location of rock chip sample with sample number; Cu content in ppm unless shown as %

Note: All samples are prefixed 733... i.e. 733149
All samples assayed for Co, Zn, Ag and Pb in addition to Cu.
A few samples have some results for these elements shown in ppm.

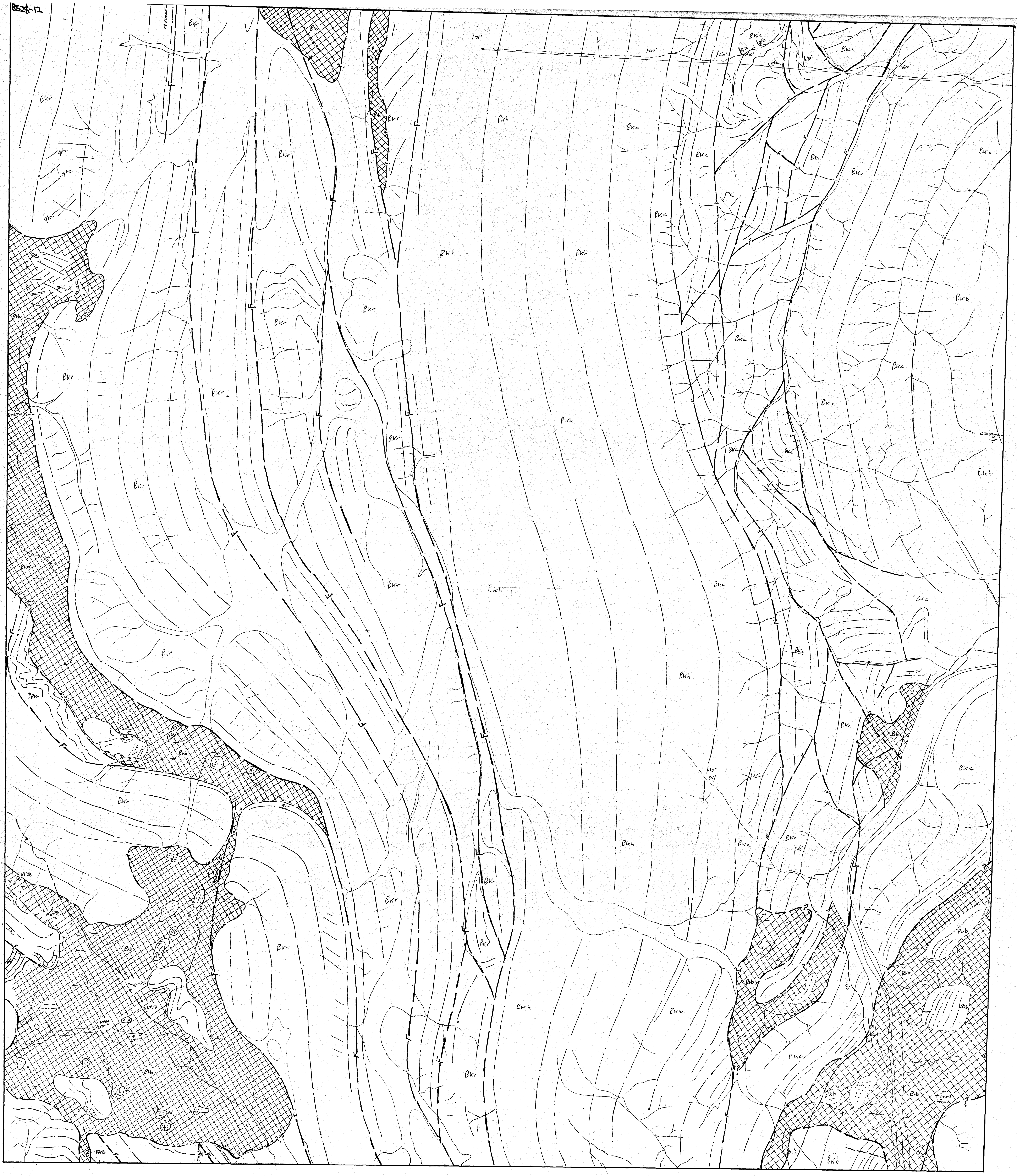
8528-11

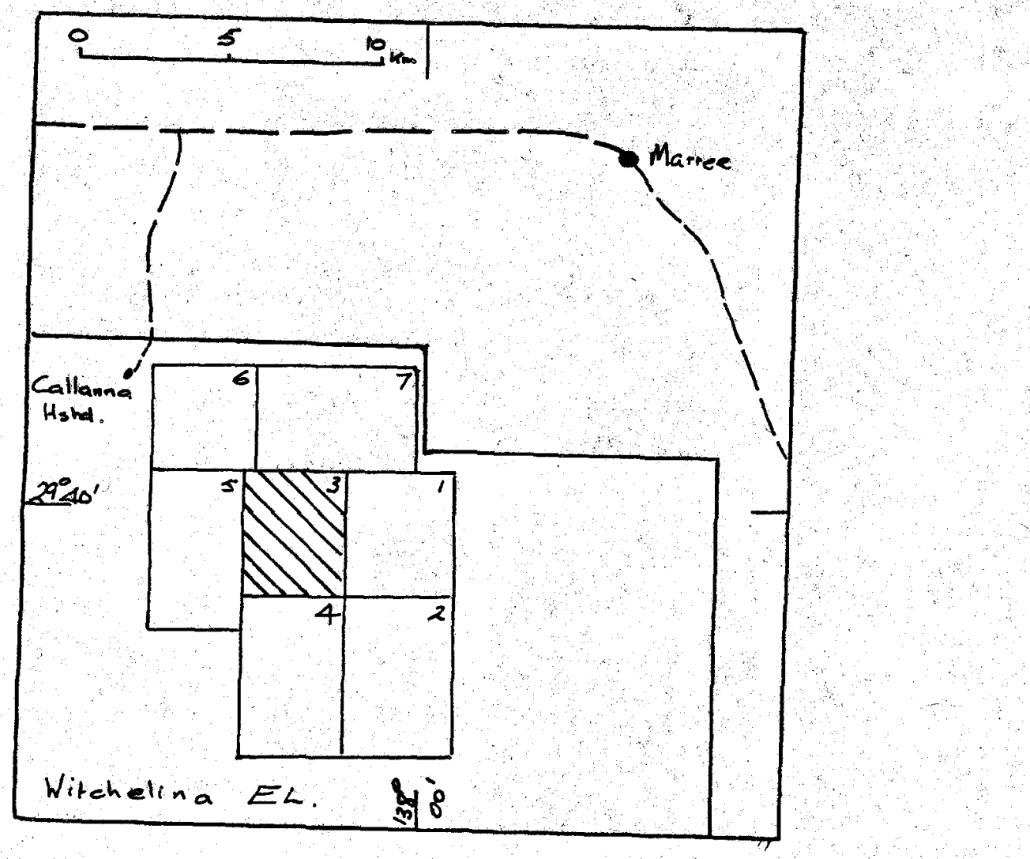
0 100 200 300 400 500m
SCALE

REVISION			
		SCALE: 1:5,000 (Approx.)	M.I.M. EXPLORATION PTY. LTD.
		GEO: I.D.K.	WITCHELINA EL
		DATE: April.1992	LOCATION OF ROCK CHIP
		DRAFT: G.J.G.	SAMPLES AND COPPER RESULTS
		DATE: April.1992	SHEET 2
		1:250,000	
		1:100,000	
		MINING FIELD OR DISTRICT: Willouran Ranges	DRG No.: 37137

Overlay to Drg.No.36591

8528-12



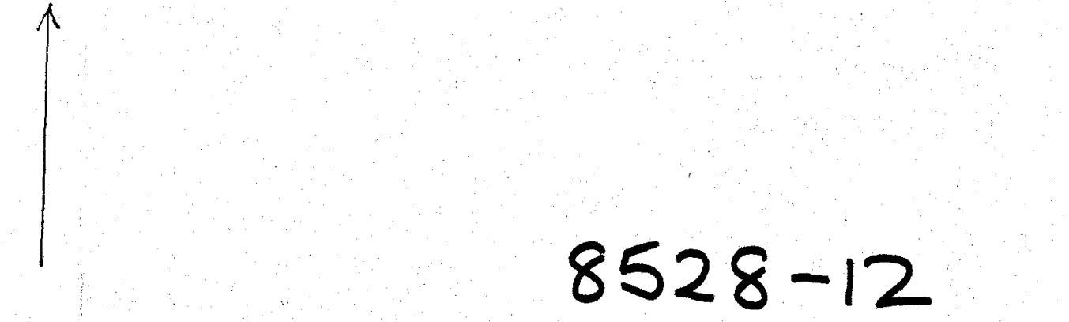


Legend

	Q	Alluvium, colluvium
	Qt	Talus, slope deposits.
Umberatana Gr	Ꝑfa	Amberoona Fm - green-grey siltstone, shale, Limestone with slump breccias
	Ꝑft	Tapley Hill Fm - dk grey, laminated siltstone with slump breccias
		Tindelpina Sh M. - black, finely laminated pyritic sh, + dol. sh.
	Ꝑue	? Serle M - sandstones, siltstones, conglomerates
	Ꝑuw	Willyerpa Fm - pebbly sst, qtzites, siltstone, diamictite
Burra Gr	Ꝑmk	Skillogalee Dol. - dk grey dol, qtzite, slst.
	Ꝑow	Witchelina Qtzite - flaggy feldspathic qtzite + slst.
	Ꝑoi	Willawalpa Fm - flaggy qtzite, slst + minor dol. Ꝑot - Top Mount SST - qtzite slst, dol.
Callanna Gr	Ꝑkb	Boorloo Slst - dk grey to black slst + dol with prominent dol. bands at top.
	Ꝑkc	Cooranna Fm - SSt, Slst, dol + Lst
	Ꝑkh	Hogan Dol - grey + brown dol. minor SSt + slst.
	Ꝑkr	Recovery Fm - flaggy qtzite, slst + minor carbonate
	Ꝑku	Dunns Mine Lst - grey, partly sandy, cherty Lst + SSt.
	Ꝑkk	Rook Tuff - flaggy tuffaceous grey sh, slst + qtzite with local dacite layer
	Ꝑkd	Dome SSt - qtzite with some hematite lamination
	Ꝑtb	Tectonic breccia, occasionally showing intrusive features (piecement structures).

Geological boundaries	——— observed	— — — inferred
Faults	F——— observed	—F— — inferred
Boundaries of tectonic breccias	——— observed	— — — inferred
Bedding	50° strike + dip	┼ vertical
		— — — trend of bedding
Foliation	30°	
Jointing	50°	
Sedimentary breccia	◁ ▽ ▽	
Tectonic breccia	× ×	
Sandstone, qtzite	∴	
Siltstone		
Carbonate (usually dol)		
Veins, usually qtz but frequently with dol + limonite. Wall rocks usually silicified + dold.	qtz, dol, lim	
Silicification	S	
Dolomitisation	D	
Australian Selection Trust grid pegs with co-ordinates in feet	△	

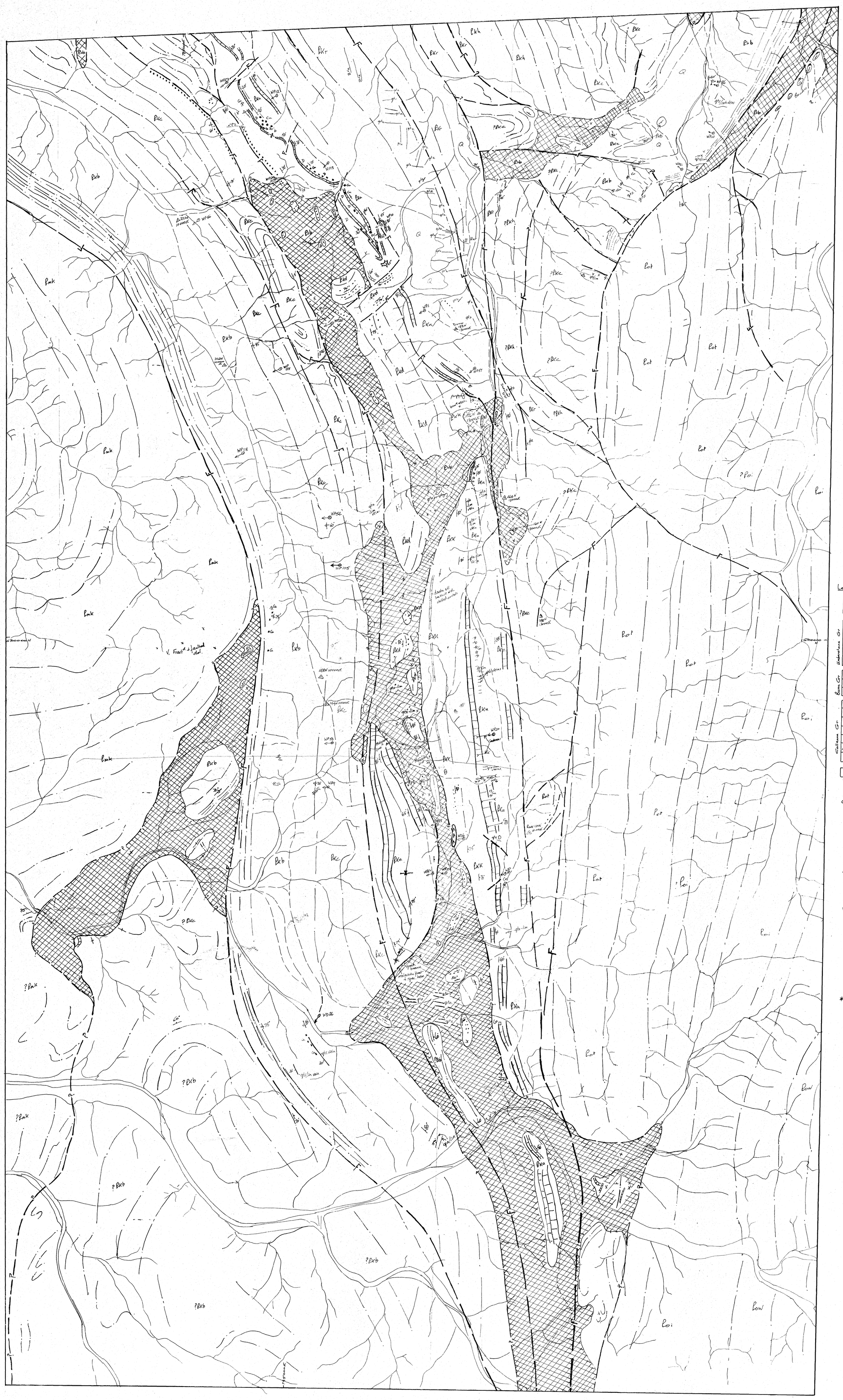
* This plan has been prepared from a colour photo-enlargement of Survey 3453 flown in June 1986. It has not been corrected for photo-distortion.



8528-12

REVISION			
	SCALE : Approx 1:5000	M.I.M. EXPLORATION PTY. LTD.	
	GEO : PB	"Witchelina" EL 1747.	
	DATE : March 92	Geological Plan North Dunn's district.	
	DRAFT : PB		
	DATE : March 92		
	1:250,000 SH53-8		
	1:100,000	Sheet 3	
	MINING FIELD OR DISTRICT : Willouran Ranges SA		DRG No. : 37129

8528-13



Legend

Q	Alluvium, colluvium
Qt	Talus, slope deposits.
Rja (Umberatana Gr)	Amberoona Fm - green-grey siltstone, shale, limestone with slump breccias
Rjt (Umberatana Gr)	Tapley Hill Fm - dk grey, laminated siltstone with slump breccias
Rue (Umberatana Gr)	Tindelpina Sh M. - black, finely laminated pyritic sh, + dol. sh.
Ruw (Umberatana Gr)	? Serle M - sandstones, siltstones, conglomerates
	Willyerpa Fm - pebbly SST, qtzites, siltstone, diamictite
Rmk (Burra Gr)	Skillogalee Dol. - dk grey dol, qtzite, slst.
Row (Burra Gr)	Witchelina Qtzite - flaggy feldspathic qtzite + slst.
Roi (Burra Gr)	Willowpa Fm - flaggy qtzite, slst + minor dol. Rot - Top Mount SSt - qtzite, slst, dol.
Rkb (Callanna Gr)	Beerloo Slst - dk grey to black slst + dol with prominent dol. bands at top.
Rkc (Callanna Gr)	Cooranna Fm - SSt, Slst, dol + Lst
Rkh (Callanna Gr)	Hogan Dol - grey + brown dol. minor SSt + slst.
Rkr (Callanna Gr)	Recovery Fm - flaggy qtzite, slst + minor carbonate
Rku (Callanna Gr)	Dunns Mine Lst - grey, partly sandy, cherty lst + SSt.
Rkk (Callanna Gr)	Rook Tuff - flaggy tuffaceous grey sh, slst + qtzite with local dacite layer
Rkd (Callanna Gr)	Dome SSt - qtzite with some hematite lamination
Rtb	Tectonic breccia, occasionally showing intrusive features (pressement structures)

Geological boundaries — observed — — — inferred
Faults — observed — — inferred
Boundaries of tectonic breccias — observed — — — inferred
Bedding — 50° strike + dip — vertical — trend of bedding
Foliation
Jointing
Sedimentary breccia
Tectonic breccia
Sandstone, qtzite
Siltstone
Carbonate (usually dol)
Veins, usually qtz but frequently with dol + limonite. Wall rocks usually silicified + dol^d. — qtz, dol, lim
Silicification S
Dolomitisation D
Dolerite, gabbro
Australian Selection Trust grid pegs with co-ordinates △ in feet

* This plan has been prepared from a colour photo-enlargement of Survey 3453 flown in June 1986. It has not been corrected for photo-distortion

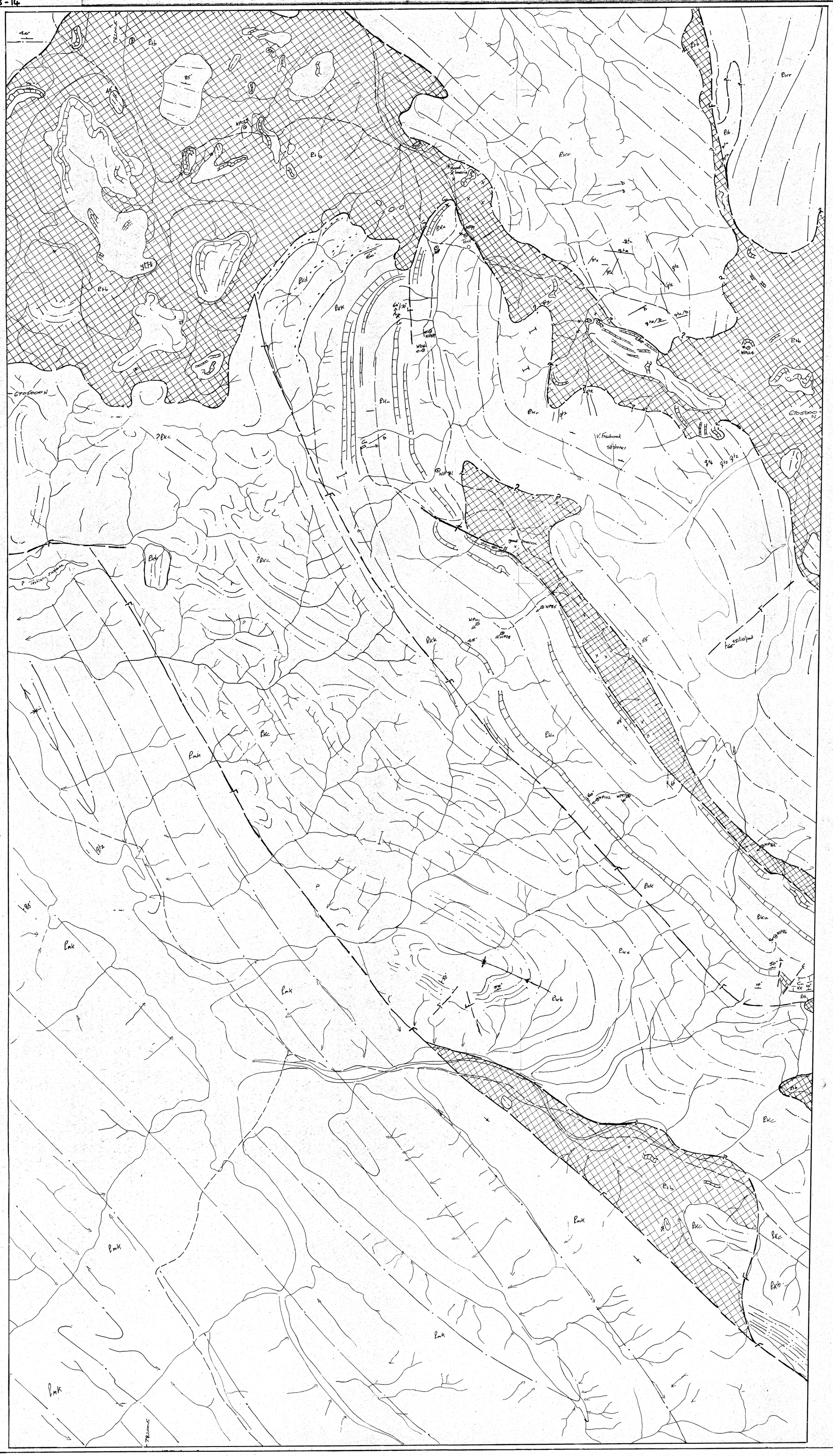
N

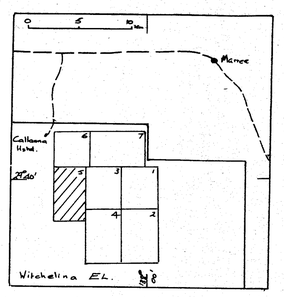
0 100 200 300 400 500 m
SCALE

8528-13

REVISION		SCALE: 1:5000	M.I.M. EXPLORATION PTY. LTD.
		GEO: PB	Witchelina EL 1747
		DATE: Nov 91	Geological Plan Rook's District.
		DRAFT: PB	Sheet 4
		DATE: April 92	
		1:250,000 SH 53-8	
		1:100,000	
		MINING FIELD OR DISTRICT: Willouran Ranges SA	DRG No.: 37132

8528-14





Legend

Q	Alluvium, colluvium
Qt	Talus, slope deposits.
Ufa	Amberoona Fm - green-grey siltstone, shale, Limestone with slump breccias
Ufp	Tapley Hill Fm - dk grey, laminated siltstone with slump breccias
Ubc	Tindelpina Sh M. - black, finely laminated pyritic sh, + dol sh
Ubw	? Serle M - sandstones, siltstones, conglomerates
	Willyerpa Fm - pebbly SSt, qtzite, siltstone, diamictite
Rmk	Skillogalee Dol. - dk grey dol, qtzite, slst.
Rmw	Witchelina Qtzite - flaggy feldspathic qtzite + slst
Rmi	Willowlpa Fm - flaggy qtzite, slst + minor dol. Rmt - Top Mount SSt - qtzite, slst, dol.
Rkb	Beerloo Slst - dk grey to black slst + dol with prominent dol. bands at top
Rkc	Cooranna Fm - SSt, Slst, dol + Lst
Rkh	Hogan Dol - grey + brown dol. minor SSt + slst.
Rkr	Recovery Fm - flaggy qtzite, slst + minor carbonate
Rku	Duns Mine Lst - grey, partly sandy, shelly Lst + SSt.
Rkk A	Rook Tuff - flaggy tuffaceous grey sh, slst + qtzite with local dacite layer
Rkd	Dome SSt - qtzite with some hematite lamination
Rtb	Tectonic breccia, occasionally showing intrusive features (piecement structures).

Geological boundaries — observed — — — inferred
Faults — observed — — — inferred
Boundaries of tectonic breccias — observed — — — inferred
Bedding — 50° strike + dip — vertical
— — — trend of bedding
Foliation
Jointing
Sedimentary breccia
Tectonic breccia
Sandstone, qtzite
Siltstone
Dolomite, gabbro
Carbonate (usually dol)
Veins, usually qtz but frequently with dol + limonite. Wall rocks usually silicified + dol^{d}. — qtz, dol, lim
Silicification S
Dolomitisation D
Australian Selection Trust grid pegs with co-ordinates in feet

* This plan has been prepared from a colour photo-enlargement of Survey 3453 flown in June 1986. It has not been corrected for photo-distortion.

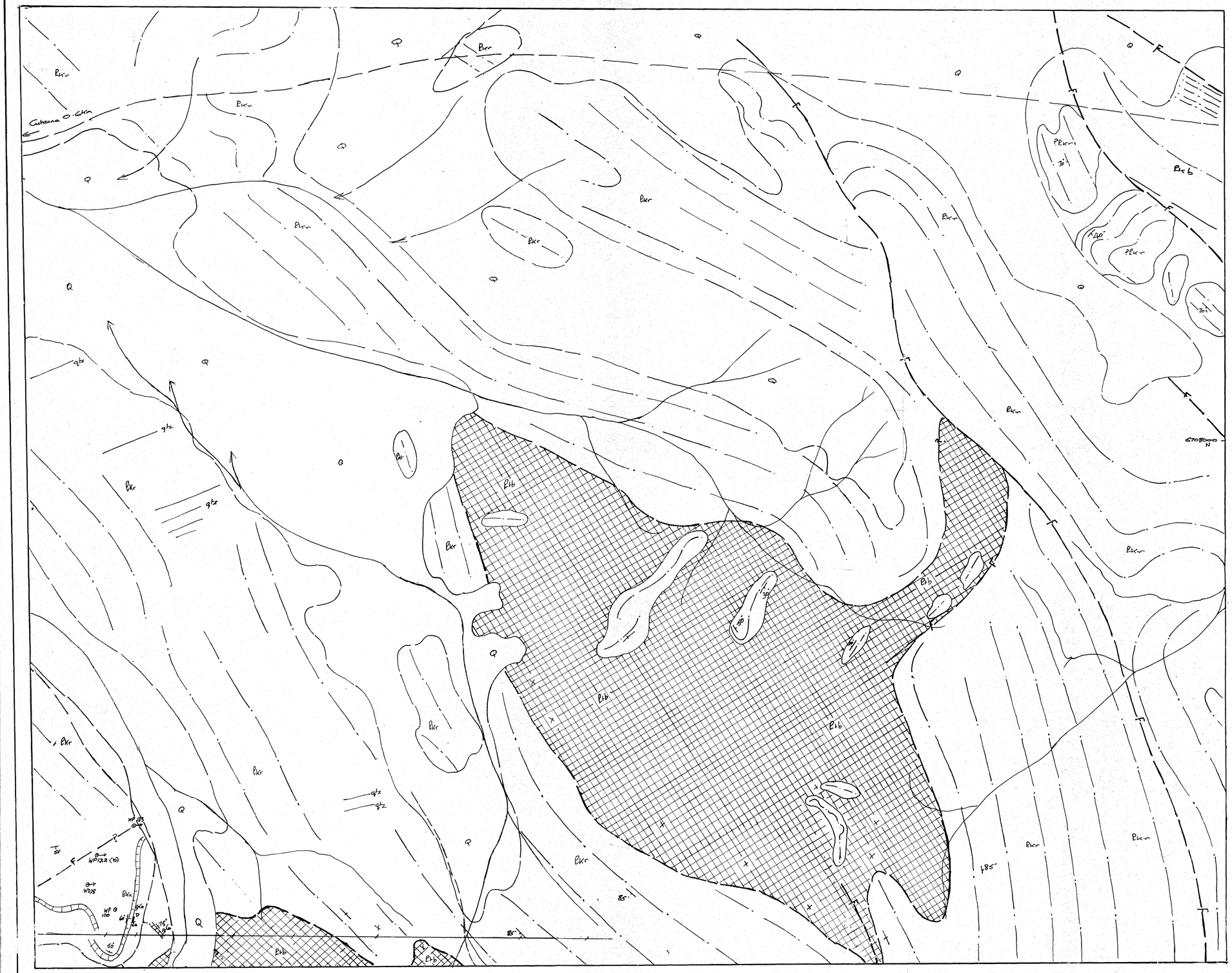
N

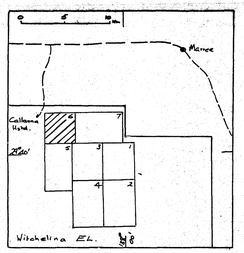
8528-14

0 — 500 m
SCALE

REVISION		SCALE: ~1:5000	M.I.M. EXPLORATION PTY. LTD.
		GEO: PB	EL 1747 "Witchelina" Geological Plan "Dunn's West" Sh. 5.
		DATE: March '92	
		DRAFT: PB	
		DATE: May '92	
		1:250,000	
		1:100,000	
		MINING FIELD OR DISTRICT: Willouran Ranges. SA.	DRG No.: 37189

8528-15





Legend

	Q	Alluvium, colluvium
	Qt	Talus, slope deposits.
Willouran Gp	Pja	Amberoona Fm – green-grey siltstone, shale, limestone with slump breccias
	Pjt	Tapley Hill Fm – dk grey, laminated siltstone with slump breccias
	—	Tindelpina Sh. M. – black, finely laminated pyritic sh, + dol. sh.
	Pwe	? Seele M – sandstones, siltstones, conglomerates
	Pww	Willyerpa Fm – pebbly ss, qzite, siltstone, diamictite
Burra Gp	Pmk	Skillogalee Dol. – dk grey dol, qzite, slst.
	Pmw	Witchelina Granite – flaggy feldspathic qzite + slst
	Pmi	Willouvolpa Fm – flaggy qzite, slt + minor dol. Pmt – Top Manee SSt – qzite, slst, dol.
Callanna Gp	Pbb	Beerloo Slst – dk grey to black slst + dol with prominent dol. bands at top.
	Pbc	Cowranna Fm – SSt, Slst, dol + slt
	Pbh	Horgan Dol – grey + brown dol. minor SSt + slst.
	Pbr	Reservoir Fm – flaggy qzite, slst + minor carbonate
	Pbu	Dunns Mine Lst – grey, partly sandy, shaly Lst + SSt.
	Pbtu, Pbtu A	Rook Tuff – flaggy tuffaceous grey sh, slst + qzite with lenticular dacite layer
	Pbd	Dams SSt – qzite with some hematite lamination
	Pb	Tectonic breccia, occasionally showing intra-c's features (pavement structures).

Geological boundaries — observed — — — inferred
Faults F — observed — F — inferred
Boundaries of tectonic breccias — observed — — — inferred
Bedding 50 strike + dip ⊥ vertical
— — — trend of bedding
Foliation 50
Jointing 50
Sedimentary breccia
Tectonic breccia × ×
Sandstone, qzite
Siltstone
Dolerite, gabbro or
Carbonate (usually dol)
Veins, usually qtz but frequently with dol + limonite. Wall rocks usually silicified + dol'd. qtz, dol, lim
Silicification S
Dolomitisation D
Australian Selection Trust grid pegs with co-ordinates in feet △

* This plan has been prepared from a colour photo-enlargement of Survey 3453 flown in June 1986. It has not been corrected for photo-distortion.

8528-15

0 500 m
SCALE

N

REVISION		SCALE: ~1:5000	M.I.M. EXPLORATION PTY. LTD.
		GEO: PB	EL 1747 "Witchelina"
		DATE: March 92	Geological Plan Callanna Area.
		DRAFT: PB	Sh. 6.
		DATE: April 92	
		1:250,000	
		1:100,000	
		MINING FIELD OR DISTRICT: Willouran Ranges SA	DRG No.: 37181

8528-16

For detailed geology of this area see Small Geological Pavement Sketch by B. Forbes QGN. SADME 109

Manee

Callanna East

Witchelina EL. 1747

Legend

Q	Alluvium, colluvium
Qt	Talus, slope deposits.
Undoolya Gp	
Efa	Amberoona Fm – green, grey siltstone, shale, limestone with slump breccias
Efb	Tapley Hill Fm – dk grey, laminated siltstone with slump breccias
Eua	Tindelpina Sh M. – black, finely laminated pyritic slt, + dol, sh.
Euw	? Scotia M – sandstones, siltstones, conglomerates
	Willyerpa Fm – pebbly SSt, qzite, siltstone, ultramafitic
Burra Gp	
Bmk	Stillwater Dol. – dk grey dol, qzite, slst.
Bmw	Witchelina Qzite – flaggy feldspathic qzite + slst.
Bwi	Willowalpa Fm – flaggy qzite, slst + minor dol. Bwi – Top Mount SSt – qzite, slst, dol.
Callanna Gp	
Bwb	Boorthea Slst – dk grey to black slst + dol with prominent dol. bands at top.
Bwc	Cowlanna Fm – SSt, Slst, dol + slst
Bwh	Hogan Dol – grey + brown dol, minor SSt + slst.
Bwr	Rawiriny Fm – flaggy qzite, slst + minor carbonate
Bwu	Burnus Mine Lst – grey, partly sandy, cherty lst + sst.
Bwk	Roach Tuff – flaggy tuffaceous grey sh, slst + qzite with local dacite layer
Bwd	Dome SSt – qzite with some hematite lamination
Bxb	Tectonic breccia, occasionally showing intrusive features (pavement structures).

Geological boundaries — observed — — — inferred
Faults — observed — inferred
Boundaries of tectonic breccias — observed — — — inferred
Bedding — strike + dip — vertical
— — — — trend of bedding
Foliation
Jointing
Sedimentary breccia
Tectonic breccia
Sandstone, qzite — Dolerite, gabbro
Siltstone
Carbonate (usually dol)

Veins, usually qtz but frequently with dol + limonite — qtz, dol, lim
Wall rocks usually silicified + dol^d.
Silicification S
Dolomitization D
Australian Selection Trust grid pegs with co-ordinates in feet

* This plan has been prepared from a colour photo-enlargement of Survey 3453 flown in June 1986. It has not been corrected for photo-distortion.

N

8528-16

SCALE

REVISION		
		SCALE: 1:5000
		GEO: PB
		DATE: March '92
		DRAFT: PB
		DATE: April '92
		1:250,000
		1:100,000

M.I.M. EXPLORATION PTY. LTD.

EL 1747 "Witchelina"

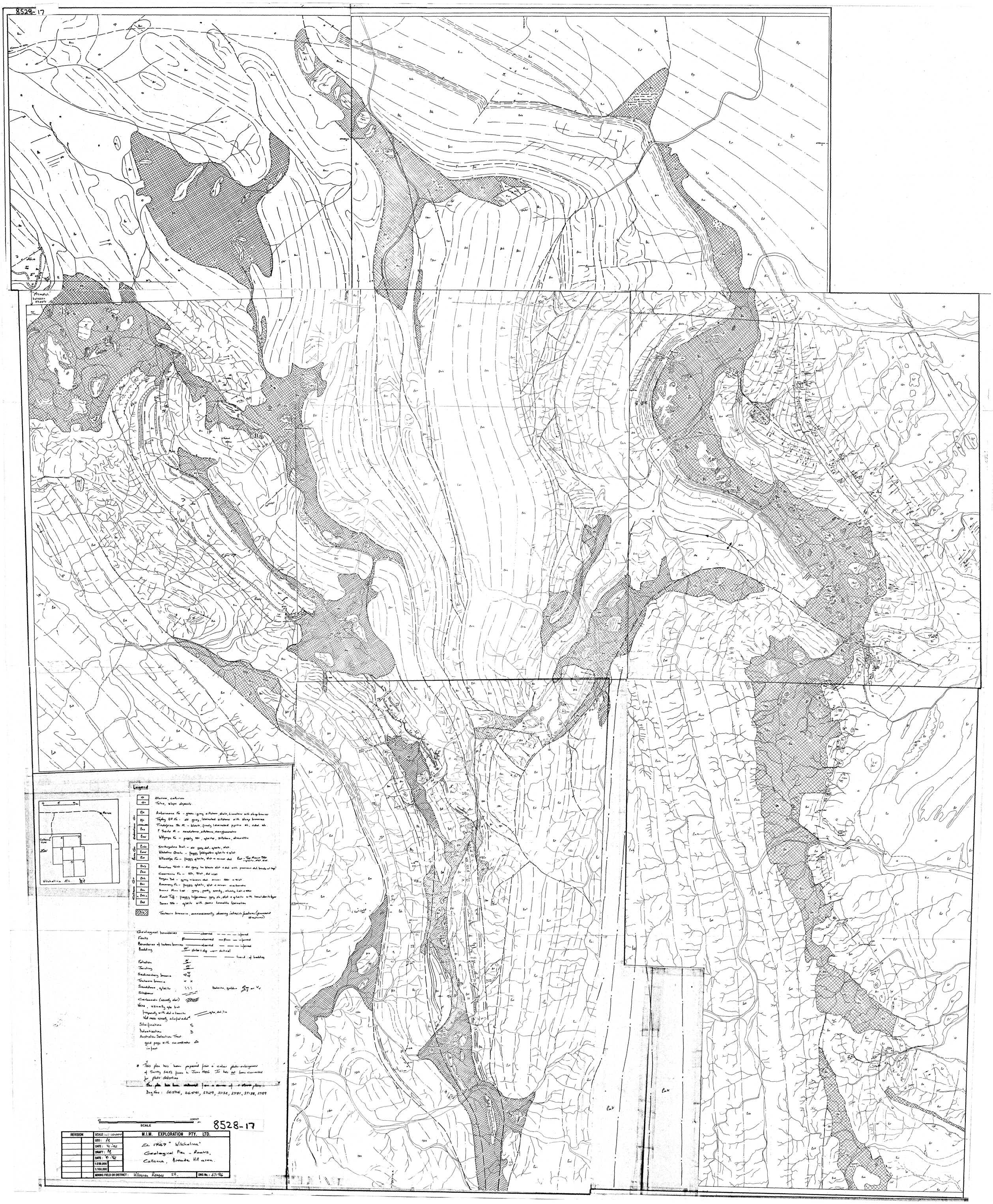
Geology Callanna East area

Sheet 7

MINING FIELD OR DISTRICT: Willouran Ranges SA

DRG No.: 37138

8528-17



Legend

Q	Alluvium, colluvium
Qt	Talus, slope deposits.
Ɛfa	Amberoona Fm - green : grey siltstone, shale, Limestone with slump breccias
Ɛft	Tapley Hill Fm - dk grey, laminated siltstone with slump breccias Tindelpina Sh M. - black, finely laminated pyritic sh, + dol. sh
Ɛue	? Serle M - sandstones, siltstones, conglomerates
Ɛuw	Willyerpa Fm - pebbly sst, qtzites, siltstone, diamictite
Ɛmk	Skillogalee Dol. - dk grey dol, qtzite, slst.
Ɛow	Witchelina Qtzite - flaggy feldspathic qtzite + slst
Ɛoi	Willawalpa Fm - flaggy qtzite, slst + minor dol Ɛot - Top Mount SSt - qtzite, slst, dol.
Ɛkb	Boorloo Slst - dk grey to black slst + dol with prominent dol. bands at top
Ɛkc	Cooranna Fm - SSt, Slst, dol + Lst
Ɛkh	Hogan Dol - grey + brown dol. minor SSt + slst.
Ɛkr	Recovery Fm - flaggy qtzite, slst + minor carbonate
Ɛku	Dunns Mine Lst - grey, partly sandy, cherty Lst + SSt
^ Ɛkk ^	Rook Tuff - flaggy tuffaceous grey sh, slst + qtzite with local dacite layer
Ɛkd	Dome SSt - qtzite with some hematite lamination
Ɛtb	Tectonic breccia, occasionally showing intrusive features (piercement structures)

Umberatana Gr (Ɛfa – Ɛuw)
Burra Gr (Ɛmk – Ɛoi)
Callanna Gr (Ɛkb – Ɛkd)

Geological boundaries ——— observed - - - - inferred
Faults F——— observed —F— — inferred
Boundaries of tectonic breccias ——— observed — — — inferred
Bedding 50° strike + dip, vertical
——— trend of bedding
Foliation 30°
Jointing 50°
Sedimentary breccia ◁ ◁
Tectonic breccia × ×
Sandstone, qtzite ∴
Siltstone
Carbonate (usually dol)
Dolerite, gabbro or V V
Veins, usually qtz but frequently with dol + limonite. Wall rocks usually silicified + dold. qtz, dol, lim
Silicification S
Dolomitisation D
Australian Selection Trust grid pegs with co-ordinates in feet △

* This plan has been prepared from a colour photo-enlargement of Survey 3453 flown in June 1986. It has not been corrected for photo distortion

~~This plan has been enlarged from a series of [illegible] plans:-~~

Drg Nos: 36506, 36591, 37129, 31132, 37181, 37138, 37189

0 1000 m
SCALE

8528-17

REVISION				
		SCALE: ~1:10000		M.I.M. EXPLORATION PTY. LTD.
		GEO: PB		EL 1747 "Witchelina" Geological Plan - Rooks, Callanna, Breaden Hill area.
		DATE: '91-'92		
		DRAFT: PB		
		DATE: '91-'92		
		1:250,000		
		1:100,000		
		MINING FIELD OR DISTRICT: Willouran Ranges SA.		DRG No.: 37196

00047

M.I.M. EXPLORATION PTY. LTD.

TECHNICAL REPORT

No. 1771

TITLE	**EL 1747 "WITCHELINA" ANNUAL REPORT FOR THE PERIOD OCTOBER 21, 1991 TO OCTOBER 20, 1992 (INCLUDING QUARTERLY REPORT TO OCTOBER 20, 1992)**
ISSUING DEPARTMENT:	**EXPLORATION**
AUTHOR:	**P.J. BINKS**
INVESTIGATIONS CONDUCTED BY:	**P.J. BINKS**
SUBMITTED BY:	**S.H. ROBINSON**
DATE:	**OCTOBER 1992**

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APPROVED FOR DISTRIBUTION

S H ROBINSON
Regional Manager - WA & SA

KEY WORDS

Willouran Ranges

Diapirs

Copper mineralisation

Geological Mapping

Soil and gossan sampling

Diamond drilling

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Drawing No.	Title	Scale
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* 36506	Geology Sheet 1 Boorloo - Breaden Hill	1:5000
* 36591	Geology Sheet 2 Breaden Hill South	1:5000
* 37129	Geology Sheet 3 Dunns North	1:5000
* 37132	Geology Sheet 4 Rooks	1:5000
* 37189	Geology Sheet 5 Dunns West	1:5000
* 37181	Geology Sheet 6 Callanna	1:5000
* 37138	Geology Sheet 7 Callanna East	1:5000
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* 36887	Cross Section DDH MWD1	1:1000
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* 36897	Cross Section DDH MWD3	1:1000
37713	Location of Geochemical samples and Cu results - Sheet 1	1:5000
37137	Location of Geochemical samples and Cu results - Sheet 2	1:5000

* These plans have been included with the Quarterly Report for January 20, April 20, July 20, 1992

EL 1747 "WITCHELINA"
ANNUAL REPORT FOR THE PERIOD OCTOBER 21, 1991 TO OCTOBER 20, 1992
(Including Quarterly Report to October 20, 1992)

1. INTRODUCTION

This report presents the results of MIM Exploration Pty. Ltd.'s (MIMEX) exploration on this tenement over the last year. The Licence covers virtually all of the Willouran Ranges and was taken up to search for structurally controlled copper mineralisation.

2. LOCATION AND ACCESS

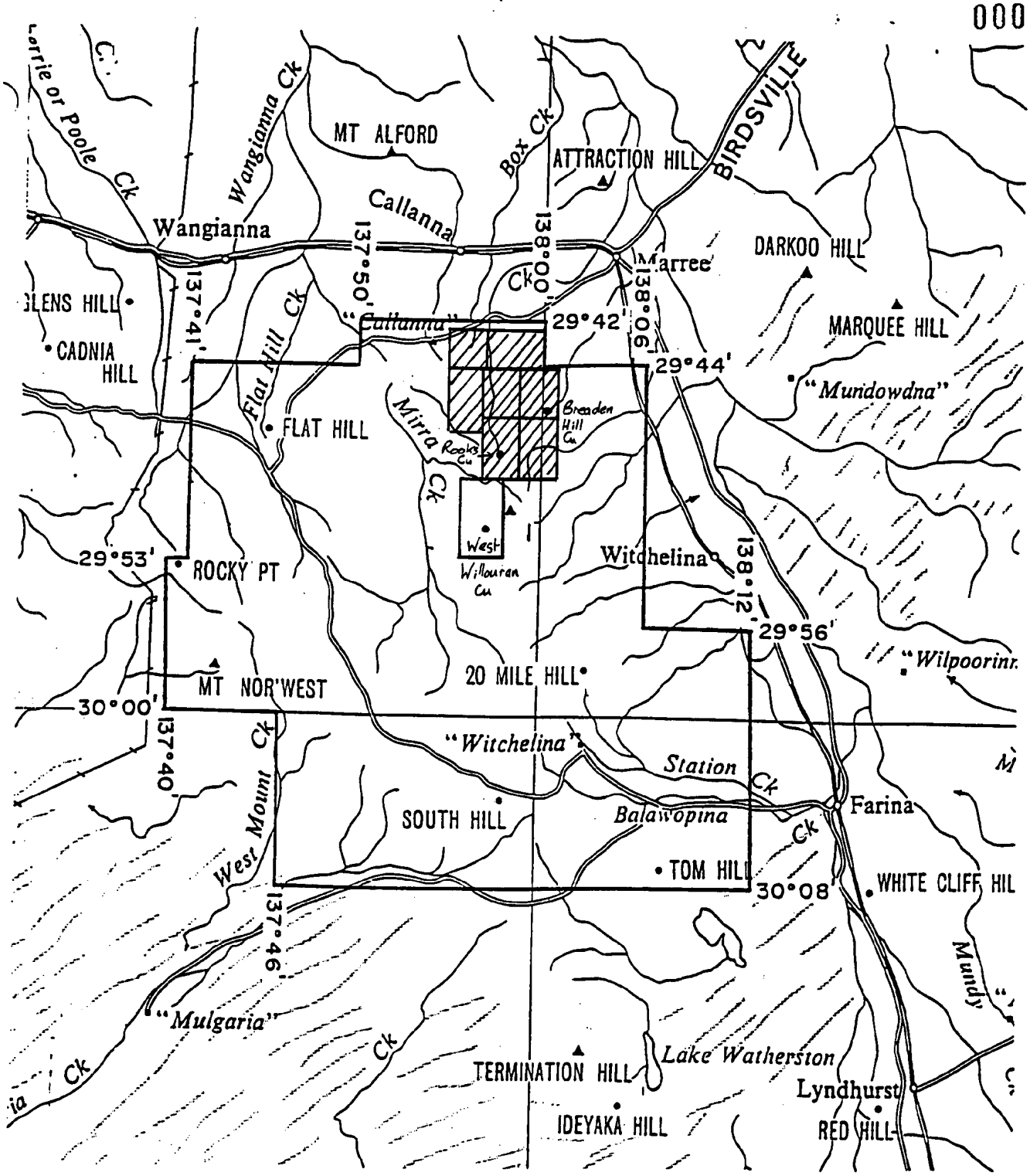
The Willouran Ranges are located to the south-west of Marree in the central-north of South Australia approximately 600km north of Adelaide. Access to the Licence is via a graded road from Farina to Witchelina Homestead and then via station tracks to water bores. Access from the north is via Callanna Station or a track from the Leigh Creek-Marree road to the Breaden Hill Copper Mine. Access into much of the Licence is poor and the eastern range of hills from Breaden Hill to Witchelina Homestead is accessible only on foot.

3. TENURE

Exploration Licence 1747 "Witchelina" was granted to Mount Isa Mines Limited on October 21, 1991 for a term of one year with an expenditure commitment of $155,000. The Licence covers most of the Willouran Ranges south-west of Marree and is 1958 km^2 in area.

4. GEOLOGY

The Licence is located over the junction of the Curdimurka, Marree, Andamooka and Copley 1:250 000 sheets and there are considerable differences in interpretations of rock units and structural features between these sheets. The Curdimurka 1:250 000 sheet has only recently been published and shows the latest ideas on the geology of the area. The south-eastern part of this sheet is based on the Wangianna 1:100 000 provisional geological sheet, which is an excellent geological map. Remapping of the central-eastern part of this map by the author at a scale of 1:5000 has broadly confirmed its validity.



//// Area mapped at 1:5000

EL 1747 Mount Isa Mines Limited

SCALE 1:500.000

KILOMETRES 10 0 10 20 30 40 50 KILOMETRES

AREA: 1958 square kilometres (approx.)

1:250000 PLANS: CURDIMURKA, MARREE, ANDAMOOKA, COPLEY

LOCALITY: WITCHELINA AREA – approx. 50 km south of Marree

Geologically, the area is an excellently exposed sequence of mainly shallow water clastics and carbonates of the Upper Proterozoic Adelaidean System. The type section of the upper part of the Callanna Group occurs in the northern part of the Licence.

Rather than go into details of the regional geology here, the reader is referred to:

- Bulletin 53 (1987). The Adelaide Geosyncline (compiled by W.V. Preiss)
- Explanatory Notes, Curdimurka - Sheet SH 53-8, 1991 (G.E. Krieg et al)
- Stratigraphy and Tectonics Across The Torrens Hinge Zone Between Andamooka and Marree, South Australia
  PhD Thesis, Adelaide University 1977. B. Murrell

In addition, some notes on the geology and suggestions on controls of mineralisation are presented in S. Carthews' Honours Thesis (Sedimentary Environs of Stratiform Copper Mineralisation in the Callanna Beds, Willouran Ranges, Flinders University 1975). Descriptions of diapirs and mechanisms of diapirism were given by W. Fairburn in Envelope 1145 describing exploration by Carpentaria Exploration Company on SML 169 in 1968/69.

Details of sedimentology within the Licence area are given in Utah's reports on exploration in Envelope 2915 (EL277) and 3507 (ELs 461 and 850). Unfortunately, much of Utah's work is marred by poor geological mapping and the apparent disbelief in faulting or tectonic brecciation.

5. PREVIOUS EXPLORATION

The Licence area has been subjected to a reasonable amount of exploration but only Utah drilled many holes. Although Utah drilled 40 diamond holes for 9160m and 139 percussion holes for 16370m, all these holes were based on ideas of stratiform mineralisation and even the prospects they drilled may still have considerable potential for structurally controlled mineralisation.

The following table lists the companies and tenements previously held over the Licence area:-

Tenement	Company	SADME Envelope No.	Period
SML 65 & 70	Australian Selection (Pty.) Ltd.	389, 599	May 1964-Feb 1966
SML 111 & 114	Anaconda Aust. Inc.	637	June 1966-Dec 1966
SML 165	Noranda Aust. Ltd.	884	
SML 169 & 353	Carpentaria Exploration Co. Pty. Ltd.	1145, 1246	June 1963-Nov 1969
SML 368	Sunhill Corp. (Aust) Ltd.	1391	Dec 1969-July 1970
SML 390	Altarama Search Pty. Ltd.	1328	June 1970-June 1971
EL 52, 53	H.R. Gillespie	2289, 2290	Feb 1973-April 1973
EL 143	Dampier Mining Co. Ltd.	2436	July 1974-August 1975
EL 277, 461, 850	Utah Development Company	2915, 3507	Dec 1976-July 1983
EL 1196	CRA Exploration Pty. Ltd.	5403	Dec 1983-Dec 1987
EL 1488	Demis Pty. Ltd.	8024	May 1988-August 1989
EL 1544	BP Minerals Australia		Nov 1988-May 1989

An excellent review of the exploration carried out before December 1983 is given in CRA's second quarterly report on EL 1196 (Envelope 5403). Since this date, CRA carried out bulk gravel sampling for diamond and rock chip sampling for gold mineralisation. CRA did not drill any holes in the area during their four year tenure.

Demis carried out rock chip sampling in the Douglas Gully (West Willouran) area, for gold mineralisation but did not do any drilling. BP Australia also carried out geochemical exploration for gold mineralisation and also did not do any drilling.

6. EXPLORATION COMPLETED BY MIMEX IN FIRST YEAR OF TENURE

6.1 Geological Mapping

An area of 130 km^2 around the Callanna, Dunns, Rooks, Boorloo and Breaden Hill copper prospects in the north-east of the Licence has been mapped at a scale of 1:5000. Mapping was carried out on coloured enlargements of Survey 3453 flown in June 1986 for the SA Lands Department. Base maps were prepared directly from the aerial photographs without allowing for distortion, consequently some of the joins between the individual sheets are not accurate. This is particularly so between Sheets 5 and 6 in the north-west of the area.

The area covered by this mapping is shown on the location plan (Drg. No. 1/7724) and on each of the seven sheets which have so far been completed. The drawing number and title of each sheet is presented in the List of Drawings at the front of this report. All of these drawings have been included with Quarterly Reports previously sent to SADME.

AMG co-ordinates are shown on these geological sheets but they are not accurate as they have been scaled off the 1:100 000 Topographic base sheet of the Wangianna Sheet. Although not accurate they are very useful for locating geochemical samples on the overlays to the geological sheets.

The 1:5000 geological sheets have been reduced to 1:10 000 and joined together to produce a 1:10 000 geological map of the area (Drg. No. 37190) which is included with this report. Also, a block diagram of the mapped area and a section across the Licence has been prepared and is also included in this report (Drg. No. 37213).

An enlarged geological map of the Breaden Hill area at 1:2500 has been prepared and is presented with this report (Drg. 37278).

Mapping is still in progress of a 1:5000 sheet over the West Willouran Copper prospects. The location of this sheet is shown on Drg. No. 1/7724.

6.2 Geochemical Sampling

A total of 362 composite limonite samples and 185 -80# soil samples have been collected on the licence during the last year. Results for the first 250 samples have been included with earlier reports, together with notes on the samples and AMG locations. Assay results of the remainder of the rock and soil samples are presented in this report in Appendix I and Ledger Sheets showing notes and AMG locations for these samples are shown in Appendix II. Sample locations and copper results for samples collected from Sheets 1 and 2 are shown on Drg. Nos. 37113 and 37137 respectively. Samples collected from other sheets have not yet been drafted but AMG co-ordinates related to each sheet are given in Appendix II.

The composite limonite samples consist of approximately 15 to 30 fragments from 1cm to 5cm in size collected over a radius of 10m around a chosen site. These fragments are either chipped off outcrop or collected from float, provided it is certain that it is in situ. The term composite limonite rather than gossan was chosen as much of the early sampling in the Boorloo district was aimed at collecting only the limonite from quartz, dolomite veins. Most of the samples after sample number 733141 were collected from limonite replacing stratiform pyrite in the basal Tapley Hill Formation and are really gossan samples.

6.3 Diamond Drilling

Three diamond drill holes were drilled for a total of 862.5m in November/December 1991. The holes were drilled by Rockdrill using a "Versatile" Rig. Drilling proved to be exceedingly difficult due to the very fractured and broken siltstones and quartzites of the Serle Conglomerate and core "runs" averaged only a metre or so. Even though the "ground" was very fractured, core recovery was good but it proved impossible to orientate the core. This was disappointing as it was hoped to gain structural information on the controls of copper mineralisation and this proved to be impossible.

Drill hole MWD1 was drilled 900m SSE of the Boorloo Mine at 790110E, 6704720N AMG (Sheet 1 AMG). The hole was drilled to test significant copper mineralisation (42m of 1.18% Cu) in Utah's percussion hole WP15 and was collared only a few metres from WP15. It was drilled on a bearing 40° to the south of WP15 to also test a series of north-east trending quartz-dolomite-limonite veins. The hole was stopped at 339.1m. Unfortunately, problems were experienced in trying to get the HQ rods out of the hole which had been used as casing for NQ coring and 129m of rods are still in the hole from 9m to 138m. This hole is cased with 42mm ID plastic casing suitable for downhole EM surveying.

Drill hole MWD2 was drilled to a depth of 168.55m beneath the Boorloo Workings to test for extensions of the copper mineralisation. This hole was cased with plastic casing suitable for downhole surveys but, unfortunately, the top 15m were broken off when the last steel casing was withdrawn.

The last hole, MWD3, was drilled 200m east of the northern workings at the Breaden Hill Mine to test for copper mineralisation in the Tapley Hill Formation adjacent to the major east trending fault. The hole is sited at 790610E, 6702800E AMG (Sheet 1 AMG) and is 262.8m in depth. Plastic casing suitable for downhole surveys has been placed in this hole.

7. RESULTS OF EXPLORATION

7.1 Geological Mapping

Results of the mapping as presented on the geological maps and cross-sections shown on the drawings referred to in Section 6.1. Geological units used on the SADME Wangianna 1:100 000 Provisional Geological Sheet. As mentioned in Section 4, the recent mapping has broadly confirmed the validity of this sheet, though in detail, far more faults and complex structural zones have been mapped on the larger scale mapping.

The largest changes to the existing geology occur around the large block of Hogan Dolomite on Sheets 3 and 7. The recent mapping has shown a series of strike faults in the Recovery and Cooranna Formations flanking this dolerite. Also, an extensive zone of tectonic breccia (diapir) occurs within the Recovery Formation to the west of the dolomite. This faulting and zone of breccia throws doubt on the thickness of the rock units defined by Murrell (Ph.D thesis) in the Callanna Beds (see the block diagram on Drg. No. 37213). The strike faulting occurs in the relatively incompetent Recovery and Cooranna Formations on either side of the rigid, competent block of Hogan Dolomite which forms a very large boudin like feature.

The extensive zones of tectonic breccia or diapir in the area are believed to be due to lack of space in anticlinal hinges due to folding above a decollement and subsequent mobilisation along major fault zones as shown on the interpretive cross section on Drg. No. 37213. This is the mechanism suggested on the Curdimurka 1:250 000 sheet. Several new zones of piercment breccias have been mapped including one centred 500m south-west of the Boorloo Mine and another dyke like body 1.4km north-west of Dunns Mine. Several zones of large scale brecciation within formational boundaries (i.e. confined to a stratigraphic unit) occur. One such area occurs within the Boorloo Siltstone in the south-west of Sheet 4.

Faulting and associated brecciation has occurred on several occasions. The large block of Burra Group quartzites and dolomites which extend from Witchelina Homestead to the latitude of the Breaden Hill Mine has been thrust to the north in several phases. The folding of the Callanna Beds and Willyerpa Formation to the north of this block on Sheet 1 was caused by one phase of thrusting. The folding of the Serle Conglomerate and Tapley Hill Formation just to the north of the Breaden Hill Mine was caused by a later phase of thrusting from the south. Details of faulting and brecciation are very complex and it is impossible to reconstruct the sequence of events. This is particularly true to the south of the block of Hogan Dolomite on Sheet 4 where many thousands of metres of Callanna Beds have been faulted out by major strike faults.

MIMEX drilling near the Boorloo Mine (MWD 1 and 2) has proved the existence of a series of reverse faults which are parallel to the strike of the Serle Conglomerate and Tapley Hill Formation (THF). The fault at the base of the Serle Conglomerate separating this unit from the folded Willyerpa Formation is one of this series of faults.

7.2 Geochemical Sampling

Copper results are shown on Drg. Nos. 37113 and 37137 which are overlays to geological sheets 1 and 2 respectively. Both rock chip and soil sample results are included on the same sheets but are identified by different sample site symbols.

Highly anomalous limonite samples occur in quartz dolomite veins in the Serle Conglomerate in the vicinity of the Boorloo Mine with many samples over 1% copper. Another interesting zone of anomalous copper occurs in limonite in basal THF over nearly 1000m of strike just to the south of the Boorloo Mine.

An area of scattered gossan occurs approximately 700m south-west of the Breaden Hill Mine. One composite sample of gossan returned 5310 ppm Cu, 2940 ppm Pb, 5480 ppm Zn and 43 ppm Ag.

7.3 Diamond Drilling

Results of drillhole MWD1 were disappointing. As mentioned previously, this hole was drilled to check good intersections of copper in Utah's percussion hole WP15. These intersections included two 2m zones of economic grade:- 2m from 128m at 3.9% Cu and 2m from 144m at 4.3% Cu. The best assays from MWD1 were in dolomites near the base of the THF with 6m of 1.02% Cu which occurred as chalcopyrite. The hole was drilled on a bearing 40° south of WP15 to test a series of north-east trending quartz-dolomite-limonite (after chalcopyrite) veins. Unfortunately, these veins were not intersected in MWD1 and it is believed that they occur above a 50° reverse fault.

Drill chips from PW15 had been glued onto paper logs by Utah and re-examination of these showed that the hole was badly contaminated from cuttings from up the hole (mainly THF) and thus the assays are unreliable. It is possible that all the copper is derived from the THF, though this seems unlikely as copper grades in the THF are lower. The most likely explanation is that WP15 intersected one or more of the quartz-limonite veins. Utah's cross section through WP15, WD4 and WD10 (SADME envelope 2915-80) is incorrect as it shows two shale units in the WP15, the lower of which is actually contamination of the THF from up the hole. Also, the dips are too shallow and this does not agree with the surface dips of the THF which average 70° to 80° to the east. The interpretation on Drg. No. 36887 is probably correct where a series of 50° reverse faults explain the steep easterly dips. The geological and assay log of MWD1 is shown on Drg. Nos. 36637 a and b.

Drill hole MWD2 did not intersect any significant copper mineralisation beneath the extensive malachite staining on the pits at the Boorloo workings. The best assay was only 0.16% Cu over 1.65m from 37.4m. Assay results are shown with the geological log of this hole on Drg. No. 36638 and a cross-section through the hole on Drg. No. 36905. This section shows the problems of correlating the geology between holes MWD2 and Utah's WP14 and WD7. The only reasonable explanation is a series of reverse faults similar to the MW1 area. In fact, MWD2 was drilled to test for copper mineralisation which was thought to be faulted off above WD7 as shown on the section. It was thought that the mineralisation was probably controlled by these faults and would persist at depth to the west.

Results of drill hole MWD 3 were disappointing with no copper values over 300 ppm. The hole was drilled to test for copper mineralisation in the THF next to a major east trending fault just to the north of the Breaden Hill Mine. The THF adjacent to this fault proved to be an excellent host rock with abundant pyrite and graphite but the faulting was post the mineralising event. In fact, this fault is the thrust plane of the major block of quartzites and dolomites which moved to the north and caused the local folding mentioned in Section 7.1. The last phase of thrusting was probably quite late and caused the local folding in the area post mineralisation. The assays are presented with the geological log on Drg. No. 36897.

APPENDIX 1

Assay Results Since July 21, 1992

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2	09/06/92	1	32

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
3251/80,QC733260,QC733280	rc Prep : OP021	Cu,Pb,Zn,Co,Ag/GA101

RESULTS TO
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RESULTS TO
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2	26/06/92	1	45

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
3281/323,QC733300/320/20	RO Prep : OP021	Cu,Pb,Zn,Co,Ag/GA101

RESULTS TO
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SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.08085	26/06/92	733281	1 OF 2

TUBE No.	SAMPLE No.	Co	Cu	Zn	Ag	Pb				
1	733281	11	48	23	<2	8				
2	733282	18	33	27	<2	6				
3	733283	6	116	17	<2	<5				
4	733284	16	197	22	<2	7				
5	733285	12	77	22	<2	<5				
6	733286	12	51	26	<2	5				
7	733287	12	28	29	<2	<5				
8	733288	12	39	22	<2	<5				
9	733289	13	22	12	<2	<5				
10	733290	18	26	21	<2	5				
11	733291	9	43	23	<2	<5				
12	733292	12	42	23	<2	5				
13	733293	13	132	36	<2	9				
14	733294	7	63	31	<2	7				
	733295	13	31	24	<2	<5				
16	733296	16	118	35	<2	8				
17	733297	12	43	40	<2	11				
18	733298	10	34	27	<2	<5				
19	733299	11	32	37	<2	8				
20	733300	8	17	12	<2	6				
21	733301	17	92	22	<2	<5				
22	733302	8	25	26	<2	<5				
23	733303	13	49	25	<2	<5				
24	733304	12	22	27	<2	<5				
25	733305	8	16	26	<2	<5				

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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3	24/07/92	1	61

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
33324/381,QC733340/80/20	ro Prep : OP021,S9900	Cu,!Cu.,Pb,!Pb.,Zn,!Zn.,Ag,!Ag.,Co,!Co./GA101

RESULTS TO
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SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.08261	24/07/92	733324	2 OF 3

TUBE No.	SAMPLE No.	Co	Cu	Zn	Ag	Pb				
1	733349	11	38	32	<2	10				
2	733350	9	65	24	<2	5				
3	733351	15	171	59	<2	12				
4	733352	12	31	33	<2	8				
5	733353	10	87	51	<2	10				
6	733354	6	70	30	<2	10				
7	733355	11	66	32	<2	12				
8	733356	10	37	56	<2	5				
9	733357	15	34	30	<2	6				
10	733358	9	56	37	<2	<5				
11	733359	11	31	52	<2	20				
12	733360	8	31	32	<2	10				
13	733361	11	35	26	<2	10				
14	733362	15	34	40	<2	20				
15	733363	7	16	50	<2	5				
16	733364	7	39	61	<2	20				
17	733365	8	36	29	<2	10				
18	733366	10	55	40	<2	8				
19	733367	11	79	55	<2	17				
20	733368	8	44	50	<2	14				
21	733369	11	188	28	<2	15				
22	733370	7	137	42	<2	14				
23	733371	9	52	28	<2	8				
24	733372	17	660	38	<2	8				
25	733373	7	25	35	<2	7				

Results in ppm unless otherwise specified
T = element present, but concentration too low to measure
X = element concentration is below detection limit
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SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.08261	24/07/92	733324	3 OF 3

TUBE No.	SAMPLE No.	Co	Cu	Zn	Ag	Pb				
1	733374	11	169	221	<2	70				
2	733375	10	51	56	<2	16				
3	733376	23	278	509	<2	128				
4	733377	5	21	45	<2	7				
5	733378	13	27	83	<2	12				
6	733379	10	25	36	<2	8				
7	733380	10	28	67	<2	8				
8	733381	9	24	58	<2	8				
9	QC733340	10	37	46	<2	10				
10	QC733360	6	30	30	<2	8				
11	QC733380	9	32	67	<2	8				
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	4	4	2	5				
24	UNITS	PPM	PPM	PPM	PPM	PPM				
25	METHOD	GA101	GA101	GA101	GA101	GA101				

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T = element present; but concentration too low to measure
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3	12/08/92	1	58

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
33 & others	ro Prep : OP021,S9900	Cu,!Cu.,Pb,!Pb.,Zn,!Zn.,Ag,!Ag.,Co,!Co./GA101

RESULTS TO
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SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.08340	12/08/92	733382	1 OF 3

TUBE No.	SAMPLE No.	Co	Cu	Zn	Ag	Pb				
1	733382	80	251	55	<2	21				
2	733383	65	236	97	<2	31				
3	733384	37	85	125	<2	25				
4	733385	50	325	73	<2	20				
5	733386	375	226	23	<2	12				
6	733387	60	219	50	<2	16				
7	733388	84	691	95	<2	18				
8	733389	160	616	77	<2	22				
9	733390	170	636	55	<2	19				
10	733391	177	1804	76	<2	24				
11	733392	60	1830	68	<2	26				
12	733393	39	796	124	<2	22				
13	733394	80	1147	88	<2	30				
14	733395	125	1281	66	<2	23				
15	733396	116	843	134	<2	34				
16	733397	45	2987	117	<2	21				
17	733398	165	580	106	<2	32				
18	733399	214	1765	92	<2	30				
19	733400	70	2987	135	<2	32				
20	733401	79	2502	135	2	18				
21	733402	125	2406	71	<2	18				
22	733403	156	3120	127	<2	53				
23	733404	50	2224	111	<2	29				
24	733405	108	966	151	<2	44				
25	733406	72	1093	82	<2	17				

Results in ppm unless otherwise specified
T = element present, but concentration too low to measure
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1	10/08/92	1

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SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
733 & others	ro Prep : OP021,S9900	Cu,!Cu.,Pb,!Pb.,Zn,!Zn.,Ag,!Ag.,Co,!Co./GA101

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.08341	10/08/92	733425	1 OF 1

JBE No.	SAMPLE No.	Co	Cu	Zn	Ag	Pb				
1	733425	6	92	232	<2	169				
2	733426	16	51	104	<2	52				
3	733427	18	237	49	<2	25				
4	733428	9	22	26	<2	17				
5	733429	17	55	39	<2	5				
6	733430	14	31	48	<2	12				
7	733431	27	134	50	<2	15				
8	733432	18	34	58	<2	16				
9	733433	14	75	38	<2	7				
10	733434	13	51	57	<2	12				
11	733436	18	57	38	<2	11				
12	733437	15	51	28	<2	10				
13	733438	19	108	32	<2	10				
14	733440	12	159	28	<2	5				
	733452	10	157	34	<2	5				
16	733453	36	430	79	<2	5				
17	733454	13	131	382	<2	182				
18	733455	7	349	19	<2	19				
19	733456	13	86	27	<2	8				
20	733457	10	36	23	<2	10				
21	QC733440	12	156	32	<2	5				
22										
23	DETECTION	5	4	4	2	5				
24	UNITS	PPM	PPM	PPM	PPM	PPM				
25	METHOD	GA101	GA101	GA101	GA101	GA101				

Results in ppm unless otherwise specified
T = element present, but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER K. Hand

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.
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A.C.N. 004 591 664

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Phone (08)3365099
16 Sunbeam Road, Glynde,S.A. 5070
Fax (08) 3365564

ANALYTICAL REPORT No. 103260.35.08567

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

INVOICE TO:
Mr P Binks
M I M Exploration Pty Ltd
140 Colin Street

West Perth WA 6005

ORDER No.	PROJECT
733458	

DATE RECEIVED	RESULTS REQUIRED
07/09/92	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
2	08/09/92	1	40

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
158/495,QC733460/80/20	ro Prep : OP021,S9900	Cu,Pb,Zn,Ag,Co/GA101

REMARKS

RESULTS TO
Mr P Binks
M I M Exploration Pty Ltd
140 Colin Street

West Perth WA 6005

RESULTS TO
Administration Superintendent
M I M Exploration Pty Ltd
GPO Box 1042

Brisbane QLD 4001

RESULTS TO

AUTHORISED OFFICER

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.
A.C.N. 004 591 664

00073

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.08567	08/09/92	733458	1 OF 2

UBE No.	SAMPLE No.	Co	Cu	Zn	Ag	Pb				
1	733458	6	38	16	<2	<5				
2	733459	7	108	33	<2	<5				
3	733460	19	871	32	<2	<5				
4	733461	15	113	26	<2	<5				
5	733462	8	156	17	<2	<5				
6	733463	11	228	18	<2	<5				
7	733464	11	115	20	<2	<5				
8	733465	12	35	28	<2	<5				
9	733466	6	136	21	<2	<5				
10	733467	7	72	30	<2	<5				
11	733468	11	80	34	<2	<5				
12	733469	7	247	25	<2	5				
13	733470	10	29	19	<2	<5				
14	733471	22	508	46	<2	6				
	733472	10	37	16	<2	<5				
16	733473	12	780	50	<2	5				
17	733474	5	45	12	<2	<5				
18	733475	7	53	20	<2	<5				
19	733476	7	56	25	<2	<5				
20	733477	10	330	40	<2	16				
21	733478	7	24	24	<2	5				
22	733479	12	311	46	<2	6				
23	733480	<5	29	16	<2	<5				
24	733481	12	39	26	<2	6				
25	733482	11	72	20	<2	<5				

Results in ppm unless otherwise specified
T = element present, but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER A. J. Branson

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.
A.C.N. 004 591 664

00074

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.08575	11/09/92	733496	2 OF 2

TUBE No.	SAMPLE No.	Co	Cu	Zn	Ag	Pb				
1	733521	9	34	32	<2	5				
2	733522	9	28	53	<2	5				
3	QC733500	8	40	26	<2	<5				
4	QC733520	10	29	35	<2	5				
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	4	4	2	5				
24	UNITS	PPM	PPM	PPM	PPM	PPM				
25	METHOD	GA101	GA101	GA101	GA101	GA101				

Results in ppm unless otherwise specified
T = element present, but concentration too low to measure
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AUTHORISED OFFICER K. Hand

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.
A.C.N. 004 591 664

A.C.N. 004 591 664

Mitchelmia
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P2.3.5

14 SEP 1992

Phone (08)3365099

16 Sunbeam Road, Glynde,S.A. 5070

Fax (08) 3365564

ANALYTICAL REPORT No. 103260.35.08575

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

INVOICE TO:
Mr P Binks
M I M Exploration Pty Ltd
140 Colin Street

West Perth WA 6005

ORDER No.	PROJECT
733496	

DATE RECEIVED	RESULTS REQUIRED
08/09/92	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
2	11/09/92	1	29

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
496/522,QC733500/20/20	ro Prep : OP021,S9900	Cu,Pb,Zn,Ag,Co/GA101

RESULTS TO
Mr P Binks
M I M Exploration Pty Ltd
140 Colin Street

West Perth WA 6005

RESULTS TO
Administration Superintendent
M I M Exploration Pty Ltd
GPO Box 1042

Brisbane QLD 4001

RESULTS TO

REMARKS

AUTHORISED OFFICER

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.
A.C.N. 004 591 664

00076

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.08575	11/09/92	733496	1 OF 2

UBE No.	SAMPLE No.	Co	Cu	Zn	Ag	Pb				
1	733496	9	31	27	<2	5				
2	733497	10	30	37	<2	<5				
3	733498	9	30	45	<2	<5				
4	733499	8	22	26	<2	<5				
5	733500	9	36	26	<2	<5				
6	733501	6	30	40	<2	<5				
7	733502	13	44	19	<2	5				
8	733503	10	44	30	<2	5				
9	733504	10	25	33	<2	<5				
10	733505	11	36	28	<2	<5				
11	733506	14	43	39	<2	5				
12	733507	11	28	25	<2	<5				
13	733508	13	23	28	<2	<5				
14	733509	12	39	36	<2	<5				
	733510	12	36	42	<2	<5				
16	733511	6	33	28	<2	<5				
17	733512	8	38	31	<2	5				
18	733513	10	24	42	<2	<5				
19	733514	9	31	35	<2	5				
20	733515	8	30	30	<2	<5				
21	733516	8	34	30	<2	<5				
22	733517	10	39	32	<2	<5				
23	733518	10	24	43	<2	<5				
24	733519	9	31	47	<2	<5				
25	733520	12	30	35	<2	6				

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
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— = element not determined

AUTHORISED OFFICER K. Hand

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.
A.C.N. 004 591 564

00077

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	103260.35.08567	08/09/92	733458	2 OF 2

TUBE No.	SAMPLE No.	Co	Cu	Zn	Ag	Pb				
1	733483	8	61	30	<2	<5				
2	733484	9	69	15	<2	<5				
3	733485	8	58	32	<2	<5				
4	733486	12	142	34	<2	5				
5	733487	9	66	38	<2	5				
6	733488	14	95	38	<2	5				
7	733489	8	56	37	<2	7				
8	733490	19	315	28	<2	11				
9	733491	9	138	42	<2	5				
10	733492	29	414	26	<2	6				
11	733493	13	365	48	<2	10				
12	733494	8	175	20	<2	5				
13	733495	13	652	58	<2	6				
14	QC733460	17	888	35	<2	<5				
	QC733480	<5	30	17	<2	<5				
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	4	4	2	5				
24	UNITS	PPM	PPM	PPM	PPM	PPM				
25	METHOD	GA101	GA101	GA101	GA101	GA101				

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AUTHORISED OFFICER A. J. Branson

APPENDIX 2

Sample Ledgers for Samples 733251 to 733547

DISPATCH REF
733251 1 OF 2

Carpentaria Exploration Company Pty. Ltd.

SAMPLE LEDGER

00079

SAMPLER'S INITIALS: D.K DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS	STORE REF.
		WITCHELINA 208BS	
733251	R	10m R Qz+Limonite, V/minor Box Work some Carbonate ~~6702350N~~ 6699505N 786320E	
2		40m Across Strike, series of Qz Veins, V/minor Limonite, some Dolomitic 6705460N 784610E	Au* ↓
3		" V/minor Magnatite " " 6705530N 784600E	Au
4		30m Across Strike, series of Qz Veins, V/minor LAS (Py) some Carbonate ~~6705~~ 6705710N 784600E	Au
5		75m Cross Strike, Qz Veins, some Dol, V/minor LAS + minor Magnatite 6705845N 784645E	Au
6		100m Cross Strike, Qz Veins V/minor Limonite, V/minor Fresh Py? Au. 6706060N 784720E	
7		* Follow up 35m East of 733141 Site Gossan from Tapleys.	
8		10m R Gossan type material some V/minor Box Work (Chalco??) 6700340N 786245E	
9		10m R, Qz+Limonite some LAS/Box Work, Limonite (Py?) Along Sstst (Very Dark+Dol) 6700535N 786570E	
60		10m R Py looking Gossan from Dark Sstst, several cross cutting Qz Veins with Limonite 6700480N 786540E	
1		5m R Minor Qz Vein with Limonite thru Quite/Sandstone Formation. 6699920N 786505E	
2		10m R dk Grey/Green Sltst, Py cross cutting Veins with Carbonate, Py Box Work 'COSEK' BED 6700020N 786535E	
3		10m R Dark Shale/Sltst Limonite some Chalco Box Work, Malachite Found, some Carbonate 6699845N 786415E	
4		10m R, V/minor exposure of Dark Shale/Sltst some insitu Gossan (Py?) * Qz Float with Malachite not sampled * 6699465N 786380E	
5		10m R Qz Veins Along and Cross cutting Formation with Limonite 6699220N 786375E	
6		10m R, minor Qz with Limonite thru Quite sltst Formation, some Carbonate 6698795N 786440E	
7		10m R Carbonate (Dolomite) with minor Limonite 6698950N 786415E	
8		10m R Carbonate + Qz with Limonite, some Box Work (Py?) 6699265N 786000E	
9		10m R, Qz Vein with Carbonate + Limonite + some Mg. 6699455N 786040E	
733270		10m R, Minor Qz Veins with Limonite + Carb, minor Box Work Chalco? 6699575N 786095E	

SAMPLE TYPE CODE:
- DD = diamond drillcore
- PD = percussion/rotary cuttings
- RAB = rotary airblast cuttings
- = other drilling samples (specify)
- S = soil sample
- SS = stream sediment sample
- R = rock chip sample
- P = petrological sample
- = other (specify)

WHITE – REGIONAL BASE
YELLOW – BRISBANE
PINK – RETAIN

NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

DISPATCH
CEC REF 733271
2 of 2.

00080

Carpentaria Exploration Company Pty. Ltd.

SAMPLE LEDGER

SAMPLER'S INITIALS: D.K DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS	STORE REF.
		WITCHELINA 208 BS	
733271	P	10m R, Large Qz Vein with Carbonate + Minor LAS Ply Box Work 6699280N 6860140E	
2		10m R, Large Qz Vein across Fmtn with Carbonate + Limonite + Hematite 6698945N 6862450E	
3		10m R, Large Qz Vein with Limonite + Carb + Malachite w Small Cu Dic, not Sampled 6698835N 6863100E	
4		10m R, Qz/Carb + LAS minor Chalco Texture, *Malachite finds 25m North not Sampled 6702305N 7851150E	
5		10m R, Minor Gossan Float, Finely Laminated Mat, Grey-Dark Slst. 6702060N 7843300E	
6		10m R, Gossan + Carb with Minor Qz Veins, Box Work Ply + Some Chalco Texture?? 6702350N 7843500E	
7		10m R, Gossan Poss. Dol origin Though Finely Laminated Material Taken. 6701795N 7843300E	
8		10m R, Gossan Float, Material Taken Finely Laminated 6701780N 7845450E	
9		" " " " 6701735N 7846300E	
733280		" " " " 6701915N 7846150E	
1			
2			
3			
4			
5			
6			
7			
8			
9			
0			

SAMPLE TYPE CODE:
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WHITE – REGIONAL BASE
YELLOW – BRISBANE
PINK – RETAIN

NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

1 of 3

Carpentaria Exploration Company Pty. Ltd.

00081

SAMPLE LEDGER

SAMPLER'S INITIALS: D.K. DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS WITCHELINA 208BS SHEET 2	STORE REF.
733281	~~SOIL~~	TAKEN FROM DARK INSITU SHALE 6698250N, ~~7900~~, 790980E	
2		" " " " Py VEINS THRU 6698440N, 790975E	
3		DK GREY SLST/SHALE 6698440N, 791040E	
4		VERY DARK SHALE 6698330N, 791040 E	
5		PALE-DARK SHALE WITH DOLOMITIC VEINS 6698290N, 791085E	
6		DARK ~~&~~ PYRITIC SHALE. 6698210N, 791020E	
7		TAKEN FM PALE-DK SLST/SHALE WITH DOLOMITIC VEINS 6698205N, 791065E	
8		DK SLST WITH Py VEINS IN FORMATION. 6698135N, 791045E	
9		V/DARK SHALE WITH Py VEINS 6698105N, 791060E	
90		" " " " 6698095N, 791020E	
1		V/DK SHALE, BRECHIATED LOTS CARBONATE? 6698140N, 790955E	
2		V/DK SHALE WITH Py VEIN NEAR DOL FEATURE 6698060N, 790980E	
3		LOOKS LIKE DARK SILICIFIED SHALE SOME Py LOOKING MATERIAL. 6698130N, 790775E	
4		DARK SHALE 6698160N, 790880E	
5		DK SHALE WITH Py VEINING 6698080N, 790925E	
6		DK SHALE CLOSE TO BRECHIA CONTACT?? 6698110N, 790865E	
7		SHALE UNIT, DOL FEATURES, SOME GOSSAN FLOAT 6698205N, 790760E	
8		FROM EDGE OF GUTTER CUTTING THRU SHALE, ASSORTED SCREE 6698275N, 790805E	
9		DARK SILICIFIED LOOKING SHALE/SLST? 6698295N, 790725E	
733300		DARK SHALE, Py LOOKING. 6698385N, 790775E	

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- P = petrological sample
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YELLOW – BRISBANE
PINK – RETAIN

NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

00082

Carpentaria Exploration Company Pty. Ltd.

SAMPLE LEDGER

SAMPLER'S INITIALS: D.K. DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS	STORE REF.
		WITCHELINA 208BS SHEET 2	
733301	-80#	PALE DOLOMITIC + Py LOOKING SHALE?	
		6698985N, 790835E	
2		" " " "	
		6698955N, 790900E	
3		" " " " SOME GOSSAN FLOAT	
		~~6698930~~ 6698930N, 790805E	
4		DOLOMITIZED SHALE UNIT.	
		6699085N, 790850E	
5		DARKISH DOLOMITIZED SHALE UNIT??	
		6699180N, 790860E	
6		" " " Py VEINS INSITU	
		6699195N, 790805E	
7		INSITU DK SHALE WITH Py VEINS, CLOSE TO BRECHIA	
		6699165N, 790770E	
8		DOLOMITIZED SHALE.	
		6699260N, 790810E	
9		INSITU SHALE WITH SOME Py VEIN, NEAR CONTACT	
		6699290N, 790720E	
10		" " " "	
		6699085N, 790785E	
1		DK INSITU SHALE WITH Py VEINS SOME DOLIMITIZATION.	
		6698310N, 790600E	
2		" " " " " "	
		6698245N, 790625E	
3		INSITU DK SHALE, LOTS GOSSAN (Py)	
		6698120N, 790635E	
4		DK GREY SHALE (DOL) JUST BELOW CONTACT?	
		6697995N 790620E	
5		DK GREY SHALE	
		6697940N, 790680E	
6		PALE - DK SHALE/SLST? WITH CARBONATE	
		6698185N, 790680E	
7		INSITU T'S JUST BELOW CONTACT. SOME	
		6697885N, 790685E	
8		DARK SILICIFIED SHALE/DOLIMITIZED	
		6697855N, 790680E	
9		" " "	
		6697770N, 790685E	
733320		T'S JUST BELOW CONTACT	
		6697715N, 790605E	

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WHITE - REGIONAL BASE
YELLOW - BRISBANE
PINK - RETAIN

NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

Carpentaria Exploration Company Pty. Ltd. 00083

SAMPLE LEDGER

SAMPLER'S INITIALS: D.K. DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS	STORE REF.
		WITCHELLNA 208BS SHEET 2	
733321	-80#	DK SHALE SOME DOLOMITIZATION. 6697615N 790670E	
2		DK SHALE SOME Py VEINS. 6697655N 790615E	
3		DK SHALE * OUT OF AREA OF INTEREST * 6697680N 790930E	
4		DISPATCH REF NO * 733281	
5			
6			
7			
8			
9			
0			
1			
2			
3			
4			
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7			
8			
9			
0			

SAMPLE TYPE CODE:
- DD = diamond drillcore
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- P = petrological sample
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WHITE - REGIONAL BASE
YELLOW - BRISBANE
PINK - RETAIN

NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

00084

Carpentaria Exploration Company Pty. Ltd.

SAMPLE LEDGER

SAMPLER'S INITIALS: DK DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS WITCHELINA 208BS. SHEET 2	STORE REF.
~~7333 1~~			
2			
3			
733324	-80#	APPEARS TO BE IN DK SLST / DOLOMITIC ? 6698870N, 790690E	
5		PALE - DK SHALE CLOSE TO BRECCIA CONTACT? V/MIXED UP AREA 6698845N, 790910E	
6		" " " " ~~6698730N~~, 6698740N, 790925E	
7		" " " " 6698670N, 791015E	
8		DK SHALE / SLST ? V/FINE GRAINED WITH DOLOMITIZATION 6699515N, 790765E	
9		DK SLST WITH SOME DOL FEATURES 6699435N, 790750E	
30		IN T'S JUST BELOW CONTACT 6699450N, 790655E	
1		IN SHALE UNIT, LIMONITE FROM CROC TEXTURE, DOL FEATURE 6699350N, 790750E	
2		DK SHALE WITH DOLOMITE, SOME GOSSAN SCREE 6699560N, 790690E	
3		T'S WITH Py GOSSAN VEINING 6699570N, 790590E	
4		DOLOMITIZED SHALE / SLST ? 6699635N, 790580E	
5		IN T'S LOTS DOL + Py LIMONITE 6699675N, 790475E	
6		" " " " 6699765N, 790410E	
7		" " " " 6699800N, 790365E	
8		" " SOME EVIDENCE OF MASSIVE Py ~~669~~ 6700420N 790075E	
9		T's / SLST ? DARK, DOLOMITIC SOME Py VEINING 6700305N, 790155E	
733340		IN T'S JUST BELOW CONTACT 6700340N, 790035E	

SAMPLE TYPE CODE:
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WHITE - REGIONAL BASE
YELLOW - BRISBANE
PINK - RETAIN

NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

Carpentaria Exploration Company Pty. Ltd.

SAMPLE LEDGER

SAMPLER'S INITIALS: DK DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS WITCHELINA 208BS. SHEET 2	STORE REF.
733341	-80#	IN TAPLEYS, CLOSE TO CONTACT? 6700170N 790140E	
2		T'S VERY DOLOMITIC SILICIFIED, SOME EVARRATE TEXTURED ROCKS?? 6700065N 790070E	
3		T'S LOTS DOL BANDS 6700180N 790205E	
4		T'S SIDE OF RIDGE JUST BELOW CONTACT 6700005N 790165E	
5		TAPLEYS BOTTOM OF HILL 6700075N 790205E	
6		T'S/SLST? LOT DOL, FAIR AMOUNT LIMONITE + Qz SCREE. 6699980N 790265E	
7		T'S SIDE OF RIDGE JUST BELOW CONTACT 6699915N 790215E	
8		T'S BOTTOM OF RIDGE, GOOD AMOUNT OF Py GOSSAN. 6699880N 790305E	
9		IN SLST?? VERY DOLOMITIC, FINELY LAMINATED 6700515N 790105E	
50		T'S EXPOSED SIDE OF GULLY, Py VEINING EVIDENT 6700580N 790020E	
1		T'S JUST BELOW CONTACT, ONLY SMALL EXPOSURE 6700625N 789990E ~~789990E~~	
2		DK SLST?, FINELY LAMINATED, DOL/SILICIFIED?? 6700610N 790070E	
3		~~SEA~~ PALE SILICIFIED T'S, Py MOLDS LEFT IN SHALE?? 6700745N 789970E	
4		DK SLST, SOME Qz + DOL FEATURES NEARBY. 6700710N 790100E	
5		PALE - DK SLST/SHALE? LOTS CARBONATE. 6700790N 790080E	
6		T'S FAIR AMOUNT Py GOSSAN FLOAT 6700835N 789990E	
7		" " " + CARBONATE 6700895N 790040E	
8		PALE SHALE, V/MINOR EXPOSURE, BURIED AREA. 6701055N 790005E	
9		DARKISH SLST/SHALE?? FINELY LAMINATED, MINOR EXPOSURE 6701100N 790080E	
733360		FRAG'S T'S IN SCREE, JUST BELOW CONTACT, CROSS CUTS Qz VEINS 6701160N 790015E	

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WHITE - REGIONAL BASE
YELLOW - BRISBANE
PINK - RETAIN

NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

Carpentaria Exploration Company Pty. Ltd.

00086

SAMPLE LEDGER

SAMPLER'S INITIALS: DK DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS	STORE REF.
		WITCHELNA 208GS. SHEET 2 *	
733361	-80# soil.	FROM RABBIT WARREN T's, DK GREY COLOUR, BURIED AREA 6701215N 790060E	
2		√/DARK T's, SOME Py GOSSAN 6701300N 790035E	
3		DARK T's, LOTS CARB + SOME Py VEINING, SIDE OF WASH GUTTER 6701320N 790095E	
4		DARK T's, JUST BELOW CONTACT, FROM RABBIT WARREN (SCREE SLOPE) 6701385N 790075E	
5		T's/sst? DOLOMITIC, SIDE OF CREEK. 6701470N 790115E	
6		T's DOWN BELOW GB VEIN, SOME GOSSAN FLOAT. 6701535N 790210E	
7		T's, SIDE OF RIDGE, SIDE OF GUTTER 6701565N 790135E	
8		T's, MINOR EXPOSURE, FAIR AMOUNT OF GOSSAN FLOAT. 6701610N 790245E	
9		T's JUST BELOW CONTACT, SIDE OF GULLY, FAIR AMOUNT GOSSAN 6701670N 790135E	
70		T's DOL/SILICIFIED, SOME Py GOSSAN. 6701775N 790145E	
1		T's, LOTS CARB, MINOR Py GOSSAN 6701850N 790245E	
2		T's, LOTS DOL'C MAT, SOME Py GOSSAN, & MINOR MALACHITE * 6701885N 790165E	
3		T's, LOTS DOL + SILICIFIED?? 6701955N 790230E	
4		T's, LOTS CARBONATE (DOL.) 6701990N 790150E	
5		T's?? SCREE WITH FAIR AMOUNT OF GOSSAN FLOAT 6702055N 790215E	
6		T's INSITU, PALE IN COLOUR, HAS Py VEINING IN CREEK 6702080N 790095E	
7		T's EXPOSED IN GUTTER WITH Py MATERIAL 6702130N 790175E	
8		SIDE OF RIDGE, T's IN SCREE, BURIED AREA. 6702265N 790205E	
9		INSITU T's/sst??, LOTS Py GOSSAN. 6702315N 790320E	
733380		SCREE SLOPE NOT INSITU, JUST BELOW SILICIFIED TOP RIDGE 6702390N 790290E	* SHEET 1

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Carpentaria Exploration Company Pty. Ltd.

00087

SAMPLE LEDGER

SAMPLER'S INITIALS: D.K. DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS	STORE REF.
		WITCHELINA 20855 SHEET 1	
733381	30# SOILS	SCREE SLOPE JUST BELOW SILICIFIED + DOL RIDGE TOP. 6702475N 710350E	
2		DISPATCH REF No 733324	
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9			
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SAMPLE TYPE CODE:
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Carpentaria Exploration Company Pty. Ltd.

00088

SAMPLE LEDGER

SAMPLER'S INITIALS: D.K DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS Rock Chip WITKELLINA 208BS SHEET (1)	STORE REF.
1			
733382	R.	10mR. Py Gossan V/DARK SHALE/SLST? FINELY LAMINATED MAT TAKEN 6706450N 789640E	
3		" " " " 6706350N 789605E	
4		" OUT ON SALT FLAT 6706300N 789655E	
5		" " " " 6706225N 789640E	
6		10mR MASSIVE Py, FRESH + WEATHERED IN T'S, BOTTOM SMALL BREAKAWAY 6706210N 789680E	
7		10mR Gossan SOME INSITU, Py BOX WORK, V/MINOR CHALCO looking 6706095N 789745E	
8		10mR Gossan ALL FINELY LAMINATED MATERIAL, Py? 6705985N 789760E	
9		" " " " 6705900N 789815E	
90		10mR G's FROM T'S, Py BOXWORK *V/MINOR MALACHITE FLOAT* ← 6705800N 789805E	
1		10mR G's FROM T'S SOME INSITU, Py BOX WORK, V/MINOR CHALCOTENTURE 6705730N 789755E	
2		" " " " " 6705685N 789780E	
3		10mR G's FROM T'S 6705615N 789795E	
4		" " " 6705575N 789820E	
5		10mR, G's FROM T'S, Py BOX WORK, SOME INSITU 6705485N 789765E	
6		10mR Gossan FLOAT FROM SCREE SLOPE, SOME Py BOXWORK 6705425N 790840E	
7		10mR G's FM T'S, DOWN BELOW OLD Cu PIT 6705375N 789770E	
8		10mR G's FM T'S Py BOX WORK 6705330N 789815E	
9		" " " " 6705265N 789795E	
733400		10mR GOSSANS PROB DOL/T'S ORIGIN 6705240N 789870E	

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Carpentaria Exploration Company Pty. Ltd. 00089

SAMPLE LEDGER

SAMPLER'S INITIALS: D.K DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS Rock Chip. WITCHELLINA 208 BS SHEET (1)	STORE REF.
733401	R.	10mR, Gossans fm T's 6705195N 7898052	
2		" " " 6705135N 7898702	
3		Gossan Float 10mR, some v/minor looking Chalco Box Work. 6705120N 7899752	
4		10mR, G's fm T's, Py Box Work, v/minor Chalco B/work ?? 6705005N 7899402	
5		10mR Gossan Float, some Py B/work. 6705810N 7899952	
6		10mR G's fm T's 6704935N 7900152	
7		10mR Gossan Float 6704915N 7901252	
8		10mR G's fm T's 6704845N 7900652	
9		10mR, Gossan Float 6704875N 7902202	
10		Gossan some insitu some Py B/work 10mR. 6704705N 7902002	
1		10mR Gossan Float. ~~7903452~~ 6704695N 7903452	
2		10mR insitu T's, Limonite v/ins no v/is Malachite, Down fm old Cu Pits 6704590N 7902502	
3		10mR Gossan Float 6704570N 7902902	
4		10mR Gossan lots Carbonate. 6704485N 7903402	
5		15mR G's fm T's 6704440N 7903852	
6		10mR Gossan fm Dolomite in T's ?? 6704430N 7904502	
7		15mR " " " 6704365N 7904352	
8		10mR Gossan Float, not far from old Cu Pit in T's 6704365N 7905102	
9		10mR, G's fm Dolomite in T's ? 6704285N 7905102	
733420		" " " ~~7~~6704260N ~~7905702~~ 7905752	

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Carpentaria Exploration Company Pty. Ltd. 00090

SAMPLE LEDGER

SAMPLER'S INITIALS: D.K. DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS Rock Chips. WITCHELINA 208BS SHEET 1	STORE REF.
733421	R.C	15mR GOSSAN TYPE MATERIAL 6704215N 790665E	
2	RC	10mR SILICIFIED T'S?? GOSSAN TYPE MAT, V/minor CHRYSOCOLLA?? * 6704120N 790705E	
3	RC	5mR SANDST/BRECCIA, LIMONITE VEINING, SOME Py B/WORK Qz VEINING 6704075N 790720E	
4	RC.	10mR Qz FM T'S, SOME Py B/WORK, MINOR CHALCO LOOKING TEXTURES. 6704060N 790775E	
5	-80# SOIL.	V/DARK T'S LOTS DOLOMITE (CARB). 6704025N 790810E	
6	-80#	" " " 6704025N 790875E	
7	-80#	T'S LOTS CARB, 20m ALONG STRIKE FM OLD Cu PIT. 6739A5N 790850E	
8	-80#	T'S V/DARK LOTS CARB 6703945N 790915E	
9	-80#	T'S SILICIFIED, LOTS CARB, SOME GOSSAN MATERIAL. 6703870N 790915E	
30	-80#	T'S LOTS DOLOMITE. 6703860N 790975E	
1	-80#	" " " SOME GOSSAN MATERIAL 6703785N 790965E	
2	-80#	T'S VERY DARK. 6703780N 791035E	
3	-80#	" " SOME GOSSAN MATERIAL 6703695N 791035E	
4	-80#	FAIR AMOUNT OF SCREE, SOME MINOR EXPOSED INSITU SHALE 6703690N 791110E	
5	Rock CHIP	10mR, GOSSAN MATERIAL FM INSITU SHALE 6703665 791070E	
6	-80#	IN T'S SOME EXPOSURE ON SCREE SLOPE, SOME GOSSAN 6703615N 791090E	
7	-80#	T'S V/DARK FROM SMALL GUTTER AS BURIED AREA 6703600N 791170E	
8	-80#	T'S LOT CARB + GOSSAN TYPE MATERIAL. 6703515N 791115E	
9	Rock CHIP.	INSITU GOSSAN MATERIAL 6703500N 791205E	
733440	-80#	SILICIFIED T'S, SOME GOSSAN MATERIAL 6703410N 791120E	

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NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

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00091

Carpentaria Exploration Company Pty. Ltd.

SAMPLE LEDGER

SAMPLER'S INITIALS: D.K. DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS	STORE REF.
		WITCHELINA 2088S SHEET (1)	
733441	ROCK CHIP	GOSSAN, Py LOOKING MATERIAL 10mRADIUS. 6703415N 7912055E	
2	RC	10mR GOSSAN FLOAT 6703300N 7912100E	
3	RC	10mR G'S FM SCREE SLOPE D/SLOPE V/MINOR SILICIFIED T'S?? 6703210N 7912100E	
4	RC	10mR GOSSAN FLOAT FROM SCREE SLOPE 6703160N 7911955E	
5	RC	15mR " " FAIRLY AVERAGE QUALITY. 6702850N 7911755E	
6	RC	10mR, GOSSAN FLOAT, PYRITIC 6702805N 7910855E	
7	RC	10mR GOSSAN FLOAT, ALSO T'S IN SCREE 6702835N 7910055E	
8	RC	10mR GOSSAN + PYRITIC SHALE 6702860N 7908100E	
9	RC	10mR GOSSAN Py FLOAT 6702815N 7907300E	
50	RC	" " " 6702765N 7906150E	
1	RC	10mR, GOSSAN FLOAT FM SCREE SLOPE 6702825N 7906050E	
2	-80#	GOOD LOOKING INSITU T'S, LOTS DOL SOME Py GOSSAN. 6701920N 790180E	
3	-80#	DARK- V/PALE SILICIFIED T'S FM TOP OF OUTCROP. 6701995N 790095E	
4	-80#	INSITU T'S FAIR AMOUNT OF GOSSAN MATERIAL 6702040N 790145E	
5	-80#	V/PALE INSITU SHALE/SLST? SOME GOSSAN MAT IN VEINING. 6701840N 790185E	
6	-80#	SMALL BREAKAWAY IN SCREE SLOPE, LOTS CARBONATE (DOL) 6701805N 790225E	
7	-80#	FINELY LAMINATED INSITU SLST SOME GOSSAN MATERIAL 6701915N 790245E	
8		DESPATCH	
9			
0			

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00092

Carpentaria Exploration Company Pty. Ltd.

SAMPLE LEDGER

SAMPLER'S INITIALS: D.K. DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS	STORE REF.
		WITCHELINA 208BS - 80# SOILS. SHEET 1	
1	S		
2			
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4			
5			
6			
7			
73345 8	-80#	INSITU T'S FAIR AMOUNT OF GOSSAN AROUND 6705840N 7897450E	
9		VERY DARK INSITU T'S 6705790N 7897200E	
60		SOME Py "VEINING" ALSO CROSS CUTTING Qz VEINS, LOTS CARB 6705725N 7897350E	
1		INSITU T'S LOTS GOSSAN MATERIAL + DOLOMITE V/DARK T'S 6705680N 7897700E	
2		V/DARK T'S " " " 6705640N 7897400E	
3		VERY DARK SHALE, CROSS CUT Qz VEIN 6705585N 7897650E	
4		V/DARK INSITU T'S 6705545N 7897700E	
5		" " " DOWN FROM WD007 6705515N 7898200E	
6		" " " Py GOSSAN + CROSS CUTTING Qz VEINS 6705450N 7897650E	
7		EXPOSED INSITU T'S ON SCREE SLOPE, LOTS GOSSAN FLOAT 6705420N 7898150E	
8		EXPOSED DARK T'S AT BOTTOM OF SCREE SLOPE, GOSSAN FLOAT 6705325N 7898050E	
9		V/DARK T'S INSITU, FAIR AMOUNT OF GOSSAN FLOAT 6705275N 7897700E	
73347 0		BLACK SHALE EXPOSED ON SCREE SLOPE * V/MINOR MALACHITE FLOAT * ← Cu 6705245N 7898450E	

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Carpentaria Exploration Company Pty. Ltd.

00093

SAMPLE LEDGER

SAMPLER'S INITIALS: D.K DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS	STORE REF.
		WITCHELINA 208 RS -80# SOILS SHEET (1)	
733471	-80# S	PALE PYRITIC SHALE NEAR CONTACT, SILICIFIED ?? PALE COLOURED SOIL 6705190N, 7897852	
2		BLACK SHALE, LOTS Py VEINING EXPOSED NEARBY IN GUTTER 6705195N, 7898702	
3		PALE-DARK SHALE, SILICIFIED/DOLOMITIZED? NEAR CONTACT? PALE SOIL 6705115N, 7898402	
4		BLACK SHALE/SLST? BLACK SOIL 6705180N, 7899452	
5		DARK T'S EXPOSED ON SCREE COVERED SLOPE, BLACK SOIL 6705055N, 7899202	
6		INSITU BLACK SHALE, SOIL PALE IN COLOUR 6705035N, 7899802	
7		PYRITIC BLACK DOL/SIL? SHALE ON CONTACT, PALE COLOURED SOIL 6704955N, 7899102	
8		V/DARK SHALE/SLST?, VERY DARK SOIL SAMPLED 6704960N, 7900552	
9		PYRITIC DARK SHALE, UPSLOPE FROM CUT PIT, ON CONTACT? LOTS CARBONATE 6704880N, 7900152	
80		INSITU BLACK SHALE LOTS CARB. 6704890N, 7900652	
1		DARK SHALE, LOTS CARBONATE, CROSS CUTTING, Qtz VEINS IN AREA 6704885N, 7901402	
2		BLACK SHALE, LOTS CARBONATE, BLACK SOIL SAMPLED 6704810N, 7900902	
3		INSITU BLACK SHALE WITH FAIR AMOUNT OF SCREE 6704780N, 7902052	
4		BLACK INSITU T'S, LOTS DOLOMITE. 6704715N, 7901602	
5		INSITU DARK SHALE/SLST, LOTS CARBONATE, Py VEINING?, DARK SOIL. 6704715N, 7902552	
6		DARK SILICIFIED SHALE? ON SCREE SLOPE, PALE COLOURED SOIL. 6704610N, 7902102	
7		INSITU DARK SIL/DOL T'S, SOIL PALE IN COLOUR 6704620N, 7902752	
8		SOME EXPOSED SIL/DOL SHALE ON SCREE SLOPE, PALE SOIL 6704545N, 7902852	
9		DARK SHALE/SLST?, PALE COLOURED SOIL. 6704530N, 7903452	
733490		PALE SILICIFIED SHALE?, LOTS CARB, PALE SOIL 6704450N, 7903352	

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PINK - RETAIN

NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

00094

Carpentaria Exploration Company Pty. Ltd.

SAMPLE LEDGER

SAMPLER'S INITIALS: D.K. DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS	STORE REF.
		WITCHELINA 208RS -80# SOILS SHEET (1)	
73349 1	-80# S.	BLACK SHALE/SLST? SILICIFIED? PALE SOIL. 6704460N 7904155E	
2		SUSPECT SAMPLE, Cu FLOAT FOUND PALE SILICIFIED T'S? 6704380N 7904055E	* Cu
3		" " " 6704360N 7904755E	
4		BLACK INSITU T'S, BLACK SOIL. 6704300N 7904955E	
73349 5		SILICIFIED T'S Qz VEIN CROSS CUT WITH LIMONITE + Cu STAINING 6704245N 7906055E	* Cu
6			
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NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

SDA MIM REF Nº 733496 1 OF 2

Carpentaria Exploration Company Pty. Ltd. 00095

SAMPLE LEDGER

SAMPLER'S INITIALS: D.K. DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS	STORE REF.
		WITCHELINA 208 BS -80# SOILS SHEET 2.	
1			
2			
3			
4			
5			
733496	-80# S	INSITU T'S SOME LIMONITE AFTER SULPHIDE, V/DARK SOIL 6698035N 791070E	
7		EXPOSED T'S ON SIDE OF SCREE SLOPE DARK SOIL 6698030N 791120E	
8		DARK SHALE, SILICIFIED STRUCTURE THRU SHALE?, PALE SOIL. 6697990N 791155E	
9		INSITU BLACK SHALE, VERY DARK SOIL 6697980N 791205E	
733500		EXPOSED SILICIFIED SHALE? SIDE OF SCREE SLOPE, PALE SOIL 6697905N 791260E	
1		MASSIVE SHALE?? PALE COLOURED SOIL. 6697910N 791350E	
2		SOME EXPOSED SHALE ON SIDE OF SCREE SLOPE, PALE SOIL. 6697840N 791410E	
3		" " " DARKISH SOIL 6697825N 791475E	
4		" " " " 6697780N 791510E	
5		NOT INSITU, SIDE SCREE SLOPE 6697755N 791560E	
6		TOP OF RIDGE, SILICIFIED SHALE?, PALE COLOURED SOIL 6697735N 791640E	
7		INSITU DARK SHALE, BLACK SOIL 6697645N 791730E	
8		" " " 6697660N 791685E	
9		" " " 6697680N 791620E	
733510		" " " 6697695N 791565E	

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Carpentaria Exploration Company Pty. Ltd.

00096

SAMPLE LEDGER

SAMPLER'S INITIALS: DK DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS	STORE REF.
		WITCHELINA 208 BS SHEET 2 -80# SOILS	
733511	Soil -80#	INSITU DARK SHALE, DARK SOIL 6697725N, 7915052,	
2		SHALE? DARKISH SOIL 6697750N, 7914452,	
3		DARK SHALE, DARK SOIL 6697755N, 7913552,	
4		EXPOSED SHALE ON SCREE SLOPE, PALE SOIL 6697805N, 7913052,	
5		INSITU DARK SHALE, BLACK SOIL 6697820N, 7912202,	
6		" " " DOLOMITIZATION? 6697865N, 7911752,	
7		DARK INSITU SHALE, DARK SOIL BOTTOM OF SCREE SLOPE 6697840N, 7911002,	
8		SIDE OF SCREE SLOPE, DARK SOIL FROM RABBIT HOLE 6697890N, 7910702,	
9		EXPOSED SHALE ON SCREE SLOPE, DARKISH SOIL. 6697905N, 7910152,	
20		DOLOMITIC SHALE? ON SIDE OF HILL, PALE SOIL 6697930N, 7909652,	
1		DARK EXPOSED SHALE, PALE SOIL, TRANS FM DIAPIR 6697970N, 7908952,	
733522		EXPOSED ~~SOIL~~ SHALE ON SCREE SLOPE, PALE SOIL 6697995N, 7908102,	
3			
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5			
6			
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0			

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- = other drilling samples (specify)

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- SS = stream sediment sample
- R = rock chip sample
- P = petrological sample
- = other (specify)

WHITE – REGIONAL BASE
YELLOW – BRISBANE
PINK – RETAIN

NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

Carpentaria Exploration Company Pty. Ltd.

00097

SAMPLE LEDGER

SAMPLER'S INITIALS: D.K. DATE:

SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS	STORE REF.
		WITCHELINA 208BS SOUTHERN EXTENSION GOSSAN SAMPLES T'S FROM SHEET 2	
1			
2			
733523	R.	5m RADIUS LAS FROM INSITU T'S, SMALL PYRITIC VEINING	
4		10m RADIUS, GOSSAN FLOAT, MINOR Py BOX WORK	
5		10m RADIUS, G'S FM T'S, PYRITIC, INSITU BLACK T'S	
6		" " " " "	
7		" " " " "	
8		" " " " "	
9		10m RADIUS, TAKEN FROM INSITU LAS VEIN ON T'S, EXPOSED IN CREEK BED	
30		10m RADIUS, GOSSAN FLOAT	
1		10m R, LAS VEINING IN T'S/SLST? EXPOSED IN CREEK BED, DIPPING BACK UNDER CONGLOMERATE??	
2		10mR, PYRITIC GOSSAN FROM T'S	
3		5mR, T'S CROSS CUT LG. QZ VEINS Py GOSSAN, SOME INSITU.	
4		15m RADIUS, GOSSAN FLOAT	
5		15mR, PYRITIC GOSSAN, SOME INSITU IN SHALE	
6		10mR. G'S FM T'S PYRITIC	
7		10mR PYRITIC G FLOAT	
8		10mR, Py G'S FROM V/DARK T'S	
9		" " " SOME INSITU.	
733540		" " "	

SAMPLE TYPE CODE:
- DD = diamond drillcore
- PD = percussion/rotary cuttings
- RAB = rotary airblast cuttings
- = other drilling samples (specify)
- S = soil sample
- SS = stream sediment sample
- R = rock chip sample
- P = petrological sample
- = other (specify)

LAS LIMONITE AFTER SULPHIDE
T'S - TAPLEYS.
G - GOSSAN
R - RADIUS

WHITE - REGIONAL BASE
YELLOW - BRISBANE
PINK - RETAIN

NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

2 of 2

Carpentaria Exploration Company Pty. Ltd.

00098

SAMPLE LEDGER

SAMPLER'S INITIALS: PK DATE:

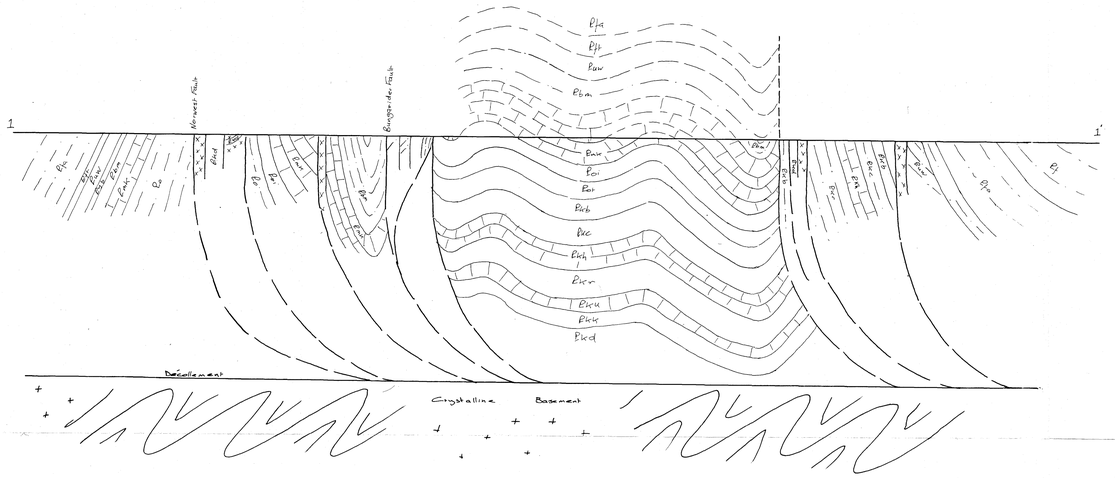
SAMPLE No.	SAMPLE TYPE	LOCATION/DETAILS	STORE REF.
		WITHELINA 208 BS ROCK CHIP SOUTH SHEET 2.	
733541	ROCK CHIP	10mR GOSSAN FROM TAPLEYS	
2		10mR GOSSAN FLOAT	
3		10mR by GOSSAN FLOAT.	
4		" " "	
5		" " " VERY DOLOMITIC	
733546		" " "	
7		DISPATCH MIMEX REF No. 733523	
8			
9			
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
0			

SAMPLE TYPE CODE:
- DD = diamond drillcore
- PD = percussion/rotary cuttings
- RAB = rotary airblast cuttings
- = other drilling samples (specify)
- S = soil sample
- SS = stream sediment sample
- R = rock chip sample
- P = petrological sample
- = other (specify)

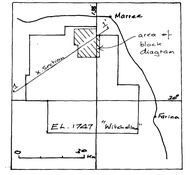
WHITE – REGIONAL BASE
YELLOW – BRISBANE
PINK – RETAIN

NOTE: PLEASE DESCRIBE SAMPLE LOCATION FULLY & CONCISELY

8528-18

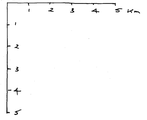


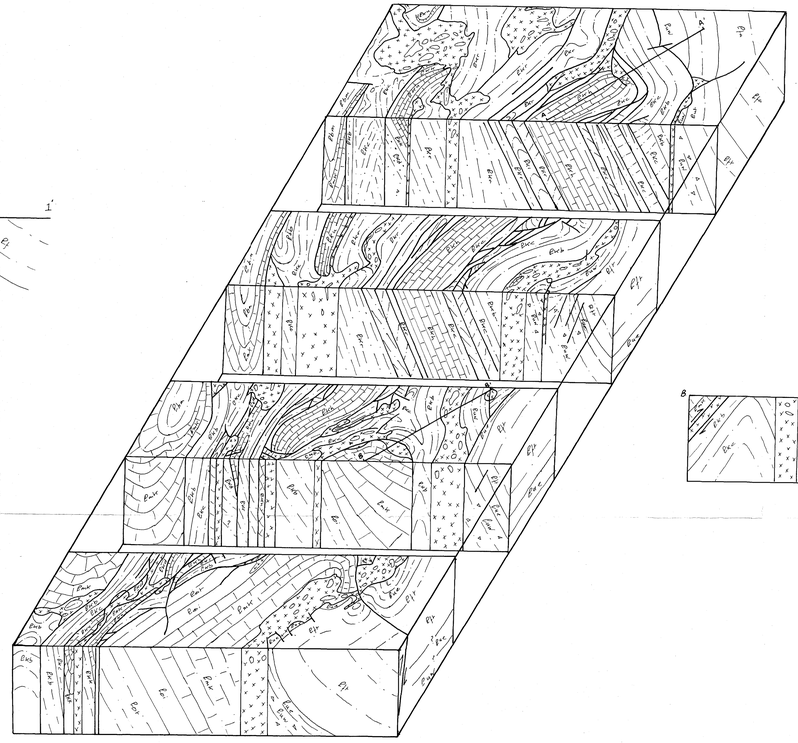
Note: fault style at depth suggested by V.C. Wall & M. Edwards.

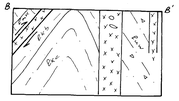


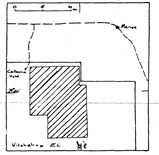
Note – X-section is closer to second section of block diagram

Scale V = h







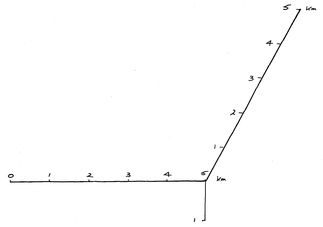


Note – The large block of Hogan Dolomite (Pbh) has acted as a competent unit around which deformation has been taken up by strike faulting and folding in the Cooranna Fm (Pbc) and Recovery Fm (Pbr). Shearing has caused the dolomite to break up into mega-boudins – presumably other boudins occur at depth and along strike under younger Adelaidean cover.

– Thrusting of the large block of relatively undeformed Burra Gr sediments (Pbt, Pbi, Pbw) from the south has caused the intense deformation in the central part of the above area. This thrusting has occurred in several phases and caused the folds in the Cooranna, Beerloo, Willyerpa, Serla and Tapley Hill units.

– Most of the faults (other than the strike faults) are shown as vertical on the block diagram. Although this seems unrealistic it is probably correct if the style of faulting shown on the regional cross-section is accepted.

Scale V = H



See Drg No. 37196 for geology of block diagram.

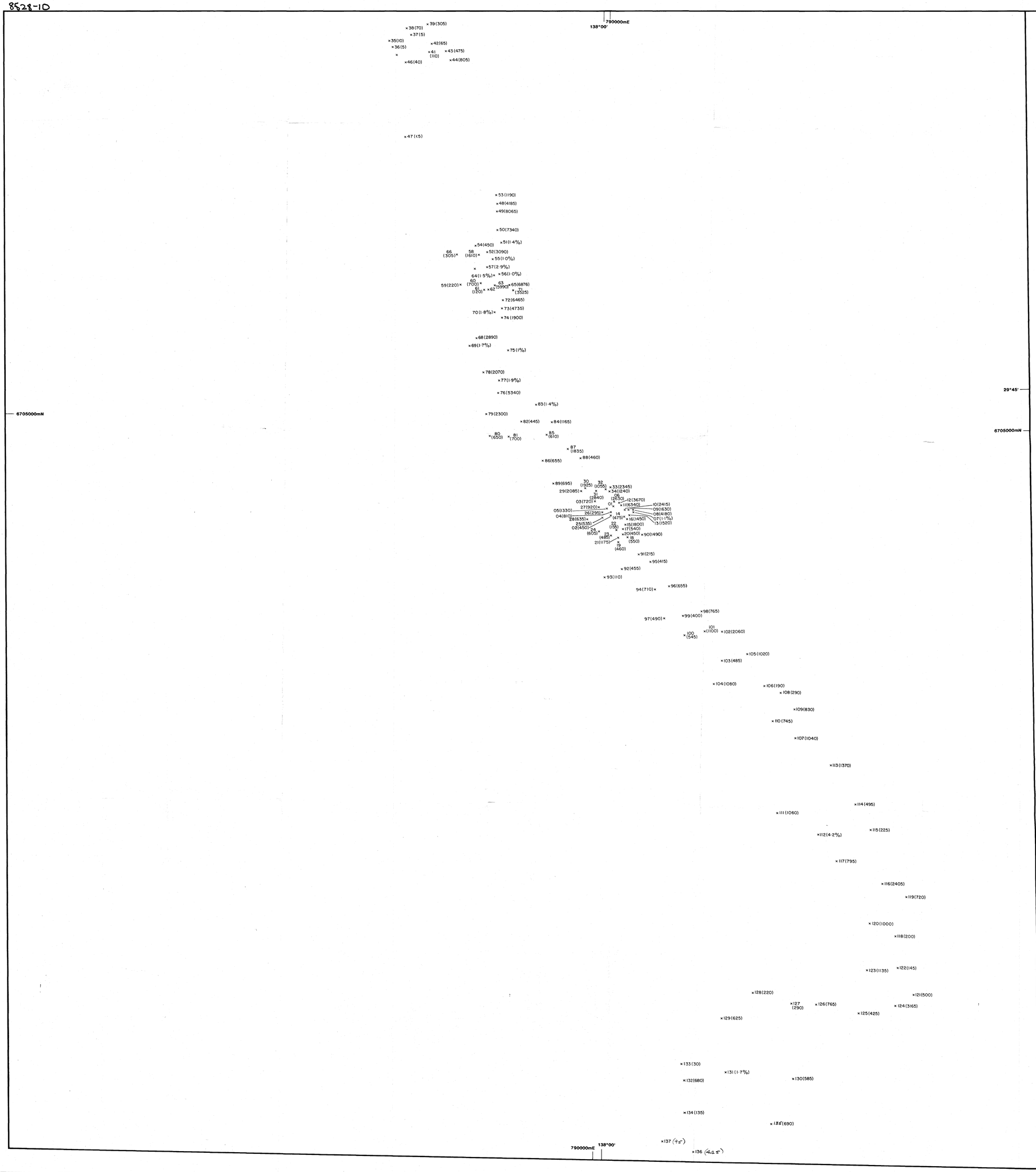
Legend

Q	Alluvium, colluvium
Qt	Talus, slope deposits
Pfq	Anthoroona Fm – green, grey, siltstone shale, limestone with stromatolites
Pfp	Tapley Hill Fm – dk grey, laminated siltstone with stromatolites
Pbw	Tindelpina Sh M – black, finely laminated pyrite sh, dolst sh
Pbi	F Sandy M – sandstone, siltstone, conglomerate
Pbp	Willyerpa Fm – probably tuff, sandst, siltstone, dolomite
Pbb	Quintaglen Dol – dk grey dol, sandst, slst
Pbc	Wilkatana Quartz – frosty lithofacies sandst & slst
Pbr	Wilkawilla Fm – frosty sandst, slst + minor dol. Pbr – Top Minor Tillite – sandst, slst, dol
Pbt	Beerloo Tillite – dk grey, to black slst + dol with prominent dol bands at top
Pbn	Cooranna Fm – slst, tillite, dol, clst
Pbh	Hogan Dol – grey + brown dol, minor slst + clst
Pbu	Recovery Fm – frosty sandst, slst + minor carbonate
Pbm	Burra Mine Lst – grey, pinky, sandy, shaly lst + slst
Pbw	Rawnsley Tillite – frosty lithofacies grey sh, slst + sandst with local dolomite layer
Pbd	Burra Slst – sandst with some kaolinite lamination
Pbp	Tectonic breccia – monomictically showing intrusive features (pyroxenite xenoliths)

8528-18

REVISION		SCALE: 1:1 55000	M.I.M. EXPLORATION PTY. LTD.
		GEO: PB	EL 1747 "Witchelina"
		DATE:	Interpretive cross-section of the northern part of the EL and block diagram of the NE portion.
		DRAFT: PB	
		DATE: June 92	
		1:250,000	
		1:100,000	
		MINING FIELD OR DISTRICT: Willouran Ranges S.A.	DRG No.: 37213

8528-10



LEGEND

× 119 (720) Location of rock chip sample with sample number
Cu content in ppm unless shown as %.

Note: All samples are prefixed 733.... i.e. (733117)
All samples assayed for Co,Zn,Ag and Pb in addition to Cu.

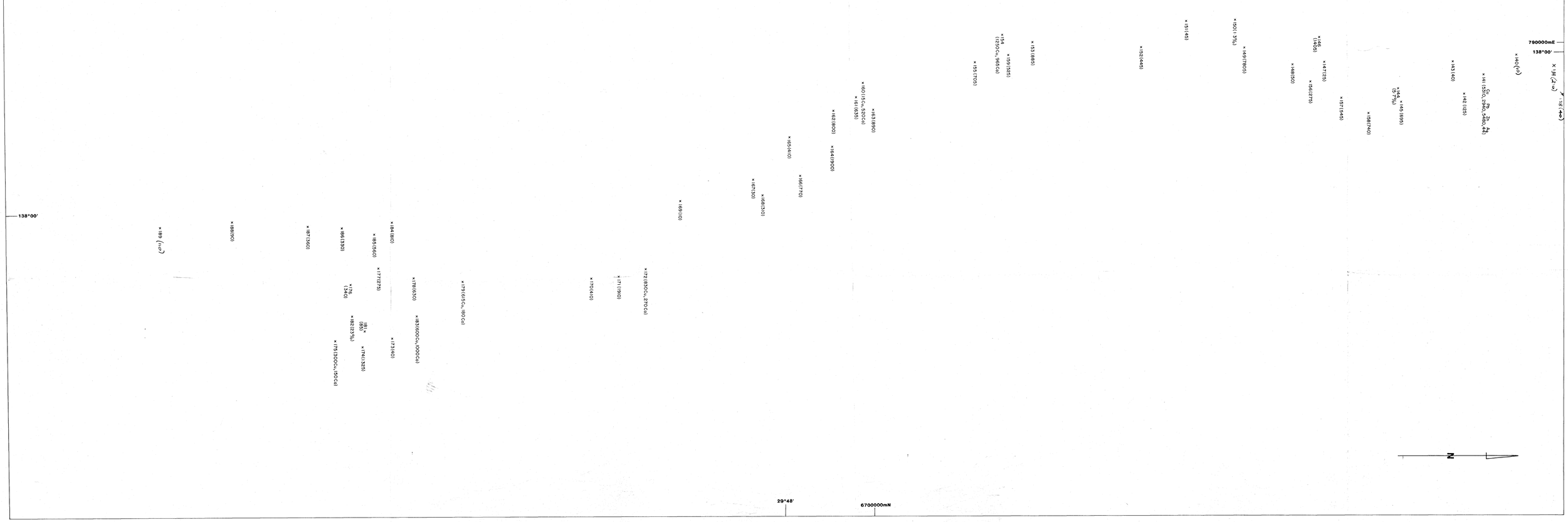
8528-10

0 100 200 300 400 500m
SCALE

Overlay to Drg. No. 36506

REVISION			
		SCALE : 1:5,000 (APPROX.)	M.I.M. EXPLORATION PTY. LTD.
		GEO : I.D.K.	WITCHELINA E.L.
		DATE : Mar.1992	LOCATION OF ROCK CHIP SAMPLES
		DRAFT : G.J.G.	AND COPPER RESULTS
		DATE : Mar.1992	SHEET 1
		1:250,000	
		1:100,000	
		MINING FIELD OR DISTRICT :	DRG No. : 37113

8528-11



LEGEND

× 149 (7605) — Location of rock chip sample with sample number; Cu content in ppm unless shown as %

Note: All samples are prefixed 733... i.e. 733149
All samples assayed for Co, Zn, Ag and Pb in addition to Cu.
A few samples have some results for these elements shown in ppm.

8528-11

0 100 200 300 400 500m
SCALE

REVISION			
		SCALE: 1:5,000 (Approx.)	M.I.M. EXPLORATION PTY. LTD.
		GEO: I.D.K.	WITCHELINA EL
		DATE: April 1992	LOCATION OF ROCK CHIP
		DRAFT: G.J.G.	SAMPLES AND COPPER RESULTS
		DATE: April 1992	SHEET 2
		1:250,000	
		1:100,000	
		MINING FIELD OR DISTRICT: Willouran Ranges	DRG No.: 37137

Overlay to Drg.No.36591

M.I.M. EXPLORATION PTY LTD

00099

TECHNICAL REPORT

No. 2039

TITLE:	EL 1747 "WITCHELINA" ANNUAL REPORT FOR YEAR ENDING OCTOBER 20, 1993
ISSUING DEPARTMENT:	EXPLORATION
AUTHOR:	PJ BINKS
INVESTIGATIONS CONDUCTED BY:	PJ BINKS
SUBMITTED BY:	SH ROBINSON
DATE:	OCTOBER 1993

00100

DISTRIBUTION:

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4. **SOUTH AUSTRALIAN DEPARTMENT OF MINES & ENERGY**

Approved for Distribution:

.....

S.H. Robinson
Regional Manager - WA & SA

Key Words

Willouran Ranges

Diapirs

Copper Mineralisation

Geological Mapping

Gossan Sampling

RC Drilling

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47023	Drill and Assay Log MWRC-3 and 4		1:500
47024	Drill and Assay Log MWRC-5		1:500
47025	Drill and Assay Log MWRC-6		1:500
47026	Drill and Assay Log MWRC-7		1:500
47027	Drill and Assay Log MWRC-8		1:500
47028	Drill and Assay Log MWRC-9		1:500
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37946	Rock Chip Results - Pb	Sheet 1	1:5,000
37947	Rock Chip Results - Zn	Sheet 1	1:5,000
37948	Rock Chip Results - Ag	Sheet 1	1:5,000
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37960	Rock Chip Results - Ag	Sheet 4	1:5,000
37961	Rock Chip Results - Co	Sheet 4	1:5,000

EL 1747 "WITCHELINA" ANNUAL REPORT FOR THE YEAR ENDING OCTOBER 20, 1993

1. INTRODUCTION

This report presents the results of M.I.M. Exploration Pty Ltd's (MIMEX) exploration on this tenement over the last year. The Licence covers virtually all of the Willouran Ranges and was taken up to search for structurally controlled copper mineralisation.

2. LOCATION AND ACCESS

The Willouran Ranges are located to the south-west of Marree in the central-north of South Australia approximately 600 km north of Adelaide. Access to the Licence is via a graded road from Farina to Witchelina Homestead and then via station tracks to water bores. Access from the north is via Callanna Station or a track from the Leigh Creek-Marree road to the Breaden Hill Copper Mine. Access into much of the Licence is poor and the eastern range of hills from Breaden Hill to Witchelina Homestead is accessible only on foot.

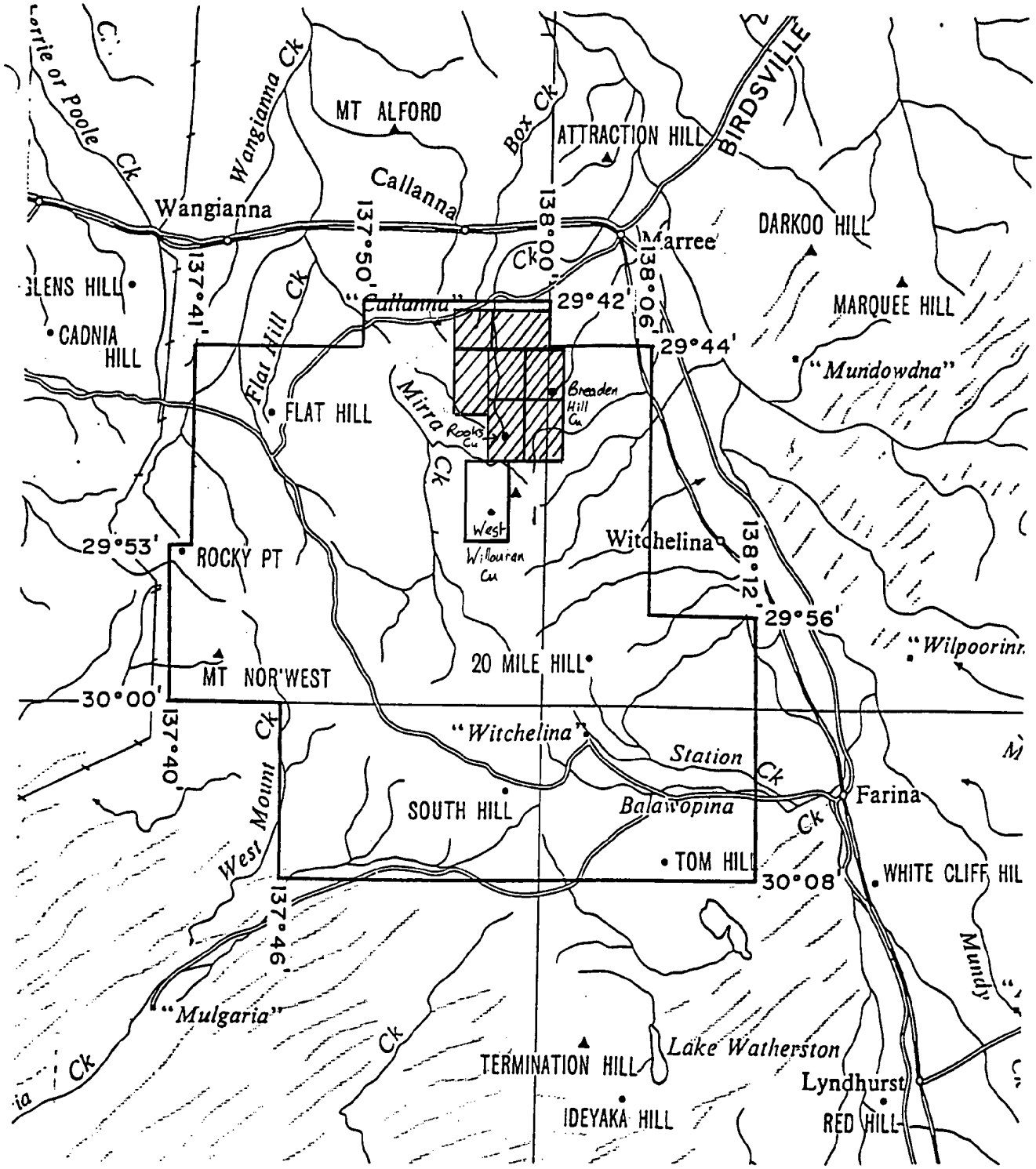
3. TENURE

Exploration Licence 1747 "Witchelina" was granted to Mount Isa Mines Limited on October 21, 1991 for a term of one year with an expenditure commitment of $155,000. The Licence covers most of the Willouran Ranges south-west of Marree and is 1958 km^2 in area. The Licence was extended for a further term of one year with the same expenditure commitment in September 1992. An application to extend the Licence over a reduced area was sent to the Department early in September 1993.

4. GEOLOGY

The Licence is located over the junction of the Curdimurka, Marree, Andamooka and Copley 1:250 000 sheets and there are considerable differences in interpretations of rock units and structural features between these sheets. The Curdimurka 1:250 000 sheet has only recently been published and shows the latest ideas on the geology of the area. The south-eastern part of this sheet is based on the Wangianna 1:100 000 provisional geological sheet, which is an excellent geological map. Remapping of the central-eastern part of this map by the author at a scale of 1:5000 has broadly confirmed its validity.

Geologically, the area is an excellently exposed sequence of mainly shallow water clastics and carbonates of the Upper Proterozoic Adelaidean System. The type section of the upper part of the Callanna Group occurs in the northern part of the Licence.



EL 1747 Mount Isa Mines Limited

SCALE 1:500,000

KILOMETRES 10 0 10 20 30 40 50 KILOMETRES

AREA: 1958 square kilometres (approx.)

1:250000 PLANS: CURDIMURKA, MARREE, ANDAMOOKA, COPLEY

LOCALITY: WITCHELINA AREA – approx. 50 km south of Marree

Rather than go into details of the regional geology here, the reader is referred to:

- Bulletin 53 (1987). The Adelaide Geosyncline (compiled by W.V. Preiss)
- Explanatory Notes, Curdimurka - Sheet SH 53-8, 1991 (G.E. Krieg et al)
- Stratigraphy and Tectonics Across The Torrens Hinge Zone Between Andamooka and Marree, South Australia
  PhD Thesis, Adelaide University 1977. B. Murrell

In addition, some notes on the geology and suggestions on controls of mineralisation are presented in S. Carthews' Honours Thesis (Sedimentary Environs of Stratiform Copper Mineralisation in the Callanna Beds, Willouran Ranges, Flinders University 1975). Descriptions of diapirs and mechanisms of diapirism were given by W. Fairburn in Envelope 1145 describing exploration by Carpentaria Exploration Company on SML 169 in 1968/69.

Details of sedimentology within the Licence area are given in Utah's reports on exploration in Envelope 2915 (EL277) and 3507 (ELs 461 and 850). Unfortunately, much of Utah's work is marred by poor geological mapping and an apparent disbelief in faulting or tectonic brecciation.

5. PREVIOUS EXPLORATION

Many companies have worked in the area but only Utah have drilled many exploration holes. Although Utah drilled 40 diamond holes for 9160m and 139 percussion holes for 16370m, all these holes were based on ideas of stratiform mineralisation and even the prospects they drilled may still have considerable potential for structurally controlled mineralisation.

The following table lists the companies and tenements previously held over the Licence area:-

Tenement	Company	SADME Envelope No.	Period
SML 65 & 70	Australian Selection (Pty.) Ltd.	389, 599	May 1964-Feb 1966
SML 111 & 114	Anaconda Aust. Inc.	637	June 1966-Dec 1966
SML 165	Noranda Aust. Ltd.	884	
SML 169 & 353	Carpentaria Exploration Co. Pty. Ltd.	1145, 1246	June 1963-Nov 1969
SML 368	Sunhill Corp. (Aust) Ltd.	1391	Dec 1969-July 1970
SML 390	Altarama Search Pty. Ltd.	1328	June 1970-June 1971
EL 52, 53	H.R. Gillespie	2289, 2290	Feb 1973-April 1973
EL 143	Dampier Mining Co. Ltd.	2436	July 1974-August 1975
EL 277, 461, 850	Utah Development Company	2915, 3507	Dec 1976-July 1983
EL 1196	CRA Exploration Pty. Ltd.	5403	Dec 1983-Dec 1987
EL 1488	Demis Pty. Ltd.	8024	May 1988-August 1989
EL 1544	BP Minerals Australia		Nov 1988-May 1989

An excellent review of the exploration carried out before December 1983 is given in CRA's second quarterly report on EL 1196 (Envelope 5403). Since this date, CRA carried out bulk gravel sampling for diamond and rock chip sampling for gold mineralisation. CRA did not drill any holes in the area during their four year tenure.

Demis carried out rock chip sampling in the Douglas Gully (West Willouran) area, for gold mineralisation but did not do any drilling. BP Australia also carried out geochemical exploration for gold mineralisation and also did not do any drilling.

During the first year of tenure of EL 1771, MIMEX carried out detailed 1:5,000 geological mapping over 130 km^2 around the Callanna, Dunns, Rooks, Boorloo and Breaden Hill copper prospects. Also, 362 gossan samples and 185 soil samples were collected. Three diamond drill holes were drilled for a total of 862m in the Boorloo, Breaden Hill area. The best intersection from this drilling was 6m x 1.02% Cu in MWD1.

6. EXPLORATION COMPLETED BY MIMEX IN THE YEAR ENDING OCTOBER 20, 1993

6.1 Geological Mapping

An area of approximately 12 km^2 has been geologically mapped at a scale of 1:5,000 around the West Willouran Copper Mine. This area adjoins the 1:5,000 mapping carried out last year over the Rooks and Mt Breaden zones to the north. Mapping was carried out on 1:5,000 enlarged colour photos and a base plan was prepared from these photographs without any corrections for distortion.

6.2 Geochemical Sampling

Further gossan sampling has been carried out on "Sheet 4" in the Dunns Mine and Rooks area. Also, a limited amount of gossan sampling has been undertaken in the Euramina area.

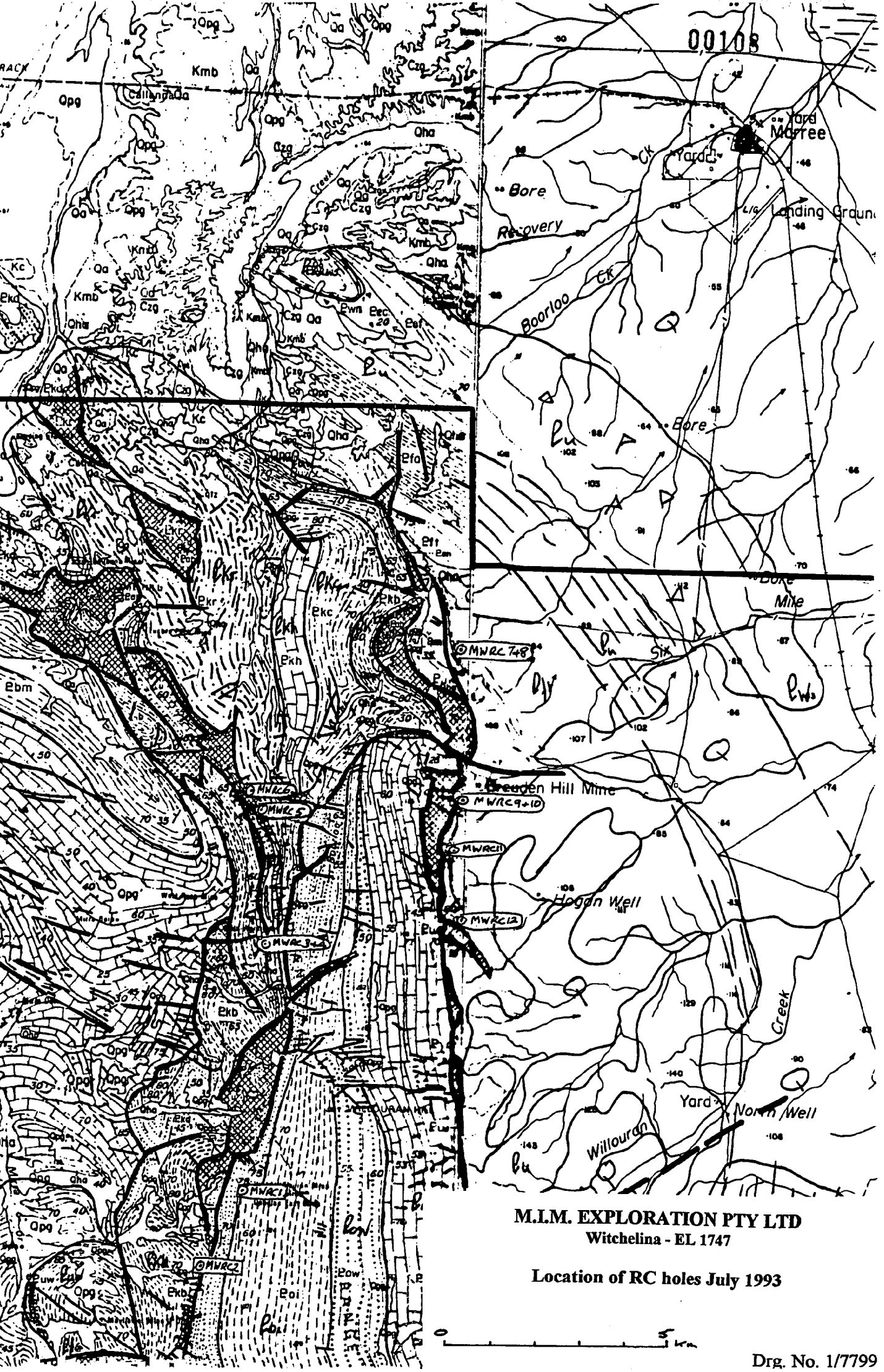
6.3 RC Drilling

A total of 1205m of RC drilling was carried out in 12 holes at six locations in July and August this year. Drilling was undertaken by Budd Drilling using a Warman 1000 rig. A plan showing locations of the holes is present on Drawing No. 17799.

7. RESULTS

7.1 Geological Mapping

A plan of the mapping in the West Willouran area is given on Drawing No. 37858. This work has confirmed the broad interpretation shown on the SADME Wangianna 1:100,000 sheet but has defined and extended the margins of the diapiric breccia.



M.I.M. EXPLORATION PTY LTD

Witchelina - EL 1747

Location of RC holes July 1993

0 5 km

Drg. No. 1/7799

7.2 Geochemical Sampling

Locations and results of gossan sampling on "Sheet 4" in the Dunns Mine and Rooks area are presented on Drawing Nos. 37956 to 37961. Also included with this report are sample locations and results of gossan sampling on "sheets 1 and 2" (Drawing Nos. 37944 to 37955). All these plans are computer generated and metal contents are represented by different sized circles centred on the sampling points. Results of sampling in the Euramina area have not been plotted yet.

7.3 RC Drilling

Drill hole MWRC 1 was drilled near Elbow Peak at the West Willouran workings to test a series of copper workings in a siltstone unit which is strongly cleaved and jointed. Copper assays were disappointing with the highest value reaching only 476 ppm over 4m. The geological and assay log is given in Appendix 1 and a cross-section presented on Drawing No. 47021.

Drill hole MWRC 2 was drilled under a small copper pit approximately 2 km SSW of the West Willouran workings. It is located 70m south of Utah's percussion hole WP 73 which intersected oxide copper for 20m to the end of the hole at 62m and 450m south of WP 78 which intersected significant pyrite with trace copper mineralisation. MWRC 2 intersected vein quartz and dolomite with a few percent pyrite and chalcopyrite from 36 to 38m. This interval averaged 1.1% Cu and 0.47 g/t Au. Trace copper averaging 0.10% Cu occurs from 12 to 36m.

Holes MWRC 3 and 4 were drilled into diapir breccia near the Rooks workings adjacent to costeans dug by Noranda in 1976. Average assays were 0.1% Cu over 28m in the western costean and 0.1% Cu over 25m in the eastern costean. Both holes intersected limonitic, oxidised and brecciated siltstone and sandstone to approximately 70-80m down hole. Interesting intersections of trace copper were found in both holes:-

MWRC 3	-	0 - 80m x 0.2% Cu
MWRC 4	-	20 - 52m, 32m x 0.24% Cu
		68 - 84m, 16m x 0.16% Cu

Trace chalcopyrite was found in both holes.

Two holes were drilled in the Dunns Mine area but neither hole intersected any copper mineralisation. MWRC 5 was drilled approximately 100m south of Dunns Mine and MWRC 6 under small workings approximately 600m north-west of Dunns Mine.

Drill holes MWRC 7 and 8 were drilled into basal Tapley Hill Formation (THF) approximately 400m and 500m south of the Boorloo workings respectively. Gossans developed on the pyritic THF in this area had outlined an area over 800m in strike length averaging more than 0.15% Cu. Drilling proved the THF to be very pyritic with many 1m intervals estimated to contain 5% or more sulphide. Unfortunately though, copper assays were disappointing with the best assay being only 0.22% Cu over 2m in MWRC 7 at 54-56m.

Two holes were drilled in the THF approximately 700 km south-west of the Breaden Hill workings. MWRC 9 was drilled to test gossan float with values of 0.53% Cu, 0.29% Pb, 0.55% Zn and 44 g/t Ag. Interesting pyrite and chalcopyrite mineralisation was intersected in quartz, dolomite veins in silicified and bleached THF. The interval from 39 to 47 returned 8m x 1.0% Cu with associated trace gold and silver (maximum silver over 1m was 16 g/t and maximum gold over 1m was 0.62 g/t). Drill hole MWRC 10 was drilled 100m east of MWRC 9 to test for extensions of the mineralisation intersected in MWRC 9. This hole intersected slightly pyritic THF but no copper mineralisation.

One hole was drilled beneath small copper workings at the Laurel prospect approximately 1.8 km south of the Breaden Hill workings. This hole (MWRC 11) intersected vein quartz and dolomite with trace pyrite and chalcopyrite from 52 to 60m in THF. This 8m interval assayed 0.25% Cu.

The last hole was drilled at the Marion prospect approximately 4.5 km south of the Breaden Hill workings. The hole (MWRC 12) was drilled in slightly pyritic shales of the THF. No anomalous copper was intersected.

APPENDIX 1

GEOLOGICAL AND ASSAY LOGS FOR

DRILL HOLES MWRC 1 TO 12

PROJECT EL1747 "WITCHELINA"

PROSPECT West Willouran

HOLE CO-ORD 78880E 6693900NAMG Sh.7

M.I.M. EXPLORATION PTY.LTD.

ROTARY PERCUSSION DRILL LOG

open hole / reverse circulation

ROTARY : from 0 to 6

HAMMER : from 6 to 138m

MWRC-00112

RL. COLLAR ..... m

INCLINATION -60 °

DIRECTION 039°M °

SAMPLE No.	Cu	Co	Ag	Y	Mag. Sus.	DEPTH metres	LOG	DESCRIPTION	REMARKS	WATER
734327	34.5	8.4	<0.1					green-grey phyllitic siltstone, haem fracs.	precollar 0-6m	
								" " "		
								green-grey " " "		
								" " "		
						5		" " "		
								" " "		
734328	19.7	3.7	<0.1					green-grey phyllitic siltstone, "	2m samples.	
								" "		
								" "		
								" "		
734329	24.9	3.9	<0.1			10		green-grey " " haem + lim fracs		
								" " "		
								grey phyllitic siltstone, haem fracs		
								" " "		
734330	11.8	5.6	<0.1			15		" "		
								" "		
								green-grey phyllitic siltstone, lim fracs		
								" "		
734331	17.0	7.4	<0.1	210	0.3			green-grey phyllitic siltstone, lim fracs		
				to	to	20		" "		
				250cps	1.0			green phyllitic " haem fracs		
					$\times 10^{-3}$			" " "		
734332	79.0	5.4	<0.1	(B ground	SI units			" " "		
				≈200	(KT-5			" " "		
				CPS	Kappameter)	25		" " "		
								" " "		
734333	395.0	3.0	<0.1					" " "		
								" " "		
								" " " haem + lim as fracture coatings		
				to EOH				" " " "		
734334	225.0	6.5	<0.1			30		" " "		
								" " "		
								" " " lim. fracs	5% QV	
						QV		" " "	"	
734335	885.0	4.3	<0.1			35		" " trace lim fracs	Trace QV	
								" " "	"	
						QV		green phyllitic siltstone, trace lim fracs	2% QV, Trace Malachite	
								" "		
734336	80.0	6.0	<0.1					" trace lim, carbonate		
						40		" "		
							Py	" 30-40% Carb	Trace Pyrite	
								" "	"	
734337	438.0	7.0	0.2					green " " 15% Carb, 5% QV.	"	
						QV	Py	" " "	"	
						45	Py	green-grey phyllitic siltstone, 5% Carb, Trace QV	"	
734338	194.0	8.0	0.3				Py	" 3% Carb	"	
								" "	"	
							Py	" 2%	"	
							Py	" "	"	
						50		" 1% Carb	—	
734339	115.0	6.8	<0.1					" "	—	
							Py	" 1%	Trace Py	
								" "	"	
734340	126.0	6.6	<0.1			55	Py	" Trace white carbonate	" (striated)	
								" "	"	
								green phyllitic siltstone 4% "	"	
							Py	" "	"	
734341	360.0	6.9	0.1					" 2% "	"	
						60	Py	" " "	"	

REASON FOR HOLE : To test dilational zone

OTHER DETAILS :

DRILL TYPE : RC	LOGGED BY : SPH
DRILL CO. : BUDD	DATE DRILLED : 19/7/93 - 20/7/93
SCALE : 1:500	PAGE : 1 of 3

PROJECT EL1747 "WITCHELINA"

PROSPECT West Willooran

HOLE CO-ORD

M.I.M. EXPLORATION PTY.LTD.

ROTARY PERCUSSION DRILL LOG

open hole / reverse circulation

ROTARY : from 0 to 6

HAMMER : from to 138M

MWRC-100113

RL. COLLAR m

INCLINATION -60 °

DIRECTION 039°M °

SAMPLE No.	ANALYSES ppm / % Cu	Co	Ag	Y	Mag Susc	DEPTH metres	LOG	DESCRIPTION	REMARKS	WATER
							Py	green phyllitic siltstone, 1% white Carbonate.	Trace Py (1m logged	
							Py	" , trace white carbonate	" sampling)	
734342	37.0	6.7	<0.1					" , "	—	
								" —	—	
						65	Py	"	rare Py	
								"	—	
734343	24.5	4.6	<0.1					" , trace Carbonate	—	
								" —	—	
								"	—	
								"		
734344	116.0	6.3	<0.1			70		" , micaceous		
								"		
								" , 5% white carbonate		
							Py	" , Trace Carb.	rare Py	
734345	22.0	4.8	<0.1			75		" "		
								" "		
								" "		
								" "		
734346	16.6	3.6	<0.1					" "		
								" "		
						80		" "		
							Py	" "	rare Py	
734347	9.5	4.6	<0.1					" "		
							Py	green & grey siltstone, "	rare Py	
					1.65		Py	green phyll. siltstone, "	"	
					1.65	85	Py	" "	" cubes	
734348	12.2	4.8	<0.1					" "		
								" "		
							Py	" "	Trace Py	
							Py	" "	Rare "	
734349	12.5	5.1	<0.1			90	Py	" "	"	
							Py	"	Trace Py cubes	
							Py	"	Trace Py	
							Py	" , Trace Carb	"	
734350	10.0	5.2	<0.1			95	Py	" "	"	
								" "	—	
					0.25		Py	" ,	Rare Py	
					to		Py	" , "	"	
734351	23.9	5.4	0.1		0.9		Py	" "	Trace Py	
					$\times 10^{-3}$		Py	" "	"	
					SI units	100	Py	" "	Trace Py (double dice)	Dry
								" "	"	Dry
734352	72.0	5.2	0.1					green and grey silt, "	—	
								" , "	-	
								" , "		
						105	Py	" , "	Trace Py	
734353	110.0	5.9	0.2				Py	" , "	Rare Py	
							Py	" , "	Trace Py	
								" , "	—	
						110	Py	green & grey silt - f.g. sandstone, Trace Carb.	Rare Py	
734354	70.0	5.2	0.1		to EOH			green & grey siltstone, Trace Carb	—	
							Py	" , "	Tr-1% Py	
							Py	green-grey siltstone, "	Tr Py	
								" "	— (Small Sample)	
734355	93.0	4.5	0.2			115	Py	" c.g. siltstone,	Trace Py	Wet
								"	—	Wet
							Py	"	Rare Py	Dry
								green c.g. siltstone	—	
734356	61.0	4.9	0.3				Py	pale green f.g. sandstone/quartzite, minor silt.	Rare Py	
						120	Py	pale f.g. " / " carbonated	Rare Py	

REASON FOR HOLE :

OTHER DETAILS :

DRILL TYPE :	LOGGED BY :
DRILL CO. :	DATE DRILLED :
SCALE : 1:500	PAGE : 2 of 3

PROJECT EL1747 "WITCHELINA"

PROSPECT

HOLE CO-ORD

M.I.M. EXPLORATION PTY.LTD.

ROTARY PERCUSSION DRILL LOG

open hole / reverse circulation

ROTARY : from ..... to .....

HAMMER : from ..... to .....

MWRC-1 00114

RL. COLLAR ..... m

INCLINATION -60° •

DIRECTION ..... •

SAMPLE No.	ANALYSES ppm / % Cu	Co	Ag	X	Mag susc	DEPTH metres	LOG	DESCRIPTION	REMARKS	WATER
								pale (white) Quartzite, siltstone (30%) contam.	?	W
								" , 20% Siltstone	Trace Py	W
734357	62·0	4·6	0·3					" , rare siltstone chips	–	Dry
								"	Rare Py	Dry
						125		" , 5% siltstone chips	"	Dry
								"		Dry
734358	121·0	6·1	0·4					50/50 Quartzite/siltstone (grey)	wet sample	W
								pale green f.g. sandstone, 10% grey siltstone	– "	
								" "	– Damp sample	
								50/50 pale green sandstone/grey phyllitic siltstone	– "	
734359	376·0	7·9	0·3			130		" "	– Wet sample	W
								90/10 " /grey silty sandstone	– "	W
								40/60 " /grey siltstone, Trace QV	– "	W
								pale green sericitic (?) sandstone	– "	W
734360	476·0	7·3	0·2					" ser. sandstone/5% grey siltstone, Trace QV	Rare Py "	W
						135		80/20 " /grey siltstone	" "	W
								40/60 " "	Trace Fram. Py "	W
						138	EOH	40% pale ser. sandstone, 30% grey siltstone, 30% grey siltstone	Rare-Trace Py, cubes "	W

Tr = Trace
Carb = Carbonate
QV = Quartz Veining
Py = Pyrite
Frac = Fractures
Fram = Framboidal
f.g. = fine grained
ser = sericite alteration
Water sample taken at 138m

Other Results

Au all ≤ 0.02 ppm
Pb 8.0 to 51.0 ppm
Zn <0.5 to 157 ppm

REASON FOR HOLE :

OTHER DETAILS :

DRILL TYPE :

DRILL CO. :

SCALE : 1:500

LOGGED BY :

DATE DRILLED :

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PROJECT EL1747 "WITCHELINA"

PROSPECT West Willouran South

HOLE CO-ORD 784920E 6692920N AMG. 547

M.I.M. EXPLORATION PTY.LTD.

ROTARY PERCUSSION DRILL LOG

open hole / reverse circulation

ROTARY : from 0 to 6

HAMMER : from 6 to 84

MWRC-20115

RL. COLLAR ..... m

INCLINATION -60 °

DIRECTION 230°M °

SAMPLE No.	Cu	Co	Au	γ	mag susc.	DEPTH metres	DESCRIPTION	REMARKS	WATER
734361	39	4.0	0.02				green to yellow sandstone & siltstone/shale	6m precollar	
							Trace Malachite		
							lim fracs		
							schistose sandy siltstone		
						5			
								Tr Mal	
							green-yellow sandstone & pyritic siltstone	Tr. Mal, Py	
734362	114	6.6	0.02		0.2		grey shale, lim fracs		
					to		" "		
					0.6	10	" "		
				200	$\times 10^{-3}$		green & grey " "		
734363	587	7.7	0.02	to	SI units		green shale, lim surfaces		
				250	(KT-5		" "		
				CPS	Kappa-		grey " "		
				(Bayard	meter)	15	pale green-grey shale, "		
734364	147	0.6	<0.02	280			" "	Tr Py boxworks	
				(PS)			" "		
							" "		
							" " + haem fracs, Tr QV		
						20	" , haem + lim fracs		
734365	2110	9.9	0.12				" haem coatings, Tr QV	Tr. Py	
							pale green shale, haem - lim fracs,	Tr-1% vein Py	
734366	4654	25.0	0.04				" , haem fracs	2% Py	
							" "	1% Py, Tr Chrysocolla	
734367	780	7.6	0.10			25	pale green to grey shale, lim fracs	Rare Py	
							" minor lim fracs	Rare Py boxworks	
							" "	3% Py	
							"	Tr Py	
734368	423	5.5	<0.02				" shale/f.g. siltstone	Rare Py	
						30	" shale	"	
							" siltstone/f.g. sandstone, minor lim		
							" " TrQV	Rare Py (on cleavage)	
734369	870	4.7	0.02		0.6		pale green f.g. sandstone - c.g. siltstone "	Tr Py veining	
					to		" " + 10% Silt 10% QV		
					0.2	35	" minor haem fracs	Tr Py 34-38 m	
				to			" Silty sandstone, ser?	veing qtz + dol with	
QS	19489	1.35%	14.8	0.41	EOH		" " + shale ser?, carb.	py + cpy	
QS	19490	0.85%	16.7	0.52			" lobbedhed, SS. (soft)	Tr Py	
734371	2080	15.7	0.10				" Sandstone, Ortonite, shale + Py	5% Py	
						40	pale green SS/30% grey shale, "	2% Py	
734372	129	6.3	<0.02				pale green SS "	Tr Py	
							60/40 green-grey shale (mica surfaces), pale grn SS	Tr Py	Dry
							90/10 white to pale green " "	—	Damp
							50/50 pale green mica shale, Qtz (clear)	—	Dry
734373	25	5.9	<0.02		0.2	45	50/50 white and pale green shale - phyllite	—	
					to		"	—	
					0.6		50/50 white and dk green shale - phyllite		
					$\times 10^{-3}$		"		
734374	7	18.8	<0.02		SI units		" rare QV		Dry
						50	60/40 pale and dk green shale - phyllite		Damp
							green SS, 1% Qtz		Damp
							Clear Qtz c.g.		Damp
734375	22	20.1	<0.02				70/30 pale grn SS m-c.g., dk grn silty partings, 2% Qtz	Tr Pyrite	Wet ✓
							" dk grn siltstone, 5% Qtz	—	Wet ✓
						55	pale grn m.g. sandstone		" ✓
							" sandstone + siltstone, lim fracs.		Damp
734376	16	14.0	<0.02				" "		Damp
							grn siltstone		"
					to EOH		"	Tr Py	"
						60	grn sandstone, bleached shale		

REASON FOR HOLE : Test down dip extension of Cu. mineralisation seen in old digging.

OTHER DETAILS :

DRILL TYPE : RC	LOGGED BY : SPH
DRILL CO. : BUDD	DATE DRILLED : 20/7/93
SCALE : 1:500	PAGE : 1 of

PROJECT EL1747 "WITCHELINA"

PROSPECT WEST WALLOURAN SOUTH

HOLE CO-ORD

M.I.M. EXPLORATION PTY.LTD.

ROTARY PERCUSSION DRILL LOG

open hole / reverse circulation

ROTARY : from ..... to .....

HAMMER : from ..... to .....

MWRC-2

00116

RL. COLLAR ..... m

INCLINATION -60° °

DIRECTION 230°M °

SAMPLE No.	ANALYSES ppm % Cu	Co	Au	Y	MAG SUSC	DEPTH metres	LOG	DESCRIPTION	REMARKS	WATER
734377	89	9.9	<0.02					light green sandstone & SLT	Wet Samp	✓
						lim ↓		" , minor SLT (Shaley pattings)	Damp Samp	✓
								" lim clay	"	✓
								" (Quartzite, lim fracs	"	✓
734378	26	6.5	<0.02			65		" Quartzite, "	"	✓
								" , minor SLT, Tr. Q.	Wet	✓
								" , minor lim fracs.	"	✓
								"	"	✓
734379	23	4.0	<0.02					" , minor lim fracs	"	✓
						70		" "		✓
								" "		✓
								" "		✓
734380	50	3.6	<0.02					" , minor SLT, "		✓
								" , lim in pore spaces/fracs?		✓
						75		" "		✓
								colourless to pale green Quartzite, "		✓
734381	44	3.0	<0.02			9		" " , 2% Qtz		✓
								" , minor SLT, lim.		✓
								pale green Quartzite, " (carbon), lim		✓
						80		" " , lim, Trace Qtz		✓
734382	154	6.2	<0.02					" " , lim, Tr. Qtz		✓
						9		" " , lim, 1% Qtz		✓
								" " , minor lim		✓
						84		" " "		✓
							EOH			

SLT = Siltstone/shale
lim = limonite

Abandoned due to lost circulation at 84m. The rods were pulled out at 84m, the sub was soldered up with tungsten chips on its circumference and a mesh was welded onto the cross-over sub. On putting the rods back down the hole, circulation was lost at 50m.

Other Results

Element	Minimum (ppm)	Maximum (ppm)
Pb	2.5	18.0
Zn	3.9	50.0
Ag	0.1	1.9

Note 57m to EOH not assayed.

REASON FOR HOLE :

OTHER DETAILS :

DRILL TYPE :

DRILL CO. :

SCALE :

LOGGED BY :

DATE DRILLED :

PAGE : 2 of

PROJECT EL1747 "WITCHELINA"

PROSPECT Rooks Workings

HOLE CO-ORD 765450E 6694470N AMG SL4

M.I.M. EXPLORATION PTY.LTD.

ROTARY PERCUSSION DRILL LOG

open hole / reverse circulation

ROTARY : from 0 to 7

HAMMER : from 7 to 135

MWRC-300117

RL. COLLAR ..... m

INCLINATION -60 °

DIRECTION 260 °

SAMPLE No.	Cu	Co	Ag	γ	Mag Sus.	DEPTH metres	LOG	DESCRIPTION	REMARKS	WATER
734383	2381	53.0	0.2		(KT-5 Kappa-meter) x10⁻³ SI units		lim. clays	Yellow limonitic clays	7m precollar	
						5				
						7		" minor haem.		
734384	2358	52.0	0.1			?		Yellow & Red. lim/haem oxidised material		
						10		" "		
								pink-cream clay + rd-brn oxidised (haem) mat.		
								cream-brn " "		
734385	1471	77.1	1.2					yllw & rd-brn limonitic clay + haem. ox.		
								yellow " 5% QV (clear)		
						15		yellow lim clay, rare arenite frag.		
								rd-brn oxidised (siliceous?) mat.		
734386	1950	59.9	0.1					yllw brn & rdbn ox. mat. clayey		
						?		"	Damp	17 to 20m hematitic
								Yellow brn lim clays		
				150		20		turbid brown " + haem?		
734387	812	28.3	<0.1	to	0.13			grey partially ox. soft		
				180	to			l.green & d.grey q.sandstone & siltstone, TrQ.		
				CPS	0.39			" "		
								pale to green grey sandstone		
734388	1330	38.7	0.4			25		yellow brn limox., dk.grey shaley siltstone, Quartz		
								White – pale grn ox, clay weath.		
								"		
								orange brown ox, clay weath, dk grey siltstone.		
734389	3482	117.4	<0.1					" "		
						30		dirty brown "		
								"		
								"		
734390	4100	156.0	<0.1		to			"	33 to 50m	
					EOH			"	V. limonitic	
						35		brown – orange "		
								"		
734391	2963	173.5	0.1					"		
								brown-green "		
				to				brown – orange "		
				EOH		40		" – yellow "		
734392	3354	181.0	0.4					"		
								"		
								"		
								" silic. sandstone frags		
734393	1390	77.1	0.5			45		brown – rd-yllw ox. clay	45m onwards	
								dk grey sil. SLT (?). Strongly oxidised	V. micaceous.	
								yellowish sandstone "		
						W.T.		brown – yellow ox. clayey		
734394	1542	71.1	2.0					" oxidised sil. sandstone	Wet Samp	W
						50		dk brown, yellow ox. sediment, quartz	"	W
								" ox. sandstone?	"	W
								brown – green ox. "	Damp	
734395	1810	47.3	0.6					grey partially ox. sandstone?		
								dk grey siltstone, minor ox		
						55		grey arenite (silt). "	Wet	W
						O.L.		pale to grey arenite "	Wet	W
734396	1242	40.4	1.0					pale green to dk grey arenite & siltstone.	Damp	
								grey arenite		
								"		
						60		grey-blue clay		

REASON FOR HOLE : Test anomalous Cu zone in diapiric breccia.

OTHER DETAILS :

DRILL TYPE : RC Conv.

DRILL CO. : BUDD

SCALE : 1:500

LOGGED BY : SPH

DATE DRILLED : 22/7/93

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PROJECT EL 1747 "WITCHELINA"

PROSPECT Rooks Workings

HOLE CO-ORD

M.I.M. EXPLORATION PTY.LTD.

ROTARY PERCUSSION DRILL LOG

open hole / reverse circulation

ROTARY : from ..... to .....

HAMMER : from ..... to .....

MWRC-30118

RL. COLLAR ..... m

INCLINATION ..... °

DIRECTION ..... °

SAMPLE No.	ANALYSES ppm % Cu	Co	Ag	Y	Mang. Silt	DEPTH metres	LOG	DESCRIPTION	REMARKS	WATER
734397	1010	27.5	0.6					grey & dk.grey arenite, silty arenite, 10% Q		
								" " " , Tr. Q		
							Py	dk.grey TrQ	TrPy	
								grey rock flour.		
734398	2060	19.5	0.3					dk.grey silty arenite + shale 2% Q	64-70m trace cpy	
						65	Py	shale + silty arenite TrQ	TrPy	
							Py	silty arenite (mafic?)	TrPy (frambs.)	
								" + shale 1% Q	"	
734399	1586	32.7	1.0				Py	metamorphosed siltstone?	TrPy	
						70		green clay + rock frags?		
								dk grey silty frags Tr. Q (Puggy ⇒ water injection)	Moist	
							Py	" " (soft)	TrPy ↓	"
734400	1531	28.4	0.7					green-grey clay balls		"
							Py	dk grey shaky frags	TrPy	"
								" & lightgreen silty arenite SLT? TrQ		Wet
						75 ?	Py	lightgrn & grey SLT/VOLC?, arenite TrQ	TrPy	
734401	1256	23.3	0.4					" " " (very few chips)		↓
								"		
								"		
								"	75 to 100m	
734402	509	25.2	0.3			80		lightgreen arenite (sandstone)	v. green ? alt mafic	
								"		
								"		
								"		
734403	178	40.3	0.3					"		
						85	Py	" TrQ	TrPy	
								" TrQ		
								" (mostly rock flour)		
734404	182	45.6	0.3				Py	" SLT	TrPy	
						90	Py	" SLT	TrPy	
							Py	"	TrPy	
							Py	"	"	
734405	131	64.1	0.1					blue-grey lithic sandstone / cong.		
								light green arenite		
						95		" to blue grey arenite (SS + cong)		
							Py	" m.g. sandstone	TrPy	
734406	121	53.5	0.2					" and dk grey sandstone + cong		
							Py	" " " "	TrPy	
							Py	" SS	TrPy	
							Py	"	TrPy	
734407	97	20.8	0.1			100		" SLT/SS (mostly rock flour)	–	
								" SS	–	W
							Py	lightgrn & dk grey SS and SLT	TrPy	W
								" " SLT, Silic?	Rare Py	Dry / Damp
734408	136	11.2	0.1					"		"
						105	Py	dk grey weakly Silic SLT	2% Py - dissem fram.	
							Py	" to green silic silty sandstone	TrPy	Moist
							Py	grn to grey silic? arenite	"	Wet
734409	14	11.1	<0.1				Py	" weak silic. SLT + SS	TrPy	Wet
						110	Py	dk grey and grn " SLT + SS	1% Py	
							Py	" silic "	TrPy	↓
							Py	" med silic. "	Tr-1% Py	
734410	220	14.1	0.6					dk grey f.g. silic (weak) SS		
							Py	"	TrPy	
						115	Py	light grn + dk grey f.g. SS + SLT	TrPy	
							Py	" " " TrPyritic Q	TrPy from.	
734411	481	17.4	0.2				Py	" " " Silic	TrPy	
							Py	" f-mg. SS + silty SS, silic TrQ	TrPy	
							Py	" "	"	
						120	Py	light, bottlegrn & dk grey SS + silty SS	"	

REASON FOR HOLE :

OTHER DETAILS :

DRILL TYPE :

DRILL CO. :

SCALE :

LOGGED BY :

DATE DRILLED :

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PROJECT EL1747 "WITCHELINA"

PROSPECT Rooks Workings

HOLE CO-ORD

M.I.M. EXPLORATION PTY.LTD.

ROTARY PERCUSSION DRILL LOG

open hole / reverse circulation

ROTARY : from 0 to 7

HAMMER : from 7 to 135

MWRC-3 00119

RL. COLLAR ..... m

INCLINATION -60 °

DIRECTION 230°M °

SAMPLE No.	ANALYSES ppm % Cu	Co	Ag	Au	Mag susc.	DEPTH metres	LOG	DESCRIPTION		REMARKS	WATER
734412	319	12.5	0.1					lgrn & dkgrey w-m. silic SS + SLT.	TrQ		W
								lgrn SS			↓
								lgrn SS, minor SLT	30% Q		
								" "	25% Q		
734413	103	10.2	0.1					"	3% Q		
						125		" , minor SLT	2% Q	1% Py	
								" "	1% Q	TrPy	
								" , minor dkgrey SLT	"	"	
734414	227	31.5	0.3					" "	3% Q	"	
								" , 20% dkgrey SLT	5% Q?	TrPy	
						130		" 10% "	2% Q	TrPy	
								" , 5-10% "	5% Q	Rare Py	
734415	874	29.0	0.2					" "	"	TrPy	
								" , 10%	2% Q	TrPy	
						135		lgrn & grey SS & SLT/shale.	TrQ	TrPy	
							EOH				

Other Results

Au all less than 0.05 ppm
Pb 3.2 to 30.3 ppm
Zn 5.6 to 46.0 ppm

REASON FOR HOLE :

OTHER DETAILS :

DRILL TYPE :

DRILL CO. :

SCALE :

LOGGED BY :

DATE DRILLED :

PAGE : 3 of 3

PROJECT EL1747 "WITCHELINA"

PROSPECT Rocks Workings

HOLE CO-ORD 785510E 6694480N AMG Sh4

M.I.M. EXPLORATION PTY.LTD.

ROTARY PERCUSSION DRILL LOG

open hole / reverse circulation

ROTARY : from 0 to 5

HAMMER : from 5 to 110

MWRC-4

RL. COLLAR ..... m

INCLINATION -60 °

DIRECTION 230°M °

SAMPLE No.	Cu	Co	Ag	γ	Mag Susc.	DEPTH metres	LOG	DESCRIPTION 0012	REMARKS	WATER
734416	14	8.4	<0.1		KT-5 Kappa-meter $\times 10^{-3}$ SI units		Clay + ox.	variably oxidised yellow-red. soft material	Precollar	
						5	lim	grey to orange clayey material	0-12m	
							lim	" yellow orange lim. clay weath?	greyish colour	
								" clayey		
734417	55	13.7	<0.1				lim	m.grey clay alt SLT, limonitic fracs		
						10	lim	" + pale green clay alt. SLT+SS, lim fracs		
					0.15		lim	"		
					to			pale green + m.grey clay weath? SS+SLT.		
734418	770	82.3	0.1		0.25		lim	m.grey + light green " , SLT+SS	12 to 42m	
							lim	yellow orange oxidised SS+SLT 5% Q	v. limonitic	
						15	he	orange brown oxid. SS		
							he	" "		
734419	1628	84.7	<0.1				he	brn limox angular chips		
					0.4	?	he	rd. brown limox "		
					to		lim he	yllw brn - rd brn " "		
					0.7		lim	orange brn " ? "		
734420	3959	71.6	0.1	Back-ground 170 to		20	lim	" to grey oxid. SLT+SS		
						?	lim	" limoxid rounded chips (SS?)		
							lim	" "		
							lim	" "		
734421	3967	44.8	0.2	200 CPS	0.15	25	lim	" "		Damp
					to		lim	dk grey part ox. dirty SS/grit (abundant chips)		
					0.35		lim	brown " "		
							lim	yllw to brown ox. " + SLT.		
734422	2340	23.7	0.1				lim	" "		
						30	lim	" "		
							lim	" "		
							lim	" "		
734423	771	16.4	0.1					yellow limox SS		
							lim	" to l.grn part. ox SS , lim ox		
						35	lim	" - cream to l.grn " SS + SLT. "		
							lim	" SS, l.grn clay weath SLT "		
734424	478	23.6	<0.1				lim	cream/grn-grey part ox. SLT + SS "		
							lim	" SLT, minor SS "		
							lim	green-grey SLT, "		
						40	lim	dk. grey " "	42 to 54m	
734425	2171	48.4	0.3				lim	green clay alt c.SLT "	trace cpy.	
							lim	yllw brn limox c.SLT/f.g.SS	43-44m - trace mal.	
								green-blue clay weath SLT/f.g.SS unoxidised		
				to EOH			lim	l.grn quartzite + SS , lim fracs		Dry
734426	2892	32.2	0.4			45	Py	" th grey quartzite "	Tr Py	Dry
							Py	" "	"	Dry
							Py	m.green SS. TQ	"	
					0.5			grey + m.green SS. "	Rare	
734427	2361	47.9	0.2		to			green Quartzite, SS Haem fracs "	"	
					2.0			SS "		
						50	2Py	SS minor haem fracs, 3% Q	2% Py (striated)	
							Py	pale green quartzite	Tr Py	
734428	890	60.7	0.2				1Py	SS	1% Py + trace of chalco	
								SS		
							Py	"	Tr	
						55	1Py	"	1% Py	
734429	173	55.1	0.1				1Py	" Haem fracs	Tr - 1% Py	
							1Py	pale grey quartzite (silic SS?).	1% Py	
							1Py	"	" cubes	
						60	1Py	pale green silic SS.	Tr - 1% Py	

REASON FOR HOLE : Test anomalous Cu zone in Diapiric Breccia

OTHER DETAILS :

DRILL TYPE : RC-Conv.	LOGGED BY : SPM
DRILL CO. : BUDD	DATE DRILLED : 23/7/93-24/7
SCALE : 1:500	PAGE : 1 of 2

PROJECT EL1747 "WITCHELINA"

PROSPECT Rooks Workings

HOLE CO-ORD

M.I.M. EXPLORATION PTY.LTD.

ROTARY PERCUSSION DRILL LOG

open hole / reverse circulation

ROTARY : from ..... to .....

HAMMER : from ..... to .....

MWRC-4

RL. COLLAR ..... m

INCLINATION -60° °

DIRECTION 230M °

SAMPLE No.	ANALYSES ppm % Cu	Co	Ag	γ	Mag. Susc.	DEPTH metres	LOG	DESCRIPTION 00121	REMARKS	WATER
734430	57	126	0.3				Py	translucent - pale green SS / Quartzite	TrPy	
							Py	"	"	
							Py	" Quartz SS	"	
							Py	"	"	
734431	61	140.0	0.1			65	1Py	"	1%Py	
							Py	"	TrPy	
							Py	"	"	
							Py	"	"	
734432	1031	161.0	0.1				Py	"	"	
						70	1Py	"	1%Py	
							Py	"	TrPy	
							1Py	"	1% Py	
734433	1001	62.0	0.3				Py	" 20% green SS	1%Py	D
								dK grey-blue dirty SS 2%Q		W
						75		m-dk grey dirty SS, + SLT		D
							Py	dk grey " + Shaley SLT TrQ	TrPy	D
734434	625	54.0	0.3				Py	light green gSS, minor dk grey SLT	TrPy	Damp
						haem	Py	" , haem as filling 1%Q	TrPy	Damp
						9		" + bottle green SS 5%Q		wet
							Py	translucent + " " 80 to 84m trace	TrPy	W
734435	1453	110.0	0.4		0.15	80	Py	light green-grey SS cpy	TrPy cubes	Damp
					to		Py	translucent + bottle green SS	TrPy	W
					0.5		Py	light green fg. SS 2%Q	TrPy	W
							Py	l.green, m.green, l.grey, dk grey SS, SLT mix	"	W
734436	301	69.0	0.2				Py	light grey quartzite?	"	
						85	Py	l.green SS (silic). rare dk grey SLT 2%Q	TrPy	
								" / Quartzite "	Rare Py	
							Py	l.grn SS (silic), bottle grn sed, dk grey SLT 2% Py Qtz	TrPy	
434437	164	32.7	0.1			9	Py	" " " 5-10%Q	TrPy	
						Do 90	Py	l.grn + dk grn c.g. SLT, 50% clear Dolomite xtals	TrPy	
						Do	Py	"	TrPy	
							Py	l.grn silic SS	TrPy	
434438	180	47.0	0.5				1Py	" + m.grey dirty SS.	1%Py	
							Py	" , Carb. veining TrQ	TrPy	
							2Py	"	2%Py	
						95	Py	"	TrPy	
434439	209	171.0	0.2				Py	" minor Carb veining	TrPy	
							1Py	" fg SS 5% "	Tr-1%Py	
							Py	" "	TrPy	
							Py	grey " "	"	
434440	241	73.8	0.2			100	2Py	l.green & grey & dk grey SS + SLT, carb veining	2%Py	
							1Py	l.green silic SS, 10% dk grey SLT "	1%Py	
							Py	" , 2% " "	TrPy / rare Py	
							Py	l.green, bottle grn SS, oxidised mat + contam.	"	
434441	273	41.6	<0.1			105	Py	l.green & bottle grn SS " Carb. veining	TrPy	
							Py	pale green-grey SS	TrPy	
							Py	" "	"	
								" 5% lim ox mat (contam)?		
434442	107	16.4	0.8			Do		dk grey dol? SS + SLT minor haem fracs	—	
						110		60/40 l.grn SS / dk grey SLT	—	
							EOH			

Other Results

Au <0.02 to 0.0 ppm
Pb 3.6 to 20.6 ppm
Zn 3.1 to 27.5 ppm

REASON FOR HOLE :

OTHER DETAILS :

DRILL TYPE : RC - convert

DRILL CO. : BUDD

SCALE : 1:500

LOGGED BY : SPH

DATE DRILLED : 23/7/93 - 24/7

PAGE : 2 of 2

PROJECT EL1747 "WITCHELINA"

PROSPECT DUNNS

HOLE CO-ORD 785400E 6701540N AMG Sn 3

M.I.M. EXPLORATION PTY.LTD.

ROTARY PERCUSSION DRILL LOG

open hole / reverse circulation

ROTARY : from 0 to 2

HAMMER : from 2 to 108m

MWRC-5

RL. COLLAR ..... m

INCLINATION -60 °

DIRECTION 244°M °

SAMPLE No.	Cu	Co	Ag	γ	Mag. Susc.	DEPTH metres	LOG	DESCRIPTION 00122	REMARKS	WATER
734443	9	6.2	<0.1		KT-5 Kappa-meter $\times 10^{-3}$ SI units			grey to oxidised dol. O/B	0-2m precollar.	
								" dol SLT.		
								m.grey sandy dol. part. oxid		
								"		
734444	118	6.3	0.2			5		m.grey to yllw-brn "		
								yllw-brn oxid. "		
								"		
								m.grey silty dol. , lim fracs		
734445	71	7.3	0.1					grey-blue " "		
						10		" "		
								" "		
								silty, sandy dol. , minor lim fracs.		
734446	118	11	0.1					sandy dolomite "		
					0.35			+ green sandy dol. + qSS , "		
					to	15		green + grey-blue q.SS + dolomite lim fracs		
					0.55			grey-blue silty dol. rd.brn frac filling (haem?)		
734447	52	7	0.1					"		
								sandy dol , minor lim f.f.		
				Back-ground				" "		
						20		silty dol , carb veining "		
734448	57	9	<0.1	110 to 130 CPS				" " "		
								" "		
								"		
734449	96	5.1	0.1			25		" strong lim f.f.		
								yllw brn limonitic m-c.g. sandy dol.		
								"		
								" TrQV.		
734450	57	10.6	0.1					grey-blue silty dol , minor lim f.f.		
						30		" " lim haem f.f.		
								" rd.brn " haem ds f.f.		
								" shaley dol "		
734451	70	9.6	0.3					gry-blue shaley dol , carb veining, lim f.f.		
								" " "		
								"		
					0.50	35		" trace ox f.f.		
734452	63	10.9	0.1		to			" "		
					0.12			" mod. lim		
								" minor lim/haem		
						40		" "		
734453	51	6.5	0.1					"		
								"		
								" trace q.SS(dol)		
								"		
734454	115	9.5	0.1			45		" minor haem f.f		
								" " lim "		
								" "		
								" 50% q.SS dol.		
734455	210	20.5	0.1					yllw brn ox. (lim) q.SS , minor shaley dol		
						50		" to l.green "		
								l.green to yllw brn ox q.SS (dol)		
								" 10% QV		
734456	431	21.7	0.3					" to grey q.SS (dol) carb veining	TrPy	
								grey-blue silty dol , carb veining, lim & f.f.		
								sandy dol " "		
						55		" + silty dol " "		
734457	110	11.4	0.6					"		
								silty dol. "		
								" lim + haem f.f.		
						60		" lim & f.f.		

REASON FOR HOLE : Test keel of drag fold.

OTHER DETAILS :

DRILL TYPE : Conv. RC.

DRILL CO. : BUDD

SCALE : 1:500

LOGGED BY : SPH

DATE DRILLED : 24/7 - 25/7/93

PAGE : 1 of 2

PROJECT EL1747 "WITCHELINA"

PROSPECT DUNNS NORTH

HOLE CO-ORD 785020E 6702040N AMG. Sh 3.

M.I.M. EXPLORATION PTY.LTD.

ROTARY PERCUSSION DRILL LOG

open hole / reverse circulation

ROTARY : from 0 to 5

HAMMER : from 5 to 108

MWRC-6

RL. COLLAR ..... m

INCLINATION -60° °

DIRECTION 199°M °

SAMPLE No.	Cu	Co	Ag	γ	Mag. Susc	DEPTH metres	LOG	DESCRIPTION 00123	REMARKS	WATER
734470	3.7	3.1	<0.1		(KT-5 Kappa-meter) $\times 10^{-3}$ SI units		O.B	green quartzite O/B	precollar.	
734471	4.5	4.5	<0.1			5		green quartz-felspathic SS.		
								"		
								"		
								" lim fracs		
						10		to yllw-brn oxidised		
734472	106.0	14.3	0.1					"		
								dk grey to yllw brn dolosilt. (lim ox)		
								" dolosilt (part. lim ox)		
								" c.g. dolosilt		
734473	62.2	8.5	<0.1			15		" " - dolarenite, Carb Vein		
								c.g. dolosilt "		
								" carb veining		
								" " lim ox		
734474	29.0	6.8	0.1		0.1			dolarenite "		
					to			" "		
					1.0	20		f.g. " "		
								m.g. " " haem f.f.		
734475	25.2	8.1	<0.1					" " , mod. haem		
								" " lim + haem ox		
				Back-		25		to green f.g. dolarenite " haem ox.		
				ground				dk. grey m.g. " "		
734476	20.9	7.5	<0.1	150				dolarenite + shaley dolosilt, Carb Vein		
				to				orney dolarenite (m+g), Carb Vein.		
				180				dk grey " "		
				CPS				" " minor lim f.f.		
734477	64.0	11.0	0.1			30		" "		
								dolosilt "	Tr Py	
								" "		
								dk grey-blue shaley dolosilt "		
734478	39.4	8.0	0.3					"	Tr Py	
						35		dolosilt/dolarenite "	Rare Py	
								" + " " minor lim f.f.		
								dolosilt. "	Tr Py	
734479	55.8	8.7	0.1					shaley " , minor dolar. , Carb V.	Rare Py	
								" "	"	
						40		dolosilt, minor dolar. Carb V	minor lim ox.	
								" "		
734480	53.4	8.5	0.1					minor dolar. "		
								dolarenite "		
								" + dolosilt "		
						45		dolosilt, minor. pale grey Quartzite	Tr Py	
734481	59.4	10.0	0.1		1.0			" Carb V		
					to			" "		
					1.4			" + dolar. " , lim f.f.		
								" Carb V "		
734482	46.4	7.1	0.1		3.4	50		translucent to pale green Quartzite		
					to			" , minor dk grey-blue dolosilt		
				to	3.9			" "		
				E.O.H.				dk grey shaley dolosilt , Carb V.		
734483	103.0	18.5	0.1		1.0			" "		
					to	55		dolosilt "		
					1.9			shaley " "		
								green q. SS (f.g) , minor dolosilt		
734484	604.0	18.0	0.3					" " TrQ.		
						60		f.g. " " Carb V.		

REASON FOR HOLE : Test Keel of drag fold.

OTHER DETAILS :

DRILL TYPE : Conv. RC.

DRILL CO. : BUDD

SCALE : 1:500

LOGGED BY : SPH

DATE DRILLED : 25/7 - 26/7/93

PAGE : 1 of 2

PROJECT EL1747 "WITCHELINA"

PROSPECT BOORLOO

HOLE CO-ORD 788400E 6705170N AMG Shl.

M.I.M. EXPLORATION PTY.LTD.

ROTARY PERCUSSION DRILL LOG

open hole / reverse circulation

ROTARY : from 0 to 1

HAMMER : from 1 to 84

MWRC-7

RL. COLLAR ..... m

INCLINATION -60° •

DIRECTION 245°M •

SAMPLE No.	ANALYSES ppm / % Cu	Co	Ag	γ	Mag. Sust.	DEPTH metres	LOG	DESCRIPTION 00124	REMARKS	WATER
734497	64.8	13.0	0.1		(KT-5 Kappa-meter) x10⁻³ SI units		O.B.	Variably ox. O.B.	In precollar.	
								dk grey carbonaceous shaley SLT		
								" minor haem ox		
								" "		
734498	40.1	14.6	0.1			5		SLT " lim ox		
								" "		
								" "		
								Shaley SLT "		
734499	69.2	11.0	<0.1					"		
						10		"		
								minor lim ox		
734500	47.1	4.9	0.1					minor "		
								"		
						15		mod. "		
								"		
734501	60.1	7.4	0.1							
							Py		Tr Py	
				Back-			Py		"	
734502	24.0	17.1	0.1	ground		20	1Py		1	
				counts	0.25		1Py		1	
734503	41.7	10.5	0.1	of	to		3Py		5	
				150	0.5		5Py		5	
734504	72.0	15.1	0.5	to		25	2Py		2	
				180			5Py		5	
734505	48.7	11.6	<0.1	CPS			2Py		2	
							3Py		3	
734506	38.0	11.6	<0.1				5Py		5	
							1Py		1	
734507	55.8	14.5	0.6			30	3Py		3 dissem.	W
							3Py		3	Dry
734508	67.9	15.1	<0.1				2Py		2	
							2Py		2	
734509	55.0	15.6	0.1			35	3Py		3	
							3Py		3	
734510	102.0	3.6	<0.1				5Py		5	
							1Py	37-38m trace cpy (not much) sample		
734511	148.0	6.2	0.1				5Py		5	
						40	7Py		7	
734512	126.0	8.3	0.1				2Py		2	
							7Py		7	
734513	102.0	24.6	0.2				3Py		3	
							2Py		2	
734514	140.0	4.2	<0.1			45	3Py		3	
							2Py		2	
734515	136.0	8.4	0.1				7Py		7-10 (1cm pieces)	Damp
							3Py		3	"
734516	167.0	9.4	1.4				1Py	minor haem as P.F.	1	Moist
						50	7Py		7-10	
734517	160.0	9.4	0.4				2Py		2	
							10Py	+ green sandy bed	10	
734518	453.0	20.0	0.2				3Py		3	W
							1Py		1	W
734519	2163.0	31.7	0.2				1Py	55-5cm trace cpy	1 — little sample	W
						55	Py	dk grey Shale + l.grn SLT/SS	Tr	
734520	510.0	42.5	0.2				Py	l.grn mg.SS minor py shale	Tr	
							Py	" + grey SS, " 1%Q	Tr	
							Py	" vughy SS, rare " "	Rare (contam?)	
							Py	" + carbpy. shale 2%Q	Tr	
						60				

REASON FOR HOLE : Test the base of the Tapleys Fm.

OTHER DETAILS :

DRILL TYPE : RC. conven.

DRILL CO. : BUDD

SCALE : 1:500

LOGGED BY : SPH

DATE DRILLED : 26/7 to 27/7/93

PAGE : 1 of 2

PROJECT EL1747 "WITCHELINA"

PROSPECT BOORLOO

HOLE CO-ORD

M.I.M. EXPLORATION PTY.LTD.

ROTARY PERCUSSION DRILL LOG

open hole / reverse circulation

ROTARY : from ..... to .....

HAMMER : from ..... to .....

MWRC-7

RL. COLLAR ..... m

INCLINATION ..... °

DIRECTION ..... °

00125

SAMPLE No.	Cu	Co	Ag	Y	Mag. Susc.	DEPTH metres	LOG	DESCRIPTION	REMARKS	WATER
734521	1228	76.4	<0.1		0.2 to 0.35		Py	pale green to l.grn vrgly SS, minor Sh. 1% Q	Tr-1% Py	W
							Py	" " " Tillite? 5% Q	Tr Py	↓
							Py	"	"	
							Py	"	Tr-1% greenish Py	
734522	1158	50.5	<0.1			65	Py	" 5% Q	"	
							Py	"	Tr Py	
								"	—	
								l.green Quartzite (Qt) Tr Q	—	
734523	223.0	34.3	0.6					"	Rare Py (contam?)	
						70	Py	"	Tr Py	
							Q	90% clear Qtz		
							Q	95% "		
734524	283.0	63.5	0.8				Q	Clear Qtz		
							Q	90% " 10% l.grn g.SS		
						75		l.grn. gSS/Qt 50% Qtz		
								translucent, pale grn, light grn. mg. SS 41% Qtz	3% Qtz	
734525	507.0	57.6	0.8					pale green Qt, light green SLT, Tr Q. (Tillite)		
							3Py	SS " Tr Q	2% Py	
734526	221.0	52.3	0.2					" + Qt + " 2% Q	Rare Py	
						80		60% Clear Qtz 40% pale green SS	—	
							Q Py	Clear Qtz	Tr Py	
							Q	60/40 " + green SS	—	
734527	46.3	26.3	<0.1					translucent Qt, minor l.grn SS	—	
						84		" to pale green Qt.	—	
							EOH			

600 g.p.h water flow, only a bit salty
Good water flow in the Sarle Tillite

Other Elements

Au <0.02 to 0.06 ppm
Pb 3.8 to 29.1 ppm
Zn 5.3 to 47.8 ppm

REASON FOR HOLE :

OTHER DETAILS :

DRILL TYPE :

DRILL CO. :

SCALE :

LOGGED BY :

DATE DRILLED :

PAGE : 2 of 2

M.I.M. EXPLORATION PTY.LTD.

ROTARY PERCUSSION DRILL LOG
open hole / reverse circulation

MWRC-8

PROJECT: EL1747 "WITCHELINA"
PROSPECT: BOORLOO
HOLE CO-ORD: 789900E 6705120N AMG. Sh1.
ROTARY: from 0 to 5
HAMMER: from 5 to 72

RL. COLLAR: m
INCLINATION: -60 °
DIRECTION: 234°M °

00126

SAMPLE No.	Cu	Co	Ag	γ	Mag. Susc.	DEPTH metres	LOG	DESCRIPTION	REMARKS	WATER
734528	59·1	12·6	<0·1		1KT-5 Kappa-meter) $\times 10^{-3}$ SI units			O/B. dk. grey carb. SLT (Shale) ≡ lim ox		
									End of precollar.	
734529	41·2	21·4	<0·1			5	lim	dk grey carb. Shale, minor lim. ox.		
								minor haem. ox.		
734530	29·6	16·6	2·0			10	lim	trace lim ox.		
								Mod lim/haem ox.		
734531	37·0	16·2	2·0			15		minor haem ox		
734532	55·9	11·4	0·1	Back-ground counts of 170 to 200 CPS	0·2 to 0·5			trace haem ox		
						20		moxidised.	Tr Py	
734533	38·5	8·3	<0·1						Tr	
									Tr	
									<Tr	
						W.T.			<Tr (Water Table) Moist	
						25			Tr-1% Damp	
34534	33·6	8·8	0·1						Rare. "	
									Tr "	
									1 (5mm pieces) Dry	
									Tr-1% "	
						30			<Tr	W
734535	49·3	12·6	<0·1						2 Dry	
									Tr	
									<Tr	
734536	49·0	10·3	0·2			35			Tr	
									Tr	
									Tr Damp	
									1 Dry	
734537	54·6	12·8	<0·1						Tr "	
						40			1	
									1	
									2	
734538	87·2	10·5	0·1					minor grey half? bed.	Tr	W
									2 Dry	
						45			5 interbedded Py "	
									Tr-1%	
734539	140·0	14·6	0·1						Tr	W
									Trace Dry	
									Tr	W
									1%	D
734540	137·0	6·2	<0·1			50			Tr	D
									1	D
									2 Damp	
									1 "	
734541	150·0	11·2	0·1						Tr.	W
						55		mod-dk grey c.g. Sticky SLT poor sample ret.	Tr-1%	W
								" "	2 Moist	
								dk. grey carb Shale. "	Tr "	
734542	382·0	12·3	<0·1						1 "	
						60			Tr	W

REASON FOR HOLE: Test the base of the Tapleys Fm.

OTHER DETAILS:

DRILL TYPE: RC. conv.
DRILL CO.: BUDD
SCALE: 1:500

LOGGED BY: SPH
DATE DRILLED: 27/7 to 28/7/86
PAGE: 1 of

PROJECT EL1747 "WITCHELINA"
PROSPECT BREADEN HILL - SOUTH
HOLE CO-ORD 790140E 6702200N AMG. Sh2

M.I.M. EXPLORATION PTY.LTD.
ROTARY PERCUSSION DRILL LOG
open hole / reverse circulation
ROTARY : from 0 to 7
HAMMER : from 7 to 138

MWRC-9
RL. COLLAR ..... m
INCLINATION -60° °
DIRECTION 310°M °

00127

SAMPLE No.	Cu	Co	Ag	γ	Mag. Susc.	DEPTH metres	LOG	DESCRIPTION	REMARKS	WATER
734546	140·0	7·1	0·9		KT-5			dk grey SLT, gypsum, limox.		
					Kappa-					
					meter)					
					$\times 10^{-3}$					
					SI units	5				
									End of precollar	
734547	363·0	11·2	1·3					dk grey + grn-grey SLT limox.		
								dk grey SLT / gypsum "		
						10		+ lgrn Silic SLT " "		
734548	18·6	10·2	2·0					l.grn + yllw-brn ox "		
								olive grn silty SS/c.g. SLT, limox TrQ		
							Py	grey + limox, silic SLT	TrPy	
								"		
734549	11·5	12·0	2·4			15		yllw-brn limox Silic SLT		
								gry Silic SLT		
734550	12·5	9·3	0·9					dk grey SLT / silty SS		
						20		grey-grn, light grn micaceous SS	Rare Py	
						0.2		transl. to dk grey Silic SLT, trace lim		
					0·15		Py	pale grn-grey Silic SLT	Tr Py cubes	
734551	79·5	11·8	1·2		Fo		Py	"	Tr Py	
				190	0·7			" + dk grey Silty SS?	"	
				to				"	"	
				220		25	1Py	" + 15% dk grey SLT	1% Py	
734552	289·0	16·9	2·9	CPS			Py	dk grey + light grey SLT	Tr Py	
							1Py	medium grey "	1% Py	
734553	890·0	14·3	1·9				2Py	"	2% Py (devils dice)	
							Py	l.grey + med. grey " 2% Q	Tr	
734554	223·0	3·1	2·9			30	Py	" + f.g. SS.	Tr	
							Py	med grey c.g. SLT TrQ	Tr Py (inquartz)	
							Py	med-dk grey "	Tr Py	
							Py	" weakly silic?	Tr	
734555	1321	3·0	2·9			35	Py	SLT TrQ	Tr	
						W.T.	Py	gry-green "	Tr	D
QS 19495	2837	4	5				Py	"	"	W
6	5474	3	9				Py	"	" possible chalk	D
7	50	28	0·8				Py	+ lgrn SLT	Tr yllw Py	D
8	1·93%	6	16				2Py	grey silic SLT.	2% Py, "	D
9	1·33%	36	13			40	2Py	green-grey	2% Py	D
500	3418	21	3				2Py	"	2% yellow Py	D
1	9830	25	11				1Py	" c.g SLT	1% Py, trace yllw Py	D
2	9400	29	9				2Py	" " /f.g. SS	2% Py, trace "	
3	3000	20	2				1Py	grn c.g. SLT	1% "	
4	2·0%	58	10			45	15Py	"	15% Py ≤1% yellow	
5	7189	54	4				7Py	" /c.g. SLT TrPy Qtz	7% Py ≤1% "	W
QS19506	3480	37	5				25Py	f.g. SS/ "	25% Py Tr yellow	W
734561	901	188	2				5Py	silty SS (f.g.) 5% carb V.	5% Py	W
							Py	l.grn g.SS. trace "	Tr Py	W
						50	3Py	" 2% "	3% Py	W
							Py	pale grn - transl. m.g. Qtzite 40% QV	Tr	Moist
734563	604	29·5	2·1				Py	" Tr. Carb Veining	Tr	
							Py	" 10% Dolomite "	"	
							Py	l.grn f.g. SS 30% dolomite	Tr	
						55		pale green - trans m.g. Quartzite 5% dol.	—	Damp
734564	325	19·0	0·9					" + lgrn f.g. SS 1%	—	
								l.grn f.g. SS silic 1%	—	
								" Tr	—	
						60	Py	" Tr	Tr	W

REASON FOR HOLE : Test Tapleys Fm. adjacent to Interpreted Fault.
OTHER DETAILS :

DRILL TYPE : RC. Convsn.
DRILL CO. : BUDD
SCALE : 1:500
LOGGED BY : SPH
DATE DRILLED : 28/7 to 29/7/93
PAGE : 1 of 3

PROJECT EL1747 "WITCHELINA"

PROSPECT BREADEN HILL -SOUTH

HOLE CO-ORD

M.I.M. EXPLORATION PTY.LTD.

ROTARY PERCUSSION DRILL LOG

open hole / reverse circulation

ROTARY : from ..... to .....

HAMMER : from ..... to .....

MWRC-9

RL. COLLAR ..... m

INCLINATION ..... °

DIRECTION ..... °

00128

SAMPLE No.	Cu	Co	Ag	X	Mag. Susc.	DEPTH metres	LOG	DESCRIPTION	REMARKS	WATER
	ANALYSES ppm / %									
734565	122	13·1	0·4	↑	↑			trans.-pale green m.g. Quartzite Tr. dolomite	Rare Py	W
							Py	" " , SLT contam.? 1%	Tr Py (contam.)	Damp
								"	–	W
								" dk grey SLT contam.?	–	
734566	115	12·6	0·3			65		" , lim. ox. fracs.	–	↓
								l. green " dk grey silty SS contam.	Rare (drilling difficulties)	
								g. SS. "	–	
								" 5% dk grey silty micaceous SS.	2% Dolomite	
734567	31·5	7·9	0·2					dk. grey silty SS , 5% l.gm. g.SS.	–	
						70	Py	dk grey silty SS, SLT + minor " " , Tr Q	Tr Py	
								c.g. SLT - f.g. silty SS , trace " ,	–	
								micaceous. SLT , "		
734568	17	3·5	0·2					silty SS , "	Rare Py	
								micaceous SLT	–	Damp
						75		- black " , 5% l.gm f.g SS.	–	Wet
								" 40% "		↓
734569	5.7-3	5·1	2·1					l.gm. SS , 5% black SLT	–	
								trans. Qtzite, 10% l.gm SS, trace SLT.	Rare Py	
							Py	" 5% "	Tr Py	
				190	0·15	80		to pale gm Qtzite	–	
734570	42·5	2·4	0·3	to	to			" & 40% silty SS, minor SLT.	–	
				220	0·7			dk grey-black SLT / silty SS , 5% Qtzite	–	
				CB				micaceous SLT / silty SS & dol. xtals.	–	
								50/50 " & pale gm Qtzite 1% Dol.		
734571	139	5·8	0·9					70/30 pale gm Qtzite / dk grey-black silty SS.	2% Dol.	
						85		95/5 dk grey-blk SLT / silty SS , l.gm Qtzite	5% Dol	Damp
								95/5 l.gm SS. / SLT , 5% yllw carb.	2% "	Wet
								l.gm SS		↓
734572	171	5·2	0·4					dk grey-blk micac. SLT , 5% SS 3% Dol.		
								" 30% " 5% "	Rare Py , green rower yllw	
						90		l. green SS rare SLT 5% "		
							Py	" 30% "	Tr Py	
734573	271	7·0	0·4				Py	g. SS , rare SLT 20% "	Tr Py	
							Py	" 20% "	Tr Py	
						95		olive. green SS, minor SLT 7% "	–	
734574	294	9·0	0·4					trans, pale grey & olive gm f.g. SS + m.g. Qtzite 5%	– small sample.	
							Py	green silty SS. 1%	Tr Py	
							Py	" SS , minor black SLT 1%	Tr Py	
							Py	m.g. SS Tr.	Tr Py	
							Py	" 1%	Tr Py	
734575	25·3	5·5	0·1			100	Py	" (silicified) 2%	Tr	
							Py	green & grey grey m.g. SS 3	Tr	
								" " " + silty SS 2		
								" " m.g. SS + " 2		
734576	11·1	5·6	0·1			105		m.g.g. SS + " Tr		
								" + SLT (minor)		
							Py	f.g.g. SS + m.g. SS Dol. xtals.	Tr Py	
								"		
734577	33·8	6·9	0·2					trans. to pale green m.g. Qtzite	Rare Py	
						110		"		
								"		
								"		
734578	23·9	9·5	0·1					"		
								" (fine chips) minor SLT 10% Dol. xtals		
						115		green " 1% Dol. xtals		
								" 5%		
734579	40·8	9·7	0·2					c.g. Q-mi. SS		
								g SS ?		
								trans to pale green Qtzite		
				↓	↓	120		"		

REASON FOR HOLE :

OTHER DETAILS :

DRILL TYPE :	LOGGED BY :
DRILL CO. :	DATE DRILLED :
SCALE :	PAGE : 2 of 3

PROJECT EL1747 "WITCHELINA"

PROSPECT BREADEN HILL - SOUTH

HOLE CO-ORD

M.I.M. EXPLORATION PTY.LTD.

ROTARY PERCUSSION DRILL LOG

open hole / reverse circulation

ROTARY : from ..... to .....

HAMMER : from ..... to .....

MWRC-9

RL. COLLAR ..... m

INCLINATION ..... °

DIRECTION ..... °

SAMPLE No.	ANALYSES ppm / % Cu	Co	Ag	γ	Mag. Susc.	DEPTH metres	LOG	DESCRIPTION 00129	REMARKS	WATER
734580	15.7	8.2	0.1		(KT-5			green SS, dolomitized 5% Dol xtals		
					Kappa-			" 10%		
					meter)			trans. & green q.SS. 1%		
					x10⁻³			" dk grey SLT 2		
734581	19.1	4.6	0.2		SI units	125		l.green + green-grey q.SS + q mi SS. 5%		
								"		
								trans + green grey. qSS & mi SS (small sample + chips)		
								"		
734582	16.5	20.0	0.3					bleached to pale grn SS (mi), Dol xtals	Rare Py	
						130		trans. to " q.SS	Rare Py	
								"	Tr Py	
								" + green q.SS.		
734583	23.6	14.8	0.2					" q.SS		
							Py	"	Tr Py	
								" + mi 1% Dol xtals.		
						135		" Qtzite (c.g) + green-black mi, silty SS/SLT		
734584	22.7	5.1	0.1					" 5% " SLT		
				↓	↓	138		" + f.g. green SS (mod. silic)		
							EOH			
								yellow Py ≡ chalcopyrite		

REASON FOR HOLE :

OTHER DETAILS :

DRILL TYPE :	LOGGED BY :
DRILL CO. :	DATE DRILLED :
SCALE :	PAGE : 3 of 3

PROJECT EL1747 "WITCHELINA"
PROSPECT BREADEN HILL - SOUTH
HOLE CO-ORD 790230E 6702060N AMG. Sh2

M.I.M. EXPLORATION PTY.LTD.
ROTARY PERCUSSION DRILL LOG
open hole / reverse circulation
ROTARY : from 0 **to** 2
HAMMER : from 2 **to** 96m

MWRC-10
RL. COLLAR ..... m
INCLINATION -60° •
DIRECTION 305°M •

00130

SAMPLE No.	Cu	Co	Ag	γ	Mag. Susc.	DEPTH metres	LOG	DESCRIPTION	REMARKS	WATER
							O.B			
734585	37.7	12.8	0.1		KT-5		lim	dk grey SLT, mod. limox		
					Kappa-meter		lim	" minor limox	End of precollar	
					x10⁻³		lim	minor limox		
734586	34.6	12.2	0.1		SI units	5	lim	dk grey-green SLT "		
				↑	↑		lim	" "		
							lim	dk grey SLT "		
							lim	" "		
734587	34.4	10.4	0.1				lim	med. grey mod. limox		
							lim	" + green SLT minor "		
						10		" SLT "		
							lim	" "		
								" "		
734588	29.8	11.6	0.1					" "	Rare Py	
						OL.	lim	dk. grey SLT (Shaley partings) "		
						15		" Rare Q		
							Py	"	Tr Py	
734589	33.9	9.8	0.1				Py	" ↓	"	
							Py	"	"	
				Back-	0.24		Py	"	"	
				ground	to	20	Py	" Tr. Carb V.	"	
734590	36.8	11.0	0.1	counts	0.60		1Py	" "	1% Py	
				of			1Py	"	1%	
				130			Py	"	Tr	
				to			Py	"	Tr	
734591	37.6	10.4	<0.1	160			Py	"	Tr	
				CPS		25	1Py	"	1% Py // to bedding	
							Py	"	Tr "	
							Py	"	Tr "	
734592	41.2	10	0.1				Py	"	Tr "	
							1Py	"	1% "	
						30	Py	"	Tr	
							Py	"	Tr	
734593	61.7	12.5	0.1					"	Rare	
							Py	"	Tr	
							1Py	"	1	
						35	1Py	"	1	
734594	54	11.4	0.1					"	÷	
							Py	med. grey SLT	Tr	
							1Py	dk grey SLT	1	
							2Py	"	2	
734595	55.8	15	0.4			40	2Py	med. grey SLT	2	
							Py	"	Tr-1%	Damp.
							2Py	"	2 "	
							Py	"	Tr	Dry
734596	62.1	13.3	0.3				1Py	dk. grey SLT	1%	
						45	1Py	"	1%	minor Xcutting Py
							2Py	"	2%	
							Py	"	Tr	
734597	56.4	11.9	0.1				3Py	"	3%	Damp
							2Py	"	2%	
						50	2Py	"	2%	
							1Py	"	1%	
734598	62.3	12.5	0.1				1Py	"	1%	
							Py	" carbonaceous	Tr	
							Py	" "	Tr	Moist
						55	3Py	" "	3	Damp
734599	52.9	11.4	0.1				Py	" ↓	Tr	
							Py	"	Tr	
							1Py	"	1%	
						60	1Py	"	1%	

REASON FOR HOLE : Test Tapleys Fm. adjacent to Interpreted Fault
OTHER DETAILS :

DRILL TYPE : RC. CONV.	**LOGGED BY :** SPH	
DRILL CO. : BUDD	**DATE DRILLED :** 30/7	
SCALE : 1:500	**PAGE :** 1 of 2	

PROJECT EL1747 "WITCHELINA"

PROSPECT BREADEN HILL – SOUTH

HOLE CO-ORD

M.I.M. EXPLORATION PTY.LTD.

ROTARY PERCUSSION DRILL LOG

open hole / reverse circulation

ROTARY : from ..... to .....

HAMMER : from ..... to .....

MWRC-10

RL. COLLAR ..... m

INCLINATION ..... °

DIRECTION ..... °

00131

SAMPLE No.	Cu	Co	Ag	Y	Mag Sus.	DEPTH metres	LOG	DESCRIPTION	REMARKS	WATER
	ANALYSES ppm / %									
734600	66·1	15·1	0·6				2Py	dark grey Shaley SLT + weakly Co alt.	2% Py	
							1Py		1%	
							Py		Tr	
							1Py			
734601	60	13·7	0·5				Py		Tr	
						65	Py	1% Calcite	Tr	
							Py		Tr	W
								SLT Carbonaceous	–	Dry
734602	49·5	12·6	0·4	Back-			Py	↓	Tr	Dry
				ground	0·24		1Py		1%	
				counts	to	70	2Py		2%	
				of	0·60		2Py		2	
734603	52·6	11·6	0·1	130			Py	carbonaceous, mod carb. alt	Tr	W
				to			Py	"	Tr	Dry
				160				"	Rare	Dry
						75		"	"	"
734604	51	10·1	<0·1					Shaley. "	"	"
							Py	Shaley " Minor Co. Vein.	Tr	"
							Py	" "	Tr	W
							Py	" "	Tr	Dry
734605	94	7·3	<0·1			80	Py	" "	Tr	"
							Py	" 3% Pyritic Carb V.	Tr	"
							Py	" Tr Carbonaceous	Tr.	"
							1Py	" "	1%	W
734606	498	10	0·3			85	1Py	" "	1½2%	W
							Py	green-grey f-g. SS " 5% dk. grey carb SS	Tr	W
							Py	M-dk. grn SLT weak carbalt	Tr	Dry
							Py	Gn-dk grey SLT	Tr Py	"
734607	240	21·8	0·1				10Py	grn-grey silic SLT? + 5% dk grey SLT	10% Py dissem!	"
							Py	green-grey + dk grey SLT	Tr	"
734608	37·1	11·3	0·1			90		l grn SLT, + silicous frags trace Carb V.	– mod carb alt.	W
								l grn f-g SS / silic SLT	– weak carb alt	Dry
734609	66·2	42·6	0·1		↓			" f-m g-SS. tr. Carb V?	– ↓	"
					1·17		Py	transl. Qtzite, l. grn SS	Tr Py "	Dry
					3·55	95	Py	transl. Qtzite + minor dol.	Tr "	Dry
				↓	1·10	96		" + grey-grn silty SS	"	
							EOH.			

Other Results

Element Results (ppm)

Au all <0·02

Pb 3·0 to 7·5

Zn 6·8 to 28·0

REASON FOR HOLE :

OTHER DETAILS :

DRILL TYPE :

DRILL CO. :

SCALE :

LOGGED BY :

DATE DRILLED :

PAGE : 2 of 2

PROJECT EL 1747 "WITCHELINA"

PROSPECT LAUREL

HOLE CO-ORD 790040E 6700700N AMG, Sh2

M.I.M. EXPLORATION PTY.LTD.

ROTARY PERCUSSION DRILL LOG

open hole / reverse circulation

ROTARY : from 0 to 8

HAMMER : from 8 to 78

MWRC-11

RL. COLLAR ..... m

INCLINATION -60 °

DIRECTION 075°M °

00132

SAMPLE No.	Cu	Co	Ag	γ	Mag. Susc.	DEPTH metres	LOG	DESCRIPTION	REMARKS	WATER
734610	56	7	0.1		KT-5 Kappa-meter $\times 10^{-3}$ SI units			Variably ox. grey SLT, strong carbonate		
						?OB				
						5	lim			
									End of precollar	
734611	104	10	0.1					M-dk grey SLT, weak carbonate minor lim ox frag		
						10	lim	" " "		
								" " "		
						O.L.	lim	" " —		
734612	170	10.7	0.1				Py		Tr Py	
							Py		Tr Py	
						15	Py	dk grey SLT	"	
							Py	"	"	
734613	145	10.9	0.1				Py	m. grey " Tr QV	"	
							Py	" "	"	
							Py	" "	"	
						20	Py	m-dk grey " "	"	
734614	1066	8.9	0.4				Py	" "	"	
							Py	" "	"	
						W.T.	Py	50/50 dk grey SLT / pale Qtzite	" Damp Seep	
								90/10 m. grey SLT / "	↓	
734615	215	7.7	0.1	120 to 140 CPS	0.27 to 0.90	25	Py	m. grey SLT	Tr Py	
							Py	"	"	
							Py	m-dk. " (big chips) Carb. Veining	1%	W
							Py	" "	Tr	W
734616	201	3.8	0.1					"		Dry.
							Py	"	Tr "	
						30	Py	dk. grey SLT	Tr	W
							Py	shaley carbonaceous	Tr	W
734617	119	4.8	<0.1					" "	—	Damp
							Py	" " tr. Carb. V.	Tr	
							Py	"	"	
						35	Py	"	"	
734618	220	12.1	0.1				Py	"	Tr	
							Py	" tr. QV.	Tr	
							Py	"	"	Dry
							Py	"	Tr "	
						40	Py	"	" devils dice. Damp	
734619	234	10	0.3				Py		" "	
							Py	M. grey SLT Tr Py. Qtz	Tr	Dry
							Py	dk grey shaley SLT weakly carbonaceous	Tr	
734620	242	12.6	0.1				Py	" " Tr. Qtz. + Carb.	Tr	
						45	Py	" "	"	
							Py	dk grey shaley carb. SLT	Tr	
							Py	"	Tr	Damp
734621	435	13.3	0.2				Py	"	Tr	Dry
							Py	"	"	Damp
						50	Py	"	Tr	↓
							Py	M. grey "	Tr	
734622	1487	5.7	0.4				Py	"	Tr	
							Py	" 5% Pyritic QV.	"	
						Py/Q	Py	"	"	
						55	Py	" Tr. Carb. V.	2	W
							Py	" "	Tr	Damp
734623	3554	4.5	1.0				Py	" "	Tr	↓
							Py	" "	Tr	
							Py	" 5% Q + Carb V.	Tr	
				↓	↓	60?		80/20 Qtz vein / m grey SLT	Tr-Rare	W

REASON FOR HOLE : Test Cu. workings

OTHER DETAILS :

DRILL TYPE : R.C. Conv.	LOGGED BY : SPH
DRILL CO. : BUDD	DATE DRILLED : 30/7 - 31/7/93
SCALE : 1:500	PAGE : 1 of 2

PROJECT EL1747 "WITCHELINA"

PROSPECT LAUREL

HOLE CO-ORD

M.I.M. EXPLORATION PTY.LTD.

ROTARY PERCUSSION DRILL LOG

open hole / reverse circulation

ROTARY : from ..... to .....

HAMMER : from ..... to .....

MWRC-11

RL. COLLAR ..... m

INCLINATION ..... °

DIRECTION ..... °

SAMPLE No.	ANALYSES ppm / % Cu	Co	Ag	γ	Mag. Susc.	DEPTH metres	LOG	DESCRIPTION 00133	REMARKS	WATER
734624	1453	3	0.4					50/50 clear Qtz / dk grey carb. SLT/SHALE	Tr Py	W
								95/5 trans.-grey Qtz / "	1% Py	W
								90/10 " " tr. Carb. V.	Tr	W
								50/50 " "	"	W
734625	962	6.3	0.3			65		"	"	W
								60/40 dk grey Shale / clear Qtz	1	W
								95/5 " "	Tr	W
								carb dk.grey Shale 5% Q+Carb V.	Tr	
734626	828	10.5	0.3					" " Tr "	2	
						70		"	1	
								dk grey carb. Shale 5% QV	Tr	
								" 2%	Tr	
734627	525	8.6	0.2					" 2%	Tr	
								" 2% Pyritic QV	Tr	
						75		" Tr Q + Carb. V.	Tr dissem	
								" "	Tr	
734628	737	6.9	0.3					" 10% QV	Tr	
						78	EOH	" 1-2% "	Tr	

Other Elements

Results (ppm)

Au all ≤ 0.03

Pb 0.6 to 15.7

Zn 9.1 to 47

REASON FOR HOLE :

OTHER DETAILS :

DRILL TYPE :

DRILL CO. :

SCALE :

LOGGED BY :

DATE DRILLED :

PAGE : 2 of 2

PROJECT EL1747 "WITCHELINA"

PROSPECT "MARION"

HOLE CO-ORD 791060E 6648130N AMG Sh 2

M.I.M. EXPLORATION PTY.LTD.

ROTARY PERCUSSION DRILL LOG

open hole / reverse circulation

ROTARY : from 0 to 6

HAMMER : from 6 to 54

MWRC - 12

RL. COLLAR ..... m

INCLINATION -90° °

DIRECTION – °

SAMPLE No.	Cu	Co	Ag	γ	Mag. Susc.	DEPTH metres	LOG	DESCRIPTION	REMARKS	WATER
734629	33	12			(KT-5 Kappa meter) x10⁻³ SI units		lim	dk.grey SLT, lim ox., strong carbonate	first sample.	
							lim	med. grey SLT. minor lim ox, weak to mod. carbonate content		
734630	23	12	<0.1			5		"		
								"		
						OL	lim, Py	carbonaceous trace lim	Tr Py. End of precollar.	
							Py	dk grey SLT.	"	
							Py	"	"	
734631	24	11	<0.1				Py	"	"	
						10	Py	Carbonaceous	1%	
							2Py	"	2	
							1Py	"	1	
734632	20	10.6	<0.1			W.T.	Py	"	Tr small samp	W
							1Py	"	1 "	Damp
							1Py	"	1	Dry
						15	Py	"	Tr	
734633	10	22.5	<0.1				Py	"	Tr	
							Py	"	Tr	
							Py	"	Tr	
							1Py	" Shaley SLT	1	
734634	27	10.3	0.1	Back-ground counts of 160 to 190 CPS	0.25 to 0.9	20	Py	" "	Tr	
							Py	" "	Tr	
							Py	" SLT, shaley partings	"	
734635	29	14.3	<0.1			25	Py	"	"	
							Py	"	"	W
							Py	" Tr. Carb V.	"	Damp
							Py	"	"	
734636	33	6.2	<0.1				Py	"	"	
						30	Py	"	"	
							Py	blocky SLT Carb-Py V.	"	W
							Py	" Tr Carb V.	"	W
734637	21	12.7	<0.1				Py	" "	"	W
							Py	Shaley SLT "	"	W
						35	Py	med. grey weakly silic carb SLT. "	"	Damp
							Py	" QV	"	Dry
734638	45	9.7	<0.1				Py	grey silic SLT QV	"	Damp
							Py	weakly silic. SLT "	"	Dry
							Py	grey. SLT "	"	"
						40	Py	m.grey, bleached, soft to silic SLT "	"	W
734639	17	10.4	<0.1					pale grn m.g. Qtzite + grey SLT	Rare Py	W
							Py	pale to med. grns tillite. minor SLT+Qtz	Tr	W
							Py	" Sandstone + SLT + Qtz tillite frags	Tr	W
							Py	" "	Tr	W
734640	18	11.9	<0.1			45		" Qtzite, SS + Qtz tillite frags	Rare	W
							Py	pale to grn to grey quartzose frags "	Tr	W
							Py	" + SLT "	"	W
								l green f + m.g. SS + Q tillite "	Rare	W
734641	38	6.2	0.1					"	Small samp	W
						50		"		W
								" + Qtzite + Q		
								pale to gran-grey SS, Qtzite + SLT tillite frags.		
734642	42	6.9	0.8					"		
						54		"		
							EOH			

Good water flow in the tillite!

Other Results (ppm)
Au all ≤ 0.02
Pb 3.4 to 6.6
Zn 9.1 to 252

REASON FOR HOLE : Test Marion diggings

OTHER DETAILS :

DRILL TYPE : RC. Conv.

DRILL CO. : BUDD

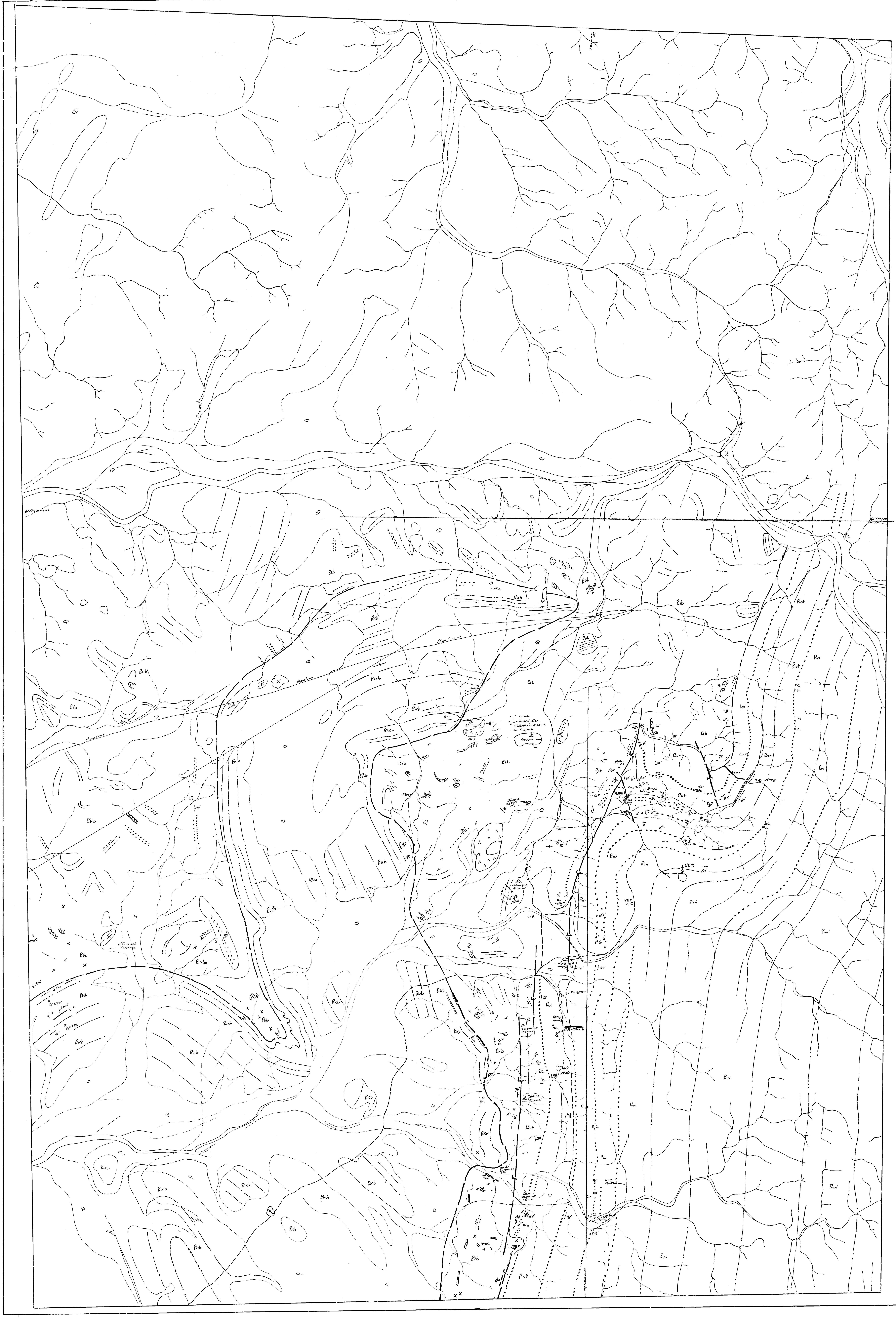
SCALE : 1:500

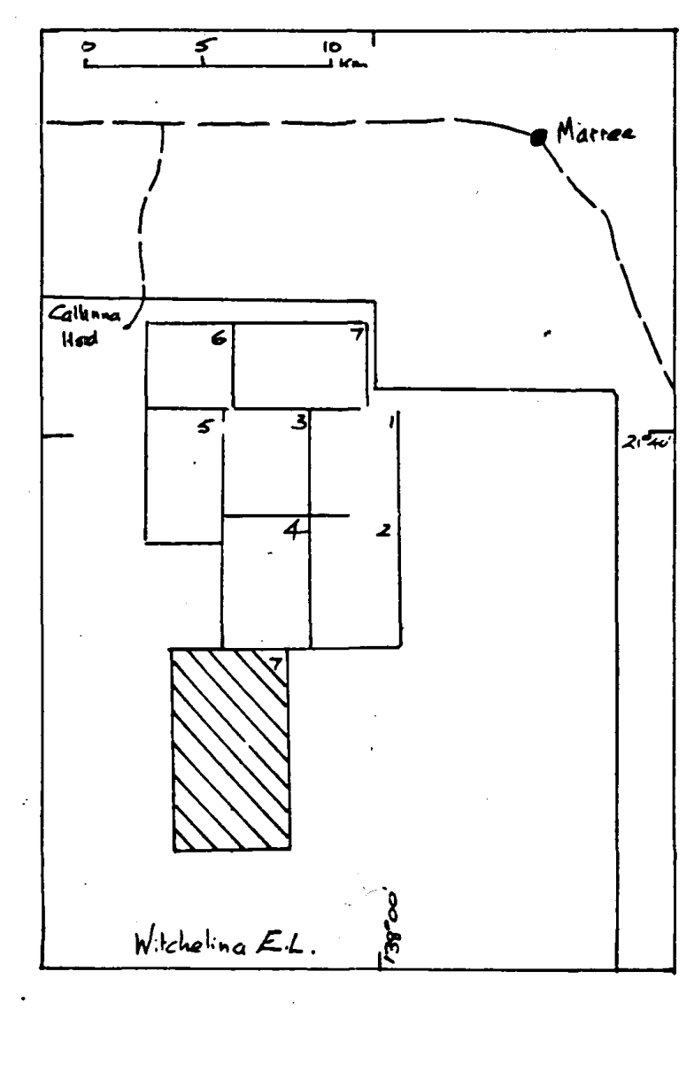
LOGGED BY : SPH

DATE DRILLED : 31/7 to 1/8/73

PAGE : 1 of 1

8528-19





Legend

	Q	Alluvium, colluvium
	Qt	Talus, slope deposits.
Umberatana Gp	Pfa	Amberoona Fm - green-grey siltstone, shale, Limestone with slump breccias
	Pft	Tapley Hill Fm - dk grey, laminated siltstone with slump breccias
		Tindelpina Sh M. - black, finely laminated pyritic sh, + dol. sh.
	Pus	? Serle M - sandstones, siltstones, conglomerates
	Puw	Willyerpa Fm - pebbly sst, qtzites, siltstone, diamictite
Burra Gp	Pbk	Skillogalee Dol. - dk grey dol, qtzite, slst.
	Pbw	Witchelina Qtzite - flaggy feldspathic qtzite + slst
	Pbi	Willawalpa Fm - flaggy qtzite, slst + minor dol (Pbt - Top Mount Sst - qtzite, slst, dol.)
Callanna Gp	Pkb	Boorloo Slst - dk grey to black slst + dol with prominent dol. bands at top.
	Pkc	Cooranna Fm - SSt, Slst, dol + Lst
	Pkh	Hogan Dol - grey + brown dol. minor sst + slst.
	Pkr	Recovery Fm - flaggy qtzite, slst + minor carbonate
	Pku	Jones Mine Lst - grey, partly sandy, cherty Lst + sst.
	Pkk	Rook Tuff - flaggy tuffaceous grey sh, slst + qtzite with local dacite layer
	Pkd	Dome Sst - qtzite with some hematite lamination
	Ptb	Tectonic breccia, occasionally showing intrusive features (piercement structures).

Geological boundaries ——— observed — — — — inferred
Faults F——— observed —F— — inferred
Boundaries of tectonic breccias ——— observed — — — inferred
Bedding 50° strike + dip + vertical
——— · ——— · ——— trend of bedding
Foliation 30°
Jointing 50°
Sedimentary breccia ◁ ▽ ◁
Tectonic breccia × ×
Sandstone, qtzite ∴∴
Siltstone
Carbonate (usually dol)
Veins, usually qtz but frequently with dol + limonite. Wall rocks usually silicified + dol^d. qtz, dol, lim
Dolerite, gabbro or Vv
Silicification S
Dolomitisation D
Australian Selection Trust grid pegs with co-ordinates in feet △

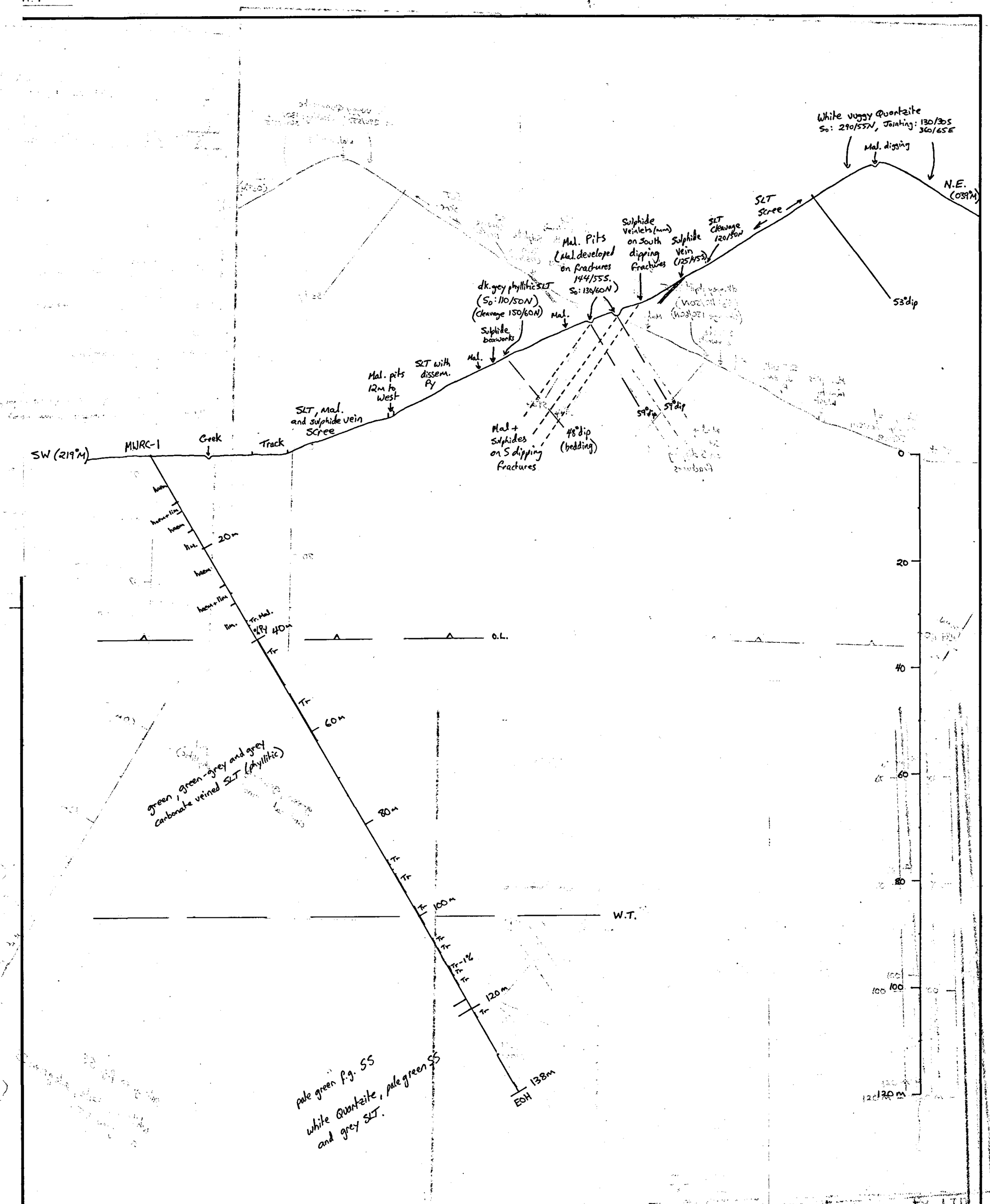
* This plan has been prepared from a colour photo-enlargement of Survey 3453 flown in June 1986. It has not been corrected for photo-distortion.

N

0 100 200 300 400 500 m
SCALE

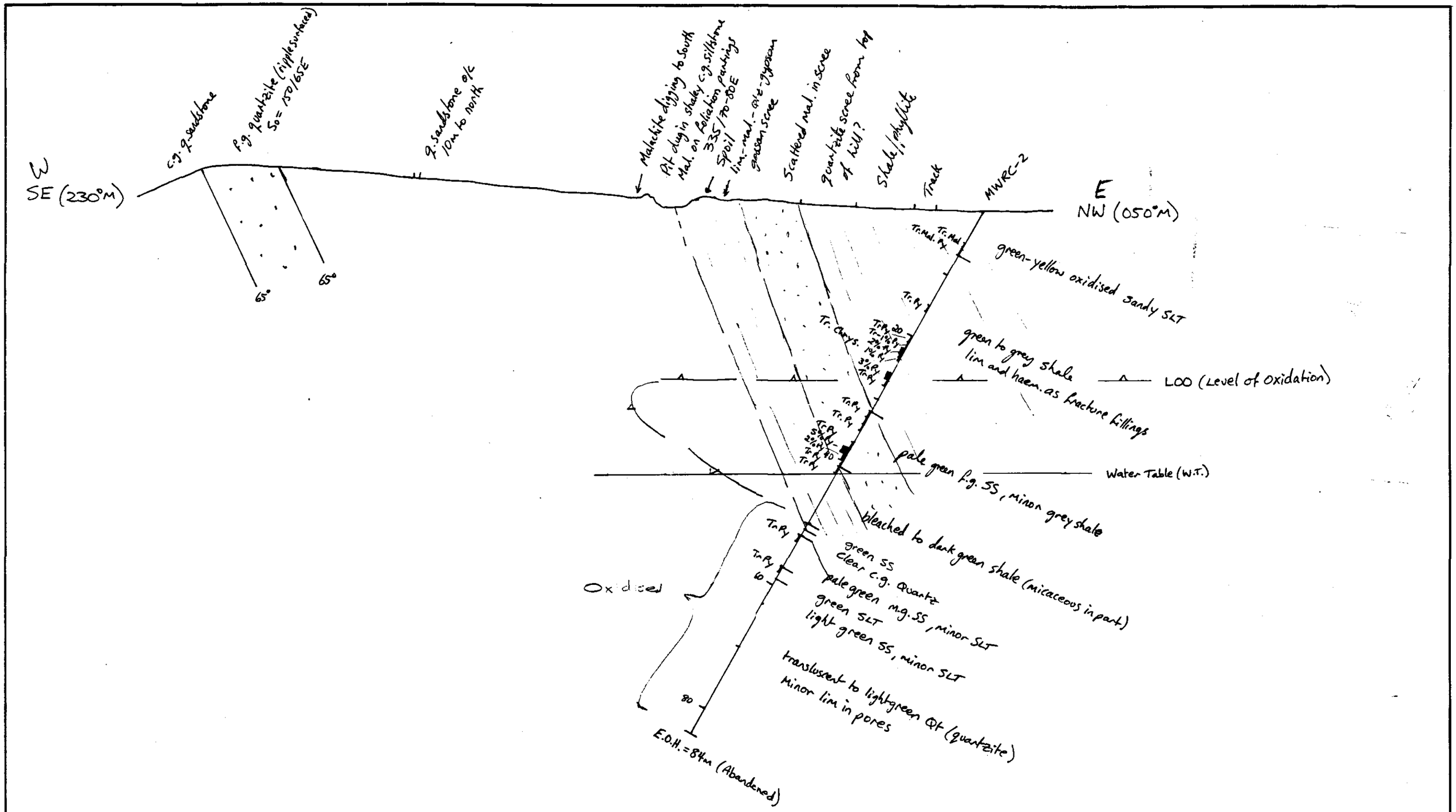
REVISION			
	SCALE : 1:5000	M.I.M. EXPLORATION PTY. LTD.	
	GEO : PB	Witchelina EL 1747 Geological Plan West Willouran Area Sheet 7	
	DATE : May 93		
	DRAFT : PB		
	DATE : May 93		
	1:250,000 SH 53-8		
	1:100,000		
	MINING FIELD OR DISTRICT : Willouran Ranges SA		DRG No. : 37858

8528-19



REVISION		SCALE 1:500	M.I.M. EXPLORATION PTY. LTD.
		GEO SPH	EL 1747 "WITCHELINA", S.A.
		DRAFT	WEST WILLOURAN PROSPECT
		CHECKED SPH	DRILLHOLE CROSS-SECTION MWRC-1
		DATE Aug. 93	
		1 250 000 SH53-8	
		1 100 000	
		MINING FIELD OR DISTRICT — WILLOURAN RANGES, S.A.	DRD No. 47021

8528-20



REVISION		SCALE: 1:500	M.I.M. EXPLORATION PTY. LTD.
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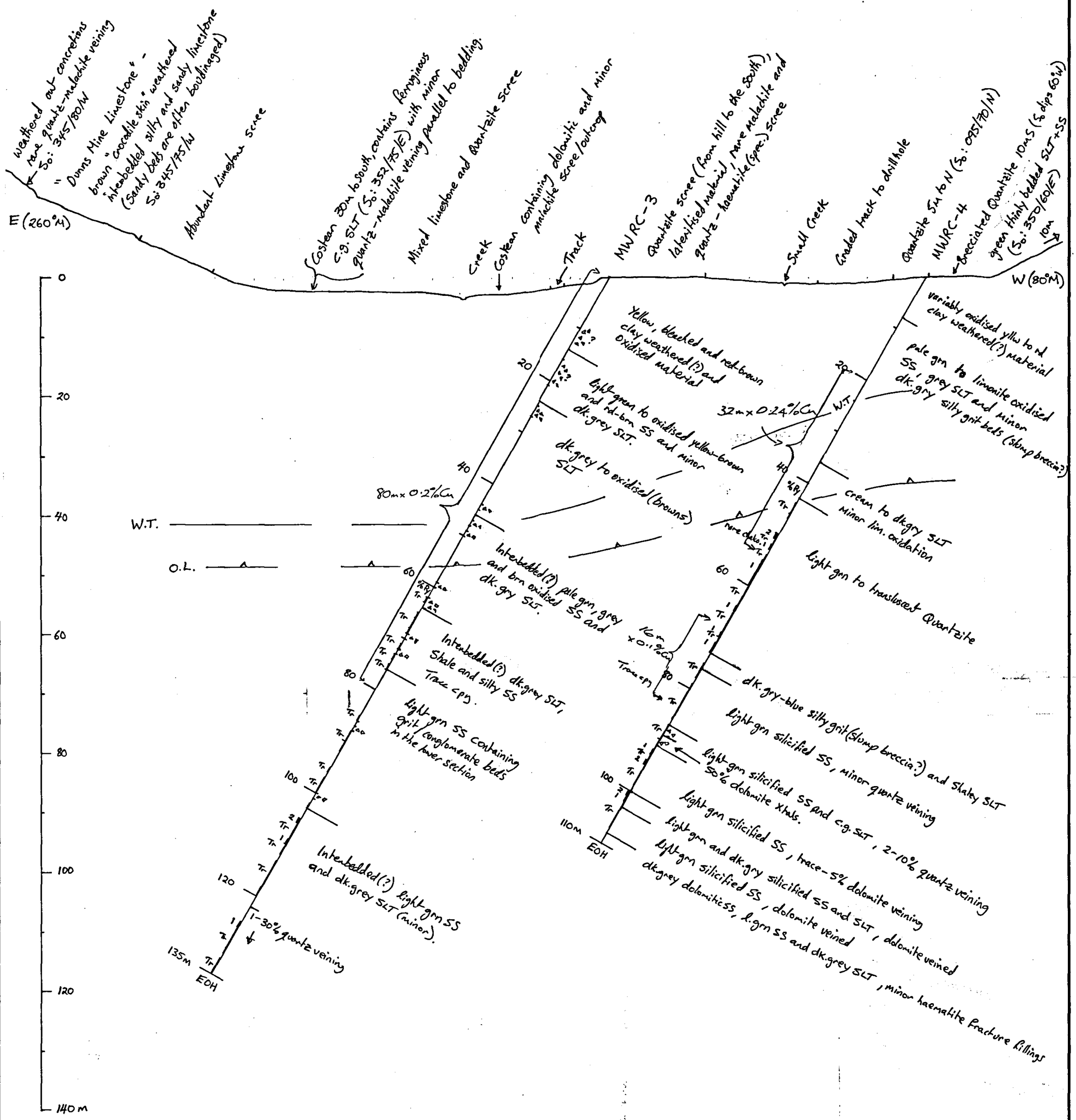
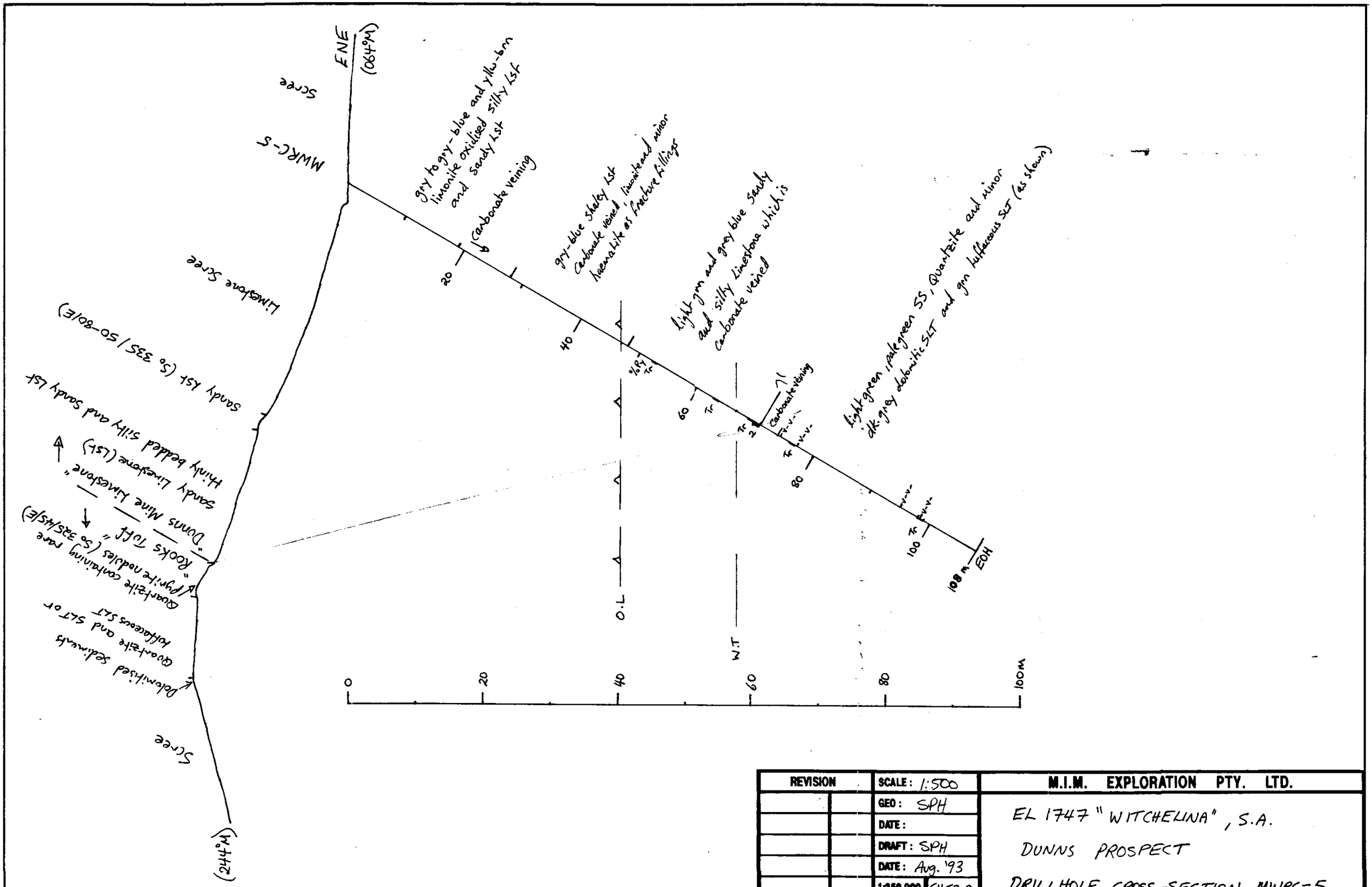
		DATE:	WEST WILLOURAN SOUTH PROSPECT
		DRAFT: SPH	DRILLHOLE CROSS-SECTION MWRC-2
		DATE: 20/7/93	
		1:250,000	
		1:100,000	
		MINING FIELD OR DISTRICT: WILLOURAN RANGES, S.A.	DRG No.: 47022

8528-21



REVISION		SCALE 1:500	M.I.M. EXPLORATION PTY. LTD.
		GEO SPH	EL 1747 "WITCHELINA", S.A.
		DRAFT	ROOKS PROSPECT
		CHECKED SPH	
		DATE Aug. '93	DRILLHOLE CROSS-SECTION MWRC-3 MWRC-4
		1 250 000 SH 53-8	
		1 100 000	
		MINING FIELD OR DISTRICT	WILLOURAN RANGES, S.A. — DRG No 47023

8528-22



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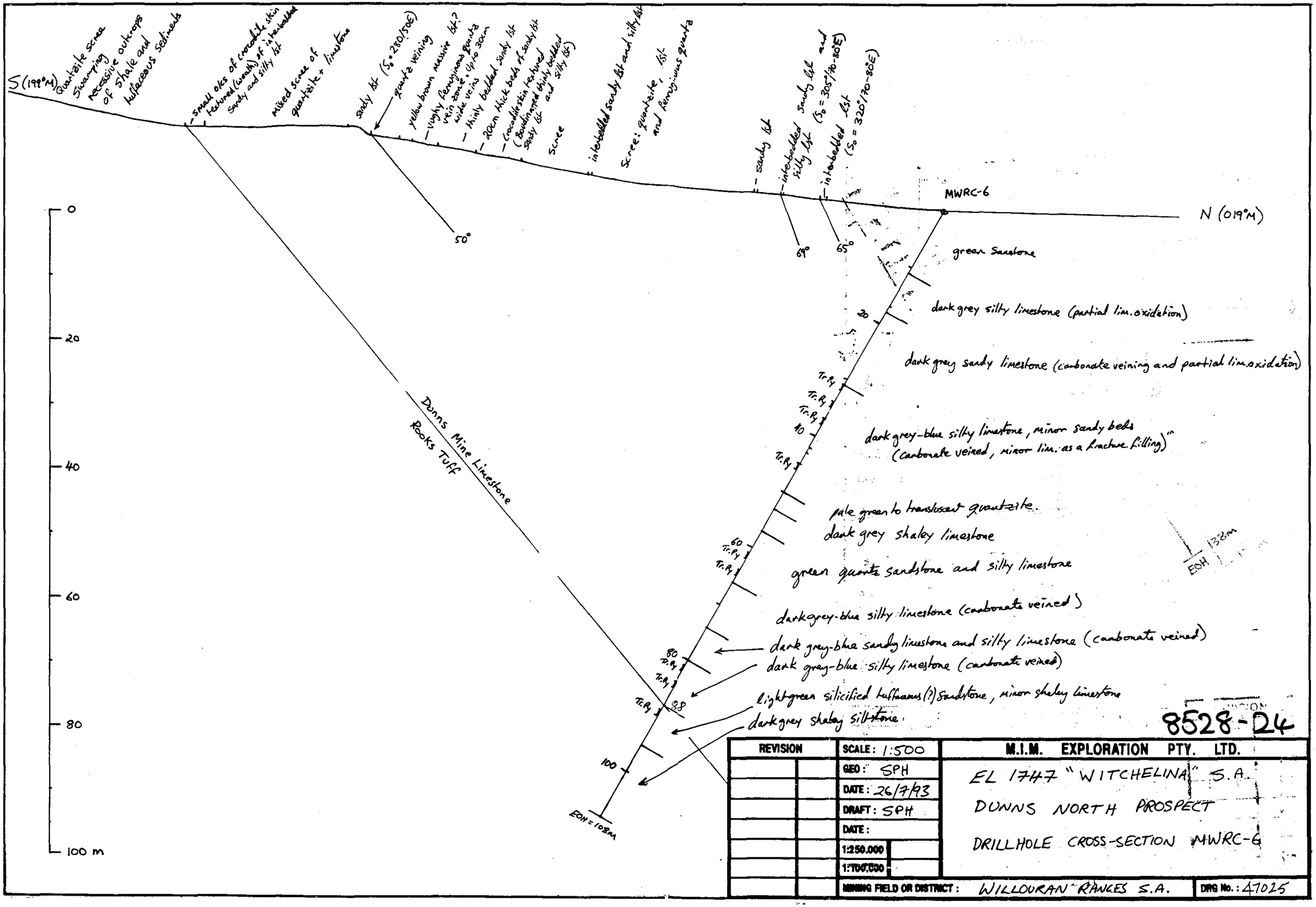
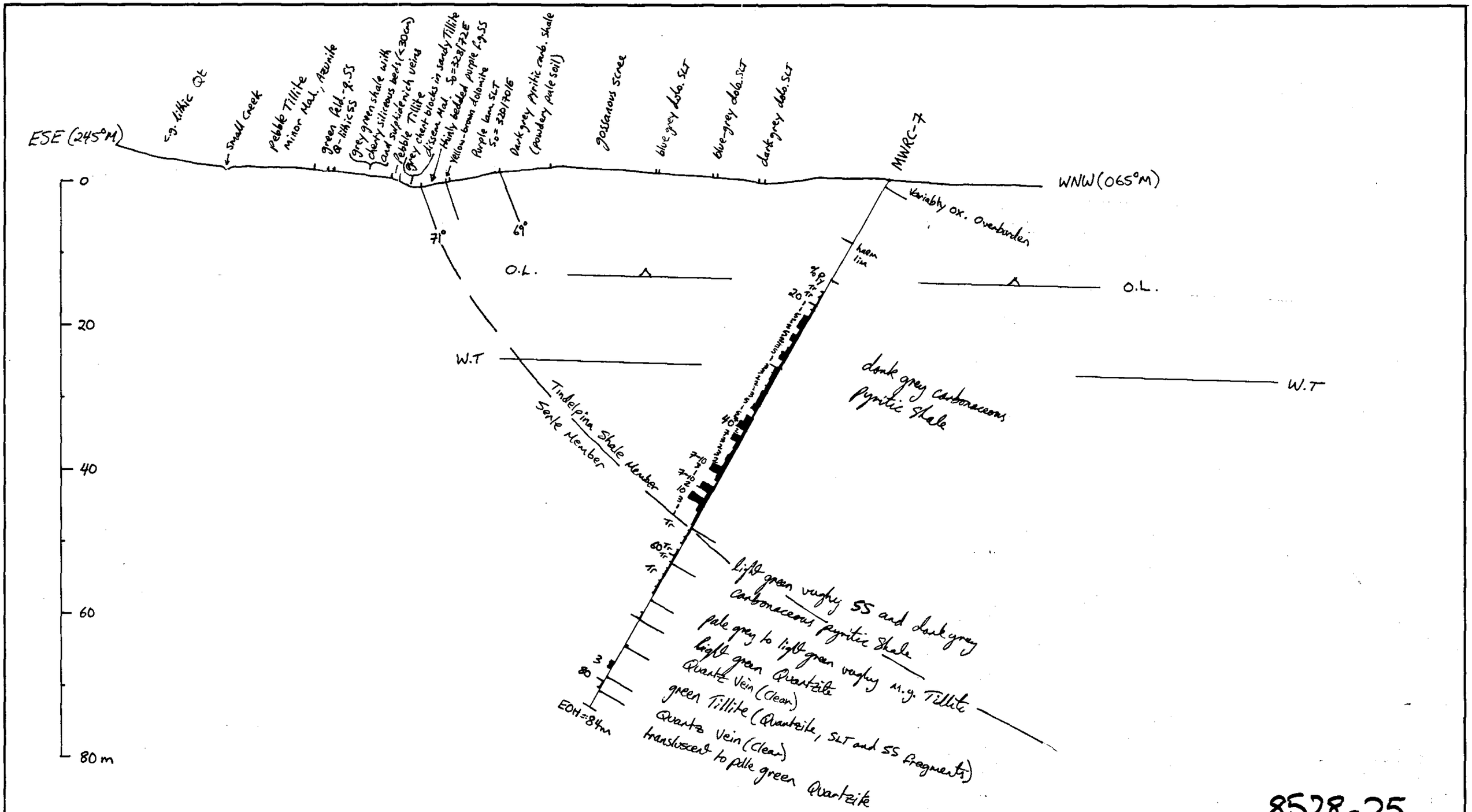
		DATE:	DUNNS PROSPECT
		DRAFT: SPH	DRILLHOLE CROSS-SECTION MWRC-5
		DATE: Aug. '93	
		1:250,000 SH53-8	
		1:100,000	
		MINING FIELD OR DISTRICT: WILLOURAN RANGES, S.A.	DRG No.: 47024

8528-23



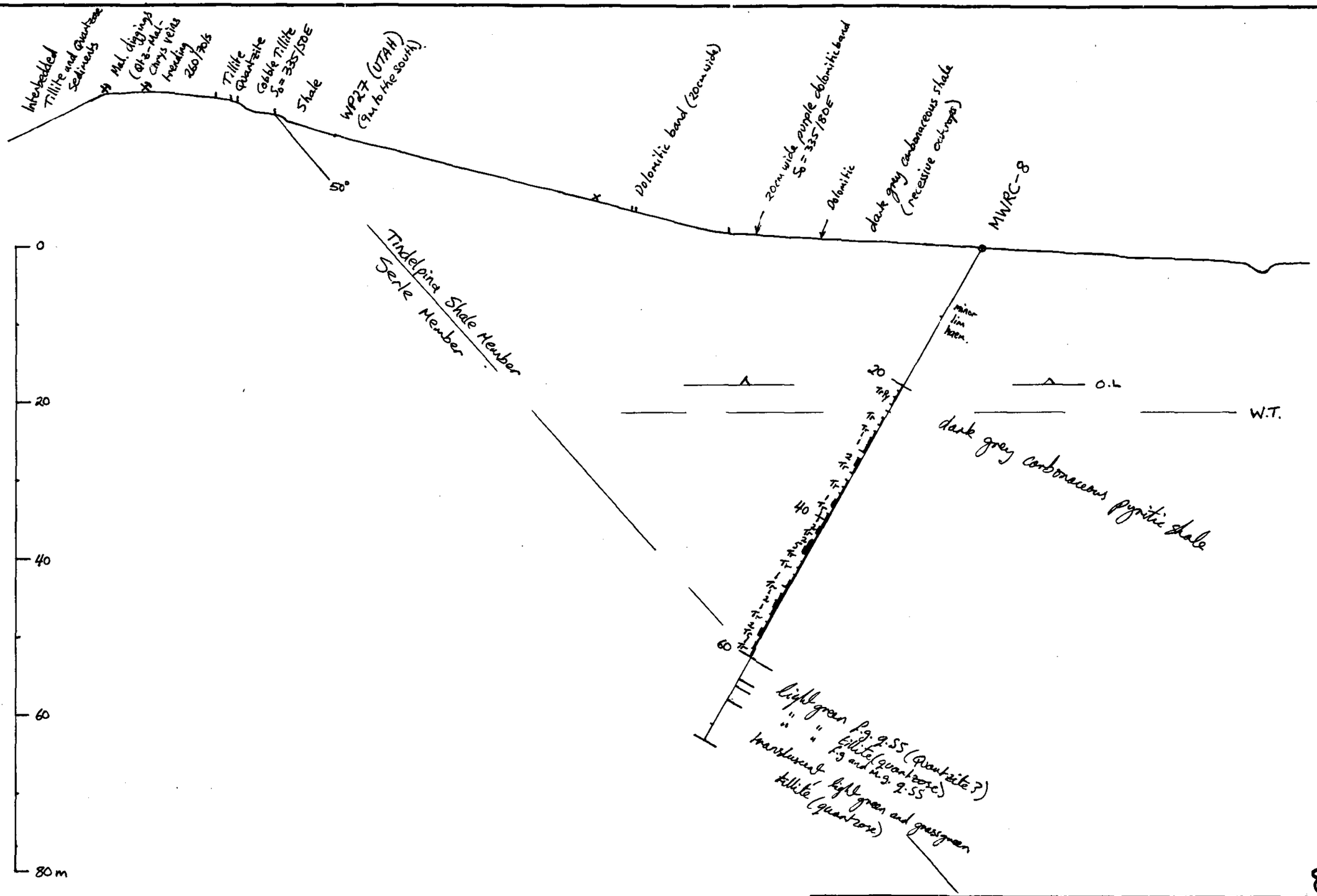
8528-D4

REVISION		SCALE: 1:500	M.I.M. EXPLORATION PTY. LTD.
		GEO: SPH	EL 1747 "WITCHELINA" S.A.
		DATE: 26/7/93	DUNNS NORTH PROSPECT
		DRAFT: SPH	DRILLHOLE CROSS-SECTION MWRC-6
		DATE:	
		1:250,000	
		1:100,000	
		MINING FIELD OR DISTRICT: WILLOURAN RANGES S.A.	DRG No.: 47025



8528-25

REVISION		SCALE: 1:500	M.I.M. EXPLORATION PTY. LTD.
		GEO: SPH	EL 1747 "WITCHELINA", S.A.
		DATE:	BOORLOO PROSPECT
		DRAFT: SPH	
		DATE: 27/7/93	DRILLHOLE CROSS-SECTION MWRC-7
		1:250,000	
		1:100,000	
		MINING FIELD OR DISTRICT: WILLOURAN RANGES, S.A.	DRG No.: 47026



8528 -26

REVISION		SCALE: 1:500	M.I.M. EXPLORATION PTY. LTD.
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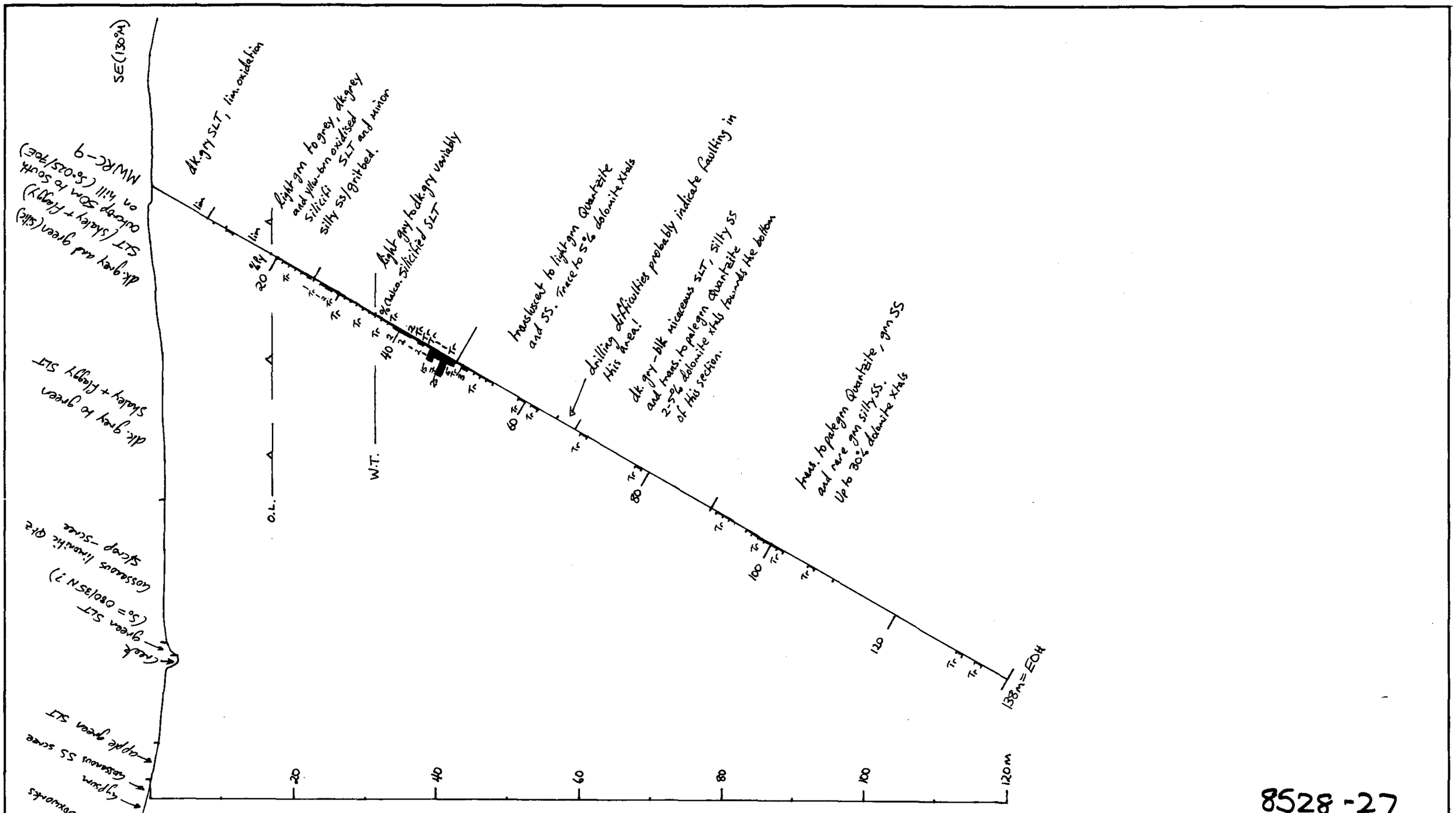
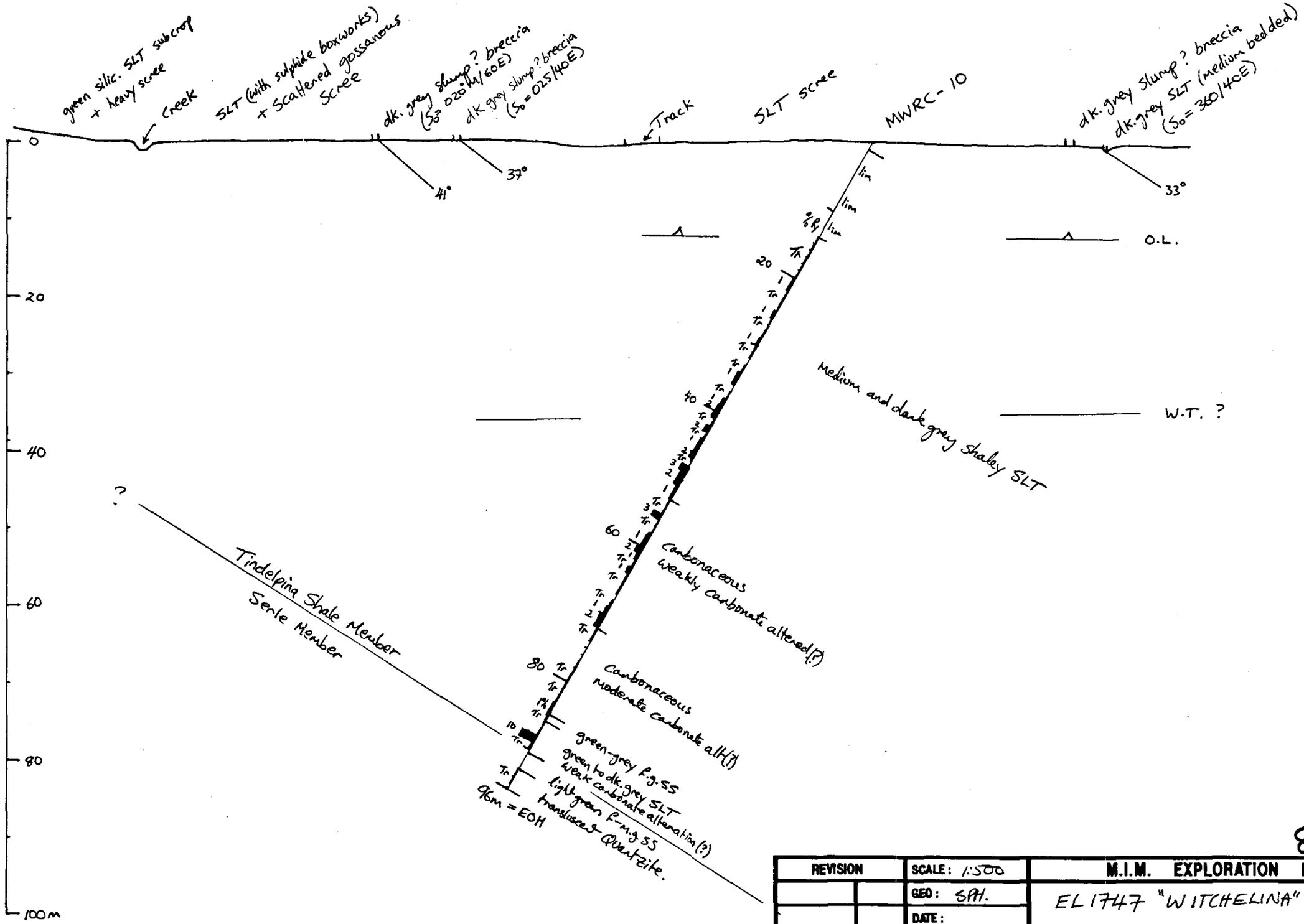
		DATE:	BOORLOO PROSPECT
		DRAFT: SPH	DRILLHOLE CROSS-SECTION MWRC-8
		DATE: 28/7/93	
		1:250,000	
		1:100,000	
		MINING FIELD OR DISTRICT: WILLOURAN RANGES, S.A.	DWG No.: 47027



8528-27

REVISION		SCALE: 1:500	M.I.M. EXPLORATION PTY. LTD.
		GEO: SPH	EL1747 "WITCHELINA", S.A.
		DATE:	BREADEN HILL - SOUTH PROSPECT
		DRAFT: SPH	DRILLHOLE CROSS-SECTION MWRC-9
		DATE: 29/7/93	
		1:250,000	
		1:100,000	
		MINING FIELD OR DISTRICT: WILLOURAN RANGES, S.A.	DWG No.: 47028



8528 -28

REVISION		SCALE: 1:500	M.I.M. EXPLORATION PTY. LTD.
		GEO: SPH.	EL 1747 "WITCHELINA", S.A.
		DATE:	
		DRAFT: SPH	BREADEN HILL-SOUTH PROSPECT
		DATE: 30/7/93	DRILLHOLE CROSS-SECTION MWRC-10
		1:250,000	
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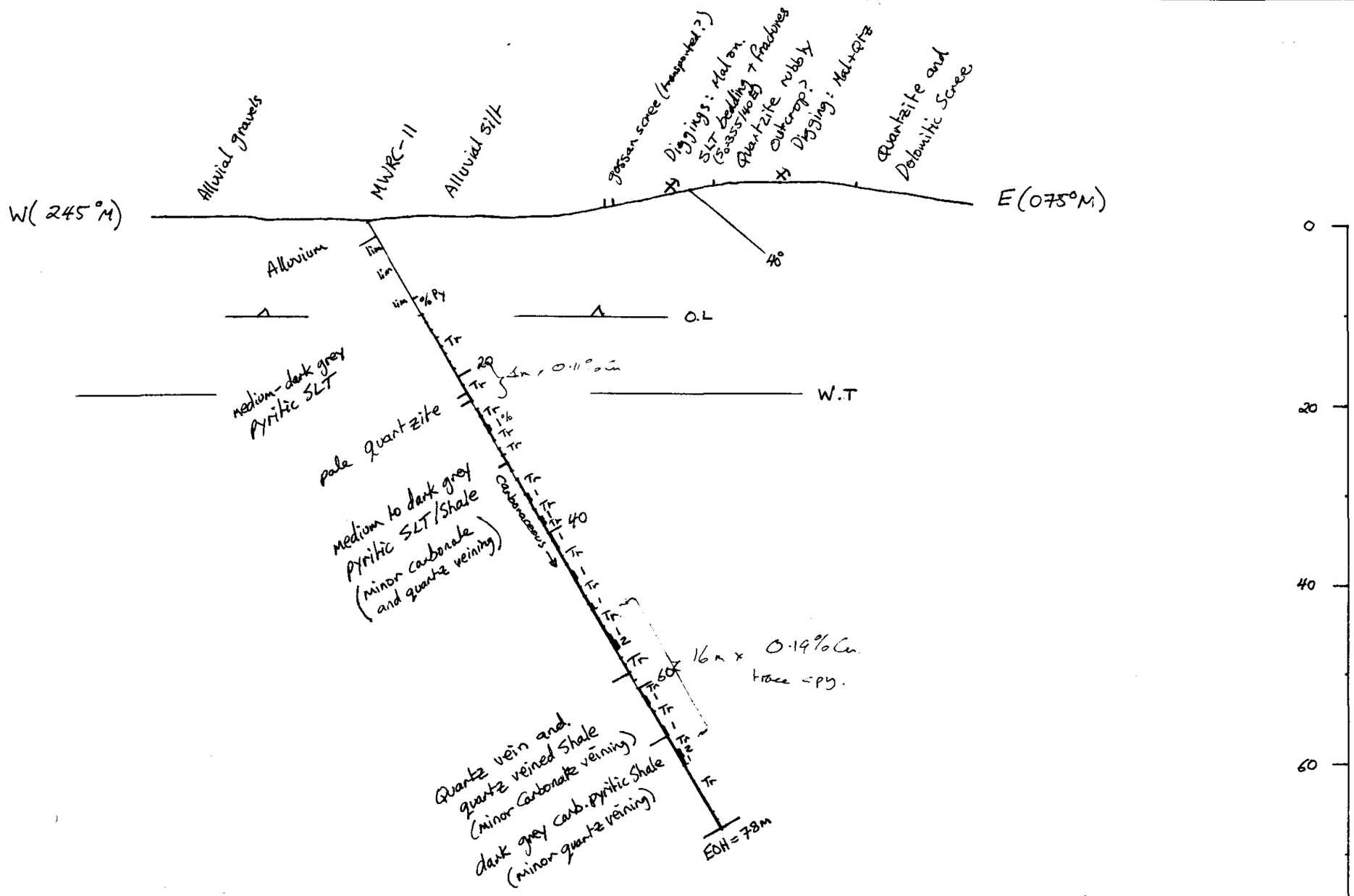
		MINING FIELD OR DISTRICT: WILLOURAN RANGES, S.A.	DRG No.: 47029



8528 - 29

REVISION		SCALE: 1:500	M.I.M. EXPLORATION PTY. LTD.
		GEO: SPH	EL 1747 "WITCHELINA", S.A.
		DATE:	LAUREL PROSPECT
		DRAFT: SPH	DRILLHOLE CROSS-SECTION MWRC-11
		DATE: 31/7/93	
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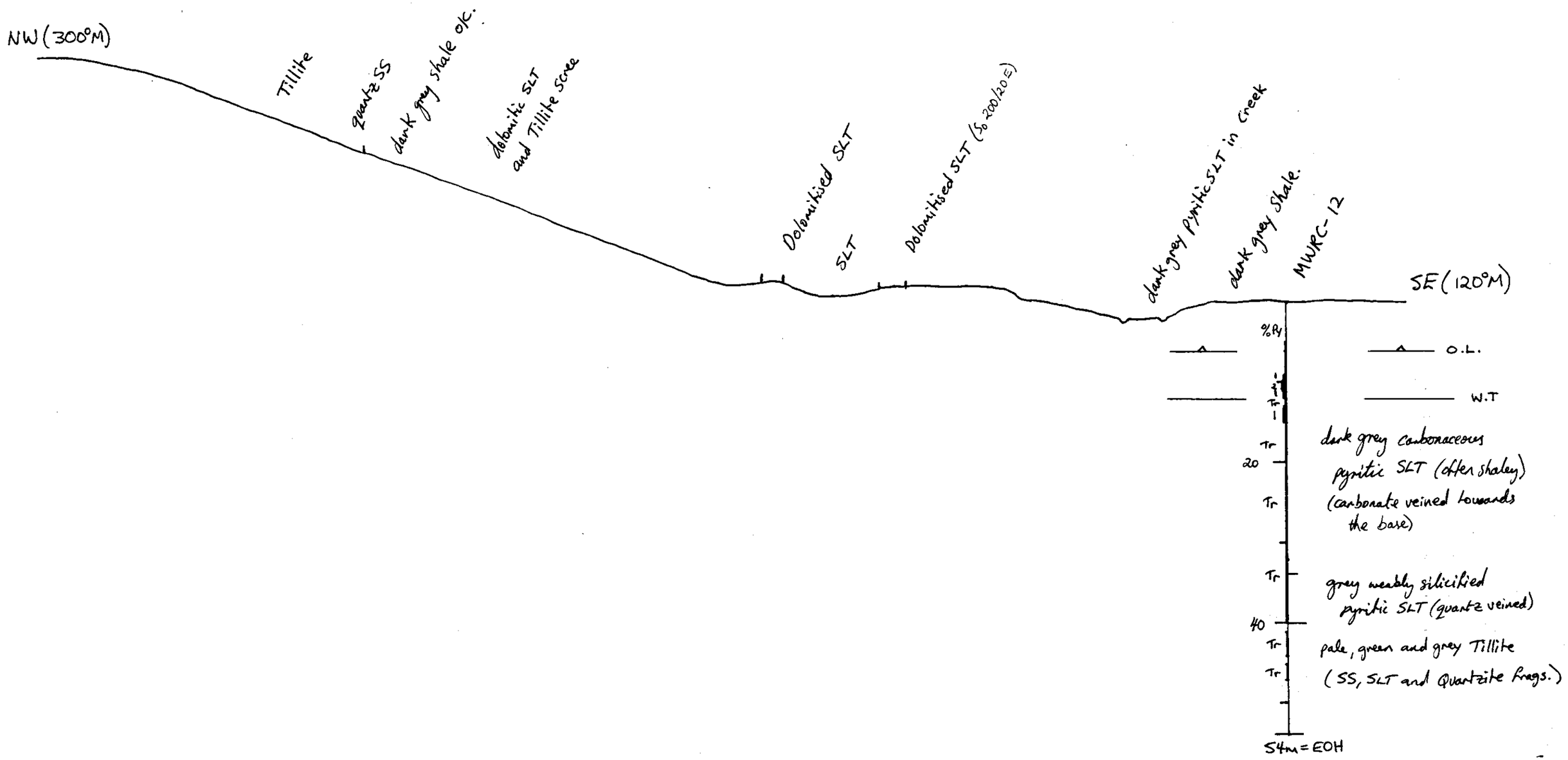
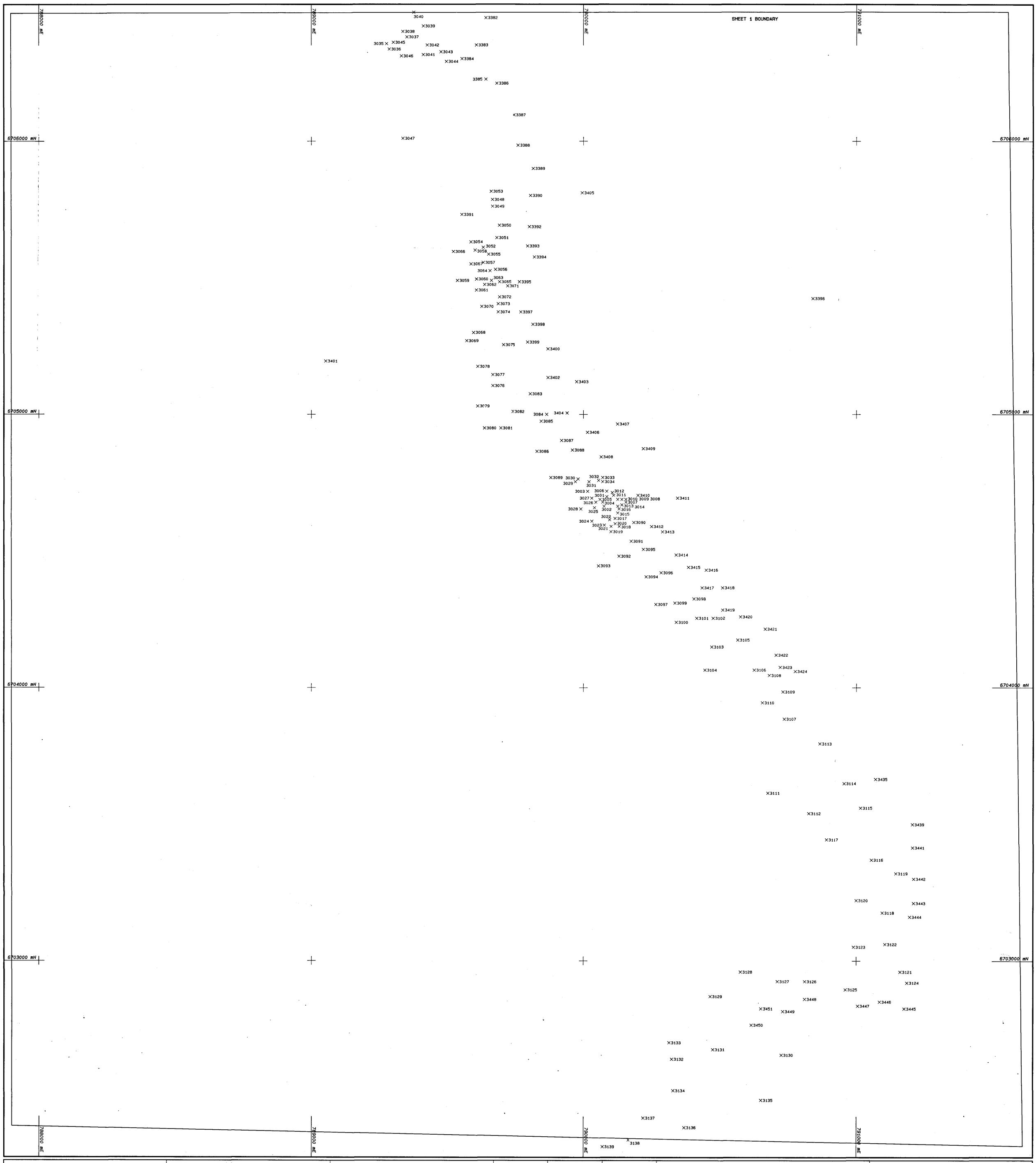
		1:100,000	
		MINING FIELD OR DISTRICT: WILLOURAN RANGES, S.A.	DRG No.: 47030



8528 -30

REVISION		SCALE: 1:500	M.I.M. EXPLORATION PTY. LTD.
		GEO: SPH	EL1747 "WITCHELINA", S.A.
		DATE:	MARION PROSPECT
		DRAFT: SPH	DRILLHOLE CROSS-SECTION MWRC-12
		DATE: 1/8/93	
		1:250,000	
		1:100,000	
		MINING FIELD OR DISTRICT: WILLOURAN RANGES, S.A.	DRG No.: 47031

8528-31



NOTES :
x 3191 - Rock chip sample location (approx.)
and number prefixed by 73.
Rock chip samples were collected between July 1991 and September 1992.

This plan overlays the Geology of the Boorloo-Breaden Hill District (DRG. No.36506)

SCALE	DATE	SHEET
1:5000	13/07/93	1 of 7
	REF No. GOSS1	

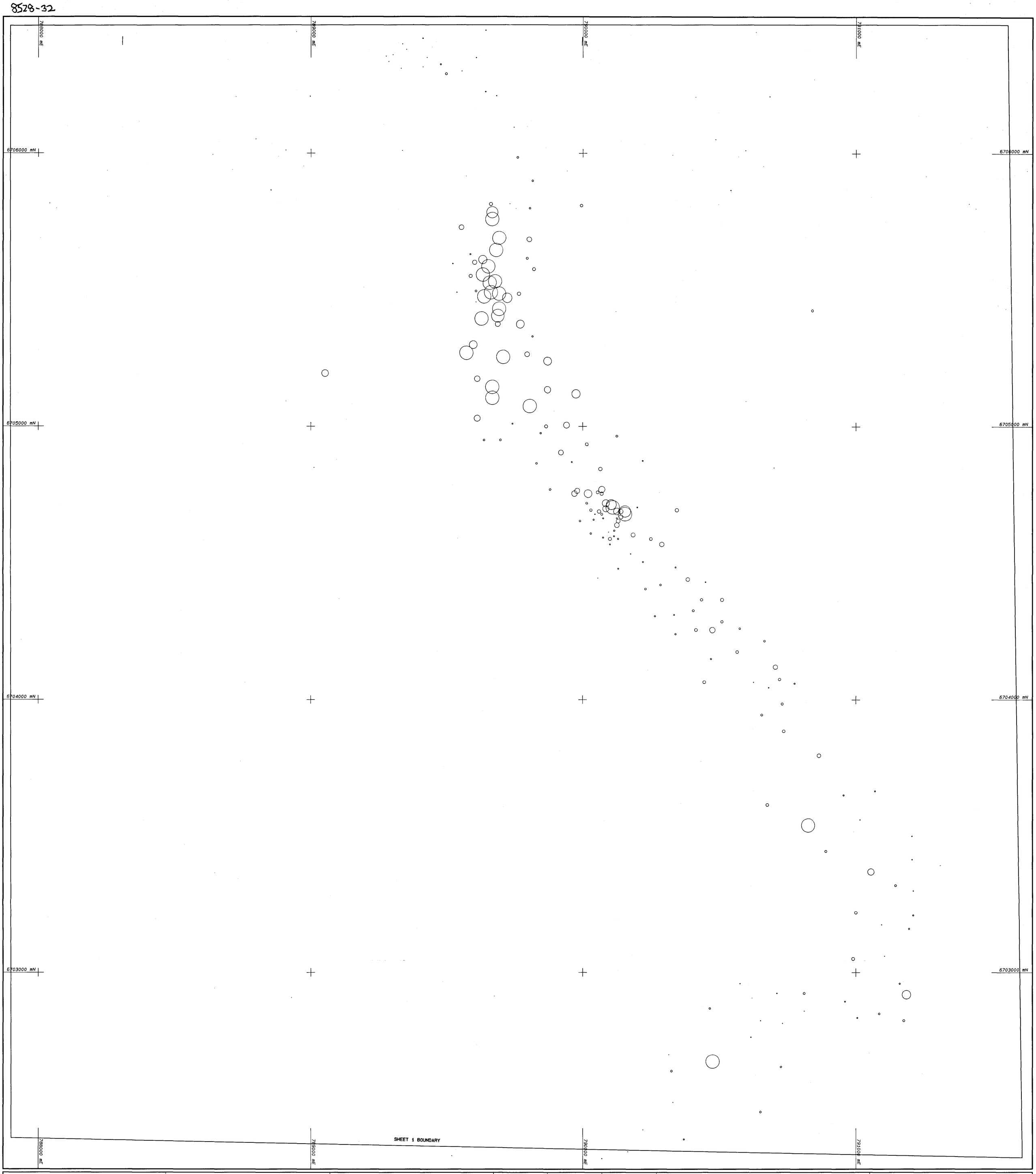
0 250 500m

M.I.M. EXPLORATION PTY. LTD.
Willouran Ranges S.A.
EL 1747 "WITCHELINA"

ROCK CHIP SAMPLE NUMBERS
BOORLOO-BREADEN HILL
SHEET 1 DRG. No.37944

8528-31

8528-32



NOTES :
Rock chip samples were assayed at Analabs, Glynde S.A..

The Cu results are shown as different sized circles based on a scaling factor of 0.02 and a maximum circle size of 0.5% Cu.

This plan overlays the Geology of the

Boorloo-Breaden Hill District (DRG. No.36506)

SCALE	DATE	SHEET
1: 5000	09/07/93	1 of 7
	REF No. GOSS1CU	

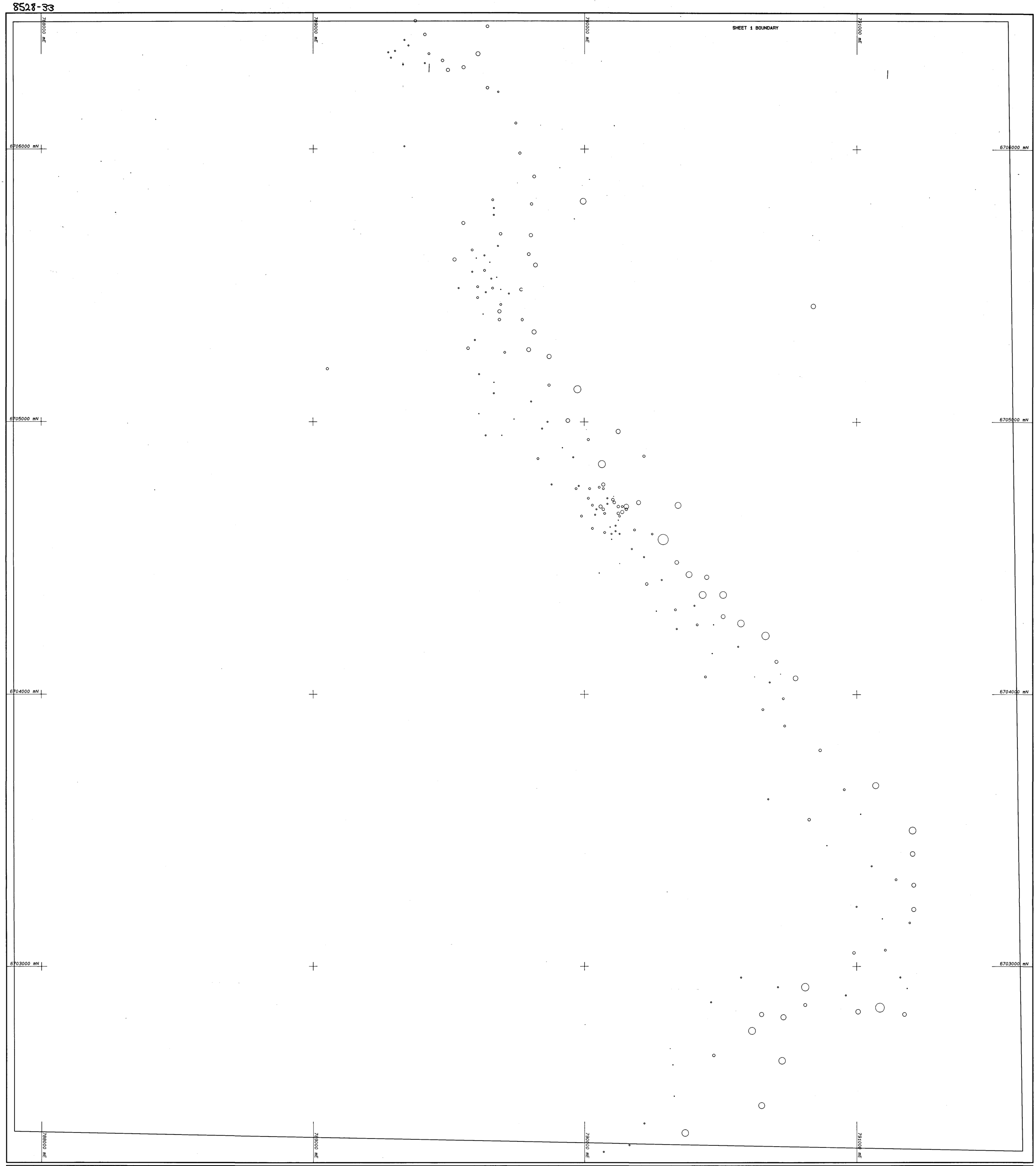
0 250 500m

M.I.M. EXPLORATION PTY. LTD.
Willouran Ranges S.A.
EL 1747 "WITCHELINA"

ROCK CHIP CU RESULTS
BOORLOO-BREADEN HILL
SHEET 1 DRG. No.37945

8528-32

8528-33



NOTES :
Rock chip samples were assayed at Analabs in Glynde, S.A..

The PB results are shown as different sized circles based on a scaling factor of 1 and a maximum circle size of 500ppm Pb.

This plan overlays the Geology of the

Boorloo-Breaden Hill District (DRG. No.36506)

SCALE	DATE	SHEET
1: 5000	13/07/93	1 of 7
	REF No. GOSS1PB	

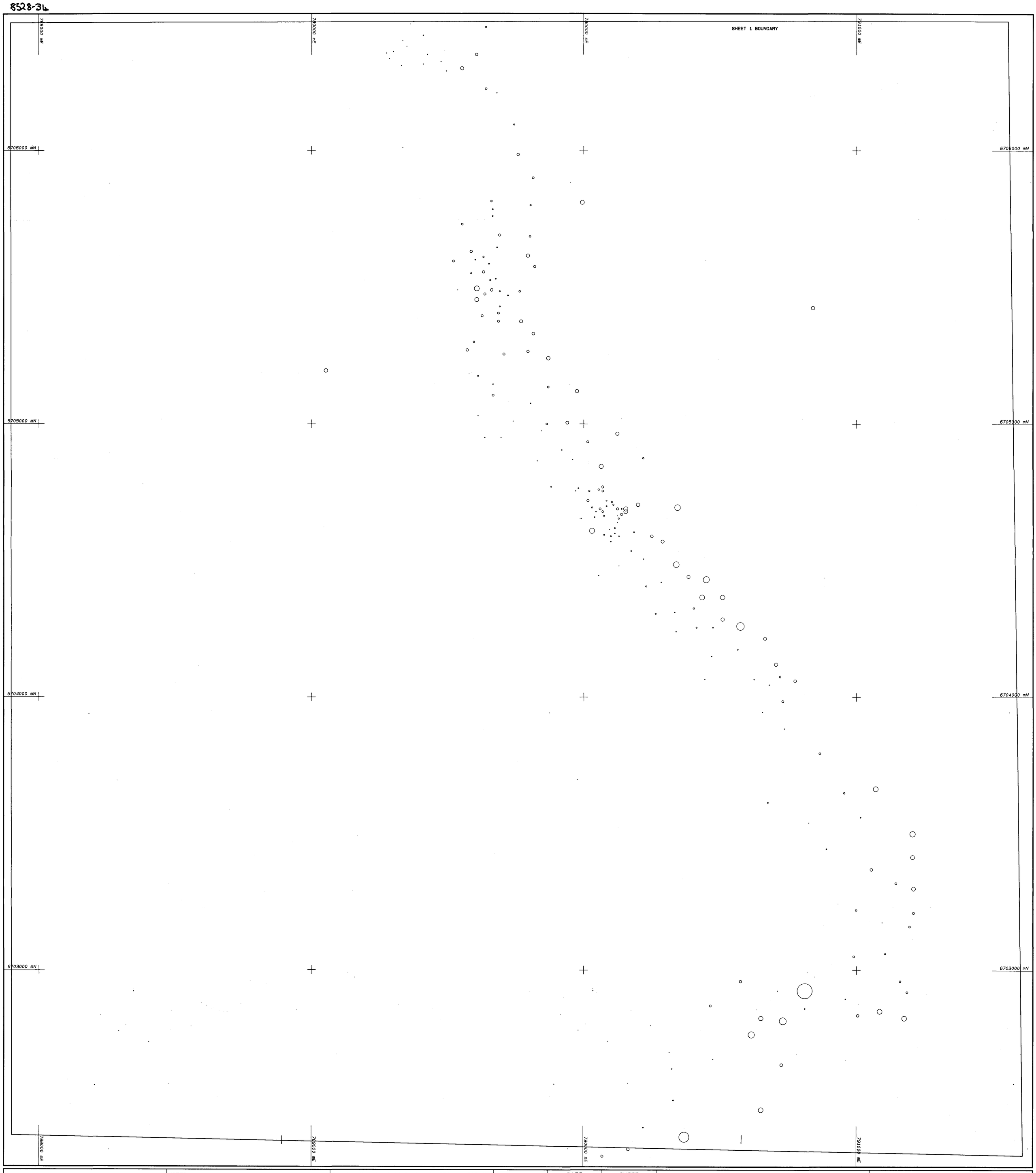
0 250 500m

M.I.M. EXPLORATION PTY. LTD.
Willouran Ranges S.A.
EL 1747 "WITCHELINA"

ROCK CHIP RESULTS - PB
BOORLOO-BREADEN HILL
SHEET 1 DRG. No.37946

8528-33

8528-34



NOTES :
Rock chip samples were assayed at Analabs in Glynde, S.A..

The Zn results are shown as different sized circles based on a scaling factor of 0.2 and a maximum circle size of 1000ppm Zn.

This plan overlays the Geology of the

Boorloo-Breaden Hill District (DRG. No.36506).

SCALE	DATE	SHEET
1:5000	13/07/93	1 of 7
	REF No. GOSS1ZN	

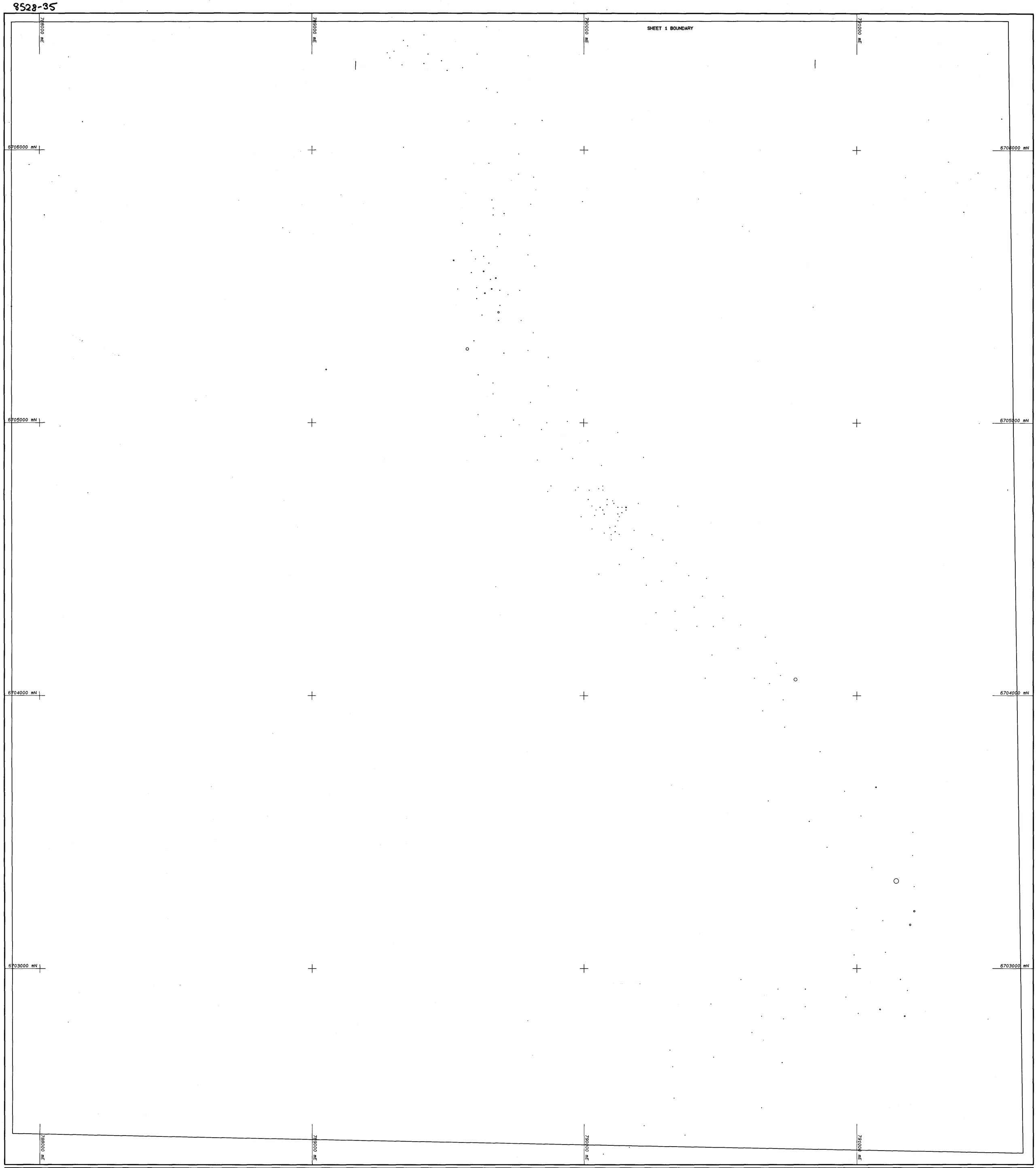
0 250 500m

M.I.M. EXPLORATION PTY. LTD.
Willouran Ranges S.A.
EL 1747 "WITCHELINA"

ROCK CHIP RESULTS - ZN
BOORLOO-BREADEN HILL
SHEET 1 DRG. No.37947

8528-34

8528-35



NOTES :
Rock chip samples were assayed at Analabs in Glynde, S.A..

The Ag results are shown as different sized circles based on a scaling factor of 4 and a maximum circle size of 50.5ppm Ag.

This plan overlays the Geology of the

Boorloo-Breaden Hill District (DRG. No.36506).

SCALE	DATE	SHEET
1:5000	13/07/93	1 of 7
	REF No. GOSS1AG	

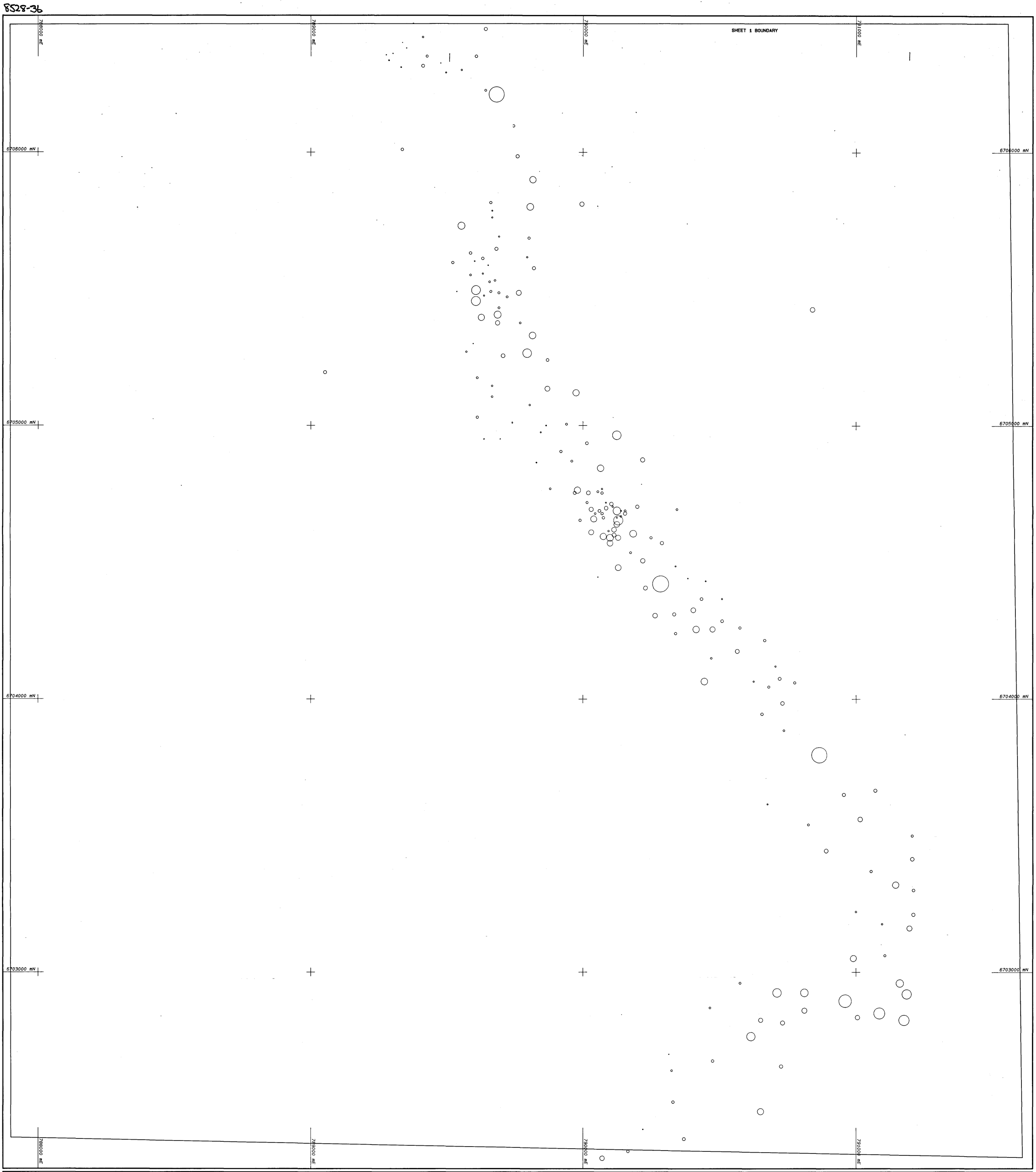
0 250 500m

M.I.M. EXPLORATION PTY. LTD.
Willouran Ranges S.A.
EL 1747 "WITCHELINA"

ROCK CHIP RESULTS - AG
BOORLOO-BREADEN HILL
SHEET 1 DRG. No.37948

8528-35

8528-36



NOTES :
Rock chip samples were assayed at Analabs in Glynde, S.A..

The Co results are shown as different sized circles based on a scaling factor of 0.3 and a maximum circle size of 700ppm Co.

This plan overlays the Geology of the

Boorloo-Breaden Hill District (DRG. No.36505).

SCALE	DATE	SHEET
1: 5000	13/07/93	1 of 7
	REF No. G0SS1C0	

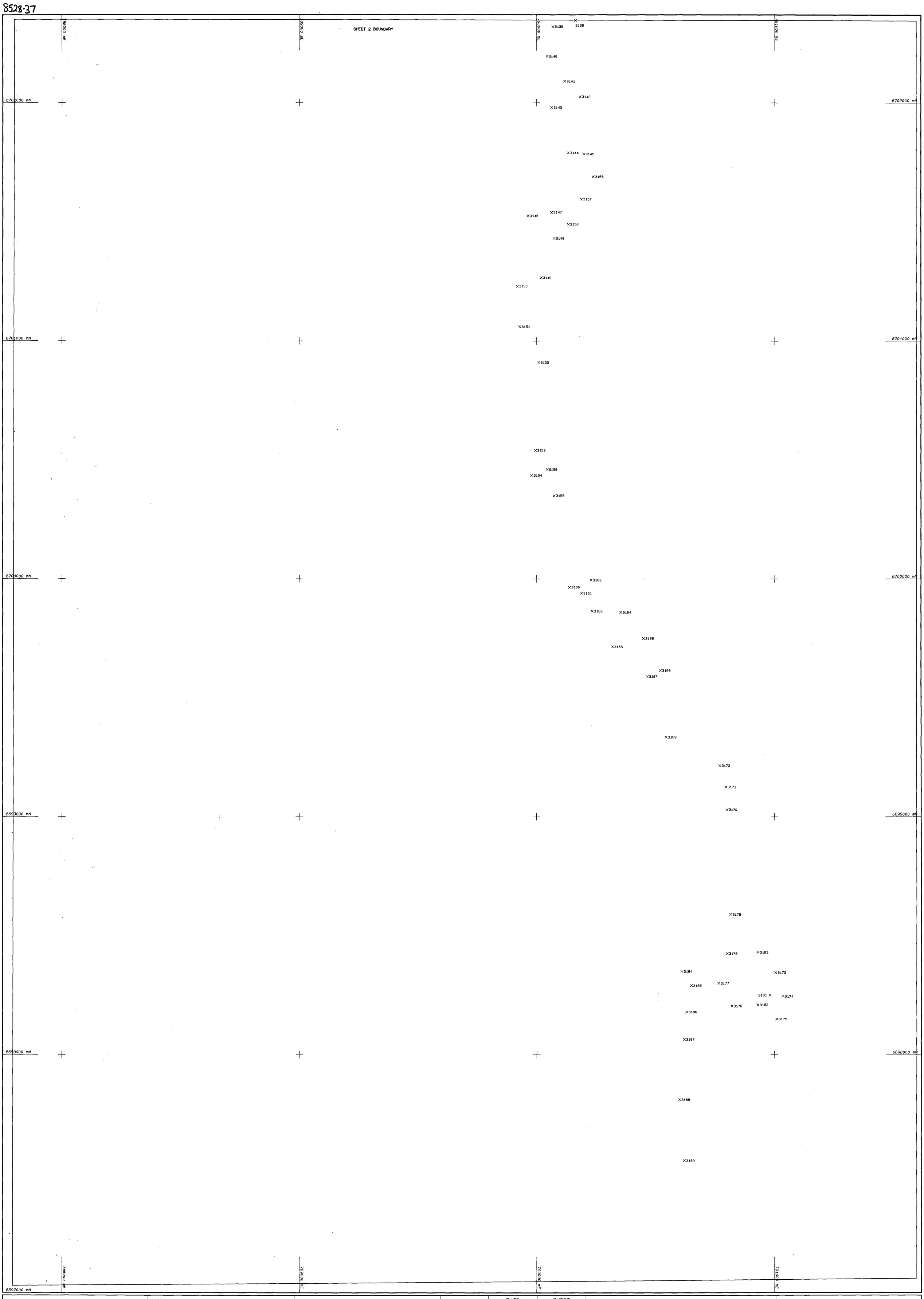
0 250 500m

M.I.M. EXPLORATION PTY. LTD.
Willouran Ranges S.A.
EL 1747 "WITCHELINA"

ROCK CHIP RESULTS - CO
BOORLOO-BREADEN HILL
SHEET 1 DRG. No.37949

8528-36

8528-37



NOTES :
x 3139 - Rock chip sample location (approx.)
and number prefixed by 73.
Rock chip samples were collected between July 1991 and September 1992.

This plan overlays the Geology of the Breaden Hill South District (DRG. No. 36591)

SCALE	DATE	SHEET
1: 5000	09/07/93	2 of 7
	REF No. GOSS2	

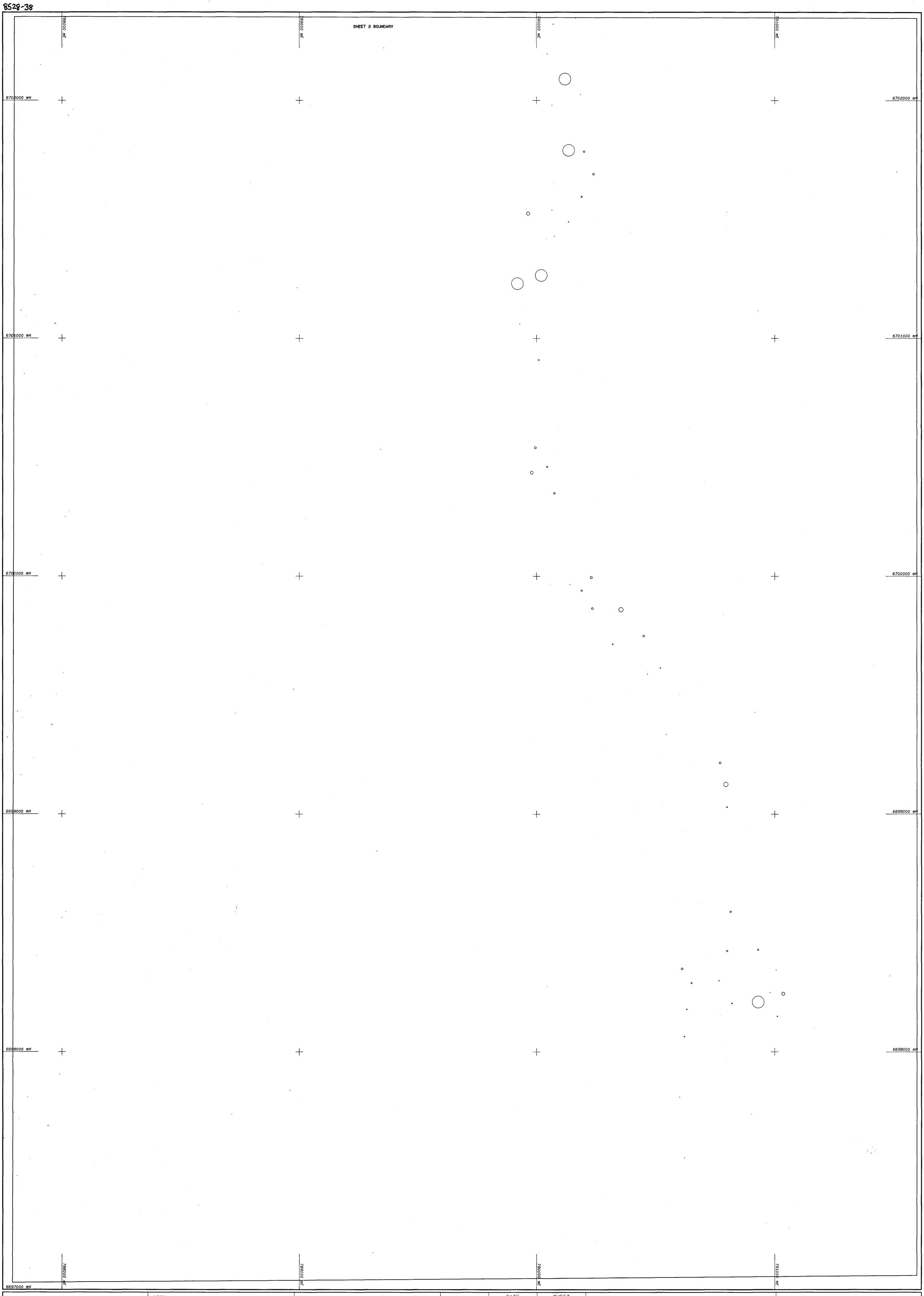
0 250 500m

M.I.M. EXPLORATION PTY. LTD.
Willouran Ranges S.A.
EL 1747 "WITCHELINA"

ROCK CHIP SAMPLE NUMBERS
BREADEN HILL SOUTH AREA
SHEET 2 DRG. No.37950

8528 -37

8528-38



NOTES :
Rock chip samples were assayed at Analabs in Glynde, S.A..

The Cu results are shown as different sized circles based on a scaling factor of 0.02 and a maximum circle size of 0.5% Cu.

This plan overlays the Geology of the

Breaden Hill South District (DRG. No.36591)

SCALE	DATE	SHEET
1: 5000	13/07/93	2 of 7
	REF No. GOSS2CU	

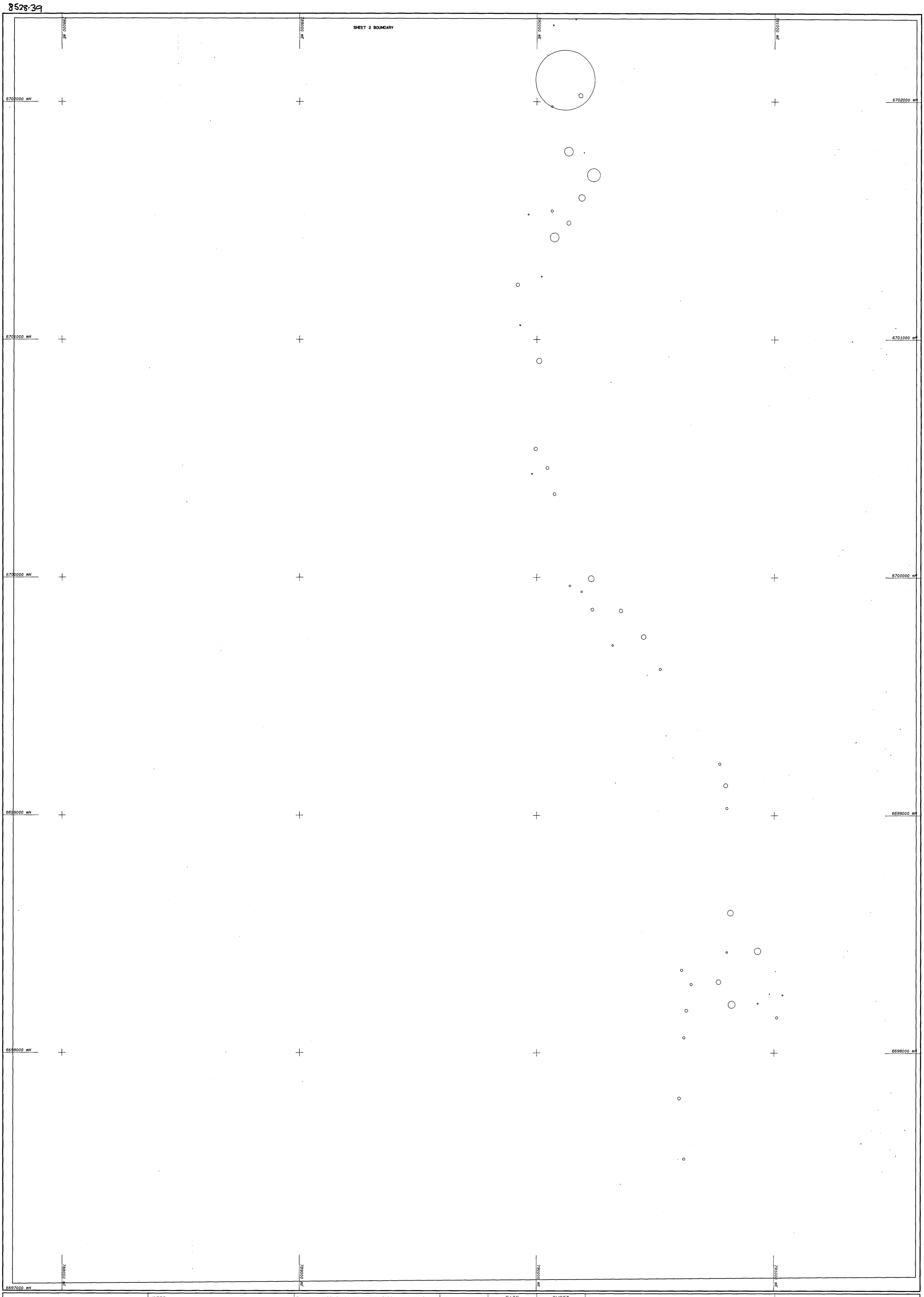
0 250 500m

M.I.M. EXPLORATION PTY. LTD.
Willouran Ranges S.A.
EL 1747 "WITCHELINA"

ROCK CHIP RESULTS - CU
BREADEN HILL SOUTH AREA
SHEET 2 DRG. No.37951

8528-38

8528-39



NOTES :
Rock chip samples were assayed at Analabs in Glynde, S.A..

The PB results are shown as different sized circles based on a scaling factor of 1 and a maximum circle size of 500ppm Pb.

This plan overlays the Geology of the Breaden Hill South District (DRG. No.36591).

SCALE	DATE	SHEET
1: 5000	13/07/93	2 of 7
	REF No. GOSS2PB	

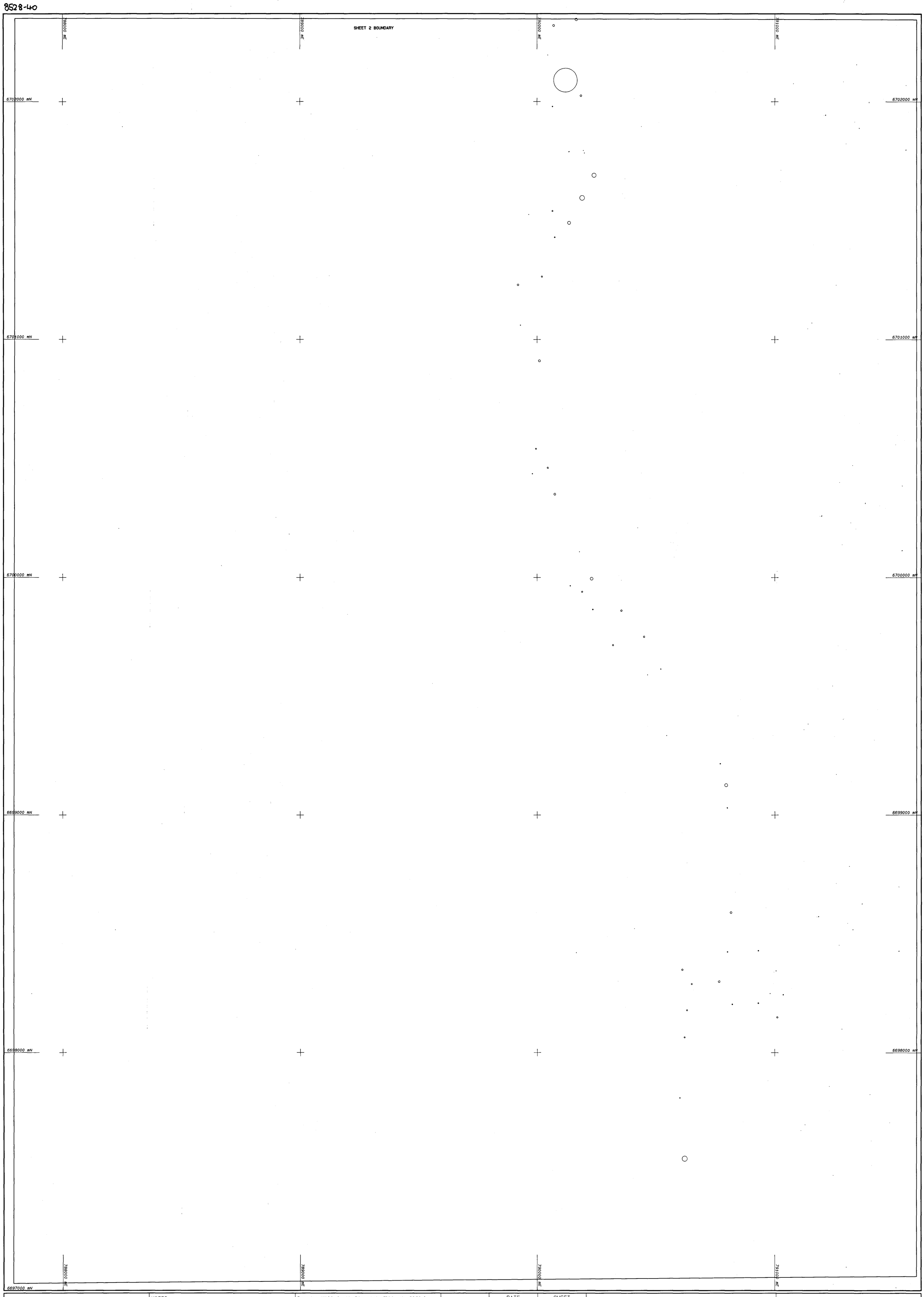
0 250 500m

M.I.M. EXPLORATION PTY. LTD.
Willouran Ranges S.A.
EL 1747 "WITCHELINA"

ROCK CHIP RESULTS - PB
BREADEN HILL SOUTH AREA
SHEET 2 DRG. No.37952

8528-39

8528-40



NOTES :
Rock chip samples were assayed at Analabs in Glynde, S.A..

The Zn results are shown as different sized circles based on a scaling factor of 0.2 and a maximum circle size of 1000ppm Zn.

This plan overlays the Geology of the

Breaden Hill South District (DRG. No.36591)

SCALE	DATE	SHEET
1:5000	13/07/93	2 of 7
	REF No. GOSS2ZN	

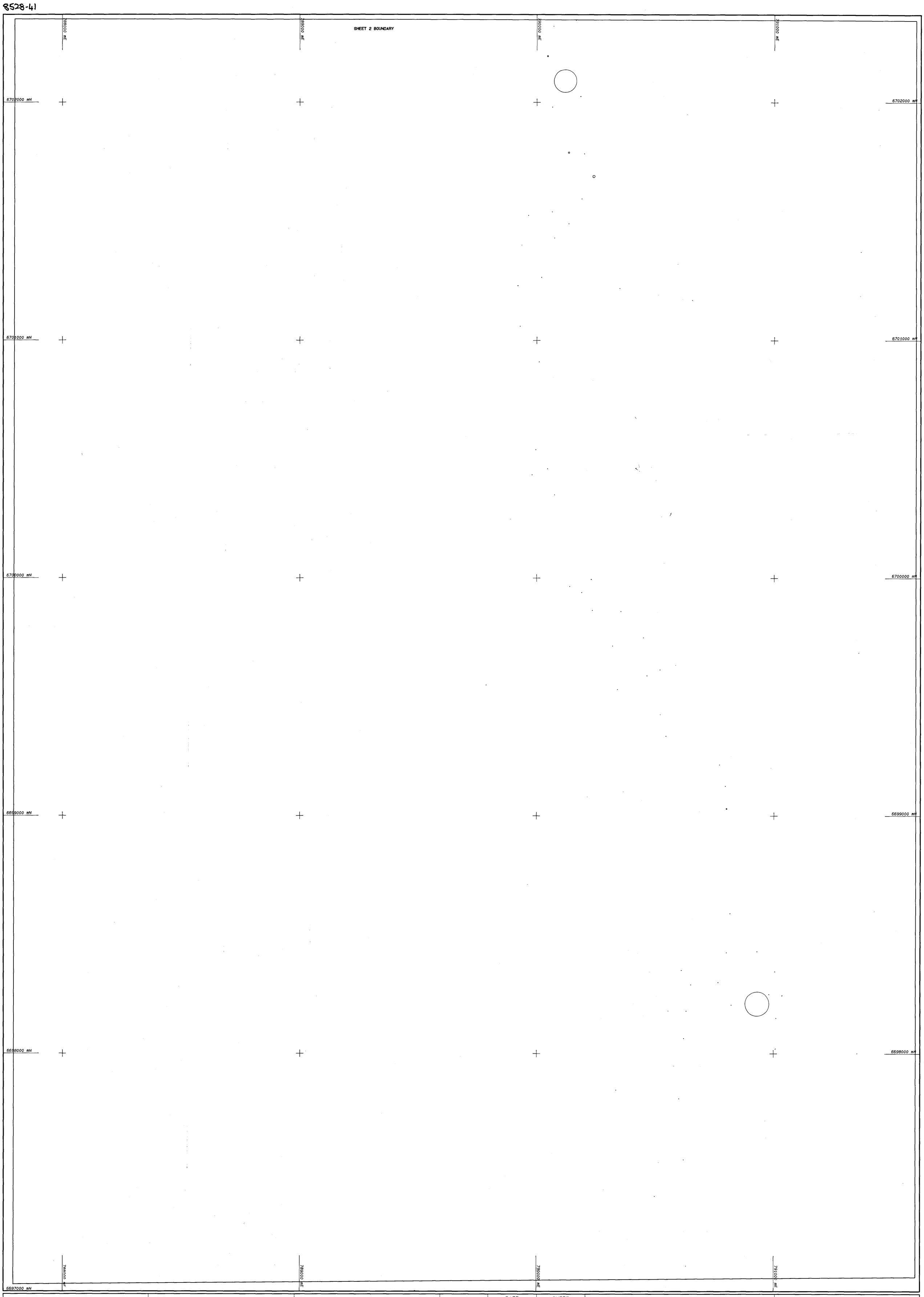
0 250 500m

M.I.M. EXPLORATION PTY. LTD.
Willouran Ranges S.A.
EL 1747 "WITCHELINA"

ROCK CHIP RESULTS - ZN
BREADEN HILL SOUTH AREA
SHEET 2 DRG. No.37953

8528-40

8528-41



NOTES :
Rock chip samples were assayed at Analabs in Glynde, S.A..

The Ag results are shown as different sized circles based on a scaling factor of 4 and a maximum circle size of 50.5ppm Ag.

This plan overlays the Geology of the Breaden Hill South District (DRG. No.36591).

SCALE	DATE	SHEET
1:5000	13/07/93	2 of 7
	REF No. GOSS2AG	

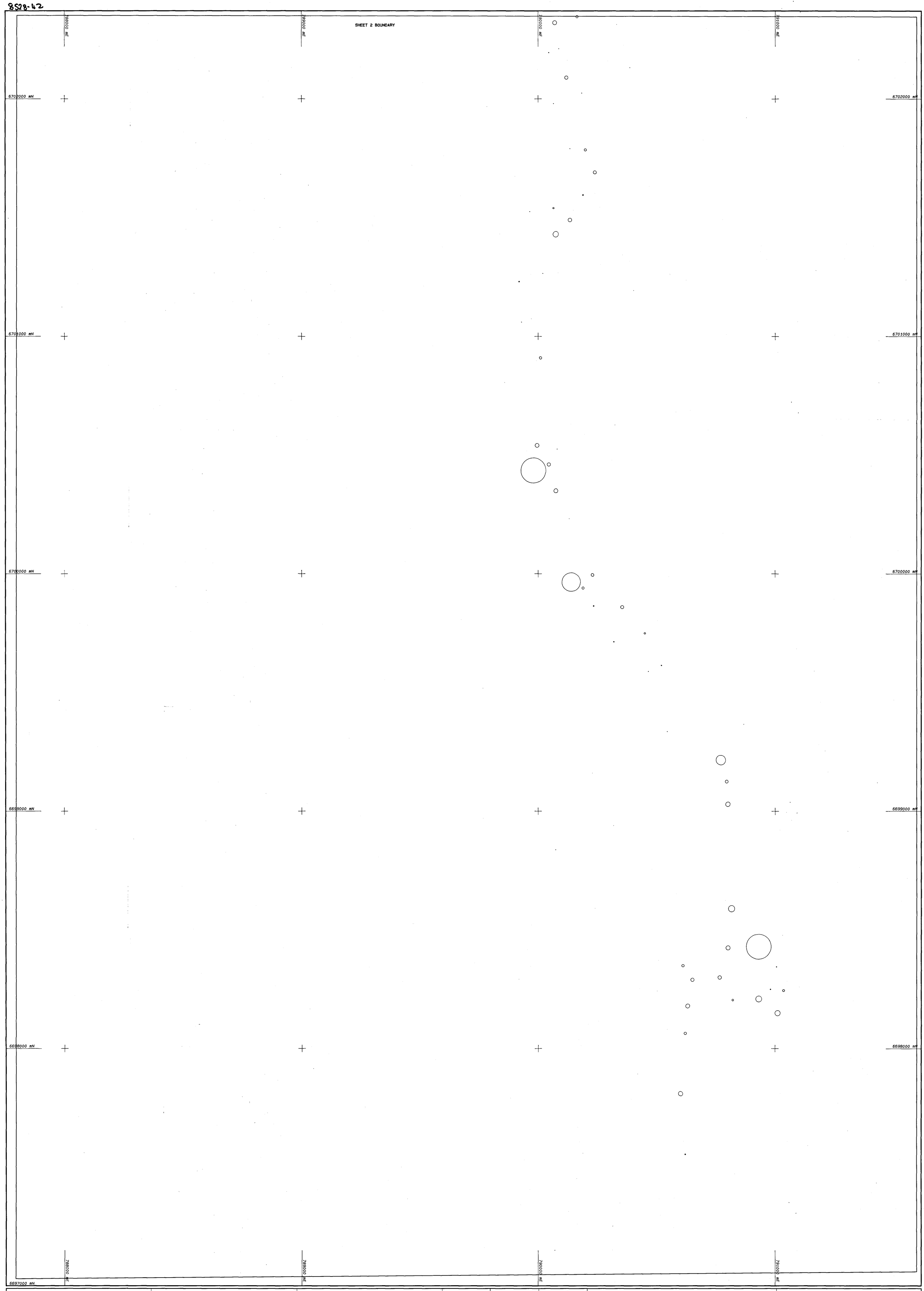
0 250 500m

M.I.M. EXPLORATION PTY. LTD.
Willouran Ranges S.A.
EL 1747 "WITCHELINA"

ROCK CHIP RESULTS - AG
BREADEN HILL SOUTH AREA
SHEET 2 DRG. No.37954

8528 -41

8528-42



NOTES :
Rock chip samples were assayed at Analabs in Glynde, S.A..

The Co results are shown as different sized circles based on a scaling factor of 0.3 and a maximum circle size of 700ppm Co.

This plan overlays the Geology of the

Breaden Hill South District (DRG. No.36591).

SCALE	DATE	SHEET
1: 5000	13/07/93	2 of 7
	REF No. GOSS2CO	

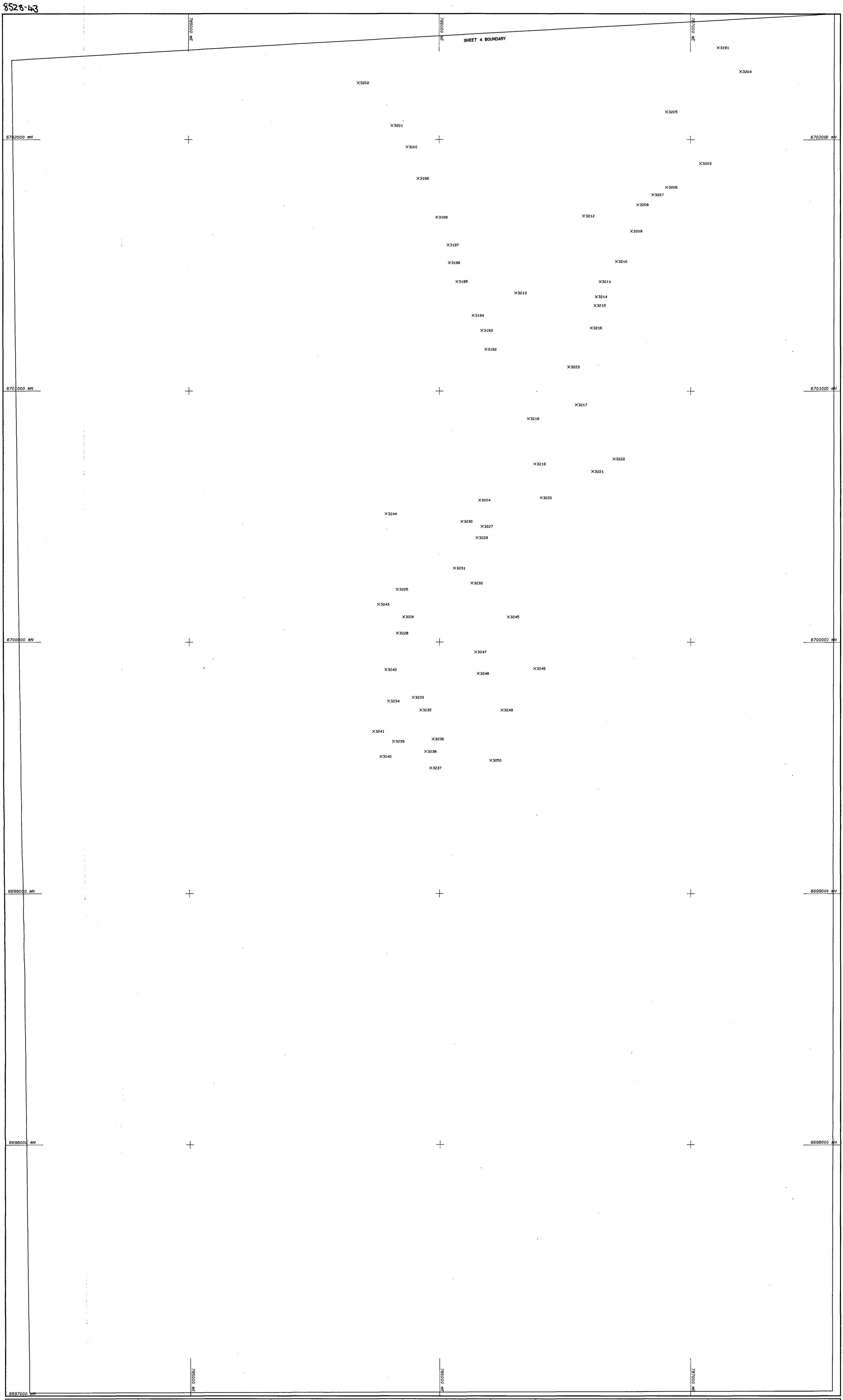
0 250 500m

M.I.M. EXPLORATION PTY. LTD.
Willouran Ranges S.A.
EL 1747 "WITCHELINA"

ROCK CHIP RESULTS - CO
BREADEN HILL SOUTH AREA
SHEET 2 DRG. No.37955

8528-42

8528-43



NOTES :
x 3001 - Rock chip sample location (approx.)
. and number prefixed by 73.
Rock chip samples were collected between July 1991 and September 1992.

This plan overlays the Geology of the Rooks District (DRG. No. 37132)

SCALE	DATE	SHEET
1:5000	27\10\93	4 of 7
	REF No. GOSS4	

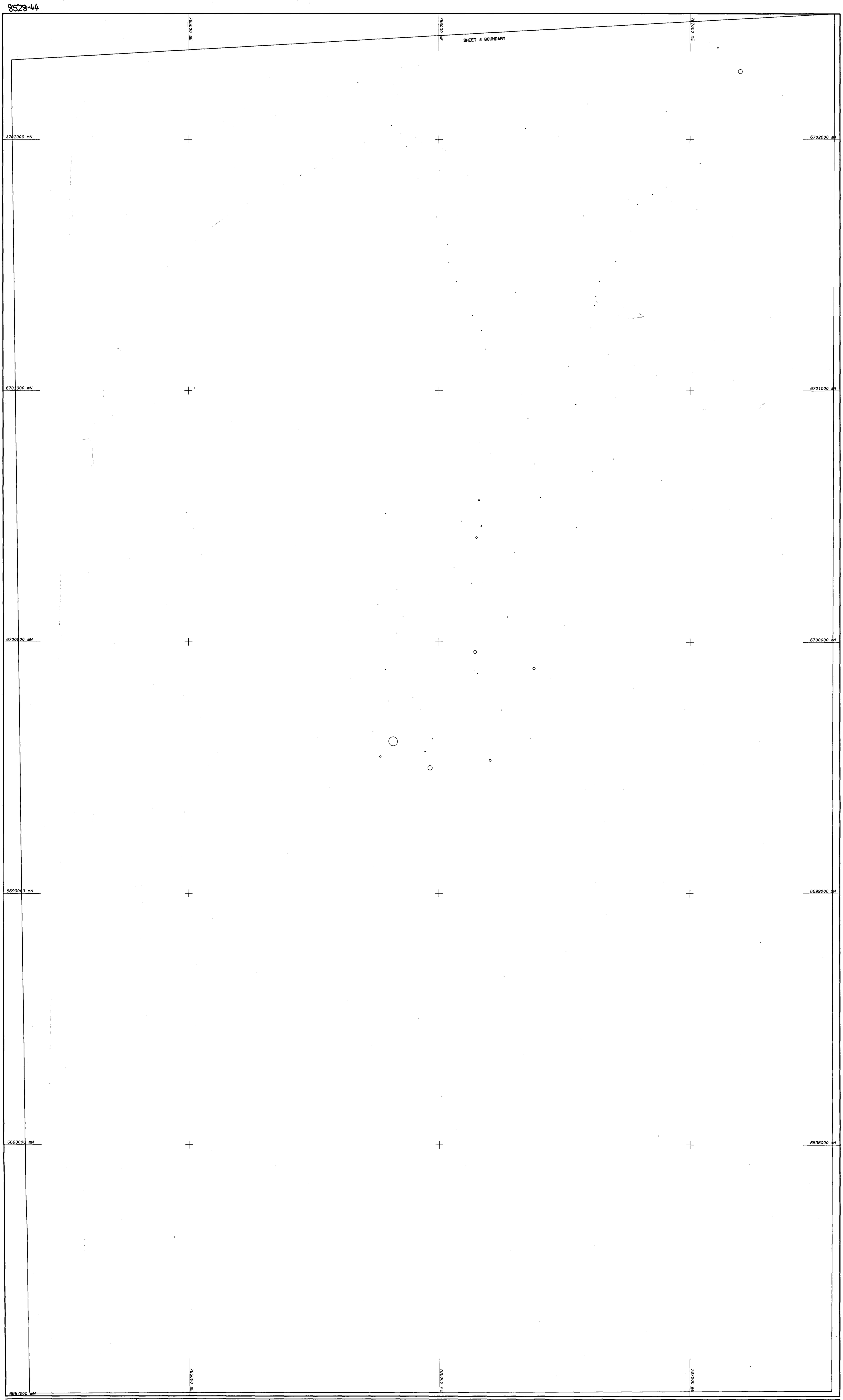
0 250 500m

M.I.M. EXPLORATION PTY. LTD.
Willouran Ranges S.A.
EL 1747 "WITCHELINA"

ROCK CHIP SAMPLE NUMBERS
ROOKS DISTRICT
SHEET 4 DRG. No.37956

8528-43

8528-44



NOTES :
Rock chip samples were assayed at Analabs in Glynde, S.A..

The Cu results are shown as different sized circles based on a scaling factor of 0.02 and a maximum circle size of 0.5% Cu.

This plan overlays the Geology of the Rooks District (DRG. No.37132).

SCALE	DATE	SHEET
1: 5000	27\10\93	4 of 7
	REF No. GOSS4CU	

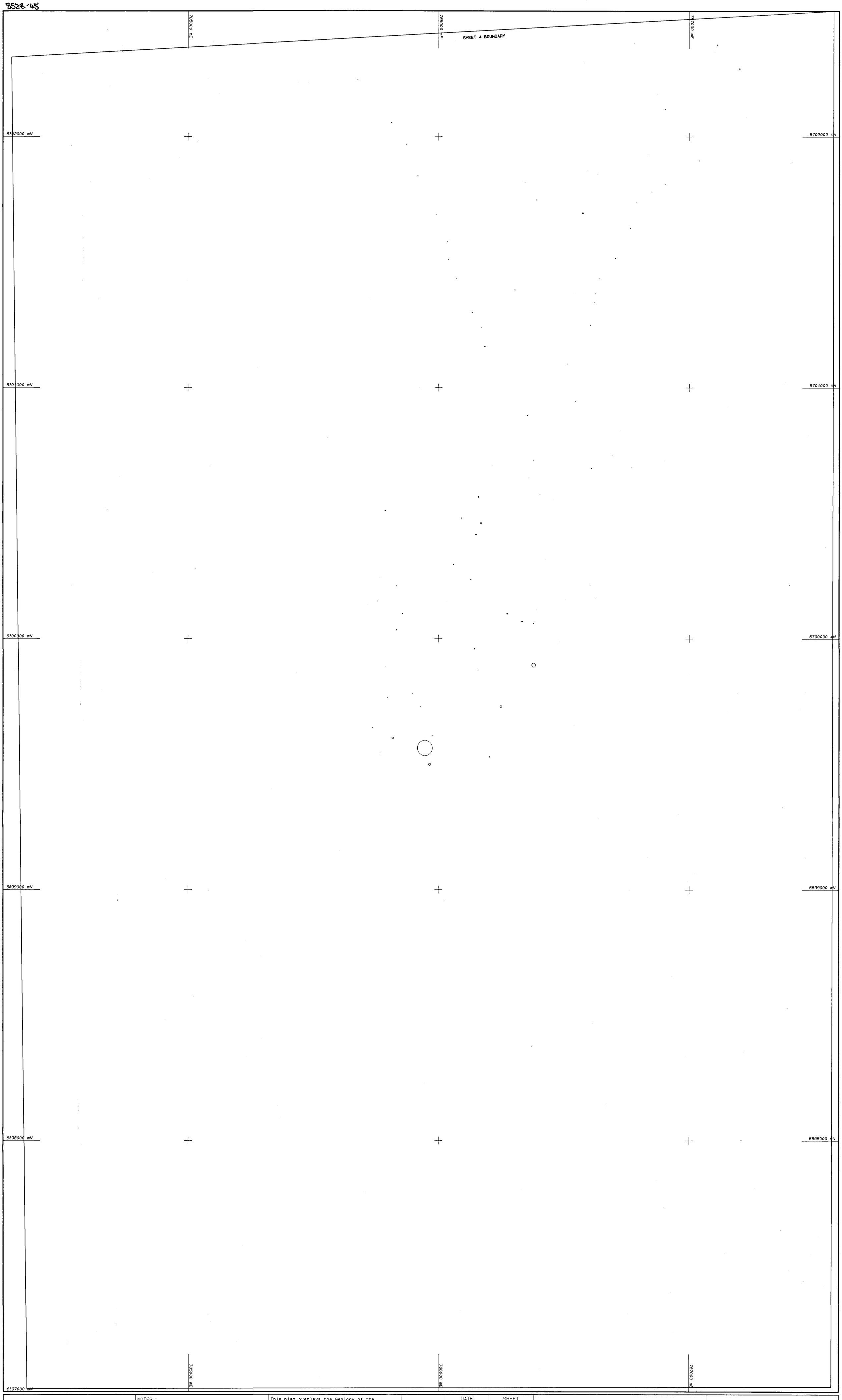
0 250 500m

M.I.M. EXPLORATION PTY. LTD.
Willouran Ranges S.A.
EL 1747 "WITCHELINA"

ROCK CHIP RESULTS - CU
ROOKS DISTRICT
SHEET 4 DRG. No.37957

8528-44

8528-45



NOTES :
Rock chip samples were assayed at Analabs in Glynde, S.A..

The Pb results are shown as different sized circles based on a scaling factor of 1 and a maximum circle size of 500ppm Pb.

This plan overlays the Geology of the Rooks District (DRG. No.37132).

SCALE	DATE	SHEET
1: 5000	27\10\93	4 of 7
	REF No. GOSS4PB	

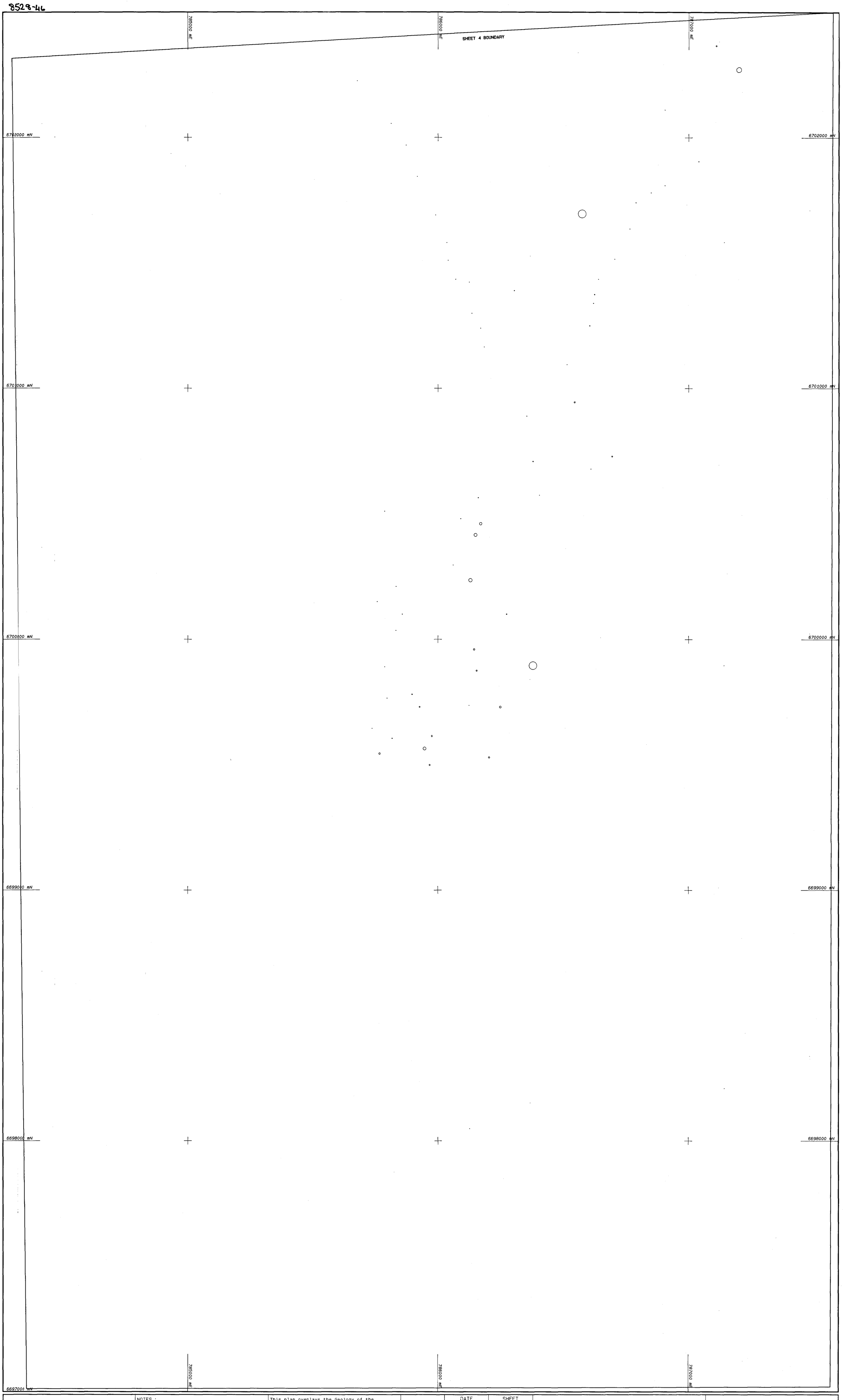
0 250 500m

M.I.M. EXPLORATION PTY. LTD.
Willouran Ranges S.A.
EL 1747 "WITCHELINA"

ROCK CHIP RESULTS - PB
ROOKS DISTRICT
SHEET 4 DRG: No.37958

8528 -45

8528-46



NOTES :
Rock chip samples were assayed at Analabs in Glynde, S.A..

The Zn results are shown as different sized circles based on a scaling factor of 0.2 and a maximum circle size of 1000ppm Zn.

This plan overlays the Geology of the Rooks District (DRG. No.37132).

SCALE	DATE	SHEET
1:5000	27\10\93	4 of 7
	REF No. GOSS4ZN	

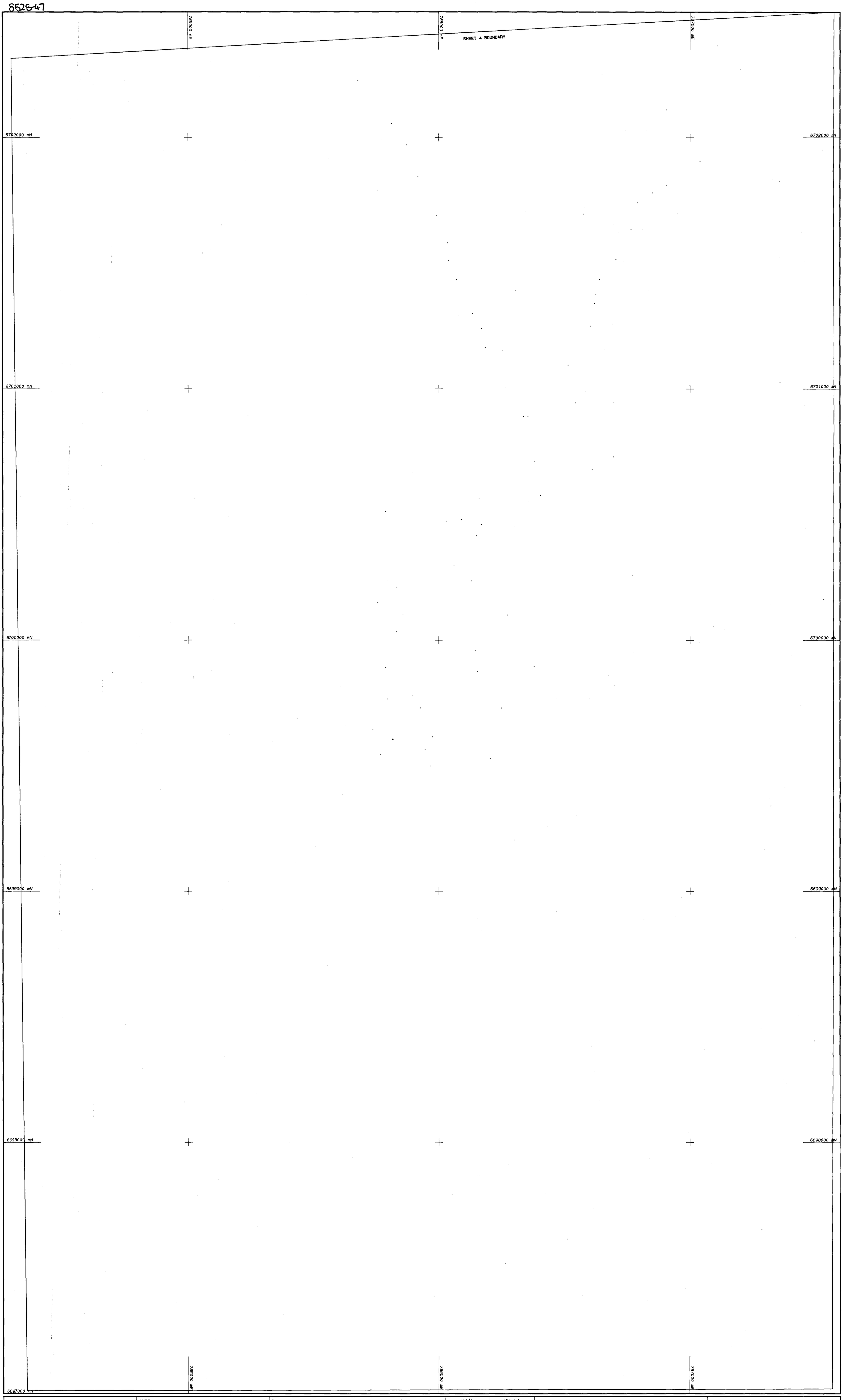
0 250 500m

M.I.M. EXPLORATION PTY. LTD.
Willouran Ranges S.A.
EL 1747 "WITCHELINA"

ROCK CHIP RESULTS - ZN
ROOKS DISTRICT
SHEET 4 DRG. No.37959

8528 -46

8528-47



NOTES :
Rock chip samples were assayed at Analabs in Glynde, S.A..

The Ag results are shown as different sized circles based on a scaling factor of 4 and a maximum circle size of 50.5ppm Ag.

This plan overlays the Geology of the Rooks District (DRG. No.37132).

SCALE	DATE	SHEET
1:5000	27\10\93	4 of 7
	REF No. GOSS4AG	

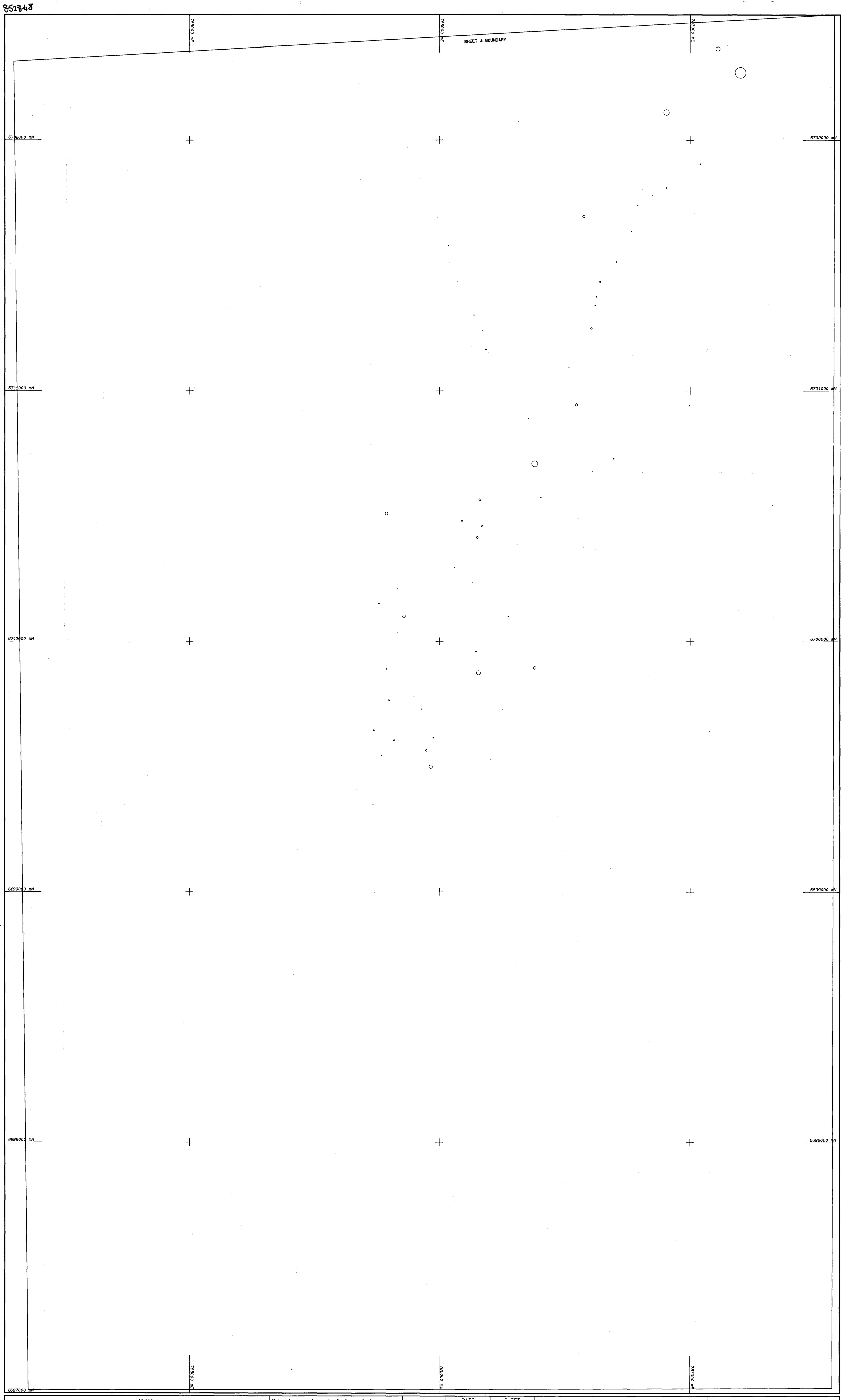
0 250 500m

M.I.M. EXPLORATION PTY. LTD.
Willouran Ranges S.A.
EL 1747 "WITCHELINA"

ROCK CHIP RESULTS - AG
ROOKS DISTRICT
SHEET 4 DRG. No.37960

8528-47

8528-48



NOTES :
Rock chip samples were assayed at Analabs in Glynde, S.A..

The Co results are shown as different sized circles based on a scaling factor of 0.3 and a maximum circle size of 700ppm Co.

This plan overlays the Geology of the Rooks District (DRG. No.37132).

SCALE	DATE	SHEET
1: 5000	27\10\93	4 of 7
	REF No. GOSS4CO	

0 250 500m

M.I.M. EXPLORATION PTY. LTD.
Willouran Ranges S.A.
EL 1747 "WITCHELINA"

ROCK CHIP RESULTS - CO
ROOKS DISTRICT
SHEET 4 DRG. No.37961

8528-48

M.I.M. EXPLORATION PTY LTD

(ACN 009 681 118)

TECHNICAL REPORT

No. 2409

TITLE:	EL 1747 "WITCHELINA" ANNUAL REPORT FOR YEAR ENDING OCTOBER 20, 1994
ISSUING DEPARTMENT:	EXPLORATION
AUTHOR:	PJ BINKS
INVESTIGATIONS CONDUCTED BY:	PJ BINKS
SUBMITTED BY:	SH ROBINSON
DATE:	OCTOBER 1994

DISTRIBUTION:

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Approved for Distribution:

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Stuart H. Robinson
Regional Manager - WA & SA

Key Words

Willouran Ranges

Diapirs

Copper Mineralisation

Sirotem Surveys

TABLE OF CONTENTS

LIST OF DRAWINGS

Drawing No.	Title	Scale
1/7724	Witchelina - Location Plan	1:500,000
37858	Geological Plan - West Willouran Area Sheet 8	1:50,000

1. INTRODUCTION

This report presents the results of M.I.M. Exploration Pty Ltd's (MIMEX) exploration on this tenement over the last year. The Licence covers most of the north-eastern portion of the Willouran Ranges and was taken up to search for structurally controlled copper mineralisation.

2. LOCATION AND ACCESS

The Willouran Ranges are located to the south-west of Marree in the central-north of South Australia approximately 600 km north of Adelaide. Access to the Licence is via a graded road from Farina to Witchelina Homestead and then via station tracks to water bores. Access from the north is via Callanna Station or a track from the Leigh Creek-Marree road to the Breaden Hill Copper Mine. Access into much of the Licence is poor and the eastern range of hills from Breaden Hill to Witchelina Homestead is accessible only on foot.

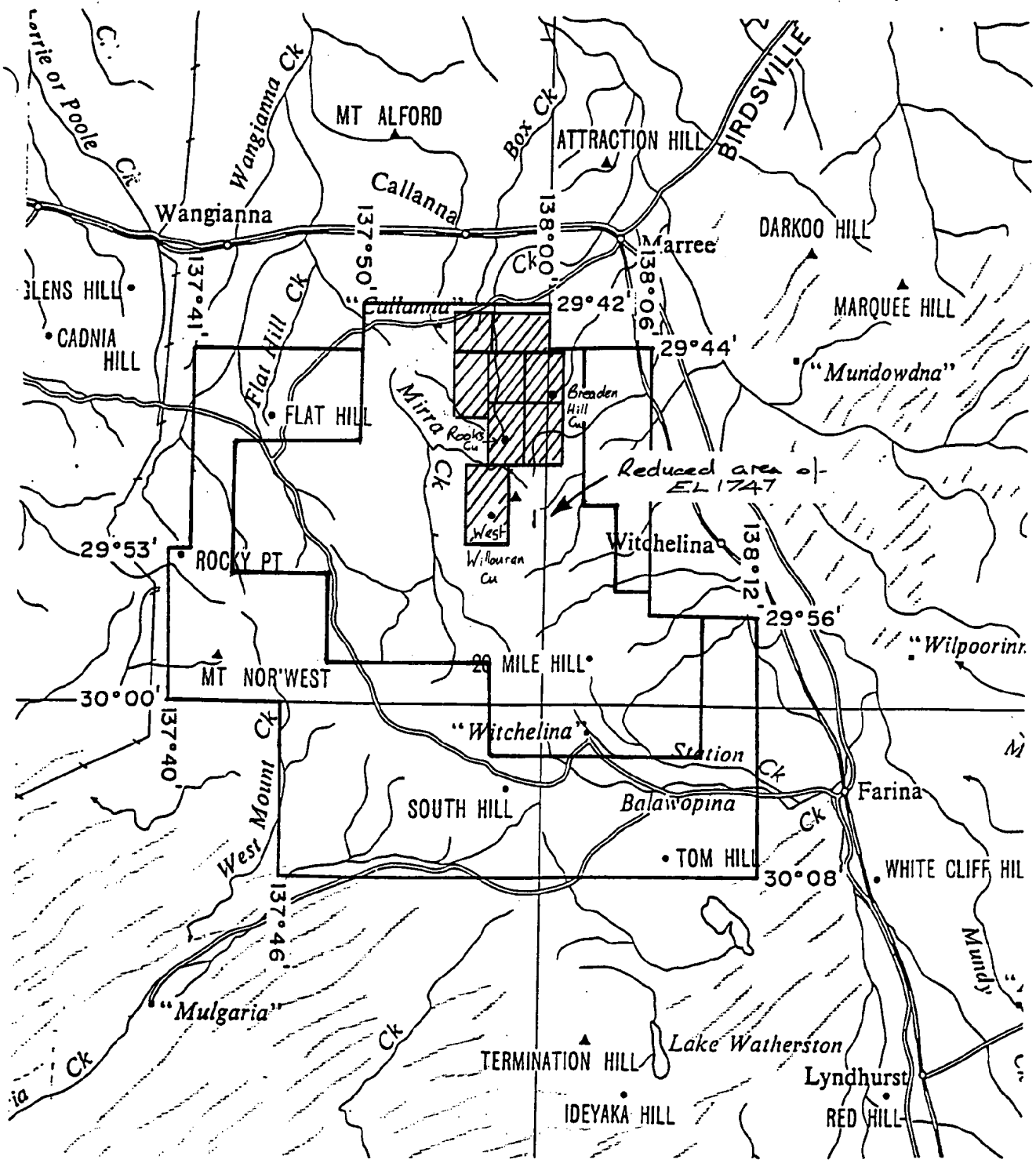
3. TENURE

Exploration Licence 1747 "Witchelina" was granted to Mount Isa Mines Limited on October 21, 1991 for a term of one year with an expenditure commitment of $155,000. The original Licence covered most of the Willouran Ranges south-west of Marree and was 1,958 km^2 in area. The Licence was extended for a further term of one year with the same expenditure commitment in September 1992. In September 1993, the Licence was extended for a further year but the area was reduced to 856 km^2. A location plan is shown on Drawing No. 1/7724.

4. GEOLOGY

The Licence is located over the junction of the Curdimurka, Marree, Andamooka and Copley 1:250,000 sheets and there are considerable differences in interpretations of rock units and structural features between these sheets. The Curdimurka 1:250,000 sheet has only recently been published and shows the latest ideas on the geology of the area. The south-eastern part of this sheet is based on the Wangianna 1:100,000 provisional geological sheet, which is an excellent geological map. Remapping of the central-eastern part of this map by the author at a scale of 1:5,000 has broadly confirmed its validity.

Geologically, the area is an excellently exposed sequence of mainly shallow water clastics and carbonates of the Upper Proterozoic Adelaidean System. The type section of the upper part of the Callanna Group occurs in the northern part of the Licence.



/// - area mapped at 1:5000

EL 1747 Mount Isa Mines Limited

SCALE 1:500.000

KILOMETRES 10 0 10 20 30 40 50 KILOMETRES

AREA: 856 square kilometres (approx.)

1:250000 PLANS: CURDIMURKA, MARREE, ANDAMOOKA, COPLEY

LOCALITY: WITCHELINA AREA – approx. 50 km south of Marree

1/7724

Rather than go into details of the regional geology here, the reader is referred to:

- Bulletin 53 (1987). The Adelaide Geosyncline (compiled by WV Preiss)
- Explanatory Notes, Curdimurka - Sheet SH53-8, 1991 (GE Krieg et al)
- Stratigraphy and Tectonics Across The Torrens Hinge Zone Between Andamooka and Marree, South Australia
  Ph.D. Thesis, Adelaide University 1977. B Murrell

In addition, some notes on the geology and suggestions on controls of mineralisation are presented in S Carthews' Honours Thesis (Sedimentary Environs of Stratiform Copper Mineralisation in the Callanna Beds, Willouran Ranges, Flinders University 1975). Descriptions of diapirs and mechanisms of diapirism were given by W Fairburn in Envelope 1145 describing exploration by Carpentaria Exploration Company on SML 169 in 1968/69.

Details of sedimentology within the Licence area are given in Utah's reports on exploration in Envelope 2915 (EL 277) and 3507 (ELs 461 and 850). Unfortunately, much of Utah's work is marred by poor geological mapping and an apparent disbelief in faulting or tectonic brecciation.

5. PREVIOUS EXPLORATION

Several companies have worked in the area but only Utah have drilled many exploration holes. Although Utah drilled 40 diamond holes for 9,160 metres and 139 percussion holes for 16,370 metres, all these holes were based on concepts of stratiform mineralisation and even the prospects they drilled may still have considerable potential for structurally controlled mineralisation.

The following table lists the companies and tenements previously held over the Licence area:-

Tenement	*Company*	*SADME Envelope No.*	*Period*
SML 65 & 70	Australian Selection (Pty.) Ltd.	389, 599	May 1964-Feb 1966
SML 111 & 114	Anaconda Aust. Inc.	637	June 1966-Dec 1966
SML 165	Noranda Aust. Ltd.	884	
SML 169 & 353	Carpentaria Exploration Co. Pty. Ltd.	1145, 1246	June 1963-Nov 1969
SML 368	Sunhill Corp. (Aust) Ltd.	1391	Dec 1969-July 1970
SML 390	Altarama Search Pty. Ltd.	1328	June 1970-June 1971
EL 52, 53	H.R. Gillespie	2289, 2290	Feb 1973-April 1973
EL 143	Dampier Mining Co. Ltd.	2436	July 1974-August 1975
EL 277, 461, 850	Utah Development Company	2915, 3507	Dec 1976-July 1983
EL 1196	CRA Exploration Pty. Ltd.	5403	Dec 1983-Dec 1987
EL 1488	Demis Pty. Ltd.	8024	May 1988-August 1989
EL 1544	BP Minerals Australia		Nov 1988-May 1989

An excellent review of the exploration carried out before December 1983 is given in CRA's second quarterly report on EL 1196 (Envelope 5403). Since this date, CRA carried out bulk gravel sampling for diamond and rock chip sampling for gold mineralisation. CRA did not drill any holes in the area during their four year tenure.

Demis carried out rock chip sampling in the Douglas Gully (West Willouran) area, for gold mineralisation but did not do any drilling. BP Australia also carried out geochemical exploration for gold mineralisation and also did not do any drilling.

During the first year of tenure of EL 1771, MIMEX carried out detailed 1:5,000 geological mapping over 130 km^2 around the Callanna, Dunns, Rooks, Boorloo and Breaden Hill copper prospects. Also, 362 gossan samples and 185 soil samples were collected. Three diamond drill holes were drilled for a total of 862 metres in the Boorloo, Breaden Hill area. The best intersection from this drilling was 6 metres x 1.02% Cu in MWD1.

During the second year of tenure, MIMEX carried out further geological mapping in the West Willouran district and drilled 1,205 metres of RC drilling in 12 holes at six locations. The best result was 8 metres at 1.0% Cu associated with carbonate and silica alteration of the host Tapley Hill Formation 700 metres south-west of the Breaden Hill Mine.

6. EXPLORATION COMPLETED BY MIMEX IN THE YEAR ENDING OCTOBER 20, 1994

6.1 Geological Mapping

Further mapping has been undertaken around the West Willouran Copper Mine. Mapping was carried out on 1:5,000 coloured air photos and plotted on base maps prepared from the same photographs without control. Results of this work are shown on Drawing No. 37858.

6.2 Gridding

Three grids were laid out for Sirotem surveys at the West Willouran, Rooks and Breaden Hill prospects. Locations of these prospects are shown on Drawing No. 1/7724. Detailed locations are shown on plans in the Appendix. Approximately 7.5 line km of grid with pegs at 50 metre centres was laid out.

6.3 Sirotem Survey

In May/June 1994, a Sirotem survey was carried out over the grids described in section 6.2. The survey was carried out by a MIMEX crew from Mount Isa using a Sirotem Mk111 receiver. Several RC drill holes were also logged by EM. Results of these surveys together with "Spiker" inversions of apparent conductivity are presented in the Appendix. Digital data from the survey will be forwarded to the Department together with this report.

A late time conductive response was recorded towards the western end of each line on the West Willouran survey. This conductor is probably caused by pyrite in the Boorloo Siltstone.

Two distinct anomalies were located on line 10050N just to the south of the Breaden Hill Mine. The western anomaly coincides with the pyrite, chalcopyrite mineralisation intersected in RC hole MWRC-9 while the eastern anomaly is under cover and untested.

No conductors were located at the Rook prospect.

APPENDIX

WITCHELINA TEM

M.I.M EXPLORATION PTY LTD

MEMORANDUM

TO	:	**PJ Binks**		
FROM	:	**Brad George**		
DATE	:	**23 May 1994**	**Ref**	: **P213.5**
SUBJECT	:	**Witchelina TEM**		

Introduction

Between 25/4/94 and 3/5/94, a Transient EM survey was carried out over grids on the Witchelina project. The survey was planned to examine areas which had previously been identified as prospective by anomalous drill results in 1993. Refer TR 2039 for details of previous exploration activities.

Surface and drill hole measurements were planned over three prospects, "West Willouran South", " Rooks" and "Breaden Hill" (see Fig 1 for location).

Survey specifications were as follows:

Receiver	:	Sirotem MKIII
Time Base	:	Composite times
Transmitter	:	Sirotem SATX
Configuration	:	100m x 100m moving loop, with central RVR, and 50m station spacing.
	:	Downhole EM using Sirotem axial component probe, with recordings at 5m intervals.
	:	Fixed loop lines utilizing 300m x 500m transmitting loop, with Z and X components recorded every 25m.

Work was carried out by an in-house sirotem crew mobilized from Mt Isa.

West Willouran South

A grid was established with coordinates 10000N 10000E at the collar of MWRC-2 (see Fig 2). Preliminary testing showed that hole MWRC-2 was blocked at approximately 40m, and thus logging was not possible.

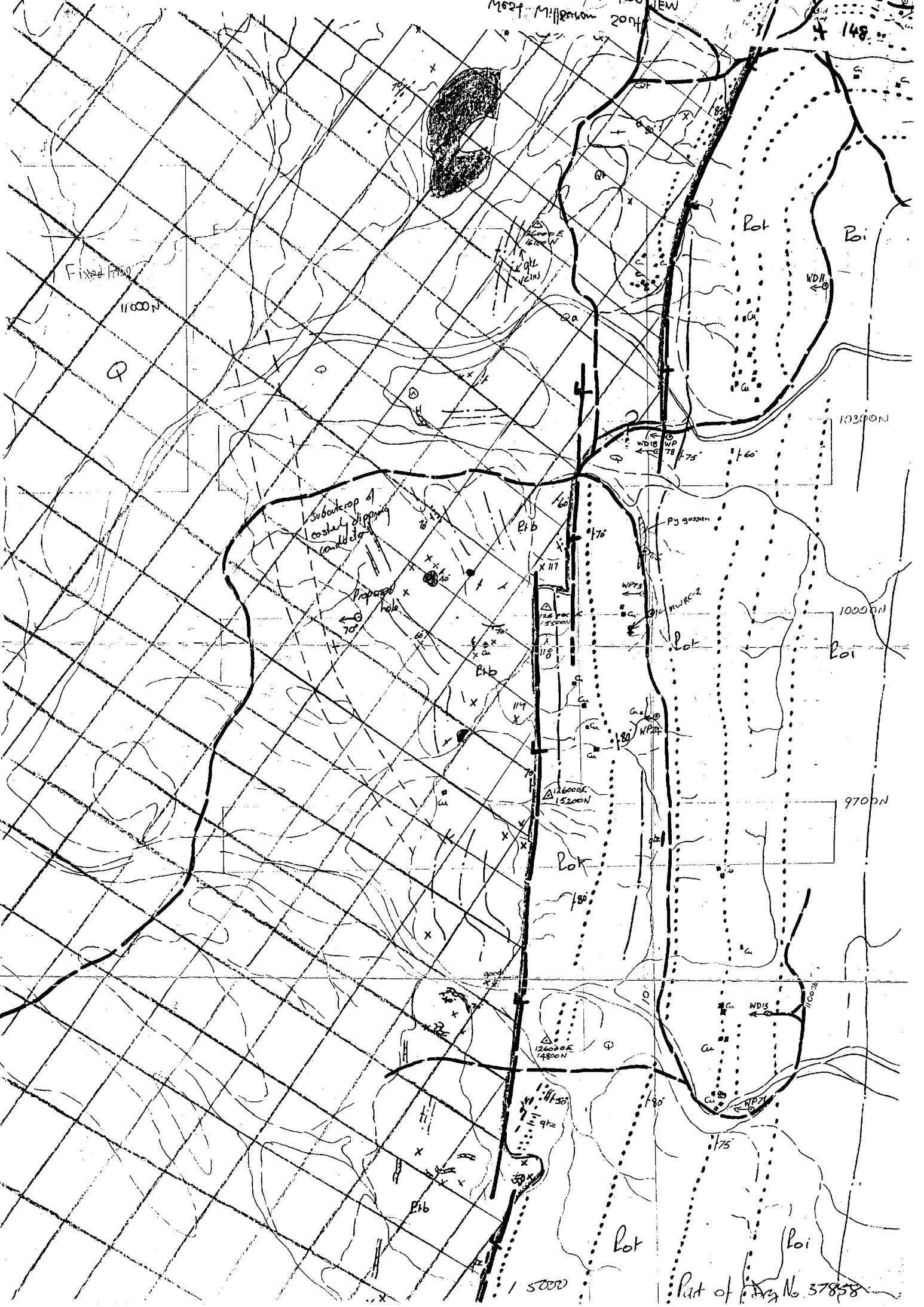
Three moving loop TEM lines were recorded. In addition, two fixed loop profiles were added to follow the northern extent of a conductive response. Line and loop coordinates are listed in Appendix 1.

A late time conductive response was delineated toward the western extremity of most lines, trending approximately parallel to an adjacent diapiric boundary. Response on the northern most line 10600N is lost by possibly being too close to the fixed transmitting loop edge. The response is consistent with a moderately shallow conductive horizon, dipping steeply eastward. While it is possible pyritic shale horizons may be the cause of the anomalies, they should be drill tested. Line 10000N would be the most likely anomaly to target as it demonstrates the shallowest source.

Data has also been presented as 1-D smooth inversion (Spiker) sections of apparent conductivity. While this form of modelling clearly emphasizes conductive zones, it is unable to properly define steeply dipping horizons, as the method assumes horizontal infinite plates. By example, Spiker sections of lines 9950N and 9650N show a tabular or even westerly dipping conductor rather that a easterly dipping plate that is obvious from the profiles.

No significant conductive responses were measured in the vicinity of the stratigraphic horizon.

Recommendation is for a RC hole on line 10000N, angled 70° westward and collared at approximately 9525E. Such a position should intersect the source of the conductive response at a down hole depth of »80-100m.

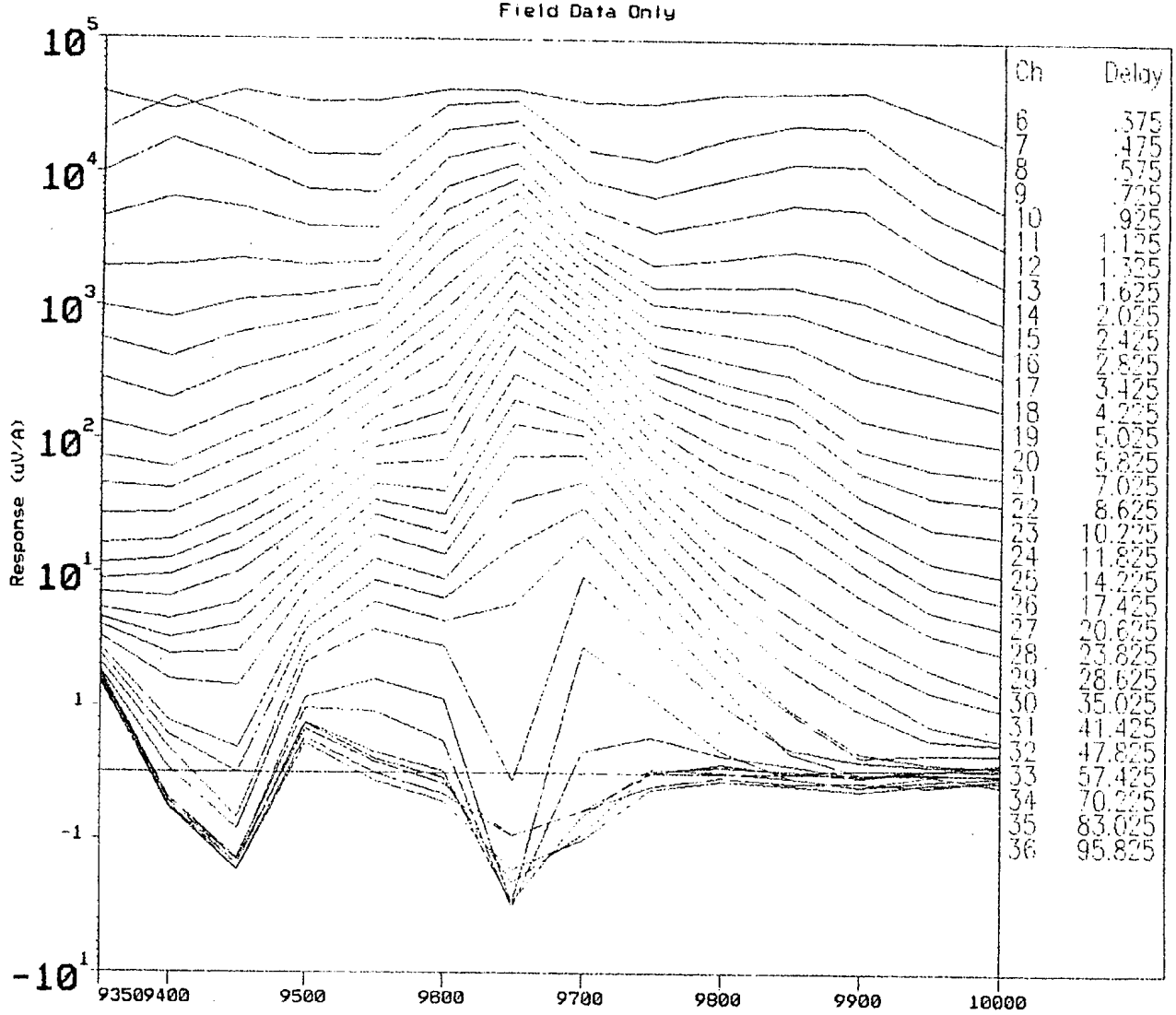

Fixed Point
11000N
Q
Qt
Qa
Rot
Roi
WD11
10300N
WD18
WP 78
Subcrop of
Proposed hole
Ptb
Pg gossan
WP73
MWRC-2
10000N
126000E
15500N
126000E
15200N
9700N
WD15
126000E
14800N
WP71
1 5000
Part of Drg No. 37858

Siro-ex : TEM Response Profile

WEST WILLOURAN SOUTH - WITCHELINA

Moving Loop Tx, In Loop Dipole Rx, I Component

Field Data Only



Distance Along Profile 9650.00

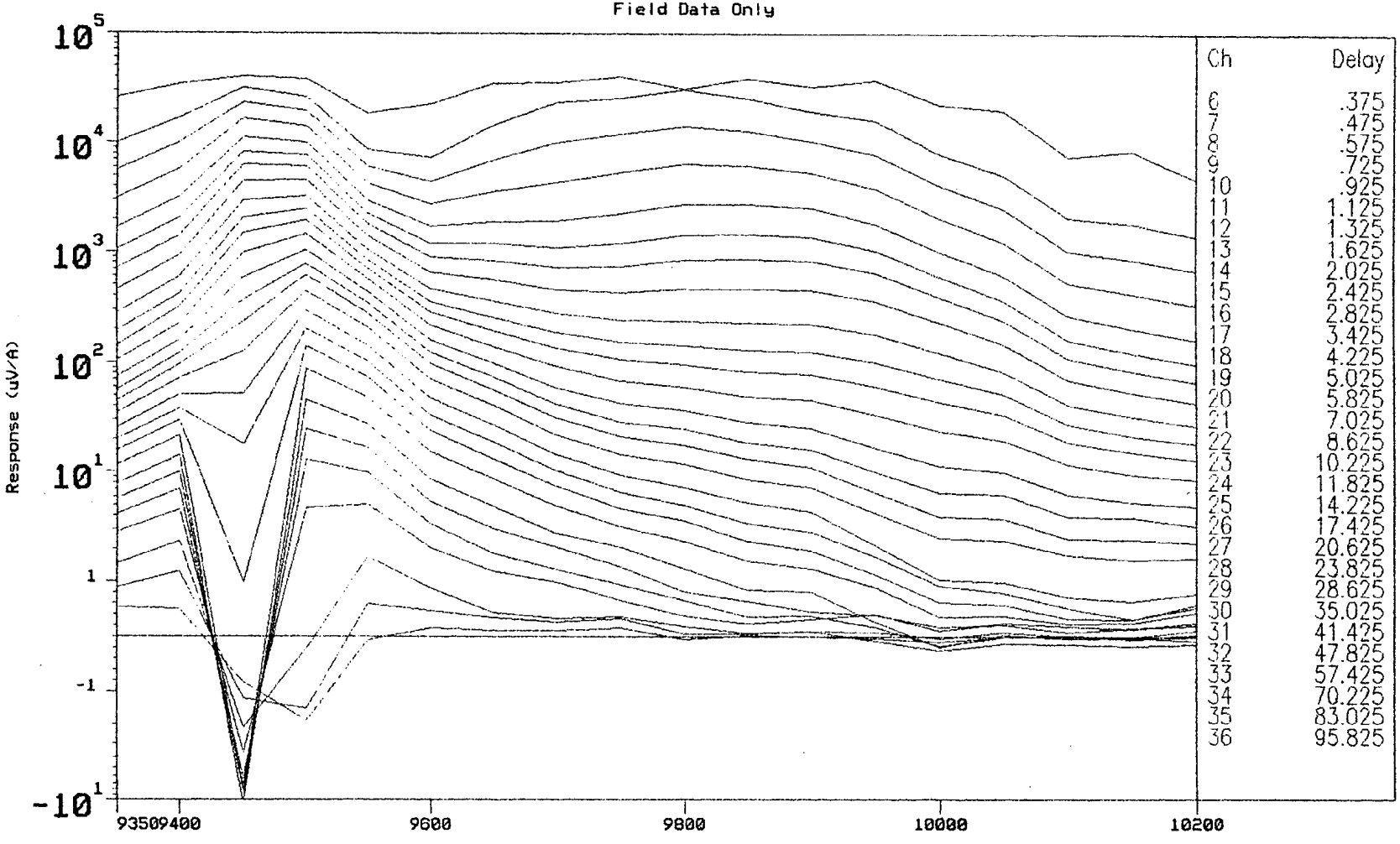
00149

Siro-ex : TEM Response Profile

WEST WILLOURAN SOUTH - WITCHELINA

Moving Loop Tx, In Loop Dipole Rx, I Component

Field Data Only



Distance Along Profile 9950.00

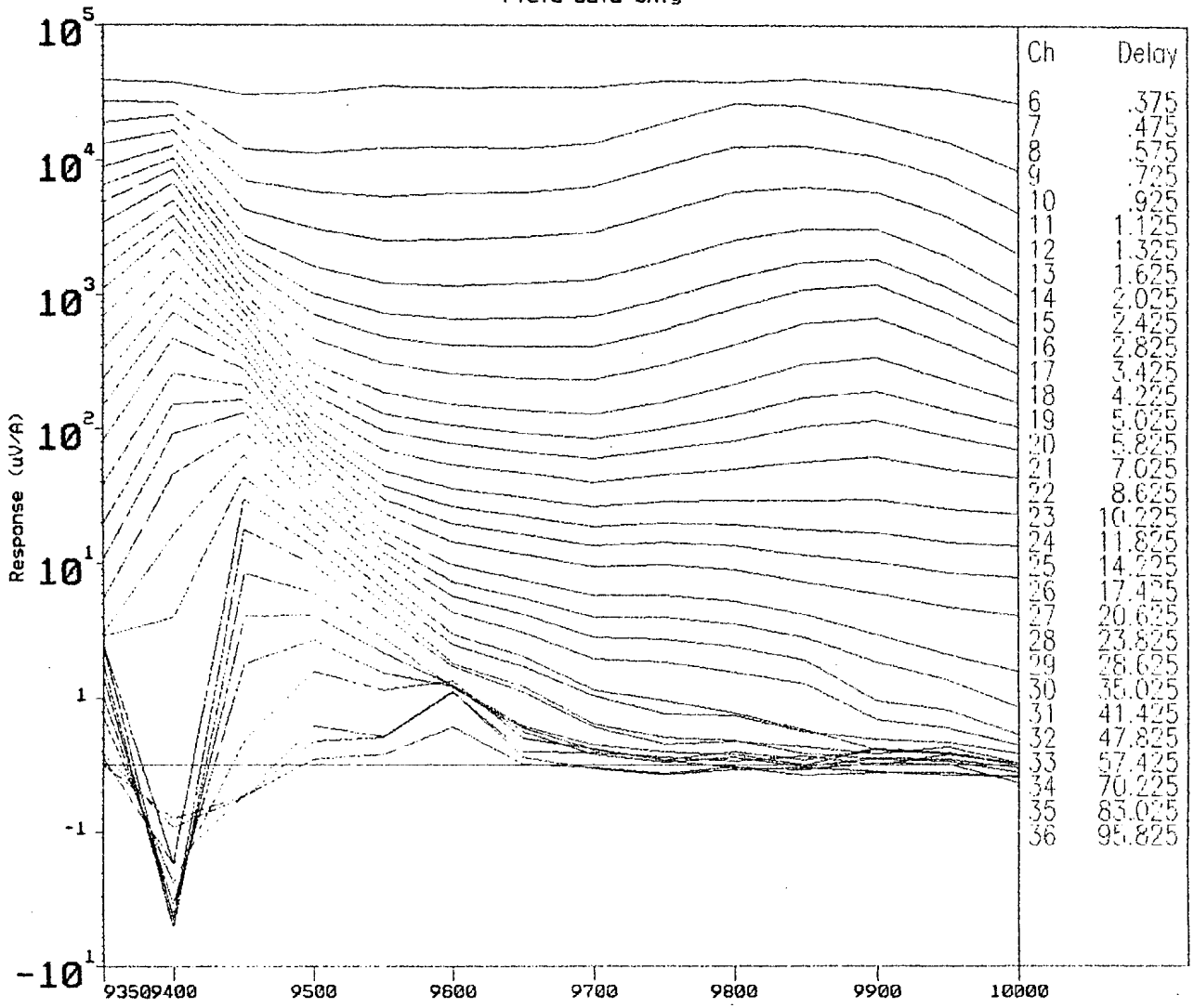
00150

Siro TEM Response Profile

WEST WILLOURAN SOUTH - WITCHELINA

Moving Loop Tx, In Loop Dipole Rx, I Component

Field Data Only



Distance Along Profile 10250.00

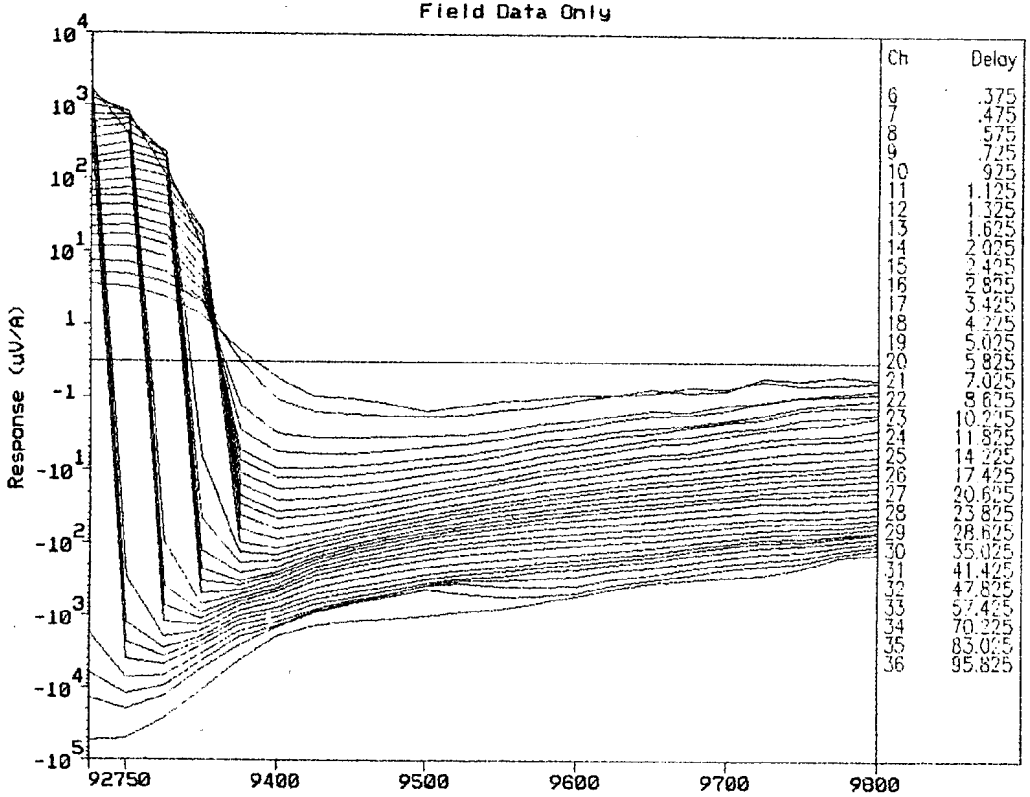
00151

Siro-ex : TEM Response Profile

WEST WILLOURAN SOUTH - WITCHELINA

Fixed Loop Tx, Roving Surface Rx, Z Component

Field Data Only



Distance Along Profile 10300.00

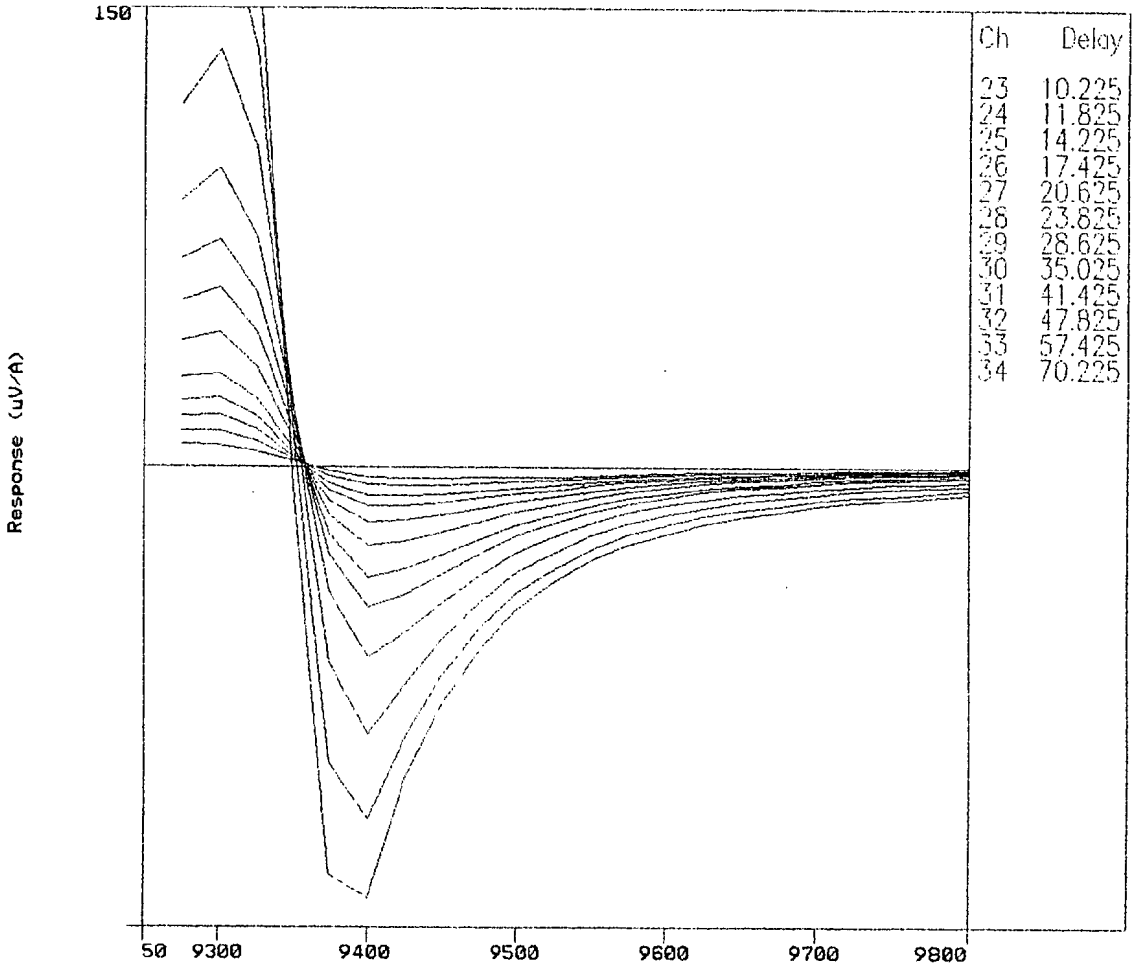
00152

Siro-ex : TEM Response Profile

WEST WILLOURAN SOUTH - WITCHELINA

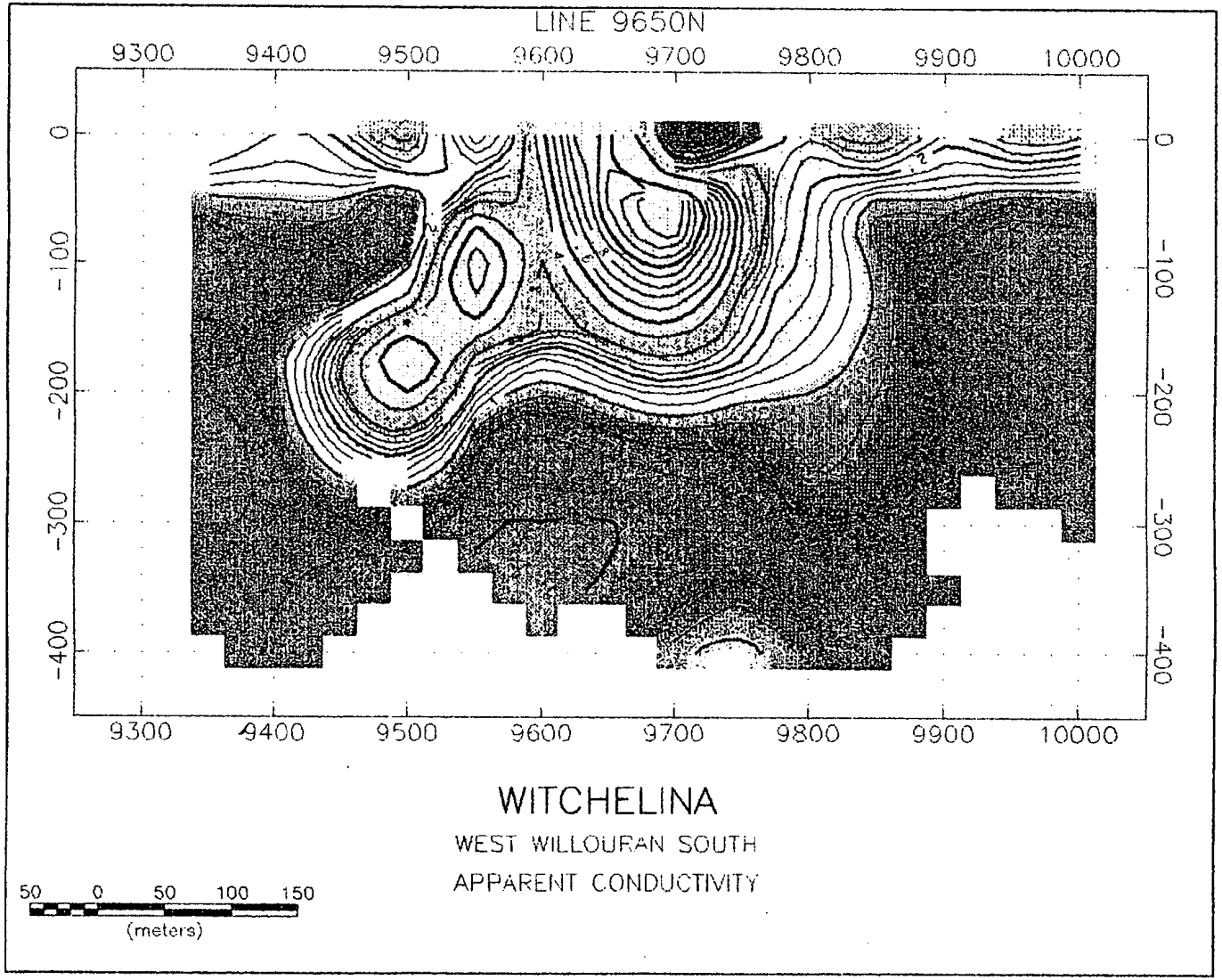
Fixed Loop Tx, Roving Surface Rx, Z Component

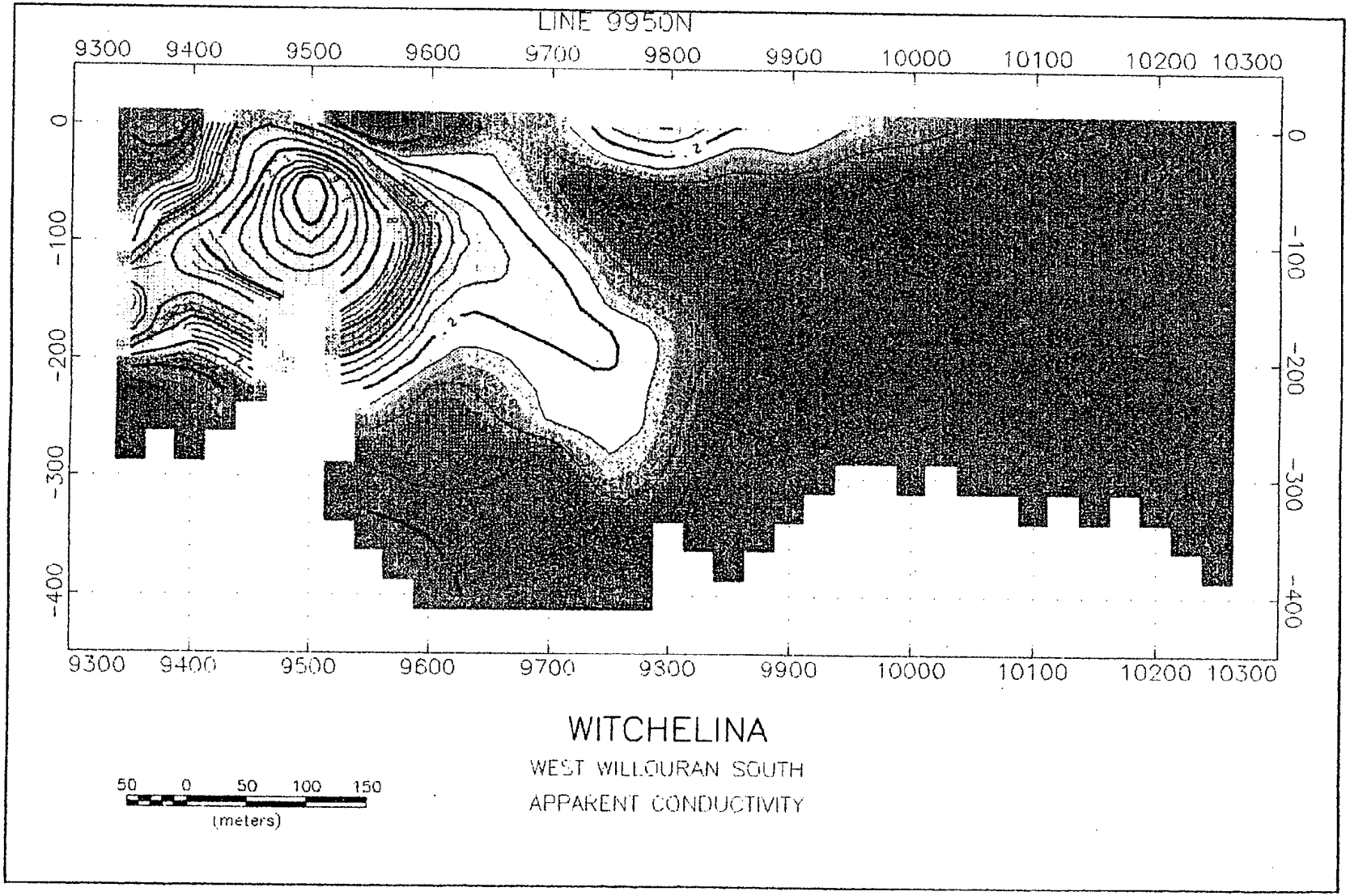
Field Data Only



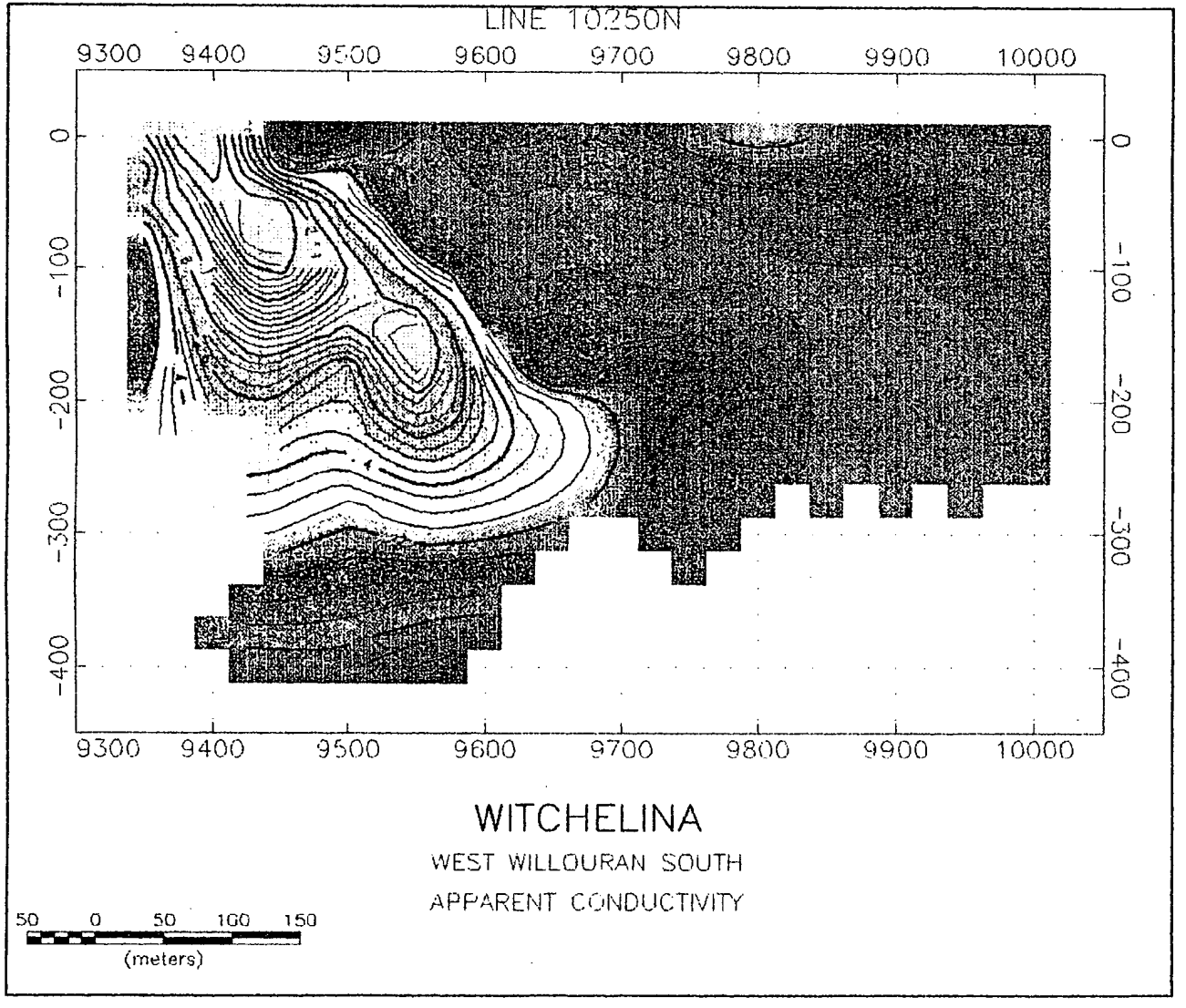
Distance Along Profile 10300.00

00153


LINE 9650N
9300
9400
9500
9600
9700
9800
9900
10000
0
-100
-200
-300
-400
WITCHELINA
WEST WILLOURAN SOUTH
APPARENT CONDUCTIVITY
50
0
50
100
150
(meters)


LINE 9950N
9300 9400 9500 9600 9700 9800 9900 10000 10100 10200 10300
0 -100 -200 -300 -400
9300 9400 9500 9600 9700 9300 9900 10000 10100 10200 10300
WITCHELINA
WEST WILLOURAN SOUTH
APPARENT CONDUCTIVITY
50 0 50 100 150
(meters)

00155


LINE 10250N
9300
9400
9500
9600
9700
9800
9900
10000
0
-100
-200
-300
-400
WITCHELINA
WEST WILLOURAN SOUTH
APPARENT CONDUCTIVITY
50
0
50
100
150
(meters)

00156

Rooks

Both holes of interest on this grid, MWRC-3 and MWRC-4, were blocked and thus not logged with EM. The local grid was centred with 10000N 10000E at collar of hole MWRC-4.

Three moving loop profiles were recorded on this grid. Terrain was quite severe on line 9650N, and some geometric responses were expected.

No significant conductive responses were detected on any lines. A flat lying surficial conductor is evident centrally on line 9950N, however this is probably due to conductive weathering products in the valley.

No further work is suggested for this prospect.

Part of Drg No. 37132

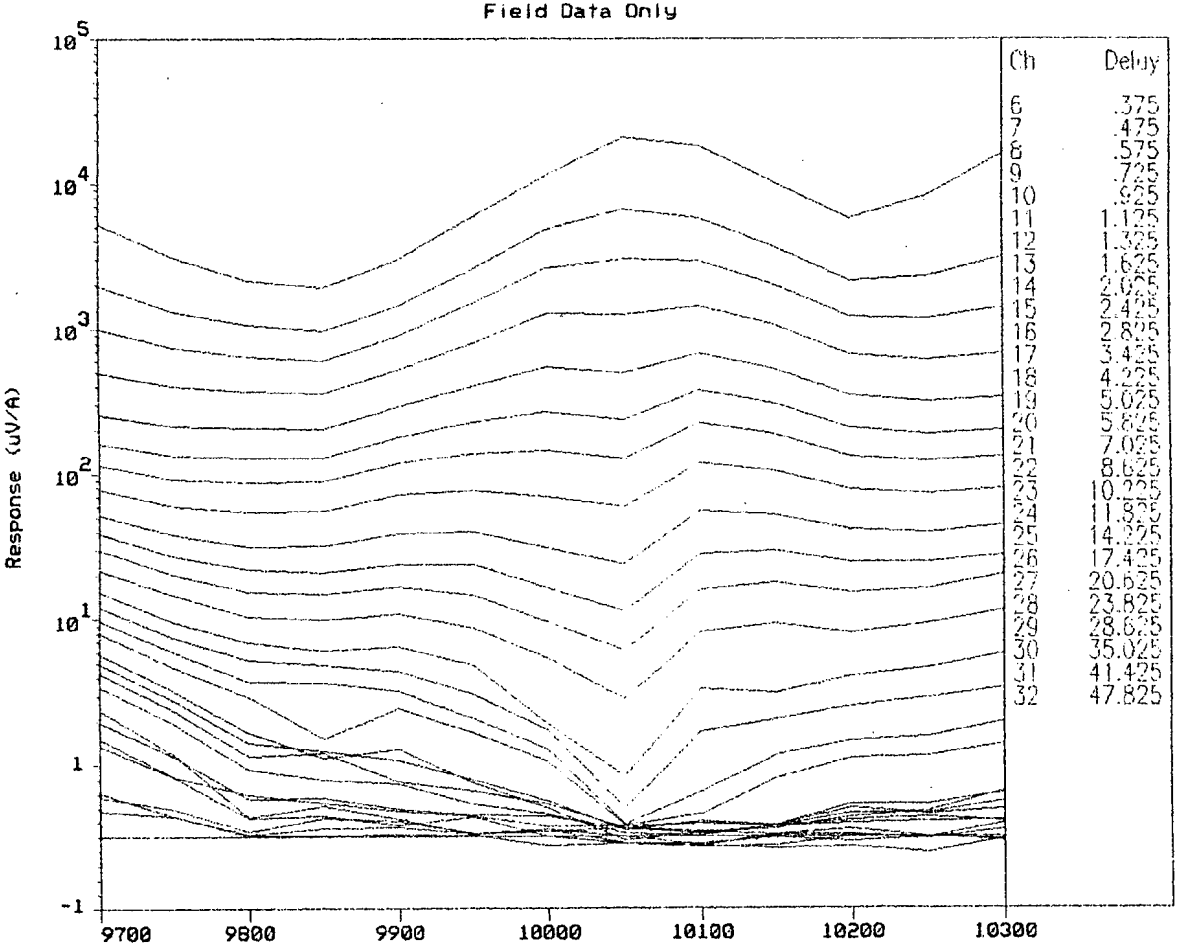
1:5000

Siro-ex : TEM Response Profile

ROOKS-WITCHELINA

Moving Loop Tx, In Loop Dipole Rx, I Component

Field Data Only



Distance Along Profile 9650.00

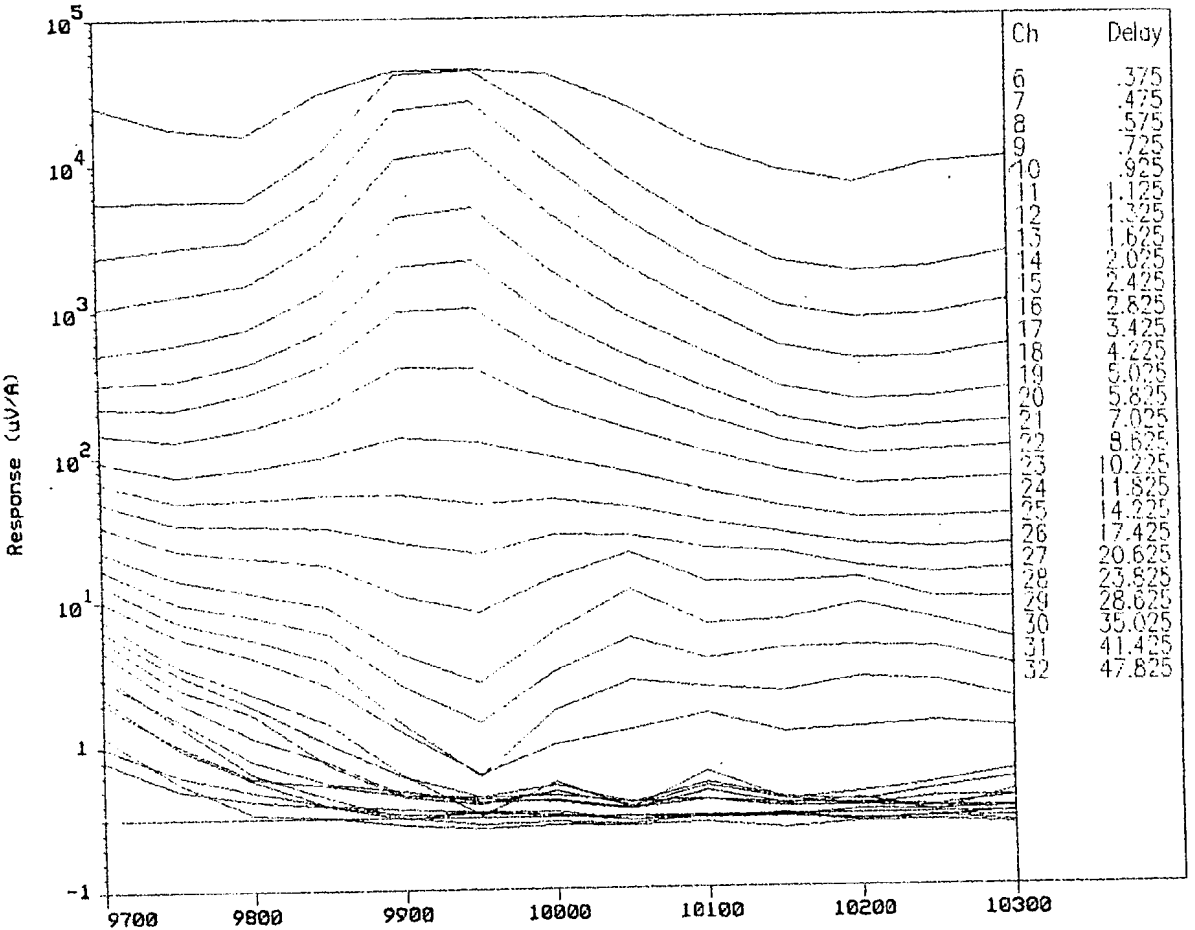
00159

Siro-ex : TEM Response Profile

ROOKS-WITCHELINA

Moving Loop Tx, In Loop Dipole Rx, I Component

Field Data Only



Distance Along Profile 9950.00

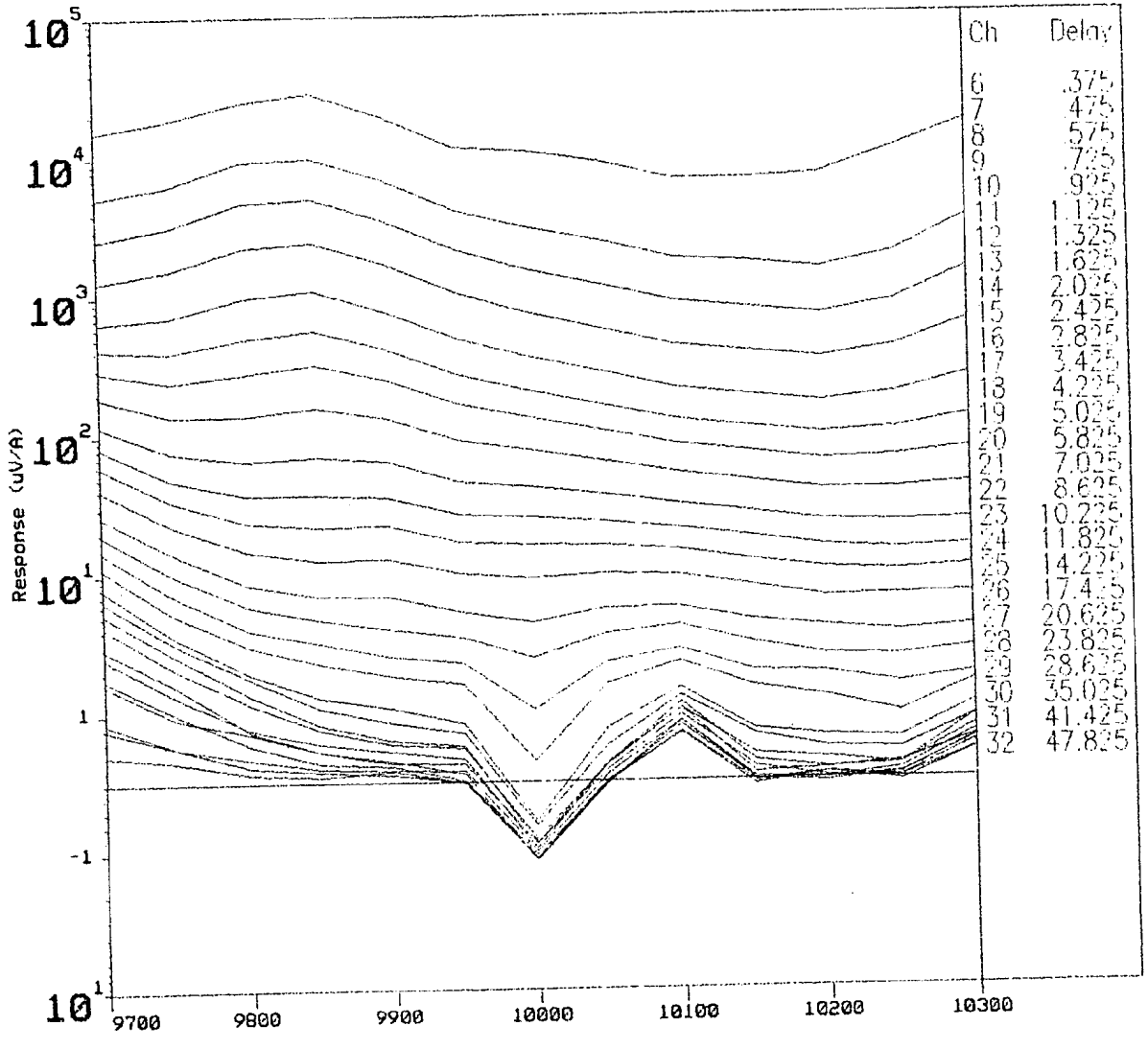
00160

Siro-ex : TEM Response Profile

ROOKS-WITCHELINA

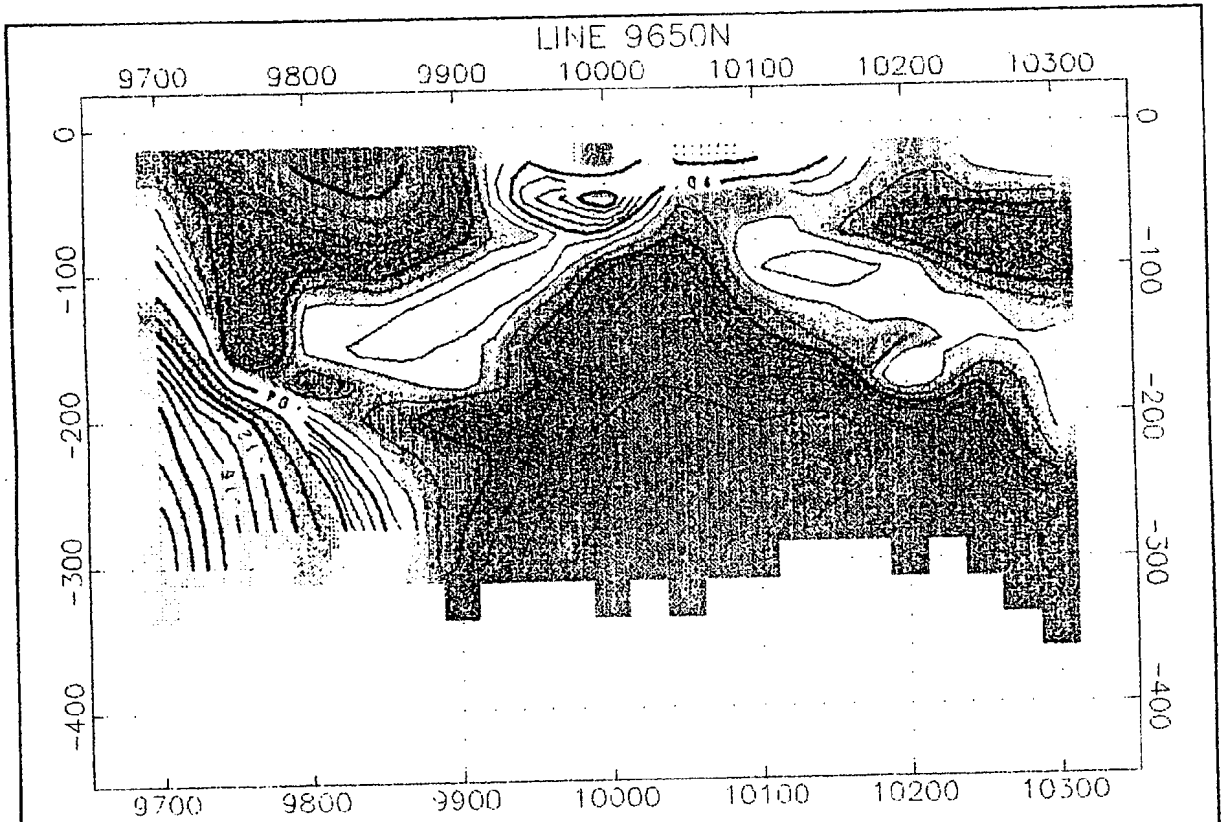
Moving Loop Tx, In Loop Dipole Rx, I Component

Field Data Only



Distance Along Profile 10250.00

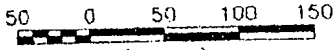
00161



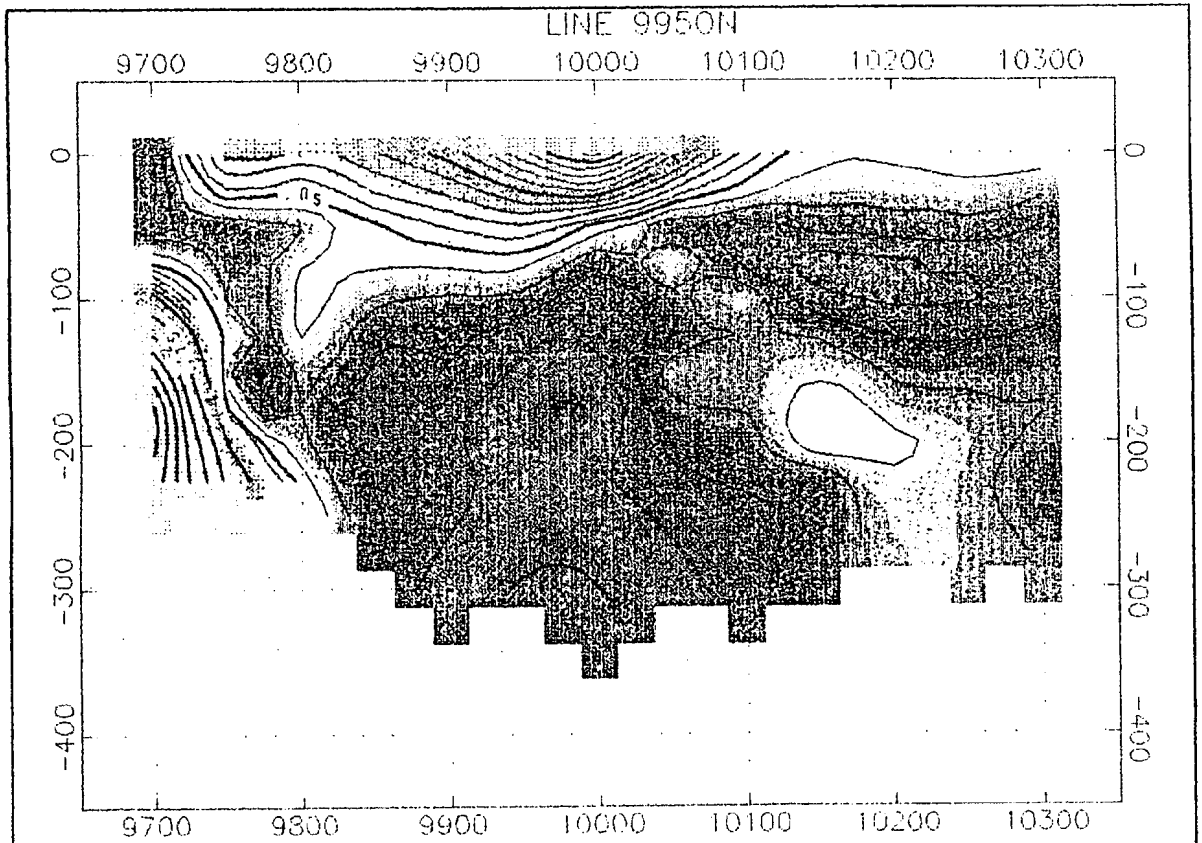
WITCHELINA

ROOKS

APPARENT CONDUCTIVITY



00162



WITCHELINA

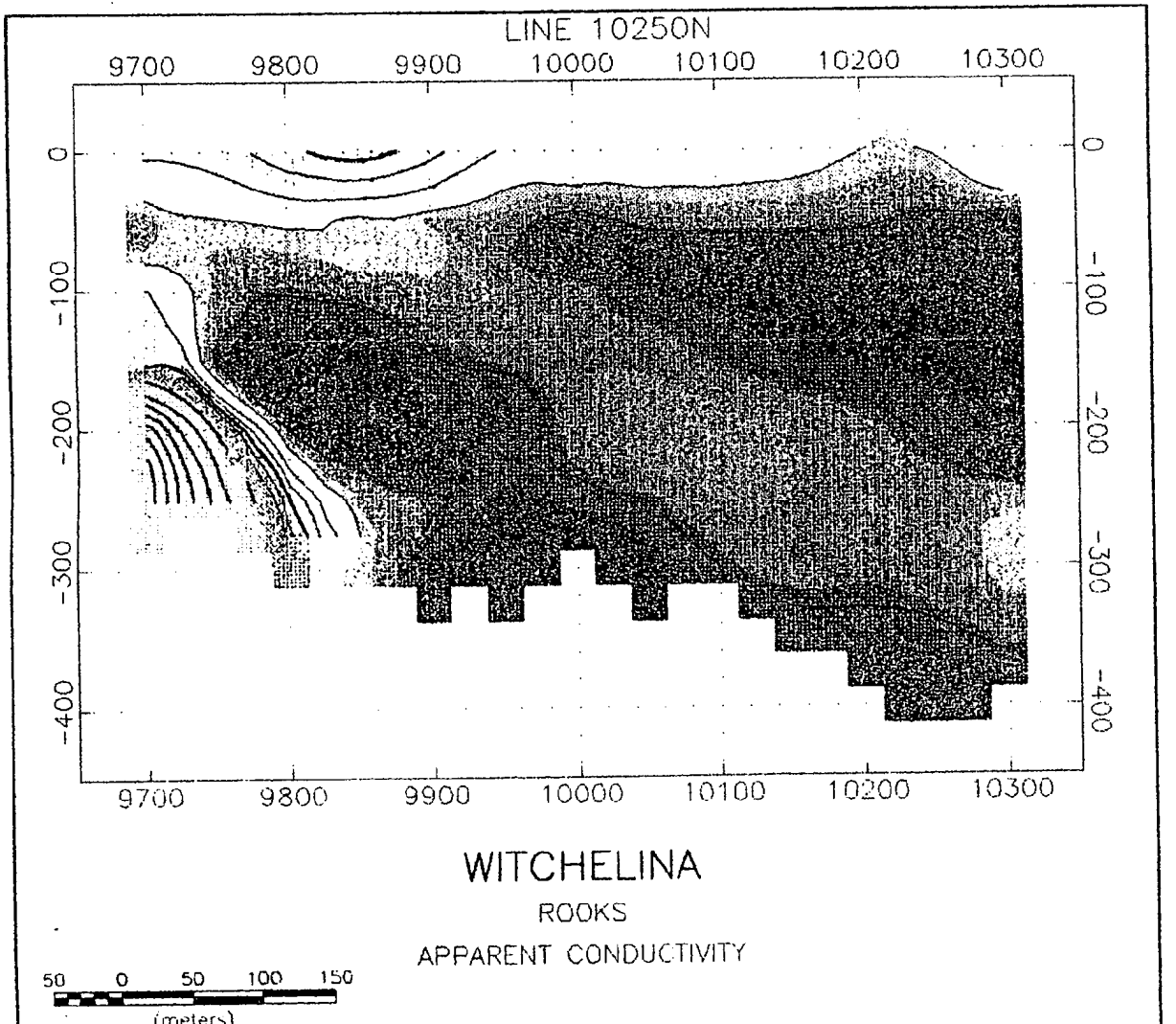
ROOKS

APPARENT CONDUCTIVITY

50 0 50 100 150

(meters)

001163


LINE 10250N
9700
9800
9900
10000
10100
10200
10300
0
-100
-200
-300
-400
WITCHELINA
ROOKS
APPARENT CONDUCTIVITY
50 0 50 100 150
(meters)

00164

Breaden Hill

Grid was located with 10000N 10000E at collar of MWRC-9. This hole was logged from two transmitting loops, and three lines of moving loop TEM were recorded.

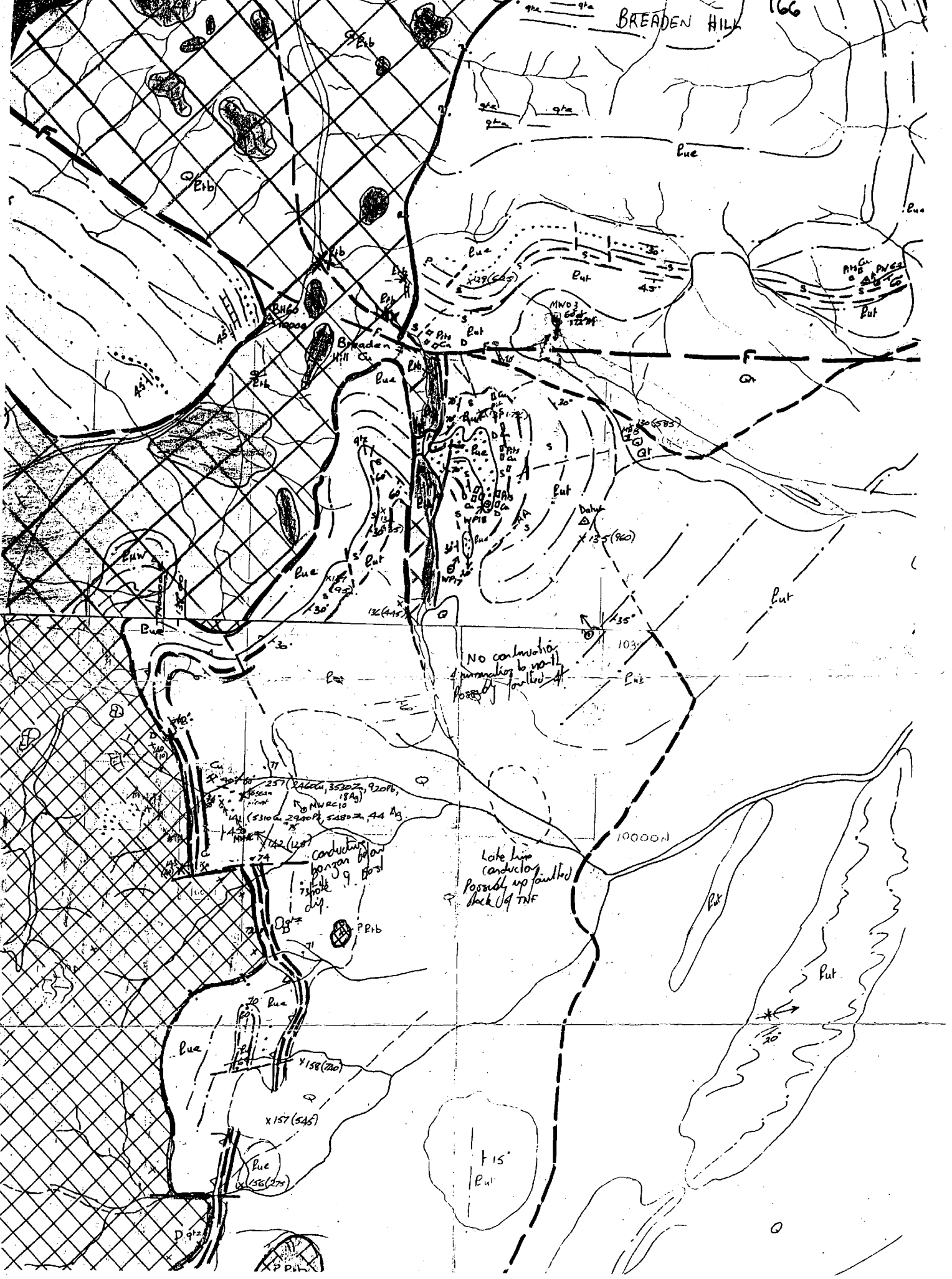
Target zone for holes in this area was possible mineralization in the base of the Tapley Hill formation. The area is structurally complex, and there is little chance of continuity from line to line.

No significant conductors were detected on the northern two lines (10350N and 10650N), even over the old Breaden Hill workings. Some moderately conductive responses were evident on eastern extent of these lines, corresponding to occurrence of conductive pyritic shales.

Two distinct conductive anomalies were located on line 10050N, beneath collar of MWRC-9, and 400m further eastward. 1-D smooth inversion of these data shows a confused picture of one sub-horizontal conductive horizon with locally more conductive zones at either end. This is possibly an artefact of the inversion method and it's inherent weakness in discriminating steeply dipping horizons. Amplitude profiles suggest two distinct easterly dipping horizons. It is difficult to correlate conductor positions with the known base of THF using a strataform model. It is necessary to consider some up faulting east of MWRC-10, and possibly cross-cutting mineralized veins to produce a small conductive pod below hole MWRC-9.

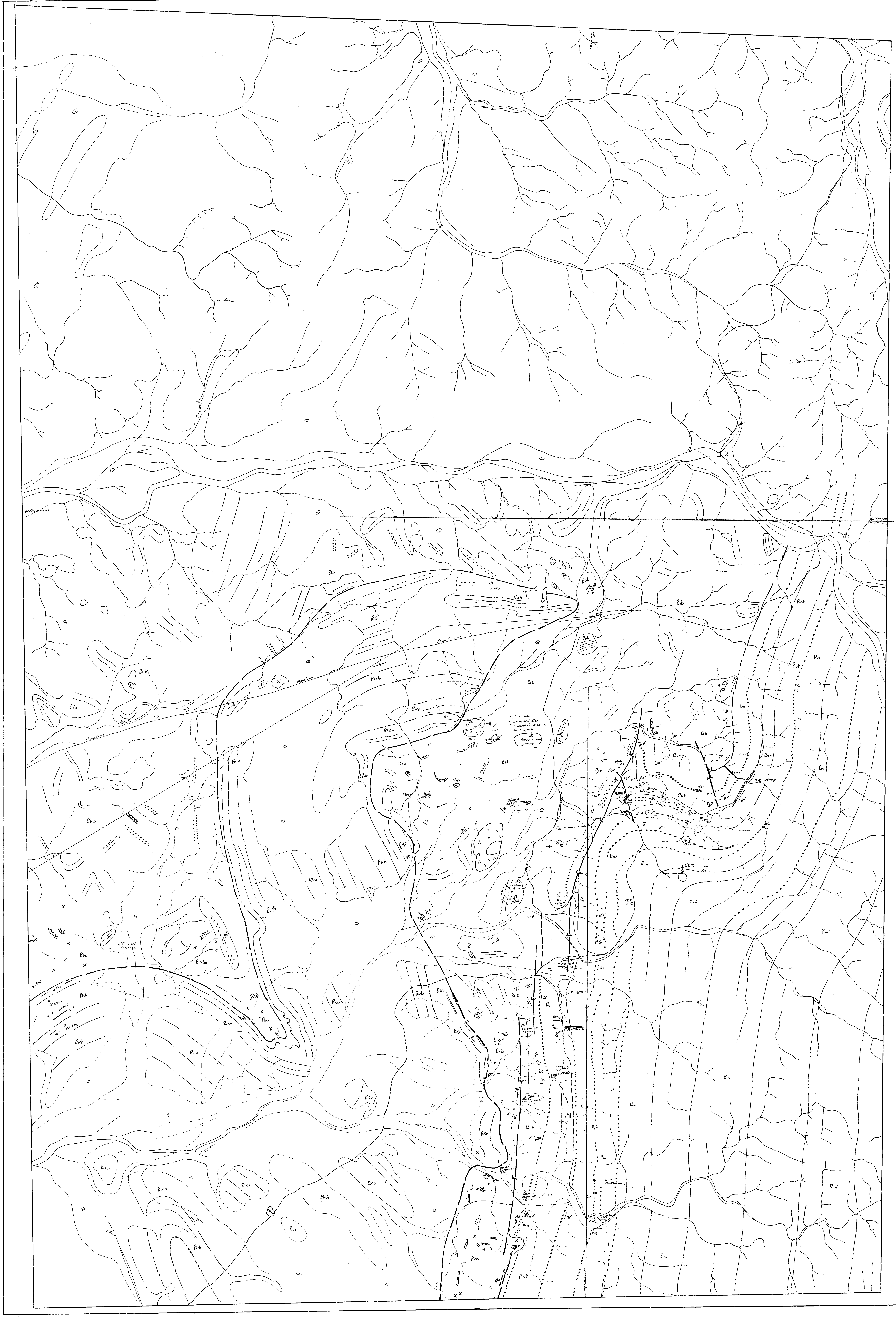
Downhole surveys of MWRC-9 showed a possible off-hole response at top of hole. This would be in agreement with surface readings indicating a conductive horizon directly below the collar. Unfortunately this off-hole response is too close to surface and is confused with cultural noise from vehicle etc.

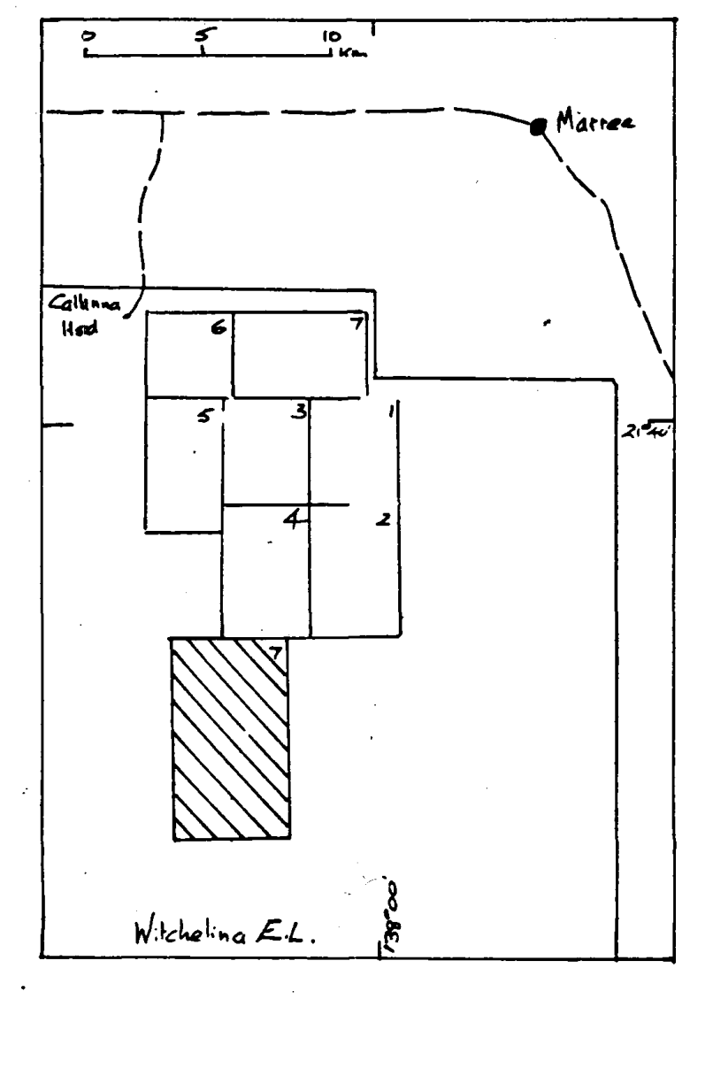
As hole MWRC-10 has already intersected basal THF, deepening of this hole is unlikely to test the conductive source at reasonable depth. If the conductor beneath MWRC-9 is indeed vein related, a new hole between 9 and 10 would have a better chance of testing this theory. Another hole would also be required to test the eastern anomaly, as it's conductivuty values appear too high to be due to unmineralized THF.



Part of Drg No. 36591.

8528-19





<u>Legend</u>

	Q	Alluvium, colluvium
	Qt	Talus, slope deposits.
Umberatana Gr	Pfa	Amberoona Fm - green-grey siltstone, shale, Limestone with slump breccias
	Pft	Tapley Hill Fm - dk grey, laminated siltstone with slump breccias
		Tindelpina Sh M. - black, finely laminated pyritic sh, +dol. sh.
	Pue	? Serle M - sandstones, siltstones, conglomerates
	Puw	Willyerpa Fm - pebbly sst, qtzites, siltstone, diamictite
Burra Gr	Pmk	Skillogalee Dol. - dk grey dol, qtzite, slst.
	Pow	Witchelina Qtzite - flaggy feldspathic qtzite + slst
	Poi	Willawalpa Fm - flaggy qtzite, slst + minor dol (Pot - Top Mount Sst - qtzite, slst, dol.)
Callanna Gr	Pkb	Boorloo Slst - dk grey to black slst + dol with prominent dol. bands at top.
	Pkc	Cooranna Fm - SSt, Slst, dol + Lst
	Pkh	Hogan Dol - grey + brown dol. minor sst + slst.
	Pkr	Recovery Fm - flaggy qtzite, slst + minor carbonate
	Pku	Junns Mtn Lst - grey, partly sandy, cherty Lst + Sst.
	Pkk	Rook Tuff - flaggy tuff-aceous grey sh, slst + qtzite with local dacite layer
	Pkd	Dome Sst - qtzite with some hematite lamination
	Ptb	Tectonic breccia, occasionally showing intrusive features (piercement structures).

Geological boundaries ——— observed — — — — inferred
Faults F——— observed —F— — inferred
Boundaries of tectonic breccias ——— observed — — — inferred
Bedding 50° strike + dip —+— vertical
——— · ——— · ——— trend of bedding

Foliation 30°
Jointing 50°
Sedimentary breccia ◁ ▽ ◁
Tectonic breccia × ×
Sandstone, qtzite ∴∴ Dolerite, gabbro or Vv
Siltstone
Carbonate (usually dol)
Veins, usually qtz but frequently with dol + limonite. Wall rocks usually silicified + dold. qtz, dol, lim
Silicification S
Dolomitisation D
Australian Selection Trust grid pegs with co-ordinates in feet △

* This plan has been prepared from a colour photo-enlargement of Survey 3453 flown in June 1986. It has not been corrected for photo-distortion.

N

0 100 200 300 400 500 m
SCALE

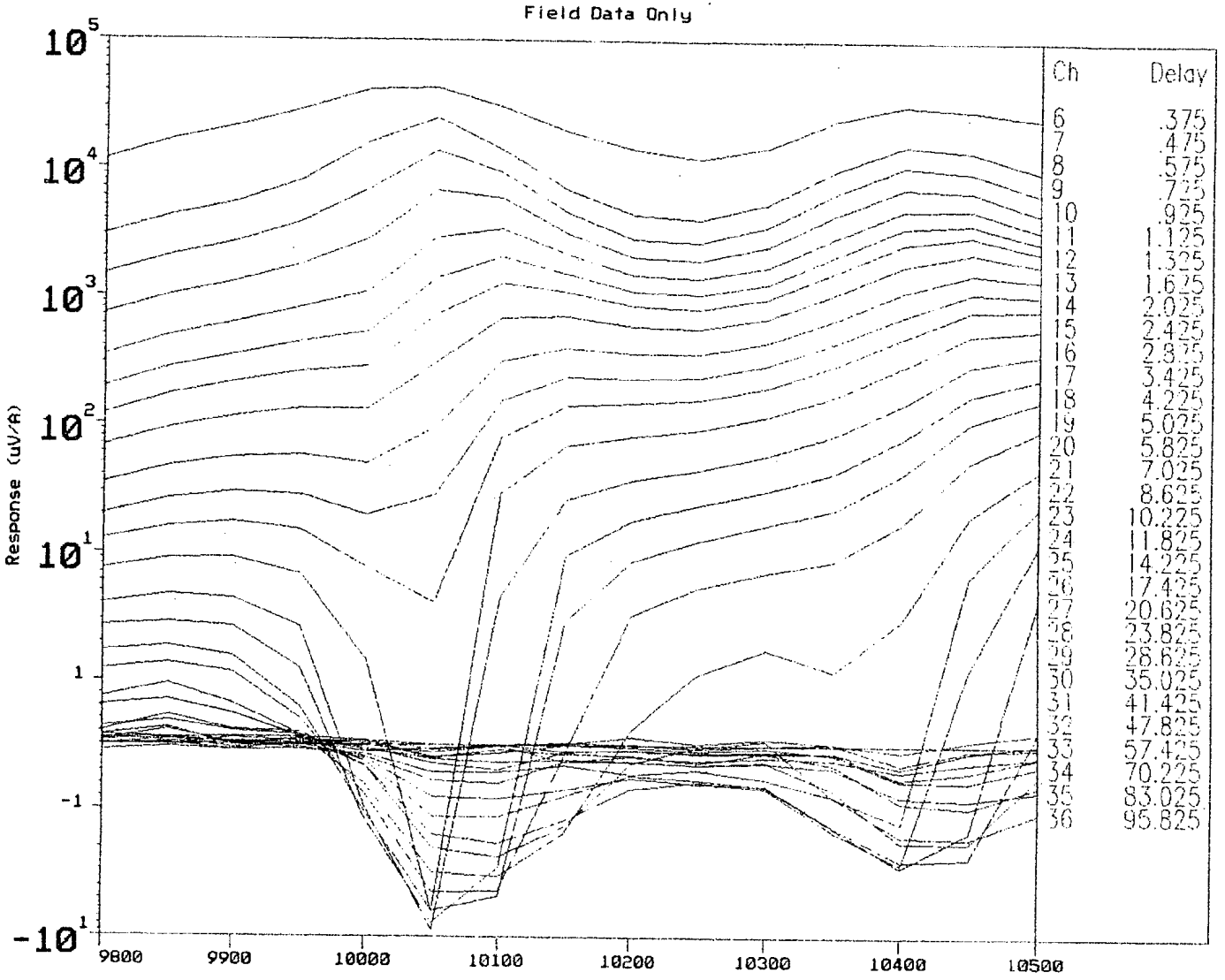
REVISION				
		SCALE : 1:5000		M.I.M. EXPLORATION PTY. LTD.
		GEO : PB		Witchelina EL 1747 Geological Plan West Willouran Area Sheet 7
		DATE : May 93		
		DRAFT : PB		
		DATE : May 93		
		1:250,000	SH 53-8	
		1:100,000		
		MINING FIELD OR DISTRICT : Willouran Ranges SA		DRG No. : 37858

8528-19

BREADEN HILL-WITCHELINA

Moving Loop Tx, In Loop Dipole Rx, I Component

Field Data Only



Distance Along Profile 10050.00

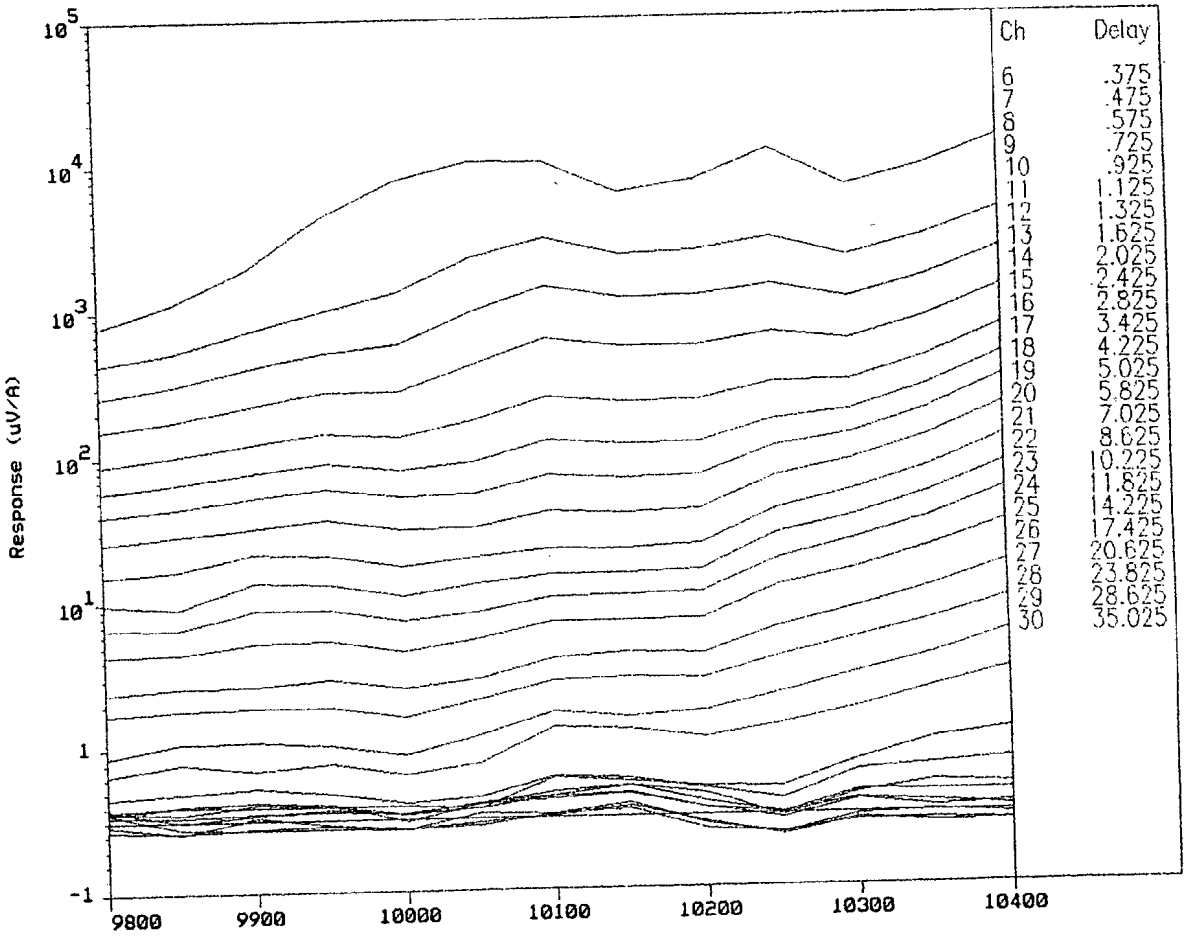
00167

Siro-ex : TEM Response Profile

BREADEN HILL-WITCHELINA

Moving Loop Tx, In Loop Dipole Rx, I Component

Field Data Only



Distance Along Profile 10650.00

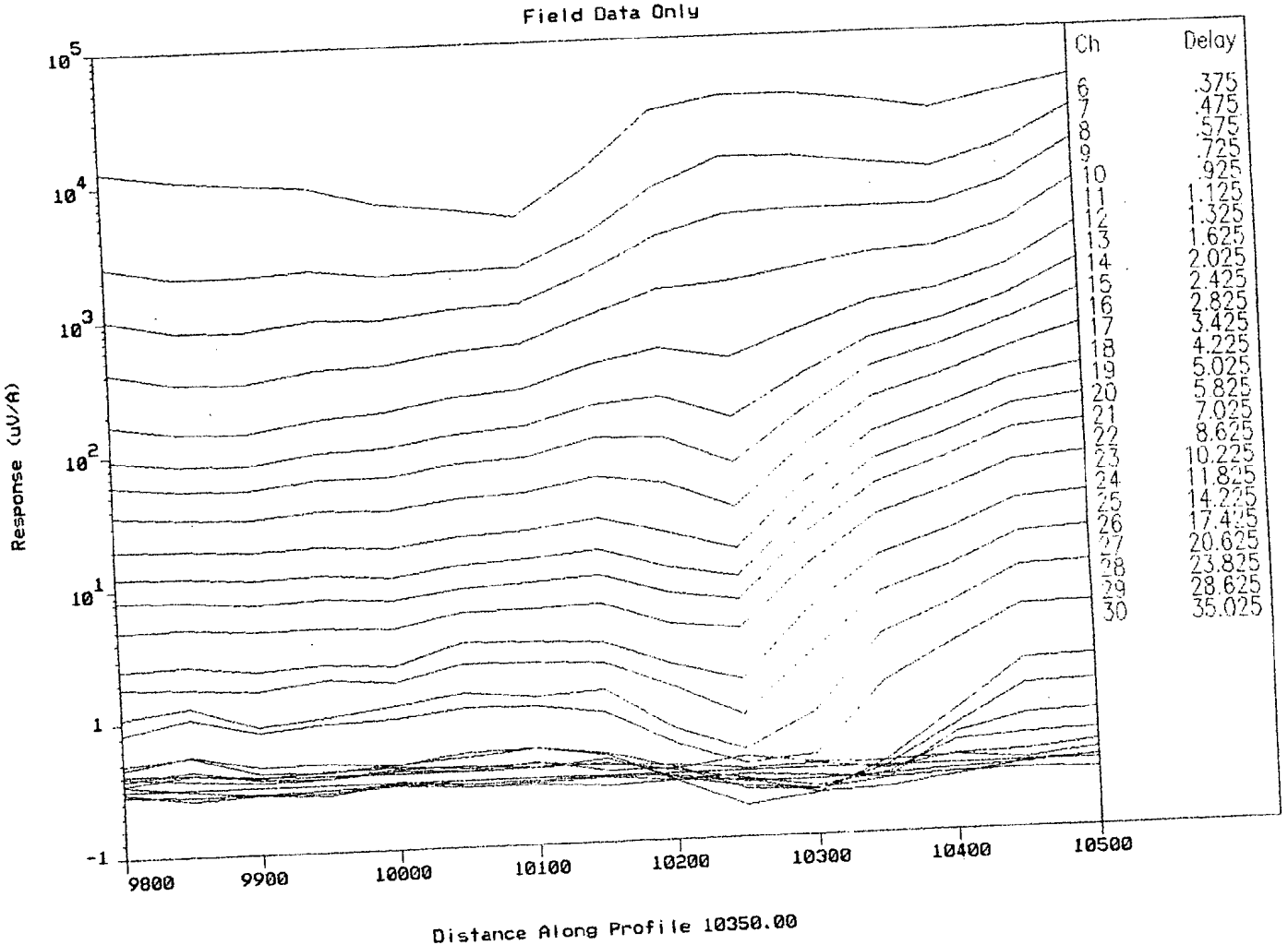
00168

Siro-ex : TEM Response Profile

BREADEN HILL-WITCHELINA

Moving Loop Tx, In Loop Dipole Rx, I Component

Field Data Only



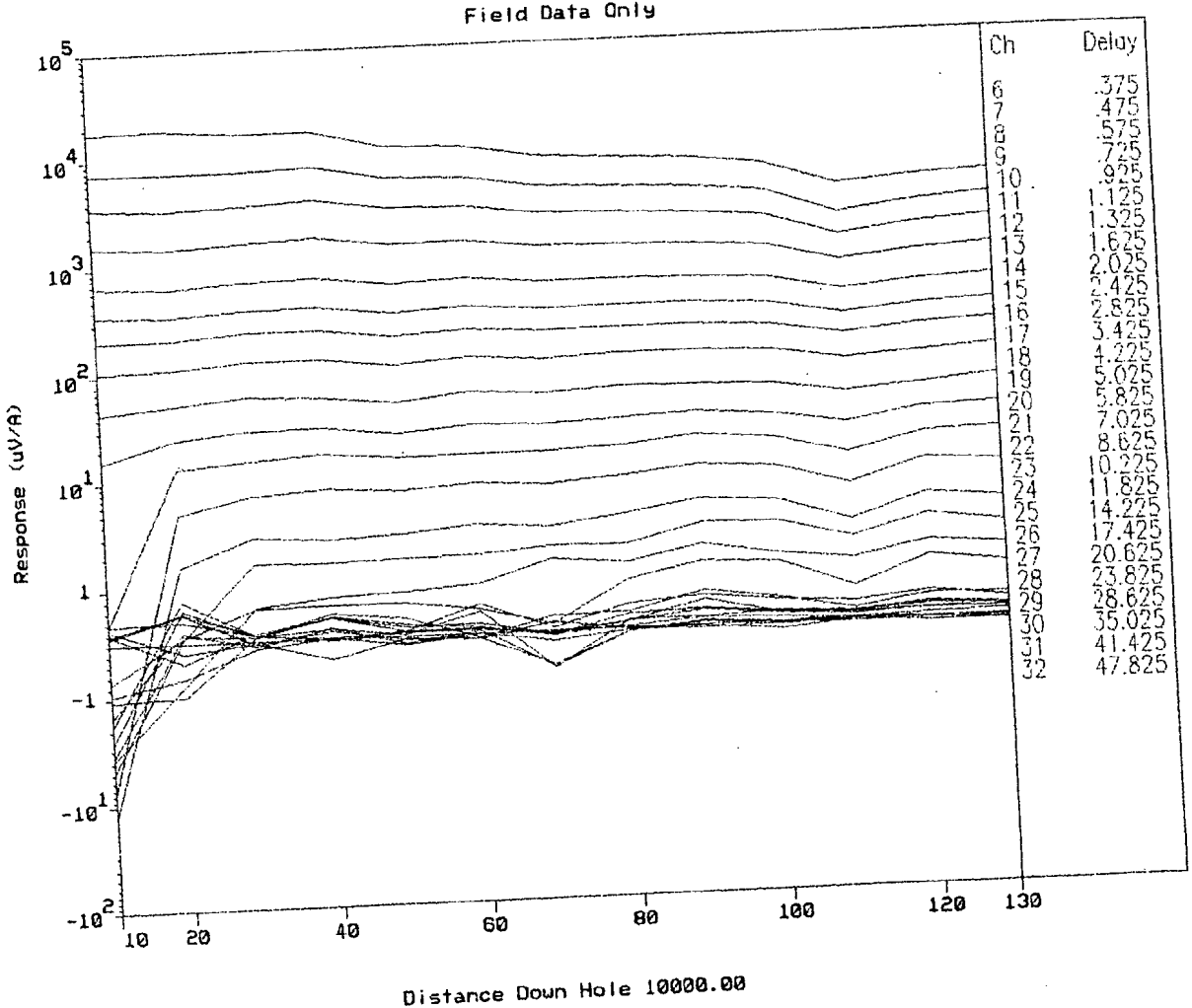
00169

Siro-ex : TEM Response Profile

BREADEN HILL-WITCHELINA HOLE MWRC-9 LOOP 1

Fixed Loop Tx, Downhole Dipole Rx, A Component

Field Data Only



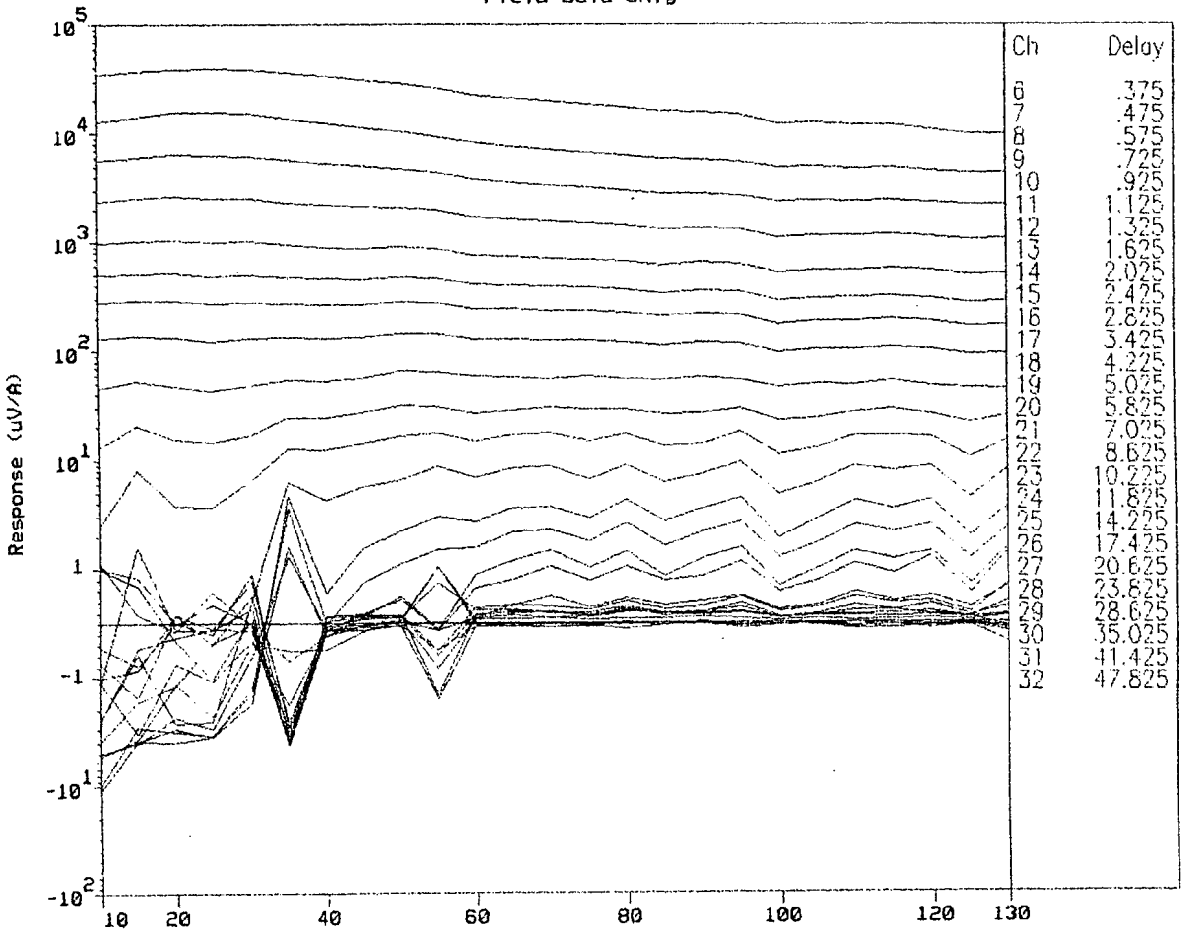
00170

Siro-ex : TEM Response Profile

BREADEN HILL-WITCHELINA HOLE MWRC-9 LOOP 2

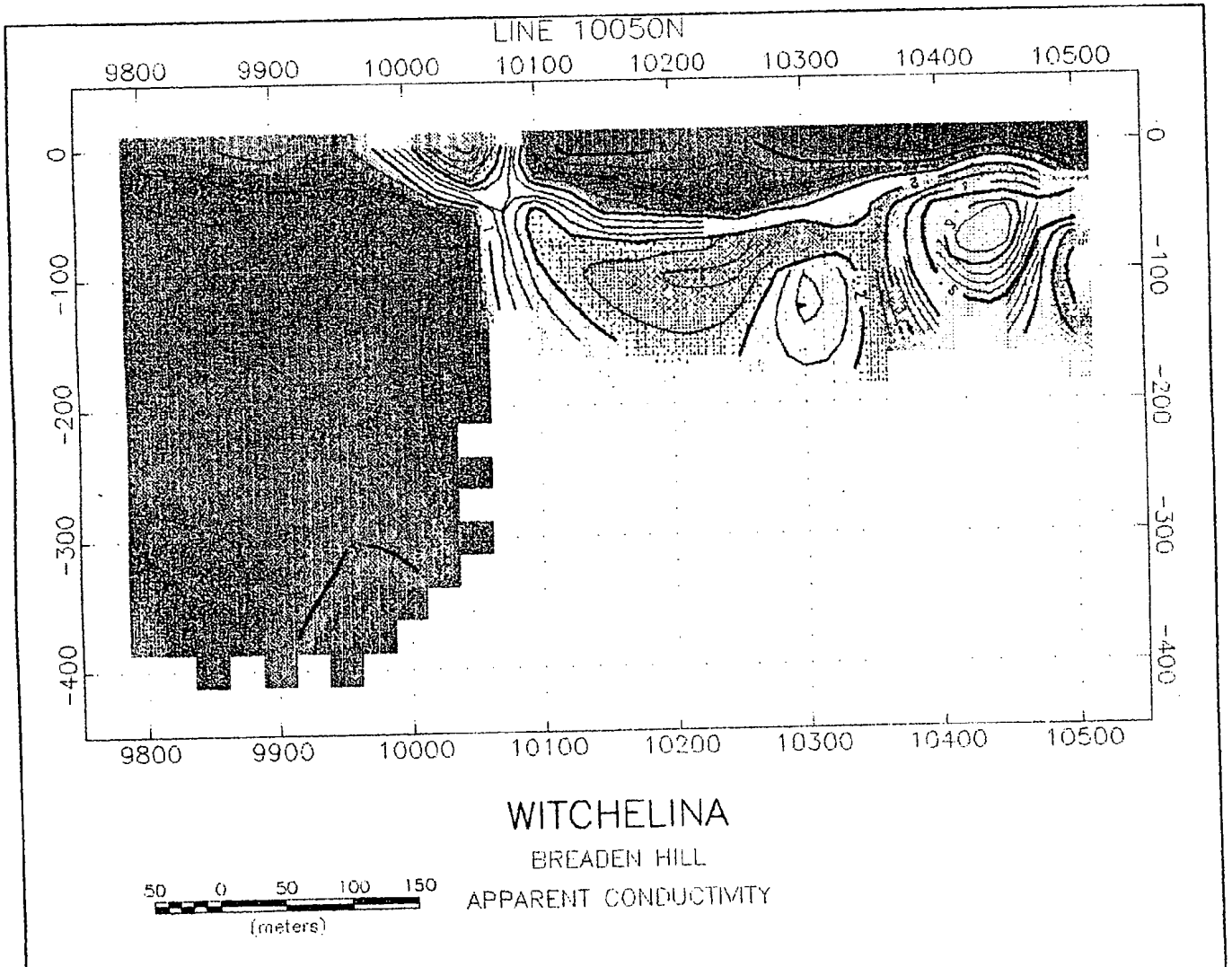
Fixed Loop Tx, Downhole Dipole Rx, A Component

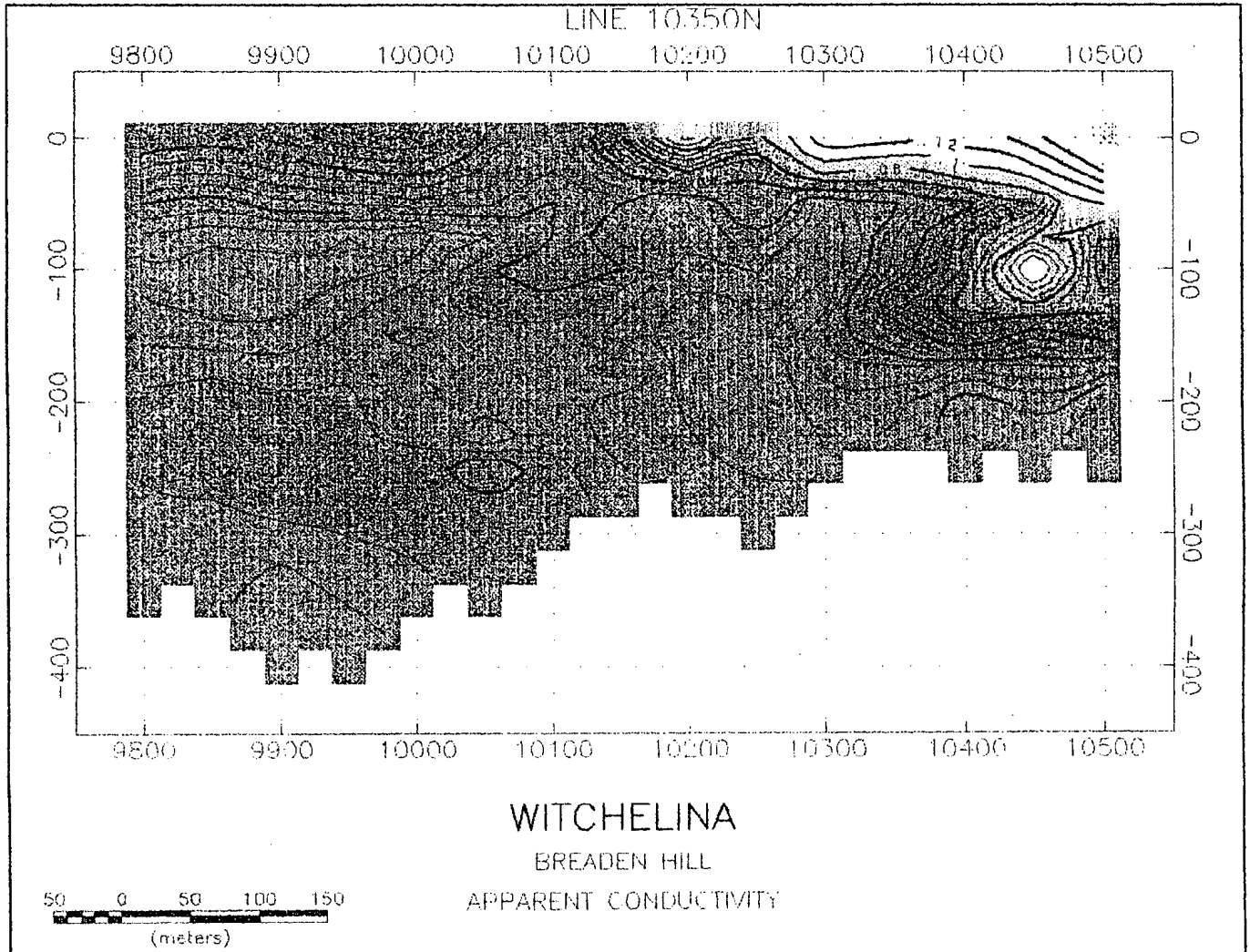
Field Data Only



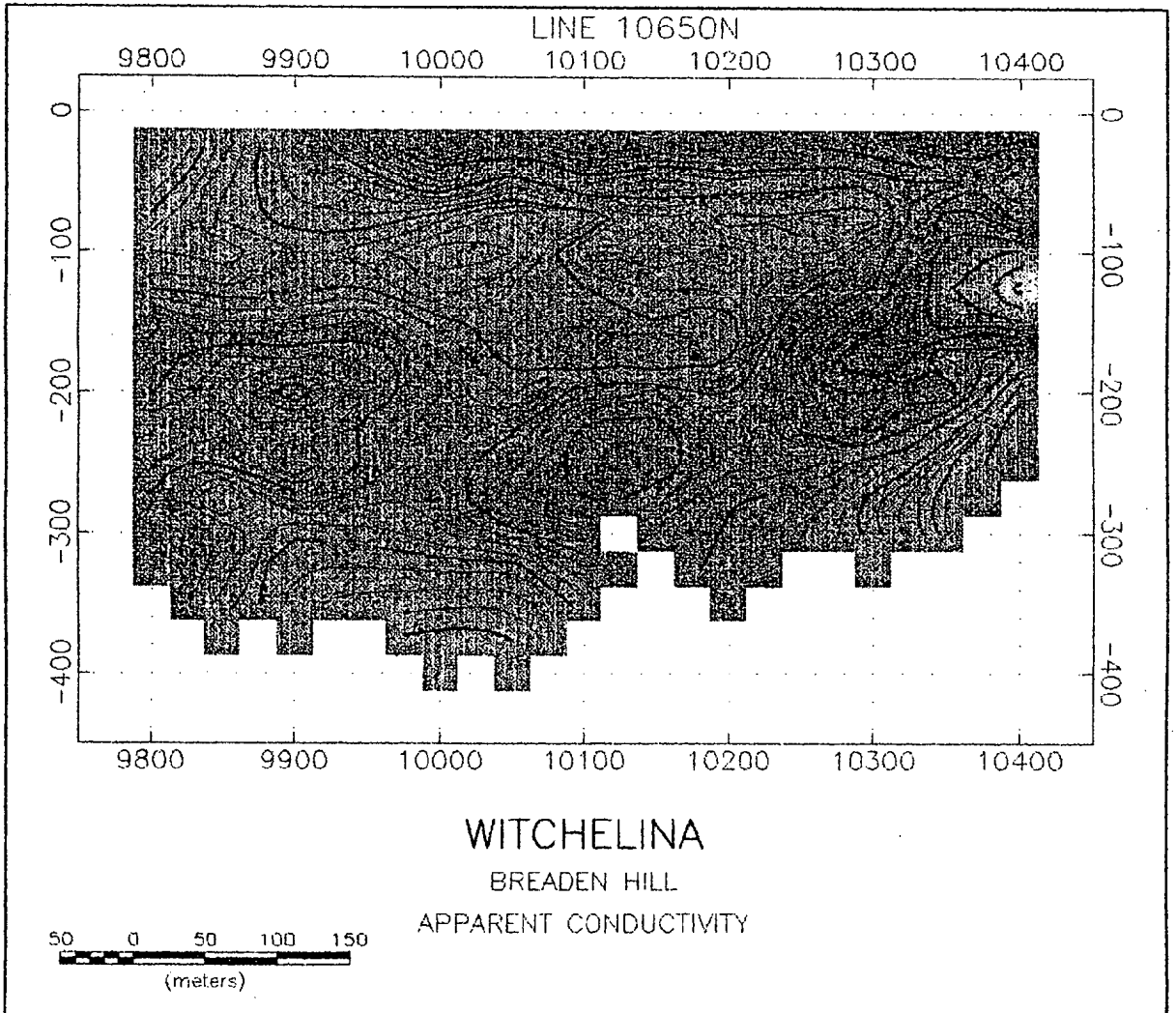
Distance Down Hole 10000.00

00171


LINE 10050N
9800
9900
10000
10100
10200
10300
10400
10500
0
-100
-200
-300
-400
WITCHELINA
BREADEN HILL
APPARENT CONDUCTIVITY
50 0 50 100 150
(meters)


LINE 10350N
9800
9900
10000
10100
10200
10300
10400
10500
0
-100
-200
-300
-400
12
WITCHELINA
BREADEN HILL
APPARENT CONDUCTIVITY
50
0
50
100
150
(meters)

00173


LINE 10650N
9800
9900
10000
10100
10200
10300
10400
0
-100
-200
-300
-400
WITCHELINA
BREADEN HILL
APPARENT CONDUCTIVITY
50
0
50
100
150
(meters)

00174

Appendix 1

Suvey Logistics Report

→ Brad / Perth.

00176

Logistic Report by Elizabeth Toolin for the Witchelina Area of South Australia from 25th April to 5th May 1994.

25.04.94-26.04.94 - Mobilisation from Mt Isa to Witchelina Field Camp, SA

26.04.94-30.04.94 - Grid 1 : West Wallouran South

Moving Loop, 100m x 100m, 50m stations.

Lines	Stations
9650N	9350E-10000E
9950N	9350E-10250E
10250N	9350E-10000E

Fixed Loop, 500m x 300m, 25m stations.

Loop Co-ordinates: 10700N ≈9260E
10700N 8950E
10200N 8950E
10200N 9250E

Lines	Stations
10300N	9300E-9800E
10600N	9275E-9800E

NB: The geometry for the fixed loop was not laid as originally designed. The loop front was approxiamately 10m East of the designed position due to gridding on rough topography.

30.04.94-01.05.94 - Grid 2 : Rooks

Moving Loop, 100m X 100m, 50m stations.

Lines	Stations
9650N	9700E-10300E
9950N	9700E-10300E
10250N	9700E-10300E

02.05.94-03.05.94 - Grid 3 : Breaden Hill

Down Hole, Hole Number MWRC9

100m x 100m loops, Loop1- 10m stations, Loop 2- 5m stations.

Loop 2 reading downhole and Loop 1 reading up the hole.

Moving Loop, 100m x 100m, 50m stations.

Lines	Stations
10050N	9800E-10500E
10350N	9800E-10500E
10650N	9800E-10450E

04.05.94-05.05.94 - Mobilisation from Marree Hotel, SA to Mt.Isa.

Brad George made on site decisions on loop design, lines to be read and the number of stations necessary. I was responsible for operating the Sirotem 3 System and made decisions as to the number of windows and stacks to take on each line. All field plots, notes and data were taken by Brad George at the completion of the survey back to Perth Office.

In summary over the seven days spent in the field we completed :

Lines - 11 (7.1 km)

Moving Loops - 130

Fixed Loops - 1

Downhole - 1 (with 2 loops)

EJ Tool

Elizabeth Toolin

M.I.M. EXPLORATION PTY LTD

(ACN 009 681 118)

TECHNICAL REPORT

No. 2704

TITLE:	**EL 1747 "WITCHELINA" ANNUAL & FINAL REPORT FOR THE YEAR ENDING OCTOBER 20, 1995.**
ISSUING DEPARTMENT:	**EXPLORATION**
AUTHOR:	**P.J. BINKS**
INVESTIGATIONS CONDUCTED BY:	**P.J. BINKS**
SUBMITTED BY:	**J. ANDERSON**
DATE:	**OCTOBER 1995**

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Approved for Distribution:

J. Anderson
Exploration Manager - Central Australia

KEY WORDS:

WILLOURAN RANGES

DIAPIRS

COPPER MINERALISATION

SIROTEM SURVEYS

RC DRILLING

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37278	Location Drill holes MWRC-13	1: 2,500

M.I.M. EXPLORATION PTY LTD

EL 1747 "WITCHELINA"

Final Report

October 20, 1995.

1. INTRODUCTION

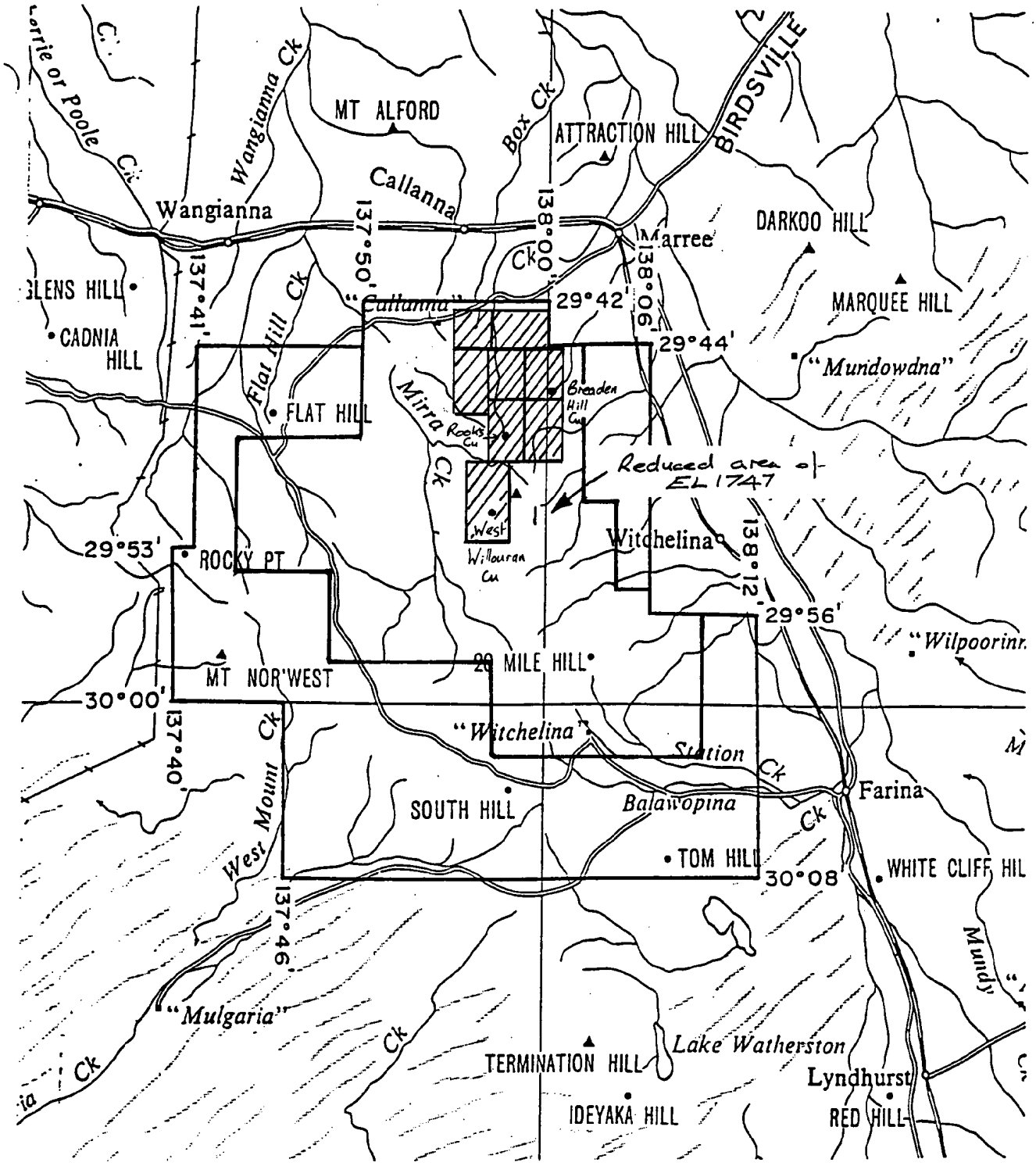
This report presents the results of the final year of exploration on this tenement by M.I.M. Exploration Pty Ltd (MIMEX). This work consisted of a review of all previous work and the drilling of one RC hole to test a Sirotem anomaly near the Breaden Hill Mine. After the completion of this work, it was decided to allow the Licence to expire on October 20, 1995.

2. LOCATION AND ACCESS

The Willouran Ranges are located to the south-west of Marree in the central-north of South Australia, approximately 600 km north of Adelaide. Access to the Licence is via a graded road from Farina to Witchelina Homestead and then via station tracks to water bores. Access from the north is via Callanna Station or a track from the Leigh Creek-Marree road to the Breaden Hill Copper Mine. Access into much of the Licence is poor and the eastern range of hills from Breaden Hill to Witchelina Homestead is accessible only on foot.

3. TENURE

Exploration Licence 1747 "Witchelina" was granted to Mount Isa Mines Limited on October 21, 1991 for a term of one year with an expenditure commitment of $155,000. The original Licence covered most of the Willouran Ranges south-west of Marree and was 1,958 km^2 in area. The Licence was extended for a further term of one year with the same expenditure commitment in September 1992. In September 1993, the Licence was extended for a further year but the area was reduced to 856 km^2. The tenement was extended for another year in September 1994 and allowed to lapse on October 20, 1995.



/// - area mapped at 1:5000

EL 1747 Mount Isa Mines Limited

SCALE 1:500.000

KILOMETRES 10 0 10 20 30 40 50 KILOMETRES

AREA: 856 square kilometres (approx.)

1:250000 PLANS: CURDIMURKA, MARREE, ANDAMOOKA, COPLEY

LOCALITY: WITCHELINA AREA – approx. 50 km south of Marree

1/7724

4. GEOLOGY

The Licence is located over the junction of the Curdimurka, Marree, Andamooka and Copley 1:250,000 sheets and there are considerable differences in interpretations of rock units and structural features between these sheets. The Curdimurka 1:250,000 sheet has only recently been published and shows the latest ideas on the geology of the area. The south-eastern part of this sheet is based on the Wangianna 1:100,000 provisional geological sheet, which is an excellent geological map. Remapping of the central-eastern part of this map by the author at a scale of 1:5,000 has broadly confirmed its validity.

Geologically, the area is an excellently exposed sequence of mainly shallow water clastics and carbonates of the Upper Proterozoic Adelaidean System. The type section of the upper part of the Callanna Group occurs in the northern part of the Licence.

Rather than go into details of the regional geology here, the reader is referred to:

* Bulletin 53 (1987). The Adelaide Geosyncline (compiled by WV Preiss)
* Explanatory Notes, Curdimurka - Sheet SH53-8, 1991 (GE Krieg et al)
* Stratigraphy and Tectonics Across The Torrens Hinge Zone Between Andamooka and Marree, South Australia

  Ph.D. Thesis, Adelaide University 1977. B Murrell

In addition, some notes on the geology and suggestions on controls of mineralisation are presented in S Carthews' Honours Thesis (Sedimentary Environs of Stratiform Copper Mineralisation in the Callanna Beds, Willouran Ranges, Flinders University 1975). Descriptions of diapirs and mechanisms of diapirism were given by W Fairburn in Envelope 1145 describing exploration by Carpentaria Exploration Company on SML 169 in 1968/69.

Details of sedimentology within the Licence area are given in Utah's reports on exploration in Envelope 2915 (EL 277) and 3507 (Els 461 and 850). Unfortunately, much of Utah's work was affected by an apparent disbelief in faulting or tectonic brecciation.

5. PREVIOUS EXPLORATION

Several companies have worked in the area but only Utah have drilled many exploration holes. Although Utah drilled 40 diamond holes for 9,160 metres and 139 percussion holes for 16,370 metres, all these holes were based on concepts of stratiform mineralisation and even the prospects they drilled may still have considerable potential for structurally controlled mineralisation.

The following table lists the companies and tenements previously held over the Licence area:-

Tenement	Company	SADME Envelope No.	Period
SML 65 & 70	Australian Selection (Pty.) Ltd.	389, 599	May 1964-Feb 1966
SML 111 & 114	Anaconda Aust, Inc.	637	June 1966-Dec 1966
SML 165	Noranda Aust. Ltd.	884	
SML 169 & 353	Carpentaria Exploration Co. Pty. Ltd.	1145, 1246	June 1963-Nov 1969
SML 368	Sunhill Corp. (Aust) Ltd.	1391	Dec 1969-July 1970
SML 390	Altarama Search Pty. Ltd.	1328	June 1970-June 1971
EL 52, 53	H. R. Gillespie	2289, 2290	Feb 1973-April 1973
EL 143	Dampier Mining Co. Ltd.	2436	July 1974-Aug 1975
EL 277, 461, 850	Utah Development Co.	2915, 3507	Dec 1976-July 1983
EL 1196	CRA Exploration Pty. Ltd.	5403	Dec 1983-Dec 1987
EL 1488	Demis Pty. Ltd	8024	May 1988-Aug 1989
EL 1544	BP Minerals Aust.		Nov 1988-May 1989

An excellent review of the exploration carried out before December 1983 is given in CRA's second quarterly report on EL 1196 (Envelope 5403). Since this date, CRA carried out bulk gravel sampling for diamond and rock chip sampling, for gold mineralisation. CRA did not drill any holes in the area during their four year tenure.

Demis carried out rock chip sampling in the Douglas Gully (West Willouran) area for gold mineralisation, but did not do any drilling. BP Australia also carried out geochemical exploration for gold mineralisation and also did not do any drilling.

During the first year of tenure of EL 1771, MIMEX carried out detailed 1:5,000 geological mapping over 130 km^2 around the Callanna, Dunns, Rooks, Boorloo and Breaden Hill copper prospects. Also, 362 gossan samples and 185 soil samples were collected. Three diamond drill holes were drilled for a total of 862 metres in the Boorloo, Breaden Hill area. The best intersection from this drilling was 6 metres x 1.02% Cu in MWD1.

During the second year of tenure, MIMEX carried out further geological mapping in the West Willouran district and drilled 1,205 metres of RC drilling in 12 holes at six locations. The best result was 8 metres at 1.0% Cu associated with carbonate and silica alteration of the host Tapley Hill Formation, 700 metres south-west of the Breaden Hill Mine.

In the third year of tenure, MIMEX undertook further geological mapping around the West Willouran Copper Mine, and gridding and Sirotem surveys at the West Willouran, Rooks and Breaden Hill prospects.

6. EXPLORATION completed by MIMEX in the year ending October 20, 1995

During the last year, all the exploration data has been reviewed and one RC hole drilled to test a Sirotem anomaly near the Breaden Hill Mine.

Drill hole MWRC-13 was drilled at 10450E on Sirotem line 10000N to test a conductor. The hole was declined 60° to the west and was drilled to a depth of 114.0m (see Drawing No. 37278 for drillhole location). The hole is approximately 500m due south of the Breaden Hill workings. Drilling was carried out by Budd Drilling using a Warman 1000 rig.

The hole intersected dark grey pyritic siltstones of the Tapley Hill Formation to 88.0m and then quartzite of the Serle Member to the end of the hole at 114.0m. Generally the pyrite content of the siltstones was less than 2% but increased to around 5% in several sections when it was accompanied by calcite veining. The siltstones appear to be bleached and dolomitised from 84.0m to 88.0m just above the contact with the Serle Member. The quartzites and siltstones of the Serle Member are recrystallised and are heavily quartz veined.

Representative two metre samples of the cuttings were assayed for Cu, Pb, Zn, Ag, Bi, Co, Ba, U and Au. Results were disappointing with only a few, very low order gold and arsenic values.

Appendix 1

Geological and Assay Log

MWRC-13

PROJECT: Witchelina

PROSPECT: Breaden Hill - 500m S of workings 10430E 10000N.

HOLE CO-ORD: 790600E 6702100N AMG.

M.I.M. EXPLORATION PTY.LTD.

ROTARY PERCUSSION DRILL LOG

open hole / reverse circulation

ROTARY : from ..... to .....

HAMMER : from 0 to 114m

MWRC-13

RL. COLLAR ..... m

INCLINATION 60°

DIRECTION W

SAMPLE No.	Cu	As	Au	DEPTH metres	LOG	DESCRIPTION	REMARKS	WATER
893251	106	30	0.02			Sandy soil + weathered pale grey brslst.		
2	32	14	<.02			Siltstone - slightly weathered, pale grey, frags of calcite with occasional xals py.	00193	
3	30	20	"					
4	32	6	"					
5	40	<2	"					
6	30	10	0.02	10				
7	36	4	<.02			Siltstone - massive; occasional diss^d py; occasional frags (upto ½cm) vein calcite + py. Generally < 2% py.		
8	34	18	"					
9	42	20	0.02					
60	30	12	<.02		py			
1	40	22	"	20				
2	38	26	"					
3	38	16	"					
4	32	18	0.02			approx^a 5% py		
5	32	14	<.02		py	-28-30m ~ 5% py		
6	42	20	0.02	30		-30-32m ~ 2% py		
7	34	14	<.02					
8	40	8	0.04		py	-32-34m ~ 5% py		
9	50	12	<.02			-34-38m 2 to 5% py		
70	40	12	"					
1	32	14	"	40				
2	74	14	"			-42-48m ~ 2% py		
3	58	22	0.02					
4	40	18	"					
5	54	14	"					
6	58	16	<.02	50				
7	74	10	"			-52-56m ~ 10% vein qtz with py		
8	60	14	"					
9	44	70	0.02					
80	70	16	"			-58-60m ~ 2% py.		
1	58	26	"	60				
2	68	12	<.02			-62-64m ~ 10% vein calcite		
3	54	22	"					
4	60	16	0.02			-66-68m ~ 10% vein calcite with py.		
5	68	6	<.02					
6	76	8	"	70		-70-74m ~ 5 to 10% py + vein calcite.		
7	78	16	"					
8	92	18	"			-76-78m ~ 10% vein calcite with py		
9	132	10	0.02					
90	96	6	"			-78-84m ~ 2% diss py.		
1	102	8	<.02	80				
2	36	20	0.02					
3	44	78	<.02			Dolomitised slst - pale grey with 2% diss^d py.		
4	92	10	0.02					
5	22	14	<.02			Vein qtz + ? recrystallised qtzite		
6	12	<2	0.04	90		? Recrystallised qtzite with 10% vein qtz - pale grey.		
7	16	30	0.02					
8	18	10	0.04					
9	64	10	<.02					
300	28	10	0.04					
1	16	10	<.02	100				
2	94	94	"					
3	82	8	"			Slst + qtzite - grey.		
4	132	4	"					
5	54	4	0.02					
6	16	4	"	110		Silicified slst with 20% vein qtz		
893307	18	46	"					
						EOH 114m. Samples also assayed for Pb, Zn, Ag, Bi, Co Ba + U. - all values low. See Analabs Rept No. - ADO 13101		

REASON FOR HOLE : To test a Sirotem anomaly.

OTHER DETAILS :

DRILL TYPE : Warman 1000	LOGGED BY : PB
DRILL CO. : Budd Drilling	DATE DRILLED : May 1995
SCALE : 1:500	PAGE : 1 of 1

Appendix 2

Assays

Analabs

Analabs Pty Ltd
ACN 004 591 664
16 Sunbeam Rd
Glynde SA 5070
Ph: (08) 336-5099
Fax: (08) 336-5564

John Anderson
M.I.M. Exploration Pty Ltd
13 Maple Ave
Forestville

SA 5035

Date Received : 01/06/95
Date Reported : 28/06/95

Job Number : AD013101
Order Number : 893251

Number of Samples: 57

Report Comprising: Cover Sheet
Pages 1 to 9

Witchelna
MWRC-13

Authorised by
On behalf of:

Keith Hand
Manager-Adelaide
ANALABS

This report relates specifically to the sample(s) tested in so far as that the sample(s) is truly representative of the sample source as supplied.

00196

Analabs

Analabs Pty. Ltd.
ACN 004 591 664
16 Sunbeam Rd, Glynde
South Australia 5070
Telephone: (61 8) 3365099
Facsimilie: (61 8) 3365564

Order No: 893251
Report Date: 28/06/95
Report Status: Preliminary
Page: 1 of 9

AD013101

ANALYTICAL DATA

Element	Au	Au:R	Au:S	As	Ba	U
893251	0.02	--	--	30	580	<3
893252	<0.02	--	--	14	560	4
893253	<0.02	--	--	20	520	<3
893254	<0.02	--	--	6	560	4
893255	<0.02	--	--	<2	520	<3
893256	0.02	--	--	10	530	<3
893257	<0.02	--	--	4	530	<3
893258	<0.02	--	--	18	570	<3
893259	0.02	--	--	20	530	<3
893260	<0.02	--	--	12	520	<3
893261	<0.02	--	--	22	530	4
893262	<0.02	--	--	26	560	<3
893263	<0.02	<0.02	--	16	570	<3
893264	0.02	--	--	18	470	<3
893265	<0.02	--	--	14	540	<3
893266	0.02	--	--	20	600	<3
893267	<0.02	--	--	14	490	4
893268	<0.02	--	--	8	530	<3
893269	0.04	--	--	12	520	<3
893270	<0.02	--	<0.02	12	540	<3
893271	<0.02	<0.02	--	14	560	4
893272	<0.02	--	--	14	510	<3
893273	0.02	--	--	22	530	<3
893274	0.02	--	--	18	600	6
893275	0.02	--	--	14	580	<3
Method	GG329	GG329	GG329	GX401	GX401	GX401
Units	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit	0.02	0.02	0.02	2	10	3

pm unless otherwise specified
= not analysed
= element not determined
= insufficient sample
= listed not received

Analabs
Analabs Pty. Ltd.
ACN 004 591 664
16 Sunbeam Rd, Glynde
South Australia 5070
Telephone: (61 8) 3365099
Facsimilie: (61 8) 3365564

Order No: 893251
Report Date: 28/06/95
Report Status: Preliminary
Page: 2 of 9

00197

Job No: AD013101

ANALYTICAL DATA

Element	Au	Au:R	Au:S	As	Ba	U
893276	<0.02	--	--	16	630	4
893277	<0.02	--	--	10	600	<3
893278	<0.02	--	--	14	560	<3
893279	0.02	--	--	70	640	6
893280	0.02	--	--	16	650	<3
893281	0.02	--	--	26	590	<3
893282	<0.02	--	--	12	490	<3
893283	<0.02	--	--	22	480	5
893284	0.02	--	--	16	450	7
893285	<0.02	--	--	6	560	6
893286	<0.02	--	--	8	640	4
893287	<0.02	--	--	16	560	<3
893288	<0.02	--	--	18	540	3
893289	0.02	--	--	10	460	3
893290	0.02	--	0.04	6	570	<3
893291	<0.02	--	--	8	460	8
893292	0.02	--	--	20	480	3
893293	<0.02	--	--	78	470	5
893294	0.02	--	--	10	220	<3
893295	<0.02	--	--	14	470	5
893296	0.04	--	--	<2	160	<3
893297	0.02	--	--	30	200	<3
893298	0.04	--	--	10	250	<3
893299	<0.02	--	--	10	180	<3
893300	0.04	--	--	10	350	<3

Method	GG329	GG329	GG329	GX401	GX401	GX401
Units	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit	0.02	0.02	0.02	2	10	3

Results in ppm unless otherwise specified
N.A. = not analysed
-- = element not determined
I.S. = insufficient sample
L.N.R. = listed not received

Analabs
Analabs Pty. Ltd.
ACN 004 591 664
16 Sunbeam Rd, Glynde
South Australia 5070
Telephone: (61 8) 3365099
Facsimilie: (61 8) 3365564

Order No: 893251
Report Date: 28/06/95
Report Status: Preliminary

00198

ıb No: AD013101

ANALYTICAL DATA

Element	Au	Au:R	Au:S	As	Ba	U
893301	<0.02	--	--	10	610	<3
893302	<0.02	--	--	94	220	<3
893303	<0.02	<0.02	--	8	340	<3
893304	<0.02	--	--	4	330	<3
893305	0.02	--	--	4	180	<3
893306	0.02	--	--	4	210	<3
893307	0.02	--	--	46	340	<3

Method	GG329	GG329	GG329	GX401	GX401	GX401
Units	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit	0.02	0.02	0.02	2	10	3

Results in ppm unless otherwise specified
N.A. = not analysed
- = element not determined
.S. = insufficient sample
.N.R = listed not received

Analabs
Analabs Pty. Ltd.
ACN 004 591 664
16 Sunbeam Rd, Glynde
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Facsimilie: (61 8) 3365564

Order No: 893251
Report Date: 28/06/95
Report Status: Preliminary

00199

Job No: AD013101

ANALYTICAL DATA

Element	Cu	Pb	Zn	Ag	Bi	Co
893251	106	50	76	<2	<20	25
893252	32	10	14	<2	<20	10
893253	30	5	8	<2	<20	15
893254	32	<5	8	<2	<20	15
893255	40	<5	8	<2	<20	15
893256	30	<5	6	<2	<20	15
893257	36	<5	<4	<2	<20	15
893258	34	<5	6	<2	<20	15
893259	42	<5	8	<2	<20	15
893260	30	<5	6	<2	<20	15
893261	40	<5	8	<2	<20	15
893262	38	<5	<4	<2	<20	20
893263	38	<5	<4	<2	<20	15
893264	32	<5	6	<2	<20	10
893265	32	<5	<4	<2	<20	10
893266	42	<5	<4	<2	<20	20
893267	34	<5	<4	<2	<20	15
893268	40	<5	<4	<2	<20	15
893269	50	<5	<4	<2	<20	20
893270	40	<5	<4	<2	<20	30
893271	32	<5	<4	<2	<20	10
893272	74	5	<4	<2	<20	30
893273	58	<5	<4	<2	<20	20
893274	40	<5	<4	<2	<20	10
893275	54	5	<4	<2	<20	15

Method	GA101	GA101	GA101	GA101	GA101	GA101
Units	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit	4	5	4	2	20	5

Results in ppm unless otherwise specified
N.A. = not analysed
-- = element not determined
I.S. = insufficient sample
L.N.R. = listed not received

Analabs
Analabs Pty. Ltd.
ACN 004 591 664
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Order No: 893251
Report Date: 28/06/95
Report Status: Preliminary
Page: 5 of 9

00200

ANALYTICAL DATA

b No: AD013101

Element	Cu	Pb	Zn	Ag	Bi	Co
893276	58	<5	<4	<2	<20	15
893277	74	<5	<4	<2	<20	20
893278	60	10	<4	<2	<20	15
893279	44	5	8	<2	<20	30
893280	70	5	16	<2	<20	30
893281	58	<5	<4	<2	<20	20
893282	68	5	<4	<2	<20	20
893283	54	5	<4	<2	<20	20
893284	60	10	4	<2	<20	15
893285	68	5	<4	<2	<20	15
893286	76	10	<4	<2	<20	15
893287	78	15	10	<2	<20	10
893288	92	5	<4	<2	<20	30
893289	132	5	<4	<2	<20	15
893290	96	5	<4	<2	<20	10
893291	102	10	<4	<2	<20	10
893292	36	5	<4	<2	<20	20
893293	44	<5	<4	<2	<20	25
893294	92	<5	<4	<2	<20	20
893295	22	<5	<4	<2	<20	35
893296	12	<5	<4	<2	<20	10
893297	16	<5	<4	<2	<20	5
893298	18	<5	<4	<2	<20	95
893299	64	<5	<4	<2	<20	95
893300	28	<5	<4	<2	<20	130
Method	GA101	GA101	GA101	GA101	GA101	GA101
Units	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit	4	5	4	2	20	5

Results in ppm unless otherwise specified
N.A. = not analysed
-- = element not determined
I.S. = insufficient sample
L.N.R. = listed not received

Analabs
Analabs Pty. Ltd.
ACN 004 591 664
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South Australia 5070
Telephone: (61 8) 3365099
Facsimilie: (61 8) 3365564

Order No: 893251
Report Date: 28/06/95
Report Status: Preliminary

00201

Job No: AD013101

ANALYTICAL DATA

Element	Cu	Pb	Zn	Ag	Bi	Co
893301	16	<5	<4	<2	<20	70
893302	94	15	6	<2	<20	115
893303	82	<5	<4	<2	<20	15
893304	132	<5	<4	<2	<20	10
893305	54	<5	<4	<2	<20	10
893306	16	<5	<4	<2	<20	15
893307	18	<5	<4	<2	<20	20

Method	GA101	GA101	GA101	GA101	GA101	GA101
Units	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit	4	5	4	2	20	5

Results in ppm unless otherwise specified
N.A. = not analysed
= element not determined
= insufficient sample
L.N.R. = listed not received

Analabs
Analabs Pty. Ltd.
ACN 004 591 664
16 Sunbeam Rd, Glynde
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Facsimilie: (61 8) 3365564

Order No: 893251
Report Date: 28/06/95
Report Status: Preliminary
Page: 7 of 9

00202

ANALYTICAL DATA

b No: AD013101

Element	Mo
893251	20
893252	<10
893253	<10
893254	<10
893255	<10
893256	<10
893257	<10
893258	<10
893259	10
893260	<10
893261	<10
893262	<10
893263	<10
893264	10
893265	<10
893266	<10
893267	<10
893268	<10
893269	<10
893270	<10
893271	<10
893272	<10
893273	<10
893274	<10
893275	<10

Method	GA101
Units	ppm
Detection Limit	10

Results in ppm unless otherwise specified
N.A. = not analysed
-- = element not determined
I.S. = insufficient sample
L.N.R. = listed not received

Analabs
Analabs Pty. Ltd.
ACN 004 591 664
16 Sunbeam Rd, Glynde
South Australia 5070
Telephone: (61 8) 3365099
Facsimilie: (61 8) 3365564

Order No: 893251
Report Date: 28/06/95
Report Status: Preliminary
Page: 8 of 9

00203

Job No: AD013101

ANALYTICAL DATA

Element	Mo
893276	<10
893277	<10
893278	<10
893279	<10
893280	<10
893281	<10
893282	<10
893283	<10
893284	<10
893285	<10
893286	<10
893287	<10
893288	<10
893289	<10
893290	<10
893291	<10
893292	<10
893293	<10
893294	<10
893295	<10
893296	20
893297	20
893298	10
893299	20
893300	10

Method	GA101
Units	ppm
Detection Limit	10

Results in ppm unless otherwise specified
N.A. = not analysed
-- = element not determined
I.S. = insufficient sample
L.N.R. = listed not received

00204

Order No: 893251
Report Date: 28/06/95
Report Status: Preliminary
Page: 9 of 9

Analabs
Analabs Pty. Ltd.
ACN 004 591 664
16 Sunbeam Rd, Glynde
South Australia 5070
Telephone: (61 8) 3365099
Facsimilie: (61 8) 3365564

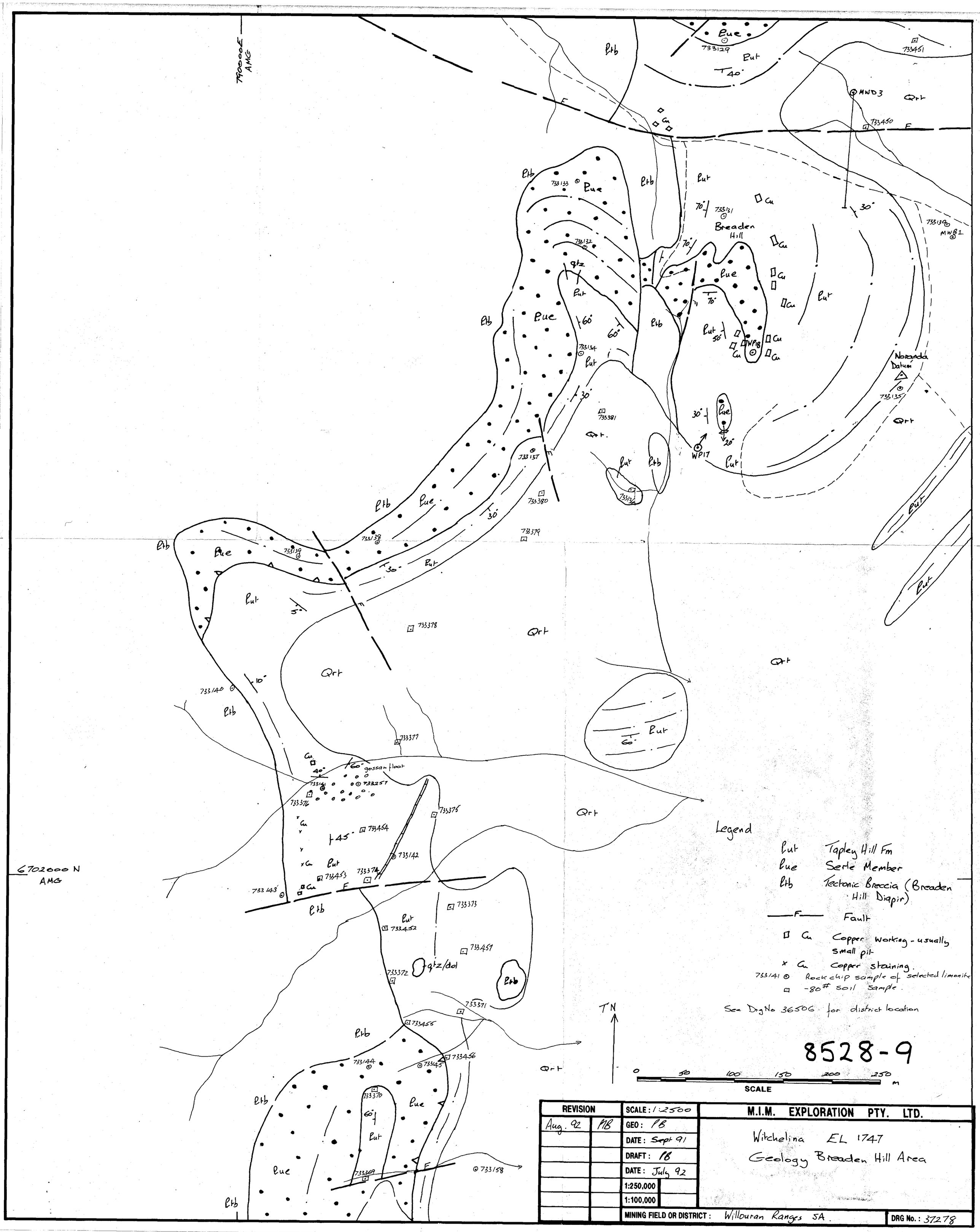
ANALYTICAL DATA

Job No: AD013101

Element	Mo
893301	<10
893302	<10
893303	<10
893304	<10
893305	<10
893306	<10
893307	20

Method	GA101
Units	ppm
Detection Limit	10

Results in ppm unless otherwise specified
N.A. = not analysed
-- = element not determined
I.S. = insufficient sample
L.N.R. = listed not received


790000E AMG
6702000 N AMG
Breaden Hill
Noranda Datum
MWD3
MWB1
WP18
WP17
gossan float
qtz/dol
Legend
Put Tapley Hill Fm
Pue Serle Member
Ptb Tectonic Breccia (Breaden Hill Diapir)
F Fault
Cu Copper working - usually small pit
× Cu Copper staining.
733141 Rock chip sample of selected limonite
-80# soil sample.
See Drg No 36506 for district location
TN
0 50 100 150 200 250 m
SCALE
8528-9
REVISION
Aug. 92 MB
SCALE: 1:2500
GEO: PB
DATE: Sept 91
DRAFT: PB
DATE: July 92
1:250,000
1:100,000
M.I.M. EXPLORATION PTY. LTD.
Witchelina EL 1747
Geology Breaden Hill Area
MINING FIELD OR DISTRICT: Willouran Ranges SA.
DRG No.: 37278