

568001

EL 1/98 - SCAMANDER

ANNUAL

REPORT

1998/1999

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ANSON GRIFFITH

1 March 1999

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ABSTRACT

Exploration Licence EL 1/98 comprising 202 square kilometres, was granted to Griffith Geological Consultants Pty Ltd on 24th April 1998 for a period of five years.

Exploration activities during year one of the exploration licence were initially directed towards the reassessment of the alluvial tin deposits in the north of the licence area and the completion of a regional geochemical sampling program. The regional sampling program was initiated to assess the potential of the Scamander Tier and Mathinna Beds to host previously undiscovered gold mineralisation.

Exploration of the alluvial tin and the potential of the Scamander Tier Dyke to host economic gold mineralisation proved disappointing. These areas are to be relinquished from EL 1/98 at the end of year 1.

Anomalous gold geochemistry was detected from the drainage of Johnny Fitz Creek in the west of the licence and is to be evaluated at a later stage.

One diamond drill hole was completed at the Orieco Prospect and returned encouraging results. Additional drilling is scheduled to commence during year 2 to further assess the potential of the deposit to support a small tonnage, high-grade mining operation.

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DIGITAL DATA

Back Pocket	EL 1/98 Scamander Digitised Creek Drainage
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1.0 Introduction

Exploration Licence EL 1/98 comprising 202 square kilometres was granted to Griffith Geological Consultants Pty Ltd on 24th April 1998 for a period of five years.

Exploration activities completed during the reporting period include reassessment of the alluvial tin areas in the north of the licence, regional geochemical sampling and the completion of one diamond drill hole at the Orieco Prospect.

The following report summarises exploration activities and results completed within the area during the period 1998/1999.

2.0 Exploration Philosophy and Objectives

Exploration activities during year one of the exploration licence were directed towards

- the reassessment of the alluvial tin deposits developed in the north of the licence to support a small scale alluvial mining operation. The establishment of a small mining operation could provide additional cash flow for funding additional exploration activities.
- the completion of a regional geochemical sampling program to assess the potential of the Scamander Tier Dyke and the Mathinna Beds in the west of the exploration licence to host previously undetected gold mineralisation.
- the reassessment of the potential of previously identified prospects within the licence area to support a small tonnage, high grade mining operation.

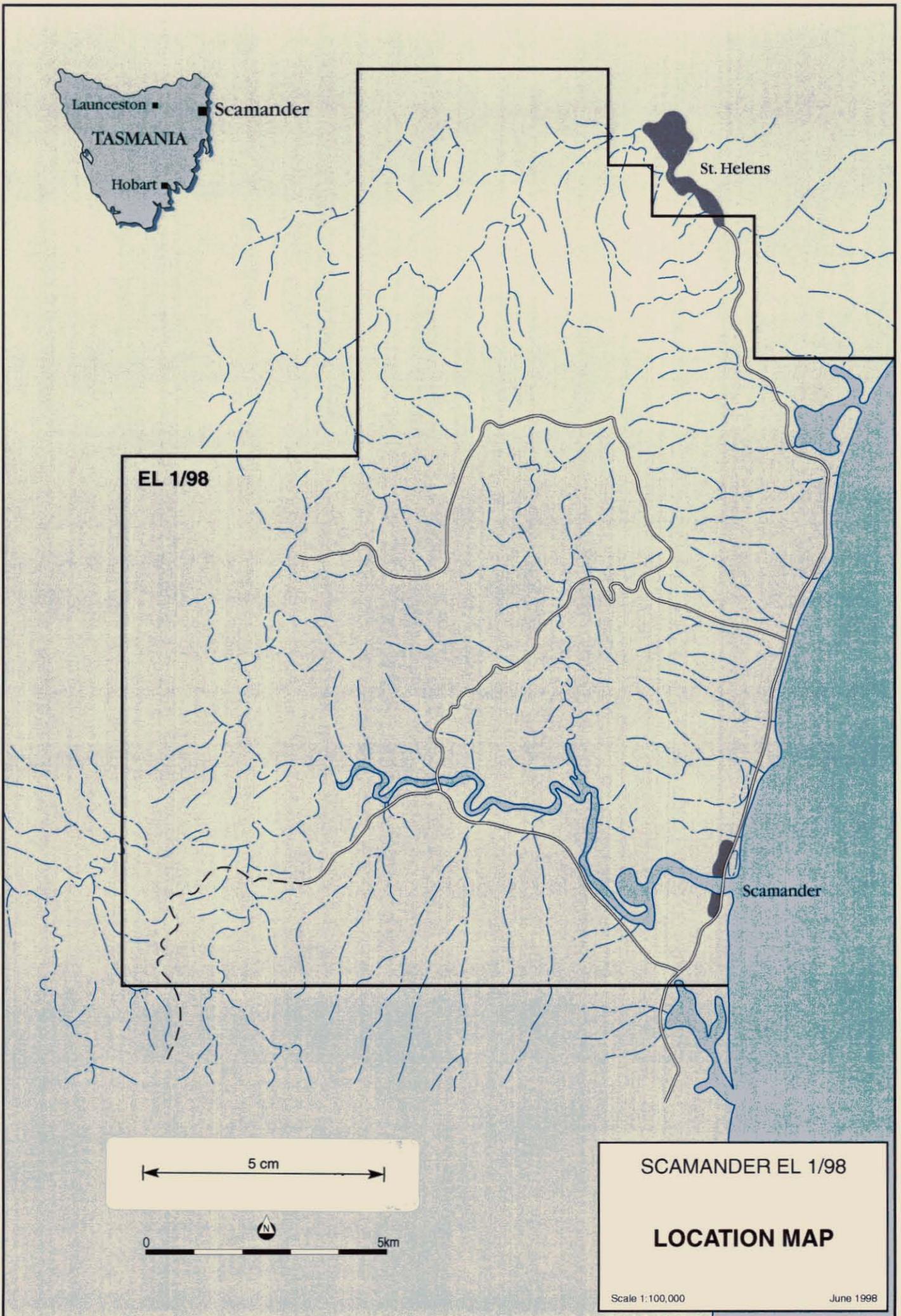
3.0 Location and Access

Exploration Licence EL 1/98 is located between the coastal townships of St Helen's and Scamander, situated on the north-eastern coast of Tasmania (Figure 1).

The licence is largely situated within State Forest and is serviced by an excellent network of all weather, graded roads and fire trails.

Topographic relief varies from undulating to steep hills and ridges developed in the central area of the license changing to gentle slopes and flat laying areas in the vicinity of the coastal regions.

Vegetation within the licence is dominated by light, open eucalypt forest with dense undergrowth generally restricted to areas adjacent to established drainages. The central area of the licence from Scamander through to the Loila Tier contains established radiata pine plantations.



Launceston ■ Scamander
TASMANIA
Hobart ■

St. Helens

EL 1/98

Scamander

5 cm

0 5km

SCAMANDER EL 1/98

LOCATION MAP

Scale 1:100,000

June 1998

4.0 Regional Geology

The geology of the exploration licence is dominated by the Silurian-Devonian Mathinna Beds, which comprise an alternating sequence of bedded quartzites, sandstones, siltstones and slates. The quartzites have a lithic component and display graded structures locally. The sequence has been interpreted to represent turbidites from previous studies.

The Mathinna Beds have been regionally folded during the Tabberabberan Orogeny around north northwest trending fold axes to produce open folds with two to four kilometre wavelengths and gentle southeast plunges. Deformation intensity may vary locally to produce tight folding and over-turned bedding has been recognised at both the Great Pyramid Prospect and Scamander Tier area.

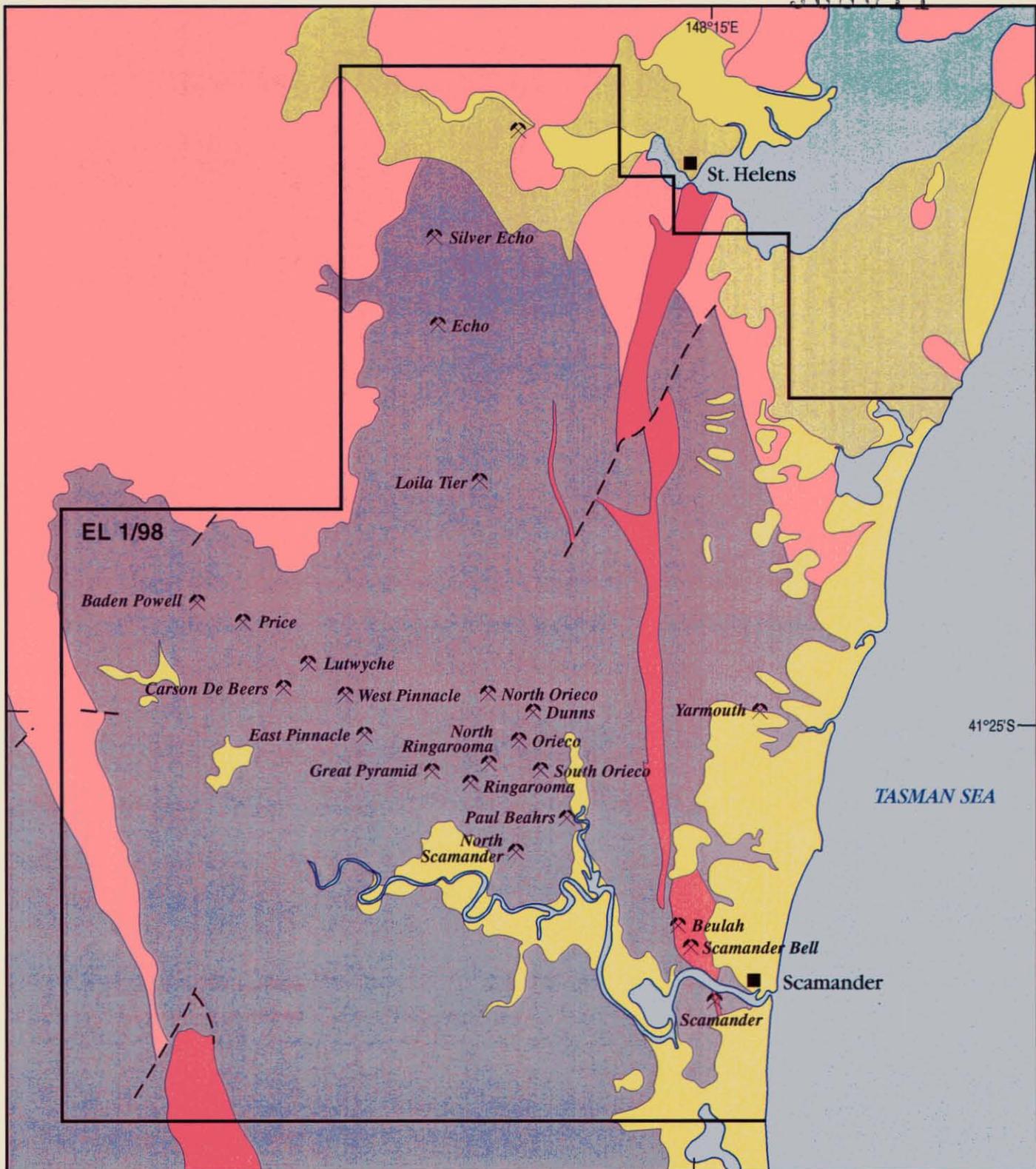
A number of north northwest trending faults and shear zones transect the Mathinna Beds and act as the focus of significant mineralisation at a number of prospect localities e.g. Orieco.

A suite of granitic intrusives, which form the southern region of the Blue Tier Batholith which may be broadly classified into two categories, has intruded the Mathinna Beds. These include non-tin bearing hornblende-biotite granodiorites-adamellites, which may occur as narrow dykes e.g. Scamander Tier, and the tin bearing biotite adamellite-granites.

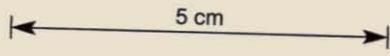
Metamorphism of the sedimentary sequence adjacent to intrusive contacts has lead to the formation of spotted hornfels and quartzites in the west and northwestern areas of the exploration licence.

A complex cycle of erosion and deposition has continued from the Tertiary leading to the deposition of fluvial and marine clays, sands and gravels. Continued erosion of the tin bearing granites during the Quaternary resulted in the deposition in a number of economically important tin bearing alluvial deposits including Thureau's Lead, Transit and Constables Creek in the north of the licence area.

The regional geology and significant prospects developed within the exploration licence including relinquished areas is given in Figure 2.



Source : Geological Survey of Tasmania
Dept. Mines - Hobart



LEGEND

- Quaternary alluvium
- Tertiary conglomerate
- Devonian-Silurian (?) Turbidite sandstone & mudstone
- Devonian Hornblende granodiorite
- Devonian undifferentiated granodiorite



SCAMANDER EL 1/98

GEOLOGY MAP

Scale 1:100,000 July 1998

5.0 Previous Work

5.1 Mining History

The St Helen's and Scamander district contains numerous metal occurrences including gold, silver, lead, zinc, tungsten, wolframite and tin which have been subjected to varying degrees of exploration and development since the turn of the century.

Early exploration and prospecting focused on the tin bearing Quaternary gravels and wash developed in the St Helen's district associated with Thureau's Deep Lead. The Lead has been described in detail previously by Montgomery in 1893 and will not be repeated here.

Numerous No Liability companies and mining syndicates were formed to prospect and develop the alluvial tin deposits in the district. Traditional mining methods including sluicing, gravel pumps and hydraulic methods were employed to recover the tin. The potential of the district to sustain a dredging operation was assessed by the Siamese Tin Syndicate during the 1930's. However, disappointing results prevented the project progressing further.

Exploratory workings were developed at a number of prospects within the district including Beulah, Scamander Bell, Yarmouth, and Silver Echo. More detailed development and mining occurred at the Orieco Mine and the Great Pyramid Tin Mine. Eighty-five tons of copper with silver credits was won from the Orieco Mine and 2.9 tons of tin was worked from Great Pyramid.

5.2 Previous Exploration

A number of exploration companies including Mt Lyell, EZ, Austminex, Geophoto, BHP, RTZ, Shell-Billiton and Scamander Mining have employed modern systematic exploration techniques to the district dating back to the 1950's.

Exploration work completed previously includes geochemical, ground and airborne magnetic geophysical surveys, mapping, trenching, costeaning, reverse circulation and diamond drilling employed at many of the prospects contained within the exploration licence.

To date, no economically viable project has been developed within the licence despite the high level of exploration undertaken within the district.

6.0 Exploration Completed During the Period

6.1 Geochemical Sampling

A regional scale geochemical sampling program of the creek drainages contained within the licence area was conducted during the first half of 1998.

The aim of the program was to test the potential of the Scamander Tier Dyke to host economic gold and base metal mineralisation based on the occurrences of gold, silver, lead and zinc at Beulah, Scamander, Scamander Bell and Yarmouth Prospects located in the southern area of the licence.

A total of fifteen drainage localities were sampled during the program. The locality of each sample position was recorded using a hand held Garman GPS 2000 recorder. The sample type collected from each locality included a stream sediment (-80 mesh), panned concentrate and rock grab or outcrop samples where applicable.

Each sample was assigned a unique sample number and assayed for gold, silver, copper, lead, and zinc. All samples were submitted to Genalysis Laboratories, 15-17 Davison Road, Maddington, Western Australia for chemical analysis.

6.2 Fern Tree Creek Sampling

Reassessment of the potential of the Fern Tree Creek Prospect to contain sufficient alluvial tin to support a profitable, small-scale mining operation was undertaken during the period.

Historically, the prospect was reported to contain high quality Ruby Tin in a payable wash of approximately three feet that was overlain by six to eight feet of loam and sand. A paddock measuring 19 feet by 10 feet was reported to yield two bags and 20 pounds of tin.

Assessment involved the collection of vertical channel samples from a number of exposed faces from the eroded gully terrain resulting from previous mining activities. The channel samples from each locality were subsequently panned and visually assessed for resultant tin content.

6.3 Orieco Prospect

Following the disappointing results of regional geochemical sampling and at Fern Tree Creek, exploration focussed on the potential of other existing prospects within the licence.

Research of historical data and a review of exploration activities conducted by previous licence holders, highlighted the potential of the Orieco Prospect to contain a small to moderate tonnage, high grade copper-silver resource.

Historically, the deposit was mined as an underground operation by the Eastern Propriety Copper and Silver Mining Company during the late 1890's and early 1900's. Recorded mine production was 446 tonnes of ore assaying between 15% and 28% copper with silver credits ranging from 13 ounces to 17 ounces.

An adit of approximately 300 metres in length was developed along the ore structure and several internal winzes were sunk on the ore to a maximum depth of 27 metres. A ventilation rise of approximately 70 metres to surface was established at the mine site. Numerous cross-cuts proved the thickness of the ore zone between 16 to 40 feet. Several payable shoots of ore were intersected above the water table and stoped during development. Mining ceased due to the influx of excess water at depth which could not be baled in sufficient quantities from the operation.

Despite the amount of exploration work completed by previous lease holders, the potential of the mineralisation beneath the existing workings in the supergene zone had not been adequately tested by drilling.

One diamond drill hole was completed during the period to test the mineralisation beneath the existing workings and a suite of specimens was collected and assayed from the dump adjacent to the adit. In addition, a number of mine surface features including the dump, shaft positions and building foundations were surveyed as part of the exploration program.

7.0 Discussion of Results

7.1 Geochemical Sampling

Results from the geochemical sampling of the Scamander Tier Dyke proved disappointing. No anomalous geochemistry for gold or other base metal assemblages was detected during the program.

However, geochemical sampling at Johnny Fitz Creek located in the west of the license area returned anomalous gold values. A high of 140 parts per billion from a panned concentrate sample is considered worthy of additional follow-up exploration.

The area is to be retained for more detailed assessment during year two.

The assay results of the program are given in Tables 1 to 3, and copies of the laboratory reports are given in Appendix 1.

Table 1
Stream Sediment Assay Results

Sample Number	Northing (AMG)	* Easting (AMG)	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
P121201	5423987	55602405	1	0.1	9	25	31
P121203	5422490	55600966	1	0.1	10	19	32
P121205	5422080	55600350	1	0.1	18	21	41
P121207	5421838	55605645	1	0	15	31	62
P121209	5419283	55606494	2	0.2	12	25	52
P121211	5414778	55605498	2	0	11	9	6
P121213	5416124	55606112	5	0	4	8	6
P121214	5417195	55606047	2	0	9	15	18
P121218	5414367	55605406	1	0	17	27	34
P121223	5416442	55602664	1	0	5	7	9
P121226	5416141	55602300	0	0.1	11	17	33
P121228	5416191	55601246	3	0.2	22	29	52
P121232	5415201	55594982	1	0.1	25	16	43
P121234	5412475	55595665	11	0.1	20	11	22
P121236	5412500	55595500	1	0	20	11	19

**(55) should be drop to give the correct Easting.*

Table 2
Panned Concentrate Assay Results

Sample Number	Northing (AMG)	Easting * (AMG)	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
P121202	5423987	55602405	1	0	7	32	33
P121204	5422490	55600966	1	0	11	14	20
P121206	5422080	55600350	1	0.1	10	6	18
P121208	5421838	55605645	1	0.1	7	6	11
P121210	5419283	55606494	1	0.2	17	5	47
P121212	5414778	55605498	2	0	8	4	3
P121215	5417195	55606047	1	0	4	8	8
P121219	5414367	55605406	1	0	3	5	4
P121224	5416442	55602664	1	0.1	9	5	6
P121227	5416141	55602300	1	0.1	4	12	19
P121229	5416191	55601246	1	0.2	15	34	46
P121233	5415201	55594982	2	0.1	13	12	38
P121235	5412475	55595665	1	0	4	5	13
P121237	5412500	55595500	140	0.1	3	3	6

Table 3
Rock Assay Results

Sample Number	Northing (AMG)	Easting * (AMG)	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
P121216	5417195	55606047	0	0.1	3	13	35
P121217	5417195	55606047	1	0	15	24	22
P121220	5414367	55605406	0	0	5	2	3
P121221	5414367	55605406	1	0	3	76	3
P121222	5414367	55605406	0	0	4	6	5
P121225	5416442	55602664	0	0	18	10	120
P121230	5416191	55601246	1	0	56	14	68
P121231	5416191	55601246	1	7.2	32	8	62

*See previous page.

7.2 Fern Tree Creek Sampling

A total of ten samples were collected from the exposures in Fern Tree Creek and panned to produce a concentrate for visual assessment of tin content.

The total tin contents for all of the samples collected proved disappointing and are not considered worthwhile of further exploration expenditure and assessment.

7.3 Orieco Prospect Dump Sampling

A selection of six grab samples were collected from the dump located outside the adit entrance to the Orieco Prospect. The samples were collected to provide an indication of the grade, type and nature of the mineralisation and geology of the rock types developed at the deposit.

Each sample was assigned a unique sample number and assayed for gold, silver, copper, lead, and zinc. All samples were submitted to Genalysis Laboratories, 15-17 Davison Road, Maddington, Western Australia for chemical analysis.

Three of the samples contained highly anomalous values of copper, silver and zinc which had not been reported from previous studies. A summary of the assay values for the samples is given in Table 4 and copies of the laboratory results are given in Appendix 1.

Table 4
Dump Sample Assay Results

Sample Number	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
P121238	0	0	30	60	0
P121239	0	0	20	30	0
P121240	0	0	1120	70	130
P121241	0	20	2.05%	20	4400
P121242	0.03	50	2700	310	10.00%
P121242	0.80	390	5.00%	1450	18.50%

The crest and toe positions of the dump adjacent to the adit entrance were surveyed to enable a volumetric determination to be calculated. A digital terrain model was constructed in Surpac 2000 and a volume of 2,468.2 metres calculated for the dump.

A potential low grade reserve of 6,170 tonnes of ore applying a specific gravity of 2.5 may be contained within the dump. A grid sampling program would need to be completed to enable a more accurate grade estimation and may be undertaken during year 2 exploration activities.

7.4 Orieco Prospect Diamond Drilling

One angled, diamond drill hole, 98ORDD-1, totalling 104.20 metres was drilled at the Orieco Prospect during the period. The drill hole was designed to test the thickness and grade of the copper-zinc-silver-gold mineralisation developed at a depth of approximately thirty metres below the existing workings.

Diamond drilling was completed by Low Impact Diamond Drilling Services of Rosebery, Tasmania, utilising a Gopher 28 rig producing BQTK41 diameter core. A sectional, topographic traverse was completed across the Orieco Hill by East Coast Surveying Pty Ltd to enable accurate drill hole planning and drill site selection. The drill hole collar was surveyed both prior to and at the completion of diamond drilling. Two down-hole survey shots were completed using an Eastman single shot camera.

The diamond drill core was logged for lithology, mineralisation, and alteration prior to sampling. Each core tray was photographed and core recoveries were calculated for each core run. Two main ore zones were identified for sampling down hole. The core was half cut with a diamond saw, bagged and assigned a unique sample number for assaying. The remaining half core was stored for future reference.

All samples were submitted to Genalysis Laboratories, 15-17 Davison Road, Maddington, Western Australia for chemical analysis. Each sample was assayed for gold, silver, copper, lead and zinc. A specific gravity determination by water displacement was calculated for each sample by Genalysis Laboratories.

Copies of the analytical reports, drill logs and core photographs are given in the Appendices.

The diamond drill hole intersected the mineralised fault-mylonite zone upon which the early underground workings were developed from 80.00m to 91.20m down hole. The zone is comprised of an intermixed zone of partially silicified, fine grained quartz sandstone and pale, to olive green coloured siltstone weakly chlorite-?epidote altered. The sediments are strongly foliated at approximately 70 degrees to the core axis and set in a fine grained, gray to black groundmass with trace sulphides (pyrite).

Elevated grades of copper and silver occur preferentially in the centre of the zone. Copper mineralisation is dominated by fine grained, black chalcocite aggregates typically occurring as supergene sulphides which both replace and border the primary chalcopyrite. Fine to coarse grained sphalerite is dispersed through out the zone, with elevated concentrations tending to occur near the margins of the fault zone. No significant gold mineralisation was contained within the zone.

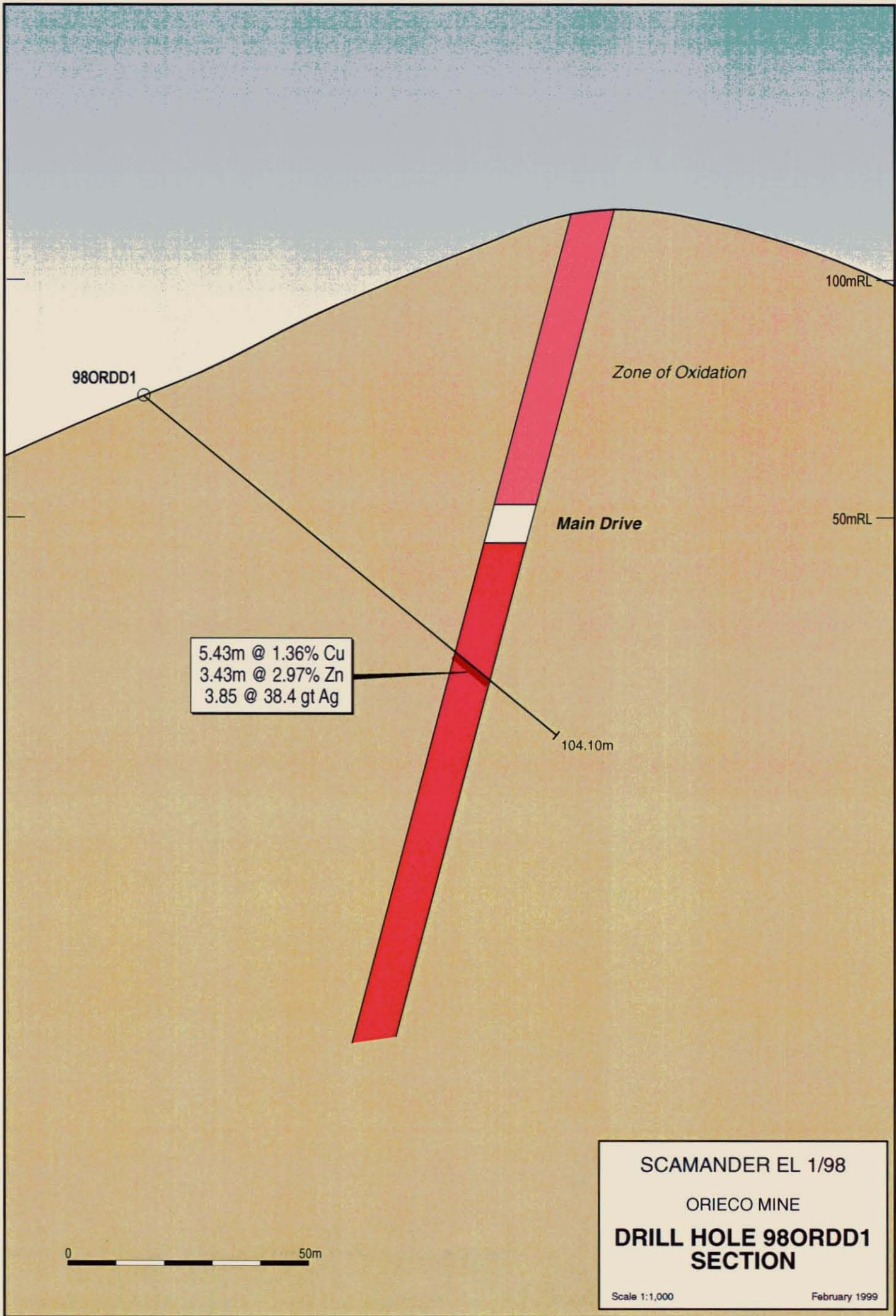
No economic grades of mineralisation were returned from sampling higher in the hole despite the presence of brecciated gossans being intersected. This may be attributed to the zones containing pyrite only and no other copper or silver bearing mineral assemblages.

Significant intersections from the drill hole are summarised in the following table and a schematic section of the drill hole is given in Figure 3.

Table 4

Drill Hole 98ORDD-1 Significant Assay Results

From (m)	To (m)	Ag (ppm)	Cu (ppm)	Zn (ppm)
83.00	83.65	0	1350	6600
83.65	84.07	30	2450	15.50%
84.07	85.00	0	7800	4200
85.00	85.67	40	1.18%	3.80%
85.67	86.43	30	5200	4200
86.43	87.50	80	3.60%	1900
87.50	88.50	0	3000	580
88.50	89.50	0	1.35%	1900
89.50	90.00	0	3400	4.50%



98ORDD1

Zone of Oxidation

Main Drive

100mRL

50mRL

5.43m @ 1.36% Cu
3.43m @ 2.97% Zn
3.85 @ 38.4 gt Ag

104.10m

0 50m

SCAMANDER EL 1/98
ORIECO MINE
**DRILL HOLE 98ORDD1
SECTION**
Scale 1:1,000 February 1999

8.0 Conclusions

Based on the results of the exploration completed during year one the following conclusions are drawn:

- *The alluvial tin mineralisation developed at FernTree Creek offers little encouragement to support a small scale, alluvial tin mining operation.*
- *The alluvial areas developed in the north of the exploration licence are to be relinquished.*
- *The Scamander Tier Dyke does not contain any significant gold mineralisation or potential to host significant mineralisation either within the granodiorite host or adjacent Mathinna Bed sediments in the central and northern areas of the exploration licence.*
- *The gold, silver and lead occurrences developed at Beulah, Scamander, Scamander Bell and Yarmouth are of limited extent and do not offer the potential to host small to medium scale tonnages.*
- *The licence area encompassing the Scamander Tier Dyke is to be relinquished.*

Exploration within the area to be retained is to focus on the reassessment of the potential of the identified prospects to support a small to medium tonnage, high-grade mining operation. In particular, further detailed exploration is to continue at the Orieco Prospect following the encouraging results received from drill hole 98ORDD-1.

Additional diamond drilling is recommended at the Orieco Prospect to further test the strike, depth, continuity and grade of the mineralisation encountered in the ore zone in drill hole 98ORDD-1. The drilling of the additional holes in a broadly spaced, regularised grid will enable a resource calculation to be completed for the project at a later stage.

9.0 Environment

All exploration activities completed during the year were conducted in accordance with the Exploration Code of Practice issued by the Mineral Resources of Tasmania.

The first pass regional assessment of the exploration licence caused no environmental disturbance during the course of the program. No rehabilitation was required during this exploration phase.

Diamond drilling at the Orieco Prospect utilised an existing track and drill pad which was established by previous licence holders. Minimal track clearing was required to access the drill site and the drill hole collar was cased and plugged at the completion of the drill hole.

No environmental rehabilitation was required at the completion of the drilling program.

568023

10.0 Expenditure

The total expenditure for EL 1/98 Scamander as at 31 December 1998 is \$53,461.41.

11.0 References

- COLMAN, W.R.G., 1934. Prospecting and Development of an Alluvial Tin Mining Area in Tasmania. Proceedings Aus. I.M.M. (Inc),93.
- CROMER, W.C., 1990. EL 76/87. Partial Relinquishment Report (End Year 3) Seabed Resources NL.
- MONTGOMERY, A.M., 1893. Report on Thureau's Deep Lead, Near George's Bay

12.0 Keywords

Scamander, St Helen's, Fern Tree Creek, Johnny Fitz Creek, Beulah, Scamander Bell, Yarmouth, Orieco, Gold, Silver, Copper, Lead, Zinc, Tin.

13.0 Acknowledgments

I would like to thank the following people from a number of organisations for their contributions to the success of the exploration activities during the year. In particular,

Mr David Gatehouse and Mr Michael "Jake" Jacobsen - Mineral Resources Tasmania,

Mr Dan Ryan, State Forestry Commission,

Mr Andrew McGregor, East Coast Surveying, St Helens,

Mr Michael Dunham and Mr Lance Stebbings - Low Impact Diamond Drilling Services.

APPENDIX 1

568028

Genalysis Laboratory Services Pty. Ltd.

ANALYSTS AND CONSULTING CHEMISTS
ACN: 008 787 237

ATTENTION A GRIFFITH
47 LAWLER STREET
NORTH PERTH WA 6006
AUSTRALIA

Analytical Report

COMMENTS

ATTENTION: A GRIFFITH ..
SOIL....

JOB INFORMATION

JOB CODE :6.3/982582
No. SAMPLES :37
ELEMENTS :7
CLIENT O/N :00297|SOIL
DATE RECEIVED :08/06/98
DATE COMPLETED :19/06/98

LEGEND

'X' = LESS THAN DETECTION LIMIT
'N/R' = SAMPLE NOT RECEIVED
'*' = RESULT CHECKED
'()' = RESULT STILL TO COME
'I/S' = INSUFFICIENT SAMPLE FOR ANALYSIS
'E6' = RESULT x 1,000,000

MAIN OFFICE AND LABORATORY
15 DAVISON ST, MADDINGTON, WA 6109
P.O. BOX 144 GOSNELLS WA 6990
Tel: (08) 9459 9011 Fax: (08) 9459 5343

KALGOORLIE SAMPLE PREPARATION DIVISION
12 KEOGH WAY, KALGOORLIE WA 6430
P.O. BOX 388 KALGOORLIE WA 6430
Tel: (08) 9021 2881 Fax: (08) 9021 3476



568029

SAMPLE DETAILS

SAMPLE STATE(S) & SAMPLE PREPARATION(S)

SOIL SAMPLES

Dry, Single Stage Mix & Grind (chrome-steel bowl)

Rock Chip Sample(s)

Dry, Crush, Single Stage Mix & Grind(chrome-steel bowl)

SAMPLE STORAGE DETAILS

GENERAL CONDITIONS :

SAMPLE STORAGE OF SOLIDS

Bulk Residues and Pulps will be stored for 60 DAYS without charge. After this time all Bulk Residues and Pulps will be stored at a rate of \$1.20/cubic metre/day until your written advice regarding collection or disposal is received. Expenses related to the return or disposal of samples will be charged to you at cost.

SAMPLE STORAGE OF SOLUTIONS

Samples received as liquids, waters or solutions will be held for 60 DAYS free of charge then disposed of , unless written advice for return or collection is received.



ANALYSIS

568030

ELEMENTS	Au	Au-Rp1	Au-Rp2	Cu	Zn	Ag	Pb
UNITS	ppb	ppb	ppb	ppm	ppm	ppm	ppm
DETECTION	1	1	1	1	1	0.1	1
METHOD	B/ETA	B/ETA	RO/ETA	B/AAS	B/AAS	B/AAS	B/AAS
SAMPLE NUMBERS							
1 P121201	1			9	31	0.1	25
2 P121202	1			7	33	X	32
3 P121203	1			10	32	0.1	19
4 P121204	1			11	20	X	14
5 P121205	1			18	41	0.1	21

6 P121206	1			10	18	0.1	6
7 P121207	1			15	62	X	31
8 P121208	1			7	11	0.1	6
9 P121209	2			12	52	0.2	25
10 P121210	1			17	47	0.2	5

11 P121211	2			11	6	X	9
12 P121212	2			8	3	X	4
13 P121213	5	7		4	6	X	8
14 P121214	2			9	18	X	15
15 P121215	1			4	8	X	8

16 P121216	X			3	35	0.1	13
17 P121217	1			15	22	X	24
18 P121218	1			17	34	X	27
19 P121219	1			3	4	X	5
20 P121220	X			5	3	X	2

21 P121221	1			3	3	X	76 *
22 P121222	X			4	5	X	6
23 P121223	1			5	9	X	7
24 P121224	1			9	6	0.1	5
25 P121225	X			18	120	* X	10

26 P121226	X			11	33	0.1	17
27 P121227	1			4	19	0.1	12
28 P121228	3			22	52	0.2	29
29 P121229	1			15	46	0.2	34
30 P121230	1			56	* 68	X	14

31 P121231	1	X		32	62	7.2 *	8
32 P121232	1			25	43	0.1	16
33 P121233	2			13	38	0.1	12
34 P121234	11		14	20	22	0.1	11
35 P121235	1			4	13	X	5

36 P121236	1			20	19	X	11
37 P121237	140	180		3	6	0.1	3
Ch.0001(P121201	) 1			10	34	0.1	27
Ch.0026(P121226	) 1			11	31	0.1	17
STD: NGL-13	12						



ANALYSIS

568031

ELEMENTS	Au	Au-Rp1	Au-Rp2	Cu	Zn	Ag	Pb
UNITS	ppb	ppb	ppb	ppm	ppm	ppm	ppm
DETECTION	1	1	1	1	1	0.1	1
METHOD	B/ETA	B/ETA	RO/ETA	B/AAS	B/AAS	B/AAS	B/AAS

SAMPLE NUMBERS

STD: NGL-13				14	23	0.5	27
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METHOD CODE DESCRIPTIONS

568032

B/ETA

Aqua-Regia digest.

Analysed by Graphite Furnace Atomic Absorption Spectrometry.

RO/ETA

Pre-Roast followed by an Aqua-Regia digest.

Analysed by Graphite Furnace Atomic Absorption Spectrometry.

B/AAS

Aqua-Regia digest.

Analysed by Flame Atomic Absorption Spectrometry.



568033

Genalysis Laboratory Services Pty. Ltd.

ANALYSTS AND CONSULTING CHEMISTS
ACN: 008 787 237

ATTENTION A GRIFFITH
47 LAWLER STREET
NORTH PERTH WA 6006
AUSTRALIA

Analytical Report

COMMENTS

ATTENTION: A GRIFFITH ...
ROCK....

JOB INFORMATION

JOB CODE :6.3/982581
No. SAMPLES :6
ELEMENTS :6
CLIENT O/N :00298
DATE RECEIVED :08/06/98
DATE COMPLETED :19/06/98

LEGEND

'X' = LESS THAN DETECTION LIMIT
'N/R' = SAMPLE NOT RECEIVED
'*' = RESULT CHECKED
'()' = RESULT STILL TO COME
'I/S' = INSUFFICIENT SAMPLE FOR ANALYSIS
'E6' = RESULT x 1,000,000

MAIN OFFICE AND LABORATORY
15 DAVISON ST, MADDINGTON, WA 6109
P.O. BOX 144 GOSNELLS WA 6990
Tel: (08) 9459 9011 Fax: (08) 9459 5343

KALGOORLIE SAMPLE PREPARATION DIVISION
12 KEOGH WAY, KALGOORLIE WA 6430
P.O. BOX 388 KALGOORLIE WA 6430
Tel: (08) 9021 2881 Fax: (08) 9021 3476



568034

SAMPLE DETAILS

SAMPLE STATE(S) & SAMPLE PREPARATION(S)

Rock Chip Sample(s)

Dry, Crush, Single Stage Mix & Grind(chrome-steel bowl), Quartz Wash

SAMPLE STORAGE DETAILS

GENERAL CONDITIONS :

SAMPLE STORAGE OF SOLIDS

Bulk Residues and Pulps will be stored for 60 DAYS without charge. After this time all Bulk Residues and Pulps will be stored at a rate of \$1.20/cubic metre/day until your written advice regarding collection or disposal is received. Expenses related to the return or disposal of samples will be charged to you at cost.

SAMPLE STORAGE OF SOLUTIONS

Samples received as liquids, waters or solutions will be held for 60 DAYS free of charge then disposed of, unless written advice for return or collection is received.



ANALYSIS

568035

ELEMENTS	Au	Au-Rp1	Cu	Zn	Ag	Pb
UNITS	ppm	ppm	ppm	ppm	ppm	ppm
DETECTION	0.01	0.01	10	10	10	10
METHOD	FA/AAS	FA/AAS	AX/AAS	AX/AAS	AX/AAS	AX/AAS
SAMPLE NUMBERS						
1 P121238	x		30	x	x	60
2 P121239	x		20	x	x	30
3 P121240	x		1120	130	x	70
4 P121241	x		2.05%	4400	20	20
5 P121242	0.03		2700	10.00%	50	310

6 P121243	0.80	0.76	5.00%	18.50%	390	1450
Ch.0001(P121238)	) x		20	x	x	50
STD: CCu1b			23.00%	5.00%	150	1.20%
STD: FA1	0.92					



METHOD CODE DESCRIPTIONS

568036

FA/AAS

Lead collection fire assay using recycled pots.
Analysed by Flame Atomic Absorption Spectrometry.

AX/AAS

Modified (for higher precision) multi-acid digest including
Hydrofluoric, Nitric, Perchloric and Hydrochloric acids.
Analysed by Flame Atomic Absorption Spectrometry.



568037

Genalysis Laboratory Services Pty. Ltd.

ANALYSTS AND CONSULTING CHEMISTS
ACN: 008 787 237

ATTENTION MR A GRIFFITH

1 BAMBRA STREET
LAUDERDALE TAS 7021
AUSTRALIA

Analytical Report

COMMENTS

ATTENTION: A GRIFFITH ...
UNSPEC....

JOB INFORMATION

JOB CODE :6.3/990094
No. SAMPLES :41
ELEMENTS :6
CLIENT O/N :A GRIFFITH
DATE RECEIVED :07/01/99
DATE COMPLETED :22/01/99

LEGEND

'X' = LESS THAN DETECTION LIMIT
'N/R' = SAMPLE NOT RECEIVED
'*' = RESULT CHECKED
'()' = RESULT STILL TO COME
'I/S' = INSUFFICIENT SAMPLE FOR ANALYSIS
'E6' = RESULT x 1,000,000

MAIN OFFICE AND LABORATORY

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ADELAIDE SAMPLE PREPARATION DIVISION

124 MOORINGE AVE, NORTH PLYMPTON, S.A. 5037
P.O. BOX 2078, SOUTH PLYMPTON, S.A. 5038
Tel: (08) 8376 7122 Fax: (08) 8376 7144



genalysis laboratory services pty. ltd.

568038

SAMPLE DETAILS

DISCLAIMER

Genalysis Laboratory Services Pty Ltd disclaims any liability, legal or otherwise, for any inferences implied from this report relating to either the origin of, or the sampling technique employed in the collection of, the submitted samples.

SAMPLE STATE(S) & SAMPLE PREPARATION(S)

Sample State Not Specified

Dry, Crush, Single Stage Mix & Grind(chrome-steel bowl), Quartz Wash

SAMPLE STORAGE DETAILS

GENERAL CONDITIONS :

SAMPLE STORAGE OF SOLIDS

Bulk Residues and Pulps will be stored for 60 DAYS without charge. After this time all Bulk Residues and Pulps will be stored at a rate of \$1.20/cubic metre/day until your written advice regarding collection or disposal is received. Expenses related to the return or disposal of samples will be charged to you at cost.

SAMPLE STORAGE OF SOLUTIONS

Samples received as liquids, waters or solutions will be held for 60 DAYS free of charge then disposed of, unless written advice for return or collection is received.



ANALYSIS

568039

ELEMENTS	Au	Cu	Zn	Ag	Pb	SG
UNITS	ppm	ppm	ppm	ppm	ppm	
DETECTION	0.01	10	10	10	10	0.01
METHOD	FA/AAS	AX/AAS	AX/AAS	AX/AAS	AX/AAS	/GRAV
SAMPLE NUMBERS						
1 P1001	x	50	x	x	x	2.57
2 P1002	0.01	140	10	x	x	2.54
3 P1003	0.01	80	x	x	30	2.55
4 P1004	x	80	x	x	70	2.62
5 P1005	0.01	40	20	x	40	2.52

6 P1006	0.01	60	x	x	x	2.51
7 P1007	x	300	x	x	30	2.51
8 P1008	0.01	110	x	x	x	2.52
9 P1009	x	100	x	x	x	2.52
10 P1010	x	10	40	x	140	2.60

11 P1011	0.01	20	30	x	30	2.58
12 P1012	x	10	20	x	60	2.56
13 P1013	0.01	60	30	x	30	2.63
14 P1014	x	60	x	x	100	2.60
15 P1015	x	760	x	x	190	2.53

16 P1016	0.01	1080	x	x	x	2.52
17 P1017	x	30	x	x	50	2.56
18 P1018	x	10	x	x	100	2.53
19 P1019	x	10	x	x	20	2.43
20 P1020	x	580	230	x	120	2.56

21 P1021	0.01	640	90	x	200	2.54
22 P1022	x	220	880	x	310	2.55
23 P1023	x	420	5000	x	x	2.55
24 P1024	0.01	110	580	x	x	2.58
25 P1025	x	130	1200	x	x	2.48

26 P1026	0.01	1350	6600	x	x	2.52
27 P1027	0.03	2450	15.50%*	30	* 40	2.84
28 P1028	0.02	7800	4200	x	30	2.64
29 P1029	0.04	1.18%*	3.80%*	40	* 380	2.52
30 P1030	x	5200	4200	30	* 2650	* 2.52

31 P1031	0.01	3.60%*	1900	80	* 60	2.58
32 P1032	0.01	3000	580	x	60	2.63
33 P1033	0.01	1.35%*	1900	10	10	2.57
34 P1034	0.02	3400	4.50%*	x	390	2.44
35 P1035	x	380	460	x	x	2.55

36 P1036	x	860	780	x	320	2.64
37 P1037	x	1000	130	x	90	2.65
38 P1038	0.02	320	250	x	10	2.80
39 P1039	x	210	240	10	180	2.70
40 P1040	x	540	330	10	1020	* 2.77



ANALYSIS

568040

ELEMENTS	Au	Cu	Zn	Ag	Pb	SG
UNITS	ppm	ppm	ppm	ppm	ppm	
DETECTION	0.01	10	10	10	10	0.01
METHOD	FA/AAS	AX/AAS	AX/AAS	AX/AAS	AX/AAS	/GRAV
SAMPLE NUMBERS						
41 P1041	X	410	130	10	90	2.67
Ch.0001(P1001)	) X	50	X	X	X	
Ch.0026(P1026)	) X	1300	6600	X	X	
STD: FA10	9.60					
STD: MRG1		140	190	10	10	



METHOD CODE DESCRIPTIONS

568041

FA/AAS

Lead collection fire assay using recycled pots.
Analysed by Flame Atomic Absorption Spectrometry.

AX/AAS

Modified (for higher precision) multi-acid digest including
Hydrofluoric, Nitric, Perchloric and Hydrochloric acids.
Analysed by Flame Atomic Absorption Spectrometry.

/GRAV

No digestion or other pre-treatment undertaken.
Analysed by Gravimetric Technique.



APPENDIX 2

ORIECO PROJECT

98ORDD1

HOLE NO: 98ORDD1	SECTION:	GRID:
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<p>PROJECT CODE</p> <p>TENEMENT : EL 1/98</p> <p>PROSPECT : ORIECO</p> <p>GRID</p> <p>MAP REFERENCE : SCAMANDER TIER</p> <p>LOCATION : ORIECO</p> <p>HOLE TYPE : DIAMOND</p> <p style="text-align: center;">**COLLAR COORDINATES AND RL**</p> <p>SURVEYED:</p> <p>AMG 5413811.07N 601103.56E 75.83RL</p> <p>PRE-COLLAR DEPTH</p> <p>FINAL DEPTH</p> <p>PURPOSE OF HOLE : Resource Definition</p> <p>HOLE STATUS : Complete</p> <p>COMMENTS : Ore intersection 20m below existing workings</p> <p>SURVEY DATA</p> <p>Survey Method: Eastman Single Shot</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Depth</th> <th style="text-align: left;">Azimuth</th> <th style="text-align: left;">Inclination</th> </tr> </thead> <tbody> <tr> <td>20</td> <td>030</td> <td>-37</td> </tr> <tr> <td>100</td> <td>032</td> <td>-41</td> </tr> </tbody> </table> <p>SUMMARY LOG</p> <p>0.00 10.53m Quartz Sandstone</p> <p>10.53 11.04m Intbd Qtz Sandstone-Siltstone</p> <p>11.04 21.20m Quartz Sandstone</p> <p>21.20 21.80m Intbd Qtz Sandstone-Siltstone</p> <p>21.80 34.50m Quartz Sandstone</p> <p>34.50 35.00m Intbd Qtz Sandstone-Siltstone</p> <p>35.00 43.50m Quartz Sandstone</p> <p>43.50 44.20m Intbd Qtz Sandstone-Siltstone</p> <p>44.20 49.00m Quartz Sandstone</p> <p>49.00 53.30m Siltstone</p> <p>53.30 57.10m Intbd Qtz Sandstone-Siltstone</p> <p>57.10 74.80m Quartz Sandstone</p> <p>74.80 80.00m Quartzite</p> <p>80.00 91.20m Mylonite-Fault zone</p> <p>91.20 97.80m Quartz Sandstone</p> <p>97.80 99.00m Intbd Qtz sandstone-Siltstone</p> <p>99.00 104.20m Quartz Sandstone</p> <p>104.20 END OF HOLE</p>	Depth	Azimuth	Inclination	20	030	-37	100	032	-41	<p style="text-align: center;">** DRILLING SUMMARY**</p> <p>DIAMOND 0.00 104.20 BQTK</p> <p>Drilling Contractor : LIDDS</p> <p>Drill Rig: : Gopher 28</p> <p>Date Started :</p> <p>Date Completed :</p> <p>Logged By : AG</p> <p>Sampled By : AG</p> <p>Material Left in Hole : NIL</p> <p>Base of Complete Oxidation : 1.50m</p> <p>Top of Fresh Rock : 78.00m</p> <p>Water First Encountered :</p> <p>Water Inflow Estimate :</p> <p style="text-align: center;">SIGNIFICANT ASSAYS</p> <table style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td>83.00-83.65</td> <td>1350Cu,</td> <td>6600 Zn</td> </tr> <tr> <td>83.65-84.07</td> <td>30Ag,</td> <td>2450Cu, 15.5% Zn</td> </tr> <tr> <td>84.07-85.00</td> <td>7800Cu,</td> <td>4200 Zn</td> </tr> <tr> <td>85.00-85.67</td> <td>40Ag,</td> <td>1.18%Cu, 3.80%Zn</td> </tr> <tr> <td>85.67-86.43</td> <td>30Ag,</td> <td>5200Cu, 4200 Zn</td> </tr> <tr> <td>86.43-87.50</td> <td>80Ag,</td> <td>3.60%Cu, 1900 Zn</td> </tr> <tr> <td>87.50-88.50</td> <td>3000Cu,</td> <td></td> </tr> <tr> <td>88.50-89.50</td> <td>1.35%Cu,</td> <td>1900 Zn</td> </tr> <tr> <td>89.50-90.00</td> <td></td> <td>4.50%Zn</td> </tr> </tbody> </table>	83.00-83.65	1350Cu,	6600 Zn	83.65-84.07	30Ag,	2450Cu, 15.5% Zn	84.07-85.00	7800Cu,	4200 Zn	85.00-85.67	40Ag,	1.18%Cu, 3.80%Zn	85.67-86.43	30Ag,	5200Cu, 4200 Zn	86.43-87.50	80Ag,	3.60%Cu, 1900 Zn	87.50-88.50	3000Cu,		88.50-89.50	1.35%Cu,	1900 Zn	89.50-90.00		4.50%Zn
Depth	Azimuth	Inclination																																			
20	030	-37																																			
100	032	-41																																			
83.00-83.65	1350Cu,	6600 Zn																																			
83.65-84.07	30Ag,	2450Cu, 15.5% Zn																																			
84.07-85.00	7800Cu,	4200 Zn																																			
85.00-85.67	40Ag,	1.18%Cu, 3.80%Zn																																			
85.67-86.43	30Ag,	5200Cu, 4200 Zn																																			
86.43-87.50	80Ag,	3.60%Cu, 1900 Zn																																			
87.50-88.50	3000Cu,																																				
88.50-89.50	1.35%Cu,	1900 Zn																																			
89.50-90.00		4.50%Zn																																			

ORIECO

DIAMOND DRILL LOG

98ORDD1

FROM (m)	TO (m)	GEOLOGICAL LOG	SAMPLE No	FROM (m)	TO (m)
0.00	10.53	<p>QUATRZ SANDSTONE</p> <p>Light brown to pale gray, fine grained, massive quartz sandstone. Moderate to strong pervasive oxidation with ferric oxides and coatings on joint planes.</p> <p>Sandstone cut by numerous white, quartz veinlets and stringers up to a maximum thickness of 1cm. Preferred orientation 45 degrees to core axis. Veinlets are typically partially oxidised with relict vughs and voids partially gossanous after pyrite. Minor cubic pyrite casts up to 3mm in diameter are irregularly dispersed through out the sandstone.</p> <p>3.65-4.65m CORE LOSS</p> <p>1.0m core loss in clay zone, possible small fault?</p> <p>Core remnants contain numerous oxidised quartz vein fragments with strong FeOx possibly after pyrite.</p>			
10.53	11.04	<p>INTERBEDDED QUARTZ SANDSTONE AND SILTSTONE</p> <p>Pale gray, fine grained interbedded massive quartz sandstone and siltstone. Weak pervasive oxidation with ferric oxides and coatings on joint planes.</p> <p>Siltstone bands are typically red brown in colour, siliceous to cherty, with individual horizons typically less than 1cm in thickness. Siltstone horizons are orientated at approximately 70 to the core axis and contain several small scale slump and flame structures. Orientation of these small scale structures indicate bedding is right way up although steeply dipping to core axis.</p>			
11.04	16.88	<p>QUARTZ SANDSTONE</p> <p>Pale gray, fine grained massive quartz sandstone with minor siltstone intervals at 13.90m and 16.48m.</p> <p>12.20-12.66m Zone of moderate to strong, white quartz vein stockworks. Veinlets to 1cm thickness, but</p> <p>14.20-15.80m typically 1-2mm. Partially oxidised with minor boxworks after pyrite. Two generations of veining based on intersections. Orientations 10 and 20 degreEs to core axis.</p>			

568044

ORIECO

DIAMOND DRILL LOG

98ORDD1

FROM (m)	TO (m)	GEOLOGICAL LOG	SAMPLE No	FROM (m)	TO (m)
16.88	21.20	<p>QUARTZ SANDSTONE</p> <p>Light brown to pale gray, fine grained, massive quartz sandstone. Moderate to strong pervasive oxidation with ferric oxides and coatings on joint planes.</p> <p>Sandstone cut by numerous white, quartz veinlets and stringers up to a maximum thickness of 1cm. Preferred orientation 45 degrees to core axis. Veinlets are typically partially oxidised with relict vughs and voids partially gossanous after pyrite. Minor cubic pyrite casts up to 3mm in diameter are irregularly dispersed through out the sandstone</p> <p>16.60-18.50m Zone of moderate to strong white quartz veining locally stockworked. Veins to 1cm in thickness, but typically 2-3mm. Veins often vughed, with gossanous boxworks after pyrite. Veining very strong at 17.50-18.0m with local brecciation.</p> <p>18.45-18.75m Siltstone interbed.</p>			
21.20	21.80	<p>INTERBEDDED SILTSTONE AND SANDSTONE</p> <p>Pale gray, massive siltstone with minor fine grained, massive quartz sandstone interbeds.</p>			
21.80	34.50	<p>QUARTZ SANDSTONE</p> <p>Pale gray to tan, fine grained, massive quartz sandstone. Weak, 1-2% white quartz veinlets 1-2mm in thickness, slight oxidation of veinlets due to weathering. No significant mineralisation with veinlets orientated at approximately 45 degrees to core axis.</p> <p>25.0-29.0m Zone of strong-intense massive quartz veining with localised brecciation and stockworking. Veins typically 2-3mm in thickness, occasionally up to 1cm orientated at 10 and 45 degrees to the core axis.</p> <p>Numerous void spaces which have been infilled by dark brown, Fe rich gossanous boxworks after pyrite. Trace peacock ore colouration on broken surfaces. Trace cubic pyrite casts scattered through out the zone.</p> <p>30.20-30.90m CORE LOSS 0.7m core loss in clay zone, possible small fault?</p>	<p>P1001</p> <p>P1002</p> <p>P1003</p> <p>P1004</p> <p>P1005</p> <p>P1006</p> <p>P1007</p> <p>P1008</p> <p>P1009</p>	<p>25.10</p> <p>26.00</p> <p>27.00</p> <p>28.00</p> <p>29.00</p> <p>30.00</p> <p>31.40</p> <p>32.70</p> <p>34.00</p> <p>34.50</p>	<p>26.00</p> <p>27.00</p> <p>28.00</p> <p>29.00</p> <p>30.00</p> <p>31.40</p> <p>32.70</p> <p>34.00</p> <p>34.50</p>

268042

ORIECO

DIAMOND DRILL LOG

98ORDD1

FROM (m)	TO (m)	GEOLOGICAL LOG	SAMPLE No	FROM (m)	TO (m)
		31.40-31.70m Zone of strong to intense quartz veining with localised brecciation and stockworking. Veins typically 2-3mm in thickness, occasionally up to 1cm orientated at 10 and 45 degrees to the core axis. Numerous void spaces which have been infilled by dark brown, Fe rich gossanous boxworks after pyrite. Trace peacock ore colouration on broken surfaces. Trace cubic pyrite casts scattered through out the zone.			
34.50	35.00	INTERBEDDED QUARTZ SANDSTONE AND SILTSTONE Pale gray, fine grained interbedded massive quartz sandstone and black siltstone. Weak pervasive oxidation with ferric oxides and coatings on joint planes.			
35.00	43.50	QUARTZ SANDSTONE Pale gray to light green, fine grained, massive quartz sandstone. Weak to moderate pervasive oxidation with ferric oxides and coatings on joint planes. Sandstone cut by numerous white, quartz veinlets and stringers up to a maximum thickness of 1cm. Preferred orientation 45 degrees to core axis. Veinlets are typically partially oxidised with relict vughs and voids partially gossanous after pyrite. 40.82-41.02m Two zones of strong, white quartz veining. Veins to 1cm in width, strongly oxidised with 41.70-41.80m boxworks after pyrite. Veins preferentially orientated at 10 and 45 degrees to the core axis.			
43.50	44.20	INTERBEDDED QUARTZ SANDSTONE AND SILTSTONE Pale gray, fine grained interbedded massive quartz sandstone and gray siltstone. Weak pervasive oxidation with ferric oxides and coatings on joint planes.			
44.20	49.00	QUARTZ SANDSTONE Dark gray, fine grained, massive quartz sandstone cut by 1-2% white quartz veinlets up to 10mm in width but typically 1-2mm. Preferred orientation 45 degrees to core axis. Partially oxidised			

508046

ORIECO

DIAMOND DRILL LOG

98ORDD1

FROM (m)	TO (m)	GEOLOGICAL LOG	SAMPLE No	FROM (m)	TO (m)
		with minor gossanous boxworks after pyrite. Trace cubic pyrite casts to 3mm randomly distributed throughout the core.			
49.00	53.30	SILTSTONE Light gray to black, siltstone. Trace amount of white, partially oxidised quartz veinlets 1-2mm in width. Preferred orientations at 20 and 45 degrees to core axis. 49.00-50.60m CORE LOSS 1.60m core loss within siltstone horizon appears non mineralised.			
53.30	57.10	INTERBEDDED QUARTZ SANDSTONE AND SILTSTONE Dark gray, fine grained, massive interbedded quartz sandstone and siltstone. Gradational boundaries between the units and weak pervasive oxidation. Interval contains up to 5% red-brown to white, partially oxidised quartz-kaolin veinlets typically 1-2mm in width. Occasional veinlets to 10mm. Preferred orientation 45 degrees to the core axis.			
57.10	74.80	QUARTZ SANDSTONE Pale gray to weakly pale green, fine grained, massive quartz sandstone with occasional minor siltstone horizons. Interval contains trace 1%, brown to white, partially oxidised quartz-kaolin veinlets 2-3mm in width orientated at 45 degrees to the core axis. Trace vughs possibly after pyrite. 58.00-60.00m Zone containing 5% white, massive quartz veins partially oxidised with veins up to 1cm. 60.80-61.00m Areas of increased vein intensity may be locally brecciated and stockworked. Preferred vein orientation 70 degrees to core axis. Strong Feox developed on fracture planes 67.00-69.00m Interval contains trace 1-2% pyrite casts randomly distributed through out the core. 68.30-68.40m Breccia zone. Angular, quartz sandstone clasts, matrix supported and infilled by dark brown to black gossanous Feox with trace chalcocite.	P1010 P1011 P1012	67.30 68.00 69.00	68.00 69.00 70.00

568047

ORIECO

DIAMOND DRILL LOG

98ORDD1

FROM (m)	TO (m)	GEOLOGICAL LOG	SAMPLE No	FROM (m)	TO (m)
		70.50-70.60m Fault gouge. Non mineralised.			
		70.60-72.00m Interval contains approximately 5% pyrite casts to 3mm randomly distributed through core.	P1013	70.00	71.00
		72.80-73.10m Mylonite. Zone approximately 30cm in width which appears to contain gray, fine grained strongly foliated sandstone clasts orientated 50 degrees to the core axis set in a black shale?	P1014	71.00	72.00
		matrix. Basal contact sharply defined with a 5cm zone of kaolin.	P1015	72.00	73.00
		73.10-74.80m Zone of moderate to strong quartz-kaolin veinlets and stockworks 2-3mm in width. Vein intensity decreases down hole below the fault zone.	P1016	73.00	74.00
		74.75m Gossanous quartz vein 1cm thick orientated at 40 degrees to the core axis.	P1017	74.00	75.00
74.80	80.00	QUARTZITE Pale gray to weakly green, fine grained, massive quartzite. Zone contains 5% white, massive quartz-kaolin veinlets 2-3mm in width which may be partially oxidised and vughed in part. Trace 1% Feox after pyrite. Vein intensity increases down hole and may be locally stockworked. Preferred vein orientations at 50 and 80 degrees to the core axis.	P1018	75.00	76.00
		78.00-80.00m Trace fine grained chalcocite and pyrite contained in quartz-kaolin veinlets.	P1019	76.00	77.00
			P1020	77.00	78.00
			P1021	78.00	79.00
			P1022	79.00	79.90
80.00	91.20	MYLONITE-FAULT ZONE Pale gray to weakly pale green mylonite-fault zone. Interval appears to be an intermixed zone of gray, partially silicified fine grained quartz sandstone and pale, to olive green coloured siltstone, with weak chlorite-epidote? alteration. Both the sandstone and siltstone appears to be set in a gray, to black coloured, fine-grained groundmass containing trace amounts of very fine grained pyrite. The zone is very strongly foliated with a preferred orientation of 70 degrees to the core axis.	P1023	79.90	81.00
		80.70-81.00m Zone of increased silicification, minor brecciation and trace 1% fine grained pyrite-sphalerite veinlets and blebs.	P1024	81.00	82.00
		82.10-82.20m	P1025	82.00	83.00
		84.12-84.37m 25cm interval containing approximately 20% fine grained black chalcocite-sphalerite-pyrite set in gray, strongly silicified groundmass.	P1026	83.00	83.65
			P1027	83.65	84.07

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ORIECO

DIAMOND DRILL LOG

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FROM (m)	TO (m)	GEOLOGICAL LOG	SAMPLE No	FROM (m)	TO (m)
		85.40-85.50m Several fine grained, black chalcocite-sphalerite-pyrite veins to 3cm in width orientated at 45 degrees to the core axis. Zone contacts strongly sheared and kaolinitic.	P1028	84.07	85.00
		85.80-86.14m Zone containing approximately 5% discontinuous gray-black chalcocite + chalcopyrite veinlets 1-2mm in width and 2-3cm in length. The black chalcocite appears to have formed as secondary copper sulphides which border the primary chalcopyrite. The veinlets have a preferred orientation of 70 degrees to the core axis.	P1029 P1030	85.00 85.67	85.67 86.43
		86.90-88.00m Zone containing 1-2% chalcopyrite+chalcocite blebs 1-2mm in width. Preferred orientation 70 degrees to the core axis.	P1031 P1032	86.43 87.50	87.50 88.50
		88.00-89.00m Zone containing up to 5% fine grained black chalcocite and chalcopyrite veinlets 1-2mm in width. Preferred orientation 60 to 70 degrees to the core axis. The veins cross-cut the the foliation associated with the fault zone at approximately 90 degrees.	P1033	88.50	89.50
		89.25-89.28m Three centimetre wide chalcocite-chalcopyrite-pyrite vein, sharply defined and sheared contacts orientated at approximately 60 degrees to the core axis.			
		89.70-89.95m Zone containing up to 5% fine grained black chalcocite-chalcopyrite-pyrite veins and blebs at 60 degrees to the core axis. The mineralisation within the zone is generally aligned parallel to the overall foliation direction.	P1034	89.50	90.00
		90.20-90.70m Weak 1% pyrite veinlets 1-2mm in width, with minor quartz-kaolin boundaries. Veins are generally orientated at 80 degrees to the core axis.	P1035	90.00	91.00
		91.20m Basal contact of mylonite/fault zone, weakly sheared, non-mineralised.			
91.20	97.80	QUARTZ SANDSTONE Pale to dark gray, massive, fine-grained quartz sandstone.	P1036	91.00	92.00
		91.20-92.00m Zone containing approximately 5% white, quartz-kaolin stockworked veins typically 1-2mm in width. Trace <1% chalcocite-chalcopyrite-pyrite in vughed areas.	P1037 P1038	92.00 93.00	92.00 94.00
		92.00-93.00m Trace 1% white quartz-kaolin veinlets at approximately 45 degrees to the core axis.	P1039	94.00	95.00
		95.60-96.00m Zone of minor brecciation of sandstone infilled by white quartz-kaolin material with trace <1% fine grained, black chalcocite.	P1040 P1041	95.00 96.00	96.00 97.00

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DIAMOND DRILL LOG

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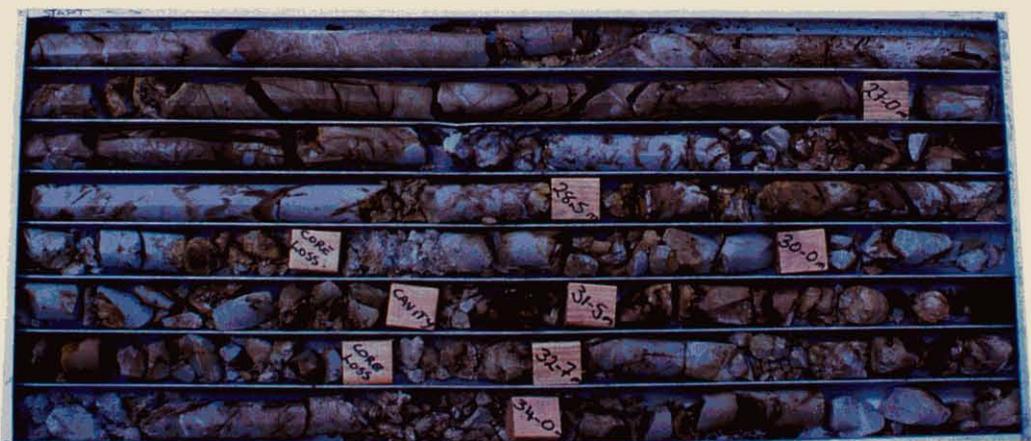
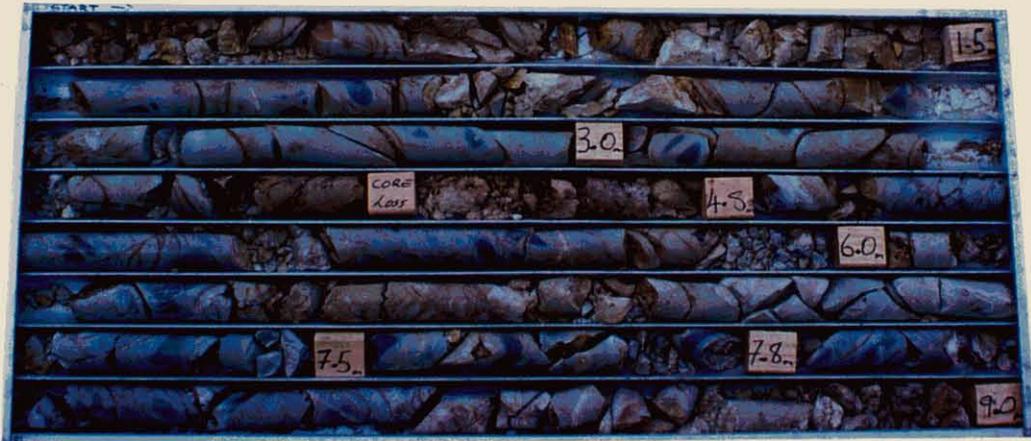
FROM (m)	TO (m)	GEOLOGICAL LOG	SAMPLE No	FROM (m)	TO (m)
97.80	99.00	<p>INTERBEDDED QUARTZ SANDSTONE AND SILTSTONE</p> <p>Pale gray, fine grained interbedded massive quartz sandstone and siltstone. Siltstone bands are typically dark gray to black in colour and up to several centimetres in width. Siltstone horizons are strongly laminar and orientated at approximately 70 to the core axis. Sharply defined upper contact with the sandstone horizon. Sedimentary structures recognised include cross bedding, flame and slump structures which indicate bedding is right way up although steeply dipping to the core axis.</p>			
99.00	104.20	<p>QUARTZ SANDSTONE</p> <p>Pale, fine grained, massive quartz sandstone. Non mineralised.</p>			
	104.2	<p>END OF HOLE</p>			

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APPENDIX 3

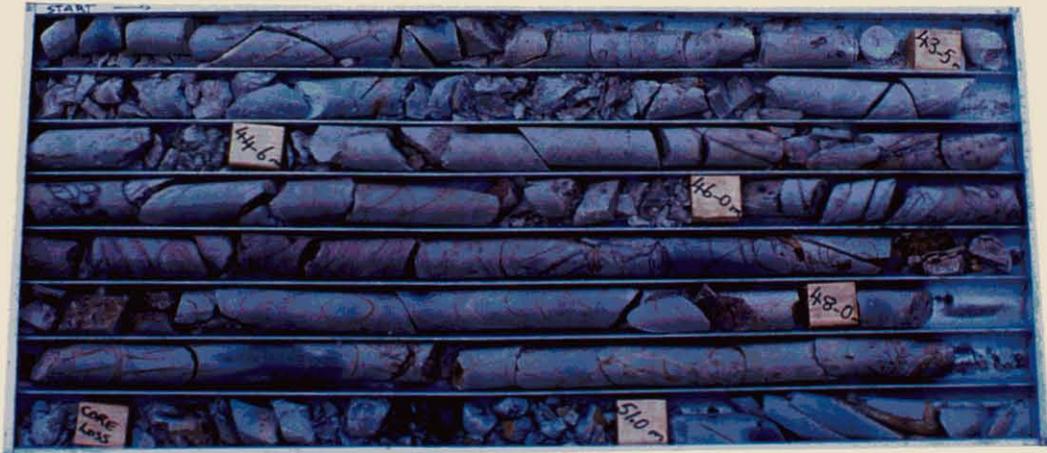
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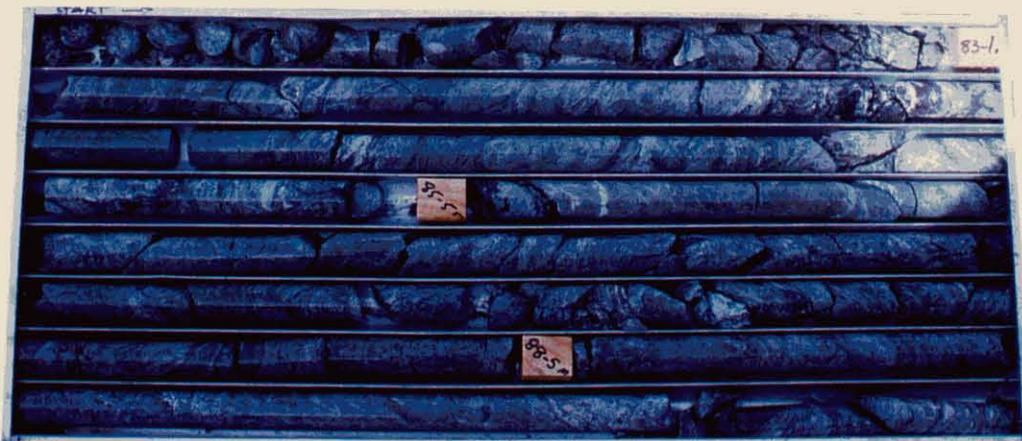
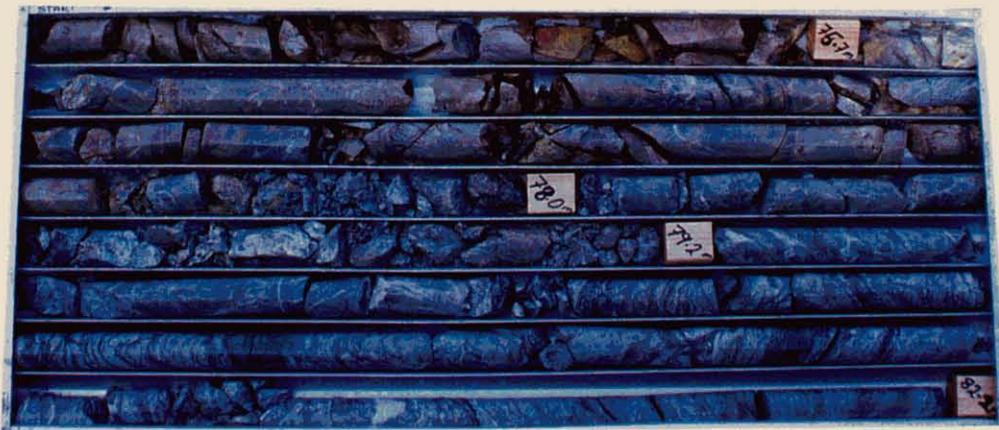
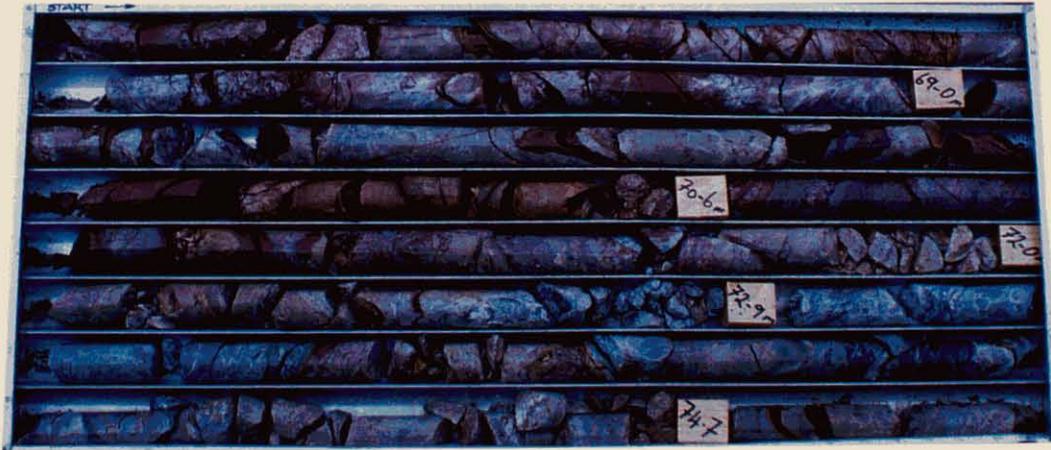
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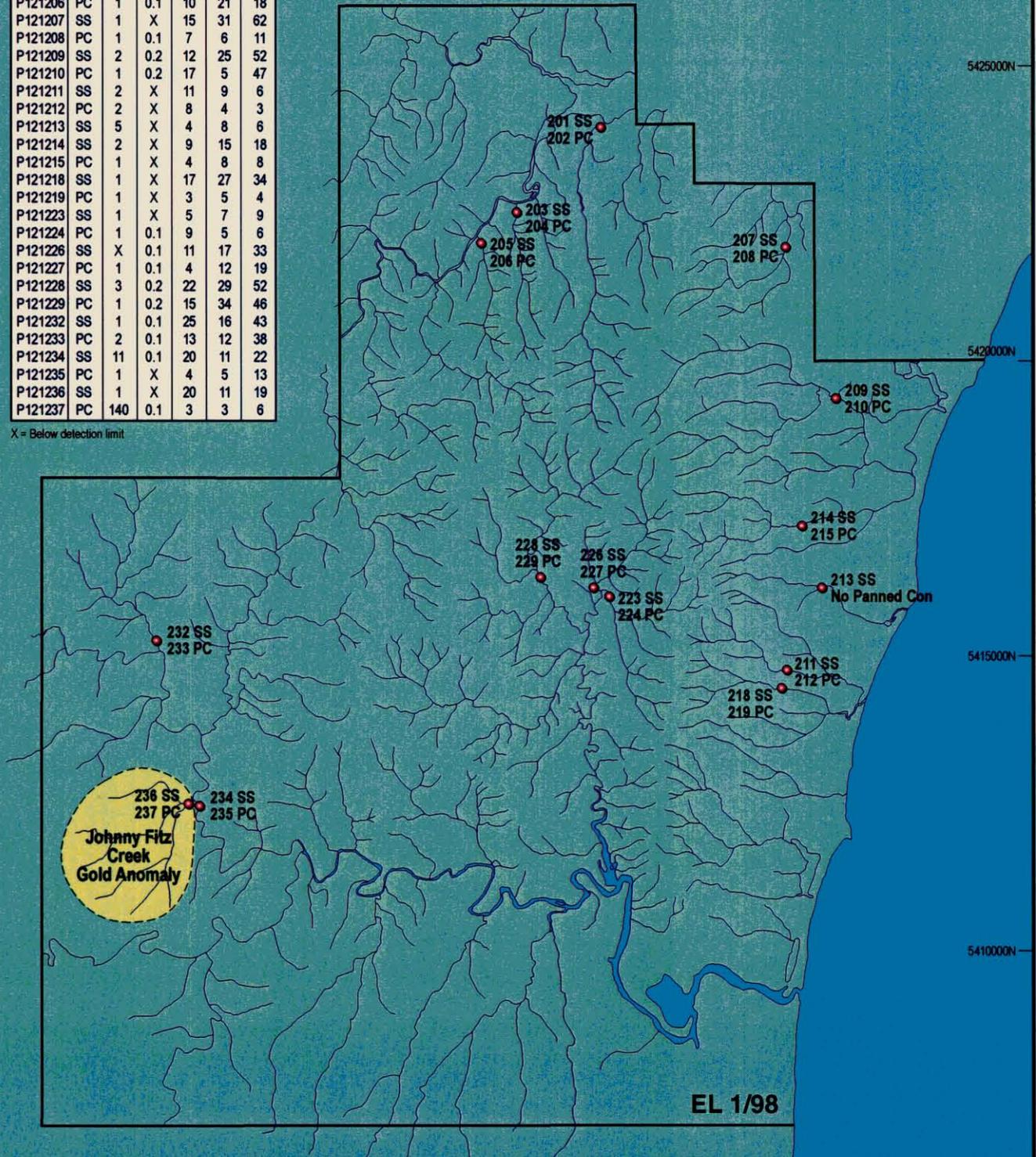
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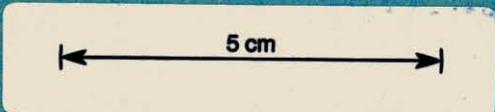
SAMPLE NUMBER	TYPE	Au ppb	Ag ppb	Cu ppm	Pb ppm	Zn ppm
P121201	SS	1	0.1	9	25	31
P121202	PC	1	X	7	32	33
P121203	SS	1	0.1	10	19	32
P121204	PC	1	X	11	14	20
P121205	SS	1	0.1	18	21	41
P121206	PC	1	0.1	10	21	18
P121207	SS	1	X	15	31	62
P121208	PC	1	0.1	7	6	11
P121209	SS	2	0.2	12	25	52
P121210	PC	1	0.2	17	5	47
P121211	SS	2	X	11	9	6
P121212	PC	2	X	8	4	3
P121213	SS	5	X	4	8	6
P121214	SS	2	X	9	15	18
P121215	PC	1	X	4	8	8
P121218	SS	1	X	17	27	34
P121219	PC	1	X	3	5	4
P121223	SS	1	X	5	7	9
P121224	PC	1	0.1	9	5	6
P121226	SS	X	0.1	11	17	33
P121227	PC	1	0.1	4	12	19
P121228	SS	3	0.2	22	29	52
P121229	PC	1	0.2	15	34	46
P121232	SS	1	0.1	25	16	43
P121233	PC	2	0.1	13	12	38
P121234	SS	11	0.1	20	11	22
P121235	PC	1	X	4	5	13
P121236	SS	1	X	20	11	19
P121237	PC	140	0.1	3	3	6

X = Below detection limit



EL 1/98

Note : All sample numbers prefixed by P121



SCAMANDER EL 1/98
STREAM SEDIMENT & PANNED CONCENTRATE
SAMPLE LOCATIONS
& ASSAY RESULTS

Scale 1:100,000

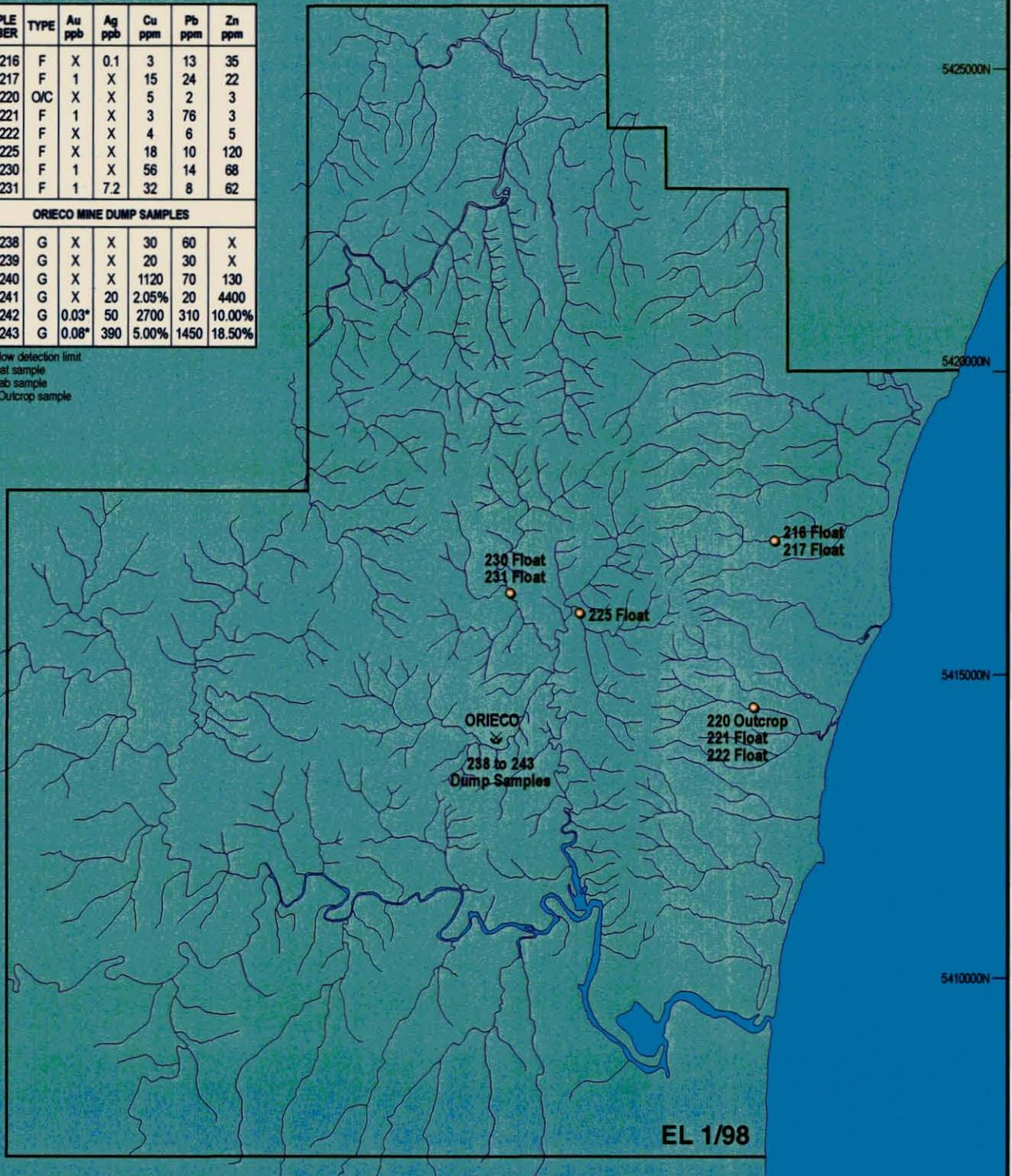
December 1998

SAMPLE NUMBER	TYPE	Au ppb	Ag ppb	Cu ppm	Pb ppm	Zn ppm
P121216	F	X	0.1	3	13	35
P121217	F	1	X	15	24	22
P121220	O/C	X	X	5	2	3
P121221	F	1	X	3	76	3
P121222	F	X	X	4	6	5
P121225	F	X	X	18	10	120
P121230	F	1	X	56	14	68
P121231	F	1	7.2	32	8	62

ORIECO MINE DUMP SAMPLES

P121238	G	X	X	30	60	X
P121239	G	X	X	20	30	X
P121240	G	X	X	1120	70	130
P121241	G	X	20	2.05%	20	4400
P121242	G	0.03*	50	2700	310	10.00%
P121243	G	0.08*	390	5.00%	1450	18.50%

X = Below detection limit
 F = Float sample
 G = Grab sample
 O/C = Outcrop sample



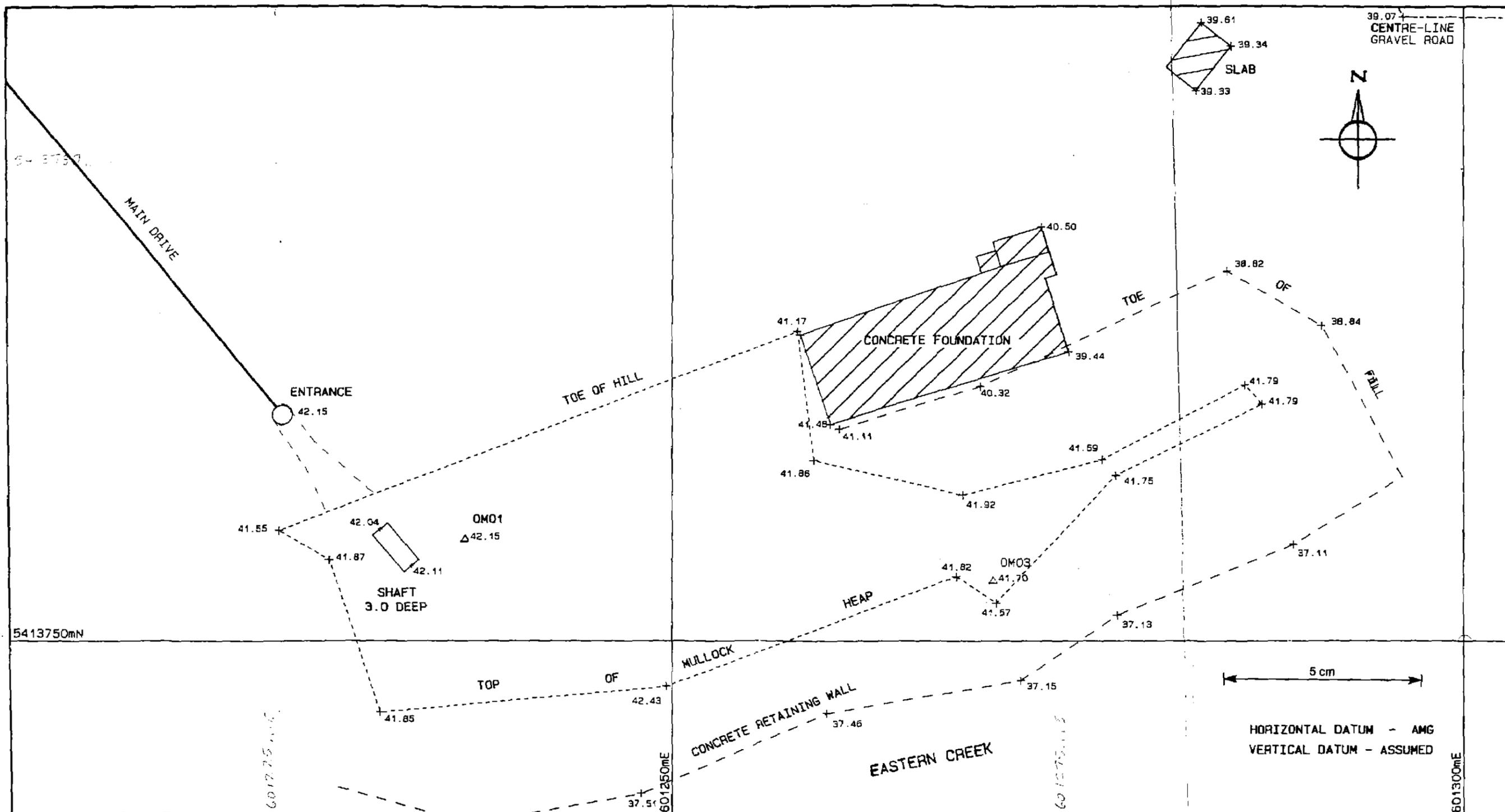
Note : All sample numbers prefixed by P121

SCAMANDER EL 1/98

ROCK SAMPLE LOCATIONS & ASSAY RESULTS

Scale 1:100,000

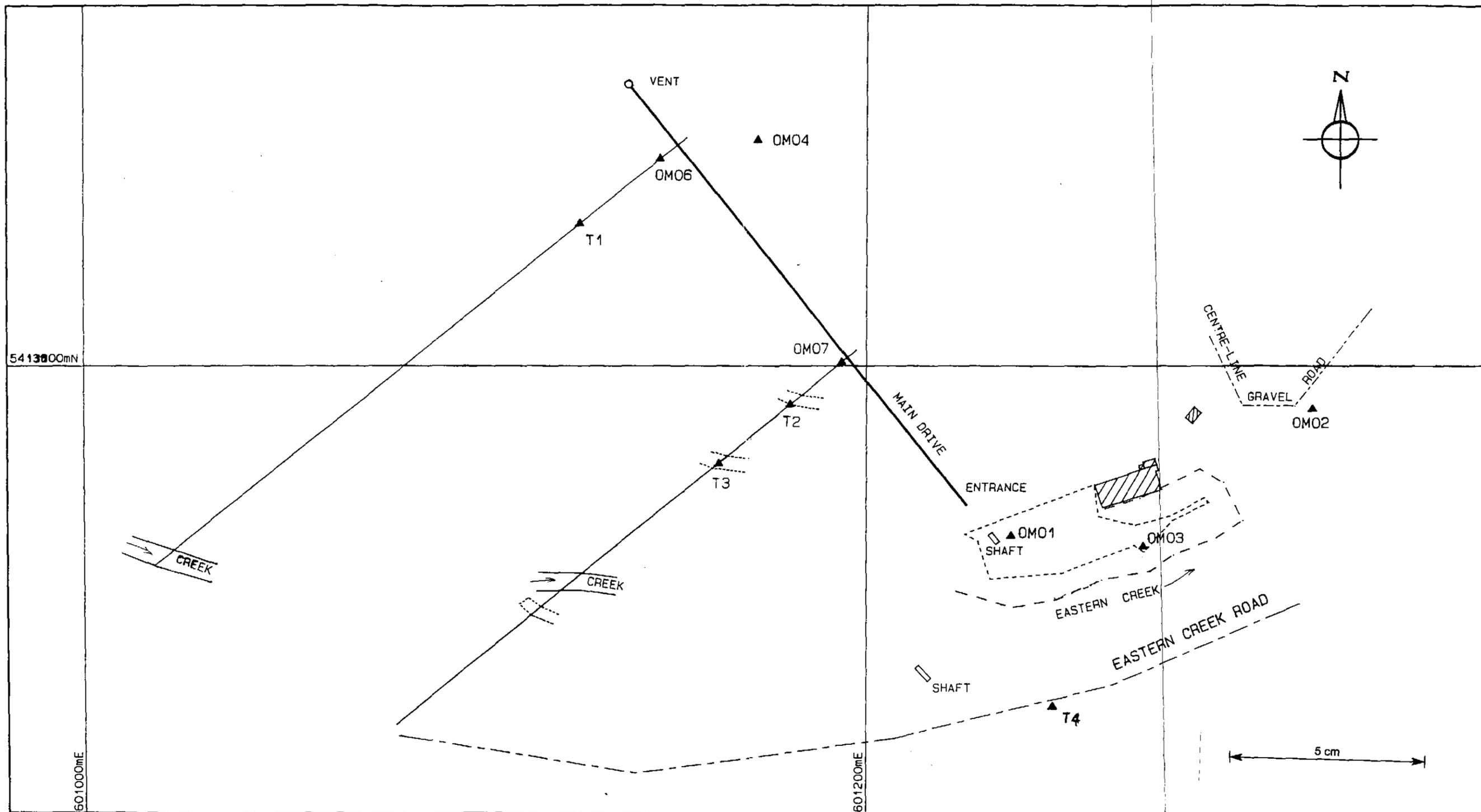
December 1998



EAST COAST SURVEYING
 CONSULTING SURVEYORS AND LAND PLANNERS
 88 TASMAN HIGHWAY ST HELENS 7216
 PHONE (003) 761972 FAX (003) 761262

ORIECO MINE
 UPPER SCAMANDER

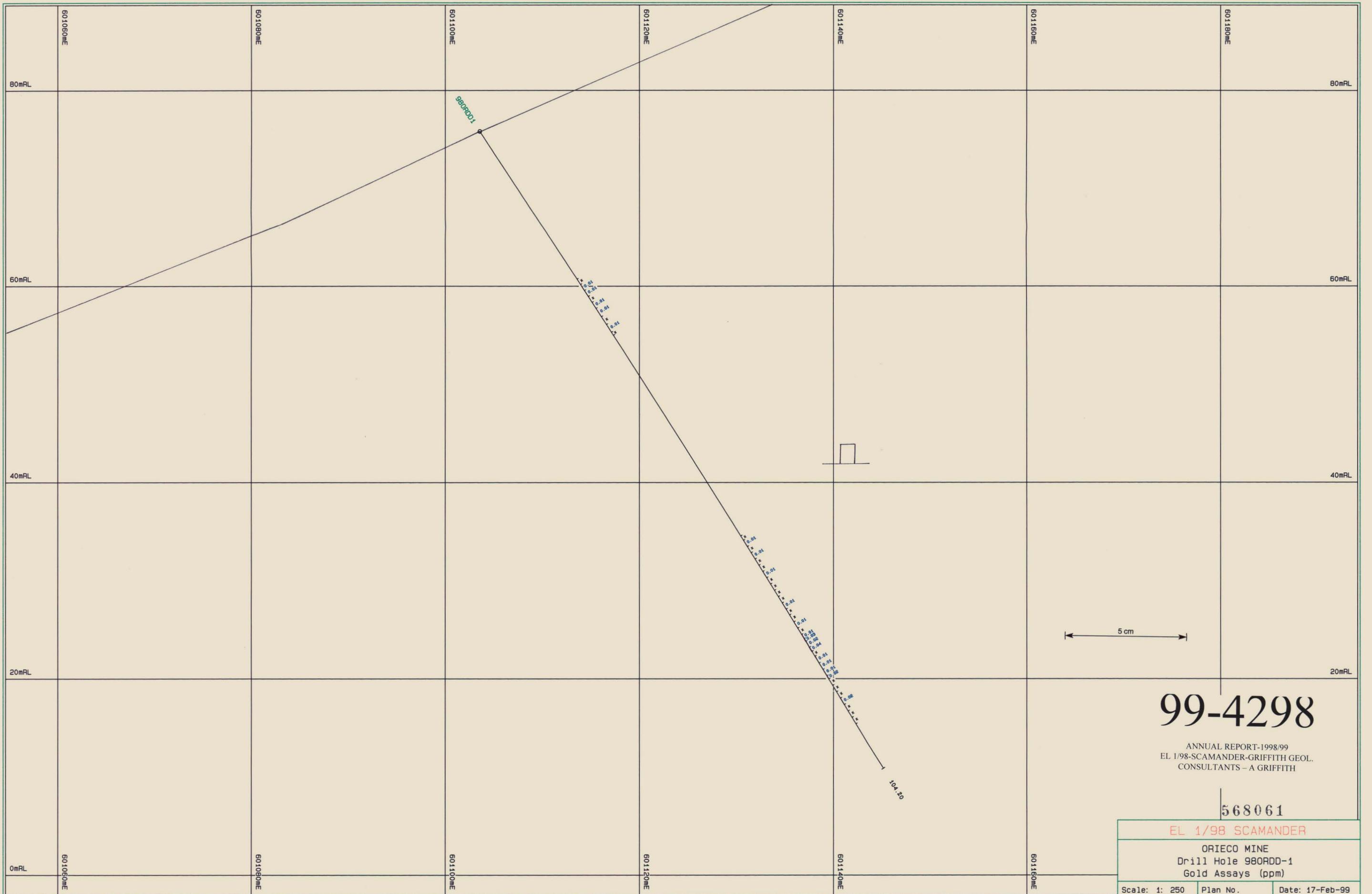
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 Job : 980705



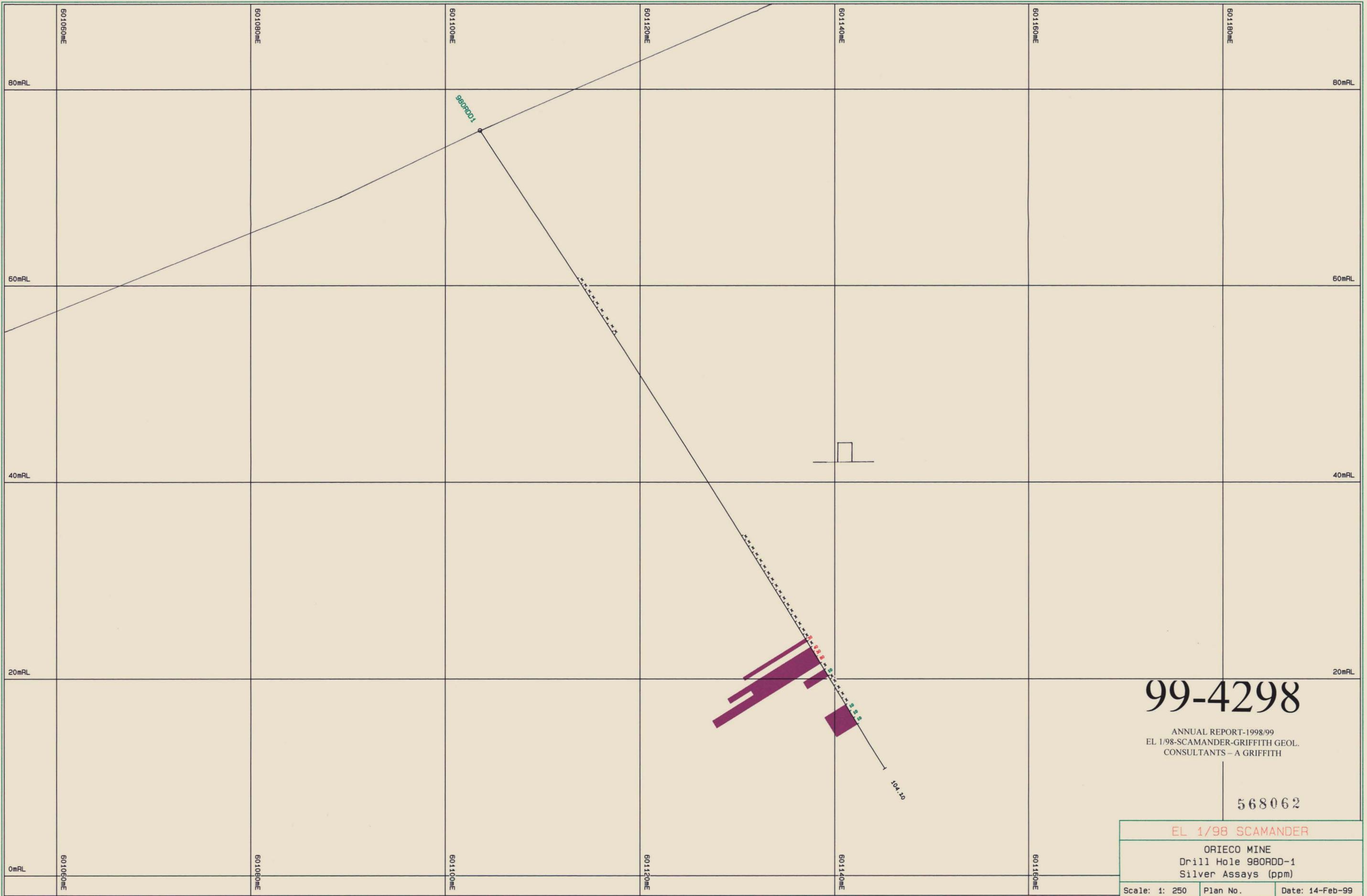
EAST COAST SURVEYING
 CONSULTING SURVEYORS AND LAND PLANNERS
 88 TASMAN HIGHWAY ST HELENS 7216
 PHONE (003) 761972 FAX (003) 761262

ORIECO MINE
 UPPER SCAMANDER

Scale : 1:1000
 Plot : SCOPE
 Date : 1 SEP 1998
 Job : 980705



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ANNUAL REPORT-1998/99
 EL 1/98-SCAMANDER-GRIFFITH GEOL.
 CONSULTANTS - A GRIFFITH

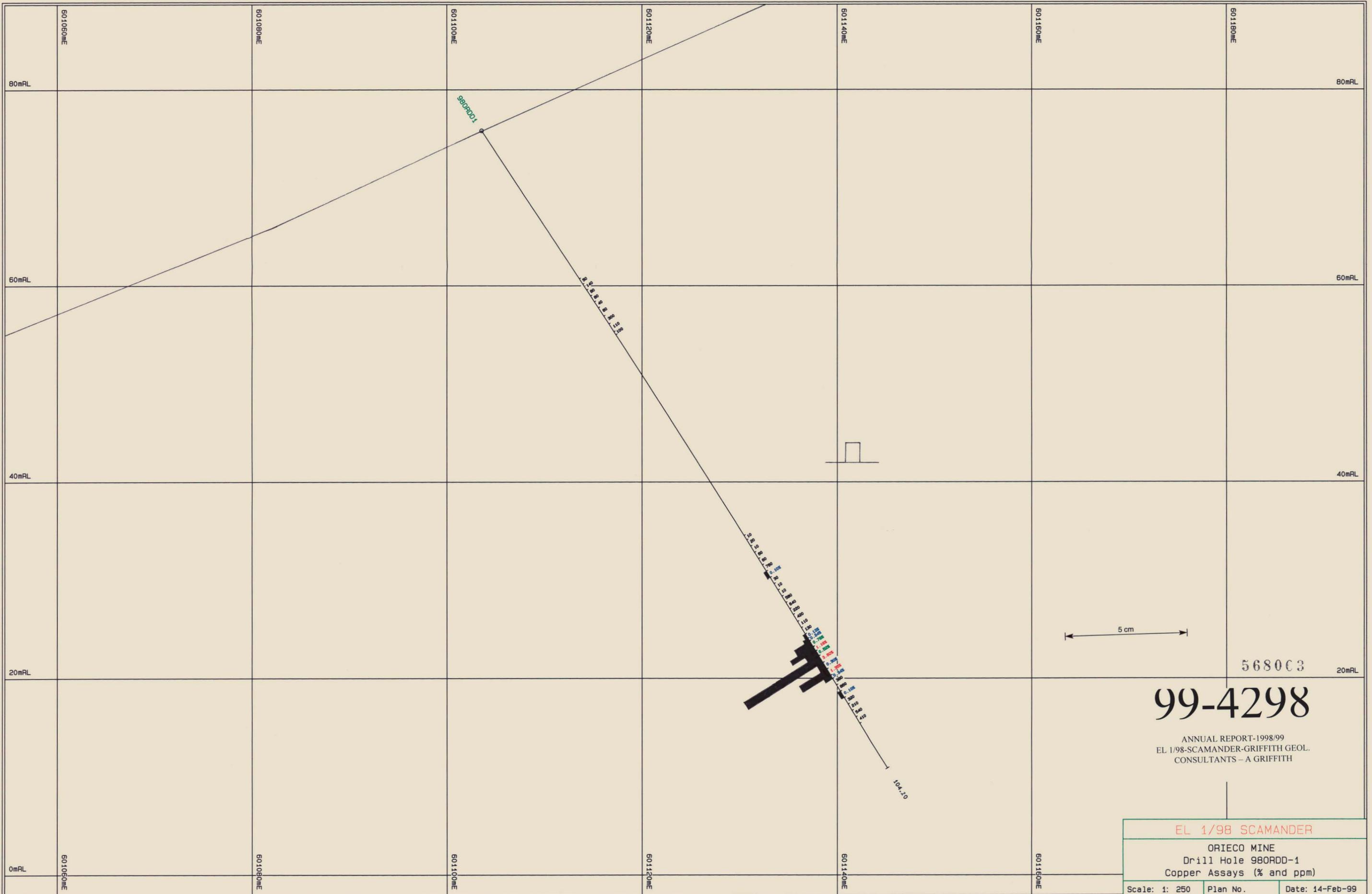
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EL 1/98 SCAMANDER

ORIECO MINE
 Drill Hole 980RDD-1
 Silver Assays (ppm)

Scale: 1: 250 Plan No. Date: 14-Feb-99

silveru.pl



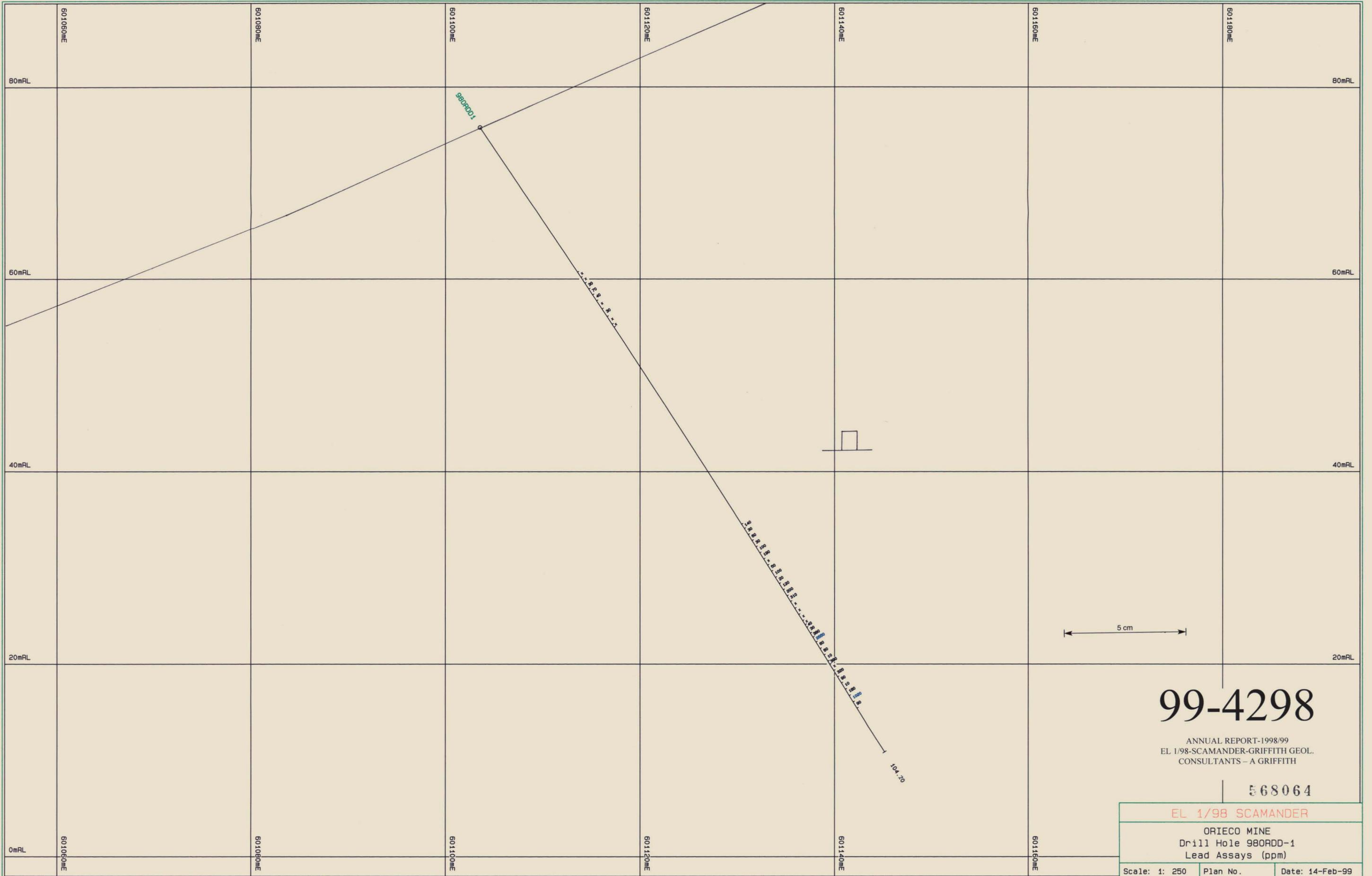
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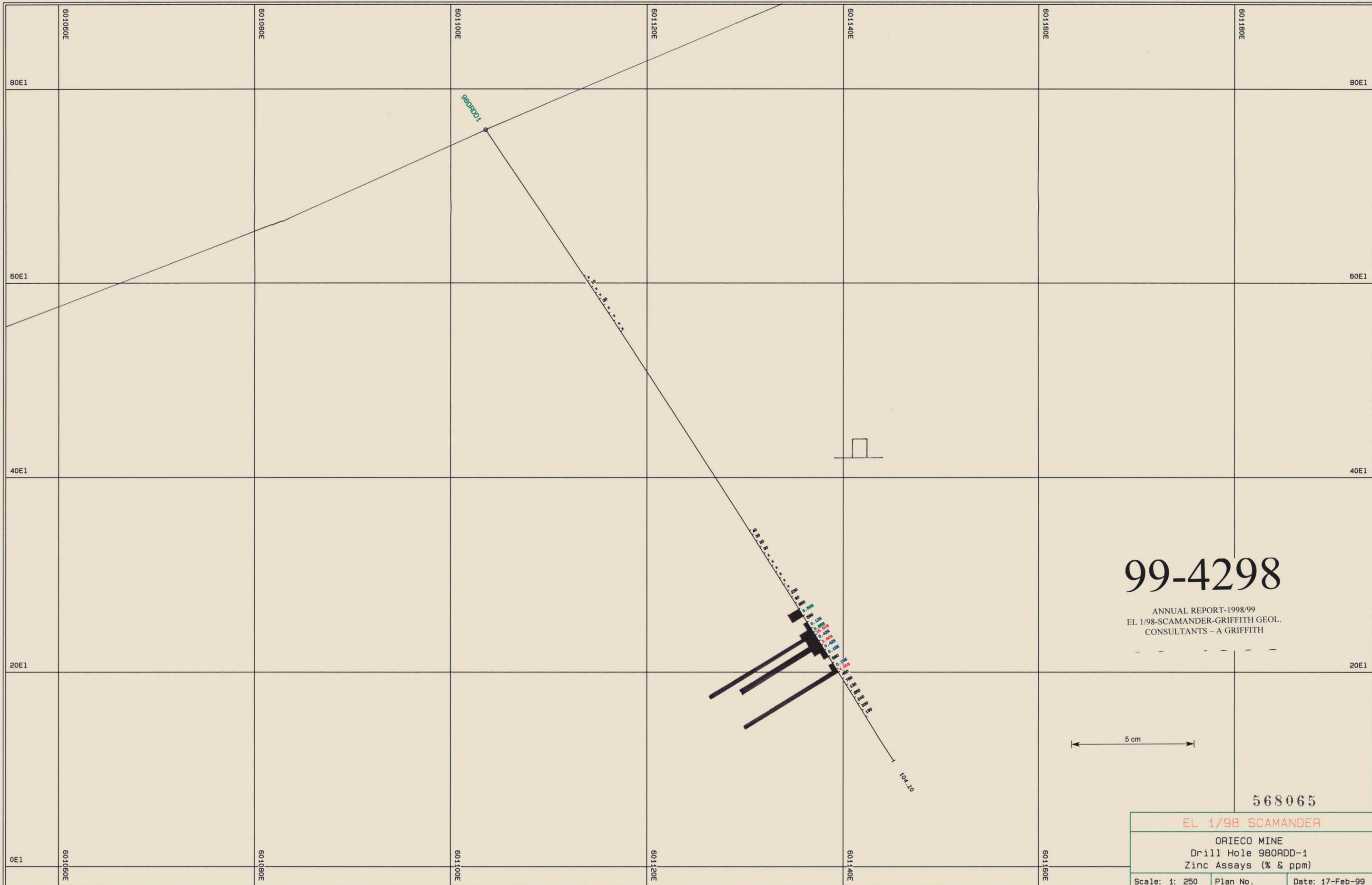
ANNUAL REPORT-1998/99
 EL 1/98-SCAMANDER-GRIFFITH GEOL.
 CONSULTANTS - A GRIFFITH

EL 1/98 SCAMANDER		
ORIECO MINE		
Drill Hole 980RDD-1		
Copper Assays (% and ppm)		
Scale: 1: 250	Plan No.	Date: 14-Feb-99

coppera.pf



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zincb.pf