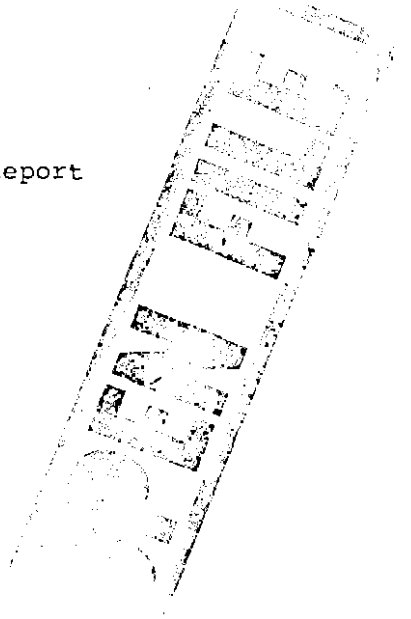
EXPLORATION LICENCE 6/88 & 34/85

I N D E X



EXPLORATION LICENCE 6/88 MT. HOLLOWAY & EL 34/85 MT BOLTON
QUARTERLY REPORT TO 31ST MARCH, 1989

During the quarter, a grid was established around the Copper Reward workings North of the Toner River and South West of Mt. Bolton. The grid straddles this Exploration Licence and 34/85. The costs incurred for the quarter have been shared equally between the exploration licence and 34/85.

Grid Outline

A grid was established parallel to the strike of the rocks (035 magnetic) with grid lines 100 metres apart, 800 metres in length and with a width of 500 metres. The ridges are coverd with low scrub but the lower country is covered with thick scrub mainly bavera, ti-tree, cutting grass and stunted eucalyptus. The grid location is shown in Fig 1. in the attached report.

Soil and Rock Chip Samples

Soil samples and ,where they were available, rock chip samples, were taken every 25 metres along the grid lines. Lines M & J were extended South East past two old adits and lines K and L were extended North West into open country up to an inferred dolerite dyke which is covered with a line of trees and scrub.

After analysis of the initial samples, some of the lines were extended by a few points and some samples taken on intermediate grid lines to confirm the actual anomalous gold values in the soil.

Samples were taken every 50 metres along an open quartz gravel ridge which runs from the flanks of Mt. Bolton down towards the Toner River to intersect the mineralization trend reported by L.K. Ward in 1911. The ridge is marked on Fig. 1.

On the North East flank of Mt. Vero there is evidence from the air of soil discoloration. Random samples were taken over the accessible parts of the plant and terrace above the Toner River including an old adit. The sites with anomalous gold values are shown in Fig.1.

Soil and Rock Chip Results

The first samples collected were analysed for gold, copper and arsenic. There is little correlation between gold and copper or gold and arsenic Elevated gold values have attendant higher arsenic values but there is no halo of elevated arsenic values. Also arsenic values may be elevated without any attendant increase in gold values.

It was decided that for confirmatory or infill sampling only gold would be analysed for and in any new areas gold, copper and arsenic would be anaylsed for.

Lead, zinc and barium were analysed for in a few samples to see if they correlated with gold or copper but there is no correlation in the soil samples but there appears to be correlation in the rock samples for lead and zinc but not barium.

Some samples were analysed for tin and chromium to check whether the gold could be a tertiary gravel residual as previous work had established higher than expected cerium and lanthanum values in stream

sediments. Tin and Chromium were uniformly low and well below average composition (Tin average 3ppm observed, crustal composition 40 ppm, chromium average 11 ppm observed, crustal compostiion 200 ppm).

It appears that the observed anomalous gold values are due to the unerlying rocks and these values are shown in figure 8.

Geophysics:

Each of the grid lines was measured for its Magnetic and Self Potential response and some were measured for their Very Low Frequency Radio wave response. The details are in the attached geophysics report by Mitre Geophysics. Three short drill holes have been recommended to test one of the magnetic anomalies and the self potential anomaly.

Future Work:

An access track will be cut South from the end of the Sumac Road to the grid to enable foot access during winter for the driller to assess the drill sites and to enable the V.L.F. geophysics to be completed.

If in the driller's assessment the drill rig and ancillary equipment can be skidded in, the Department of Main Roads will survey the proposed Link Road corridor from Sumac 15 to the grid in September. The three holes will be drilled in October and at the same time an Induced Polarization survey will be carried out to locate any disseminated sulphide bodies.

Down hole E.M. on the drill holes will be carried out if there is any indication of sulphide ore or precious metals in the core.

Further gridding, soil sampling, Magnetic surveys, Self Potential surveys, V.L.F. Radio Wave surveys and Induced Polarization surveys will depend on the results of the drilling.

From the air there are many areas of apparent soil discolouration which indicate mineralization. It is likely that anomalous gold values will be found at most of these sites. The major fault systems and especially fault intersections need to be carefully assessed as well. The faults are often under a dense cover of trees and scrub so soil sampling will be a fairly tedious undertaking.

Previous aero magnetic work indicated a number of magnetic highs over the area but of nowhere near the magnitude determined in the grid. It is likely that the smoothing produced magnetic highs which bear little relationship to the complex pattern measured over the grid and hence follow up work carried out by previous tenement holders could easily have missed the magnetic anomalies on the ground.

B.R. HARRISON

10:40

003 APPENDIX 2

629004

SYDNEY
ANALYTICAL
LABORATORIES

ANALYTICAL REPORT

JOB NO: SAL 39B
CLIENT ORDER: ZGT0159

METHOD OF PREPARATIONS AND ANALYSIS USED

GP4	Sample is dried, hand pummelled if necessary and sieved at 80 mesh. Minus fraction analysed. Oversize retained.
G1	Aqua Regia digestion - 20g sample. Determined by AAS.
G2(B)	Nitric/Perchloric digestion - Base Metals. Determined by AAS.
G2(H)	Nitric/Perchloric digestion - Hydride Elements. Determined by AAS.

1 x 6

629005

004

BRIAN

L & M

RON HANSEN

LABORATORY COPY

No of Samples: _____

Type of Samples: SOILS / ROCKS

Rel No: SAL 0021

Date In: 17/1/89

Date Required: _____

Date Completed: _____

Analysis / Sample No(s)		ppb Au	ppm Cu	ppm As	ppb chk Au			ppb Au	ppm Cu	ppm As	ppb chk Au
SOILS -212μ C1		4	4	1.0		D4		5	2	<0.5	
2		7	3	<0.5		5		3	3	1.0	
3		3	3	1.0		6		3	2	0.5	
4		3	2	1.0		7		5	3	<0.5	
5		5	3	<0.5		8		2	2	↓	
6		3	8	<0.5		9		1	2	↓	
7		4	4	0.5		10		76	3	3.5	(92)
8		4	3	1.0		11		2	2	<0.5	
9		6	4	1.0		12		2	3	↓	
10		4	3	1.5		13		4	4	↓	
11		5	2	<0.5		14		8	2	1.0	
12		4	2	1.0		15		4	3	0.5	
13		3	2	0.5		16		2	3	0.5	
14		6	3	<0.5		17		52	3	4.0	(49)
15		2	2	2.0		18		60	3	3.0	(60)
16		6	4	1.0		19		7	3	<0.5	
17		6	3	0.5		20		4	5	1.0	
18		2	3	1.0		21		4	5	2.0	
19		<1	2	<0.5		E1		3	3	3.0	
20		2	3	1.0		2		3	4	1.5	
21		6	4	0.5		3		4	8	1.0	
D1		2	2	0.5		4		3	4	<0.5	
2		4	15	<0.5		5		1	4	1.5	
3		9	3	↓		6		2	5	1.5	
Blk		—	<1	↓		Std		320	2200	870	
LLD		1	1	0.5	1			1	1	0.5	1
METHOD		D1	D2(B)	D2(H)	D1			D1	D2(B)	D2(H)	D1
PREP		SP4	SP4	SP4	SP4			SP4	SP4	SP4	SP4

Chief Chemist

005

629006

2×6

L.M

RON HANSEN

LABORATORY COPY

No of Samples _____

Type of Samples SOILS / ROCKS

Ref No SAR 0021

Date In 17/1/89

Date Required _____

Date Completed _____

Analysis / Sample No(s)	Ppb Au	Ppm Cu	Ppm As	ppb Chk Au		Ppb Au	Ppm Cu	Ppm As	ppb Chk Au
SOILS -2124									
E7	3	4	1.0		F10	2	3	3.0	
8	6	5	<0.5		11	10	16	8.5	
9	3	3	0.5		12	7	8	1.5	
10	11	254	1.0		13	5	4	1.0	
11	7	152	<0.5		14	3	3	0.5	
12	2	7	↓		15	4	2	<0.5	
13	4	5			16	2	4	0.5	
14	3	4			17	4	4	↓	
15	6	8			18	4	5		
16	6	3	0.5		19	3	4		
17	2	2	0.5		20	2	3	↓	
18	5	4	1.0		21	26	7	1.0	(26)
19	1	3	<0.5		G1	2	4	<0.5	
20	2	5	0.5		2	2	2	1.0	
21	2	3	<0.5		3	4	7	<0.5	
F1	4	4	↓		4	5	4	↓	
2	7	2			5	4	6		
3	3	10	0.5		6	3	5	↓	
4	3	5	1.0		7	3	3	1.5	
5	6	44	2.0		8	7	4	1.0	
6	5	4	1.5		9	12	3	0.5	
7	5	3	1.0		10	9	4	1.0	
8	2	2	1.0		11	3	5	<0.5	
9	2	3	0.5		12	10	4	0.5	
Blk	-	<1	<0.5		Std	930	2130	870	

_____

Chief Chemist

006

629007

3x 6

Lo M
RON HANSEN

LABORATORY COPY

No of Samples _____

Type of Samples SOILS / LOCKS

Ref No SAL 0021

Date In 17/1/89

Date Required _____

Date Completed _____

Analysis / Sample No(s)		ppb Au	ppm Cu	ppm As	ppb chk Au		ppb Au	ppm Cu	ppm As	ppb chk Au
G 13		3	4	1.5		H16	1	5	0.5	
14		5	4	<0.5		17	7	3	↓	
15		4	4	1.0		18	4	3		
16		3	4	1.0		19	<1	5	1.0	
17		7	3	3.0		20	2	2	0.5	
18		22	5	3.0		21	1	2	0.5	
19		175	9	6.5	165	H(0)	4	4	1.0	
20		9	3	1.0		(-1)	3	6	<0.5	
21		6	6	2.5		(-2)	5	4		
H1		3	3	3.5		(-3)	2	3		
2		5	18	11		(-4)	6	5		
3		2	3	1.5		(-5)	4	6	↓	
4		<1	4	1.0		(-6)	2	3	1.0	
5		3	3	1.5		(-7)	7	4	0.5	
6		5	2	2.0		(-8)	2	4	1.5	
7		3	4	0.5		(-9)	2	7	0.5	
8		7	5	<0.5		(-10)	2	2	<0.5	
9		2	4	1.5		(-11)	1	3		
10		6	3	1.0		(-12)	3	2		
11		7	2	2.0		S1	<1	4	↓	
12		7	3	0.5		2	2	3	1.0	
13		8	4	2.0		3	3	2	1.0	
14		4	4	1.0		4	4	4	1.0	
15		4	2	1.0		5	6	2	0.5	
Bk		—	<1	<0.5		Std	830	2210	900	

Chief Chemist

007 629008 4x6

LABORATORY COPY

L+M
RON HANSEN

No of Samples _____

Type of Samples SOILS / ROCKS

Ref No SAL 0021

Date In 17/1/89

Date Required _____

Date Completed _____

Analysis / Sample No(s)		Ppb Au	Ppm Cu	Ppm As	Ppb chk Au		Ppb Au	Ppm Cu	Ppm As	Ppb chk Au
J6		6	3	0.5		J(-6)	6	3	1.0	
J7		5	2	↓		(-7)	1	2	0.5	
J8		2	2			(-8)	3	4	1.0	
J9		3	1			(-9)	1	10	4.0	
J10		— NO	SAMPLE	—		(-10)	2	3	<0.5	
J11		3	3	1.0		(-11)	9	4	1.0	
12		3	2	0.5		K1	3	4	1.5	
13		7	4	<0.5		2	3	3	0.5	
14		5	3	0.5		3	<1	3	↓	
15		1	2	1.0		4	5	5		
16		4	2	↓		5	4	6	1.0	
17		9	3			6	3	3	1.0	
18		3	2	0.5		7	2	2	1.5	
19		3	3	1.0		8	2	3	0.5	
20		8	4	↓		9	4	3	<0.5	
21		4	2			10	2	<1	0.5	
22		5	2	<0.5		11	— NO	SAMPLE	—	
23		3	5	0.5		12	— NO	SAMPLE	—	
J(C)		2	4	0.5		13	— NO	SAMPLE	—	
(-1)		5	3	1.0		14	3	1	1.0	
(-2)		4	4	↓		15	2	2	0.5	
(-3)		<1	5			16	5	4	0.5	
(-4)		2	6	↓		17	2	3	1.0	
(-5)		5	4	<0.5		18	<1	3	0.5	
Blk		—	<1	<0.5		Std	860	2210	900	

Chief Chemist

008

629009

5x6

LaM

LABORATORY COPY

No of Samples _____

Type of Samples SOILS / ROCKS

Ref No SAL 0021

Date In 17/1/89

Date Required _____

Date Completed _____

Analysis / Sample No(s)		Ppb Au	Ppm Cu	Ppm As	Ppb Chk Au			Ppb Au	Ppm Cu	Ppm As	Ppb Chk Au
K19		4	3	2.0			L19	3	4	1.0	
20		3	3	1.5			20	5	4		
21		6	5	1.0			21	4	3		
22		2	4	2.0			22	6	4		
23		5	6	0.5			23	2	2	<0.5	
24		4	4	1.0			24	5	3	<0.5	
L1		5	3	<0.5		EXTRA					
2		3	4				C11	7	3	0.5	
3		2	4				E10	3	12	0.5	
4		5	5			ADIT	H(-5)	55	1250	10	55
5		8	4				K/L(-1)	3	4	1.0	
6		7	3	0.5			F/E13	125	65	8.5	125
7		4	4	<0.5							
8		3	4			ROCKS					
9		1	2				F5	9	14	4.5	
10		2	5				F21	3	8	1.5	
11		<1	4	1.0			G10	5	10	<0.5	
12		6	6	1.0			G11	5	6	<0.5	
13		5	4	0.5			G13	2	10	0.5	
14		5	3	<0.5			G19	82	6	8.0	
15		3	2	0.5			H(-5)	ADIT 70	285	20	
16		5	3				J(-11)	7	16	5.0	
17		2	3				K/L(-1)	4	27	18	
18		4	5								
Bk		-	<1	<0.5							

Chief Chemist

629010

009

6x6

L & M

LABORATORY COPY

No of Samples _____

Type of Samples Soils / Rocks

Ref No SAL 0021

Date In 17/1/89

Date Required _____

Date Completed _____

Analysis / Sample No(s)		ppb Au	ppm Cu	ppm As	ppb dk Au			ppb Au	ppm Cu	ppm As	ppb dk Au
Rocks ADIT 1/1		170	8.2%	22			K-5/-7	5	7	<0.5	
1/2		170	35.5%	43			L6	1650	10	↓	
2/1		3	1150	8.5			L5	13	8		
2/2		8	150	3.5							
2/3		5	198	3.5		DUPS					
3/1		250	6.3%	30			D3	7	3	<0.5	
3/2		4~	3.6%	12			E6	4	4	1.5	
3/3		210	9.2%	19			F9	2	3	1.0	
3/4		135	6.3%	16			G12	7	4	1.0	
J23/K23		37	145	9.0			H15	4	1	0.5	
KL 24/~		3	338	6.5			J5	6	4	0.5	
SHAFT 1		3	2400	11			J(-5)	4	3	<0.5	
							K18	2	3	↓	
STREAM SEDIMENTS							L18	3	5		
-425µm 316		7	10	<0.5		S/S	L5	13	7	↓	
317		2	11								
318		2	10								
319		<1	9								
320		3	7								
321		4	9								
G20/21		6	5								
H3/2		3	4								
H20/21		3	4								
J17/18		4	4								
J19		3	6	↓							

NOTE Au -425µm weighted for Au (Stream Sediments only)

Chief Chemist

EXTRA ANALYTES

010

BRIAN

629011

L & M

RON HANSEN

LABORATORY COPY

No of Samples _____

Type of Samples SOILS / ROCKS

Ref No SAL 0021 (B)

Date In 17/1/89

Date Required _____

Date Completed _____

Analysis / Sample No(s)		ppm Pb	ppm Zn	ppm Ba	ppm Sn	ppm Cr					
SOILS D9		6	12	230	3	//					
10		7	14	215	4	//					
11		6	8	120	2	//					
16		4	8	110	<2	//					
17		7	4	115		//					
18		6	6	110		//					
19		6	5	110		//					
E9		8	4	140		//					
10		7	4	165		//					
11		11	10	265		//					
12		11	5	320		//					
F20		4	3	170		//					
21		5	4	185		//					
G17		4	4	130	2	//					
18		4	4	165	<2	//					
19		6	5	165	<2	//					
20		6	8	250	2	//					
ADIT H(-5)		63	34	85	4	//					
F/E 13		7	13	175	3	//					
ROCKS G19		6	40	385	2	//					
ADIT H(-5)		40	31	75	4	//					
J23/K23		22	17	375	<2	//					
KL24/2		52	29	610	3	//					
Std		455	1570	600	120	//					
LLD		2	1	5	2	2					
METHOD											
PREP		SP4	SP4	SP4	SP4	SP4					

Chief Chemist

011

629012 L&M

RON HANSEN.

LABORATORY COPY

No of Samples _____

Type of Samples SOILS / ROCKS

Ref No SAL 0021 (B)

Date In 17/1/89

Date Required _____

Date Completed _____

Analysis / Sample No(s)		Pb	Zn	Ba	Sn	Cr					
S/S G20/21		//	//	//	<2	6					
H3/2		//	//	//		4					
H20/21		//	//	//		5					
J17/18		//	//	//		7					
J19		//	//	//		6					
J(-8/-7)		//	//	//		9					
L0		//	//	//		2					
L5		//	//	//	6	50					

_____

Chief Chemist

BRIAN

012

629013

RON HANSEN

LABORATORY COPY

No of Samples _____

Type of Samples SOILS / ROCKS

Ref No SAM 0039 (A)

Date In 8/3/89

Date Required _____

Date Completed _____

OU AREA.

Analysis / Sample No(s)		Ppb Arr	Ppb chk Arr					Ppb Arr	Ppb chk Arr		
SOILS C/D 10		2				F/G 12		4			
16		4				17		4			
17		4				18		7			
18		8				19		2			
19		(12)				20		3			
D/E 9		41				21		(28)	(26)		
10		6				22		4			
11		2				G/H 8		5			
17		(16)				9		8			
18		(12)				10		7			
19		6				11		2			
E/F 9		4				12		8			
10		8				13		4			
11		9				17		5			
12		5				18		5			
13		3				19		4			
14		(22)	(20)			20		7			
15		7				21		6			
20		5				J/K 23		3			
21		(13)				24		13			
22		(10)				25		5			
23		7				26		8			
F/G 10		6				27		4			
11		3				28		2			
Blk		—				Std		810			
LLD		1	1					1	1		
METHOD		G1	G1					G1	G1		
PREP		GP4	GP4					GP4	GP4		

_____

Chief Chemist

013

629014 Lo M

LABORATORY COPY

No of Samples _____

Type of Samples SOILS / ROCKS

Ref No SAC 0039 (A)

Date In 8/3/89

Date Required _____

Date Completed _____

	Analysis / Sample No(s)	Ppb Au	Ppb Check Au					Ppb Au	Ppb Check Au
SOILS	J/K 29	3				10		(110)	(95)
	K/L 23	4				11		4	
	24	4				12		3	
	25	2				13		8	
	M/N 0	<1				14		6	
	E 0	7			H(5)	ADIT ENTRANCE	FLOOR	4	
	-1	2				HOLE	FLOOR	5	
	-2	2				MIDDLE	FLOOR	7	
	F 11	(80)	(93)	ADIT FLOOR		HOLE	SURFACE	4	
	22	6				ENTRANCE	SURFACE	2	
	23	(14)				MIDDLE	SURFACE	3	
	G 22	5							
	23	2				EXTRAS			
	24	3				UNMARKED		2	
	K29	4				J/K 26/27 "STREAM"		5	
MOUNT BOLTON/ TONER RIDGE	1	6	50	multi elem					
	2	(15)				ROCKS			
	3	3				C/D	10	4	
	4	<1				D/E	9	3	
	5	4					10	5	
	6	4					11	4	
	7	5				E/F	9	4	
	8	2					10	6	
	9	(85)	(85)				12	5	
	Bk	-					Std	910	

Chief Chemist

LABORATORY COPY

No of Samples _____

Type of Samples SOILS/ROCKS

Ref No SAL 0039 (A)

Date In 8/3/89

Date Required _____

Date Completed _____

Analysis / Sample No(s)	Ppb Au	Ppb Check Au				Ppb Au	Ppb Check Au		
E/F 14	(31)	(28)			K29	<1			
15	3			MT BOSTON/TONER RIDGE	1	3			
F/G 10	8				2	7			
11	(42)	(50)			5	2			
17	3				7	<1			
19	<1			HS ADIT	MIDDLE SURFACE	5			
20	3				HOLE SURFACE	6			
22	4				UNMARKED	3			
G/H 18	5								
19	5				ROCKS ONLY				
20	5				K1	3			
21	7				K24	<1			
J/K 23	2				J/K0	<1			
24	13			HS ADIT	+150m	7			
25	3				+300m	5			
27	3				WALL ROCK HOLE	2			
28	6								
29	11				STREAM SEDIMENTS				
K/L 23	6			-425µ	E-2	6			
24	4				F/G 17	(18)			
M/N C	7				G/H 20/21	9			
E-2	4				J0	7			
F 22	5				J8	4			
23	4				L0	3			
Blk	—				Sil	870			
					NOTE	ALL -425µ weighed for Au			
						(Stream Sediments Only)			

Chief Chemist

015

629016

4x4

LABORATORY COPY

No of Samples _____

Type of Samples SOILS / ROCKS

Ref No SAL 0039 (A)

Date In 8/3/89

Date Required _____

Date Completed _____

Analysis / Sample No(s)		Ppb Au	Ppb Check Au								
4MO		(75)									
MO BANK		4									
MO STREAM		4									
DUPS											
F/G 11		3									
J/K 28		4									
MB/TR 9		(85)									
14		7									
ROCK E/F12		6									
F23		3									
S/S LO		2									
MO STREAM		4									

Chief Chemist

016

629017

L & M
RON HANSEN

LABORATORY COPY

No of Samples _____

Type of Samples SOILS / ROCKS

Rel No SAL 0039 (B)

Date In 8/3/89

Date Required _____

Date Completed _____

NEW AREA NORTH FLANK MT. VIERO.

Analysis / Sample No(s)		Au ppb FA	Cu ppm	As ppm	Au ppb dk			Au ppb FA	Cu ppm	As ppm	Au ppb dk
SOILS 2/3/1		10	5				11 FLOAT	4	15		
2		6	3				12	4	18		
3		7	3			DRY STREAM	17	3	11		
5		8	4				18	12	10		
6		5	3				19	2	14		
9		9	4								
10		11	2				ROCKS ONLY				
10	RIDGE	2	3								
TONER/ADIT 11	FLOOR	3	10				2/3/11	4	5		
11	WALL	7	8				2/3/12	4	15		
14		4	2				2/3/15	6	7		
17		6	2				DYKE	11	8		
DRY STREAM 17		3	4			CK MAIN STREAM		3	8		
18		(200)	3		210						
19		4	3			STREAM SEDIMENTS					
							2/3/4	6	4		
ROCKS							2/3/8	<1	3		
2/3/1		4	12				2/3/8 MAIN CLOCK	<1	<1		
3		4	7				2/3/12	3	2		
5		3	5				2/3/16	5	1		
6		6	26				2/3/7 TONER TUB	7	1		
9		4	14			DUPS					
10		5	10				2/3/19	4	4		
10	RIDGE	3	6			ROCK	2/3/10	3	10		
Blk		—	<1			SS	2/3/12	2	3		
							Std	910	2250		
LLD		1	1	0.5	1						
METHOD		G1	G2(B)	G2(-)	G1		NOTE	ALL -425m weighted for Au			
PREP		GP4	GP4	GP4	GP4			(Stream Sediments Only)			

Chief Chemist

GILFILLAN ASSOCIATES PTY LIMITED

CONSULTING GEOLOGISTS

(Incorporated in New South Wales)

PETROLOGY IN ASSOCIATION WITH DR. B.J. BARRON

9th Floor, 275 Alfred Street,
North Sydney, N.S.W., 2060
Australia

Postal Address:
P.O. Box 422,
Lane Cove, N.S.W., 2066
Australia

Telephone: (02) 957 1056
Telex: AA 171270
Fax: (02) 922 3286

Our Ref: L5/85/326

Your Ref: L5/85, Lance Smith, Sydney Analytical Laboratories Pty Ltd.

PETROLOGICAL EXAMINATION OF
TWO ROCK SAMPLES

Report No: L5/85/326 22nd March, 1989

For: Sydney Analytical Laboratories Pty Ltd

J. Barron.

Dr B.J. Barron
Consulting Petrologist

Sample No. E-2

Rock Type Partly altered, foliated and deformed very fine grained claystone with numerous narrow quartz siltstone bands.

Hand Specimen A fine grained pale green to pale grey foliated sample with poorly defined narrow deformed layering. The rock is partly stained by yellow-brown limonitic oxides.

Thin Section Grain size layering is characteristic in part of this sample, in which very narrow deformed and discontinuous quartz-rich silty bands, alternate with exceptionally fine clay-rich bands. Accessory heavy detrital grains in the finely recrystallised quartz-rich silty bands include tourmaline (added to epitaxially), zircon and apatite. The fine clay-rich bands which predominate, contain minor proportions of quartz and sparse minute prisms of tourmaline, set in a dense mat of weakly foliated exceptionally fine grained wispy birefringent clay (?sericite, pyrophyllite, etc.). Irregular patches and deformed flakes of green chlorite are present in both the clay-rich and quartz-rich fractions.

Several deformed and recrystallised veinlets that cut across the rock contain dominant strained quartz with subordinate patches of chlorite and minor cubic sites that once may have comprised sulphides. Ubiquitous fine grained disseminated patches of ?leucoxene are located mostly within the argillic bands.

The sample may be identified as a partly altered foliated and deformed very fine grained claystone with numerous narrow quartz siltstone bands.

Sample No. Toner South

Rock Type Finely recrystallised fine grained quartzite derived from a well sorted fine grained arenaceous parent.

Hand Specimen A massive mid grey siliceous sample (well rounded river ?cobble) with a pale red-brown partly oxidised and stained weathering rind. Small voids coated with red-brown limonitic oxides once may have comprised disseminated sulphides.

Thin Section Well sorted clastic texture is clearly evident in this very fine grained quartz-rich sediment that has been distinctly recrystallised. Well rounded detrital grains now exhibit strain shadows and strongly sutured grain boundaries, with dusty trails of oxides marking original grain shapes.

A very meagre rock matrix comprises wispy flakes of green chlorite (possibly altered biotite), and sparse disseminated sulphide grains that are partly oxidised or else occupy sites that are partly void. Rare small rounded zircon grains and tourmaline are relict primary heavy accessory phases.

The sample may be classed as a finely recrystallised fine grained quartzite derived from a well sorted fine grained arenaceous parent.

629021

MITRE GEOPHYSICS PTY LTD

MINERAL EXPLORATION AND ENGINEERING CONSULTANTS

BUGGS LANE ELLIOTT TASMANIA 7325 PHONE 004-363143

APPENDIX 1

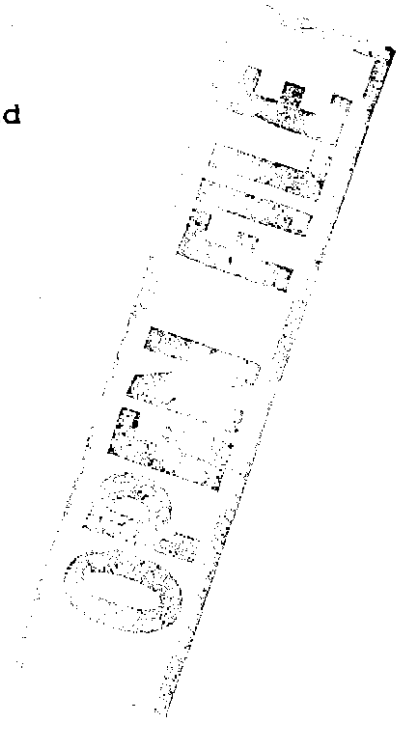
RESULTS OF GEOPHYSICAL SURVEYS OVER THE TONER GRID, E.L's. 34/85 & 6/88.

for

Wolston Developments Pty Ltd

by

Dr J.R. Bishop



WD/MG89/04
April, 1989.

CONTENTS

LIST OF TABLES AND FIGURES

SUMMMARY

Magnetic and self potential surveys plus some VLF traverses have been conducted over an area with prospective surface gold values in north-west Tasmania. The sources of the recorded magnetic highs are interpreted to be disseminated magnetite in the Precambrian sediments but one drill hole, beneath elevated gold values, is recommended to confirm this. A strong but local self potential anomaly was defined over a mineralised vein which has been exposed at some old workings and a second hole is recommended to test the vein at depth. A third hole is targeted beneath an adjacent self potential anomaly which also has associated anomalous gold. Details of the suggested holes are listed in Table 1.

These three holes are largely based on the geophysics and cover only a small region in the vicinity of the old workings. It is noted that a number of other equally prospective zones in the nearby region were defined by the original sampling program, but none of these has, as yet, been followed up.

INTRODUCTION

The Toner Grid covers an area of old workings some 14kms to the west-north-west of the Savage River iron ore mine in western Tasmania. The grid, which is named after the nearby Toner River, straddles the boundary between E.L.'s 34/85 and 6/88 both of which are held by Wolston Developments. These E.L.'s are partially within the Arthur-Pieman Protected Area and partially within unassigned crown land: both regions being available for mineral exploration and extraction under the State's normal statutes. Although at present inaccessible on the ground -a helicopter was used to transport personnel carrying out the surveys described here -a road is planned to pass within a few hundred metres of the gridded area.

This report presents the results of geophysical surveys carried out during March, 1989. This data has been integrated with encouraging soil and rock chip gold assays to define some drill targets. Prospective gold assays have also been recorded in the region around the gridded area.

EXPLORATION TARGETS AND GEOLOGICAL SETTING

The geology of the area has not been mapped (or at least published) in any detail. On the Mines Dept's 1:250,000 scale 'Burnie' sheet, the area is shown as undifferentiated Precambrian sediments of the Rocky Cape Group. In the survey region these are relatively unmetamorphosed arenites. Parts of the grid have a thin veneer of Tertiary quartz gravel. This map also shows a number of north-east trending Precambrian dolerite dykes within the area of interest; but none have been noticed within the gridded area. The rocks strike to the north-east (about 35° magnetic) with a generally steep(?) dip. Some tight folding can be observed on outcrops and a number of regional cross-cutting fractures can be seen in the aerial photography.

The grid has been centred on some old workings which intersected a vein of copper-bearing sulphides. (The trend of this vein, about 113° magnetic, can also be seen on the aerial photography.) The results of a soil sampling program by Wolston Developments has revealed some elevated gold values and gold is now the prime target. (Elevated rare earths have also been recorded in the soil samples.)

Geochemical sampling in the region of the old workings has shown that surface leaching of the gold has apparently taken place -rocks containing gold in potentially economic quantities at depths of a metre of so, have no surface expression. Thus geophysical surveys were employed to help define the structure and possibly locate sulphides with which the gold is apparently associated. Magnetic and VLF surveys were recommended for the former purpose, while self potential (SP) was suggested for locating shallow sulphides such as had been observed in the adit. The induced polarisation (IP) technique was expected to be more effective for detecting disseminated sulphides, but it was decided to first evaluate the magnetic, SP and VLF results.

EXPLORATION HISTORY

The Toner Grid covers a section of the Toner River Mining Properties described in some detail by Ward (1911). Originally prospected for copper, the old workings consist of a number of small tunnels and trenches and, in the gridded area, a shaft. A number of companies have included the area as part of their regional exploration programs. These include the Mt Lyell Mining and Railway Company who carried out some sampling for base metals without encouragement (Hutton, 1981) and Geopeko who investigated a number of magnetic anomalies in the vicinity during a search for tin-bearing skarns. Most anomalies were attributed to disseminated magnetite in the sediments, but some were considered to be caused by pyrrhotite (Pemberton, 1984). The Toner grid exploration by Wolston Developments follows a regional sampling program (Anon., 1988).

GRID AND SURVEY DETAILS

The Toner grid was originally established for soil geochemical sampling. It was surveyed in by compass and pacing, with detours around areas of thick bush. This, combined with significant magnetic deviations in areas of anomalous magnetic field, has resulted in a rather irregular grid. Further, the grid has not been precisely positioned on the ground and no absolute (AMG) coordinates are shown on the small scale figures. However the adit at 600E/1100N is approximately located at 337,000mE/ 5,410,300mN (see Figure 1). The grid lines, at 125° magnetic, were positioned perpendicular to the regional strike and thus are at a very shallow angle to the mineralised vein (ie, Ward's "line of lode" at 110° - 113°: see Figure 2).

Sampling stations on the original grid were marked with flagging tape and specified by a letter and number. Most stations were spaced 25m apart, but some, near the ends of lines, were spaced 30 or 50m apart. To present the geophysical data, a plan using arbitrary coordinates has been employed. Figure 2 shows the original labelled stations on the new coordinate plan. The grid has been idealised, but some attempt has been made to position the stations along the lines.

In March 1989 the grid was surveyed with magnetics and self potential, with limited coverage of VLF-EM. For all techniques, the reading positions were the flagged geochemical sampling points or (paced) intermediate stations. The magnetic survey used a Geometrics 816 proton precession magnetometer on a 3m pole, reading (nominally) at 12.5m intervals. Readings were repeated at regular intervals and the data has been corrected for diurnal variation. Figure 3 shows the magnetic results as profiles and Figure 4 as contours.

The self potential survey was carried out using a digital voltmeter connected to the usual copper/copper sulphate electrodes. The length of connecting wire was such that the base electrode

had to be moved after every 8 to 10 readings (which were again at a nominal 12.5m interval). Also contributing to a lower precision was the use of only a single cross-traverse connecting the survey lines. The results have been presented as profiles in Figure 5 and as contours in Figure 6.

VLF profiles of dip and field strength were made along four lines using the NWC transmitter on a Phoenix VLF-2 receiver at a 25m station spacing. Dip and field strength were recorded and the dip profiles are shown in Figure 7. No strong anomalies were detected and it was decided to concentrate on the magnetics and SP during the time available.

To determine drill targets, the geophysical results have been integrated with the geochemistry. Figure 8 shows a plan of the grid with the gold assays. Most of these values are from shallow soil samples. The other, usually higher, readings are from rock chip assays which have been indicated with an asterisk. Figure 9 gives the profiles of these combined assays.

RESULTS

Magnetics

The magnetic survey recorded a considerable variation of response over the grid. A number of anomalies, apparently parallel to strike, were defined. The sources of these responses are interpreted to be magnetite-rich, strata-bound lithological units, which have been, in places, either faulted off or magnetite-depleted due to hydrothermal(?) alteration. Modelling cannot uniquely determine the distribution of the magnetic sources (ie, there is an infinite number of possible models which will produce the observed profile), but Figures 10 and 11 show that three steeply dipping tabular bodies can provide reasonable fits to the data. Depths in excess of 100m are indicated, but shallower magnetic material is expected to have produced the spikey character in the profile, as is shown for example in Figures 12 (line 400E) and 13 (line 1000E). Relatively modest susceptibilities (eg, 0.002cgs) were used for the modelling, such as might pertain to magnetite-bearing siltstones. If the actual sources have higher susceptibilities, then the bodies should be smaller than indicated. (Depth extent was largely ignored during the modelling. This is not a sensitive parameter and the indicated depths are unlikely to represent reality. Rather, position (of the bulk) of the bodies is the important point.)

Self Potential

Although the filtered contour plan (Figure 6) shows a strong anomaly centred at 700E/1065N, the largest recorded response, in excess of -100mv, was over the old workings at 600E/1100N. (A smoothing filter was applied to the profiles to reduce the spikes in the data -possibly caused by the very dry surface conditions.) The trend of the anomaly shown on the contour plan is quite divorced from the trend of the vein and may indicate a further

occurrence of sulphides, possibly at depth.

Quantitative analysis of SP is rarely carried out because of the gross simplifications that are made for the interpretation. However, if the source of the anomaly at 700E/1065N is assumed to be a dipping plate, then the top of the plate is beneath 1050N at a depth of around 35m. A shallow dip of around 25° to the south is indicated. If the source is assumed to be spherical, then the centre of the sphere lies at about 90m below 1020N (radius not determined).

VLF-EM

A number of low-amplitude anomalies were obtained, which can be tentatively interpreted as responses over faults or contacts trending at about 175° (mag.), but further data is required before any definite correlations can be made.

The Toner grid is at a bearing of 100° from the North West Cape VLF transmitter station (NWC), which is thus well oriented to locate conductors parallel to the trend of the mineralised vein (~110°). However the traverse lines would be required to be at a much higher angle, eg 0°, to effectively test this feature for a VLF response.

Readings were attempted using the Japanese VLF station, whose orientation was best suited to locate any conductors trending in a more northerly direction; however signal levels were too low.

CONCLUSIONS AND RECOMMENDATIONS

Although pyrrhotite has been identified among the sulphides present within the Toner grid and has been attributed as the source of aeromagnetic anomalies in the vicinity, it does not appear to be the source of the magnetic anomalies observed here. There is no correlation between the known mineralisation at Toner and the recorded magnetics unless it is a lack of response or 'low', possibly due to alteration. Rather, the source of the anomalies is likely to be disseminated magnetite in the sediments as was concluded by Pemberton (1984) investigating aeromagnetic anomalies in the close vicinity. Pemberton also refers to a slight magnetic response from conformable amphibolites. (The previously mentioned Precambrian dolerite dykes are apparently also either only weakly- or non- magnetic.)

The geophysical surveys were at least partly carried out because soil sampling above rocks containing significant concentrations of gold returned negligible values, indicating that leaching was taking place at the near-surface. And that therefore surface sampling was not necessarily an accurate indication of the sub-surface conditions. Nevertheless, areas of elevated soil (and rock chip) values must be significant and the drill holes recommended below test geophysical anomalies in areas of elevated gold values.

DDH TG1 is designed to test the mineralised vein beneath the old workings and has the highest priority. DDH TG2 tests the adjacent (broad) SP anomaly, while DDH TG3 is designed to locate the source of the magnetic anomalies. The locations are indicated on Figrue 8. There is no compelling reason for the northerly drilling directions chosen for all three holes on Figure 8, apart from TG1 where the lower terrain on the southern side of the vein should assist its intersection. Specifications for these drill holes are given in Table 1.

It should be noted that there are a number of other anomalous zones indicated on Figure 8 which are not tested by these holes and that there are also a number of prospective regions indicated on Figure 1, away from the gridded area, which deserve further work.

J.R. Bishop
April, 1989.

REFERENCES

Anonymous, 1988. Exploration program, North-west Tasmania. Longworth and McKenzie report for Monier Ltd.

Pemberton, J., 1984. Annual report on E.L. 17/83, Mt Bolton. Geopeko report to the Mines Dept; ref. no. 84/6659.

Ward, L.K., 1911. The Mount Balfour Mining Field. Geological Survey Bulletin no. 10.

Hutton, M.J., 1981. Progress report; Jan 1981 Donaldson (E.L. 27/78) Mt Lyell report to the Mines Dept; ref. no. 81/15634 (or 81/15673?)

Table 1

RECOMMENDED DRILL HOLES

Hole	Collar	Azimuth (magnetic)	Dip*	Length# (m)	Purpose
TG1	540E 1090N	23°	~50°	~150	To test beneath the old workings.
TG2	700E 1010N	305°	~50°	~150	To test source of SP anomaly beneath raised gold values.
TG3	550E 1130N	305°	~50°	~150	To test source of magnetic anomaly beneath raised gold values.

* Dip should be shallow to transect as much stratigraphy as possible.

Suggested length should be maximum required to intersect target.

If the drill rig is to be shifted by helicopter, consideration should be given to drilling TG1 and TG3 from the one site.

E 36,000mE.

E 37,000mE.

E 38,000mE.

MOUNT BOLTON

54 11,000mN.

TONER GRID

L

K

J

H

G

F

E

D

C

1100

54 10,000mN.

X16

TONER

85

110

RIVER

X200

54 09,000mN.

X11

X7

X8

X10

X9

X11

MOUNT HADMAR

54 08,000mN.

5 cm

KEY:

X10 Gold soil sample value

MOUNT VERO

6/88

34/85

54 07,000mN.

Ref: WD/MG89/04

629032

WOLSTON DEVELOPMENTS PTY. LTD.

TONER RIVER AREA

E.L's. 34/85 & 6/88

GEOCHEMICAL SAMPLING LOCATIONS

DRAWN BY : J.R.B.

DRAFTSMAN : T.G.D.S.

DATE : April '89

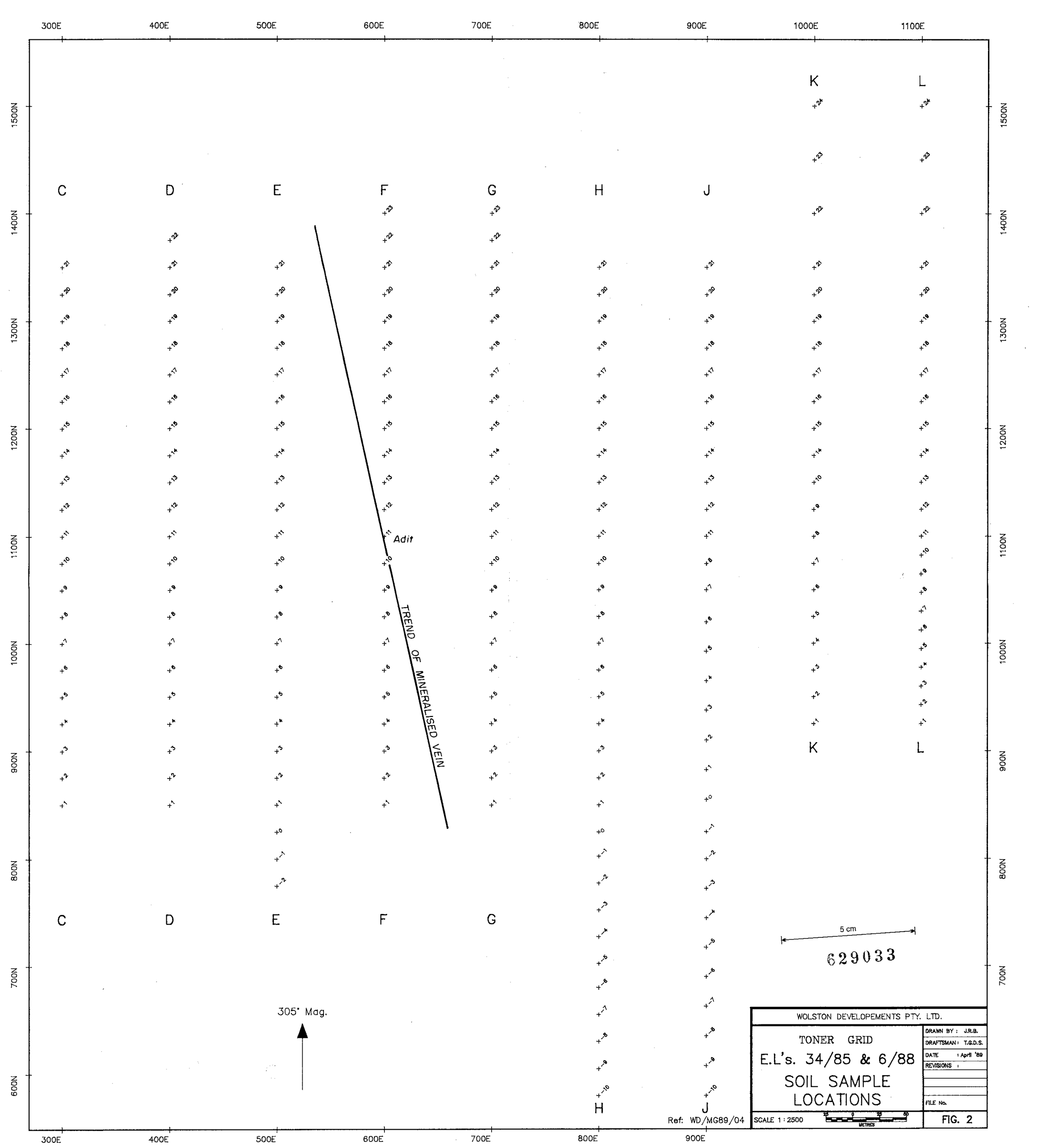
REVISIONS :

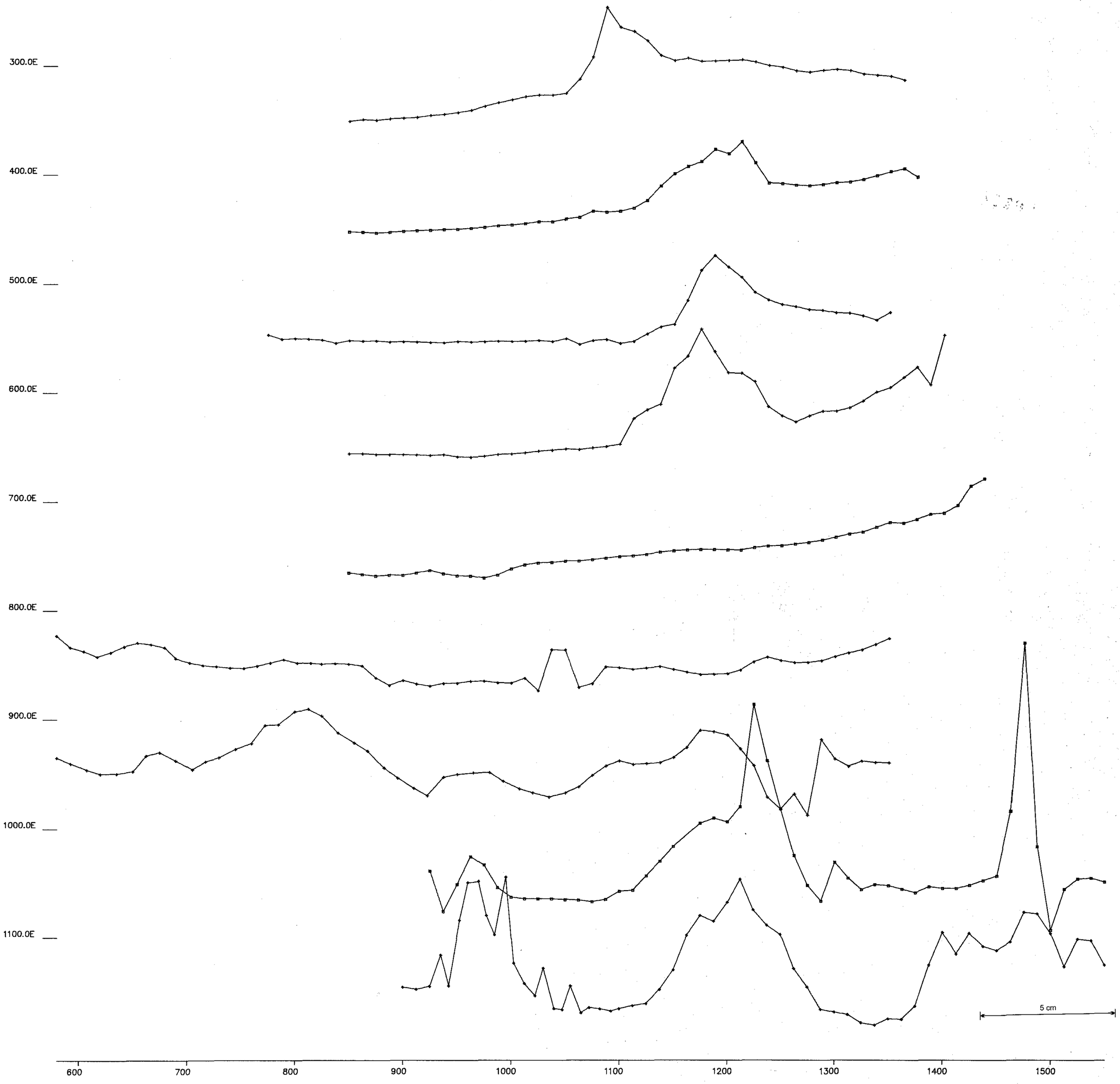
FILE No.

SCALE 1:10,000

100 0 100 200 METRES

FIG. 1


300E
400E
500E
600E
700E
800E
900E
1000E
1100E
1500N
1400N
1300N
1200N
1100N
1000N
900N
800N
700N
600N
C
D
E
F
G
H
J
K
L
Adit
TREND OF MINERALISED VEIN
305° Mag.
5 cm
629033
WOLSTON DEVELOPEMENTS PTY. LTD.
TONER GRID
E.L's. 34/85 & 6/88
SOIL SAMPLE LOCATIONS
DRAWN BY : J.R.B.
DRAFTSMAN : T.G.D.S.
DATE : April '89
REVISIONS :
FILE No.
SCALE 1 : 2500
METRES
FIG. 2
Ref: WD/MG89/04

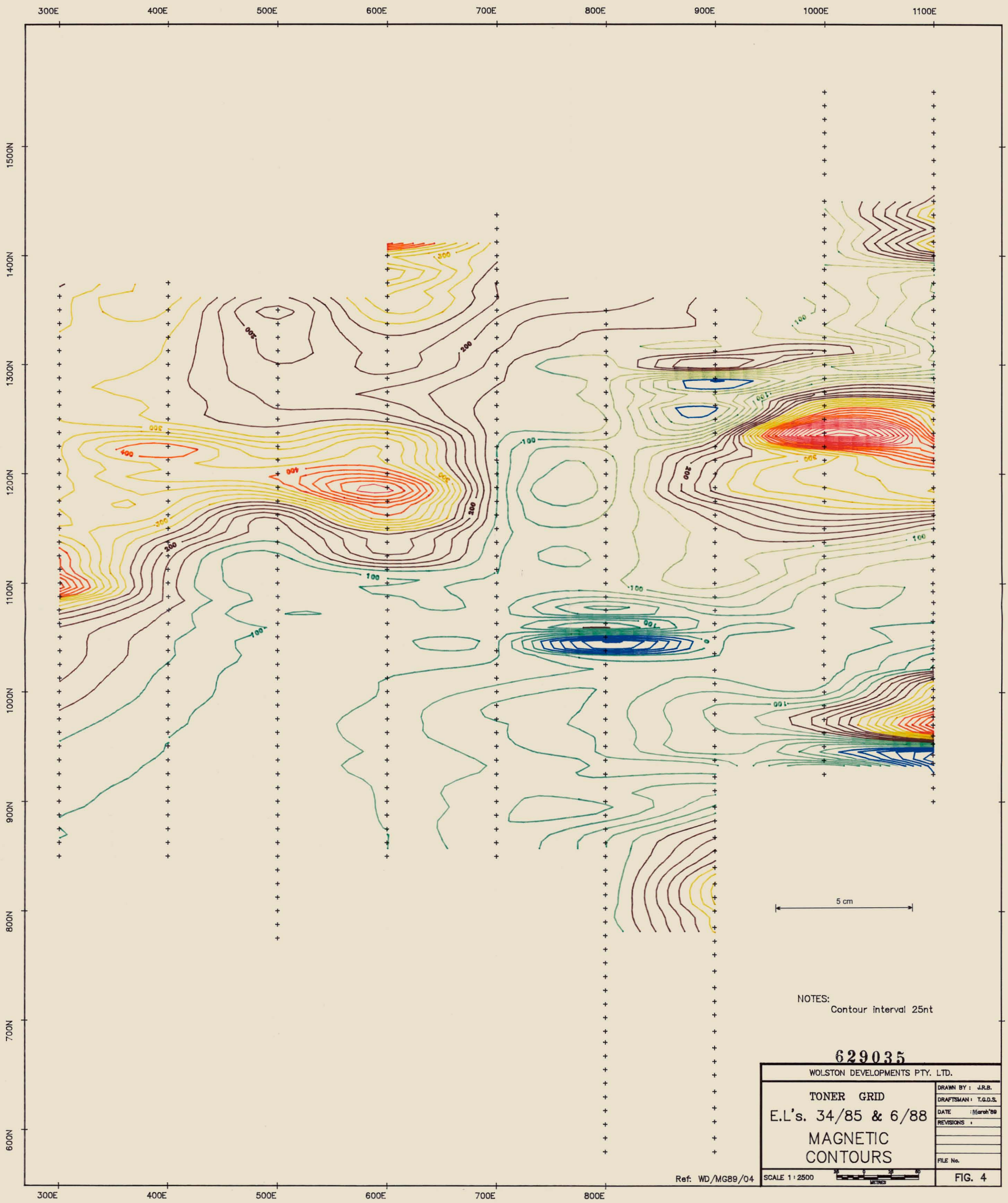


629034

NOTES:
Vertical scale 100nt/cm
Base level 62300nt.

Ref: WD/MG89/04

WOLSTON DEVELOMENTS PTY. LTD.	
TONER GRID E.L's. 34/85 & 6/88 MAGNETIC PROFILES	DRAWN BY : J.R.B. DRAFTSMAN : T.G.D.S. DATE : March'89 REVISIONS : FILE No.
SCALE 1 : 2500 (25 0 25 50 METRES)	FIG. 3



NOTES:
Contour interval 25nt

629035

WOLSTON DEVELOPMENTS PTY. LTD.	
TONER GRID E.L's. 34/85 & 6/88 MAGNETIC CONTOURS	DRAWN BY : J.R.B. DRAFTSMAN : T.G.D.S. DATE : March '89 REVISIONS : FILE No.
SCALE 1 : 2500 (25 0 25 50 METRES)	FIG. 4

Ref: WD/MG89/04

300.0E

400.0E

500.0E

600.0E

700.0E

800.0E

900.0E

1000.0E

1100.0E

5 cm

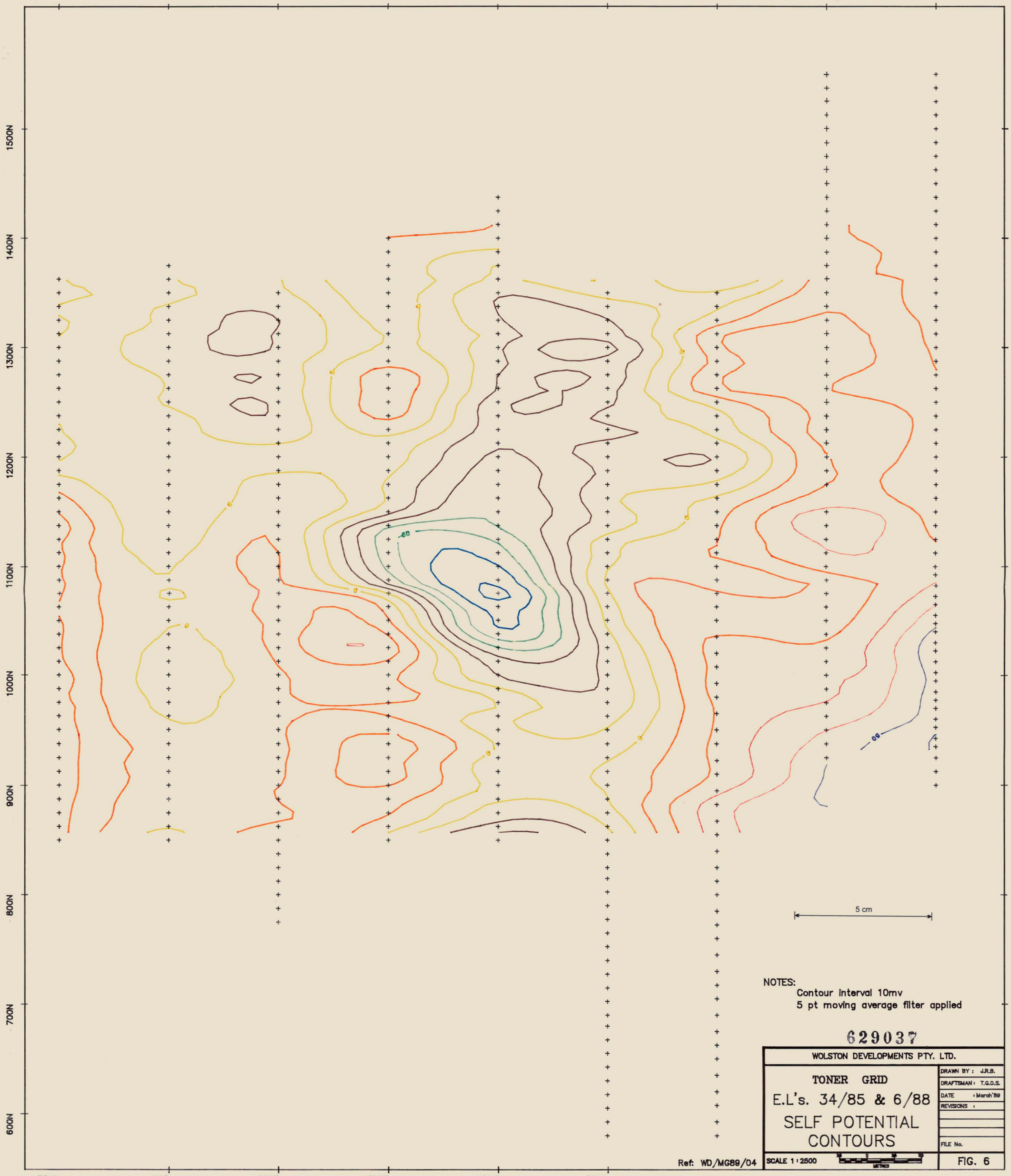
800 900 1000 1100 1200 1300 1400 1500

629036

NOTES:
Vertical scale 25mv/sec
Base level 0mv.

Ref: WD/MG89/04

WOLSTON DEVELOMENTS PTY. LTD.	
TONER GRID E.L's. 34/85 & 6/88 SELF POTENTIAL PROFILES	DRAWN BY : J.R.B. DRAFTSMAN : T.G.D.S. DATE : March'89 REVISIONS : FILE No.
SCALE 1 : 2500 (25 0 25 50 METRES)	FIG. 5



NOTES:
Contour interval 10mv
5 pt moving average filter applied

629037

Ref: WD/MG89/04

WOLSTON DEVELOPMENTS PTY. LTD.	
TONER GRID E.L's. 34/85 & 6/88 SELF POTENTIAL CONTOURS	DRAWN BY : J.R.B. DRAFTSMAN : T.G.D.S. DATE : March'89 REVISIONS : FILE No.
SCALE 1 : 2500 METRES	FIG. 6

700.0E

800.0E

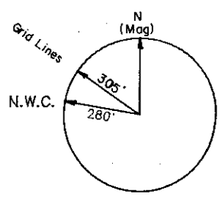
900.0E

1000.0E

5 cm

600 700 800 900 1000 1100 1200 1300 1400 1500

Plotting Convention



NOTES:
Vertical scale 5°/cm
Base level 0°
Tx : NWC

629038

WOLSTON DEVELOMENTS PTY. LTD.

TONER GRID
E.L's. 34/85 & 6/88
VLF
PROFILES

DRAWN BY : J.R.B.
DRAFTSMAN : T.G.D.S.
DATE : March '89
REVISIONS :
File No.

SCALE 1 : 2500
25 0 25 50 METRES

FIG.7

Ref: WD/MG89/04

300E 400E 500E 600E 700E 800E 900E 1000E 1100E

1500N 1400N 1300N 1200N 1100N 1000N 900N 800N 700N 600N

DDH TG3

DDH TG1

DDH TG2

5 cm

Recommended Drill Hole

NOTES:
All assays are from soil samples except those marked with asterisk (*) which are rock chips.

629039

Ref: WD/MG89/04

WOLSTON DEVELOMENTS PTY. LTD.

TONER GRID

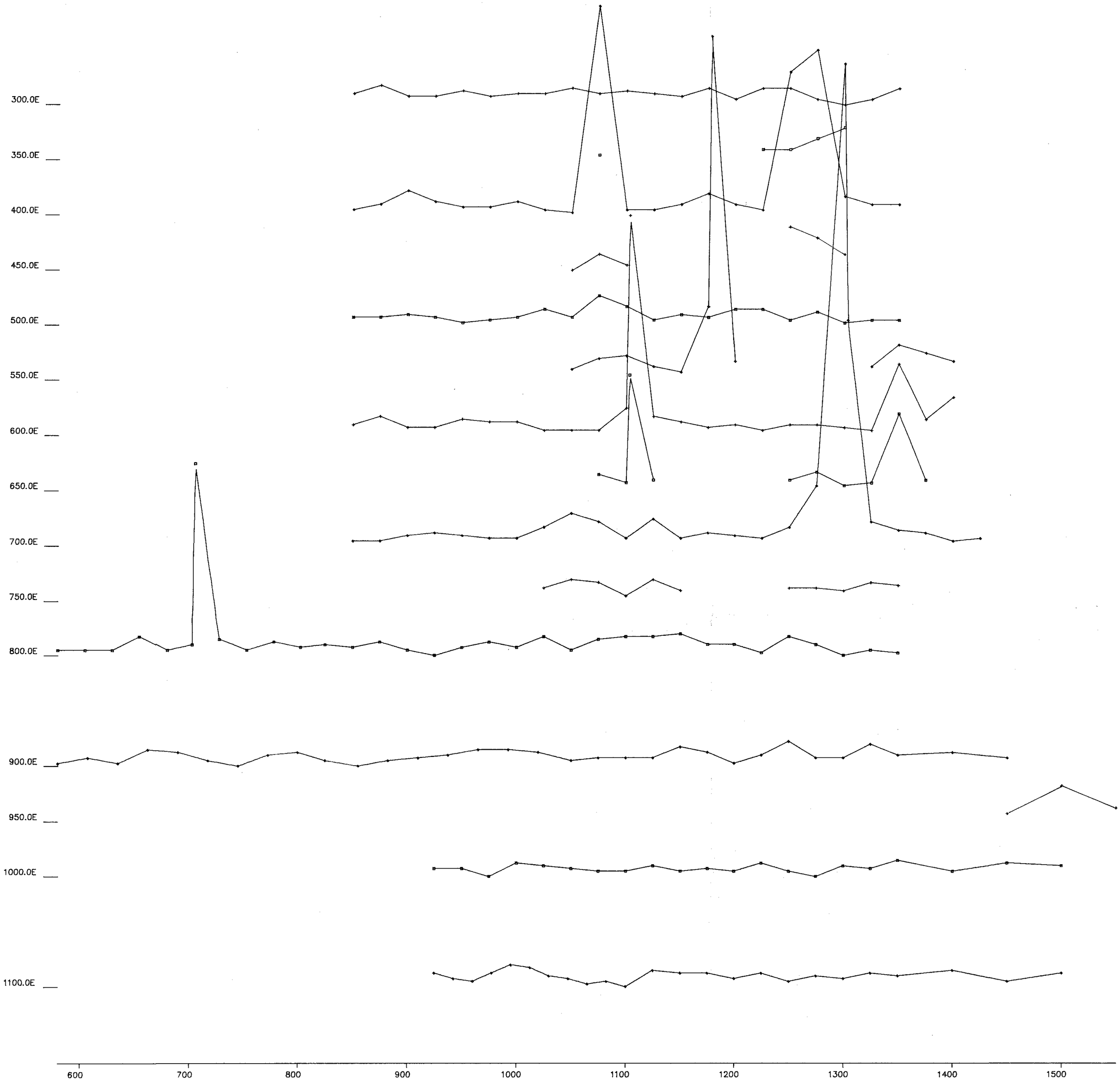
E.L's. 34/85 & 6/88

GOLD ASSAYS (ppb)

DRAWN BY : J.R.B.
DRAFTSMAN : T.G.D.S.
DATE : March'89
REVISIONS :
FILE No.

SCALE 1 : 2500

FIG. 8



NOTES:
Vertical scale 10ppb/cm

629040

WOLSTON DEVELOMENTS PTY. LTD.

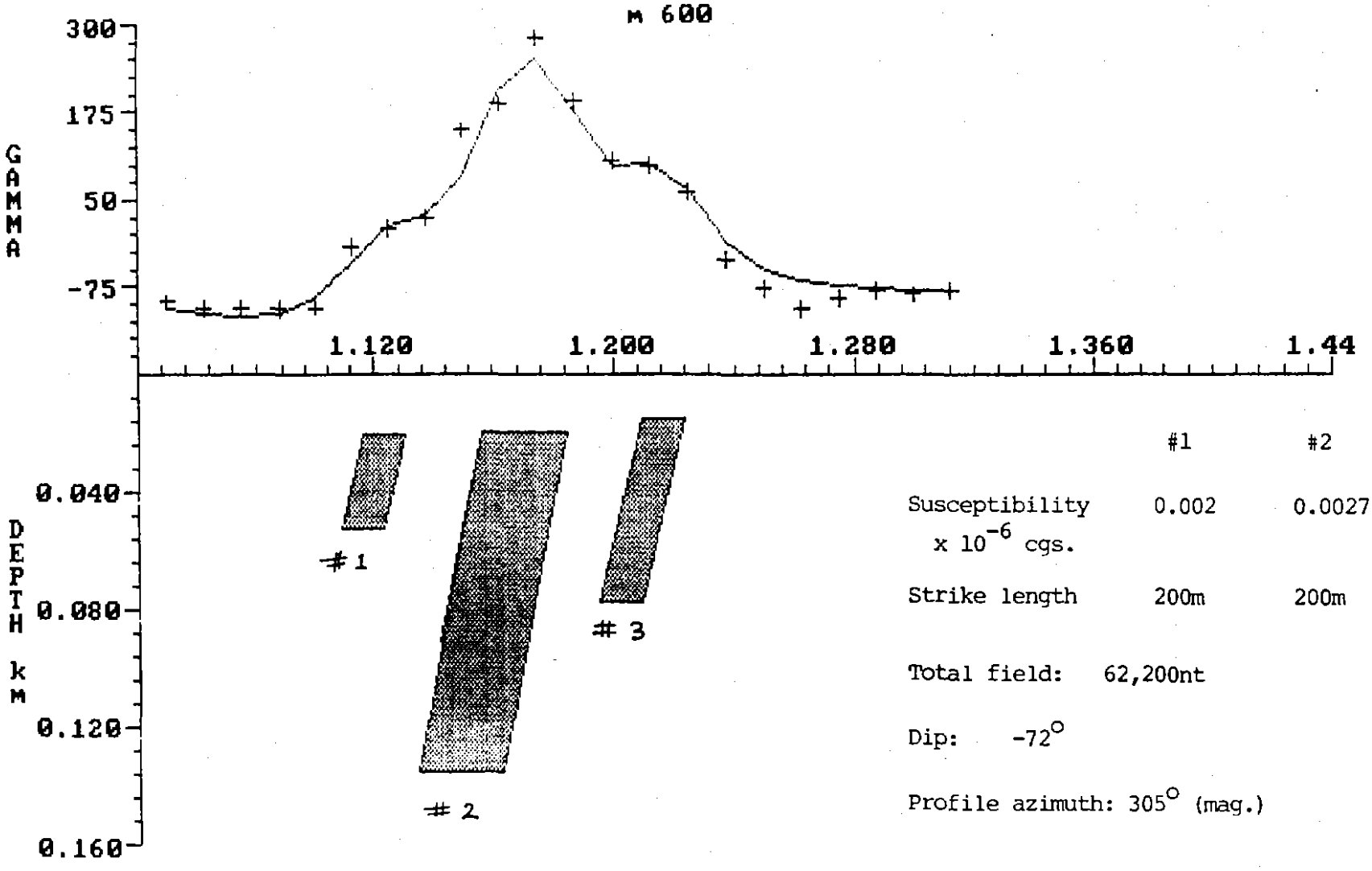
TONER GRID
E.L's. 34/85 & 6/88
GOLD ASSAY (ppb)
PROFILES

DRAWN BY : J.R.B.
DRAFTSMAN : T.G.D.S.
DATE : March '89
REVISIONS :
FILE No.

SCALE 1 : 2500 (25 0 25 50 METRES)

FIG. 9

Ref: WD/MG89/04



	#1	#2	#3
Susceptibility x 10^{-6} cgs.	0.002	0.0027	0.0015
Strike length	200m	200m	200m

Total field: 62,200nt

Dip: -72°

Profile azimuth: 305° (mag.)

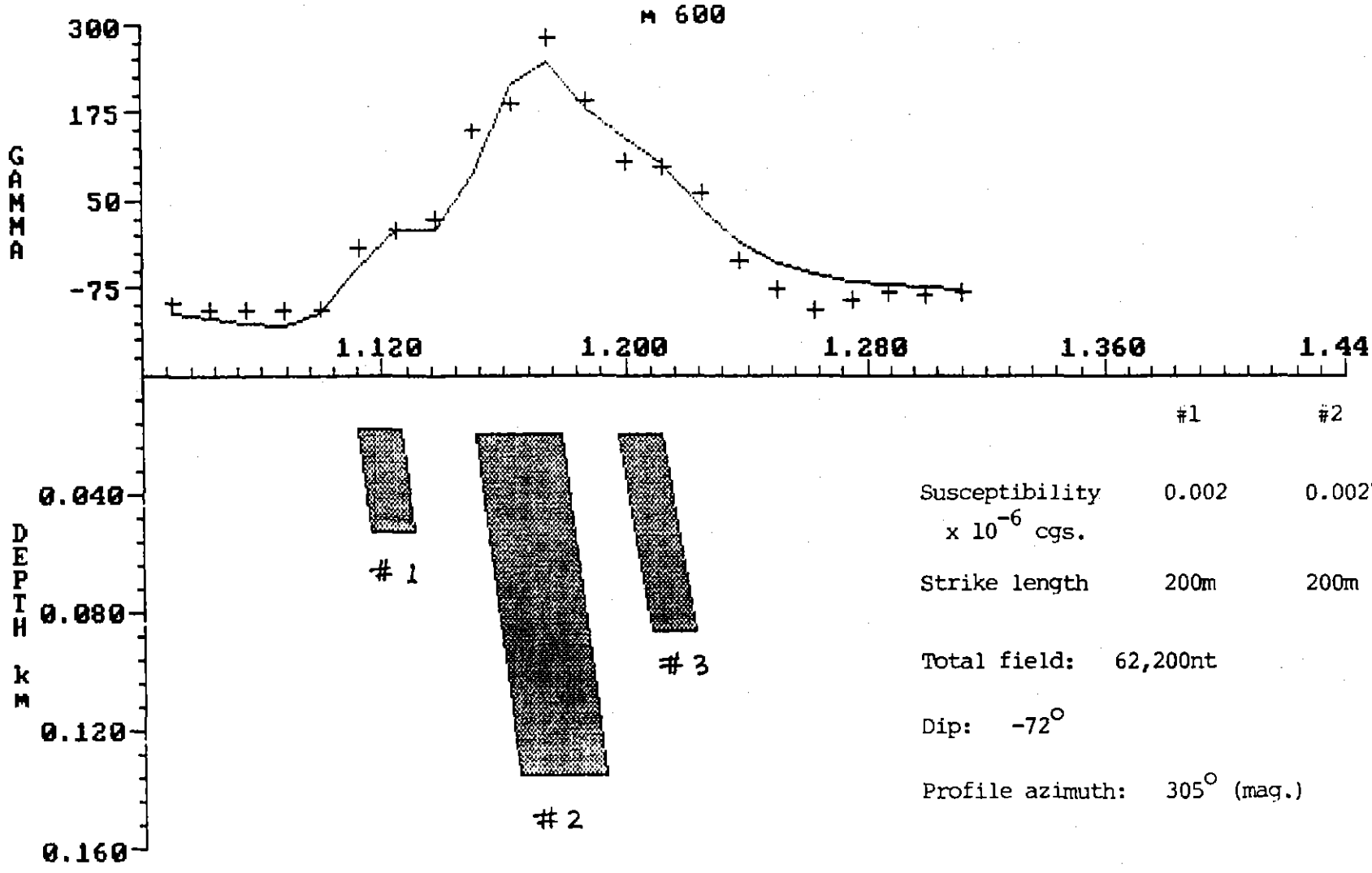
TONER CRID

MAGNETIC MODELLING

LINE 600E

(South Dip)

Fig. 10.



	#1	#2	#3
Susceptibility x 10^{-6} cgs.	0.002	0.0027	0.0015
Strike length	200m	200m	200m

Total field: 62,200nt

Dip: -72°

Profile azimuth: 305° (mag.)

TONER CRID

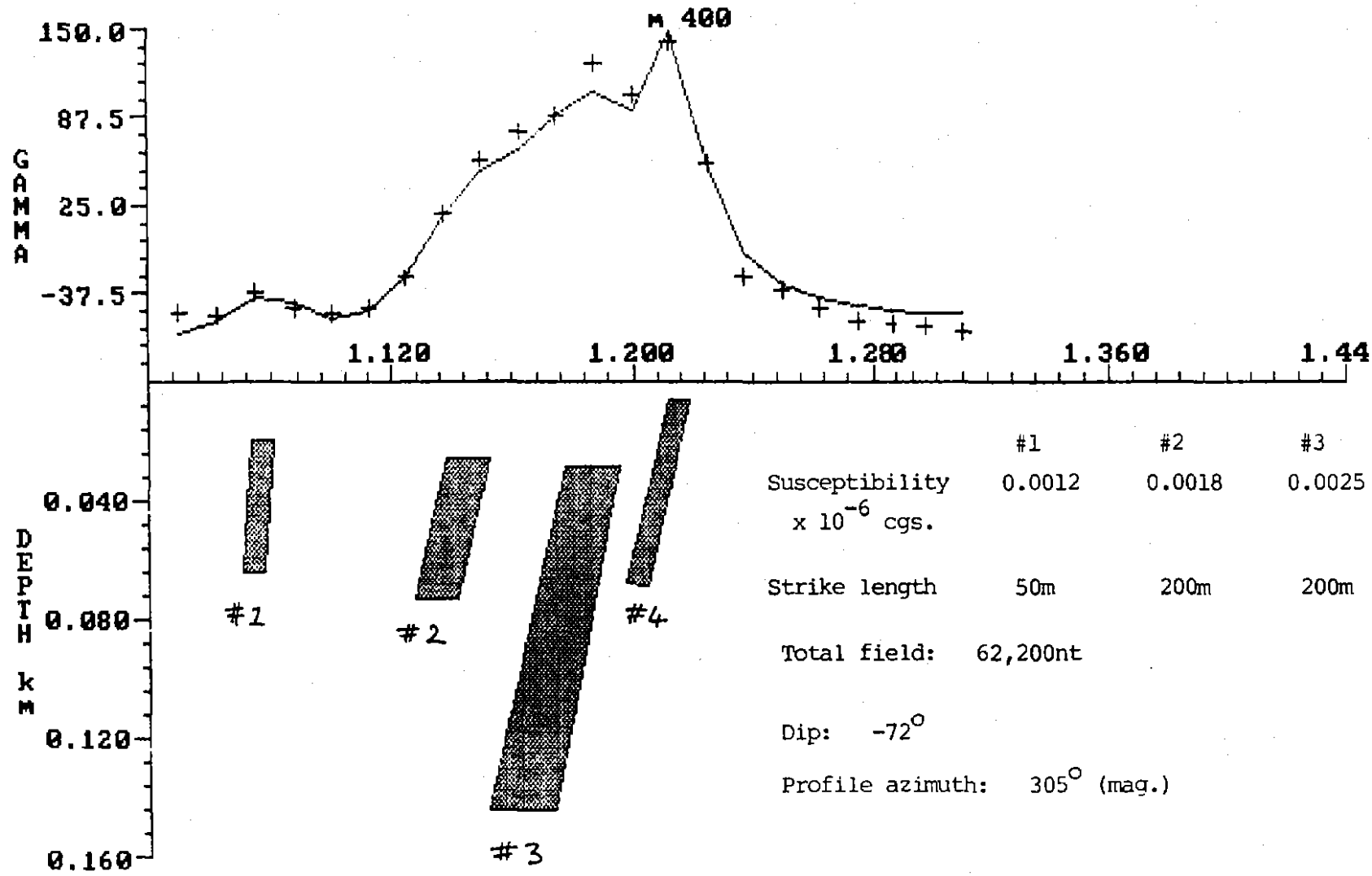
MAGNETIC MODELLING

LINE 600E

(North Dip)

629042

Fig. 11.



	#1	#2	#3	#4
Susceptibility x 10^{-6} cgs.	0.0012	0.0018	0.0025	0.0012
Strike length	50m	200m	200m	200m

Total field: 62,200nt

Dip: -72°

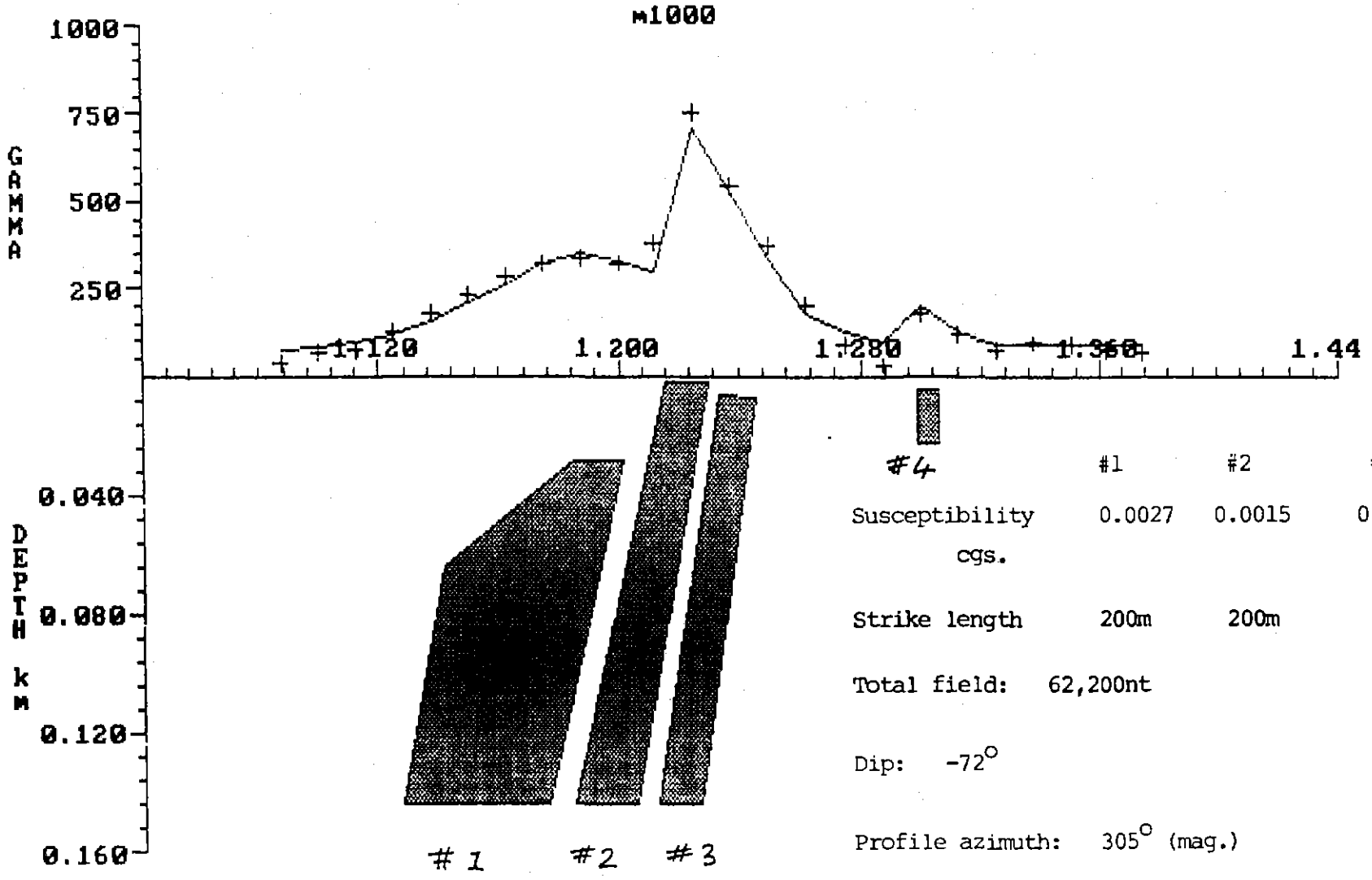
Profile azimuth: 305° (mag.)

TONER GRID

MAGNETIC MODELLING

LINE 400E

Fig. 12.



	#1	#2	#3	#4
Susceptibility cgs.	0.0027	0.0015	0.002	0.0012
Strike length	200m	200m	200m	100m

Total field: 62,200nt

Dip: -72°

Profile azimuth: 305° (mag.)

629044

TONER GRID

MAGNETIC MODELLING

LINE 1000E

Fig. 13.